

International Perspectives on Aging 13
Series Editors: Jason L. Powell, Sheying Chen

Diego Sánchez-González
Vicente Rodríguez-Rodríguez *Editors*

Environmental Gerontology in Europe and Latin America

Policies and Perspectives on
Environment and Aging

 Springer

International Perspectives on Aging

Volume 13

Series editors

Jason L. Powell

University of Lancashire, Manchester, United Kingdom

Sheying Chen

Pace University, New York, New York, USA

The study of aging is continuing to increase rapidly across multiple disciplines. This wide-ranging series on International Perspectives on Aging provides readers with much-needed comprehensive texts and critical perspectives on the latest research, policy, and practical developments. Both aging and globalization have become a reality of our times, yet a systematic effort of a global magnitude to address aging is yet to be seen. The series bridges the gaps in the literature and provides cutting-edge debate on new and traditional areas of comparative aging, all from an international perspective. More specifically, this book series on International Perspectives on Aging puts the spotlight on international and comparative studies of aging.

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Diego Sánchez-González
Vicente Rodríguez-Rodríguez
Editors

Environmental Gerontology in Europe and Latin America

Policies and Perspectives on Environment
and Aging



Editors

Diego Sánchez-González
Faculty of Architecture
Autonomous University of Nuevo León
Monterrey, Nuevo León, México

Vicente Rodríguez-Rodríguez
Institute of Economics
Geography and Demography (IEGD),
Spanish National Research
Council (CSIC)
Madrid, Spain

ISSN 2197-5841

ISSN 2197-585X (electronic)

International Perspectives on Aging

ISBN 978-3-319-21418-4

ISBN 978-3-319-21419-1 (eBook)

DOI 10.1007/978-3-319-21419-1

Library of Congress Control Number: 2015951458

Springer Cham Heidelberg New York Dordrecht London

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Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media (www.springer.com)

Preface

The field of environmental gerontology seems to play different roles in gerontology over time, oscillating between prominent contributions versus operating more in the backyard of aging research. Environmental gerontology as the research stream within social and behavioral aging research that addresses and analyzes the physical-spatial context of aging was much on the agenda of gerontology in the 1970s and 1980s. The landmark work of M. Powell Lawton (among others such as Francis Carp, Eva Kahana, Graham Rowles, and Rick Scheidt; see Wahl (2001) for an overview) at the theory as well as empirical level likely contributed much to this prominence. In the 1990s, environmental gerontology lost some of its impact and concentrated much on the demented older adults as a group with particular environmental vulnerability and a strong need for optimized environments, particularly long-term care contexts (Cohen and Weisman 1991). Since the beginning of the new century, fresh impetus has enabled reinstalling the importance of environmental gerontology, the least coming from Europe with empirical work such as the cross-country ENABLE-AGE study (Iwarsson et al. 2007). Indeed, the overall ambition to bring the area forward seems to regain power and dynamics in more recent time (Wahl et al. 2004; Wahl and Oswald 2010; Wahl et al. 2012). However, the emphasis to consider and apply environmental gerontology theory and studies continued mostly to remain a European and North American endeavor. Thus, generalization to other countries and cultures remained limited.

That said, it is excellent to see that the scope, differentiation, and application of environmental gerontology finds major extension in this new volume edited by Diego Sánchez-González and Vicente Rodríguez-Rodríguez. Compiling in a rich way perspectives on how environments shape aging trajectories and outcomes in countries such as Mexico, Chile, Ecuador, and Brazil with views from European countries, but also the USA, Canada, and Israel, is very informative as well as highly innovative and leads to both unexpected new insights and important future research impact.

In particular, I consider it as very helpful and synergy-provoking that this book is based on a broad understanding of environmental gerontology and that a range of relevant person-environment issues is treated. The book, for instance, addresses the

impact of globalization at large, “aging in place” challenges in a number of countries including the major themes of place attachment and place identity, mobility and migration, housing, and the rural-urban distinction which separates the aging worlds around the globe on a continuing basis. Future key public health challenges such as climate change or the need to develop age-friendly urban environments also find considerable attention in the book. Such a multi-theme and multidimensional approach to environmental gerontology research is also important, because it leads to the treatment of the micro-, meso-, and macro-level of person-environment transactions in similar intensity. This is both a valuable addition to previous environmental gerontology research as well as helps to profoundly anchor person-environment issues in current and future policy agendas. For example, as we see rapidly increasing older migrant populations with pronounced cultural diversity, the glasshouse effect will hit old and very old individuals to a large extent, and the designing of urban habitats in the future will be strongly affected by the full heterogeneity of large numbers of old and very old adults, ranging from those with remaining solid competencies to those with pronounced physical and cognitive limitations. Going further, the book also gives equal emphasis to the role of the objective and experiential part of person-environment transactions as people age in different countries.

A closer look at some of the chapters enables to easily corroborate what has been said in the previous section: For example, Chap. 2 gives an overview of the applicability of theoretical models established in environmental gerontology comparing South European and Latin American countries. Chapter 5 builds string bridges among person-environmental issues and health in the UK. Chapter 9 sheds light on the role of urban aging by relying on intensive case studies conducted in the city of Valparaíso, Chile. Chapter 11 highlights issues of place attachment with data from Mexico, but with an author team that gathers scholars from Mexico and the UK. Chapter 15 elaborates on the challenges and problems of what is frequently called age-friendly environments (WHO), while contrasting Manchester, Ghent, and Brussels.

In conclusion, I expect that this volume will significantly contribute to our knowledge of a range of issues related to the fact that we all age in context, though this context is strongly framed within specific cultures. Thus, the context of aging has meanwhile gained a global dimension, and therefore, environmental gerontology has to turn out international and cross-country comparative. Simultaneously, the enduring importance of environmental gerontology will receive major impulses from this volume and hence will further strengthen the area at large. Even if the oscillation of environmental gerontology continues as described above, we should do everything that it remains a priority on the agenda of future gerontology. This book will help a lot to achieve this goal.

Department of Psychological Ageing Research
Institute of Psychology, Heidelberg University
Heidelberg, Germany

Hans-Werner Wahl

References

- Cohen, U., and G. Weisman. 1991. *Holding on to home: Designing environments for people with dementia*. Baltimore: Johns Hopkins University Press.
- Iwarsson, S., H.-W. Wahl, C. Nygren, F. Oswald, A. Sixsmith, J. Sixsmith, Z. Széman, and S. Tomsone. 2007. Importance of the home environment for healthy aging: Conceptual and methodological background of the ENABLE-AGE Project. *The Gerontologist* 47: 78–84.
- Wahl, H.-W., and F. Oswald. 2010. Environmental perspectives on aging. In *The SAGE handbook of social gerontology*, eds. Dannefer, D. and C. Phillipson, 111–124. London: Sage.
- Wahl, H.-W., R. Scheidt, and P. Windley (eds). 2004. *Annual Review of Gerontology and Geriatrics* 23, Issue on *Aging in context: Socio-physical environments*. New York: Springer.
- Wahl, H.-W., S. Iwarsson, and F. Oswald. 2012. Aging well and the environment: Toward an integrative model and research agenda for the future. *The Gerontologist* 52: 306–316. doi:[10.1093/geront/gnr154](https://doi.org/10.1093/geront/gnr154).

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Contributors

María Elena Acosta-Maldonado Ministry of Urban Development and Housing, Quito, Ecuador

Tine Buffel, Ph.D. The University of Manchester, Manchester, UK

Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

Sergio Antonio Carlos, Ph.D. Social Work Department, Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil

Hernan Casakin, Ph.D. School of Architecture, Ariel University, Ariel, Israel

Rosalía Chávez-Alvarado, Ph.D. School of Architecture, Autonomous University of Nuevo Leon (UANL), Monterrey, Mexico

Alejandra Cortés, MSc Faculty of Architecture and Planning, University of Chile, Santiago de Chile, Chile

University of Technical Federico, Santa María, Chile

Liesbeth De Donder, Ph.D. Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

Nico De Witte, Ph.D. Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

University College Ghent, Ghent, Belgium

Johannes Doll, Ph.D. School of Education, Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil

Sarah Dury, MSc Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

Giulietta Fadda, Ph.D. Faculty of Architecture, Valparaíso University, Valparaíso, Chile

Beatriz Fedrizzi, Ph.D. Horticulture and Silviculture Department, Federal University of Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil

Gloria Fernández-Mayoralas, Ph.D. Institute of Economics, Geography and Demography (IEGD), Spanish National Research Council (CSIC), Madrid, Spain

Maria-João Forjaz, Ph.D. National School of Public Health and REDISSEC, Institute of Health Carlos III (ENS, ISCIII), Madrid, Spain

Alejandro Klein, Ph.D. Social Sciences Division, University of Guanajuato, León, Guanajuato, Mexico

University of Oxford, Oxford, UK

George W. Leeson, Ph.D. Oxford Institute of Population Ageing and Oxford Martin School, University of Oxford, Oxford, UK

Pablo Martínez-Martín, Ph.D. National Centre of Epidemiology, Carlos III Institute of Health and CIBERNED (CNE, ISCIII), Madrid, Spain

Paul McGarry, Ph.D. Public Health Manchester, Manchester City Council, Manchester, UK

Alessandra Olivi, Ph.D. Institute of Latin American Studies, University of Seville, Seville, Spain

Chris Phillipson, Ph.D. The University of Manchester, Manchester, UK

María-Eugenia Prieto-Flores, Ph.D. Department of Geography, National University of Distance Education (UNED), Madrid, Spain

Abira Reizer, Ph.D. Department of Behavioral Sciences, Ariel University, Ariel, Israel

Vicente Rodríguez-Rodríguez, Ph.D. Institute of Economics, Geography and Demography (IEGD), Spanish National Research Council (CSIC), Madrid, Spain

Institute of Economics, Geography and Demography (IEGD, CSIC), Madrid, Spain

Fermina Rojo-Pérez, Ph.D. Institute of Economics, Geography and Demography (IEGD), Spanish National Research Council (CSIC), Madrid, Spain

Diego Sánchez-González, Ph.D. Faculty of Architecture, Autonomous University of Nuevo León, Monterrey, Nuevo León, México

An-Sofie Smetcoren, MSc Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

Sergio Luiz Valente Tomasini, Ph.D. Department of the Environment of Porto Alegre (SMAM), Porto Alegre, Brazil

Felipe R. Vázquez-Palacios, Ph.D. Center of Research and Advanced Studies in Social Anthropology of Gulf (CIESAS-Golfo), Xalapa, Veracruz, Mexico

Dominique Verté, Ph.D. Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

Hania Zlotnik, Ph.D. Department of Economic and Social Affairs Population Division, New York, NY, USA

Maria Victoria Zunzunegui, Ph.D. Department of Preventive and Social Medicine, University of Montreal, Montreal, QC, Canada

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About the Book

Some Basic Ideas Framing the Need for the Proposed Book

There has been a growing interest in recent years in the environmental issues of population ageing, i.e. how space and place determine the quality of life of the elderly, family members and careers. In the coming decades it is likely that this research topic will take on huge importance, associated with an increase in the complex issue of population ageing at different levels in developed, and especially, developing countries. The challenge also of promoting active ageing will require a greater understanding of the complex relationships between physical-social environments and the elderly, fostering the creation of new built environments, as well as adjustments and adaptations between different environmental contexts (home, residence, neighbourhood, urban and rural environment) and the quality of life of the ageing population, associated with residential strategies and other aspects related to health and dependency. In addition, the advance of the ageing phenomenon in a context of urbanisation, globalisation and climate change will require new approaches and analysis in Environmental Gerontology, particularly from developing regions such as Latin America.

There is currently only a sparse amount of literature on Environmental Gerontology confined to the Anglo-Saxon world (mainly the United States, Canada, United Kingdom, Australia and, to a lesser extent, Germany) (Golant, 1992; Andrews and Phillips, 2005; Hodge, 2008; Davies and James, 2011; Peace et al. 2006 and 2011; Rowles and Chaudhury, 2005; Rowles and Bernard, 2013; Scheidt and Schwarz, 2013). What's more, different theoretical and methodological models (especially Anglo-Saxon) on the socio-spatial problems of the environments of population ageing, as well as adjustments to the environment, residential strategies and other models of friendly cities with elderly people, do not always fit in the Latin American and European context. And, there is no theoretical and methodological framework defined for the main environmental issues of ageing, which determine the quality of life of the elderly from a multidimensional and transdisciplinary perspective. Further analysis also needs to be encouraged of the attributes and func-

tions of the physical-social environments of ageing, particularly built environments, which have hardly been addressed by social and health sciences. Similarly, very little is known about the effects of urbanisation, globalisation and climate change on active ageing in place. It is important that studies help to promote the association between the academic environment of environmental gerontology and the professional field of public planning and management.

The contribution of social researchers to the multidisciplinary and interdisciplinary field of Environmental Gerontology is widely recognised, particularly to the study of the diverse settings of the elderly and their quality of life, with special focus on space and place in population ageing research. However, new approaches need to be encouraged to European and Latin American geographical contexts in which population ageing will be consolidated in the coming years, so multiple consequences will therefore become apparent in the geographical space.

Purpose of the Book

The main aim is to look at the relationships between the physical-social environment and the elderly in Latin America and Europe, from the Environmental Gerontology perspective and through geographical and psychosocial approaches. This book addresses the main environmental issues of population ageing, based on an understanding of the complex relationships, adjustments and adaptations between different environments (home, residence, public spaces, landscapes, neighbourhoods, urban and rural environment) and the quality of life of the ageing population, associated with residential strategies and other aspects related to health and dependency. The different levels of socio-spatial analysis will also be explored: macro (urban and rural environments, regions and landscapes), meso (neighbourhood, public space) and micro (personal, home and institution). New theoretical and methodological approaches are proposed to analyse the attributes and functions of the physical-social environment of the elderly, as well as new ways of living the ageing process. All will have to respond to the challenges of urbanisation, globalisation and climate change in the twenty-first century. Also, the different experiences and challenges of public planning and management professionals involved with the growing ageing population are presented, and will require greater association and collaboration with the academic and scientific fields of Environmental Gerontology.

References

- Andrews, G.J., and D.R. Phillips. 2005. *Ageing and place: Perspectives, policy, practice*. London: Routledge.

- Davies, A., and A. James. 2011. *Geographies of ageing. Social processes and the spatial unevenness of population ageing*. Burlington: Ashgate.
- Golant, S.M., 1992. *Housing America's elderly: Many possibilities, few choices*. Newbury Park: Sage.
- Hodge, G. 2008. *The geography of aging: Preparing communities for the surge in seniors*. London: McGill-Queen's Press.
- Peace, S., C. Holland, and L. Kellaher. 2006. *Environment and identity in later life*. Berkshire: Open University Press.
- Peace, S., C. Holland, and L. Kellaher. 2011. Option recognition' in later life: Variations in ageing in place. *Ageing and Society* 31(5): 734–757. doi:[10.1017/S0144686X10001157](https://doi.org/10.1017/S0144686X10001157).
- Rowles, G.D., and M. Bernard. 2013. *Environmental gerontology: Making meaningful places in old age*. New York: Springer.
- Rowles, G.D., and H. Chaudhury. 2005. *Home and identity in late life: International perspectives*. New York: Springer.
- Scheidt, R.J., and B. Schwarz (eds.). 2013. *Environmental gerontology: What now?* New York: Routledge.

About the Editors

Diego Sánchez-González, PhD in Geography and Master in Social Gerontology in the University of Granada (Spain), is Professor of Human Geography and Gerontology of the College of Architecture at the Autonomous University of Nuevo Leon (UANL) (Mexico). He has visited and taught in some Spanish, British, and Mexican universities and is an experienced supervisor of PhD students. He is an Accredited Professor of Human Geography for the National Agency for Quality Assessment and Accreditation of Spain (ANECA) and is a member of the National System of Researchers of the National Council of Science and Technology (CONACYT), Mexico. His research lines focus on environmental gerontology-geography of aging, quality of life and active and healthy aging, friendly cities with the elderly and disabled, tourism and older people, climate change, vulnerability, and aging. Responsible for research projects in environmental gerontology, population aging, and climate change, Dr Sánchez-González is the author/editor of different books and monographs, book chapters and journal articles, and many research reports. Currently, he serves as one of the editorial boards of the *Contexto UANL*, *Cuadernos de Arquitectura y Asuntos Urbanos*, *Sebentas D'Arquitectura*, and as referee in various international journals indexed by JCR-Thomson Reuters and Scopus.

Vicente Rodríguez-Rodríguez, PhD in Geography, Complutense University of Madrid. Research Professor, Institute of Economics, Geography and Demography, Centre for Human and Social Sciences, Spanish National Research Council. Dr Rodríguez has visited and taught in some Spanish, British, and German universities. As a member of the Research Group on Aging, GIE-CSIC, his research focuses on various aspects of aging of the Spanish population and its social consequences (residential strategies of population, elderly migration, health and dependency, quality of life, longitudinal analysis). Leading an interdisciplinary research consortium, Dr Rodríguez has developed the project "International Migration of Retirees in Spain (MIREs)" to deepen into the Northern European retirees who live and develop their way of life in Spain. Also he is carrying out, as a member of another interdisciplinary team, the Longitudinal Study of Ageing in Spain (ELES), which aims at assessing the aging process of the Spanish population in the coming years.

Chapter 1

Introduction to Environmental Gerontology in Latin America and Europe

Diego Sánchez-González and Vicente Rodríguez-Rodríguez

1.1 Introduction

The last few years have witnessed a growing interest in population ageing-related environmental issues, i.e., how space and place affect the quality of life of elderly people, their relatives and carers (Rowles and Bernard 2013).

Since the early 1960s, environmental gerontology has sought to unravel the components underlying the environment-ageing process relationship, concluding that the “place” makes the difference as people age (Gans et al. 2009; Sanchez-Gonzalez 2014). For over half a century, researchers from different disciplines have emphasized the biological and genetic importance of the ageing process; yet what is becoming ever more evident is that the physical and social environment has an increasingly larger bearing on how you age and the quality of life that you can enjoy in old age (Lawton and Nahemow 1973; Wahl et al. 2004).

In this regard, contributors to gerontological literature are starting to question certain dominant theoretical positions, anchored in limited geographic and cultural visions of ageing, and to foster a new consensus on the construction of theory and its practical application (Scheidt and Schwarz 2012). For instance, the headway being made in environmental gerontology is arousing interest in looking for new interpretations and practical applications to tackle the global challenge of popula-

D. Sánchez-González (✉)

Faculty of Architecture, Autonomous University of Nuevo León,
Monterrey, Nuevo León, México
e-mail: diego.sanchezgn@uanl.edu.mx

V. Rodríguez-Rodríguez

Institute of Economics, Geography and Demography (IEGD),
Spanish National Research Council (CSIC), Madrid, Spain
e-mail: vicente.rodriguez@cchs.csic.es

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D. Sánchez-González, V. Rodríguez-Rodríguez (eds.), *Environmental Gerontology in Europe and Latin America*, International Perspectives on Aging 13, DOI 10.1007/978-3-319-21419-1_1

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tion ageing, from the relevant premise of understanding the relationship between the environment and active and healthy ageing.

This book is part of the wide-ranging series produced by the Springer, *International Perspectives on Aging*, edited by Jason L. Powell and Sheying Chen, which is a collection of texts on different and enriching approaches to ageing in the context of globalization, where attention is paid to the necessary international and comparative studies (Chen and Powell 2012; Arxer and Murphy 2013). It is precisely the significant headway being made in gerontological research from multidisciplinary approaches that has opened up an exciting universe of socio-spatial implications of place and quality of life in ageing, and it is here that this book attempts to shed light by exploring new paths.

This book has been written from an environmental gerontology perspective, through geographic and psychosocial approaches, and aims to analyse of relations between the physical and social environment and the elderly in Latin America and Europe. Major environmental issues of population ageing that influence elderly people's quality of life are analysed on the basis of understanding the complex relationships, adjustments and adaptations between different environments (housing, residence, public spaces, landscapes, neighbourhoods, and urban and rural areas), and the quality of life of population ageing, associated with residential strategies and health and dependency-related issues. It also focuses on different levels of socio-spatial analysis, namely the macro (urban and rural environments, regions and landscapes), meso (neighbourhood, public space) and micro (personal, housing and institution) levels. It proposes new theoretical and methodological approaches for analysing the attributes and functions of the elderly's physical and social environment and new ways of living that will have to respond to the challenges of urbanization, globalization and climate change in the twenty-first century. In addition, it outlines different experiences of the public management and planning professionals and governance involved with the growing elderly population, and that will pose new challenges and require greater engagement and collaboration with the academic and scientific field of environmental gerontology.

1.2 Approach to the Structure and Contents

With a foreword by the gerontologist Hans-Werner Wahl, this book is divided into four thematic sections that include 14 chapters written by 31 researchers from different geographical and cultural latitudes of Latin America and Europe and the United States, Canada and Israel. Valuable contributions from the multidisciplinary and interdisciplinary approach to environmental gerontology provide an opportunity to discuss the main theories and methodologies, as well as the policies and perspectives on the environment and population ageing in Europe and Latin America in the twenty-first century, in a context of globalization, urbanization and climate change.

The first five-chapter part of the book, *International policies and perspectives on ageing and the environment*, represents an updated approach to the discussion of major environmental gerontology issues from an international perspective. Chapter 2, written by Sánchez-González and Rodríguez-Rodríguez, addresses the

epistemological and methodological development of environmental gerontology, paying special attention to the prospects for research in Mediterranean Europe and Latin America. Both authors discuss the limited applicability of the theoretical models developed in the English-speaking cultural field, which pose certain imbalances in relation to other socio-cultural ageing environments, such as Mediterranean Europe and Latin America. They go on to underscore the need to further discuss their epistemological and methodological foundations to foster their applicability in heterogeneous ageing environments, and to design public policies aimed at improving elderly people's quality of life. In Chap. 3, Hania Zlotnik writes from a demographic perspective and addresses the fertility decline and increased ageing of the world's population and its differing socio-spatial and economic implications in developed countries and, above all, in developing countries, a fact which should be reflected in public policy. Chapter 4, written by Vicente Rodríguez-Rodríguez, analyses the socio-demographic characteristics of elderly migrants in Latin America, evaluating how important is a role destinations play in the decision to move and their way of life, and the environmental impacts that their settlement causes. The chapter identifies certain mechanisms that governments, companies and agents use to attract older migrants, and studies the characteristics of the priority areas for this older adult population. Similarly, the author discusses the environmental, social, economic and integration impacts, or as well as the effects of intercultural relations between the host society and its population, and migrants in the region. In Chap. 5, George Leeson reviews the literature to broach the Environment's importance on the elderly's health in developed regions and developing regions such as Latin America. He discusses the challenges of housing and neighbourhood design in the twenty-first century, as everyday places of great individual and social significance, and their implications for health and, in general, quality of life in ageing, above all in a scenario of rapid urbanization and climate change. Indeed, Chap. 6, written by Diego Sánchez-González and Rosalía Chávez, reflects on the challenges of population ageing in the context of climate change, based on the importance of knowing the attributes and functions of the elderly's physical-social environment in flood-risk areas, so as to generate prevention strategies in Latin America. Both authors propose the development of public policies aimed at adapting the physical and social environments of ageing, especially in the region's big cities, which face serious habitability and safety problems, as well as to make the elderly more resilient to the effects of climate change.

Ageing and urban environments is the title of the second part of the book and is formed by the next three chapters, which take different approaches to ageing in different urban contexts in Europe and Latin America. Chapter 7, by María Victoria Zunzunegui, looks at how neighbourhoods influence the disability of elderly people living in districts of Latin American cities, focusing on the cities of Manizales (Colombia) and Natal (Brazil). Zunzunegui argues that a neighbourhood's physical barriers, such as poorly kept pavements, the problems reaching safe places to walk in and insecurity (crime, drugs) pose risks for elderly people's health and functional capacity. In the same vein, the author emphasizes the need to improve Latin America's municipal public policies on neighbourhoods' physical infrastructure

and social organization, so as to turn urban spaces into places where people of all ages can live, fostering active and healthy ageing. In turn, in Chap. 8 Fermina Rojo-Pérez, Gloria Fernández-Mayoralas, Maria-João Forjaz, Maria-Eugenia Prieto-Flores and Pablo Martínez-Martin look at the relationship between elderly people's immediate residential environment and their satisfaction with life and, in general, as an indicator of quality of life in old age. According to the authors, satisfaction with life is determined by the household status, satisfaction with the form of cohabitation, perceived health (morbidity and depression), and how people rate their residential environment (home, neighbourhood, neighbours). In this respect, they highlight the need to design and implement public policies for adapting residential environments to the circumstances and perception of their elderly residents, who live and want to age at home, in lifelong familiar surroundings, autonomously and independently. Along the same lines, in Chap. 9, Giulietta Fadda, Alejandra Cortés and Alessandra Olivi analyse the relationship between the physical and social conditions of the urban environment and quality of life of elderly people, taking the Chilean city of Valparaíso as a case study. Elderly people's quality of life is found to be linked to the process of territorial identification and appropriation, such as districts and neighbourhoods, which are socio-spatial reference units that favour or limit the social relationship-building process and, in general, well-being in old age (Smith 2009). Also, the authors warn us about the importance of promoting urban policies that limit the effects of gentrification processes, as the property renewal and rejuvenation schemes carried out in traditional neighbourhoods tend to hurt vulnerable groups, especially the elderly (Sanchez-Gonzalez and Egea 2011).

Part III of the book, *Place, housing and ageing*, formed by three chapters, visualizes the symbolic importance of place in old age, paying attention to the everyday place in urban and rural areas, where older adults identify with their living space. In this respect, Chap. 10, written by Hernan Casakin and Abira Reizer, addresses the issue of older adults' place attachment through the perceived environmental uncertainty caused by socio-economic changes (privatization of services, organizational separation) in the lifestyles of residents of Israel's renewed kibbutzim. The results of their research shows that understanding older adults' place attachment contributes to design appropriate surroundings to help them successfully cope with the contingencies of old age, and address the kibbutz' environmental changes. In Chap. 11, Alexander Klein investigates the meanings of the sense of identity and attachment in elderly people, discussing how important these factors are in stimulating the sense of citizenship, resilience and generational transmission. The author also reflects on the life cycle concept, which can help to understand the relationship between a home's significance and the individual, associated with cultural factors that ought to be taken into account, such as the stereotypes associated with old age (Rowles and Chaudhury 2005). Felipe Vázquez takes an ethnographic approach in Chap. 12, addressing the spatial practices that elderly people experience in rural environments, allowing us to broach the problem of ageing in rural areas of Mexico and, in general, in Latin America. The chapter spotlights the importance of knowing about spatial experiences of older adults in their everyday environments (housing, farm plot, community, region), associated with their lifestyles, specific situations

and historical moments, so as to contribute to develop their ability to act with their own senses and meanings in their living space.

Public policies, planning and practices for the built environment and ageing is the title of the fourth and final part of the book, divided into three chapters, and which addresses the diversity and complexity involved in designing public and planning policies concerning the built environment of ageing, through the participation of professionals and, above all, of the elderly. Chapter 13, by Maria Elena Acosta, reflects on the state of the different housing and environment policies, and their socio-spatial implications for ageing in Latin America. In this sense, the author champions active housing policies geared towards the elderly population in the region, and that urban planning should lead to livable and inclusive communities, as a seed for friendly cities. In Chap. 14, Sergio L.V. Tomasini, Sergio A. Carlos, Beatriz Fedrizzi and Johannes Doll use a piece of action research to underline the importance of getting elderly residents to take part in developing outdoor spaces such as gardens, in long-stay institutions for the elderly in Porto Alegre, Brazil. In this respect, they argue that well-designed gardens can improve how elderly people adapt to institutionalized environments (Tomasini and Fedrizzi 2003). The authors also suggest that using participatory planning methods, such as social design, can boost the beneficial effects of these spaces at a personal level in their relationship with institutional settings. Last of all, Chap. 15, written by Tine Buffel and her colleagues, reflects on the importance of urban context in promoting active ageing, for which purpose she compares the policies and initiatives of two elderly-friendly cities, Brussels and Manchester (Buffel et al. 2014). Addressing the socio-demographic and multicultural contexts of the two European cities, the authors reflect on the differences in the actions taken to promote friendly cities, discussing the obstacles and resources needed to implement elderly-friendly policies.

1.3 By Way of Conclusion

Despite being criticized, advances in environmental gerontology in the twenty-first century are prompting a growing wave of expectation among ageing researchers, and society in general. There is no denying that population ageing poses significant environmental challenges in a context of urban globalization and climate change, beyond its demographic, economic, social or political components.

Environmental gerontology-related issues are highly likely to reach enormous proportions over the next few decades, due to the rise and complexity of demographic ageing at different levels in developed countries, and especially in developing countries, as their elderly population grows larger and larger. Besides, the challenge of promoting active ageing will call for greater understanding of the complex relationships between physical-social environments and the elderly, encouraging the creation of new built environments, together with adjustments and adaptations among the different environmental contexts and the quality of life of elderly people. Furthermore, as the ageing phenomenon looms larger in a context of environmental

crisis associated with rapid urbanization and climate change effects, environmental gerontology will be required to develop new approaches and analytical proposals, especially from developing regions such as Latin America.

Social researchers are acknowledged for their contributions to the multidisciplinary, interdisciplinary field of environmental gerontology and, in particular, to the study of elderly people's different environments and their quality of life, placing special emphasis on the space and place in population ageing. Even so, we must encourage new viewpoints and approaches to Latin American and European geographical contexts, which are is where a consolidation of demographic ageing will be seen in the next few years and, therefore, will clearly witness a wide range of consequences from a geographical perspective.

In short, the book invites readers to reflect on the importance of space and place in the way that we age. The older adult's environment is a complex reality, and one too often ignored, to which policy makers and professionals alike should pay greater attention and become better acquainted with, while leveraging on the valuable active participation of ageing people.

As with other areas of social and health sciences, environmental gerontology around the world is most likely to be renewed through contributions of researchers from developing regions such as Latin America. This book is highly recommended for readers interested in learning and rediscovering the different paths of one branch of gerontology that has made significant headway in recent decades. Last but not least, it is worth noting the considerable epistemological and methodological interest aroused by this book, which has been put together to foster reflection and open discussion among ageing's students, academics and professionals, from different latitudes and cultural contexts, interested in building tomorrow's environmental gerontology.

References

- Arxer, S.L., and J.W. Murphy (eds.). 2013. *The symbolism of globalization, development and aging*. New York: Springer.
- Buffel, T., P. McGarry, C. Phillipson, L. De Donder, S. Dury, N. De Witte, A.-S. Smetcoren, and D. Verté. 2014. Developing age-friendly cities: Case studies from Brussels and Manchester and implications for policy and practice. *Journal of Aging & Social Policy* 26(1–2): 52–72. doi:[10.1080/08959420.2014.855043](https://doi.org/10.1080/08959420.2014.855043).
- Chen, S., and J.L. Powell (eds.). 2012. *Aging in China: Implications to social policy of a changing economic state*. New York: Springer.
- Gans, D., N.M. Putney, V.L. Bengtson, and M. Silverstein. 2009. The future of theories of aging. In *Handbook of theories of aging*, ed. V.L. Bengtson, M. Silverstein, N.M. Putney, and D. Gans, 723–737. New York: Springer.
- Lawton, M.P., and L. Nahemow. 1973. Ecology and the aging process. In *The psychology of adult development and aging*, ed. C. Eisdorfer and M.P. Lawton, 132–160. Washington, DC: American Psychology Association.
- Rowles, G.D., and M. Bernard. 2013. *Environmental gerontology: Making meaningful places in old age*. New York: Springer.

- Rowles, G.D., and H. Chaudhury. 2005. *Home and identity in late life international perspectives*. New York: Springer.
- Sanchez-Gonzalez, D. 2014. Identidad del lugar, envejecimiento y presiones ambientales de la ciudad. Reflexiones desde la gerontología ambiental. In *Identidad y espacio. Ampliando ámbitos y prácticas*, ed. D. Sanchez-Gonzalez and L.M. Domínguez-Moreno, 141–168. Barcelona: Gedisa.
- Sanchez-Gonzalez, D., and C. Egea. 2011. Social vulnerability approach to investigate the social and environmental disadvantages. Its application in the study of elderly people. *Papeles de Población* 17(69): 151–185.
- Scheidt, R.J., and B. Schwarz (eds.). 2012. *Environmental gerontology. What now?* New York: Routledge.
- Smith, A.E. 2009. *Ageing in urban neighbourhoods. Place attachment and social exclusion*. Bristol: The Policy Press-University of Bristol.
- Tomasini, S.L.V., and B. Fedrizzi. 2003. Espaços abertos em instituições para idosos. *Estudos Interdisciplinares sobre o Envelhecimento* 5: 101–117.
- Wahl, H.-W., R.J. Scheidt, and P.G. Windley. 2004. *Annual review of gerontology and geriatrics. Focus on aging context: Socio-physical environments*. New York: Springer.

Part I
Policies and Perspectives International
in Aging and Environment

Chapter 2

Approaches to Environmental Gerontology in the Mediterranean Europe and Latin America: Policy and Practice on Ageing and Place

Vicente Rodríguez-Rodríguez and Diego Sánchez-González

2.1 Introduction

Over the course of history we have never before managed to live so long. This has made ageing population a widespread and central theme, which, in the twenty-first century, poses serious challenges to researchers, practitioners and the governments in the developed regions, such as Europe, and developing regions, such as Latin America.

Ageing is a slow and dynamic process that lasts a lifetime, determined by internal factors such as genes, and external factors such as the physical and social environment (Matteson 1997). In past decades, the secret of longevity was primarily attributed to genetic factors (Risch 1990; Bezrukov and Foigt 2005), however today different researchers have found that environmental factors have an increasingly relevant weight in prolonging human life and, above all, the quality of life of the elderly (Dychtwald 1986; Fetter et al. 2012). This change in the perspective on ageing is the result of developments in research into geriatrics and, particularly, gerontology, which has moved forward from traditional approaches, based on biological decline, towards a new multidimensional and multidirectional approach¹

¹Ageing is a multidimensional and multidirectional process which is experienced through differences in the pace and direction of change (gains and losses) of the different characteristics of the individual (WHO 1998).

V. Rodríguez-Rodríguez (✉)

Institute of Economics, Geography and Demography (IEGD),
Spanish National Research Council (CSIC), Madrid, Spain
e-mail: vicente.rodriguez@cchs.csic.es

D. Sánchez-González

Faculty of Architecture, Autonomous University of Nuevo León,
Monterrey, Nuevo León, México
e-mail: diego.sanchezgn@uanl.edu.mx

where the environment becomes a key factor in determining healthy and active ageing² (Wahl 2001; WHO 2002).

In the 1960s the progress of studies on the relationship between the environment and the elderly gave rise to a branch of gerontology—environmental gerontology—the development of which was particularly significant in the English-speaking world, particularly the US, the UK, Germany, Canada, Sweden and Australia (Wahl and Weisman 2003).

However, the applicability of theoretical models developed in the English-speaking cultural environment poses certain imbalances with regard to other sociocultural ageing environments, such as Mediterranean Europe and Latin America. This important premise was the origin of this work, which aims to reflect on the key environmental implications of ageing populations in Mediterranean Europe and Latin America from the viewpoint of environmental gerontology. Furthermore, the marked differences in these two regions: Mediterranean Europe—a demographically aged region with a high standard of social development—and Latin America, currently in the process of demographic transition, and characterized by social inequality, enables us to visualize the heterogeneous landscape that researchers face in this branch of gerontology.

This chapter is an approach to the epistemological and methodological development of environmental gerontology, paying particular attention to prospects for research in Mediterranean Europe and Latin America. The methodology was based on a review of the international literature through databases of indexed journals, such as Thomson Reuters and Scopus. The results indicate that the applicability of the theoretical models in environmental gerontology poses certain imbalances in heterogeneous spaces. Also, in both regions it is seen that a predominant proportion of research has focussed on the social environment associated mainly with health, with scant attention paid to analysing the physical environment (man-made and natural), which hinders a comprehensive understanding of the physical and social environment which is essential to promote ageing in place. We also see an uneven depth of research, particularly in Latin America, as well as the need to further discuss its epistemological and methodological tools in order to make them more applicable to heterogeneous ageing environments, and design public policies focussed on improving quality of life for the elderly.

2.2 Epistemological and Methodological Approaches to Environmental Gerontology

In the last stage of the lifecycle people share similar biological characteristics. However, the ageing process is experienced unequally in different physical and social contexts³ (Golant 1986). With this premise, different social and health

²The term “active ageing” is the process of optimizing opportunities for health, involvement and security, in order to enhance quality of life as people age (WHO 2002).

³The objective dimensions of the physical environment refer to everything that is outside the skin; which is inanimate and that can be measured in centimetres, grams or seconds. Thus, the subjective

researchers are gradually building up a theoretical body of knowledge on environmental gerontology, a multidisciplinary field which presents major theoretical and methodological challenges in the twenty-first century, although this is not immune to criticism.

The development of environmental gerontology—and of gerontology in general—has been characterized by the increasing development of multidisciplinary and interdisciplinary research into ageing (Hagan-Henness and Walker 2011), as well as by the changes associated with different professional and governmental interests at any given time. The early 1920s saw the first approaches to studying the environment and population, tackled from the standpoint of urban sociology and social psychology (Hellpach 1924; Bechtel and Churchman 2002). In the early 1930s various studies warned of a paradigm shift in ageing and, in general, in gerontology, from physiological perspectives to more comprehensive and complex views, seen from an environmental standpoint (Wahl and Gitlin 2007). Also, since the 1960s the contributions of various social sciences, such as environmental psychology (Stokols 1978; Lawton 1985; Spencer and Blades 1986) and geography⁴ (Rowles 1978, 1993; Warnes and Law 1984; Smith 1991; Walmsley and Lewis 2014), have brought to light a new branch of gerontology: environmental gerontology, which aims to understand, analyse, modify and optimize the relationship between the person who is ageing and their physical and social surrounding,⁵ from a multidisciplinary and interdisciplinary standpoint⁶ (Wahl and Weisman 2003; Wahl and Gitlin 2007). Indeed, during these years some governments, such as the US, have run residential programmes and housing for the elderly, coupled with support for the studies on environment and ageing. Thus, in the 1960s and 1970s researchers were interested in assessing the decisive influence of the environment on the capabilities of the elderly (Lawton and Nahemow 1973), focusing on the design of buildings and particularly institutionalized buildings such as old people's homes.

This context made the 1970s and 1980s very prolific as regards the development of environmental gerontology, through the formulation of different theories (Altman

dimensions of the social environment are associated with the range of operational processes experienced by a person as they age, forming cognitive and affective bonds with their physical-spatial environments (Lawton 1999).

⁴Warnes (1990) notes that geographical research should contribute to the development of gerontology through the study of spatial and time-based variations in elderly person-environment relations, and facilitate research on the socio-spatial implications of population ageing which is essential in planning and public policy.

⁵The term “*physical and social surroundings*” derived from environmental psychology, expresses the complexity of the environment and its physical and social relationships with people who are ageing. Thus, the socio-ecological model of ageing (Moos and Lemke 1985) suggests that physical and social environments influence individual behaviour and viceversa.

⁶This area of knowledge includes different disciplines, such as psychology, geography, town planning, architecture, engineering, design, health sciences, social work, occupational therapy, sociology, anthropology and other related sciences (Rowles and Bernard 2013; Scheidt and Schwarz 2013).

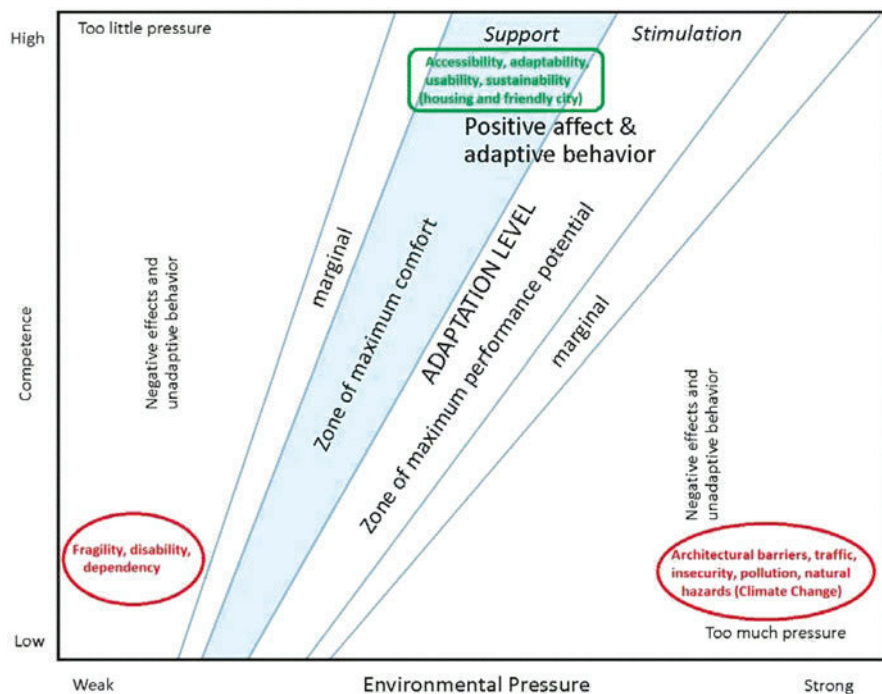


Fig. 2.1 Ecological model of ageing (Source: Adapted from Lawton and Nahemow (1973), by authors)

et al. 1984; Pastalan and Schwarz 2001), such as the ecological model of ageing⁷ (Fig. 2.1) and the hypothesis of environmental docility⁸ (Brody et al. 1971; Lawton and Nahemow 1973). These theories will have a broad impact on subsequent research into the analysis of individual-environment relationships, such as the correlation between the type of home and residential satisfaction (Lawton 1980; Galster 1987), and between the characteristics of neighbourhood and the lifestyles of the elderly (Lawton et al. 1984; Satariano 2006). However, the ecological model of ageing (Lawton and Nahemow 1973) will be criticized for its determinism,⁹ reductionism (housing and old people's home, excluding other environments), and positivist approach (Golant 2003; Wahl and Weisman 2003; Schwarz 2012).

⁷The ecological model of ageing formulates that behaviour depends on the competence of the elderly person and the environmental pressure to which they are exposed. The psychologist, Kurt Lewin (1951), was a pioneer in explaining living space as a function determined by the individual and their environment.

⁸The environmental docility hypothesis establishes that population ageing implies a gradual reduction in abilities, which means fewer skills to deal with environmental pressures.

⁹Determinism lies in associating ageing with a process of increasing passivity, which serves to hinder the ability to cope with environmental pressures.

The stereotypical image of the elderly as passive and dependent, with lives determined by their surroundings, has been discredited by environmental gerontology, which has found that during ageing high levels of activity and productivity can be maintained, both to manage their adaptation to the physical and social environment, and to provide assistance and collaborate altruistically in society. In this direction, alternative theoretical models have emerged, based on the concepts of adaptation¹⁰ and adjustment,¹¹ such as models of person-environment congruence¹² (Kahana 1982) and complementary congruence¹³ (Carp and Carp 1984). Thus, motivation is proposed as a possible explanatory factor of the relation between the elderly and their environment (Kahana 1982; Carp and Carp 1982, 1984).

Subsequent research has showed that the elderly can choose, create and adapt environments to their needs, reducing certain environmental pressure, thus formulating the hypothesis of environmental proactivity (Lawton 1989, 1990), which states that ageing individuals can act as agents of change in their own environments and therefore, a two-way relationship is recognized between the elderly and the environment (Fig. 2.2). In turn, an elderly person is determined by three basic functions of the environment: maintenance, enabling knowledge, persistence and consistency in the environment through everyday experience, identity and attachment; secondly, stimulation, which promotes adaptive behaviour, reducing or amplifying behavioural problems; and, thirdly, support, which promotes security, orientation and the independence of the elderly.

In turn, different proactive models have been developed, aimed at promoting creative resources to promote successful ageing in place, such as the Baltes and Baltes model (1990) which poses selective optimization of personal resources and finding alternative routes to offset less adaptability to the environment; and the proactive model of preventive and corrective adaptation (Kahana and Kahana 1996),

¹⁰Adaptation is a process of negotiation by which an individual modifies their behaviour patterns and/or characteristics of the environment to adjust to the surroundings where they live, in relation to their own personal abilities. This adaptation is the result of human-environment transactions which are explained on the basis of four categories: responsive (impact of environment on health and user behaviour); interpretive (affective processes and sense of place); evaluative (assessment of the constructed environment and of the attitudes); and operational (action to change the built environment). From the ideas of Stokols (1978), Lawton (1985) states that transactions between the elderly and the environment should be analysed at different levels: macro (national and city context); meso (neighbourhood); and micro (elements inside the home).

¹¹The fit is the level of competence of the individual in certain spheres, given a certain level of environmental pressure.

¹²The person-environment congruence model indicates that behaviour is a function of the congruence between individual characteristics of people and the specific features of the physical and social environment to satisfy these. To better apply congruence in the taxonomic analysis of the environmental characteristics of the neighbourhood, the importance of four physical and two social measurements is highlighted: physical comfort or aesthetics, resource services, security, stimulation or peace of mind, homogeneity or heterogeneity, and interaction or loneliness (Kahana et al. 2003).

¹³The model of complementary congruence explains that the welfare of the elderly is determined by the correspondence between personal needs and the characteristics of the environment.

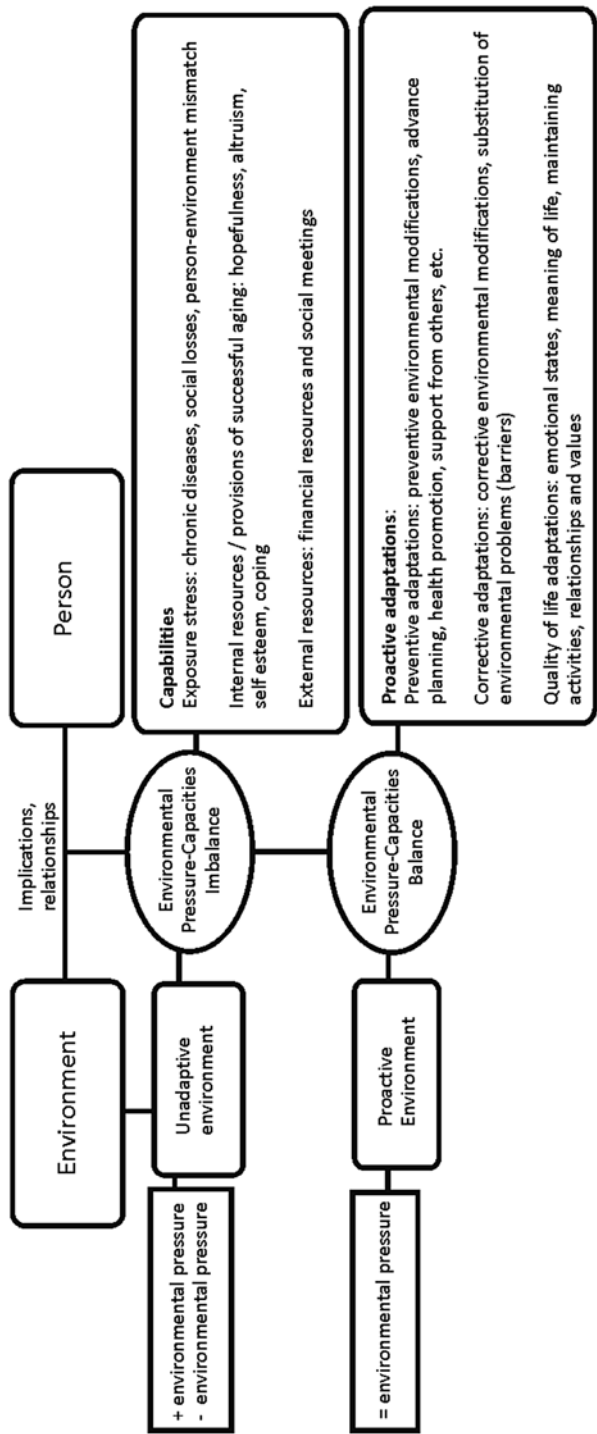


Fig. 2.2 Environmental proactivity (Source: Adapted from Lawton (1989), by authors)

which proposes proactive adaptation which helps to create personal coping resources, such as self-esteem, altruism and life satisfaction, which can be activated in times of stress due to factors such as disease, the loss of skills, and the incongruity between the individual and his environment. In this regard, preventive proactive adaptation constitutes preventive types of behaviour that the elderly can develop to facilitate their adaptation to the physical and social environment, such as promoting health, planning and helping others, while proactive, corrective adjustments are associated with changes in behaviour on a personal level, and with changes in the environment.

Some studies have indicated that the decision of the elderly who own their homes to undertake major refurbishment there is determined by environmental and socio-economic factors, such as the size of the dwelling, its age, location, the cost of refurbishment, income, and the new needs of users to adapt (Culp 2011). In this regard, there has been debate over the limited possibilities of the elderly to alter their environments, for example in the case of those living in rented accommodation (Wahl and Weisman 2003; Bates and Fassenfest 2005; Sánchez-González 2005).

Recent studies show residential relocation could be an alternative to consider, since it develops beneficial adaptive processes in ageing (Litwak and Longino 1987; Rowles et al. 2004). Therefore, there is an insistence on the need to raise awareness of ageing in place, as an individual and above all collective responsibility, which should involve individuals and society at large (Garvin et al. 2012; Pastalan 2013). In this regard, we need to better understand the spatial experience of ageing in place, both linked to the adaptation of buildings, and the implications of the social environment (neighbours, family, society) and the support this can provide to the welfare of the elderly (Cutchin 2003; Sánchez-González 2009a, b; Cramm et al. 2013). Indeed, there has been an increase in qualitative research, in understanding the spatial experiences of the elderly within their relationship of belonging to the physical and social context, and the identity and attachment to their milieu (Rowles and Schoenberg 2002; Wiles et al. 2011; Sánchez-González 2014). Also, the time perspective helps to understand the spatial experiences of the elderly in their everyday environments due to their historical significance (Golant 2003), and an understanding of these is becoming possible thanks to longitudinal studies and an ethnographical approach, such as life stories and photo stimulation (Garvin et al. 2012).

The studies have used environmental dimensions, determined by their attributes and functions, as well as space-time scales of observation. However, in environmental gerontology findings are still inconsistent and reflect the methodological difficulties of measuring the built environment (Cunningham and Michael 2004). The most widely studied environmental attributes associated with ageing include comfort, privacy, accessibility, guidance, control, security and dignity (Christenson and Taira 1990; Kahana et al. 2003). Likewise, environmental functions, which can serve as resources for the elderly are maintenance, support and encouragement (Wahl and Gitlin 2007; Davies and James 2011; Kurniawati 2012) (Fig. 2.3). The spectrum of the physical and social environments of ageing has also broadened, with public amenities and the natural environment becoming important in the quality of life of people as they age in place, and analysed at different scales: micro (housing, resi-

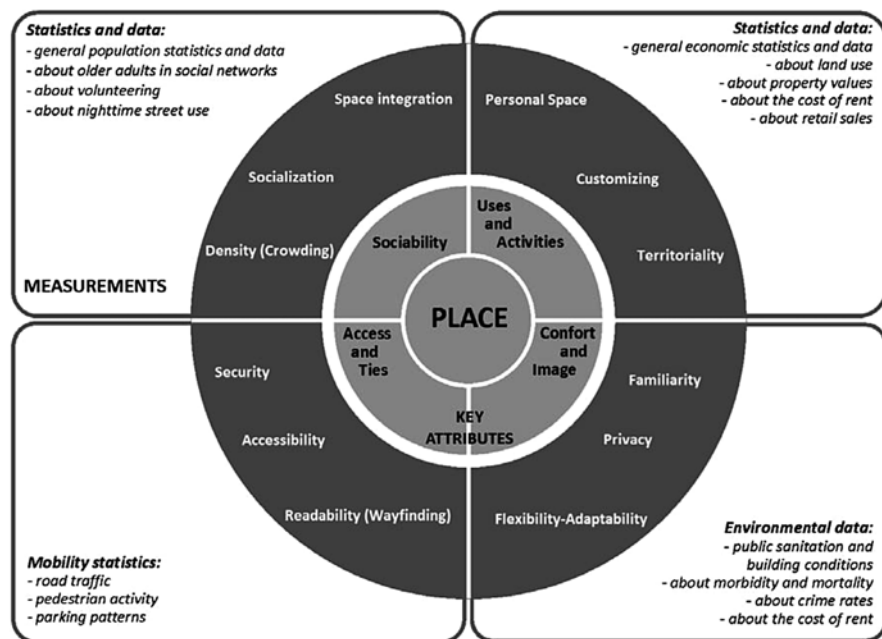


Fig. 2.3 Attributes and functions of the ageing in place (Source: Adapted from Kurniawati (2012), by authors)

dence), meso (neighbourhood) and macro (urban and rural) (Rowles and Chaudhury 2005; Andrews and Phillips 2005; Andrews et al. 2007). In this regard, solutions have been offered for building design, as well as neighbourhood and urban planning proposals, which are essential to promote ageing in place (Lui et al. 2009). This has been approached by analysing the important role of public transport, accessibility and the diversity of buildings and neighbourhoods, without forgetting the importance of providing creative public amenities where the population ages inclusively, along with the rest of the community (OECD 2001, 2003; Scott 2012; Sánchez-González 2005, 2013).

The literature bears out that the increase in life expectancy explains the increase in dependent persons and those who need some assistance to maintain their independence (Pastalan 2013). Since the late 1970s the governments of the developed countries, such as the US and UK, have begun to rethink the economic viability of the institutionalization model for the elderly in nursing homes, given the projected growth in population ageing. In the same vein, various experts advise against residential relocation for the elderly, and are inclined to promote ageing in place (home and neighbourhood), considering that the everyday environment contributes to the independence and overall quality of life of the elderly, including that of frail and dependent people (Rowles 1993). To do this, attention is starting to be paid to the physical building environment, since it has been found that relocation increases among the elderly who experience deteriorating health associated to environmental

hazards, such as falls due to architectural barriers (Stoeckel and Porell 2010). In this sense, there is an institutional impulse to develop policies aimed at promoting ageing in place, through better design of the residential and private environments, as well as supporting housing alterations and the inclusion of local services oriented to caring for and satisfying elderly users (Gitlin 2003; Bookman 2008; Vasunilashorn et al. 2012). In the same vein, residential models have been developed for the long-term care of elderly dependents, based on combining designs of specially adapted housing and social support services, such as computer-based healthcare, which both optimize private living areas for ageing communities, such as access to public amenities for social and recreational activities (Christenson and Taira 1990; Schwarz and Brent 1999). To contribute to ageing in place, different environments have been designed, adapted and improved, involving multidisciplinary teams comprised of builders, architects, designers, therapists, psychologists, social workers and gerontologists. This has enabled innovative, adapted and intelligent housing designs, where control is exercised over elements ranging from the universal design and removal of architectural barriers to the control of lighting and colour (Taira and Carlson 1999; Nugent and Augusto 2006). Here, the literature emphasizes the importance of the design of environments due to the beneficial implications of environmental stimuli such as light, nature, sounds and virtual reality in improving pain control and, in general, the health of the elderly (Malenbaum et al. 2008).

In ageing, mobility outdoors decreases progressively, particularly among the elderly living alone, increasing the time spent in the same location, home and neighbourhood (Sánchez-González 2005). Here, public amenities are of great importance in active ageing in place (Rodiek and Schwarz 2006; Peace 2013), since they increase daily and collective outdoor activities such as walking, recreation and social relations (Takano et al. 2002; Peace et al. 2006; Rubinstein and Medeiros 2005). Some studies therefore suggest evaluating both issues concerning the accessibility of public places and the satisfaction levels of elderly pedestrians (Wennberg et al. 2007). In the same vein, it is proposed that society should encourage mobility among the elderly, providing good accessibility in public areas to be able to walk independently, as well as facilitating access to public transport (Stjernborg et al. 2014). In addition, accessibility in public amenities is an important issue for the elderly with reduced functional abilities, such as dependents and disabled persons, and it is important to ensure the safety of elderly pedestrians. In fact, the literature confirms that natural environments provide positive changes in the physical well-being of the elderly with dementia, reducing their stress levels. Thus, different researchers analyse the positive relationship between the designs of gardens and parks and the improvement in the quality of life of people with dementia (Rodiek and Schwarz 2013).

Besides, the importance of landscapes has been highlighted, due to its aesthetic and therapeutic value, with regard to the promotion of healthy lifestyles and improving the quality of life of the elderly (Gastaldo et al. 2004).

In recent years environmental gerontology has been discussing the need to improve the quality of the environments where we age, offering new types of buildings and natural environments that are tailored to the individual abilities of the

elderly (Wahl et al. 1999; Pastalan and Schwarz 2013), based on understanding how elderly people experience the different relationships with the environment at different stages of ageing; and how they can manage and optimize the opportunities and limitations of their physical and social environments, through the study of the environment's objective and subjective dimensions. In this regard, different taxonomic analyses of the objective and subjective characteristics of the physical and social environment of ageing are being proposed, which contribute to residential satisfaction and the overall quality of life of the elderly (Carp and Carp 1984; Lawton 1999; Bittencourt et al. 2012). In turn, in the next few years the development of environmental gerontology will be linked to its theoretical, empirical and methodological advances, as well as its applicability in practice, in order to contribute proposals that back public policies aimed at promoting ageing in place.

2.3 Prospects for Research into Environmental Gerontology in Mediterranean Europe

The development of environmental gerontology is linked to the undeniable contribution of demographic, socioeconomic and environmental researchers in English-speaking countries such as the US, Canada, the UK and Germany. Proof of this are the recent compilations of studies on environmental gerontology, taken from multidisciplinary and interdisciplinary standpoints, which include only contributions from certain English-speaking countries, such as the US, Canada, Germany, Sweden, the UK and Ireland (Rowles and Bernard 2013). However, the dominant literature does not clearly reflect the contributions made to this field by researchers from other cultural environments and developing regions, such as Latin America.

This section explores the development and current status of environmental gerontology in Mediterranean Europe¹⁴ (France, Spain, Portugal, Italy and Greece), focusing on the problems of applying the main theories coming from the English-speaking academic world.

In Europe the study of ageing population-related environmental issues has been widely differing, and has been marked by demographic changes and the unequal socio-economic and scientific development of nations. The literature bears out that in Northern European countries such as the UK, Germany and Sweden there is a greater tradition of research and there has been a major boost in environmental gerontology, preceded by an early interest in establishing the implications of the environment on the elderly, while a limited approach to these issues has been seen in Mediterranean European countries, due to the shortage of environmental gerontologists. In fact, as has been corroborated by the results of scientific meetings, in Mediterranean European countries the subjects of ageing as associated with socio-

¹⁴In reviewing the literature we have chosen not to include studies on other countries in Mediterranean Europe with less demographic weight, such as Albania, Croatia, Montenegro, Bosnia-Herzegovina, Malta and Cyprus.

demographic and health issues predominate, linked to the social environment of the elderly (Rodríguez Rodríguez et al. 2012).

With the expected increase in the region's ageing population,¹⁵ in recent years, the European Commission has funded projects such as FUTURAGE (2011),¹⁶ aimed at building consensus over research priorities within ageing for the coming decades. The aforementioned project, involving the collaboration of researchers from different countries,¹⁷ underlines the growing importance of ageing better at home and in community settings, by looking at the status of techniques, methods and emerging fields within environmental gerontology. Despite the enormous interest in this type of project and its valuable contributions, the pre-eminence of issues related to the social environment of ageing over and above those focusing on the physical and constructed environment, both natural and virtual, is somewhat debatable. Also, the absence of new interest in ageing is observed with regard to the diversity of environments, such as climate change, environmental identity and therapy landscapes. Furthermore, we detect a lack of a true interdisciplinary approach, representative of the heterogeneous socio-cultural and geographical settings of the region.

In Mediterranean Europe the development of environmental gerontology has been late and fragmented, with very few studies focussed on this branch of gerontology. Indeed, studies reveal the prevalence of social and health areas, which attempt to determine the quality of life of the elderly (Prieto-Flores et al. 2008), while there has been a limited focus upon the dimensions of the physical and constructed environment of ageing, through the analysis of environmental attributes. This would be explained by the scarcity of environmental gerontologists, resulting in many physical and social determinants (environmental, social and cultural) of daily life remaining unknown, as well as the quality of life of the elderly in general in this region (Sánchez-González 2005; Rojo-Pérez and Fernández-Mayoralas 2011).

At a general level, the literature highlights the studies from France and Spain, and to a lesser extent Italy, Greece and Portugal. Furthermore, the demographic, geographical, sociological and health tradition of ageing has predominated (Parant 2007)—such as the analysis of the spatial distribution of the elderly population in urban and rural environments. Also notable are the contributions to the study of elderly mobility and residential strategies (Abellán García 1999; Bonvalet and Ogg 2008; Nowik and Thalineau 2010), as well as their socio-spatial implications at residential level, and as regards social services and healthcare planning (Boutrand 2009). However, this exploratory nature limits the development of the few studies

¹⁵ It is estimated that between 2008 and 2030 in Europe the population aged 65 and older will increase by 45 % and in 2060 will represent 30 % of the total population (Lanzieri 2011).

¹⁶ Future Group (2011): *FUTURAGE. A Road Map for european ageing research*. Sheffield: The University of Sheffield. www.futurage.group.shef.ac.uk.

¹⁷ The project brings together institutions and researchers from Albania, Austria, Belgium, Bulgaria, Denmark, Spain, Finland, France, Greece, Holland, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, the Czech Republic, Romania, Russia, Sweden, Switzerland, Turkey, the UK, Israel, the US and Canada, Japan and Singapore.

on the factors of elderly residential mobility, which help to improve their quality of life (Lardiés 2008). Therefore, this subject needs a closer look, in longitudinal and analytical terms, focusing more on the relationship between the elderly and their adaptation to their physical environment.

Research reveals significant differences in the perception of the elderly's place of residence, depending on whether this is an urban or rural environment. Thus, research confirms that the size of the place of residence remains a structural element of the distribution of the perception of the habitat of the elderly. Few studies have been identified on rural ageing in these countries, with a predominance of local surveys and studies, and omitting analysis of the constructed environment. In fact, surveys show a certain degree of homogeneity in the perception of socioeconomic and health problems in this sector of the population. However, rural areas reveal a certain conformity and growing concern regarding the urbanization of rural environments (Bigot et al. 2001). It has also been indicated that family solidarity and aid for dependency in old age in both rural areas, where families continue to be larger, and also in urban settings, is conditional upon the spatial distribution of family members, associated with distance and linked to migration (Bourdieu et al. 2004). In the same vein, some studies underscore the persistent problems of poverty and social exclusion of the elderly population (Compán and Sánchez-González 2005; Bultez and Gelot 2010), compounded by the global economic crisis, and which have a greater impact on widows, the homeless, immigrants and rural residents. Despite the complexity of ageing in rural areas, recent studies indicate the growing importance of new residential areas for the elderly, located in rural France and characterized by their amplitude, lower density and design, based on criteria adopted by the European Commission on common facilities and services for ageing in place (Brutel and Levy 2012).

In Mediterranean European countries the convergence of the phenomena of demographic ageing and the process of urbanization explains the central attention taken up by the city as a habitat for ageing, both present and future, as well as the need to convert this conflicting and dynamic space into a user-friendly place for the elderly (Pihet 2006; Sánchez-González 2013). Some research conducted in Spanish cities, such as Madrid and Granada, analyses the problems of ageing in urban settings (home and neighbourhood) (López-Jiménez 1993; Sánchez-González 2005). In this regard, it is stated that the habitability of the environmental setting for the elderly is determined by their spatial experience, which relates socioeconomic factors (income, housing conditions, facilities) and factors of spatial subjectivity (proximity to relatives and neighbours, sense of place, rootedness), warning of worsening socio-spatial problems for the elderly in the absence of gerontology planning in cities (Sánchez-González 2009a). In this regard, we note the growing problem of habitability and the inadequacy of the urban setting for the elderly, since their changing needs and desires for accommodation, their immediate environment, and the conditions of the city are left unattended. It has also been noted that the ageing urban population is exposed to natural hazards (heat waves, floods) and anthropogenic hazards (architectural barriers, traffic accidents, violence and pollution) (Bungener 2004; Coupleux 2010).

In the region the concern over a habitat for the ageing is recent, as confirmed by the fact that until the 1990s France did not begin to design more user-friendly and stimulating environments for dependents in the geriatric hospital setting (Guisset and Veyssset 1990). Thus, we have observed that in this country and, in general, in Mediterranean Europe, problems of environmental stress persist among people suffering from Alzheimer, associated with current physical dimensions in nursing units and old people's homes (Ploton and Cropier 2006). Fortunately, in recent years new studies have addressed the problems of accessibility, privacy, lack of safety, and noise in public buildings in order to correct imbalances and facilitate their adaptation to the needs of the elderly (Souchon et al. 2006).

In Mediterranean Europe ageing in place raises important challenges that must be addressed by researchers and governments. Indeed, studies in Italian cities such as Genoa, warn about the demands of adapting homes to the specific needs of the elderly and making survival possible in their neighbourhoods, where they spend most of their lives. The challenge is major, as it is estimated that 20 % of those aged 65 and older are living in conditions of partial or total non-self-sufficiency (Capacci and Mangano 2003). In the same vein, it has been noted that in Spanish cities the elderly face significant difficulties in altering and adapting their environment to their changing needs with age (Sánchez-González 2005). Salgado and Olivera (2005) found that most of the elderly who had suffered a hip fracture, particularly in the home, returned home and had to again face the same environmental pressures, due to their inability to refurbish. Also, in France, the home can become a painful and even fatal place, particularly for the population aged 85 and over, who have a high suicide rate (Balard and Somme 2011).

Unlike English-speaking countries, it is observed that in Mediterranean European countries the elderly have less residential mobility and higher rates of home ownership, as well as more economic and environmental problems when tackling a major home refurbishment. This would be explained by the fact that in Mediterranean culture the home acquires crucial importance in old age. Thus, the importance of satisfaction with the home and neighbourhood is underlined as an extension of the home itself (Rojo-Pérez et al. 2007). Hence, in recent years, the home has become one of the central elements of wellbeing in old age, which has favoured the implementation of a number of different residential alternatives to enable ageing in place (De Guitaut et al. 2005; Argoud 2006; Dehan et al. 2007). In this sense, the new housing policy, aimed at this group of the population, should involve the experience and active participation of the elderly themselves, through planning their everyday environment and the implementation of local initiatives to improve their neighbourhoods and homes (Argoud 2012).

Another discrepancy in the literature concerns the differential climatic factor, linked to the elderly person-environment relationship. Unlike the predominantly cold climates in some English-speaking countries, such as Sweden and Canada, which tend to confine the elderly over the long winter months (Garvin et al. 2012); in Mediterranean climates the predominance of sunny days promotes the culture of being in public places throughout one's entire life—and particularly in old age—and this has not been sufficiently addressed in the literature. Precisely studies

corroborate the importance of neighbourhood characteristics with regard to the welfare and health of the elderly, since these determine both outdoor activities in daily life and independence and social participation (Fernández-Mayoralas et al. 2004; Sánchez-González 2009a, b). In addition, recent educational experiences related to city workshops for the elderly, such as Granada's City Workshop (Taller-Ciudad de Granada), have organized both exercises to propose gerontology-based town planning in their neighbourhoods, and have also contributed to promoting the active participation and empowerment of this sector (Sánchez-González 1998). From this we deduce that the design of user-friendly cities and promoting policies on ageing in place must necessarily involve the active participation of the elderly themselves.

2.4 Prospects for Research into Environmental Gerontology in Latin America

Below are some reflections on the development and current situation of environmental gerontology in Latin America, as well as the problems of applying the theories from English-speaking academic sources.

The Latin American region comprises a wide range of developing countries, which face significant social inequalities, as well as a rapid advance in demographic ageing,¹⁸ particularly, in the twenty-first century (Lloyd-Sherlock 1997). In recent decades studies on ageing population in the region have been conducted from the standpoint of social gerontology (Díaz-Tendero 2011). It has also been observed that environmental gerontology is still a relatively unknown field for a broad spectrum of society, with little impact on academic circles in these countries (Tomasini 2005; Sánchez-González 2007, 2011; Batistoni 2014). In fact, the limited number of published studies is located mainly in Brazil and Mexico, with fewer contributions from other countries. In addition, major Latin American scientific meetings on ageing remain focussed on the social environment of ageing, ignoring the importance of the physical environment and its relationships with the elderly as a conditioning factor of a better quality of life (Sánchez-González 2015).

A review of the literature highlights the importance of addressing the socio-spatial implications of the ageing phenomenon which have not, however, been reflected in the planning and drafting of public policies, aggravating the already insufficient capacity of governments in the region to respond. In this regard, studies on distribution and localization of demographic ageing have revealed their effects on a regional and local (urban-rural) scale (Sánchez-González 2007, 2008), with major consequences for the labour market, pensions, social services and health, and residential issues (Jacomini 1990; Negrete 2003), as well as care for disability,

¹⁸ It is estimated that by 2050, 196 million people aged 60 and older will inhabit the region, while their relative weight will increase from 10.6 to 25.1 % (UN 2013).

dependency and social exclusion (Serrano et al. 2009; Jasso et al. 2011) and creating conditions for living autonomously and in good health (Uchoa et al. 2010).

In recent decades special attention has been paid to studies on reducing urban mobility patterns in ageing, as well as the motivations associated with migration of the elderly population (health, dependency, tourism) and its effects on receiving areas (Rodríguez et al. 1999; Balsan 2005). In the region, research focused on the elderly's residential mobility and strategies are notable for their input as regards the motivations and effects of urban and rural areas (Gomes da Conceição 1997; Hakkert and Guzmán 2004; Capron and González 2010). Additionally, recent studies are beginning to show some of the effects of return migration, as well as the vulnerability of undocumented elderly returnees on the border between Mexico and the US (Chávez and Sánchez-González 2012; Montes de Oca et al. 2013). A bunch of papers are also highlighting the role played by the mobility of foreign retired on the economic, social and political effects within the residential and social structure of certain cities, as well as residential integration/segregation or the mobilization of public policies. Some examples can be seen in Chapala, Los Cabos and San Miguel de Allende, Mexico (Truly 2002; Lizárraga 2010; Schafran and Monkkonen 2011; Rojas et al. 2014), in Cuenca, Ecuador (Bustamante 2012) or in Granada, Nicaragua (Reyes 2011).

The recent Latin American literature on the subject gives us an understanding of the importance of environmental factors in the quality of life of the elderly, from two different viewpoints. On the one hand, studies are emerging which examine the negative or limiting aspects of life in cities, as well as the architectural barriers, isolation, crime and abuse, noise and insomnia (Fadda and Cortés 2009) without neglecting the effects on the elderly of environmental factors such as air pollution in major Latin American cities (Cakmak et al. 2007; Romieu et al. 2012) or flood risks for the elderly living in degraded urban areas of the cities (Castelliano and Lapa 2013). On the other hand, the importance has been borne out of public amenities in social relations and promoting outdoor activities for the elderly, as well as the aesthetic and therapeutic value of the landscape associated with health and residential satisfaction during ageing (Sánchez-González and Adame-Rivera 2014). However, its results are not yet consistent in Latin American countries (Hernández et al. 2010) since hardly any studies have been done in some cities like Bogotá, Colombia or Curitiba, Brazil. Urban infrastructure, such as footpaths or bicycle lanes, have been validated in residential environments that favour physical activity for the elderly (Salvador et al. 2009; Giehl et al. 2012; Gómez et al. 2015), objective indicators that define the building environment for people's lives (Hino et al. 2011; Reis et al. 2013) or objective and subjective indicators which help explain the recreational use of the city for the elderly (Gómez et al. 2010; Parra et al. 2010a, b) in improving their health and quality of life.

Cities and rural areas in Latin American countries are undergoing increasingly speculative processes and marginalization that are triggering progressive environmental deterioration, which adversely affects ageing in place (Formiga and Prieto 2010). The unplanned growth of large cities has transformed the urban environment into a hostile one for ageing (pollution, architectural barriers, traffic accidents,

insecurity), which increases the risk of accidents (falls, hip fractures) (Peixoto et al. 2008) and psychosocial problems (isolation, depression, anxiety) for the elderly (Salas and Sanchez-Gonzalez 2014). For example, as it has been found that in Latin American cities, such as Bahía Blanca (Argentina) and Havana (Cuba), the old town shows high rates of elderly people at risk of social exclusion, who are impoverished, alone and malnourished (Bagnulo and Pizarro 2010; Bello 2013). In fact, these cities have detected that these vulnerable elderly people opt for confinement¹⁹ in their homes, which has negative effects on their quality of life (Mejía et al. 2007; Tapia et al. 2010), as a measure to avoid stressful experiences in the urban environment (crime, falls). In this regard, it has been found that the amount of time confined in the home is associated with a decrease in use of social and health services, increasing the vulnerability and fragility of this group (Palomo et al. 1998). All this confirms that the urban environment is not user-friendly for the elderly, and contributes to increasing the vulnerability of the heterogeneous aged population (differences by cohort and gender), threatened by biological and social processes, such as loss of health and income (Salgado and Wong 2006; Sánchez-González and Egea 2011).

To date, in the region, government-led and private residential solutions offered to the elderly population have been piece-meal and have not solved the growing problem (lack of assessment of residential satisfaction for housing types, existence of impossible ramps, and railings on buildings which isolate residents) (López-Salgado 2006). The overall advance in urban demographic ageing poses major challenges for gerontology planning (Sánchez-González 2007), making cities into areas of special interest to researchers, governments and international organizations. Therefore, some experts (Escudero 2003; Silveira 2003; Tomasini 2005) appeal for more focus on adapting housing and urban areas to promote the elderly's adaptability to the progressive deterioration associated with age. Some proposals from universities establish, firstly, an analytical framework which, among other factors, diagnoses the urban environment for the adult population through personal surveys in the city of Aguascalientes, Mexico; and, secondly, set up a proposal regarding basic elements of urban living space, such as increasing the provision of public amenities, consolidating neighbourhood centres, re-orientating facilities belonging to other age groups to be used by the elderly as the population ages, and providing the elderly involved with the opportunity to consult (Narváez 2012).

With a more general perspective geared towards Latin American countries, proposals have also been drafted to improve environmental conditions in cities. With an international perspective, documents such as the Regional Strategy on Ageing, adopted in 2013 in Santiago de Chile, and the Charter of San José on the rights of the elderly in Latin America and the Caribbean, adopted at the Third Regional Intergovernmental Conference on Ageing in Latin America and the

¹⁹ Some experts (Jacobson 2011) argue that confinement in old age may be related to diseases such as agoraphobia and hypochondria, arguing that these are not only psychological problems but also disorders associated with maladjustment in older people, particularly women, to urban surroundings and the stressful situations that surround them.

Caribbean 2012, are becoming aware of the risks that limit social participation and prevent social exclusion of the elderly population. In many countries, protection of the elderly is contained in charters and specific legislation (Huenchuán 2013). Recognized rights include the physical environment (public amenities, buildings and housing, and transport) where this population resides. Although legislative adaptation of these plans is neither simple nor homogeneous, between 40 and 50 % of countries in the region had drafted plans to improve access to housing and its quality, to provide transport services or special assistance for mobilization or to improve the accessibility of urban space (CELADE 2007). In some cases laws are enacted which are conducive to homeownership or renting; in other cases access to transportation or public amenities, which encourage social inclusion (Huenchuán 2013).

Policies with a global nature have been defined aimed at improving the urban residential environment. In 2005, in Rio de Janeiro, the Global user-friendly Cities Programme was designed along with the elderly (WHO 2007). This programme encourages healthy and active ageing in place, by optimizing opportunities for health, involvement and safety/security, and where the city's physical and social environment should contribute to improving the quality of life of the elderly. Here, attention is paid to the importance of determinants of active ageing, such as outdoor spaces and buildings, transportation, housing, social participation, respect and social inclusion, civic participation and employment, communication and information, and community support and health services. The 33 cities which joined the initial project across the globe include the Latin American cities of La Plata, Rio de Janeiro, San José de Costa Rica, Kingston, Montego Bay, Cancún, Ciudad de México, Mayagüez and Ponce.

Within this legislative development, international and national institutions responsible for public policy on the elderly have recognized the role of civil society in its management and development. For some years now, particularly since the World NGO Forum of the Second World Assembly on Ageing, Madrid, 2002, and the Conference of Brasilia in 2007, the elderly who are organized within associations saw their social function recognized, and were involved in events. The documents drafted at these events fully set out their rights, including those of access to public amenities, free movement around their place of residence, protection of housing, non-creation of physically or socially excluded areas, and social and community involvement. However, there is some disconnection between civic organizations and the elderly population in terms of social commitment to assistance, and their social value is not particularly deeply rooted in this population (Cruz and Pérez 2006). Thus, it has been necessary to move from (institutional) care-based organizations to others, emerging from society itself, with a prospective and proactive vision. These are the organizations, which have been developing their role of care and empowerment in recent years (Morlachetti et al. 2007; Razo 2014). In this direction a major effort is being made in many countries to incorporate the efforts of civil society, and the design of public policies geared towards the elderly population, within their legislation (Viveros 2001; Morlachetti et al. 2007).

In the Latin American literature examined results vary widely from those of studies on English-speaking and Mediterranean European areas as regards property and the cultural significance of housing, as well as the use and appropriation of public amenities in old age. Both environmental and sociocultural factors concerning private and public places, such as housing and neighbourhood, have a decisive influence on ageing in place. Therefore, it is necessary to consider and rethink the applicability of currently, general established models in order to explain the complex relationships between the elderly and the cultural-social-physical environment in these southernmost aging regions.

2.5 Discussion and Conclusions

Environmental gerontology today is divided in its criticism of the (sometimes) fruitless argument over the preeminent theoretical models and the possible need for new paradigms and methods of analysis to promote and facilitate their applicability. In this regard, various experts, such as Smith (2009) and Schwarz (2012), argue that the limited development of environmental gerontology can be explained by three factors: the decrease in theoretical, critical studies in applied research; their limited applicability in the practical field; and their predominantly positivist approach, focusing on independent predictive studies, where the physical environment -so essential in understanding the ageing process- tends to be ignored. Also, other researchers (Wahl and Weisman 2003) argue that the development of environmental gerontology remains controversial, due to the lack of empirical evidence related to methodological problems; lack of control groups and sample selection; and the predominance of descriptive studies focusing on the characteristics of the social environment, leaving aside the physical milieu. It follows from this that to date this branch of gerontology lacks a set of theories and methods shared by their researchers. Despite the importance of some of its central theories, such as the ecological model of ageing (Lawton and Nahemow 1973) or other approaches based on “person-environment” interaction, environmental gerontology (Wahl and Lang 2003), it lacks the necessary consensus as regards past and present theoretical scientific achievements, as well as an integrative theoretical benchmark framework, due largely to the multidisciplinary nature of the disciplines it comprises, and the increasing heterogeneity of its data and results (Schwarz 2012). However, proper use of research into environmental gerontology should not just restrict itself to identifying the factors and causes of man’s relationship with the environment but also create awareness and the conditions for its application to improve the quality of life of the elderly (Schwarz 2012).

On the other hand, most of the approaches are focussed on studies and experience gained in developed countries (Smith 2009). An analysis of the possibilities of future research should place the focus on aspects which go beyond traditional approaches undertaken so far, and along three main lines: (i) the conceptual and methodological advances associated with interaction between different disciplines

which deal closely with the elderly population's interaction with the environment; (ii) the new conditions imposed by global patterns of behaviour and technological and social innovations in local areas; but also (iii) the conditions under which demographic ageing is taking place in developing countries, in this case in Latin America.

Indeed, one of the most controversial issues concerns the drawbacks of validating the methods and scales of measurement in environmental gerontology. Some authors (Kendig 2003) have argued that an understanding of the relationship between the elderly and their environment from a macro perspective is needed; however, certain gerontologists tend to look at the context at the micro and personal level, and the question of diminishing capabilities, associated with a quantitative and qualitative methodology, respectively (Andrews et al. 2013). Also, many experts choose multivariate analyses of the different dimensions of the physical-social environment to understand residential satisfaction among the elderly (satisfaction with neighbourhood, accessibility, facilities, geographical location, etc.), which has not, however, overcome the difficulties associated with validating and replicating the methods used, and the risk of obtaining studies which are more descriptive than analytical (Amérigo and Aragonés 1997). Meanwhile, other researchers suggest the possibility of using a single, well-designed variable in assessing satisfaction with housing, which would function equally well, or better, than several different variables that may not measure the same content (Wanous et al. 1997; Gardner et al. 1998; Bergkvist and Rossiter 2007). The question of measuring a ratio between elderly individuals and the physical space they inhabit is necessarily complex (Iwarsson et al. 2013). Individuals seek security in their environment, at the same time as vital stimuli and the capacity to act there (Oswald and Wahl 2005), through horizontal forms of interaction (relationships between individuals in one same residence); vertical forms (an individual lives at the same time at different regional levels which overlap each other, as noted by Peace et al. (2006); or time-bound forms (each individual carries with them a legacy of decisions that determines their relationship with the physical space). All leads to a "recognition of options" on the part of the individual, depending on circumstances and experiences (Peace et al. 2011). Even theoretical and methodological tensions become mixed, from psychological and behavioural standpoints of the individuals in the nearest residential locations, to sociological guidelines and public policies governing decisions on a macro scale (Wahl and Weisman 2003; Wahl and Lang 2003). These tensions require greater and deeper analysis in the future, once theoretical bases and methodological tools that will facilitate better analysis have been found.

To date, two challenges urgently await the heterogeneous world of environmental gerontology researchers, being the first to promote a true global consensus as to theoretical and empirical development through new methods of research, and systematic standardization of tools and tests between disciplines—as well as from an interdisciplinary approach. A second challenge is to encourage their applicability in the practical field and, in general, in public policy on ageing, based upon its adaptability to heterogeneous geographical and sociocultural settings, comprising the many links between the macro, meso and micro environments of the ageing-population. Thus, a real impetus is needed to overcome the obstacles hindering the

development of communication, bonding, cooperation and solidarity between researchers and institutions globally, particularly in developing regions, in environmental gerontology.

Despite the necessary criticism, discoveries in environmental gerontology are creating growing expectation among researchers in various sciences, professionals, managers and society in general, at a time when the conditions created by globalization and social and technological innovations are reaching any region and society. Challenges of population ageing associated with an urbanized world require a greater understanding of increasingly complex, dynamic and technically advanced environments where the population is growing—and will grow—old. Also, the global trend of ageing in place is associated with the preference of the elderly to continue living in a familiar setting, such as their own home and neighbourhood. All this makes environmental gerontologists key professionals who stand out for their research into the understanding of the physical, technological and social surroundings for growing old positively, and the adaptive processes associated with age-related functional loss, as well as their relevant role in the applicability of their findings in heterogeneous and changing environments for ageing.

Globally, in the past 60 years the main concern of researchers, practitioners and governments has been focussed into the increasingly ageing population, associated with declining fertility, reduced mortality and migration. In addition, over the course of time, a process of concentration of the aged population into urban areas has been reported, particularly in developing regions, which has led to a causal relationship between environmental deterioration and loss of quality of life for the population (Keyfitz 1996). Furthermore, the ageing phenomenon has gone from being approached from an institutionalized and palliative perspective, linked to fragility and dependence, to now being considered as a natural, widespread process, which from a preventive and proactive standpoint, focuses on promoting active ageing in place: in the home and neighbourhood.

In the literature there is much evidence, which indicates the bias of gerontology research towards examples from developed countries, particularly the US, a fact which sometimes prevents extrapolation to other contexts. Many of these studies put their emphasis on institutional settings—but not specific urban areas—where large proportions of the elderly live (Smith and Smith 2009a, b). It is necessary, therefore, to establish new analytical and methodological frameworks, adapted to the new reality of ageing, favouring comparison between different geographical and cultural contexts. Reductionist forms of research into the current situation have been prevalent until now, clinging closely to familiar disciplines and contexts, but little interested in finding generalizations appropriate to the heterogeneity of the ageing process. An example of this need for open research is to consider the importance of the entire course of life in understanding the behaviour and decisions of the elderly when they live in dynamic and naturally changing residential environments—but which are “familiar” to them (Phillips et al. 2011). The construction of individual perceptions, the experiences gained in the assessment of environmental satisfaction, and the changes in the residential environment throughout life are all decisive factors for the skills and abilities of the elderly with regard to the place

where they live, or will live in the future, and their identification with it (Gitlin 2003; Smith and Smith 2009a, b). A break away would, in many cases, facilitate their residential mobility, in so far as they recognize other possible options for a change of residence (Peace et al. 2011), however the conditions and strategies for keeping the elderly population in their own homes and residential environment have not yet been sufficiently analysed either (Gitlin 2003; Landorf et al. 2008; Fausset et al. 2011).

Like other similar shortfalls, this must be corrected in future studies in other geographical and cultural contexts where the problems to be analysed have individual backgrounds, deep cultural roots, and regulatory and legal structures that determine the knowledge needed to resolve and apply these socially (Schwarz 2012). Therefore, any environmental gerontology research which assesses life events without seeking a solution to problems, no allowing social involvement, no using the experience of populations, or no training the social partners involved, would have limited usefulness (Windley and Weisman 2003), particularly when trying to implement models designed in other countries with different cultural resources.

Through a review of the literature, it has been found that studies on environmental gerontology which jointly address the regions of Mediterranean Europe and Latin America are insufficient and too shallow as regards the issues discussed, as evidenced by those analysing the implications of the residential environment on health (Garin et al. 2014) and physical exercise (Annear et al. 2014). Initially, it can be said that these Latin American countries produce a great deal of social, economic and environmental situations that facilitate the emergence of scenarios which analyse the relationship between population (specifically, the elderly) and environmental conditions. Poverty, social inequality, the processes of exclusion and segregation in cities, environmental hazards, stagnation in the education and economy of many social groups, are widely recognized phenomena in many of these countries. As happens in other disciplines such as environmental psychology (Corral-Verdugo and Pinheiro 2009), there is an “indigenous” way of understanding the relationships between population and surrounding environment, albeit coexisting along with other “western” perceptions.

Mediterranean Europe and Latin America have sought, without much success so far, to establish a methodology that can be replicated in different environments, to assess the significance of the physical and social context of ageing and its implications for theoretical development, as well as its applicability in the sphere of public policy. In this direction, studies produced have been characterized by important theoretical and empirical limitations resulting from their applicability in different national contexts, due to methodological weaknesses. Similarly, the low penetration of environmental gerontology in the academic field of the European Mediterranean and particularly Latin America, is explained by the lack of truly multidisciplinary research groups, which would integrate the vision of professionals from the physical, built environment of ageing—such as architects, designers, geographers and planners, among others—and the perspective of professionals in the social environment of ageing, such as psychologists, social workers, public health professionals, sociologists and anthropologists.

The results indicate that the reduced visibility of the studies conducted by researchers from both regions is associated with a lower level of scientific development, such as lack of funding and collaboration, problems of inbreeding and academic isolation, poor updating of university courses, and less visibility of journals in languages other than English. Also, some researchers (Lloyd-Sherlock 1997) stress that, due to the socio-spatial complexity of (extremely unsafe) urban slums in Latin America, the use of certain methodological tools, such as formal surveys of the elderly, is particularly problematic. Therefore, researchers from these countries should be more creative and produce new methodologies adapted to each social and environmental situation of ageing.

In a context of an ageing society it is important to understand the many physical and social factors that determine the daily lives of the elderly, and that means dealing with the enormous complexity of attempting to control all the factors that influence ageing. Progress in medium and long term research in environmental gerontology depends largely on the growing numbers of dependent and frail elderly people with chronic and degenerative (Alzheimer and Parkinson diseases) actually benefitting from new measures, and experiencing a real improvement in their everyday life through changes in the environment. This is a commitment that should lead society in Latin American countries to reflect upon the importance of appreciating the little things that make it possible to face every-day environmental problems and promote an improvement in the quality of life of the elderly and particularly of those who require care, without forgetting their caregivers, families and professionals.

In this sense, diagnoses and guidelines produced by and for the purposes of international organizations, and the structures of economic capital and social participation that deal with the elderly, are of vital importance. Vertical interaction, top-down, or horizontally between them, can create mechanisms of knowledge-building and transfer to society, and to the organized individuals involved. As noted above, instruments such as the Conference of Brasilia, in 2007, and the Charter of San José, in 2012, within the Regional Strategy for implementation of the International Plan of Action on Ageing, in Madrid in 2002, have created commitments between states to launch initiatives that recognize the situation of the elderly, from a global perspective: that of human rights—and among these, the right to decent housing and a supportive residential environment that improves people's quality of life (Huenchuán 2009) (Table 2.1).

Beyond their official recognition, various problems limit their applicability, as recognized by the Latin American Demographic Centre (CELADE): the lack of standardization of the concept "residential environment", the heterogeneity of their components and the difficulty in providing reliable and consistent data which prevent proper diagnosis of the situation (CELADE 2006). Notwithstanding, there has been an effort to lay the foundation for the analysis of social environments (family and household arrangements, social networks, social participation, violence and abuse, and social image) and the physical *milieu* (housing and urban environment) within the parameters of the Regional Strategy. Similarly, policies of intervention in this area do not have even general coverage, since there tend to be rather narrow, limited public policies or they don't extend to all the countries. Nor are they intended

Table 2.1 Main areas of intervention of the physical and social environment programmes for the elderly in Latin America and the Caribbean

Country	Physical environments			Social environments			
	Housing	Transport	Accessi- bility	Social networks and family support	Social partici- pation	Abuse	Education
Aruba	X	X	X	X			
Argentina		X	X	X	X	X	
Belice	X			X	X	X	X
Bolivia						X	
Brazil		X		X	X	X	
Chile	X	X	X	X	X	X	X
Colombia			X			X	
Costa Rica	X	X		X	X	X	X
Cuba	X	X		X	X	X	
Dominican Republic	X		X	X		X	X
Dutch Antilles				X			X
El Salvador	X					X	
Guatemala		X		X			
Honduras			X			X	
Mexico	X		X			X	
Nicaragua		X	X			X	
Panama	X			X		X	
Paraguay			X		X		
Peru	X					X	
Puerto Rico	X	X	X	X		X	
Uruguay	X			X	X	X	
Venezuela		X				X	
N=22	12	10	10	13	8	18	5

Source: Adapted from Huenchuán (2009), by authors

only for the elderly but rather the entire population at risk of poverty and exclusion, including the elderly (Huenchuán 2009). Despite their legal recognition, there is no guarantee for the continuity of these limited policies or future expansion to more countries and more specific groups, such as the elderly.

A global reality, also in Latin American countries, is the implementation of bottom-up initiatives that increase the social and political involvement of older people to improve their quality of life in their home environments. Some of these have developed international channels, such as HelpAge International in its Latin American division, the Iberoamerican Federation of the Elderly (Federación Iberoamericana de Asociaciones de Personas Mayores) or the Continental Network for the Elderly (Red Continental de Personas Mayores). Others are focussed on the care of the elderly in their own countries, such as Costa Rica. A review of the types of partnerships and their objectives suggest that there is no line of approach to promote the interests of the elderly with regard to housing and the residential environ-

ment. As mentioned above, the initiatives which stir up most interest are those directed at remedying individual shortages/deficiencies, such as poverty and social exclusion, assistance to families and their members, obtaining basic economic resources, or accessing healthcare resources. The home, even though a primary necessity, is not usually envisaged among the objectives of associations that serve the elderly, nor are the environmental conditions of residential settings. Once again the contradiction between the recognition of the rights of individuals and the difficulty of compliance, also between associative structures, is highlighted. This is yet another challenge to take on board in the coming decades, as the increasingly elderly population demands more attention in all areas.

People will live increasingly longer, so society must prepare itself for the longevity revolution, where environment will play a central role in the way population behave and face old age, as a time of change and opportunities, in order to promote a positive outlook and the desire to live life to the full at a late age.

References

- Abellán García, A. 1999. Movilidad residencial y género entre las personas de edad: una aproximación a las estrategias residenciales en Madrid. *Documents d'Anàlisi Geogràfica* 34: 143–159.
- Altman, I., M.P. Lawton, and J.F. Wohlwill (eds.). 1984. *Elderly people and the environment*. New York: Plenum.
- Amérigo, M., and J.I. Aragonés. 1997. A theoretical and methodological approach to the study of residential satisfaction. *Journal of Environmental Psychology* 17(1): 47–57. doi:[10.1006/jevp.1996.0038](https://doi.org/10.1006/jevp.1996.0038).
- Andrews, G.J., and D.R. Phillips. 2005. *Ageing and place: Perspectives, policy, practice*. London: Routledge.
- Andrews, G.J., M. Cutchinb, K. Mccrackenc, Dr. Phillips, and J. Wilese. 2007. Geographical gerontology: The constitution of a discipline. *Social Science & Medicine* 65(1): 151–168. doi:[10.1016/j.socscimed.2007.02.047](https://doi.org/10.1016/j.socscimed.2007.02.047).
- Andrews, G.J., J. Evans, and J.L. Wiles. 2013. Re-spacing and re-placing gerontology: Relationality and affect. *Ageing and Society* 33(8): 1339–1373. doi:[10.1017/S0144686X12000621](https://doi.org/10.1017/S0144686X12000621).
- Annear, M., S. Keeling, T. Wilkinson, G. Cushman, B. Gidlow, and H. Hopkins. 2014. Environmental influences on healthy and active ageing: A systematic review. *Ageing and Society* 34: 590–622. doi:[10.1017/S0144686X1200116X](https://doi.org/10.1017/S0144686X1200116X).
- Argoud, D. 2006. De nouvelles formes d'habitat pour personnes âgées: D'hier à aujourd'hui. *Gerontologie et Societe* 119: 85–92. doi:[10.3917/gs.119.0085](https://doi.org/10.3917/gs.119.0085).
- Argoud, D. 2012. Le pouvoir gris à l'épreuve du territoire. *Gerontologie et Societe* 143: 63–76. doi:[10.3917/gs.143.0063](https://doi.org/10.3917/gs.143.0063).
- Bagnulo, C., and N. Pizarro. 2010. Distribución espacial de los adultos mayores en condición de riesgo de malnutrición en la ciudad de Bahía Blanca. *Revista Universitaria de Geografía* 19(1): 119–138.
- Balard, F., and D. Somme. 2011. Faire que l'habitat reste ordinaire. Le maintien de l'autonomie des personnes âgées en situation complexe à domicile. *Gerontologie et Societe* 136: 105–118. doi:[10.3917/gs.136.0105](https://doi.org/10.3917/gs.136.0105).
- Balsan, R. 2005. *Espaços de turismo e lazer dos idosos em Rio Claro-Sp. Tese doutorado*. Rio Claro: Universidade Estadual Paulista.

- Bates, T., and D. Fasenfest. 2005. Enforcements mechanisms discouraging black American presence in suburban Detroit. *International Journal of Urban and Regional Research* 29(4): 960–971. doi:[10.1111/j.1468-2427.2005.00631.x](https://doi.org/10.1111/j.1468-2427.2005.00631.x).
- Batistoni, S.S.T. 2014. Gerontologia Ambiental: panorama de suas contribuições para a atuação do gerontólogo. *Revista Brasileira de Geriatria e Gerontologia* 17(3): 647–657.
- Bechtel, R.B., and A. Churchman. 2002. *Handbook of environmental psychology*. New York: Wiley.
- Bello, W. 2013. Vulnerabilidad socio-demográfica de las personas de la tercera edad. Estudio de caso, centro histórico de La Habana. *Cuadernos Geográficos* 52: 153–177.
- Bergkvist, L., and J.R. Rossiter. 2007. The predictive validity of multiple-item versus single item measures of the same constructs. *Journal of Marketing Research* 44(2): 175–184. doi:[10.1509/jmkr.44.2.175](https://doi.org/10.1509/jmkr.44.2.175).
- Bezrukov, V., and N.A. Foigt. 2005. Longevidad centenaria en Europa. *Revista Española de Geriatria y Gerontología* 40(5): 300–309.
- Bigot, R., G. Hatchuel, and L. Ortalda. 2001. On pense différemment à Paris, dans les zones urbaines et dans le rural. *CREDOC* 147: 4.
- Bittencourt, M.C., V.L. Do Valle Pereira, and W. Pacheco. 2012. The elderly in the shopping centers: The usability study of semipublic spaces as attractiveness generator. *Work: A Journal of Prevention, Assessment and Rehabilitation* 41(1): 4163–4170. doi:[10.3233/WOR-2012-0713-4163](https://doi.org/10.3233/WOR-2012-0713-4163).
- Bonvalet, C., and J. Ogg. 2008. The housing situation and residential strategies of older people in France. *Ageing and Society* 28(6): 753–777. doi:[10.1017/S0144686X08007071](https://doi.org/10.1017/S0144686X08007071).
- Bookman, A. 2008. Innovative models of aging in place: Transforming our community for an aging population. *Community, Work and Family* 11(4): 419–438. doi:[10.1080/13668800802362334](https://doi.org/10.1080/13668800802362334).
- Bourdieu, J., G. Postel-Vinay, P.A. Rosental, and A. Suwa-Eisenmann. 2004. La dispersion spatiale des familles: un problème de taille. Les solidarités familiales de 1800 à 1940. *Recherches et Prévisions* 77: 63–72.
- Boutrand, M. 2009. *Seniors et cité. Avis et rapport*. Paris: Conseil Economique Social et Environmental.
- Brody, E.M., M.H. Kleban, M.P. Lawton, and H.A. Silverman. 1971. Excess disabilities of mentally impaired aged: Impact of individualized treatment. *Gerontologist* 11(2): 124–133. doi:[10.1093/geront/11.2_Part_1.124](https://doi.org/10.1093/geront/11.2_Part_1.124).
- Brutel, C., and D. Levy. 2012. Le nouveau zonage en bassins de vie de 2012. Trois quarts des bassins de vie sont ruraux. *INSEE Première* 1425: 4.
- Bultez, J.P., and D. Gelot. 2010. *Viellir dans la pauvreté. Problèmes politiques et sociaux*. Paris: La Documentation Française.
- Bungerer, M. 2004. Canicule estivale: la triple vulnérabilité des personnes âgées. *Mouvements* 32(2): 75–82. doi:[10.3917/mouv.032.0075](https://doi.org/10.3917/mouv.032.0075).
- Bustamante, D.M. 2012. *Amenities migration: A case study on the retired expatriate community in Cuenca, Azuay, Ecuador*. Scripps Senior theses, Paper 29: 33.
- Cakmak, S., R.E. Dales, and C. Blanco Vidal. 2007. Air pollution and mortality in Chile: Susceptibility among the elderly. *Environmental Health Perspect* 15: 524–527. doi:[10.1289/ehp.9567](https://doi.org/10.1289/ehp.9567).
- Capacci, A., and S. Mangano. 2003. Envejecimiento de la población y viviendas para personas mayores en Génova, Italia. *Scripta Nova. Revista electrónica de geografía y ciencias sociales* 7(46): 105. [http://www.ub.es/geocrit/sn/sn-146\(105\).htm](http://www.ub.es/geocrit/sn/sn-146(105).htm). Accessed 08 Sept 2014.
- Capron, G., and S. González. 2010. Residential mobility of the elder people and the life trajectories of their family in the metropolitan area of Mexico City. *Alteridades* 20(39): 67–78.
- Carp, F.M., and A. Carp. 1982. Perceived environmental quality of neighborhoods: Development of assessment scales and their relation to age and gender. *Journal of Environmental Psychology* 2(4): 295–312. doi:[10.1016/S0272-4944\(82\)80029-7](https://doi.org/10.1016/S0272-4944(82)80029-7).
- Carp, F.M., and A. Carp. 1984. A complementary congruence model of well-being or mental health for the community elderly. In *Elderly people and the environment*, ed. I. Altman, M.P. Lawton, and J.F. Wohlwill, 279–336. New York: Plenum.

- Castelliano, D., and A.E. Lapa. 2013. Vivendo o risco de enchentes: relatos de moradores de Campo. *Grande/MS Psico-USF* 18(2): 299–308.
- CELADE. 2006. *Manual sobre indicadores de calidad de vida en la vejez*. Santiago: Centro Latinoamericano de Demografía.
- CELADE. 2007. *Informe sobre la Estrategia Regional para la Implementación para América Latina y el Caribe del Plan de Acción Internacional de Madrid sobre el Envejecimiento*. Santiago de Chile, Centro Latinoamericano de Demografía. <http://www.cepal.org/celade/noticias/paginas/5/31915/Djaspers.pdf>. Accessed 09 Sept 2014.
- Chávez, R., and D. Sánchez-González. 2012. Social vulnerability of older adults migrants returning on the border of Mexico and the United States. In *Vulnerabilidad social: posicionamiento y ángulos desde geografías diferentes*, ed. C. Egea, D. Sanchez-Gonzalez, and J.I. Soledad, 223–240. Granada: Universidad de Granada.
- Christenson, M., and E.D. Taira. 1990. *Aging in the designed environment*. New York: Taylor and Francis.
- Compán, D., and D. Sánchez-González. 2005. The elderly to the loft. The process of biological and social degradation in the aged population of Granada. *Cuadernos Geográficos* 36: 255–274.
- Corral-Verdugo, V., and J.Q. Pinheiro. 2009. Environmental psychology with a Latin American taste. *Journal of Environmental Psychology* 29: 366–374. doi:10.1016/j.jenvp.2008.10.007.
- Coupleux, S. 2010. Logement des personnes âgées dans le Pas-de-Calais approche du risqué et de ses représentations: l'exemple des Béguinages. *Cuadernos Geográficos* 46: 163–179.
- Cramm, J., H. Van Dijk, and A. Nieboer. 2013. The importance of neighborhood social cohesion and social capital for the well being of older adults in the community. *The Gerontologist* 53(1): 142–150. doi:10.1093/geront/gns052.
- Cruz, A., and L. Pérez. 2006. *Adultos mayores en Uruguay: actores del voluntariado y del servicio cívico*. Montevideo: Instituto de Comunicación y Desarrollo.
- Culp, R. 2011. Relocate then renovate: An empirical analysis of the role of environmental attributes in the home improvement decision. *Journal of Housing Research* 20(1): 53–66.
- Cunningham, G.O., and Y.L. Michael. 2004. Concepts guiding the study of the impact of the built environment on physical activity for older adults: A review of the literature. *American Journal of Health Promotion* 18(6): 435–443. doi:10.4278/0890-1171-18.6.435.
- Cutchin, M. 2003. The process of mediated aging-in-place: A theoretically and empirically based model. *Social Science and Medicine* 57(6): 1077–1090. doi:10.1016/S0277-9536(02)00486-0.
- Davies, A., and A. James. 2011. *Geographies of ageing. Social processes and the spatial unevenness of population ageing*. Burlington: Ashgate Publishing Company.
- De Guitaut, E., A. Vezin, and A.M. Coutrot. 2005. *Bien vieillir à la maison*. Paris: Senior Plus.
- Dehan, P., M. Le Chapellier, and B. Spinga. 2007. *L'habitat des personnes âgées: du logement adapté aux EHPAD, USLD et Unités Alzheimer*. Paris: Le Moniteur.
- Díaz-Tendero, A. 2011. Estudios de población y enfoques de gerontología social en México. *Papeles de Población* 17(70): 49–79.
- Dychtwald, K. (ed.). 1986. *Wellness and health promotion for the elderly*. Rockville: Aspen Publications.
- Escudero, J.M. 2003. Los viejos en su casa, en su ciudad. *Scripta Nova. Revista Electrónica de Geografía y Ciencias Sociales* 7(146): 203. Barcelona: Universidad de Barcelona. [http://www.ub.es/geocrit/sn/sn-146\(103\).htm](http://www.ub.es/geocrit/sn/sn-146(103).htm). Accessed 08 Sept 2014.
- Fadda, G., and A. Cortés. 2009. Hábitat y adulto mayor: el caso de Valparaíso. *Revista INVI* 24(66): 89–113. doi:10.4067/S0718-83582009000200003.
- Fausset, C.B., A.J. Kelly, W.A. Rogers, and A.D. Fisk. 2011. Challenges to aging in place: Understanding home maintenance difficulties. *Journal of Housing For the Elderly*. 25(2): 125–141. doi:10.1080/02763893.2011.571105.
- Fernández-Mayoralas, G., F. Rojo-Pérez, and J.M. Rojo-Abuín. 2004. Components of the residential environment and sociodemographic characteristic of the elderly. *Journal of Housing for the Elderly* 18(1): 25–49.

- Fetter, I., L. Olivos, G. Gutiérrez, and S. Michán. 2012. Regulación epigenética del envejecimiento. In *Aspectos moleculares del envejecimiento*, ed. E. López and N.M. Torres, 61–69. México: Instituto de Geriatria.
- Formiga, N., and M.B. Prieto. 2010. Envejecimiento y diferenciación socioespacial en calidad de vida. La situación en Bahía Blanca, Argentina. In *Sociedad y adulto mayor en América Latina. Estudios sobre Envejecimiento en la Región*, ed. E. Peláez, 39–67. Córdoba: Editorial Copiar-ALAP.
- Future Group. 2011. *FUTURAGE. A road map for European ageing research*. Sheffield: The University of Sheffield.
- Galster, G. 1987. Identifying the correlates of dwelling satisfaction. An empirical critique. *Environment and Behavior* 19(5): 539–568. doi:[10.1177/0013916587195001](https://doi.org/10.1177/0013916587195001).
- Gardner, D.C., L.L. Cummings, R.B. Dunham, and J.L. Pierce. 1998. Single-item versus multiple-item measurement scales: An empirical comparison. *Educational and Psychological Measurement* 58(6): 898–915. doi:[10.1177/0013164498058006003](https://doi.org/10.1177/0013164498058006003).
- Garin, N., B. Olaya, M. Miret, J.L. Ayuso-Mateos, M. Power, P. Bucciarelli, and J.M. Haro. 2014. Built environment and elderly population health: A comprehensive literature review. *Clinical Practice & Epidemiology in Mental Health* 10: 103–115. doi:[10.2174/1745017901410010103](https://doi.org/10.2174/1745017901410010103).
- Garvin, T., C. Nykiforuk, and S. Johnson. 2012. Can we get old here? Senior's perceptions of seasonal constraints of neighborhood built environments in northern, winter city. *Geografiska Annaler: Series B, Human Geography* 94(4): 369–389.
- Gastaldo, D., G.J. Andrews, and N. Khanlou. 2004. Therapeutic landscapes of the mind: Theorizing some intersections of health geography, health promotion and immigration studies. *Critical Public Health* 14(2): 157–176.
- Giehl, M., I. Schneider, H. Corseuil, T. Benedeti, and E. d'Orsi. 2012. Physical activity and environment perception among older adults: A population study in Florianópolis, Brazil. *Revista de Saúde Pública* 46(3): 1–9. doi:[10.1590/S0034-89102012005000026](https://doi.org/10.1590/S0034-89102012005000026).
- Gitlin, L.N. 2003. Conducting research on home environments: Lessons learned and new directions. *The Gerontologist* 43(5): 628–637. doi:[10.1093/geront/43.5.628](https://doi.org/10.1093/geront/43.5.628).
- Golant, S.M. 1986. *A place to grow old: The meaning of environment in old age*. New York: Columbia University Press.
- Golant, S.M. 2003. Conceptualizing time and behaviour in environmental gerontology: A pair of old issues deserving new thought. *The Gerontologist* 43(5): 638–648.
- Gomes da Conceição, M.C. 1997. El envejecimiento poblacional y las formas de residencia en México. *Papeles de Población* 3(14): 171–194.
- Gómez, L.F., D.C. Parra, D. Buchner, R. Brownson, O.L. Sarmiento, J.D. Pinzón, M. Ardila, J. Moreno, M. Serrato, and F. Lobelo. 2010. Built environment attributes and walking patterns among the elderly population in Bogotá. *American Journal of Preventive Medicine* 38(6): 592–599. doi:[10.1016/j.amepre.2010.02.005](https://doi.org/10.1016/j.amepre.2010.02.005).
- Gómez, L.F., R. Sarmiento, M.F. Ordoñez, C.F. Pardo, T. Hérick de Sác, C.H. Mallarino, J.J. Miranda, J. Mosquera, D.C. Parra, R. Reis, and D.A. Quistberg. 2015. Urban environment interventions linked to the promotion of physical activity: A mixed methods study applied to the urban context of Latin America. *Social Science & Medicine* 131: 18–30. doi:[10.1016/j.socscimed.2015.02.042](https://doi.org/10.1016/j.socscimed.2015.02.042).
- Guisset, M.J., and B. Veysset. 1990. *Grand âge, dépendance et lieux de vie*. Paris: Fondation de France.
- Hagan-Henness, C., and A. Walker. 2011. Promoting multi-disciplinary and inter-disciplinary ageing research in the UK. *Ageing and Society* 31(1): 52–69.
- Hakkert, R., and J.M. Guzmán. 2004. Envejecimiento demográfico y arreglos familiares de vida en América Latina. In *Imágenes de la familia en el cambio de siglo*, ed. M. Ariza and O. Olive, 479–518. México: Universidad Nacional Autónoma de México.
- Hellpach, W.H. 1924. *Psychologie der umwelt*. Berlin: Urban & Schwarzenberg.
- Hernández, A., L.F. Gómez, and D.C. Parra. 2010. Ambientes urbanos y actividad física en adultos mayores: Relevancia del tema para América Latina. *Revista de Salud Pública* 12(2): 327–335.

- Hino, A.A., R.S. Reis, O.L. Sarmiento, D.C. Parra, and R.C. Brownson. 2011. The built environment and recreational physical activity among adults in Curitiba, Brazil. *Brazilian Preventive Medicine* 52(6): 419-422.
- Huenchuán, S. 2009. *Envejecimiento, derechos humanos y políticas públicas*. Santiago: Comisión Económica para América Latina y el Caribe.
- Huenchuán, S. 2013. *Envejecimiento, solidaridad y protección social en América Latina y el Caribe. La hora de avanzar hacia la igualdad*. CEPAL, Santiago de Chile, libro 117, 183 p.
- Iwarsson, S., A. Ståhl, and Ch. Löfqvist. 2013. Mobility in outdoor environments in old age. In *Environmental gerontology: Making meaningful places in old age*, ed. G.D. Rowles and M. Bernard. New York: Springer Publishing Company.
- Jacomini, W. 1990. *O envelhecimento da população e a condição dos idosos: Processos sociais analisados em Rio Claro*. Rio Claro: Universidade Estadual Paulista.
- Jasso, P.B., J. Montoya, and E. Cadena. 2011. Los adultos mayores en las zonas metropolitanas de México: desigualdad socioeconómica y distribución espacial, 1990–2005. *Papeles de Población* 17(70): 81–124.
- Kahana, E. 1982. A congruence model of person-environment interaction. In *Aging and the environment – Theoretical approaches*, ed. M.P. Lawton, P.G. Windley, and T.O. Byerts, 97–120. New York: Springer Publishing Company.
- Kahana, E., and B. Kahana. 1996. Conceptual and empirical advances in understanding aging well through proactive adaptation. In *Adulthood and aging. Research on continuities and discontinuities*, ed. V.L. Bengtson, 18–40. New York: Springer Publishing Company.
- Kahana, E., L. Lovegreen, B. Kahana, and M. Kahana. 2003. Person, environment, and person-environment fit as influences on residential satisfaction of elders. *Environment and Behavior* 35(3): 434–453. doi:[10.1177/0013916503035003007](https://doi.org/10.1177/0013916503035003007).
- Kendig, H. 2003. Directions in environmental gerontology: A multidisciplinary field. *The Gerontologist* 43(5): 611–615.
- Keyfitz, N. 1996. Population growth, development and the environment. *Population Studies – A Journal of Demography* 50(3): 335–359. doi:[10.1080/0032472031000149526](https://doi.org/10.1080/0032472031000149526).
- Kurniawati, W. 2012. Public space for marginal people. *Procedia Social and Behavioral Sciences* 36: 476–484. doi:[10.1016/j.sbspro.2012.03.052](https://doi.org/10.1016/j.sbspro.2012.03.052).
- Landorf, Ch., G. Brewer, and L.A. Sheppard. 2008. The urban environment and sustainable ageing: Critical issues and assessment indicators. *Local Environment* 13(6): 497–514. doi:[10.1080/13549830802259896](https://doi.org/10.1080/13549830802259896).
- Lanzieri, G. 2011. *The greying of the baby boomers: A century-long view of ageing in European populations*. Luxembourg: Eurostat.
- Lardiés, R. 2008. Aproximación cualitativa al estudio del efecto de la movilidad residencial en la calidad de vida de los mayores. *Forum: Qualitative Social Research* 9(2): 22. <http://nbn-resolving.de/urn:nbn:de:0114-fqs0802227>. Accessed 09 Sept 2014.
- Lawton, M.P. 1980. Housing the elderly: Residential quality and residential satisfaction. *Research on Aging* 2(3): 309–328. doi:[10.1177/016402758023002](https://doi.org/10.1177/016402758023002).
- Lawton, M.P. 1985. The elderly in context: Perspectives from environmental psychology and gerontology. *Environment and Behaviour* 17(4): 501–519. doi:[10.1177/0013916585174005](https://doi.org/10.1177/0013916585174005).
- Lawton, M.P. 1989. Environmental proactivity and affect in older. In *The social psychology of aging*, ed. S. Scpacapan and S. Oskamp, 135–163. Newbury Park: Sage.
- Lawton, M.P. 1990. Residential environment and self-directedness among older people. *American Psychologist* 45(5): 638–640. doi:[10.1037/0003-066X.45.5.638](https://doi.org/10.1037/0003-066X.45.5.638).
- Lawton, M.P. 1999. Environmental taxonomy: Generalizations from research with older adults. In *Measuring environment across the life span*, ed. S.L. Friedman and T.D. Wachs, 91–124. Washington, DC: American Psychological Association.
- Lawton, M.P., and L. Nahemow. 1973. Ecology and the aging process. In *The psychology of adult development and aging*, ed. C. Eisdorfer and M.P. Lawton, 619–674. Washington, DC: American Psychological Association.

- Lawton, M.P., M. Moss, and E. Moles. 1984. The suprapersonal neighborhood context of older people: Age heterogeneity and well-being. *Environment and Behavior* 16(1): 89–109. doi:[10.1177/0013916584161004](https://doi.org/10.1177/0013916584161004).
- Lewin, K. 1951. *Field theory in social science: Selected theoretical papers*. New York: Harper & Brothers.
- Litwak, E., and C.F. Longino. 1987. Migration patterns among the elderly: A developmental perspective. *The Gerontologist* 27(3): 266–272.
- Lizárraga, O. 2010. The US Citizens retirement migration to Los Cabos, Mexico: Profile and social effects. *Recreation and Society in Africa, Asia and Latin America* 1(1): 75–92.
- Lloyd-Sherlock, P. 1997. *Old age and urban poverty in the development world. The Shanty Towns of Buenos Aires*. New York: Palgrave Macmillan.
- López-Jiménez, J.J. 1993. *El proceso de envejecimiento urbano y sus implicaciones en el municipio de Madrid. Tesis doctoral*. Madrid: Universidad Complutense de Madrid.
- López-Salgado, M.N. 2006. Políticas de viviendas para nuevas demandas: el caso del programa de jubilados y pensionistas del BPSMVOTMA del Uruguay. *Revista INVI* 21(57): 44–60.
- Lui, C.W., J.A. Everingham, J. Warburton, M. Cuthill, and H. Bartlett. 2009. What makes a community age friendly: A review of international literature. *Australasian Journal on Ageing* 28(3): 116–121. doi:[10.1111/j.1741-6612.2009.00355.x](https://doi.org/10.1111/j.1741-6612.2009.00355.x).
- Malenbaum, S., F.J. Keefe, A. Williams, R. Ulrich, and T.J. Somers. 2008. Pain in its environmental context: Implications for designing environments to enhance pain control. *Pain* 134(3): 241–244.
- Matteson, M.A. 1997. Biological theories of aging in gerontological nursing concepts and practice. In *Gerontological nursing: Concepts and practice*, ed. M.A. Matteson, E.S. Mc Connell, and W.B. Linton, 158–171. Philadelphia: Saunders.
- Mejía, S., A.M. Jaimes, A. Villa, L. Ruiz, and L.M. Gutiérrez. 2007. Deterioro cognoscitivo y factores asociados en adultos mayores en México. *Salud Pública de México* 49(4): 475–481.
- Montes de Oca, V., S.J. García, and R. Sáenz. 2013. Transnational aging: Disparities among elderly Mexican immigrants. *Transnational Social Review. A Social Work Journal* 3(1): 65–82.
- Morlachetti, A., J.M. Guzmán, and M. Cuevas. 2007. *Estrategias para abogar en favor de las personas mayores*. CELADE, Población y Desarrollo 75, Santiago de Chile, 44 p.
- Narváez, O.L. 2012. Envejecimiento demográfico y requerimientos de equipamiento urbano: hacia un urbanismo gerontológico. *Papeles de Población* 18(74): 203–235.
- Negrete, M.E. 2003. El envejecimiento poblacional en la ciudad de México: evolución y pautas de distribución espacial entre 1970–2000. *Papeles de Población* 9(37): 5–27.
- Nowik, L., and A. Thalineau. 2010. La mobilité résidentielle au milieu de la retraite: un cadre spatial structurant lié à des configurations sociales. *Espace, Populations, Sociétés* 1: 41–51.
- Nugent, C., and J.C. Augusto. 2006. *Smart homes and beyond*. Lancaster: ICOST Press.
- OECD. 2001. *Ageing and transport. Mobility needs and safety issues*. Paris: Organization for Economic Cooperation and Development Publishing.
- OECD. 2003. *Ageing, housing and urban development*. Paris: Organization for Economic Cooperation and Development Publishing.
- Oswald, F., and H.W. Wahl. 2005. Dimensions of the meaning of home in later life. In *Home and identity in late life: International perspectives*, ed. G.D. Rowles and H. Chaudhury. New York: Springer Publishing Company.
- Palomo, L., J. Gervás, and M.T. Tejerina. 1998. Estado de salud, capacidad de ayuda familiar y utilización de servicios sanitarios por pacientes crónicos recluidos a domicilio. *Semergen: Revista española de medicina de familia* 6: 441–453.
- Parant, A. 2007. Le vieillissement démographique. Chronique d'un tsunami annoncé. *Gerontologie et Societe* 123: 135–152. doi:[10.3917/g.s.123.0135](https://doi.org/10.3917/g.s.123.0135).
- Parra, D.C., L.F. Gómez, N. Fleischer, and J.D. Pinzón. 2010a. Built environment characteristics and perceived active park use among older adults: Results from a multilevel study in Bogotá. *Health and Place* 16: 1175–1181. doi:[10.1016/j.healthplace.2010.07.008](https://doi.org/10.1016/j.healthplace.2010.07.008).

- Parra, D.C., L.F. Gómez, O.L. Sarmiento, D. Buchner, R. Brownson, T. Schimd, V. Gómez, and F. Lobelo. 2010b. Perceived and objective neighborhood environment attributes and health related quality of life among the elderly in Bogotá, Colombia. *Social Science & Medicine* 70: 1070–1076. doi:[10.1016/j.socscimed.2009.12.024](https://doi.org/10.1016/j.socscimed.2009.12.024).
- Pastalan, L.A. (ed.). 2013. *Aging in place. The role of housing and social supports*. New York: Taylor and Francis.
- Pastalan, L.A., and B. Schwarz (eds.). 2013. *Housing choices and well-being of older adults: Proper fit*. New York: Routledge.
- Peace, S. 2013. Social interactions in public spaces and places: A conceptual overview. In *Environmental gerontology: Making meaningful places in old age*, ed. G.D. Rowles and M. Bernard, 25–49. New York: Springer Publishing Company.
- Peace, S., C. Holland, and L. Kellaher. 2006. *Environment and identity in later life*. Berkshire: Open University Press.
- Peace, S., C. Holland, and L. Kellaher. 2011. Option recognition' in later life: Variations in ageing in place. *Ageing and Society* 31(5): 734–757. doi:[10.1017/S0144686X10001157](https://doi.org/10.1017/S0144686X10001157).
- Peixoto, A., E. Ramos, S. Atie, A. Crispim, and A. Orlando. 2008. A influência das quedas na qualidade de vida de idosos. *Ciência & Saúde Coletiva* 13(4): 1265–1273.
- Phillips, J., N. Walford, and A. Hockey. 2011. How do unfamiliar environments convey meaning to older people? Urban dimensions of placelessness and attachment. *International Journal of Ageing and Later Life* 6(2): 73–102.
- Pihet, C. 2006. Du vieillissement dans les villes à des villes pour le vieillissement. Réflexions sur quelques exemples français. *Annales de la Recherche Urbaine* 100: 15–22.
- Ploton, L., and Y. Cropier. 2006. À propos de la collaboration entre l'architecte et un psychologue ou un psychiatre, pour la conception de bâtiments accueillant des malades d'Alzheimer. *Gerontologie et Societe* 119: 107–128. doi:[10.3917/gs.119.0107](https://doi.org/10.3917/gs.119.0107).
- Prieto-Flores, M.E., G. Fernández-Mayoralas, F. Rojo-Pérez, R. Lardiés-Bosque, V. Rodríguez-Rodríguez, K. Ahmed-Mohamed, and J.M. Rojo-Abuín. 2008. Factores sociodemográficos y de salud en el bienestar emocional como dominio de calidad de vida de las personas mayores en la Comunidad de Madrid, 2005. *Revista Española de Salud Pública* 82(3): 301–313.
- Razo, A.M. 2014. La política pública de vejez en México: de la asistencia pública al enfoque de derechos. *Revista CONAMED* 19(2): 78–85.
- Reis, R.S., A.A. Hino, C.R. Rech, J. Kerr, and P.C. Hallal. 2013. Walkability and physical activity: Findings from Curitiba, Brazil. *American Journal of Preventive Medicine* 45(3): 269–275. doi:[10.1016/j.amepre.2013.04.020](https://doi.org/10.1016/j.amepre.2013.04.020).
- Reyes, F.A. 2011. *Exploring multiple modernities. Case study for Granada, Nicaragua. The emergence of a localized modernity in a context of international retirement migration*. Thesis International Master of Science in Rural Development, Wageningen University.
- Risch, N. 1990. Linkage strategies for genetically complex traits. II. The power of affected relative pairs. *The American Journal of Human Genetics* 46(2): 229–241.
- Rodiek, S., and B. Schwarz (eds.). 2006. *The role of the outdoors in residential environmental for aging*. New York: Taylor and Francis.
- Rodiek, S., and B. Schwarz (eds.). 2013. *Outdoors environments for people with dementia*. New York: Taylor and Francis.
- Rodríguez Rodríguez, V., L. Rodríguez-Mañas, M. Sancho, and R. Díaz. 2012. Envejecimiento. La investigación en España y Europa. *Revista Española de Geriatria y Gerontología* 47(4): 174–179.
- Rodríguez, V., G. Fernández-Mayoralas, F. Rojo, and A. Abellán. 1999. *Los inmigrantes europeos jubilados en Andalucía. Rasgos sociodemográficos, motivaciones para migrar y modo de vida*. Sevilla: Instituto de Estadística de Andalucía.
- Rojas, V., H.P. Leblanc, and T.S. Sunil. 2014. US retirement migration to Mexico: Understanding issues of adaptation, networking, and social integration. *International Migration & Integration* 15: 257–273.

- Rojo-Pérez, F., and G. Fernández-Mayoralas. 2011. *La calidad de vida y envejecimiento. La visión de los mayores sobre sus condiciones de vida*. Bilbao: Fundación BBVA.
- Rojo-Pérez, F., G. Fernández-Mayoralas, V. Rodríguez-Rodríguez, and J.M. Rojo-Abuín. 2007. The environments of ageing in the context of the global quality of life among older people living in family housing. In *Quality of life in old age*, ed. H. Mollenkopf and A. Walker, 123–150. Dordrecht: Springer.
- Romieu, I., N. Gouveia, and L. Cifuentes. 2012. *Multicity study of air pollution and mortality in Latin America (the ESCALA Study)*. Health Effects Institute, Research report, 171: 108.
- Rowles, G.D. 1978. *Prisoners of space? Exploring the geographical experience of older people*. Boulder: Westview Press.
- Rowles, G.D. 1993. Evolving images of place in aging and “aging in place”. *Generations* 17(2): 65–71.
- Rowles, G.D., and M. Bernard. 2013. *Environmental gerontology: Making meaningful places in old age*. New York: Springer Publishing Company.
- Rowles, G.D., and H. Chaudhury. 2005. *Home and identity in late life: International perspectives*. New York: Springer Publishing Company.
- Rowles, G.D., and E. Schoenberg. 2002. *Qualitative gerontology. A contemporary perspective*. New York: Springer Publishing Company.
- Rowles, G.D., F. Oswald, and E.G. Hunter. 2004. Interior living environments in old age. In *Annual review of gerontology and geriatrics. Focus on aging context: Socio-physical environments*, ed. Hans-Werner Wahl, Rick J. Scheidt, and Paul Gordon Windley, 167–194. New York: Springer Publishing Company.
- Rubinstein, R.L., and K. Medeiros. 2005. Home, self and identity. In *Home and identity in late life: International perspectives*, ed. G.D. Rowles and H. Chaudhury, 47–62. New York: Springer Publishing Company.
- Salas, S.M., and D. Sánchez-González. 2014. Population aging, health and urban environment in Latin America. Challenges of Gerontological Urbanism. *Contexto. Revista de la Facultad de Arquitectura Universidad Autónoma de Nuevo León* 8(9): 31–49.
- Salgado, A., and F.J. Olivera. 2005. Estudio de la accesibilidad a los domicilios en ancianos con fractura de cadera. *Rehabilitación: Revista de la Sociedad Española de Rehabilitación y Medicina Física* 39(5): 207–214. doi:[10.1016/S0048-7120\(05\)74350-4](https://doi.org/10.1016/S0048-7120(05)74350-4).
- Salgado, V.N., and R. Wong (eds.). 2006. *Envejecimiento, pobreza y salud en la población urbana. Un estudio en cuatro ciudades de México*. Cuernavaca: Instituto de Salud Pública.
- Salvador, E.P., A.A. Florindo, R. Reis, and E.F. Costa. 2009. Perception of the environment and leisure-time physical activity in the elderly. *Revista de Saúde Pública* 43(6): 1–8.
- Sánchez-González, Diego. 1998. La integración de las personas mayores a través de la educación. La experiencia del Taller-Ciudad. In *I Jornadas sobre Personas Mayores y Educadores Sociales*, ed. J. García-Mínguez, 253–265. Granada: Grupo Editorial Universitario.
- Sánchez-González, D. 2005. *La situación de las personas mayores en la ciudad de Granada: Estudio geográfico*. Granada: Universidad de Granada.
- Sánchez-González, D. 2007. Urban demographic aging and its socio-spatial repercussions in Mexico. Challenges for gerontology planning. *Revista de Geografía Norte Grande* 38: 45–61.
- Sánchez-González, D. 2008. Elderly people in the planning of the rural tourist space in Tamaulipas. *Papeles de Población* 14(55): 59–94.
- Sánchez-González, D. 2009a. Environmental context and spatial experience of aging in place: The case of Granada. *Papeles de Población* 15(60): 175–213.
- Sánchez-González, D. 2009b. Geography of vulnerable aging and its environmental context in the city of Granada: Incapacity, dependency and social exclusion. *Cuadernos Geográficos* 45: 107–135.
- Sánchez-González, D. 2011. *Geografía del envejecimiento y sus implicaciones en Gerontología. Contribuciones geográficas a la Gerontología Ambiental y el envejecimiento de la población*. Saarbrücken: Editorial Académica Española.

- Sánchez-González, D. 2013. Prisoners of the urban space. Challenges of planning in the friendly cities for the older people. In *Espacio urbano, reconstrucción y reconfiguración territorial*, ed. A. Palacios, E. Sousa, and E. Cadena, 101–118. Hualpén: Universidad del Bío-Bío.
- Sánchez-González, D. 2014. Place identity, aging and environmental pressures of the city. Reflections from environmental gerontology. In *Identidad y espacio público. Ampliando ámbitos y prácticas*, ed. D. Sanchez-Gonzalez and L.A. Domínguez, 141–168. Barcelona: Editorial Gedisa.
- Sánchez-González, D. 2015. Physical and social environment and aging from environmental gerontology and geography. Socio-spatial implications in Latin America. *Revista de Geografía Norte Grande* 60: 93–110.
- Sánchez-González, D., and L.M. Adame-Rivera. 2014. Identidad ambiental y envejecimiento en el lugar ante los retos del cambio climático. El caso de Monterrey, México. In *Revisando paradigmas, creando alianzas*, ed. J. Carpio, F. Cebrián, and M.C. Mínguez, 69–91. Madrid: Universidad Complutense de Madrid-Asociación de Geógrafos Españoles.
- Sánchez-González, D., and C. Egea. 2011. Social Vulnerability approach to investigate the social and environmental disadvantages. Its application in the study of elderly people. *Papeles de Población* 17(69): 151–185.
- Satariano, W.A. 2006. *Epidemiology of aging: An ecology approach*. London: Jones and Bartlett Publishers.
- Schafran, A., and P. Monkkonen. 2011. Beyond Chapala and Cancún: Grappling with the impact of American migration to Mexico. *Migraciones Internacionales* 6(2): 223–258.
- Scheidt, R.J., and B. Schwarz (eds.). 2013. *Environmental gerontology: What now?* New York: Routledge.
- Schwarz, B. 2012. Environmental gerontology: What now? *Journal of Housing for the Elderly* 26(1–3): 4–19.
- Schwarz, B., and R. Brent (eds.). 1999. *Aging, autonomy, and architecture: Advances in assisted living*. Baltimore: The Johns Hopkins University Press.
- Scott, B.M. 2012. *Livable communities for aging populations. Urban design for longevity*. Hoboken: Wiley.
- Serrano, A.T., M.I. Ortiz, and R. Vidal. 2009. La discapacidad en población geriátrica del Distrito Federal, México, año 2000. Un caso de la geografía de la población. *Terra Nueva Etapa* 25(38): 15–35.
- Silveira, A. 2003. Meio ambiente e envelhecimento: desafio e alternativas para a sociedade brasileira. Uma abordagem ecológica. *Lumen* 9(20): 75–93.
- Smith, A.E. 2009. *Ageing in urban neighborhoods: Place attachment and social exclusion*. Bristol: The Policy Press.
- Smith, G.C. 1991. Grocery shopping patterns of the ambulatory urban elderly. *Environment and Behavior* 23(1): 86–114.
- Smith, R.G., and A.E. Smith. 2009a. Environmental gerontology. In *Ageing in urban neighbourhoods: Place attachment and social exclusion*, ed. R.G. Smith and A.E. Smith, 9–35. Bristol: The Policy Press.
- Smith, R.G., and A.E. Smith. 2009b. *Ageing in urban neighbourhoods: Place attachment and social exclusion*. Bristol: The Policy Press.
- Souchon, S., F. Nogues, H. Jibidar, E. Fondop, and A.M. Lezy-Mathieu. 2006. L'architecture peut-elle être source de maltraitance? Un regard de gériatres. *Gerontologie et Societe* 119: 75–84. doi:[10.3917/gs.119.0075](https://doi.org/10.3917/gs.119.0075).
- Spencer, C., and M. Blades. 1986. Pattern and process: A review essay on the relationship between behavioural geography and environmental psychology. *Progress in Human Geography* 10: 229–248. doi:[10.1177/030913258601000204](https://doi.org/10.1177/030913258601000204).
- Stjernborg, V., U.M. Emilsson, and A. Ståhl. 2014. Changes in outdoor mobility when becoming alone in the household in old age. *Journal of Transport & Health* 1(1): 9–16. doi:[10.1016/j.jth.2013.11.001](https://doi.org/10.1016/j.jth.2013.11.001).

- Stoeckel, K.J., and F. Porell. 2010. Do older adults anticipate relocating?: The relationship between housing relocation expectations and falls. *Journal of Applied Gerontology* 29(2): 231–250. doi:[10.1177/0733464809335595](https://doi.org/10.1177/0733464809335595).
- Stokols, D. 1978. Environmental psychology. *Annual Review of Psychology* 29: 253–295.
- Taira, E.D., and J. Carlson. 1999. *Aging in place. Design, adapting, and enhancing the home environment*. New York: Taylor and Francis.
- Takano, T., K. Nakamura, and M. Watanabe. 2002. Urban residential environments and senior citizens' longevity in mega city areas: The importance of walkable green spaces. *Journal of Epidemiology and Community Health* 56(12): 913–918. doi:[10.1016/j.ufug.2007.12.002](https://doi.org/10.1016/j.ufug.2007.12.002).
- Tapia, C., H. Varela, L. Barra, M.D. Ubilla, V. Iturra, C. Collao, and R. Silva. 2010. Valoración multidimensional del envejecimiento en la ciudad de Antofagasta. *Revista Médica de Chile* 138(4): 444–451. doi:[10.4067/S0034-98872010000400008](https://doi.org/10.4067/S0034-98872010000400008).
- Tomasini, S.L.V. 2005. Envelhecimento e planejamento do ambiente construído: em busca de um enfoque interdisciplinar. *Revista Brasileira de Ciências do Envelhecimento Humano* 2(1): 76–88.
- Truly, D. 2002. International retirement migration and tourism along the Lake Chapala Riviera: Developing a matrix of retirement migration behaviour. *Tourism Geographies* 4(3): 261–281. doi:[10.1080/14616680210147427](https://doi.org/10.1080/14616680210147427).
- Uchoa, M.G., J. Araujo, A. Loyola, and E. Uchoa. 2010. Role of autonomy in self- assessment of health by the elderly. *Revista de Saúde Pública* 44(1): 1–6. doi:[10.1590/S0034-89102010000100017](https://doi.org/10.1590/S0034-89102010000100017).
- UN. 2013. *World population ageing 2013. Report*. New York: Department of Economic and Social Affairs Population Division, United Nations.
- Vasunilashorn, S., B.A. Steinman, P.S. Liebig, and J. Pynoos. 2012. Aging in place: Evolution of a research topic whose time has come. *Journal of Aging Research* 12: 1–6.
- Viveros, A. 2001. *Envejecimiento y vejez en América Latina y el Caribe: políticas públicas y las acciones de la sociedad*. CELADE, Población y Desarrollo 22, Santiago de Chile, 60 p.
- Wahl, H.W. 2001. Environmental influences on aging and behaviour. In *Handbook of the psychology of aging*, eds. J.E. Birren and K.W.Schaie, 215–237. San Diego: Academic.
- Wahl, H.W., and L.N. Gitlin. 2007. Environmental gerontology. In *Encyclopedia of gerontology*, ed. J.E. Birren, 494–502. Oxford: Elsevier.
- Wahl, H.W., and F.R. Lang. 2003. Aging in context across the adult life course: Integrating physical and social environmental research perspectives. *Annual Review of Gerontology and Geriatrics* 23: 1–33.
- Wahl, H.W., and G.D. Weisman. 2003. Environmental gerontology at the beginning of new millennium: Reflections on its historical, empirical, and theoretical development. *The Gerontologist* 43(5): 612–627.
- Wahl, H.W., F. Oswald, and D. Zimprich. 1999. Everyday competence in visually impaired older adults: A case for person-environment perspectives. *The Gerontologist* 39(2): 140–149. doi:[10.1093/geront/39.2.140](https://doi.org/10.1093/geront/39.2.140).
- Wahl, H.W., S. Iwarsson, and F. Oswald. 2012. Aging well and the environment: Toward an integrative model and research agenda for the future. *The Gerontologist* 52(3): 306–316. doi:[10.1093/geront/gnr154](https://doi.org/10.1093/geront/gnr154).
- Walmsley, D.J., and G.J. Lewis. 2014. *People and environment. Behavioural approaches in human geography*. New York: Routledge.
- Wanous, J.P., A.E. Reichers, and M.J. Hudy. 1997. Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology* 82(2): 247–252. doi:[10.1037/0021-9010.82.2.247](https://doi.org/10.1037/0021-9010.82.2.247).
- Warnes, A.M. 1990. Geographical questions in gerontology: Needed directions for research. *Progress in Human Geography* 14(1): 24–56. doi:[10.1177/030913259001400103](https://doi.org/10.1177/030913259001400103).
- Warnes, A.M., and C. Law. 1984. The elderly population in Great Britain: Locational trends and policy implications. *Transactions of the Institute of British Geographers* 9(1): 35–59.

- Wennberg, H., A. Ståhl, and C. Hydén. 2007. Importance of and satisfaction with different accessibility factors as perceived by older pedestrians. In *Transport and roads. 20th ICTCT, international co-operation on theories and concepts in traffic safety workshop*, 25–26 October 2007, 1–14. Valencia: ICTCT.
- WHO. 1998. *The role of physical activity in healthy ageing*. Geneva: World Health Organization.
- WHO. 2002. Active ageing: A political framework. *Revista Española de Geriatria y Gerontología* 37(S2): 74–105.
- WHO. 2007. *Global age-friendly cities: A guide*. Geneva: World Health Organization.
- Wiles, J.L., A. Leibing, N. Guberman, and J. Reeve. 2011. The meaning of “Aging in Place”. *The Gerontologist* 52(3): 357–366.
- Windley, P.G., and G.R. Weisman. 2003. Environmental gerontology research and practice: The challenge of application. *Annual Review of Gerontology and Geriatrics* 23: 334–365.

Chapter 3

Population Ageing in the Context of Globalization

Hania Zlotnik

3.1 Introduction

The twentieth century witnessed unprecedented changes in the world's population dynamics. Mostly after 1950, medical breakthroughs in preventing or treating infectious diseases coupled with advances in public health and improved sanitation and nutrition made possible a universal reduction in mortality that was significant even in the least developed countries. Consequently, population growth accelerated because people continued having many children although more children survived to become adults. In other words, fertility levels remained high even as mortality decreased. Yet, over time, fertility also began to drop as people realized that they could have fewer children to achieve their desired number of adult offspring and as more people got access to effective methods of contraception that allowed them to control when to have children and how many to have. Furthermore, in many countries, the desired number of children itself decreased, producing in some cases a very fast reduction of fertility and often leading to unprecedentedly low fertility levels. These changes in population dynamics produced over time characteristic changes in the distribution of the population by age.

In high mortality populations, a major effect of reductions in mortality is to increase the survival of children, thus augmenting both the number and the share of children in the population. That is, at the early stages of the transition from high to low mortality, the percentage of the population at younger ages increases, making the population's age distribution younger. That trend is eventually reversed by the effects of declining fertility: as women bear fewer and fewer children, there comes

H. Zlotnik (✉)

Department of Economic and Social Affairs Population Division,
New York, NY, USA

e-mail: hania.zlotnik@hotmail.com

a time when the proportion of children in the population decreases. That moment marks the start of population ageing.

Population ageing is a process whereby the population gets increasingly concentrated first in the adult ages and later at older ages. Population ageing is mainly the result of decreasing fertility but decreasing mortality at adult and older ages also contributes to the process. The contribution of declining mortality becomes stronger as fertility reaches and maintains very low levels.

Between 1950 and 2010, all countries in the world had recorded major reductions in mortality and, similarly, in all countries fertility in 2010 was lower than it had been at its peak. Furthermore, although both the timing and the pace of fertility decline varied considerably among countries, in all of them the reduction of fertility and its start had been such as to trigger population ageing before 2010. Therefore, the population of every country is currently ageing. There are, however, major differences among countries regarding the pace of population ageing and the stage that they have reached in that process. This chapter will describe past trends in fertility and mortality as the main causes of population ageing, the resulting trends in population ageing and future prospects. It will show that a major shift of the population age distribution of every country toward older ages is necessary if the size of the world population is to remain within sustainable limits during the twenty-first century.

The twentieth century witnessed the unprecedented growth of the world population: between 1910 and 2010, the number of people on Earth quadrupled. Although so far that rapid growth has been accompanied by major improvements in the quality of life of most people on Earth, the basic life support systems that the planet provides are showing signs of stress and the challenge of not only maintaining livelihoods but also improving the standards of living of a continuously growing population are daunting. To cite just one, the Food and Agriculture Organization (FAO) estimated in 2009 that food production had to increase by at least 70 % from the 2006/2008 average levels to meet the increased demand for food of a population of 9.1 billion in 2050 (Food and Agricultural Organization 2009). In the preparation of the 2009 High-Level Expert Forum on How to Feed the World in 2050, FAO stated that its goal “was to ensure that the world population can be fed when it nears its peak of nearly 9.2 billion people in the middle of this century.”¹ At that time, the United Nations population projections stopped at 2050. Since then, the official United Nations population projections have been extended to 2100 and they show that the world population is on track to keep on rising beyond 2050 to reach nearly 11 billion people by 2100. Should those increases materialize, the challenge of feeding and improving the wellbeing of that much larger population will be even greater, especially given the mounting evidence regarding the slowing rates of increase in grain yields, the increasing scarcity of water and the negative effects of climate change. For that reason, the discussion below will consider that a future where the population grows less would be preferable than one where future population increases are large.

¹ See <http://www.fao.org/wsfs/forum2050/wsfs-forum/en/>, accessed 30 May 2014.

3.2 Past Demographic Trends and Their Implications for Population Ageing

3.2.1 Fertility Trends

Reductions in fertility are the main drivers of population ageing. It is therefore instructive to consider how much fertility has declined in the major world regions. Total fertility, a measure indicating the average number of children that women would have if they did not die and were subject throughout their reproductive lives to the propensity of having children observed during a given period, is used to assess the change in fertility levels over time. Table 3.1 shows estimated total fertility in 1960–1965, a period when fertility peaked in several regions, and in 2005–2010, the most recent period for which estimates are available.² Data are presented for three groups of countries classified by level of development, namely, developed countries, developing countries and least developed countries, as well as for groups of countries classified by geographical region. The developed countries comprise all those in Europe, including the Russian Federation, plus Australia, Canada, Japan, New Zealand and the United States. The least developed countries are 49 countries³ identified by the United Nations as being in especial need of assistance. They comprise 34 countries in Africa, nine in Asia, five in Oceania and one in the Caribbean. The developing countries include all the remaining countries of the world.

In 1960–1965, total fertility was high in both the developing countries and the least developed countries, at 6.0 and 6.7 children per woman, respectively. In contrast, the total fertility of developed countries, at 2.7 children per woman, was already low because in most of them fertility began declining during the second half of the nineteenth century or early in the twentieth century. In fact, a number of developed countries experienced an increase in fertility in the 1950s (the so-called “baby boom”) as part of their post-war recovery. Thus, total fertility in Northern America, which had been very low in the 1930s, reached 3.4 children per woman in 1960–1965. Oceania, which includes both the developed countries of Australia and New Zealand and all the developing countries in the Pacific, also had a moderately high total fertility at that time, at 3.9 children per woman, whereas Europe had a low

²Unless otherwise indicated, the data presented in this chapter are drawn from the results of the 2012 Revision of World Population Prospects, the official set of world population estimates and projections prepared by the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat. The full set of projection results can be accessed at <http://esa.un.org/unpd/wpp/index.htm>

³The full list as of July 2013 is: Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gambia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao People’s Democratic Republic, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Samoa, São Tomé and Príncipe, Senegal, Sierra Leone, Solomon Islands, Somalia, South Sudan, Sudan, Timor-Leste, Togo, Tuvalu, Uganda, United Republic of Tanzania, Vanuatu, Yemen and Zambia.

Table 3.1 Change in total fertility between 1960–1965 and 2005–2010 by region (children per woman)

Region	1960–1965	2005–2010
World	5.0	2.5
Developed countries	2.7	1.7
Developing countries	6.0	2.4
Least developed countries	6.7	4.5
Africa	6.7	4.9
Asia	5.8	2.3
Latin America and the Caribbean	6.0	2.3
Northern America	3.4	2.0
Europe	2.6	1.5
Oceania	3.9	2.5

Source: Adapted from United Nations (2013b), by author

2.6 children per woman. In contrast, the major developing regions had markedly higher total fertility in 1960–1965, ranging from 5.8 children per woman in Asia to 6.7 children per woman in Africa.

By 2005–2010, total fertility had declined in all major regions, but the reduction had been most rapid in Asia and in Latin America and the Caribbean whose total fertility levels had dropped by at least 3.5 children per woman in each, leading to a low total fertility of 2.3 children per woman in both regions. In Africa, the reduction of fertility was modest, amounting to 1.8 children per woman and yielding a still high total fertility of 4.9 children per woman in 2005–2010. In Northern America and Oceania, total fertility had dropped by 1.4 children per woman in each so that by 2005–2010 their total fertility levels stood at 2.0 and 2.5 children per woman respectively. Europe had experienced the smallest reduction, mainly because its total fertility in 1960–1965 was already low. Yet, by 2005–2010 its fertility had declined to an unprecedentedly low 1.5 children per woman.

In a population experiencing low mortality, a total fertility of about 2.1 children per woman is necessary to ensure that every woman has, on average, a daughter who survives to an age where she herself can have children. That is, a total fertility of about 2.1 children per woman ensures the eventual replacement of generations and is therefore said to be “at replacement level.” When total fertility remains below replacement level for lengthy periods, it eventually results in a declining population whose tendency to age will be more pronounced than that of a population whose total fertility remains at replacement level.

Given that the faster fertility declines, the more rapid a population will age and the more time elapsed since the decline started, the more advanced the ageing process will be, the observed trends in total fertility imply that Africa’s population should be at the earliest stages of the ageing process and should still have a young population. The populations of Asia and Latin America and the Caribbean should be at an intermediate stage of the ageing process but should be ageing rapidly, whereas those of Europe, Northern America and, to a lesser extent, Oceania should be the most advanced in the ageing process and should already have markedly older populations than the other regions.

These differences are even more accentuated when one considers the experience of the development groups. The least developed countries, whose total fertility remains high at 4.5 children per woman in 2005–2010 and declined by just 2.2 children per woman since 1960–1965, are expected to have the youngest populations and to be still at the early stages of the ageing process. The developing countries, whose fertility declined markedly (by 3.6 children per woman since 1960–1965), are expected to be at an intermediate stage of the ageing process and to have rapidly ageing populations. Lastly, the developed countries, whose total fertility is below-replacement level, are expected to have the oldest populations and to be at an advanced stage of the ageing process.

3.2.2 *Changes in the Median Age*

The median age of the population will be used to confirm the conclusions reached above. The median age is the age that divides a population into two equal parts, with half the people younger than the median age and half at or older than the median age. An increasing median age indicates that the population is ageing, whereas a decline in the median age implies that the age distribution of the population is getting younger or “rejuvenating.”

As expected, the median age of the world population declined at first and then rose, passing from 23.5 in 1950 to 21.5 in 1970 and then increasing to reach 28.5 years in 2010 (Fig. 3.1). Changes in the median age of the developing countries as a group largely parallel those for the world as a whole, with their median age decreasing from 21.6 years in 1950 to 19.0 years in 1970 and then rising to 27.8 years in 2010. The period of rejuvenation was much longer for the population of the least developed countries, which had and continue to have the youngest population among the development groups. Their median age declined from 19.3 years in 1950 to 17.5 years in 1985 before starting a very slow increase to reach 19.3 years again in 2010. In sharp contrast, the median age of developed countries increased consistently between 1950 and 2010, rising from 28.5 to 39.9 years, so that their population remained the oldest among the developed groups over the whole 1950–2010 period.

Trends in the median age by region from 1950 to 2010 are displayed in Fig. 3.2. Those trends also confirm expectations: in all regions except Europe the median age declines first before it starts increasing, implying that the populations of those regions became younger as mortality decreased or fertility increased over the early part of the 1950–2010 period. Europe is the only region whose median age has been increasing consistently since 1950. As a result, Europe’s population is currently the most advanced in the ageing process, with a median age of 40.3 years in 2010. Northern America has the next oldest population, with a median age of 37.3 years. Oceania follows with a considerably younger population and a median age in 2010 of 32.2 years. Note that the median ages of these three regions were closer to each other in 1950, being 27.9 years in Oceania, 28.9 in Europe and 29.8 in Northern

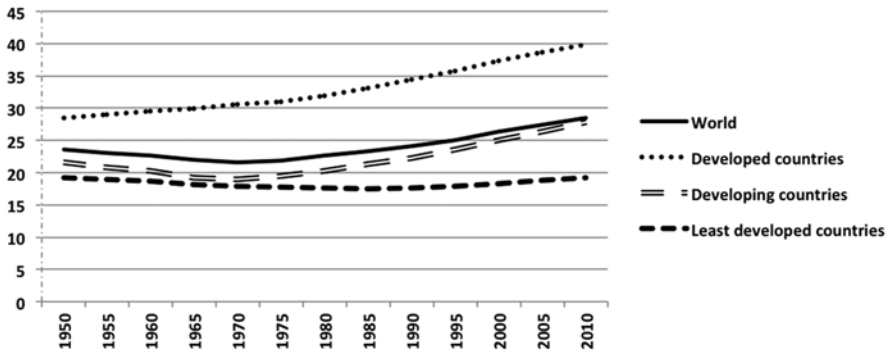


Fig. 3.1 Median age for the world and the development groups, 1950–2010 (Source: Adapted from United Nations (2013b), by author)

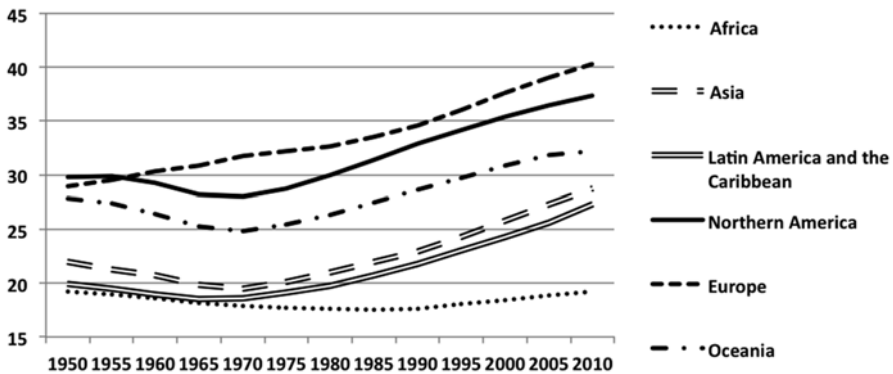


Fig. 3.2 Median age by region, 1950–2010 (Source: Adapted from United Nations (2013b), by author)

America. The divergence between them stems from the rejuvenation of the populations of Northern America and Oceania that occurred between 1950 and 1970. Especially in the case of Northern America, these trends illustrate how increases in fertility can counteract and therefore slow down the ageing process.

Compared with Europe or Northern America, Asia and Latin America and the Caribbean still have relatively young populations, with median ages of 28.8 and 27.3 years in 2010, respectively, values comparable to those of Europe or Oceania in 1950. However, Asia and Latin America and the Caribbean have reached those median ages just 40 or 45 years after their populations began to age, whereas Europe attained a similar stage in the ageing process after more than 60 years had elapsed from the start of the process. Given their rapid reduction of fertility, the populations of Asia and Latin America and the Caribbean are ageing faster than the population of Europe did before 1950.

Africa is clearly an outlier with respect to population ageing. Although its median age is currently increasing, it began to do so only in 1990 and, as a result, Africa's median age in 2010 is still low at 19.2 years, equal to Africa's median age in 1950 before a period of population rejuvenation started. That is, Africa has maintained a very young population over the whole 1950–2010 period mainly because of its continued high fertility and the increasing survival of children. Africa's population is therefore still at the early stages of the ageing process and whether and how fast it proceeds in that process depend mostly on its future fertility trends.

Maintaining a young population requires maintaining also a rapid population growth. Thus, Africa's population continues to increase rapidly. In 2010–2015, its estimated rate of natural increase⁴ is 2.5 % per year, more than double the next highest rate among world regions: 1.2 % per year in Latin America and the Caribbean. Asia, Latin America and the Caribbean and Oceania, all of which have populations that are rapidly ageing, have current rates of natural increase ranging from 1.0 to 1.2 % annually. Northern America's annual rate of natural increase is 0.5 % and Europe's is –0.1 % and both are already far advanced in the ageing process. These comparisons illustrate the tradeoff between population growth and population ageing: if the speed of population growth is to be reduced by reducing fertility, pronounced population ageing is unavoidable.

3.2.3 *The Increasing Probability of Surviving to Old Age*

Another change in population dynamics that has contributed to population ageing is the decreasing risk of dying before reaching older ages. Thus, the estimated probability of surviving to age 65 according to the mortality rates of a given period has increased in all world regions (Table 3.2). Even in Africa, where only 25 out of every 100 baby boys born in 1950–1955 would have been expected to reach their 65th birthday had they been subject during all their lives to the risks of dying prevalent over that period, that probability had more than doubled to 52 out of every 100 male babies born in 2010–2015. Moreover, that increase would have been larger had Africa not suffered from the scourge of the HIV/AIDS epidemic, which increased markedly the risk of dying in adulthood in many countries of the region. In Asia, where the relative impact of the HIV/AIDS epidemic has been lower than in Africa, the probability of surviving to age 65 among males increased two and a half times between 1950–1955 and 2010–2015, reaching 72 % in 2010–2015. In Europe, male survivorship to age 65 increased only moderately with the result that it matches that in Asia, at 72 %. For males in Latin America and the Caribbean the probability of surviving to age 65 according to 2010–2015 mortality rates is similar, at 73 % for

⁴The rate of natural increase is the difference between the birth rate and the death rate in a population, that is, it does not take into account the effects of international migration on population change. It is therefore a better indicator than the growth rate of the effect that imbalances between fertility and mortality have on population growth.

Table 3.2 Probability of surviving to age 65 by region, 1950–1955 and 2005–2010 (percentage)

Region	Males		Females	
	1950–1955	2010–2015	1950–1955	2010–2015
World	35	69	42	77
Developed countries	60	76	71	88
Developing countries	28	70	32	78
Least developed countries	24	57	27	62
Africa	25	52	30	58
Asia	28	72	32	80
Latin America and the Caribbean	42	73	49	84
Northern America	63	82	75	88
Europe	59	72	70	87
Oceania	53	80	63	86

Source: Adapted from United Nations (2013b), by author

each. Males in Oceania and Northern America have currently the best prospects for surviving to old age, with their probabilities of survival to age 65 in 2010–2015 being 80 % and 82 % respectively.

For females the regional probabilities of surviving to age 65 increased slightly less in relative terms than for males but, given the survivorship advantage that characterizes females, more females than males were expected to survive to age 65 in every region. By 2010–2015, the probability of surviving to age 65 for females was at least 80 % in all regions except Africa. Females in Northern America had the highest probability of surviving to age 65 at 88 %. In Europe, 87 out of every 100 girls born in 2010–2015 could expect to reach their 65th birthday if subject throughout their lives to the mortality risks prevalent during that period. Oceania's female survivorship probability to age 65 was not far behind, at 86 % and that for Latin America and the Caribbean stood at 84 %. For Asia, it was 80 %. In Africa, the probability of surviving to old age among females was much lower, at 58 %.

In 2010–2015, the female advantage over males in the probability of surviving to age 65 amounted generally to 6 or 7 percentage points, but it was 11 percentage points in the case of Latin America and the Caribbean and 15 percentage points in the case of Europe. In both of those regions, men are subject to higher risks of death due to external causes, which include accidents and homicide. In Europe the relatively high mortality of males is mainly the result of the high mortality levels prevalent among males in Eastern Europe and, particularly, in the Russian Federation.

The higher the difference in the chances of surviving to old age between men and women, the more women will predominate among the older population. The high feminization of the population aged 65 or over is the result of disparities in the risk of dying before age 65 that continues after that age. Because in most societies women marry men older than themselves, women are also more likely to become widows than men are to become widowers.

3.3 The Growing Number of Older Persons and the Over-Representation of Women Among Them

In 2010, out of a population of 6.9 billion, the world had 531 million people aged 65 years or over, representing 7.7 % of the total population (Table 3.3). The population aged 65 or over had grown faster than the total population. Between 1950 and 2010, the number of people aged 65 or over had quadrupled, whereas the total population had not quite tripled. Similarly, in developed countries, the population aged 65 or over had more than tripled since 1950 to reach 199 million in 2010, whereas their overall population had increased only half as much. In developing countries the increase in the population aged 65 or over had been even more marked, having increased five-fold between 1950 and 2010, to reach 302 million, while their total population had tripled. In contrast, in the least developed countries, the older population and the total had grown at about the same pace, more than quadrupling between 1950 and 2010.

Among all the major regions, Africa was the only one where the population aged 65 or over had grown at approximately the same pace as the total population, a further corroboration that the continent is still in the early stages of population ageing.

Table 3.3 Number of people aged 65 or over, percentage of women among them and their share of the total population, 1950 and 2010

Region	Population aged 65 or over (millions)		Percentage female among those aged 65 or over in 2010	Percentage aged 65 or over		Average annual growth rate during 1950–2010 (percentage)	
	1950	2010		1950	2010	Population aged 65 or over	Total population
World	128	531	55.7	5.1	7.7	2.4	1.7
Developed countries	63	199	58.9	7.7	16.1	1.9	0.7
Developing countries	59	302	53.9	3.9	6.2	2.7	1.9
Least developed countries	6	29	53.2	3.3	3.5	2.5	2.4
Africa	7	35	55.4	3.2	3.4	2.6	2.5
Asia	57	284	53.6	4.1	6.8	2.7	1.8
Latin America and the Caribbean	6	40	56.2	3.5	6.8	3.2	2.1
Northern America	14	46	56.6	8.2	13.2	2.0	1.2
Europe	44	121	60.4	8.0	16.3	1.7	0.5
Oceania	1	4	54.3	7.4	10.7	2.4	1.8

Source: Adapted from United Nations (2013b), by author

As a result, the percentage of Africa's population aged 65 or over had remained fairly stable, amounting to a low 3.4 % in 2010. In all other regions the population aged 65 or over had increased more rapidly than the overall population and therefore it had increased significantly as a percentage of the total population. The largest increase in the share of the population aged 65 or over had been recorded in Europe, where it more than doubled from 1950 to 2010 (from 8.0 % to 16.3 %). The next largest absolute increase in the percentage of the older population had occurred in Northern America: from 8.2 % in 1950 to 13.2 % in 2010. In Oceania, the increase in the share of the population aged 65 or over had been smaller: from 7.4 % in 1950 to 10.7 % in 2010. Lastly, in both Asia and Latin America and the Caribbean, the share of the older population had increased modestly to reach 6.8 % in 2010 in both cases. Nevertheless, because of its huge population, Asia had the largest number of older people in 2010: 284 million. It was followed by Europe, with 121 million.

Northern America, Latin America and the Caribbean and Africa had the next largest numbers of older persons, at 46 million, 40 million and 35 million, respectively. Oceania had only 4 million. Note that the number of older persons may keep on increasing rapidly even if the overall population remains young. If, for instance, all countries in Africa were to maintain until 2100 the fertility and mortality levels they had in 2005–2010, their population aged 65 or over would rise to 368 million in 2100, larger than the current population of Northern America, and would still account for only 3.5 % of Africa's overall population, which would itself soar to 10.7 billion. That is, increases in the population aged 65 or over, by themselves, do not indicate that a population is ageing. Population ageing occurs only when the older segment of the population grows faster than the overall population and results in an increasing proportion of the population at older ages.

Because of sex disparities in the chances of surviving to old age, there are more women than men among those aged 65 or over in every region (Table 3.3). At the world level, 55.7 % of those aged 65 or over are women and the share of women among the older population is higher in developed countries (58.9 %) than in developing countries (53.9 %) or in the least developed countries (53.2 %). At the regional level, the share of women among the elderly is highest in Europe at 60.4 % of those aged 65 or over, indicating that the survivorship advantage of women with respect to men has been highest in that region. The lowest share of women among the older population is found in Asia, a region where excess female mortality in childhood and high maternal mortality in adulthood used to be common in a number of countries, especially during the early decades of the 1950–2010 period. In all other regions, the proportion of women among the older population ranges from 54.3 % (Oceania) to 56.6 % (Northern America). If the population aged 65 or over has been rising faster than the overall population, an even more rapid increase has occurred with respect to the population aged 80 or over (Table 3.4). At the world level, the number of "oldest old," that is, those aged 80 or over rose from 14 million in 1950 to 108 million in 2010, nearly an eight-fold increase.

The oldest old are almost equally divided between developed countries (53 million) and developing countries (51.5 million). The least developed countries have just 3.9 million persons aged 80 or over. Asia hosts the largest number of oldest-old

Table 3.4 Number of people aged 80 or over in 1950 and 2010, and percentage of women among them in 2010

Region	Population aged 80 or over (millions)		Percentage of women among those aged 80 or over in 2010
	1950	2010	
World	14.1	108.3	62.6
Developed countries	8.0	53.0	66.5
Developing countries	5.5	51.5	59.1
Least developed countries	0.6	3.9	54.9
Africa	0.6	4.5	59.7
Asia	5.2	50.3	59.5
Latin America and the Caribbean	0.7	8.6	60.9
Northern America	2.0	12.7	63.5
Europe	5.5	31.2	68.1
Oceania	0.1	1.0	61.0

Source: Adapted from United Nations (2013b), by author

(50.3 million) and Europe the second largest (31.2 million). Northern America has 12.7 million persons aged 80 or over and Latin America and the Caribbean has 8.6 million. The number of oldest-old rose especially rapidly in Latin America and the Caribbean, where it increased eleven-fold between 1950 and 2010. In Africa, the number of oldest-old was just 4.5 million in 2010 and in Oceania it was 1.0 million.

The percentage of women among those aged 80 or over is higher than among those aged 65 or over, because men continue to die earlier than women as they age. At the world level, women constituted 62.6 % of the oldest-old, being particularly over-represented in that age-group in developed countries (66.5 %) and less so in developing countries (59.1 %) or in the least developed countries (54.9 %). Once more, Europe had the highest percentage of women among the oldest-old (68.1 %) and Asia the lowest percentage, at 59.5 %.

3.4 Future Prospects

3.4.1 *The Tradeoff Between Population Ageing and Population Size*

Future prospects for population ageing depend mainly on the future paths that fertility and mortality take. Since there is no certainty about how those paths will develop in the future, it is instructive to consider the results of different projection scenarios that vary with respect to the assumptions made about future trends in fertility and mortality (United Nations 2013a, b).

Table 3.5 presents the results of seven different scenarios in terms of two parameters: the total population projected to 2100 and the median age of the population at that date. The reference projection for the construction of all the others is the *medium variant*, which projects future fertility and mortality on the basis of past trends using stochastic modeling and simulation (United Nations 2014). Once the fertility projected by the medium variant is available, the *high variant* is produced by making the total fertility of each country remain half a child above that of the medium variant over the whole projection period. The *low variant* is produced by making the fertility of each country remain half a child below the total fertility of the medium variant.

The *constant-fertility scenario* maintains fertility constant for each country at the level it had in 2005–2010 but lets mortality decline over time as in the medium variant. The *constant-mortality scenario* uses, for each country, the same future fertility as the medium variant but makes mortality stay constant at the level it had in 2005–2010. The *no-change scenario* maintains both fertility and mortality constant from 2010 to 2100 at the level they had in 2005–2010. Lastly, the *instant-replacement scenario* makes total fertility be exactly at replacement level for each 5-year period in 2010–2100, starting with 2010–2015. The instant-fertility scenario projects a very sharp decrease in fertility from 2005–2010 to 2010–2015 in countries that still have high fertility and a significant increase in fertility for those whose total fertility is below-replacement level.

Since the medium variant provides the basis for the preparation of the other variants, it is useful to visualize the fertility paths it projects for the different development groups (Fig. 3.3). For the least developed countries, whose total fertility in 2005–2010 was estimated at 4.5 children per woman, the medium variant projects declining fertility that remains above 2.1 children per woman, that is, above replacement level during the whole projection period (2010–2100). For the developing countries, whose total fertility in 2005–2010 was 2.4 children per woman, the medium variant projects declining fertility that drops below 2 children per woman in 2070–2075 and continues declining to reach 1.93 children per woman in 2095–2100. For developed countries, the projected total fertility increases between 2010 and 2100, albeit very slowly, starting at 1.66 children per woman in 2005–2010 and ending at 1.93 children per woman in 2100, that is, their fertility remains below replacement level during the whole projection period. For all groups of countries, mortality is projected to decline consistently from one 5-year period to the next. By the end of the projection period (2095–2100) life expectancy is projected to be 89 years in developed countries, 82 years in developing countries and 78 years in the least developed countries, up from 77, 69 and 58 years, respectively, in 2005–2010.

Given the trends in fertility and mortality projected by the medium variant, one would expect that the ageing process would accelerate in the least developed countries, that it would continue in the developing countries but eventually slow down and that, after some time, it would almost cease in developed countries. These expectations are confirmed by the projected change in the median age (Fig. 3.4), which increases steadily for the least developed countries, increases rapidly at first

Table 3.5 Projected population and median age in 2100 according to different projection scenarios

Projection variant	Population in 2100 (billions)	Median age in 2100	Ratio of population in 2100 to that in 2010	Difference between median age in 2100 and 2010
Estimate for 2010	6.9	28.5	–	–
Low variant	6.8	48.6	1.0	20.0
Instant-replacement	9.9	41.6	1.4	13.1
Medium variant	10.9	41.2	1.6	12.7
Constant-mortality	7.9	39.0	1.1	10.5
High variant	16.6	35.2	2.4	6.7
No change	19.9	23.4	2.9	–5.1
Constant fertility	28.6	22.6	4.1	–5.9
Developed countries				
Estimate for 2010	1.2	39.9	–	–
Low variant	0.8	55.3	0.6	15.4
Instant-replacement	1.6	43.7	1.3	3.8
Medium variant	1.3	46.3	1.0	6.4
Constant-mortality	1.1	41.5	0.9	1.6
High variant	2.0	39.1	1.6	–0.8
No change	0.8	44.1	0.6	4.2
Constant fertility	1.2	48.5	0.9	8.6
Developing countries				
Estimate for 2010	4.8	27.8	–	–
Low variant	4.0	50.8	0.8	23.0
Instant-replacement	6.9	41.6	1.4	13.8
Medium variant	6.6	42.8	1.4	15.1
Constant-mortality	5.0	40.1	1.0	12.3
High variant	10.4	36.4	2.2	8.6
No change	10..3	27.8	2.1	–0.0
Constant fertility	13.9	27.4	2.9	–0.4
Least developed countries				
Estimate for 2010	0.8	19.3	–	–
Low variant	1.9	41.8	2.3	22.5
Instant-replacement	1.5	39.4	1.7	20.2
Medium variant	2.9	35.9	3.5	16.6
Constant-mortality	1.8	35.0	2.2	15.7
High variant	4.3	31.1	5.1	11.8
No change	8.8	18.2	10.5	–1.1
Constant fertility	13.6	17.6	16.2	–1.6

Source: Adapted from United Nations (2013b), by author

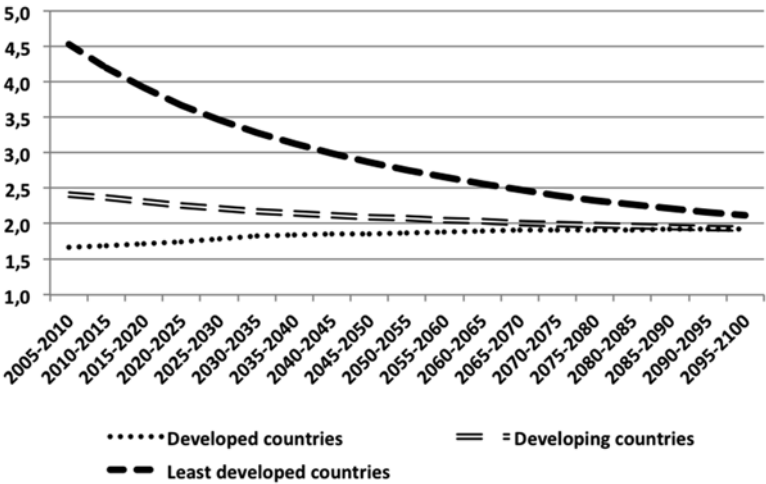


Fig. 3.3 Projected total fertility according to the medium variant, 2005–2100 (Source: Adapted from United Nations (2013b), by author)

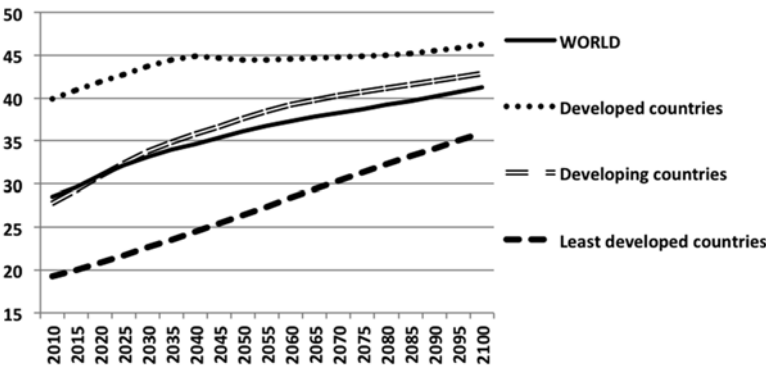


Fig. 3.4 Projected median age, medium variant, 2005–2100 (Source: Adapted from United Nations (2013b), by author)

in the developing countries but begins to slow down after 2070 and, for developed countries, increases moderately up to 2050 and changes little thereafter.

The results of other scenarios are presented only in terms of the median age attained at the end of the projection period, that is, in 2100 (Table 3.5). In the case of the developed countries, nearly all scenarios produce an increase of the median age in 2100 with respect to its value in 2010 (39.9 years). Only the high variant, where the fertility of developed countries remains above-replacement level during most of the projection period, produces a reduction of the median age by 2100 and the reduction is small (0.8 of a year). Yet, in order to achieve that small reduction, the population of the developed countries would have to increase 60 % between

2010 and 2100. Among the other scenarios, the one maintaining mortality constant at the level it had in 2005–2010 produces the smallest increase in the median age and yields a 2100 population for the developed countries that is just 10 % lower than that in 2010. That is, one way of reducing future population ageing would be for mortality to stop decreasing, especially at older ages.

In comparison with the constant mortality scenario, the no-change scenario, which keeps both fertility and mortality constant, leads to more pronounced ageing of the population of developed countries (their median age increases by 4.2 years to reach 44.1 years in 2100) and a faster reduction of the total population (by 40 % with respect to 2010). In the constant fertility scenario, population ageing in developed countries is even more pronounced because total fertility remains constant at the low levels it had in 2005–2010 and mortality keeps on declining. These changes jointly produce an increase of 8.6 years in the median age of developed countries, which reached 48.5 years in 2100, while the population declines by just 10 % from 2010 to 2100. The low variant, with its combination of very low fertility and declining mortality, produces results in the same direction, but more accentuated, so that the median age of developed countries increases markedly (by 15.4 years to reach 55.3 years in 2100) and the population drops by 40 %. Although these scenarios are unlikely to become a reality, they provide insights on the possible variations in population ageing that may occur if total fertility in developed countries fails to increase as projected in the medium variant or if mortality levels stall before reaching the high life expectancies projected in that variant. In the medium variant, the population of developed countries in 2100 is the same as it was in 2010 but has an older age distribution, with a median age of 46.3 years, up from 39.9 in 2010. If the fertility of developed countries increases faster than projected in the medium variant, their population will not age as much but the population in 2100 will be higher than projected in the medium variant. If mortality levels in developed countries fail to decline as projected in the medium variant, population ageing will be slower and their population in 2100 will be smaller than projected in the medium variant. However, fertility would have to increase by far more than a child and mortality would need to stall at today's levels or even increase in future to reverse in a significant way the population ageing that has already taken place and none of those developments seems likely.

With regard to the developing countries, both the no-change and the constant-fertility scenarios produce some reduction of the median age between 2010 and 2100, but that reduction is very small in both cases. Yet, in order to achieve those minimal reductions, the population of developing countries would need to either double or nearly triple by 2100, surpassing 10 billion or nearly reaching 14 billion inhabitants by that date. High population growth is also projected by the high variant, which nevertheless produces also significant population ageing, since the median age in 2100 that it yields for developing countries is 8.6 years higher than it was in 2010.

All other projection scenarios produce more pronounced ageing in developing countries than the three considered above, but they also entail small or only moderate increase in population size. Maintaining constant mortality at 2005–2010 levels

would keep the median age of developing countries from rising much above 40 years (it would reach 40.1 years in 2100) and would produce a 2100 population equal to that in 2010. In comparison, the medium variant, which assumes continuous reductions of mortality, would produce a median age of 42.8 years in 2100 and a population increase of 40 % between 2010 and 2100. The instant-replacement scenario, by attaining immediately and maintaining replacement-level fertility until 2100, would produce the same increase in population size as the medium variant but a slightly less pronounced population ageing, since its median age would increase just to 41.6 years in 2100. The low variant, which projects a more rapid decline of fertility than the medium variant and a longer period of below-replacement fertility for developing countries, would result in a decreasing population in 2100 and a much older one, with a median age of 50.8 years. This set of results suggests that developing countries are unlikely to avoid a period of pronounced population ageing in future if their population is not to increase beyond reasonable bounds. Furthermore, if they wish to avoid extreme ageing, significant population increases will still need to be accommodated. For this group of countries, the path embodied in the medium variant represents an acceptable tradeoff between future population ageing and expected population growth, with the median age rising from 27.8 years in 2010 to 42.8 years in 2100 and the population of developing countries increasing from 4.8 billion in 2010 to 6.6 billion by 2100.

As for the least developed countries, again only the no-change and the constant-fertility scenarios maintain the population young during the projection period. Yet the slight rejuvenation they achieve is at the cost of very sharp population increases, with the population of the least developed countries increasing ten-fold in the no-change scenario and more than 16-fold in the constant-fertility scenario between 2010 and 2100. Such enormous population increases in the poorest countries of the world would hardly be sustainable. Therefore, it seems almost certain that the population of the least developed countries will have to age markedly in future. Even the high variant, whose total fertility is just half a child higher than that projected in the medium variant, produces significant ageing of the population of the least developed countries while at the same time producing a five-fold increase of their population by century's end. To keep population growth within more manageable limits, either mortality in the least developed countries must stop decreasing or their fertility has to decline faster than in the high variant, and any one of those developments produces more pronounced population ageing than in the high variant. To keep future population growth at a minimum, the least developed countries would have to follow the instant-replacement scenario, whereby fertility declines to replacement level immediately and remains at that level for the rest of this century. That scenario makes the population of the least developed countries increase by just 70 % and their median age rise from 19.3 years in 2010 to 39.5 in 2100, a value lower than the median age of developed countries in 2010 (39.9 years). Since it is unlikely that the least developed countries could reduce their fertility so quickly, the next best option is to reduce fertility and mortality as in the low variant, which produces a 2100 population of 1.9 billion (up from 0.8 billion in 2010) and a median age of 41.8 years. By comparison, the medium variant yields a 2100 population of

2.9 billion for the least developed countries and a median age of 35.9 years. That is, an additional billion people in 2100 reduces the projected median age by about 6 years but, in comparison with the median age in 2010 (19.3 years) both the medium and the low variants entail pronounced ageing of the population.

In sum, there is a tradeoff between future population ageing and expected population growth. Two demographic trends can slow down or reverse population ageing: increasing fertility or increasing mortality. Since increasing mortality is unacceptable, increasing fertility appears as the only option. In countries that already have fertility below replacement level and, especially those in which total fertility has fallen below 1.8 children per woman, increasing fertility to levels closer to 2 children per woman would be desirable in order to stall population ageing over the long run. For those countries, rising fertility that nevertheless remains below replacement level would also slow down population decreases and would likely make the adaptation to an older population easier.

For countries that still have fertility above replacement level, increasing fertility to stall or reverse population ageing means accelerating population growth and facing rather staggering increases in their populations as time elapses. Fertility reductions have been fostered precisely to reduce population growth and those reductions constitute a major achievement of humanity. Continuing on the path to low fertility seems therefore the best option to ensure a sustainable population over the long run, even if that path also makes population ageing unavoidable. Moreover, as discussed further down, the reduction of fertility brings about a period where the age distribution is beneficial for economic growth and can therefore be a boost for development.

3.4.2 Future Increases in the Number of Older Persons

Population projections indicate that the world population will likely keep on increasing during most of the twenty-first century and, since it will also be ageing, not only will the proportion of older persons rise but their number will also increase rapidly. Thus, the number of persons aged 65 or over, which is reckoned to be 0.6 billion in 2015, is projected to attain 1.5 billion in 2050 and rise further to 2.4 billion by 2100 according to the medium variant, therefore increasing about four times as fast as the total population (Table 3.6). The fastest increase in the older population will occur in the least developed countries, where it is projected to rise from 33 million in 2015 to 124 million in 2050 and then to 452 million in 2100. But the largest increase in absolute terms is projected in the developing countries whose population aged 65 or over may rise from 351 million in 2015 to 1,556 million in 2100, thus adding 1.2 billion older persons to the world population. In comparison, the older population of developed countries is expected to increase moderately, from 220 million in 2015 to 336 million in 2050 and to change little thereafter, being projected to be 368 billion in 2100.

Table 3.6 Population aged 65 or over and 80 or over, medium variant, 2015, 2050 and 2100

Region	Population 65 or over (millions)			Population 80 or over (millions)		
	2015	2050	2100	2015	2050	2100
World	604	1,490	2,376	125	392	830
Developed countries	220	336	368	59	124	164
Developing countries	351	1,029	1,556	61	247	545
Least developed countries	33	124	452	5	21	121
Africa	41	140	587	5	20	141
Asia	328	901	1,223	60	220	442
Latin America and the Caribbean	48	150	224	10	44	99
Northern America	53	97	138	14	36	58
Europe	129	191	185	34	67	82
Oceania	5	10	18	1	4	8

Source: Adapted from United Nations (2013b), by author

Despite having still a relatively youthful population, the developing countries host a higher number of older people than the developed countries, whose populations are older. In 2015, the developing countries accounted for 58 % of all those aged 65 or over and that share is projected to increase to 69 % in 2050. By 2100, the share of the older population in the developing countries would have decreased somewhat, to 65 %, as that of the least developed countries reached 19 %, up from just 6 % in 2015 and 8 % in 2050. That is the majority of older people already live in the developing world and their concentration in the developing and least developed countries will likely increase.

At the regional level, Asia has and will continue to have the largest number of older people but, whereas in 2015, Europe had the second largest population of persons aged 65 or over, by 2100 Africa and Latin America and the Caribbean are projected to surpass it. In 2015, 69 % of those aged 65 or over lived in Africa, Asia or Latin America and the Caribbean. By 2100, 89 % will do so.

Within the older population, the numbers of “oldest old” (those aged 80 or over) are growing the fastest. If the declines in mortality projected under the medium variant are realized, this segment of the population will increase markedly, from 125 million in 2015 to 830 million in 2100.

Just as in the case of the older population, the oldest old will be increasingly concentrated in the developing countries until at least 2050 and then in both the developing and the least developed countries. The percentage of oldest old in Africa, Asia and Latin America and the Caribbean is projected to rise from 61 % in 2015 to 82 % in 2100. In Africa as in the least developed countries, the number of oldest old is projected to increase particularly rapidly after 2050.

The projected mortality declines at older ages produce also an ever increasing number of “centenarians”, that is, people aged at least 100 years (Table 3.7). Current estimates put the number of centenarians in the world at about half a million but their number may increase to 3.4 million by mid-century. Asia with 185,000 centenarians and Europe with 125,000 have the highest and second highest number

Table 3.7 Population aged 100 years or over, medium variant, 2015, 2050 and 2100

Region	Population aged 100 year or over (thousands)		
	2015	2050	2100
World	499	3,392	20,109
Developed countries	284	1,908	7,194
Developing countries	206	1,393	11,146
Least developed countries	9	91	1,769
Africa	4	35	880
Asia	185	1,481	9,008
Latin America and the Caribbean	98	653	4,548
Northern America	81	424	1,957
Europe	125	748	3,351
Oceania	6	51	363

Source: Adapted from United Nations (2013b), by author

of centenarians in the world and both expect to see their numbers soar by 2050, to reach nearly 1.5 million in Asia and 748,000 in Europe by 2050. By the end of the century, the world could have just over 20 million centenarians. However, the realization of these projections hinges on reducing mortality as projected. To do so, the probability of surviving to age 65 has to rise to 87 % for men and 91 % for women at the world level by 2095–2100 and all regions, except Africa, have to achieve probabilities of survival to age 65 of at least 90 % in the case of men and 93 % in the case of women. Achieving those high survival probabilities will demand continued improvements in public health, a decreasing prevalence of unhealthy behaviours, and more efficient strategies to treat non-communicable diseases.

Because the projected survival probabilities tend to reduce the survival gap between men and women, the percentage of women among the older population declines over the projection period. Thus, at the world level, women are projected to represent 54.5 % of those aged 65 or over in 2050 and 52.9 % in 2100, down from their 55.7 % share in 2010. The decline in the proportion of women at older ages is particularly marked in Europe, where it is projected to drop from 60.4 % in 2010 to 54.9 % in 2100. The smallest reductions are projected in Africa (from 55.4 % in 2010 to 54.0 % in 2100) and in Asia (from 53.6 % to 52.0 %).

**3.5 The Beneficial Impact of Changing Age Distributions:
The Two Demographic Dividends**

**3.5.1 Trends in the Support Ratio and Their Relation
to the First Demographic Dividend**

The characteristic changes in the age distribution brought about by the transition from high mortality and high fertility to low mortality and low fertility, a process known as the “demographic transition,” include a period over which the proportion

of people in the “working ages” (15–64 years of age) increases with respect to the proportion of people outside that age range. Since most economically active people are aged 15–64 and, in most countries, children under the age of 15 are economically dependent and persons aged 65 or over are less likely to be economically active than younger people, it is customary to consider the ratio of the number of people aged 15–64 to the sum of the number of people under 15 and the number aged 65 or over as an indicator of the number of potential workers per dependant. That “support ratio” changes in systematic ways as the demographic transition proceeds. As mortality starts declining while fertility remains high and the population becomes younger, the support ratio declines. Then, once the proportion of children starts declining as a result of reductions in fertility, the support ratio increases until the proportion of children stabilizes and the proportion of older people continues to increase to the detriment of the proportion in the working ages, resulting in a declining support ratio.

The period over which the support ratio increases is favourable to economic growth because a rising support ratio implies that there are more potential workers per dependant than before. If during that period all those wishing to work find productive employment, output will rise and, because society as a whole will have a smaller dependency burden, more can be saved and reinvested to make the economy grow further. Thus, this “first demographic dividend” can launch a virtuous cycle that can propel development. Furthermore, declining fertility also contributes to increase the labour force participation of women who, having fewer children than their mothers, have more time to devote to gainful employment. The support ratio, being a crude indicator of changes in the age distribution, does not reflect changes in female labour force participation but can nevertheless be used to assess the length of the period over which a population has a favourable age distribution.

Figure 3.5 shows the evolution of the support ratio for the major world regions from 1950–2010 and as projected under the medium variant until 2100. In all regions, the support ratio declines at the beginning of the period considered and then increases for a lengthy period before a decline sets in again, as predicted by the demographic transition. Table 3.8 shows, for each region, the year in which the support ratio reaches a minimum as well as that minimum value and the year in which it reaches a maximum and that maximum value. Those 2 years mark the start and the end of the period when a demographic dividend may be realized if countries adopt the necessary measures to benefit from an advantageous age distribution. According to those data, the beneficial period closed in 2010 for Europe, Northern America and Oceania, having lasted 45 years in Europe and 50 years in the other two regions. In Asia, the beneficial period will close in 2015 and in Latin America and the Caribbean in 2025. In Africa, the beneficial period started much later than in other regions and, if its fertility declines as projected in the medium variant, it may extend until 2090.

From 1950 to 2010, Europe and Northern America had higher support ratios than any other region, although those two regions were more advanced in the ageing process than the other regions. The low percentage of children in their populations, especially in Europe, contributed to such outcome (Table 3.9). The support ratio

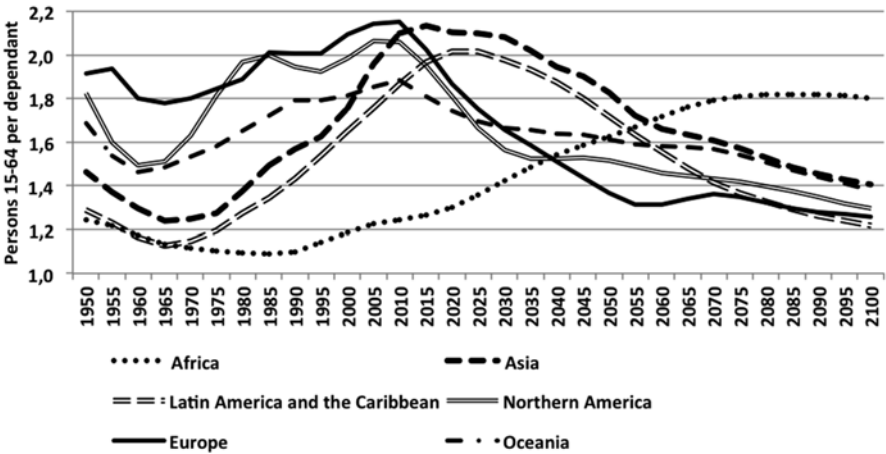


Fig. 3.5 Support ratio by region, medium variant, 1950–2100 (Source: Adapted from United Nations (2013b), by author)

Table 3.8 Years in which the support ratio attains minimum and maximum values by region, 1950–2100

	Support ratio (15–64 over 0–14 plus 65+)			
	Year	Minimum	Year	Maximum
Africa	1985	1.09	2090	1.82
Asia	1965	1.24	2015	2.13
Latin America and the Caribbean	1965	1.13	2025	2.02
Northern America	1960	1.50	2010	2.06
Europe	1965	1.78	2010	2.15
Oceania	1960	1.46	2010	1.88

Source: Adapted from United Nations (2013b), by author

was much lower in Africa, Asia or Latin America and the Caribbean, but in the latter two regions it rose rapidly after 1965, as their fertility dropped markedly. By 2015, both regions are expected to have support ratios comparable to the highest values attained by Europe or Northern America, and both will continue to have relatively high support ratios until at least 2050 if their fertility continues to decline as projected under the medium variant. As Table 3.9 shows, such a decline in fertility would reduce the proportion of children in the populations of both Asia and Latin America and the Caribbean to 18 % in 2050, down from 25 % and 28 %, respectively, in 2010, and the projected decline in the proportion of children from 2050 to 2100 would be relatively small. By contrast, between 2050 and 2100, the proportion of their population aged 65 or over is projected to increase markedly (from 17 % to 26 % in Asia, and from 19 % to 30 % in Latin America and the Caribbean), contributing to reduce their support ratios to levels similar to the ones those regions had in the 1950s.

Table 3.9 Distribution of the population of major regions by major age-groups, selected years, 1950–2100

	1950	1970	1990	2010	2030	2050	2100
Percentage under 15							
Africa	41	44	44	41	37	32	22
Asia	37	41	34	25	21	18	16
Latin America and the Caribbean	40	42	36	28	22	18	15
Northern America	27	28	22	20	19	18	17
Europe	26	25	21	15	15	15	15
Oceania	30	32	27	24	22	20	16
Percentage aged 15–64							
Africa	55	53	52	55	59	62	64
Asia	59	56	61	68	68	65	58
Latin America and the Caribbean	56	53	59	65	66	63	55
Northern America	65	62	66	67	61	60	56
Europe	66	64	67	68	62	58	56
Oceania	63	60	64	65	62	62	58
Percentage aged 65 or over							
Africa	3	3	3	3	4	6	14
Asia	4	4	5	7	12	17	26
Latin America and the Caribbean	4	4	5	7	12	19	30
Northern America	8	10	12	13	20	22	27
Europe	8	10	13	16	22	27	29
Oceania	7	7	9	11	15	18	26

Source: Adapted from United Nations (2013b), by author

For Europe and Northern America the projected declines in the support ratios are steeper and take them to lower levels than those they have experienced since 1950. Those reductions are mainly driven by increases in the proportion of older persons in their populations since their proportion of children changes little between 2010 and 2100 or, in the case of Europe, not at all.

In Oceania, the changes in the support ratio are less marked than in Europe since its maximum is lower and its decline after reaching the maximum is slower, implying that Oceania maintains a fairly high support ratio until 2050. However, those dampened trends are the result to two very different trends within this region, with Australia and New Zealand following trends similar to the developed countries because their fertility has been low for a long time and the rest of Oceania following trends that are closer to those of the least developed countries since, on average, the developing countries in the Pacific still have relatively high fertility and a young population.

Lastly, Africa is only beginning the experience the period with a beneficial age distribution and its support ratio, though increasing, remains very low at just 1.24 persons aged 15–64 per dependant. If Africa's fertility declines as projected in the medium variant, its support ratio is projected to keep on rising but it will not reach the high levels it attained in Asia or Europe. A faster fertility decline than that

Table 3.10 Labour force participation rates for the population aged 65 or over by sex, 2014

	Male	Female	Total
World	31	13	21
Africa	53	33	42
Asia	37	14	24
Latin America and the Caribbean	38	16	26
Northern America	23	15	18
Europe	9	5	7
Oceania	20	11	15

Source: Adapted from International Labour Organisation (2011), by author

projected by the medium variant would be necessary to speed the increase of Africa's support ratio and make it reach a higher maximum value. As Table 3.9 shows, Africa still has a very high proportion of children (41 % in 2010) and even by 2050 about a third of its population may still be under age 15. Such high proportions of children coupled with the continued population growth that Africa is projected to experience, gives rise to an ever increasing number of children in Africa's population, so that the continent faces a rising demand for services to ensure that the younger generations are healthy and productive.

It can be argued that the support ratio is misleading because it gives equal weight to the dependency needs of children and older persons, and older persons are not necessarily dependent on economic support from others. In particular, a significant proportion of older persons are economically active, especially in developing countries. As Table 3.10 shows, labour force participation rates among older men are high in Africa, Asia and Latin America and the Caribbean, ranging from 37 % to 53 %. Among women, labour force participation rates are generally lower, but 33 % of older women are economically active in Africa and 14 % and 16 %, respectively, are in Asia and Latin America and the Caribbean. In Northern America 23 % of older men and 15 % of older women are economically active. Labour force participation among older people is lowest in Europe, where generous pension coverage makes the option of not working at older ages possible for more people.

In order to provide a better assessment of the relationship between producers (workers) and consumers (dependants) in a population, economists have estimated "national transfer accounts" which include estimates of labour income by age and consumption by age.⁵ Using those estimates, one can calculate an "economic support ratio" by using as numerator the sum over all ages of the population multiplied by labour income for each age and as denominator the sum over all ages of the population multiplied by consumption for each age. Although the economic support ratio is better at capturing differences between countries in regard to who produces and who consumes, it has mostly served to corroborate that declining fertility leads to a period during which the population of working age increases faster than the consuming population so that the economic support ratio increases and can boost

⁵ See www.ntaccounts.org.

economic growth, thus giving rise to a “first demographic dividend”. However, that increase is transitory because, eventually, the population of working age ceases to increase. That is, as suggested by trends in the support ratio discussed above, the period over which a first demographic dividend may be reaped is limited.

3.5.2 The Second Demographic Dividend

The demographic transition involves both the reduction of mortality and the reduction of fertility. As mortality keeps on declining, especially in adult and older ages, people realize that they will live longer and that they need to accumulate more wealth to be able to support themselves in old age. Furthermore, as people have fewer children, they may be able to save more since they will have lower overall costs in raising children. Typically, older persons have accumulated more wealth than younger ones. Consequently, the higher the proportion of older persons in a population, the higher wealth per capita will be and, the higher the wealth per worker, productivity and asset income will increase, producing to a long-lasting “second demographic dividend”.

To realize that second dividend, however, wealth must be accumulated as savings or assets that can be invested productively before they are needed to defray consumption in old age. Policies and institutions play a key role in promoting savings and asset accumulation over the life course and in ensuring that they are productively utilized by the economy. When people expect to depend on family transfers (e.g., support from their children) or public pensions instead of on their own accumulated wealth to defray consumption in old age, they are likely to accumulate less wealth and, therefore, the second dividend will be reduced (Mason and Lee 2006). Governments can encourage asset accumulation by providing incentives for people to save in personal retirement accounts, by using public pensions to provide a minimum safety net that would prevent poverty in old age but would not reduce the incentive to save, and by ensuring a stable macro-economic environment that would maintain confidence in saving or investing over the long-term. Countries in the developing world where population ageing is only starting to accelerate have little time to lose in implementing the policies that could maximize their second demographic dividend. The longer the delay in their implementation, the bigger the problem of adapting to an older population will become.

3.5.3 Quantifying the First and Second Demographic Dividends

Economists have tried to quantify the impact that the two demographic dividends have had on economic growth. Regarding the first demographic dividend, it has been estimated that between 25 % and 40 % of the increased economic growth in

the East Asian “tigers” can be attributed to the changing age distribution of their populations (Bloom et al. 2002). In Southeast Asia, the demographic dividend is estimated to have accounted for about 1 percentage point of per capita annual income growth during the 1990s (Bloom et al. 2002) and in South Central Asia the demographic dividend is reckoned to have accounted for approximately 0.7 percentage points of per capita annual income growth during the late 1990s.

However, the positive contribution of the demographic dividend to economic growth is not automatic. During the period in which the first demographic dividend may accrue, the right policies need to be pursued to ensure that employment expands in productive ways. Expanding access to education and training are key strategies to ensure the success of a country’s efforts to capture the first demographic dividend but so is a policy fostering the opening of the economy to world trade and financial flows. Cross- country regression analysis suggests that a country with a working-age population growing at 3 % per year and 1.5 % faster than the overall population can increase its economic growth by 0.5 percentage points per year if its economy is closed, but by 1.5 percentage points per year if its economy is open (Bloom et al. 2002). That is, a policy of economic openness and full participation in globalization can triple the size of the demographic dividend.

In Latin America, most countries maintained closed economies, relied too heavily on domestic demand and did not pursue an export-oriented policy of growth during the 1970s and 1980s when they had favourable age distributions. As a result, they failed to realize a demographic dividend and their economic growth during that period remained low, especially when compared with that of the Asian “tigers”. Had Latin America’s economy been completely open between 1965 and 1985, its annual rate of gross domestic product (GDP) growth per capita would have been 0.9 percentage points higher on average, implying a near doubling of the rate of growth actually achieved (Bloom et al. 2002).

The size of the first and second demographic dividends between 1970 and 2000 for the different world regions has been estimated by Mason (Lee and Mason 2006) in terms of percentage points contributed by each dividend to the annual rate of increase of GDP per effective consumer. To get the GDP per effective consumer, GDP was divided by the population weighted by an estimate of consumption by age. Table 3.11 presents the estimates obtained together with an estimate of the actual contribution of the demographic dividends to GDP growth. Mason’s estimates are based on the estimated shapes of consumption and labour income by age for very few countries. That is, the regional estimates are derived from population estimates for the full region but economic estimates for just a few countries. Therefore the resulting estimates of the contributions attributable to the two dividends do not really reflect the actual production and consumption patterns in the regions considered. Nevertheless, the results indicate that the second demographic dividend is likely to be greater than the first dividend and that the young age distribution that Africa maintained during 1970–2000 as a result of prevailing high fertility was slightly detrimental to economic growth. It is sobering to compare the estimates of the potential dividends with estimates of the actual dividend achieved. In agreement with other analyses, the actual demographic dividend was positive in

Table 3.11 Estimates of first and second dividends by region, 1970–2000

Region	Potential first dividend	Potential second dividend	Sum of both potential dividends	Actual GDP growth per effective consumer	Actual dividend
Advanced industrial countries	0.34	0.69	1.03	2.25	1.22
East and Southeast Asia	0.59	1.31	1.90	4.32	2.42
South Asia	0.10	0.69	0.80	1.88	1.08
Latin America	0.62	1.08	1.70	0.94	−0.76
Sub-Saharan Africa	−0.09	0.17	0.08	0.06	−0.02
Middle East and North Africa	0.51	0.70	1.21	1.10	−0.11
Countries in transition	0.24	0.57	0.81	0.61	−0.20
Pacific Island countries	0.58	1.15	1.73	0.93	−0.79

Note: Countries in transition are: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Mongolia, Poland, Romania, Russian Federation, Serbia and Montenegro, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan

Source: Adapted from Economic Commission for Africa (2013), by author

Eastern Asia, the advanced industrial countries and South Asia, in order of dividend size. But all other regions failed to realize the potential benefit of a favourable age distribution and, having been unable to generate sufficient employment for their rapidly growing labour forces, their economic growth was lower than it could have been.

These examples underscore the importance of implementing the right policies to ensure the realization of the demographic dividends. Accruing either dividend depends on generating productive employment for all those who wish to work. Increasing the educational attainment of the population is crucial to improve the productivity of workers and propel development. Furthermore, because the level of education a person has is positively correlated with lifetime income, those with more education tend to save more over their lifetimes. As a result, in many developing countries where a majority of the population still has low educational attainment, most savings are being accumulated by the small proportion of high-income households (World Bank 2013). To reverse that pattern, expanding the educational opportunities for those at the lower end of the income scale is necessary. Cross-national data from the national transfer accounts show that there is a tradeoff between the quantity and quality of children, that is, as total fertility declines, the investment per child on education and health increases (National Transfer Accounts 2011).

This empirical finding suggests that both increasing educational attainment and reducing fertility are strategies that reinforce each other. The national transfer account data also show that older people today depend on a variety of sources to defray consumption in old age (National Transfer Accounts 2011). In Indonesia, for instance, older people depend on their accumulated assets and on work, while at the same time making a net contribution to the support of younger relatives. In Mexico, accumulated assets are the main source of support while labour income and public transfers make equal and significant contributions to consumption. Furthermore, as in Indonesia, older persons in Mexico make net transfers to younger people. In several other countries (Austria, Brazil, Costa Rica, Germany, Hungary, Spain, Sweden, Uruguay and the United States) older people give more to their children and grandchildren than they receive. However, in the Republic of Korea, Taiwan and Thailand, younger people make significant private transfers to their elders. Public transfers (mostly in the form of pensions) account for 80 % or more of the consumption of older people in Austria, Brazil, Finland, Hungary, Slovenia and Sweden, and for between 49 % and 69 % in Japan, Chile, Costa Rica, Germany, Spain and Uruguay. In the United States, public transfers account for a low 32 % of old age consumption and in India, Indonesia, the Philippines and Thailand, public transfers play virtually no role in defraying consumption in old age. These findings suggest that understanding how national laws and institutions shape the ways in which older persons support themselves is crucial in developing effective strategies to promote the accumulation of savings and assets by the generations that are currently producers and that will be generating the second demographic dividend in years to come.

3.6 Conclusion

This chapter has shown that, if the world population is to remain within sustainable limits, low fertility and slower population growth or decline are the destiny of all countries. If increasing longevity is added to that mix, the possibility of reaping sustained benefits from the evolving age distribution of the populations transitioning to low fertility and low mortality increases. Lower fertility implies fewer children per couple and, provided parents find gainful employment, brings forth the potential of investing more in improving the human capital of each child. Declining fertility also leads to a period in which the age distribution is beneficial for economic growth, having more potential workers per consumer. During that period, policies that improve human capital and generate jobs can boost economic growth above what it would have been if fertility had not declined. Although most developing countries are already far advanced in the period when this first demographic dividend may be realized, the least developed countries and most of those in Africa have just entered that period and still have the opportunity to accelerate their economic growth by adopting the right policies.

In addition, all countries have been experiencing a reduction of mortality and the probability of surviving to old age is high and increasing in every region. Therefore,

people in the majority of countries have an incentive to accumulate wealth to defray expenses in old age. That incentive can be strengthened by instituting appropriate financial vehicles to save for retirement, ensuring financial transparency and good management of the accumulated funds, promoting productive investment, developing the institutions that facilitate the accumulation of assets, and increasing educational opportunities for all, but especially for those in the low rungs of the income ladder.

Population ageing is inevitable but it presents many opportunities, especially if the challenges it poses are addressed early. The population of the developing world is ageing more rapidly than that of developed countries did and under different circumstances. Yet developing countries have the advantage of being able to learn from the experience of the countries that have preceded them in the path to ageing. The interrelations between population ageing and economic opportunities are better understood today than a couple of decades ago. This understanding provides a solid basis on which to act and diligent action is likely to show that population ageing is not only unavoidable but also desirable.

References

- Bloom, D.E., D. Canning, and J. Sevilla. 2002. *The demographic dividend: A new perspective on the economic consequences of population change*. Santa Monica: Rand.
- Economic Commission for Africa. 2013. *Beyond the first dividend: Sustaining the second demographic dividend*. Addis Ababa: Economic Commission for Africa of the United Nations. <http://www.prb.org/pdf13/africa-second-demographic-dividend.pdf>. Accessed 30 May 2014.
- Food and Agricultural Organization. 2009. *How to feed the world in 2050*. Rome: Food and Agricultural Organization of the United Nations. http://www.fao.org/fileadmin/templates/wsfs/docs/expert_paper/How_to_Feed_the_World_in_2050.pdf. Accessed 30 May 2014.
- International Labour Organisation. 2011. *Economically active population, estimates and projections, sixth edition*. Genève: International Labour Organisation. http://laborsta.ilo.org/applv8/data/EAPEP/eapep_E.html. Accessed 15 May 2014.
- Lee, R., and A. Mason. 2006. What is the demographic dividend? *Finance and Development* 43(3): 16–17. <http://www.imf.org/external/pubs/ft/fandd/2006/09/basics.htm>. Accessed 30 May 2014.
- Mason, A., and R. Lee. 2006. Reform and support systems for the elderly in developing countries: Capturing the second demographic dividend. *GENUS* 62(2): 11–35.
- National Transfer Accounts. 2011. *Data sheet 2011*. National Transfer Accounts. <http://www.ntac-counts.org/doc/repository/NTA%20Data%20Sheet.pdf>. Accessed 30 May 2014.
- United Nations. 2013a. *World population prospects: The 2012 revision. Highlights and advanced tables*. New York: United Nations.
- United Nations. 2013b. *World population prospects: The 2012 revision, CD-ROM edition*. New York: United Nations.
- United Nations. 2014. *World population prospects: The 2012 revision. Methodology of the United Nations population estimates and projections*. New York: United Nations.
- World Bank. 2013. *Capital for the future: Saving and investment in an interdependent world. Global development horizons*. Washington, DC: World Bank.

Chapter 4

Aging, Mobility and Migration in Latin America

Vicente Rodríguez-Rodríguez

4.1 Introduction

The mobility of the elderly is now an established phenomenon that involves several facets of major importance, both demographic and geographical, among others. This mobility may be considered as a result of the demographic consolidation, which has occurred in many societies, particularly in developed countries. This means that more and more people are now in a position to be able to move (for personal, family, or economic reasons) when they reach the time of retirement. Moving or migrating in adulthood is thus the result of being able also to select the place of residence and opt for the attractions that these places offer. Such mobility can become migration under certain conditions, and that process affects not only individuals but also the places that host them. The reasons for such behaviour are not primarily economic, but rather, above all, to enjoy leisure time, fulfil expectations and adapt to new stimuli.

In the international scientific literature the analysis of the elderly mobility involves cross-disciplinary constraints that do not facilitate the standardization of concepts or contents. It is common to find terms used as similes – citing only the most common ones – such as ‘migration of retirees’ (predominant socio-demographic group that migrates), ‘amenity-based’ or ‘environmental migration’ (preference for the physical characteristics of the destination), ‘lifestyle migration’ (preference for a way of life, no matter the age) or ‘privileged migration’ (referring to one’s economic capability to undertake the move). Perhaps looking for a trait common to all of these, it could be said that people who move in adult/old age have had previous leisure travel behaviour throughout their working lives, to a greater

V. Rodríguez-Rodríguez (✉)
Institute of Economics, Geography and Demography (IEGD),
Spanish National Research Council (CSIC), Madrid, Spain
e-mail: vicente.rodriguez@cchs.csic.es

extent than people who have not moved from their original location. The closest concept to this characterization is 'residential tourism', widely used in tourism studies. However, in general there is no perceived convergence between these, rather confusion, which does not always make it easier to deal with them in research. Without wishing to emphasize the importance of some concepts over others, this paper attempts to explore the mobility associated with elderly who choose to retire to a different country, in this case a Latin American country.

No less important is the fact that the mobility of older people has been limited to the areas of greatest development in the world. From pioneering research in the US and Canada, these mobility studies have gradually expanded to Australia, Europe, North Africa, and also to several Latin American countries. If an explanatory scheme based on 'life cycle' is used, one might consider that some of these areas (North America, Europe) can be found in the consolidation phase or even saturation phase, while others – in the case of this study, the Latin American countries – are in their growth stage. The examples drawn from other continents refer to broad areas where retirees settle, forming a fairly recognizable continuous settings: thus, in the US, Florida and Arizona have been traditional destinations for this group, as are the Costa del Sol or the Costa Blanca in Spain (Casado et al. 2004), or the Gold Coast in Australia (Stimson and Minnery 1998). In the case of Latin America, destinations are location-based and smaller in size, a fact which can influence the characterization of migration itself.

Among the various possibilities, it has opted to make a pragmatic interpretation of the examples of retiree mobility in Latin America. The objectives of this chapter are, in addition to analysing the socio-demographic characteristics of older migrants, to assess the importance of the destinations in the decision to move and in their way of life and to value the environmental impacts their resettling causes. It will be necessary to identify some mechanisms that governments, companies and agents use to attract older migrants and study the characteristics of the priority areas for this elderly population. Similarly, it will be essential to dwell on the environmental, social, and economic impacts, as well as integration or intercultural relations between the host population and society, and the migrants. Ultimately, all these components must be used to build up a basic scheme to be able to interpret environmental aspects of the mobility of the elderly towards chosen destinations in Latin America.

4.2 Materials and Methods

In order to produce this paper the publications discussing retirement locations in Latin American countries, which have come to light in the last 15 years, have been analysed. Both articles and book chapters are included, such as doctoral theses and research papers, and reports in both English and Spanish. After a thorough search, 44 have been identified, most of which are written in English. Other contextual non-scientific documentation, such as several books on destinations in Latin America, has been also used. Its main objective is to provide general, practical, or specific

information for potential migrants interested in these places. The large quantity available of such books has forced to make a basic choice in line with this chapter's aims. Finally, some websites addressed to the same audience as the books were reviewed, under the auspices of commercial enterprises selling updated information on these locations. Essentially, these are: International Living (www.international-living.com), the Living Abroad network (www.liveabroad.com) and the Best Places to Retire website (<http://www.bestplacestoretire.com>), due to their general and international character. There are a multitude of more local sites that play a very important role in the transmission of information and anchor retirees in the countries of destination. Some are essential such as those referred to Mexico (The Lake Chapala Society, www.lakechapalasociety.com), Ecuador (www.liveabroad.com, www.cuencahighlife.com), or Panama (movetopanama.com, www.panamainfo.com/en/retire-panama).

The scientific literature has been analysed using the qualitative data analysis programme, Leximancer v4, which makes an automatic breakdown of the themes and concepts relevant to the chapter, through their semantic relationships (Sotiriadou et al. 2014) between topics, concepts and thesauri (Hansson et al. 2010; Cretchley et al. 2010), based on mathematical algorithms to measure natural language (Smith and Humphreys 2006). Two data sets were formed: 28 in English and 16 in Spanish, in order to assess the significance of the concepts in both languages. Additionally, Atlas.ti v7 was used to encode their content through a brief list of keywords fitting the objectives. This tool provides a complete process of information analysis, from the most basic, which is coded, up to constructing a theory by analysing relationships between different concepts (Ramboree 2014; Friesen 2014). Essential to this process is the visualization of the results in a very practical way in order to interpret the contents (Konopásek 2008). Three types of codes have been identified to analyse the meaning and trend of the studies: (a) the ones which relate to the countries where the study was run ('Costa Rica', 'Ecuador', 'Mexico', 'Panama'), (b) those related to concepts of elderly migrant population ('amenity' migration, 'leisure', 'lifestyle', 'privileged', 'residential tourism', 'retirement') and (c) those which are linked to the place of settlement ('alternative scenarios', 'identity', 'place', 'image of place', 'place attachment', 'environment', 'segregation', 'tourism').

4.3 A Target Population: Characteristics and Concepts

From a demographic point of view, the difficulties of measuring the number of elderly involved in this process of mobility or migration are well known. Secondary national sources come up against significant limitations when taking note of the remarkable dynamism of migration, in this case of retirees, more than a 'snapshot' of merely 'static' demographic situations. The result is the confirmation that there are many more people living in retirement locations than those recorded in the sources; i.e., their number is underreported, regardless of where they live (Gustafson 2007; Rodríguez et al. 2010; Huete et al. 2013). This is due to multiple factors

related to different types of people that move/migrate (Croucher 2009; van Noorloos 2012; Kool 2012); to the flexible conditions where movement occurs; and to the form of transnational, global lifestyle that migrants develop. It is therefore very difficult for host countries to have the capacity to register retired residents at municipal level. This reduces the reliability of records, which are clearly unable to reflect dynamic movements (Janoschka 2009). All this is aggravated, among other reasons, by the lack of interest on the part of foreign retirees in registering (Rodríguez et al. 2010). In contrast to official data, population estimates are often used (Truly 2002; Pera 2008a, b; Janoschka 2009), though are sometimes unhelpful. However, research strategies to obtain 'primary' data are also used through in-depth or qualitative-based interviews. Thus, personal, introspective and dynamic information is obtained, although the possibility of research into the characteristics of the general population is limited, largely by the low response rate (Croucher 2009).

Drawn from literature analysed, the number of retirees (Table 4.1) therefore varies depending on the country and estimates made (high in Mexico, Costa Rica or Panama, around 250,000, 40,000 and 10,000 US residents respectively), although the proportion is actually very low: less than 1 % of the total population in the case of Costa Rica (van Noorloos 2012), or 0.06 % of the population over 55 years in the US (Janoschka 2009) when accounting for US immigrants in this country. Although the figures may vary depending on the source used, their socio-demographic profile is defined by some fairly stable parameters: these people are elderly but not extremely old (mean age around 60 years); they are couples (with no marked gender difference, and generally married); they are out of the labour market (early retirement or retirement age, with values close to 60 %); their educational level is relatively high (university), which can ensure a good economic status (approximate, annual income \$50,000). Although other aspects are not usually mentioned in the studies analysed, retired migrants tend to be in good health, with plenty of disability-free years (life expectancy); and have motivations linked to the consumption of leisure and the development of cultural and social initiatives (Table 4.1).

In addition to these personal, family, economic or social traits, the existence of general conditions (macro), demographic or otherwise, that facilitate mobility are also highlighted in the studies. One of the most frequently given, due to its explanatory value, is the arrival of the baby boom generation at the age of retirement, in northern countries, mainly the United States. Of the large numbers in this generation, a significant proportion shows a high propensity to mobility towards settling in favourable locations, although their actual proportion is in fact irrelevant. This situation is favoured by the various conditions associated with globalization that have facilitated the growth of particular locations in other countries, as well as the opportunities for physical mobility (transportation), for the transfer of economic resources at global scale, for the dissemination of visual images of worlds movers perceive, and for the essential information to be able to take instant decisions, for the transnational communication of affections between members of relocated families, or for setting up sales-based and economic information networks between different geographical areas.

Table 4.1 Some demographic features taken from studies reviewed

Socio-demographic traits	Census data Dixon et al. 2006		Data from scientific surveys				Data from media surveys	
	Mexico	Panama	Amin and Ingman 2010	Kool 2012	Van Noorloos 2012 ^a	Rojas et al. 2014	ICF 2010	Cuenca News 2013 ^b
Age:								
<65			32.9				52.9	46.0
65–75			50.0				39.6	36.0
>75			17.1				7.1	3.5
Mean age				53.0	56.0	68.0		
Sex:								
Male	51.8	67.6	48.7	52.0		51.8	51.7	61.0
Female	48.2	32.4	51.3	48.0		48.2	48.3	39.0
Civil status:								
Married		69.4	84.2	69.0	72.0	55.8	69.5	63.0
Single		16.4	3.9		18.0		5.6	8.0
Widow/ee		7.6	5.3				7.4	4.0
Divorced		6.6	6.6				17.5	25.0
Education:								
Primary	50.4				29.0		27.8	20.0
Secondary	26.1		55.0	33.0	33.0	33.7	35.5	49.0
University	23.5			45.0	38.0	37.8	36.7	31.0
Income (\$)			48,000			52,000	50,000	50,000
% Retired		72.7	55.0	38.0			72.6	77.0

^aPermanent resident, most lifestyle migrants, no elderly sensu stricto

^bSurvey addressed to general expatriate population, so young respondents are non included (Source: Adapted by author from references cited)

As mentioned above, the retired migrants can be conceptualized differently, depending on the motivations behind their movements, and this generates a certain degree of conceptual confusion. It is possible to speak of various types, sometimes interchangeable (Janoschka 2011; Croucher 2012; Van Noorloos 2013a). The *amenity* and / or *lifestyle migrants* are addressed towards the enjoyment of leisure time in environmentally favourable locations, such as mountain or rural areas (Glorioso 2009; Cadieux and Hurley 2011; Gosnell and Abrams 2011). For these, obtaining advantages in their economic position is essential in the decision to emigrate (Pera 2008b; Bustamante 2012). However, when referring to older emigrants seeking to consolidate their lifestyle in residential areas outside their own country, other intangible aspects gain strength that link the former residence with the new residence they settle in as emigrants in a global and flexible environment (Janoschka and Haas 2014). Not only this multiplicity of lifestyle options is valued (O'Reilly and Benson 2009; Croucher 2012), but also cosmopolitanism as a lifestyle (Dixon et al. 2006), or the colonial heritage that provides a privileged way of life (Croucher 2012; O'Reilly and Benson 2009; Benson 2013; Janoschka and Haas 2014). Essentially, this emi-

gration highlights the distinction and individualization of behaviour (Benson and O'Reilly 2009), which is opted for over the life course and related to subjective reasons (Huete et al. 2013). It is grounded in educational level and in interest in culture (Benson 2012), and affects not only emigrants who are retired (Kool 2012). Lifestyle is managed as a constant process of negotiation between one's own experiences and expectations (Benson and O'Reilly 2009; Osbaldiston 2012), which can mark out relationships of power (Zunino et al. 2014). There is no need, then, to pull together this migration with other types, which also seek a lifestyle based only on economic improvement (Huete et al. 2013). As some authors point out, this is privileged migration (Pera 2008a; Croucher 2012; Janoschka and Haas 2014).

The other item of interest is that of *residential tourism*. Its main characteristic is its link to the housing market for second homes for tourists seeking to enjoy leisure time (Barrantes 2011). This means, essentially, choosing residential tourist resorts, often promoted by private tourism initiatives (Van Noorloos 2012) and sometimes by local or state authorities (Janoschka 2009; Myers 2009; Torkington 2010; Van Noorloos 2011a, b; 2012). There is, therefore, the perception that all stakeholders (retirees, building companies, local authorities) profit from this business (Van Noorloos 2011b). There is also evidence that the consequences can be negative, whether economic (Janoschka 2009; Myers 2009; Lizárraga 2010), region-based (Jackiewicz and Craine 2010; Van Noorloos 2012) and/or environmental (Myers 2009; Lizárraga 2010; Van Noorloos 2011a, b; Kool 2012; Van Noorloos 2012). This contrast among different interests also affects the 'authenticity' of the residential areas when they deteriorate due to the pressure of residential tourism (Mantecón and Huete 2009), and also affects to certain social groups that find themselves excluded from the market (Van Noorloos 2012; Bastos 2014). Strictly speaking, this behaviour cannot only be considered tourism and commerce, but particularly affecting people who are associated with tourists (O'Reilly and Benson 2009; Myers 2009; Barrantes 2011; Kool 2012). Along with tourism in general, the development of residential tourism largely also affects its sustainability, depending on the life cycle of these residential resorts (Myers 2009; McWatters 2009). Figure 4.1 shows the interaction between all these concepts, using the analysis of subject areas and concepts provided by Leximancer.

Outstandingly, some confusion can be reported in the terminology used to name the group of emigrant population among the authors who have studied this phenomenon and written in English and Spanish. In English, the term 'migrants', referring to the entire population that migrates, as a nonspecific category, is mixed with the term 'retirees', which refers to people migrating after having retired from the labour market and who are, predictably, elderly, along with the term 'residents': the migrants who have settled, more or less permanently, in the destination. This situation does not differ greatly in the references in Spanish, when differentiating between the terms: 'inmigrantes' ('immigrants'), 'jubilados' ('retirees') and 'personas mayores' ('the elderly'). Secondly, these names are not neutral but rather associated with other aspects of the migration and residential process, identifying how the authors interpret this process and their own particular geographical origin. Thus, 'migrants' appear in studies on Panama as associated with residential tourism and their settling as 'residents'. Also, the two categories, taken together, are the subject of studies on Costa Rica. However, studies on Mexico opt for 'immigrant retirees' and with aspects of

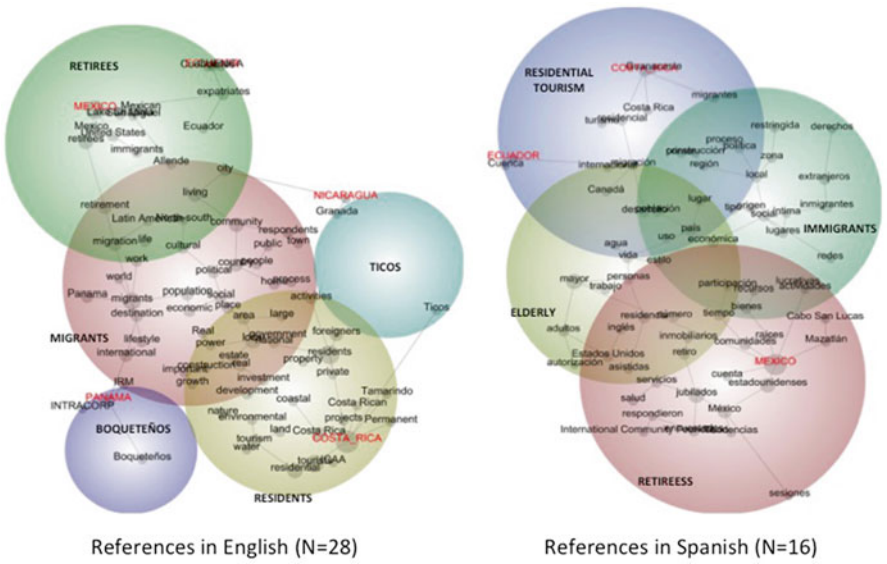


Fig. 4.1 Concepts used in references about adult/older population migration in Latin America (Source: author)

their way of life, not so much with their settling process. Something similar can be seen in the studies written in Spanish. Each one of these countries, then, sets down a particular way of receiving elderly foreign immigrants.

4.4 A Demand for the Destinations Desired by Retirees

Locations for residential resettlement in Latin American countries are identified as ‘suggested’ destinations by the information available, but also ‘sold’ as business and social products. They are given a suitable identity for foreign retirees, a fact which then reinforces their role as places of an elitist, selective and different character (Banks 2004), which may favour discrimination in the sense that not everyone can live there. Thus, a physical image is built up (the features that define the location) – but also a social one, based on economic interests (grounded on residential estates), social (those of ‘conservative’ individuals) or political ones (relationships of power between local government and immigrant residents at local level).

Studies reviewed often research the motivation of retirees, through their opinions, in settling in these countries. Environmental amenities play a major role, and this is the case when the weather and environmental conditions (coast, beach, mountains) are important on a global scale as a reason for migrating within Europe (Williams et al. 2000; Casado et al. 2004) or Australia (Stimson and Minnery 1998; Gurran 2008). In the case of studies on Latin America, a complex set of reasons is described

involving factors such as the attractiveness of the country of destination intertwine with personal reasons (Sunil et al. 2007; Pera 2008b; Kool 2012), but also with expulsion from the country of origin and life experiences (Van Noorloos 2012).

Among them, no less important are economic factors (the cost of living, property, housing, investment etc.) or personal ones (quality of life) (Myers 2009). However those provided by the destination itself – its natural features and social amenities – gain in importance. In this sphere aspects such as climate, nature or the beaches (Van Noorloos 2012) are valued, but also cultural, religious and political conditions, or those of neighbourhood coexistence (Matarrita-Cascante and Stocks 2013). The cosmopolitan character of the city of Panama (Dixon et al. 2006), the historical and cultural values of Granada in Nicaragua and Cuenca in Ecuador, and the colonial substrate found in Mexican cities (Clausen and Velázquez 2011; Gárriz 2011) are all mentioned as positive values. The corollary of these reasons is the construction of an identity for the particular location, through the view of retirees themselves, discursively contrasted with the collective definition of the place image created by its own inhabitants and based on a system of consumption and lifestyles.

All this reinforces the feeling of attachment to the place, which validates the very decision to migrate and settle in one specific place, and full immersion in it from different perspectives. Several theoretical approaches help interpret place attachment, all of which have a structural nature linked to the characteristics of the location (Scannell and Gifford 2010; Barcus and Brunn 2010), with a psychological base which looks into the role of individuals, their emotions, knowledge and behaviour (Scannell and Gifford 2010; Droseltis and Vignoles 2010), or with gerontological roots (Phillips et al. 2011). The value of previous experience as a migrant in a particular place, maximizing the opportunities that arise from that prior knowledge, the construction of transnational social networks, or the feelings about the place (Gustafson 2006) are essential references for retirees who are resettling. This construction process on site may be portable, but more often it is permanent (Barcus and Brunn 2010). It may have different significance and applications for diverse migrants, and it may even involve different settlement locations and places which can be chosen during or throughout their lifetime, or at varied times of the year (McHugh and Mings 1996). In any case, attachment to a place is an adjustment process between the ‘real’ identity of where the population settles and the ‘social’ identity generated by individuals who come to live there (Torkington 2014). And in this sense, environmental quality is an essential element of this identity, along with others. But how is that identity ‘sold’ when it is targeted at the elderly and the places they can retire to?

4.5 Destinations: Images Provided

Indeed, a specific place becomes a product for consumption, utilitarian in nature, and which becomes part of the life project of foreign retirees in Latin American countries and a form of ‘construction of reality’ (Zunino et al. 2014). Not only

researchers who analyse the life experiences of individuals who migrate ‘sell’ places, but also certain services-based and property companies, which promote them for commercial and economic investment purposes among retirees in Latin America.

A significant example is International Living (<http://internationalliving.com>), a US company. A basic tool for this is the Annual Retirement Index, one of their quality indicators,¹ built to a national scale using appraisal criteria rated by the agents of their International Living Magazine. These criteria are: the *property market* (affordable prices, property dealers); special *benefits* offered by governments for comfortable living (discounts on services, favourable entry requirements); the *cost of living* (food, housing, services, communications etc.); ease of *integration* (speak English at destination, friendliness of local people, existence of retirement community); *amenities* (restaurants, outdoor activities, music, art, culture); the *healthcare system* (cost and quality of services, health care indicators); *infrastructure* (quality of roads, communications, transportation, internet, access to the country of origin); and, of course, *climate* (temperature, rainy days, natural disasters). The result is an ordered set of countries (Table 4.2), including, for the past 6 years, several Latin American

Table 4.2 International living annual global retirement index

Ranking	2014	2013	2012	2011	2010	2009
1	Panama	Ecuador	Ecuador	Ecuador	Ecuador	Ecuador
2	Ecuador	Panama	Panama	Mexico	Panama	Mexico
3	Malaysia	Malaysia	Mexico	Panama	Mexico	Panama
4	Costa Rica	Mexico	Malaysia	Spain	France	Uruguay
5	Spain	Costa Rica	Colombia	New Zealand	Italy	Italy
6	Colombia	Uruguay	New Zealand	France	Uruguay	France
7	Mexico	Colombia	Nicaragua	Uruguay	Malta	Brazil
8	Malta	Spain	Spain	Costa Rica	Chile	Argentina
9	Uruguay	Thailand	Thailand	Malta	Spain	Costa Rica
10	Thailand	Malta	Honduras	Italy	Costa Rica	Australia

Source: International Living

¹ Others are: Quality of Life, World’s Healthiest Places to Live, Best Climates in the World, World’s Best Property Markets in 2012, Best Place to Start Your Own Business, or Cheapest Countries in the World.

countries. It is no wonder that Ecuador, Panama, Costa Rica and Mexico are the most attractive countries for American retirees, since they are the most frequent destinations of the large cohort of American baby boomers willing to reside in them, as shown in the studies reviewed in this chapter (Dixon et al. 2006; Hunt 2008; Myers 2009; Kiy and McEnany 2010a, b, c), either as tourists only (Jiménez 2011) or as investors in housing (González and Torres 2007; Kiy and McEnany 2010d). In addition, numerous ‘colonies’ of US residents in various parts of these countries and readers of their magazine are reinforcing the image offered by ‘profiles’ of people ‘that editors all over the world have met, who are living their dream overseas. Some have retired; others have relocated and started their own business in their new country’. The company also publishes ‘daily postcards’ where it briefly reports on retirement, properties, travel and opportunities in selected destinations. A final mechanism, probably crucial to channel the flow of Americans to these countries, is the organization and holding of events, some aimed at attracting investors (Fast Track Your Retirement Overseas Conference, International Property Investment Forum). Others are specifically focussed on the promotion of places in certain countries. Recent events have been – or will be – held, not by chance, in Ecuador, Panama and Costa Rica, three Latin American countries in the Annual Retirement Index.

Best Places to Retire (<http://www.bestplacetoiretire.com>) has a similar target, although focussed on retirement locations within the United States. It brings, however, a very interesting perspective, editing self-help and sales manuals where professionals who are either active or retired write about their experiences, along with recipes for better retirement in countries other than their own. In a more neutral sense, AARP² also offers its views on destinations for retirees globally, which satisfy the condition of being warm and sunny, attractive from an economic point of view, and have excellent healthcare systems for retired Americans (http://www.aarp.org/home-garden/livable-communities/best_places_to_retire_abroad/). Many interesting ways build the image of the destinations that are promoted and assess the importance of the elements that constitute this image.

Another sector that constructs destinations is that of retirees themselves who transmit their own experiences through books ‘helping’ new retirees interested in changing their place of residence. In this case, the experiences they share (the ‘extended self’, Droseltis and Vignoles 2010) can be considered a mixture of their own concerns, of “private experiences” (as named by Clausen and Velázquez 2011) and ways of behaviour shared by the retiree communities. Although these experiences are not representative of general behaviour (Dixon et al. 2006) they are, indeed, of primary concern, widely signified in life paths and defined locations (Gustafson 2011) and which generate knowledge and an identity which is specific and different, depending on the individuals (O’Reilly and Benson 2009). In short, to have these experiences it is not strictly necessary to have personal contact between individuals or live permanently in these places of residence. These locations have acquired an ‘elasticity’ only possible since relatively recently (Barcus and Brunn 2010). The new migrants, to a fair extent, take over these images to fit them to their

²American Association of Retired Persons (<http://www.aarp.org>).

own knowledge and experiences (Benson 2012) for the purpose of more appropriate decision-making. There is a huge amount and great variety of these books in the market. It is not easy, or perhaps appropriate, to systematize their contents, given their objectives and the audience they target. In general, it can be said that the structure of these books offers a complex mix of reasons that could be followed to assess the decision to emigrate.

A second general idea is that, almost without exception, this material is aimed at North Americans, which already implies a close positioning of the baby boomers as the target population. A third idea is that there is a predominance of useful information on how to live, day by day, in unfamiliar surroundings, which could become initially hostile. A number of examples are presented which, due to their closer focus on the contents of this chapter, could add value to the knowledge of the experiences of retired migrants themselves. Among the factors that attract most, it should be highlighted the economic factor: authors mention the lower cost of living in the place of destination as an essential determinant for American retirees, depending on the pension received. There are several books that offer examples of calculations of monthly costs in the country of destination, to 'sell' the benefits of living in a place with lower cost compared to America. Tax incentives and the benefits the retirees obtain in the Latin American countries play an important role in the construction of this shopping bag. It is also a help that books authors have confidence in the economic stability of these countries, which are very close, on the other hand, to their home in the United States.

No less important is the climate and natural beauty of the locations where many of these retirees settle. These are conditions that facilitate a much more open, outdoor lifestyle, outside and in the vicinity of the house, especially in the case of Mexico, Panama and Costa Rica. This environmental benignity is combined with the attraction of smaller and more manageable urban locations, with a hugely attractive historical tradition in the case of some Mexican, Nicaraguan and Ecuadorian colonial cities (Reyes 2011). They are unique locations for a lifestyle that values, very positively, a slower pace, a different lifestyle, in keeping with the country itself, and a friendly relationship with different kinds of people and cultures. Often these conditions in the country of destination are completed with quite an acceptable level of health services and the existence of social structures that facilitate communication in English, at least at a sufficient level. Needless to say, there is also a strong personal component, some specific traits that make the elderly migrant population a very select one. Books speak of the possibilities of living a freer life, with a strong component of adventure, especially in cases that they can substantiate the need to 'escape' from the United States to live away as a personal challenge. It is also true that these 'free birds' have been fuelled by previous experiences as migrants or expatriates during their working life. There is little doubt about the validity of such behaviours in a positive outlook on life, enjoying new experiences in contact with nature and other populations.

As pointed out by some books, the role played by national authorities in promoting these places should not be underestimated, nor that played by the promoters of the residential area in the countries of destination. However, this role is not easily

analysed because the logic of these players is entirely conditioned by the sale of residential products, the guidelines of the national and international market that seeks to maximize profits, or the interests in avoiding the exposure of environmental problems, in the first case, and the promotion of business. In the next section, however, some of these problems arising from the action of these partners in relation to the environment are analysed.

4.6 Residentialism Versus Environmentalism

Although not always the case, the set rule is that the retiree population settling in certain Latin American locations is linked to the specific residential properties, which are provided by an industry that is connected not only to the retiree population but also to any individual interested in investing in property abroad.

American and Canadian retirees are a powerful force interested in residing in Latin American countries. This is so for demographic reasons, as mentioned before, but above all, due to the conditions of the global economy, which strengthens markets, rather than people as individuals, and regions, as unique areas. In this unequal relationship, local economies, people and regions alter in appearance (Puga 2001), almost always permanently (Janoschka 2011; Van Noorloos 2012), over the course of a process that involves adapting local conditions to those of the international, global market (Myers 2009). So much so that anywhere in the world can become a unique destination for the retired population (Van Noorloos 2011a). Locally, the unfairness of this process that has dispossessed many people of their resources and capabilities (Reyes 2011; Janoschka and Haas 2014; Bastos 2014) has been clearly indicated.

The State, with all its components and institutional structures, is seen as an essential agent in the production of areas for foreign retirees and images of these destinations, and to provide good socio-political conditions. On the one hand, migrants themselves consider the political, economic and social stability as a factor to be very important in their choice of a place of residence. Under these conditions, some states, through political and economic incentives, favour the arrival of companies and international investors for building new residential areas, linked to tourist development, not always legally regulated and poorly supervised by multiple levels of government, whose job it is to manage the regions under its regulation. Costa Rica and Panama are two recent examples where market forces tend to stay ahead of administrative or political regulations (Jackiewicz and Craine 2010; Barrantes 2011; Myers 2009; Van Noorloos 2011b, 2012). On the other hand, the commitment of countries interested in the migration of retirees is moving in the direction of promoting the facilities of retiree destinations, improving the chances of economic growth, without neglecting environmental sustainability. The slogans “Essential Costa Rica” or “Costa Rica with no artificial ingredients” respond to this interpretation of the real situation, to communicate it in other sending countries. Panama’s slogan, “The best place to retire”, abounds in the socio-political conditions offered

to prospective retirees, always in a direct line with the US market. Similarly, the Ecuadorian slogan, “Love life”, emphasizes the importance of quality of life, built by dimensions such as environmental protection. The ten retirement destinations promoted by the Mexican tourism agency are ‘sold’ as a product that combines nature, urban communities, colonial legacy and general and health services. These wonderful images, however, fail to dwell on the negative effects of the ‘colonies of retirees’ in many of the places where they live.

Some states have favoured retirees’ settling through national programmes. The most significant example is the Panama Pensioner Programme. Investing certain amounts in property, and fulfilling other requirements, essentially having a pension from a foreign country, one can access reductions in buying goods and services, plus exemption from certain taxes. The retiree may finally obtain a permanent residence permit or citizenship. The ultimate goal is to promote the economic growth of the country, attracting investment and economic resources in a stable political situation. With the progress of the programme, the retirement locations for foreigners are many and varied throughout the country, which have arisen from property developments by Panamanian and foreign companies. Again, there is no mention to processes of environmental damage and / or social breakdown. In the case of Costa Rica, there is now a type of residence for pensioners, which facilitates settling for foreign retirees under good conditions, with easy access to general goods, property and services. Tourism and property development fostered by Costa Rican and foreign companies help channel the arrival of retirees towards entertaining residential environments.

Meanwhile, Mexico also offers legal conditions, which favour the permanent settlement of retirees and their life in the country (Topmiller et al. 2011). Some initiatives try to combine the interests of residential-tourism investors, retired migrants, and the indigenous population itself (www.amar.org.mx). However, other requirements may limit home ownership (Lizárraga 2008) or access to the health-system under conditions similar to those of their country of origin.

The production of residential complexes, essentially by governments and property dealers, almost always involves altering the physical, demographic and social conditions of the affected sites. In the Latin American countries which have been most affected by retired migrants resettling, there is multiple evidence to assess the effects of ‘residentialism’ on the local environment. Some areas have been analysed extensively, such as Guanacaste in Costa Rica, where impacts have been documented on certain areas of economic development at local level (Van Noorloos 2011b, 2012; Kool 2012), and on the countryside, on water and waste management, or the destruction of protected habitats (Barrantes 2011), as a result of residential tourism development (Van Noorloos 2011b, 2012). However, the resident and native population itself sometimes finds contradictory reasons, both positive and negative, economic and environmental, to assess this impact in an ambivalent manner (Hayes 2013). As Myers (2009) notes, there are several scenarios where this relationship can be measured, from the two populations (natives and foreigners) uniting in the defence of the interests of the region – in this case Boquete, Panama – to the tensions and conflicts between interests, or the deterioration of local living conditions.

The environment bears the most salient impact of retirees 'residentialism', through building works such as regional infrastructure, the preparation of areas for residential communities (Barrantes 2011; Myers 2009; Schafran and Mönkkönen 2011; Lizárraga 2012), or the change in specific products supplied (Pera 2008a, b; Van Noorloos 2012). A number of essential facts have major importance, such as the number of stakeholders involved (government, developers, estate agents, users, local population), the size of the residential communities (the larger, the greater the environmental impact) and type of resident population, native or foreign (the greater the awareness of preservation, the greater the ability to alter town planning projects to preserve lands). The immediate consequence is the channelling of opposition and protests against urban initiatives as the most effective way to change these settings (Janoschka 2013; Van Noorloos 2012), given the loss of resources and land use rights, and the lack of regulation by the State. It is also important to emphasize the need to plan action that many stakeholders propose to have the tourist and residential communities designed according to sustainable standards and certifications (Kiy and McEnany 2011e). In fact, these authors have documented various projects employing 'green' strategies to adapt the development profile to suit buyers who are discerning with regard to environmental sustainability.

4.7 Conclusions

Older people are coming to reside in many destinations in Latin American countries. For several decades bodies and researchers in the United States, Europe or Australia have been running studies on the pattern of migration and/or mobility. There is therefore sufficient evidence to document the basic parameters but also to highlight the most important differences.

A remarkable aspect of the migration of retirees to locations in Latin American countries is that the demography seems to resemble what has been documented in other international studies, due to its selective nature, essentially as a result of the single origin of the migrants, mainly North American. Demographic information not always assess potential population changes that may occur in the future. Contributing to this relative lack of knowledge is, among other elements, the limited ability of official sources to detect such subtle and dynamic movement as is seen in retirees, and the ease and flexibility of these movements, which makes it no easy task to 'follow' people. Specific surveys, providing intrinsic value for research, have succeeded in overcoming this limitation, but do not generalize the knowledge of the situation. It is true that these studies have a specific character, dictated by the particular situation of each country and place of settlement analysed. It has been found that the very name of the migrant population types is related to the specific nature of the behaviour of migrants and their economic and social conditions.

Getting over these limitations will be one of the challenges for the coming years, especially in Latin American countries, where the process of retiree mobility is not yet consolidated. Other challenges are related to the conditioning factors (personal,

social, economic, behavioural) that facilitate the mobility of people, to the linkage of their transnational patterns and the resulting tourist travel among their immediate family and social circles, or to the role of national and international players that promote mobility and facilitate the transformation of the destinations. In this area it will be very important to delve into the function of the transmission of information via the companies, which promote retiree resorts, and of the experiences of migrants themselves, or the forming of transnational tourist and residential forms of behaviour. The role of communities of residents in attracting new retirees, and their influence on the local economy and the construction of social organizations should not be forgotten either. Their main effect, also to be studied in the future, will be to channel the interests of retirees towards the local community, cultural and socio-political participation and the recognition of their rights as residents. Social integration, apart from being a target for migrants, is a challenge for research. Ultimately, all these challenges delve into the importance, for future research, of studying the impacts of all kinds of retirement destinations in order to assess the introduction of policies to provide good resource management and coexistence.

References

- Amin, I., and S.R. Ingman. 2010. Retiring in a foreign land: How do the American retirees deal with health care issues in Mexico? *Journal of Aging and Emerging Economies* 2: 22–35.
- Banks, S. 2004. Identity narratives by American and Canadian retirees in Mexico. *Journal of Cross-Cultural Gerontology* 19(4): 361–381. doi:[10.1023/B:JCCG.0000044689.63820.5c](https://doi.org/10.1023/B:JCCG.0000044689.63820.5c).
- Barcus, H.R., and S.D. Brunn. 2010. Place elasticity: Exploring a new conceptualization of mobility and place attachment in rural America. *Geografiska Annaler: Series B, Human Geography* 92(4): 281–295. doi:[10.1111/j.1468-0467.2010.00353.x](https://doi.org/10.1111/j.1468-0467.2010.00353.x).
- Barrantes-Reynolds, M.P. 2011. The expansion of “real estate tourism” in coastal areas: areas: Its behaviour and implications. *Recreation and Society in Africa, Asia and Latin America* 2(1): 51–70.
- Bastos, S. 2014. Territorial dispossession and indigenous rearticulation in the Chapala Lakeshore. In *Contested spatialities, lifestyle migration and residential tourism*, ed. M. Janoschka and H. Haas. London: Routledge.
- Benson, M. 2012. How culturally significant imaginings are translated into lifestyle migration. *Journal of Ethnic and Migration Studies* 38(10): 1681–1696. doi:[10.1080/1369183X.2012.711067](https://doi.org/10.1080/1369183X.2012.711067).
- Benson, M. 2013. Postcoloniality and privilege in new lifestyle flows: The case of North Americans in Panama. *Mobilities* 8(3): 313–330. doi:[10.1080/17450101.2013.810403](https://doi.org/10.1080/17450101.2013.810403).
- Benson, M., and K. O'Reilly. 2009. Migration and the search for a better way of life: A critical exploration of lifestyle migration. *The Sociological Review* 57(4): 608–625. doi:[10.1111/j.1467-54X.2009.01864.x](https://doi.org/10.1111/j.1467-54X.2009.01864.x).
- Bustamante, D.M. 2012. *Amenities migration: A case study on the retired expatriate community in Cuenca, Azuay, Ecuador*. Scripps Senior Theses, Paper 29, 33 p.
- Cadieux, K.V., and P.T. Hurley. 2011. Amenity migration, exurbia, and emerging rural landscapes: Global natural amenity as place and as process. *GeoJournal* 76: 297–302. doi:[10.1007/s10708-009-9335-0](https://doi.org/10.1007/s10708-009-9335-0).
- Casado, M.A., C. Kaiser, and A.M. Warnes. 2004. Northern European retired residents in nine Southern European areas: Characteristics, motivations and adjustment. *Ageing & Society* 24: 353–381. doi:[10.1017/S0144686X04001898](https://doi.org/10.1017/S0144686X04001898).

- Clausen, H.B., and M.A. Velázquez. 2011. En búsqueda del México auténtico. Las comunidades norteamericanas en ciudades turísticas de México. In *Construir una nueva vida. Los espacios del turismo y la migración residencial*, ed. T. Mazón, R. Huete, and A. Mantecón, 61–80. Santander: Milrazones.
- Cretchley, J., D. Rooney, and C. Gallois. 2010. Mapping a 40-year history with Leximancer: Themes and concepts in the journal of cross-cultural psychology. *Journal of Cross-Cultural Psychology* 41(3): 318–328. doi:[10.1177/0022022110366105](https://doi.org/10.1177/0022022110366105).
- Croucher, S. 2009. *The other side of the fence: American migrants in Mexico*. Austin: University of Texas Press.
- Croucher, S. 2012. Privileged mobility in an age of globality. *Societies* 2: 1–13.
- Dixon, D., J. Murray, and J. Gelatt. 2006. *America's emigrants: US retirement migration to Mexico and Panama*. Washington: The Migration Policy Institute.
- Droseltis, O., and V.L. Vignoles. 2010. Towards an integrative model of place identification: Dimensionality and predictors of intrapersonal-level place preferences. *Journal of Environmental Psychology* 30(1): 23–34. doi:[10.1016/j.jenvp.2009.05.006](https://doi.org/10.1016/j.jenvp.2009.05.006).
- Friese, S. 2014. *Qualitative data analysis with ATLAS.ti*, 2nd ed. London: SAGE, 296 p.
- Gárriz, I. 2011. The right to the city as a conceptual framework to study the impact of north–south migration. *Recreation and Society in Africa, Asia and Latin America* 2(1): 3–33.
- Glorioso, R.S. 2009. Toward a strategy for managing amenity migration: The role of multiple future scenarios. *Die Erde* 140(3): 293–315.
- González, L., and A. Torres. 2007. *Mercado inmobiliario para babyboomers: Segunda vivienda y turismo de retirados. Situación Inmobiliaria 2007*. México DF: Servicio de Estudios Económicos/BBVA Bancomer.
- Gosnell, H., and J. Abrams. 2011. Amenity migration: Diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *GeoJournal* 76: 303–322. doi:[10.1007/s10708-009-9295-4](https://doi.org/10.1007/s10708-009-9295-4).
- Gurran, N. 2008. The turning tide. Amenity migration in coastal Australia. *International Planning Studies* 13(4): 391–414. doi:[10.1080/13563470802519055](https://doi.org/10.1080/13563470802519055).
- Gustafson, P. 2006. Place attachment and mobility. In *Multiple dwelling and tourism: Negotiating place, home and identity*, ed. N. McIntyre, D.R. Williams, and K.E. McHugh, 17–31. Cambridge: CABI.
- Gustafson, P. 2007. Transnationalism in retirement migration: The case of North European retirees in Spain. *Ethnic and Racial Studies* 31(3): 451–475. doi:[10.1080/01419870701492000](https://doi.org/10.1080/01419870701492000).
- Gustafson, P. 2011. Roots and routes: Exploring the relationship between place attachment and mobility. *Environment and Behavior* 33(5): 667–686. doi:[10.1177/00139160121973188](https://doi.org/10.1177/00139160121973188).
- Hansson, T., G. Carey, and R. Kjartansson. 2010. A multiple software approach to understanding values. *Journal of Beliefs & Values: Studies in Religion & Education* 31(3): 283–298. doi:[10.1080/13617672.2010.521005](https://doi.org/10.1080/13617672.2010.521005).
- Hayes, M.F. 2013. Una nueva migración económica: el arbitraje geográfico de los jubilados estadounidenses hacia los países andinos. *Boletín del Sistema de Información sobre Migraciones Andinas* 15: 2–13.
- Huete, R., A. Mantecón, and J. Estévez. 2013. Challenges in lifestyle migration research: Reflections and findings about the Spanish crisis. *Mobilities* 8(3): 331–348. doi:[10.1080/17450101.2013.814236](https://doi.org/10.1080/17450101.2013.814236).
- Hunt, H.D. 2008. Viva retirement! Looking south of the border. *Development*, Pub. 1852: 1–5.
- Jackiewicz, E.L., and J. Craine. 2010. Destination Panama: An examination of the migration-tourism-foreign investment nexus. *Recreation and Society in Africa, Asia and Latin America* 1(1): 5–29.
- Janoschka, M. 2009. The contested spaces of lifestyle mobilities: Regime analysis as a tool to study political claims in Latin American retirement destination. *Die Erde* 140(3): 251–274.
- Janoschka, M. 2011. Imaginarios del turismo residencial en Costa Rica. Negociaciones de pertenencia y apropiación simbólica de espacios y lugares: Una relación conflictiva. In *Construir una nueva vida. Los espacios del turismo y la migración residencial*, ed. T. Mazón, R. Huete, and A. Mantecón, 81–102. Santander: Milrazones.

- Janoschka, M. 2013. Nuevas geografías migratorias en América Latina: Prácticas de ciudadanía en un destino de turismo residencial. *Scripta Nova. Revista Electrónica de Geografía y Ciencias Sociales* 7: 439–462.
- Janoschka, M., and H. Haas. 2014. Contested spatialities of lifestyle migration. Approaches and research questions. In *Contested spatialities, lifestyle migration and residential tourism*, ed. M. Janoschka and H. Haas. London: Routledge.
- Jiménez, A.J. 2011. De lo global a lo local: las cadenas hoteleras y la región de Cancún–Riviera Maya. In *Nueva colonización turística: del Mediterráneo a Mesoamérica y El Caribe. Lógicas espaciales del capital turístico*, eds. M. Blázquez and E. Cañada. Turismo Placebo. Managua: EDISA.
- Kiy, R. and A. McEnany. 2010. Tendencias sobre la jubilación de estadounidenses en las comunidades costeras de México. Datos demográficos y prioridades en los estilos de vida. International Community Foundation, U.S. Retirement. *Mexico Research Series*, 20 p.
- Kiy, R., and A. McEnany. 2010b. Los servicios de salud y los estadounidenses que se jubilan en México. International Community Foundation, U.S. Retirement. *Mexico Research Series*, 27 p.
- Kiy, R., and A. McEnany. 2010c. Participación cívica, voluntariado y donativos filantrópicos de los estadounidenses que se retiran en las comunidades costeras de México. International Community Foundation, U.S. Retirement. *Mexico Research Series*, 26 p.
- Kiy, R., and A. McEnany. 2010d. Tendencias sobre la vivienda y los bienes raíces entre los estadounidenses que se retiran en las comunidades costeras de México. International Community Foundation, U.S. Retirement. *Mexico Research Series*, 33 p.
- Kiy, R., and A. McEnany. 2011e. El enverdecimiento de los destinos de retiro de estadounidenses en México: Temas y tendencias emergentes en las comunidades costeras. International Community Foundation, U.S. Retirement. *Mexico Research Series*, 45 p.
- Konopásek, Z. 2008. Making thinking visible with atlas.ti: Computer assisted qualitative analysis as textual practices. *Forum Qualitative Social Research*, 9(2), art. 12.
- Kool, J. 2012. *Residential tourists in Guanacaste, Costa Rica. Who are they, and what is their local involvement?*, 106 p. Barcelona: Alba Sud.
- Lizárraga, O. 2008. La inmigración de jubilados estadounidenses en México y sus prácticas transnacionales. Estudio de caso en Mazatlán, Sinaloa y Cabo San Lucas, Baja California Sur. *Migración y Desarrollo* 1: 97–117.
- Lizárraga, O. 2010. The US citizens retirement migration to Los Cabos, Mexico: Profile and social effects. *Recreation and Society in Africa, Asia and Latin, America* 1(1): 75–92.
- Lizárraga, O. 2012. *La trans migración placentera. Movilidad de estadounidenses a México*. México, D.F: Instituto Politécnico Nacional/Universidad Autónoma de Sinaloa.
- Mantecón, A., and R. Huete. 2009. The value of authenticity in residential tourism. The decision-maker's point of view. *Tourist Studies* 8(3): 359–376. doi:[10.1177/1468797608100656](https://doi.org/10.1177/1468797608100656).
- Matarrita-Cascante, D., and G. Stocks. 2013. Amenity migration to the global south: Implications for community development. *Geoforum* 49: 91–102. doi:[10.1016/j.geoforum.2013.06.004](https://doi.org/10.1016/j.geoforum.2013.06.004).
- McHugh, K.E., and R.C. Mings. 1996. The circle of migration: Attachment to place in Aging. *Annals of the Associations of American Geographers* 86(3): 530–550. doi:[10.1111/j.1467-8306.1996.tb01765.x](https://doi.org/10.1111/j.1467-8306.1996.tb01765.x).
- McWatters, M.R. 2009. *Residential tourism: (De)Constructing paradise*. Bristol/Buffalo/Toronto: Channel View Publications.
- Myers, E.S. 2009. *What becomes of Boquete: Transformation, tension, and the consequences of residential tourism in Panama*. Master thesis, Ohio University.
- O'Reilly, K., and M. Benson. 2009. Lifestyle Migration: Escaping to the good life? In *Lifestyle migration: Expectations, aspirations and experiences*, ed. M. Benson and K. O'Reilly, 198. London: Ashgate.
- Osbaldiston, N. 2012. *Seeking authenticity in place, culture, and the self: The great urban escape*. New York: Palgrave Macmillan.
- Pera, J.L. 2008a. *Tamagringo: Citizenship and community change in Tamarindo, Costa Rica*. Master thesis, University of Oregon.

- Pera, J.L. 2008b. *Amenity migration in the Americas: Population and policy in Costa Rica and Panama*. University of Oregon.
- Phillips, J., N. Walford, and A. Hockney. 2011. How do unfamiliar environments convey meaning to older people? Urban dimensions of placelessness and attachment. *International Journal of Ageing and Later Life* 6(2): 73–102.
- Puga, D. 2001. Un lugar en el sol. Inmigración internacional de jubilados hacia Costa Rica. In *Población del istmo 2000: Familia, migración, violencia y medio ambiente*, ed. L. Rosero, 253–276. San José: Centro Centroamericano de Población.
- Ramboree, K. 2014. Three methods of qualitative data analysis using ATLAS.ti: A posse ad esse. In *ATLAS.ti user conference 2013. Fostering dialog on qualitative methods*, ed. S. Friesse and Thomas G. Ringmayr. Berlin: Technische Universität Berlin.
- Reyes, F.A. 2011. *Exploring multiple modernities. Case study for Granada, Nicaragua. The emergence of a localized modernity in a context of international retirement migration*. Thesis International Master of Science in Rural Development, Wageningen University.
- Rodríguez, V., R. Lardiés and P. Rodríguez. 2010. *Migration and the registration of European pensioners in Spain*. *ARI* 20/2010. http://www.realinstitutoelcano.org/wps/portal/web/rielcano_es/contenido?WCM_GLOBAL_CONTEXT=/elcano/elcano_es/zonas_es/demografia+y+poblacion/ARI20-2010#.VPC5ZIsh9bY. Accessed 24 Nov 2014.
- Rojas, V., H.P. Leblanc, and T.S. Sunil. 2014. US Retirement migration to Mexico: Understanding issues of adaptation, networking, and social integration. *Journal of International Migration & Integration* 15(2): 257–273.
- Scannell, L., and R. Gifford. 2010. Defining place attachment: A tripartite organizing framework. *Journal of Environmental Psychology* 30: 1–10. doi:10.1016/j.jenvp.2009.09.006.
- Schafraan, A., and P. Mönkkönen. 2011. Beyond Chapala and Cancún: Grappling with the impact of American migration to Mexico. *Migraciones Internacionales* 6(2): 223–258.
- Smith, A.E., and M.S. Humphreys. 2006. Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior Research Methods* 38(2): 262–279. doi:10.3758/BF03192778.
- Sotiriadou, P., J. Brouwers, and T.A. Le. 2014. Choosing a qualitative data analysis tool: A comparison of NVivo and Leximancer. *Annals of Leisure Research* 17(2): 218–234. doi:10.1080/1745398.2014.902292.
- Stimson, R.J., and J. Minnery. 1998. Why people move to the “Sun-belt”: A case study of long-distance migration to the gold coast, Australia. *Urban Studies* 35(2): 193–214.
- Sunil, S., V. Rojas, and D. Bradley. 2007. United States’ international retirement migration: The reasons for retiring to the environs of Lake Chapala, Mexico. *Ageing and Society* 27: 489–510. doi:10.1017/S0144686X07005934.
- Topmiller, M., F.J. Conway, and J. Gerber. 2011. US migration to Mexico: Numbers, issues, and Scenarios. *Mexican Studies/Estudios Mexicanos* 27(1): 45–71.
- Torkington, K. 2010. Defining lifestyle migration. *Das Algarve* 19: 99–111.
- Torkington, K. 2014. Lifestyle migrants, the linguistic landscape and the politics of place. In *Contested spatialities, lifestyle migration and residential tourism*, ed. M. Janoschka and H. Haas. London: Routledge.
- Truly, D. 2002. International retirement migration and tourism along the lake Chapala Riviera: Developing a matrix of retirement migration behaviour. *Tourism Geographies* 4(3): 261–281. doi:10.1080/14616680210147427.
- Van Noorloos, F. 2011a. A transnational networked space: Tracing residential tourism and its multi-local implications in Costa Rica. *International Development Planning Review* 33(4): 429–444.
- Van Noorloos, F. 2011b. Residential tourism causing land privatization and alienation: New pressures on Costa Rica’s coasts. *Development* 54(1): 85–90.
- Van Noorloos, F. 2012. *Whose place in the sun? Residential tourism and its implications for equitable and sustainable development in Guanacaste, Costa Rica*. Ph.D. thesis, University of Utrecht.

- Van Noorloos, F. 2013a. Residential tourism and multiple mobilities: Local citizenship and community fragmentation in Costa Rica. *Sustainability* 5: 570–589.
- Van Noorloos, F. 2013b. Un lugar en el sol para quién? El turismo residencial y sus consecuencias para el desarrollo equitativo y sostenible en Guanacaste, Costa Rica. *AlbaSud* 15, 49 p.
- Williams, A., R. King, T. Warnes, and G. Patterson. 2000. Tourism and international retirement migration: New forms of an old relationship in Southern Europe. *Tourism Geographies* 2(1): 28–49. doi:[10.1080/146166800363439](https://doi.org/10.1080/146166800363439).
- Zunino, H., R. Rodrigo, and I. Zebryte. 2014. Utopian lifestyle migrants in Pucón, Chile. Innovating social life and challenging capitalism. In *Contested spatialities, lifestyle migration and residential tourism*, ed. M. Janoschka and H. Haas. London: Routledge.

Chapter 5

Environment, Health and Ageing

George W. Leeson

5.1 Introduction

One of the founding fathers of modern demographic theory, Thomas Malthus, was fundamentally concerned with and about the interaction between population development, human welfare and the environment in as much as he famously argued that unrestrained population growth would be limited by fixed resources and an imbalance between population size and available resources would inevitably (if population remain unchecked) impact negatively on human welfare (Malthus 1798). More than 200 years after Malthus wrote his *Essay on Population*, scientists and policy makers remain concerned about the same interactions.

However, the interaction between population and environment was not always a research focus for demographers. There were (and to some extent this remains true) two reasons for this. Firstly, many demographers have taken the Malthusian line that rapid population growth has a negative impact on natural resources and in true Malthusian fashion these demographers focused their research on determining *how to slow population growth* (fast forward to the Chinese one-child policy). Secondly, some demographers at the other end of the scale believed conveniently that population was not the central cause of environmental problems and therefore not an issue for them to research. By the 1990s, it was becoming increasingly felt that a whole range of other factors (social institutions, market efficiency, technology) were as important at least as population growth.

Whichever one of these three stances is considered, it is striking that demography in relation to environmental impact equates only with population growth. More people more problems with the environment.

G.W. Leeson, Ph.D. (✉)

Oxford Institute of Population Ageing and Oxford Martin School, University of Oxford,
Oxford, UK

e-mail: george.leeson@ageing.ox.ac.uk

Today, population structure and not just size is seen as critical for the impact our demographics around the world have on our environment (Royal Society 2012a).

So today, while population growth remains an issue, the ageing of the population in the more developed world throughout the latter part of the twentieth century and the prospect of continued ageing well into the twenty-first century in these regions as well as an acceleration of ageing in the developing countries of the world has led to social, political and economic concern with regard to a number of ageing population issues—including this demographic development and its link with the environment and human welfare.

In this chapter, we shall consider the relationship between our individual and collective ageing, our health and the environment in which we live.

5.2 The Ageing of Our Populations

The world is ageing—both at an individual and population level—and this ageing produces challenges and opportunities for governments and citizens across the globe (Leeson and Harper 2006, 2007a, b, c, 2008).

At an individual level, life expectancies at birth have increased from 47 years in the mid-twentieth century to 70 years today, and are expected to rise to 76 years by the mid-twenty-first century. At the population level, the proportion of the world's population aged 60 years and over has increased from 8% in the mid-twentieth century to 11 %, and by 2050, it is expected to reach 21 %, equating to two billion people (United Nations 2013). The challenge of increasing longevity has long been an issue of demographic interest, and no less so in more recent years (Leeson 2009a; Vaupel and Kistowski 2005).

The scale of ageing across the globe is truly immense and must surely be regarded as one of the success stories of humankind as more and more people live long, relatively healthy lives (Leeson 2001a). However, this success does not come without some concerns, perhaps, and challenges, most certainly. In addition, different regions of the world—and even different countries within regions—have experienced the demographic ageing of their populations in significantly different ways. For example, the ageing of the populations of Europe began with the so-called demographic transition and this transition from high fertility and mortality to low fertility and mortality lasted for around 150 years giving societies and governments time to address and adjust as their populations transitioned from young to old. The infrastructures in place in the developed world today (long term care services, housing and transport, pensions systems, for example) have been developed accordingly in response to changing demographics and levels of welfare. Elsewhere, and more recently, this transition is not only more dramatic in terms of scale, but also in terms of speed (Khan and Leeson 2008). There is little time to address and adjust, despite the good intentions of governments, and the window of opportunity is closing slowly but surely.

As Europe and North America aged through the twentieth century, the next wave sees the populations of much of Asia ageing in the first decades of the twenty-first

century on an unprecedented scale, driven primarily by rapidly declining fertility. Fertility in the Republic of Korea, for example, has declined in the course of just one generation from almost 3 in 1975–1980 to just 1.3 in 2010–2015 (United Nations 2013). This presents huge challenges to individuals, families, and society as a whole, not least because many of these societies are highly family-based in respect of support for older people. Quite simply, that family is shrinking dramatically and the role of the family is changing likewise (Harper 2004).

As the ageing of populations encompasses the globe, Latin America and the Caribbean, with their own history, culture and traditions, now stand on the brink of their own ageing challenge, and countries are variously prepared or unprepared to take on the challenge (Brea 2003). As well as ageing, the populations of the region have grown and urbanised, increasing strain on infrastructures such as public services, housing, transport, jobs and education. So while a large majority of people in the region live in urban settings, indigenous peoples still remain in rural areas, and there are increasing divides in wealth and the demography of the region and the policies to address the challenges are thus not a one-size fits all—not across the region and not within countries.

This global ageing will undoubtedly impact on the environment and the environment (in its broadest sense) will impact on the ability of these ageing populations to live full and meaningful lives.

5.3 Me and My Environment

Let us first of all consider briefly three dimensions of ageing and the environment before moving to look at the interaction between the environment, health and ageing.

5.3.1 *The Environment in Which the Individual Lives and Ages*

There has been an abundance of research that reveals that most adults *stay put* (Leeson 2001b, 2004, 2006a). Both future and present generations of older people in Denmark note the importance of home and of staying in their present home as they age and even become more frail, which underlines the feeling that services should go to the older person and not vice versa (Leeson 2001b, 2004, 2005).

In other words, housing mobility for most adults is limited, and this has led to one of the major issues associated with the ageing of our populations, namely that older people (and particularly those living on their own after the death of their spouse/partner) are living in unsuitable housing (i.e. too big, inappropriate design) while younger generations struggle to make entry into the housing market. Policy across much of the developed world focused—unsuccessfully—on providing

suitable housing in old age, and the literature is still awash with research on *suitable housing in old age*.

In recent years, the environmental sphere *outside the home* has come into focus, and accessibility of public services and activities has been a key issue. Research now looks for example at the walkability of public areas for people with varying and different disabilities, but the availability of secure and affordable transport is also a component of accessibility. How will we live in the future?

5.3.2 *The Individual's Ageing Health Profile*

Our population health profiles have developed from communicable diseases to non-communicable, chronic, life style diseases. Most of us now face dying of old age in the literal sense even if not in the medical sense. And at the individual level, this impacts on our quality of life and our ability to navigate homes and environments that have not been designed and maintained for an ageing population. How will these health profiles change and how will they impact on our old age? In the 1990s, changes in the ecology of microorganisms led to the increasing frequency of drug-resistant bacteria and parasites and the emergence of new diseases (for example, Olshansky et al. 1997; Levy 1998). Demographers began at the same time to work theoretically on the interaction between demography and the environment (for example, Demeny 1991; McNicoll 1990, 1995), and in recent years this research and the concerns have intensified (Royal Society 2012a).

5.3.3 *Increasing Individual Longevity*

In the more developed world, life expectancies increased in the course of the twentieth century from around 50 years at birth to around 80 years at birth. This has had a huge impact on our families, our communities and our societies, but have we as individuals seriously begun to understand and address our individual longevity? Life expectancies in most of the developing world (outside sub-Saharan Africa) are rapidly catching up with those in the more developed world and the twenty-first century is destined to be the century of centenarians. How will we address these long lives?

5.4 The Environment, Health and Ageing

We could look at a vast range of issues under this rubric, but let us just look at one, namely walkable streets and neighbourhoods. These down-to-earth everyday realities are crucial to the health and wellbeing of every individual regardless of age. For people 75 years old and over with advanced effects of ageing, the specific features

of the pedestrian street environment become especially critical to achieving mobility—to getting out and about, taking exercise and reducing social isolation. The health benefits of regular physical activity for older adults are becoming increasingly evident. Current low levels of physical activity among older adults leave considerable scope for improved physical function with subsequent reductions in health and social care costs. An urban environment that encourages and enables walking in the older population may have an important part to play in health improvement. The links, for example, between regular walking and the prevention of cardiovascular diseases, strokes and mortality are well documented (Sofi et al. 2008; Hamer et al. 2009; Lovasi et al. 2007; Manson et al. 2002; Tanasescu et al. 2002; Hu et al. 2000). However regular walking can have other potential benefits for the older population besides reducing the incidence of physical disease and slowing down loss of functional status. It impacts more broadly on their wellbeing and quality of life. Social isolation may be exacerbated by streets that do not encourage walking (Chappell and Badger 1989), and mobility problems can be associated with depression (Vallee et al. 2011). Other problems in the built environment can lead to older people becoming anxious, fearful, bored, intimidated, confused, embarrassed and lonely (Burton and Mitchell 2006). Barriers to walking that are close to home may discourage older people with mobility problems from leaving their home—what Beard et al. (2009) called a “going outside the home” disability. Dropped kerbs are important for the mobility in the public domain of wheelchair users (Mackett et al. 2008).

Our neighbourhoods—and who lives in them—have apparently a lot to answer for. According to Beard et al. (2009) a series of “negative” neighbourhood and street characteristics were associated with higher prevalence of both physical disability and “going outside the home” disability, and high crime levels were also associated with physical disability.

All this, just to do with walkable streets and neighbourhoods. But as we shall see, manifestly important in terms of our well-being.

So where to start?

A recent Royal Society report has a set of nine eminently sensible and noble recommendations (Royal Society 2012b) for global and national action, so let us return instead to the focus of bringing together the environment, health and ageing. In this focus, we shall look more to the environment as understood in our pre-ambles about walkable streets—in other words our immediate environment, including where and how we live. We shall also consider how health and the environment are linked—how physical activity (or the lack of physical activity) is linked to the environment in which we live and how this then impacts on our health.

And all of this in a demography of ageing and increasing longevity.

5.5 A Look at Health.....and the Rest

The benefits of physical activity on our health and mortality have become an everyday chorus of health specialists and governments wanting to cut back on health care costs. As already pointed out, for people 75 years old and over with advanced effects

of ageing, the specific features of the pedestrian street environment become especially critical to achieving mobility—to getting out and about, taking exercise and reducing social isolation. The health benefits of regular physical activity for older adults are becoming increasingly evident.

Cardiovascular disease (CVD) is responsible for more than 30 % of deaths globally (WHO 2010), and towards the end of the twentieth century, studies provided a relatively large body of evidence linking physical activity and the prevention of CVD (Sesso et al. 1999; Kannel et al. 1986). Similarly, the evidence linking physical activity and the prevention of coronary heart disease (CHD)—which accounts for more than half of CVD deaths—proved to be equally convincing (Sofi et al. 2008). Even on total mortality, physical activity, both regular and infrequent appeared to postpone mortality (Lee et al. 2004).

Physical activity also protects against mental and cognitive decline (Sofi et al. 2010; Hamer et al. 2009). The positive impact of physical activity (even at moderate and infrequent levels) seems unquestionable. But does my environment encourage or discourage me from taking even infrequent and gentle exercise? Am I unable for *environmental reasons* unable to walk that extra mile? Am I even able to get out of my home? Dare I leave my home? That occasional extra mile becomes a marathon perhaps. So what is wrong with our environment that prevents us from engaging in these life-saving and death-delaying activities? Beard et al. (2009) link these negative neighbourhood environmental characteristics with both physical disability and what they call a “going outside the home” disability.

We shall turn to that in the following section, but first there is that little question of obesity. Are our own lifestyles turning that mile into a marathon?

The evidence would suggest so.

The link between television and inactivity and increased risk of obesity has been the subject of research for some time (Ainsworth et al. 1993; Lank et al. 1992; Dietz and Gortmaker 1985; Hu et al. 2001, 2003), and the evidence suggests that watching television leads to a lower metabolic rate than other forms of inactivity such as sewing, reading, writing, driving (Ainsworth et al. 1993) while the exposure to commercials for food results in unhealthy dietary habits (Lank et al. 1992; Dietz and Gortmaker 1985; Hu et al. 2001).

Similarly to the work of Beard et al. (2009) linking neighbourhood environmental characteristics with both physical disability and what they call a “going outside the home” disability, Lovasi et al. (2009) found a link between obesity and the built environment in disadvantaged populations, which was in fact supporting more general evidence of this link (Gordon-Larsen et al. 2006; Reidpath et al. 2002; Frank and Engelke 2001). Lovasi et al. (2009) suggest that increasing access to neighbourhood supermarkets and places to exercise as well as improving neighbourhood safety would reduce obesity-related health disparities, and there is now an understanding that residential neighbourhood resources supportive of physical activity along with access to healthy food choices are likely to impact on the risk of obesity in populations (Larkin 2003; Rao et al. 2007). Rundle et al. (2009) found that food environment is significantly associated with body size net of individual and neighbourhood characteristics and neighbourhood walkability features.

These issues—and many more related issues—will become more relevant as our streets and cities are inhabited by growing numbers of older people. Clearly, health and well-being and the environments in which we live are linked. But can we design and build age and health friendly environments which encourage healthy behaviours—both in respect of physical activity and dietary habits?

5.6 A Look at the Environment...and the Rest

At a time when the ageing of our populations and our own increasing individual longevity has led to increasingly vociferous calls for life-long learning (Leeson 2009b), there now seems to be an additional life-long concept gathering momentum and support, namely life-long streets, or *streets for life* (Burton and Mitchell 2006).

The *streets for life* concept was developed from an interest in the relationships between built environments on the one hand and mental health and cognitive impairment on the other hand, relationships for which there was already a body of research evidence, as outlined above (Sofi et al. 2010; Hamer et al. 2009). Much of the impetus has also come from a move to regarding an individual's disability as a result of environments and products—so-called social model of disability—which has naturally led to a drive to design environments and products which minimise rather than exacerbate any disability. In some sense, this would address the “going outside the home” disability (Beard et al. 2009).

The research and the campaigning from disability groups is taking the action into the streets, into our public spaces and away from our homes, which have been the focus since the concept of *lifetime homes* was developed by the Joseph Rowntree Foundation in the United Kingdom in 1991 (Burton and Mitchell 2006), the idea being that homes should meet the changing needs of families as they age. Also part of the *streets for life* movement is the increasing need for *sustainable communities*, which seek to balance environmental, social and economic issues.

The ageing of our populations makes this lifetime and inclusive and sustainable design even more key to the future of our individual selves and our communities. As already pointed out, the research shows that people want to stay put (and that is often good for them) as they age and as they perhaps become more frail and dependent (Leeson 2001a, 2004, 2006a), but staying put should not mean inactivity and this is where the built environment becomes crucial (Hall and Imrie 1999).

These ideas of environment, health and ageing have witnessed their coming together in *environmental gerontology* (Kendig 2003; Schwarz and Scheidt 2012; Rowles and Bernard 2013). Over recent decades our knowledge of the meaning of place as we age has increased, as has the value of place (Rowles 1991, 2000) and the detrimental value of loss of place (Castle 2001), relating particularly to our home environment and all that that environment entails, including possessions (Ekerdt et al. 2004).

But as the concept of streets for life implies, we do have a life outside our private sphere in the public domain. For some—even in later life—this is a homeless life

(Leeson 2006b, 2011), but for the large majority old age should not mean being out of place, and there is growing drive to design and develop age-friendly neighbourhoods, the importance of which for all kinds of well-being we have outlined above (Abbott et al. 2009; Clark and Glicksman 2012; Lui et al. 2009). The design of our homes is equally important in respect of staying put is concerned, and increasingly technologies are enabling older adults to remain in the homes of their choice without losing their sense and experience of well-being (Leeson 1992, 2010; Hwang et al. 2011).

The final environmental element that we would wish to highlight in relation to population change is that of climate change. A recent report from the UK Government's Foresight programme (Foresight 2011) focuses on the impact of global climate change on migration, and one of the key conclusions of that report is that *"...millions of people will be unable to move away from locations in which they are extremely vulnerable to environmental change..."*.

Urban populations will be particularly vulnerable, and this is a matter of great concern as our global population becomes increasingly urbanised (United Nations 2012) and as large numbers of those urban populations will be older people ageing in place. These older people will be at risk of severe disadvantage, unable to relocate from increasingly hostile urban environments.

By 2050, the world population is expected to increase to almost 9.6 billion, an increase of around 2.3 billion on its current level (United Nations 2013). This global population increase of 2.3 billion is less than the expected increase in the urban population of the world, which is expected to increase by 2.6 billion from its current 3.7 billion. Today, around 51 % of the world populations live in urban settings. This is expected to increase to almost 66 % by 2050. This development poses significant challenges to governments to provide jobs in these urban settings, sufficient and adequate housing (taking into account the issues already raised above), energy and infrastructure. If governments fail in this task, urban poverty and slums will increase and the urban environment will deteriorate.

Among a total of 450 urban areas with at least one million inhabitants today (and this group alone comprises almost 20 % of the world population), 60 % (equating to nearly 900 million people) are located in regions exposed to at least one major risk of natural disaster (United Nations 2012)—mainly outside Europe and Africa.

5.7 Concluding Remarks

The ageing of our populations across the world is truly global—we shall see more and more people living longer and longer lives, and there is scant evidence that low fertility countries will return to replacement level. The twenty-first century is destined to be the last century of youth and the century of centenarians.

Design at home and in public spaces will need to address this ageing as the research evidence is that poorly designed homes and neighbourhoods can lead to a whole range of issues at the individual and societal level, such as poor health, inactivity, crime.

Not only are our populations ageing, they are becoming increasingly urban, with an expected two thirds of the world population living in urban areas by 2050—urban areas that will find it more and more difficult to sustain their populations, and urban areas that in many cases (affecting at least 20 % of the world population) will be at risk of natural hazard, and urban areas most vulnerable in addition to the effects of climate change in both high and low income countries.

In other words, there are potentially large populations who will be living in cities which may not be able to sustain such populations and given the vulnerability of many of these urban areas to climate change, there is a real danger that disadvantaged groups in these populations will become trapped and therefore even more vulnerable to environmental shocks (Foresight 2011).

And so, the ideas of sustainable design, streets for life and smart home technologies need increasingly to address the impacts of climate change—particularly but not exclusively in our growing cities.

The environment, health and ageing are issues that every individual can and must relate to. They are not issues that affect *someone else*.

References

- Abbott, P.S., et al. 2009. *Recreating neighbourhoods for successful aging*. Baltimore: Health Professions Press.
- Ainsworth, B.E., et al. 1993. Compendium of physical activities. *Medicine & Science in Sports & Exercise* 25: 71–80. doi:[10.1249/00005768-199301000-00011](https://doi.org/10.1249/00005768-199301000-00011).
- Beard, J.R., et al. 2009. Neighbourhood characteristics and disability in older adults. *Journal of Gerontology, Social Sciences* 64B(2): 252–257.
- Brea, J.A. 2003. Population dynamics in Latin America. *Population Bulletin* 58(1).
- Burton, E., and L. Mitchell. 2006. *Inclusive urban design: Streets for life*. Oxford: Elsevier.
- Castle, N.G. 2001. Relocation of the elderly. *Medical Care Research and Review* 58(3): 291–333. doi:[10.1177/107755870105800302](https://doi.org/10.1177/107755870105800302).
- Chappell, N.L., and M. Badger. 1989. Social isolation and well-being. *The Journal of Gerontology* 44(5): 169–176. doi:[10.1093/geronj/44.5.S169](https://doi.org/10.1093/geronj/44.5.S169).
- Clark, K., and A. Glicksman. 2012. Age-friendly Philadelphia: Bringing diverse networks together around aging issues. *Journal of Housing for the Elderly* 26: 121–136. doi:[10.1080/02763893.2012.655662](https://doi.org/10.1080/02763893.2012.655662).
- Demeny, P. 1991. Tradeoffs between human numbers and material standards of living. In *Resources, environment and population: Present knowledge, future options*, ed. K. Davis and M.S. Bernstam, 408–421. New York: Oxford University Press.
- Dietz, W.H., and S.L. Gortmaker. 1985. Do we fatten our children at the television set? *Pediatrics* 75: 807–812.
- Ekerdt, D.J., et al. 2004. Household disbandment in later life. *Journal of Gerontology, Social Sciences* 59(5): 265–273. doi:[10.1093/geronb/59.5.S265](https://doi.org/10.1093/geronb/59.5.S265).
- Foresight. 2011. *Migration and global environmental change: Future challenges and opportunities*. London: The Government Office for Science.
- Frank, L.D., and P.O. Engelke. 2001. The built environment and human activity patterns: Exploring the impacts of urban form on public health. *Journal of Planning Literature* 16(2): 202–218. doi:[10.1177/08854120122093339](https://doi.org/10.1177/08854120122093339).
- Gordon-Larsen, P., et al. 2006. Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics* 117(2): 417–424. doi:[10.1542/peds.2005-005](https://doi.org/10.1542/peds.2005-005).

- Hall, P., and R. Imrie. 1999. Architectural practices and disabling design in the built environment. *Environment and Planning B—Planning and Design* 26(3): 409–425. doi:[10.1068/b260409](https://doi.org/10.1068/b260409).
- Hamer, M., E. Stamatakis, and A. Steptoe. 2009. Dose-response relationship between physical activity and mental health: The Scottish Health Survey. *British Journal of Sports Medicine* 43: 1111–1114. doi:[10.1136/bjsm.2008.046243](https://doi.org/10.1136/bjsm.2008.046243).
- Harper, S. 2004. *Families in ageing societies: A multi-disciplinary approach*. Oxford: Oxford University Press.
- Hu, F.B., et al. 2000. Physical activity and risk of stroke in women. *Journal of American Medical Association* 283(22): 2961–2967. doi:[10.1001/jama.283.22.2961](https://doi.org/10.1001/jama.283.22.2961).
- Hu, F.B., et al. 2001. Physical activity and television watching in relation to risk for type 2 diabetes mellitus in men. *Archives of Internal Medicine* 161: 1542–1548. doi:[10.1001/archinte.161.12.1542](https://doi.org/10.1001/archinte.161.12.1542).
- Hu, F.B., et al. 2003. Television watching and other sedentary behaviors in relation to risk of obesity and type 2 diabetes mellitus in women. *Journal of American Medical Association* 289(14): 1785–1791. doi:[10.1001/jama.289.14.1785](https://doi.org/10.1001/jama.289.14.1785).
- Hwang, E., et al. 2011. Impacts of home-modification on aging-in-place. *Journal of Housing for the Elderly* 25(3): 246–257. doi:[10.1080/02763893.2011.595611](https://doi.org/10.1080/02763893.2011.595611).
- Kannel, W.B., et al. 1986. Physical activity and physical demand on the job and risk of cardiovascular disease and death. *American Heart Journal* 112: 820–826. doi:[http://dx.doi.org/10.1016/0002-8703\(86\)90480-1](http://dx.doi.org/10.1016/0002-8703(86)90480-1)
- Kendig, H. 2003. Directions in environmental gerontology: A multidisciplinary field. *The Gerontologist* 43(5): 611–615. doi:[10.1093/geront/43.5.611](https://doi.org/10.1093/geront/43.5.611).
- Khan, H., and G.W. Leeson. 2008. The demography of aging in Bangladesh: A scenario analysis of the consequences. *Hallam International Journal of Aging* 8(1): 1–21. doi:[10.2190/HA.8.1.a](https://doi.org/10.2190/HA.8.1.a).
- Lank, N.H., et al. 1992. Food commercials during television soap operas. *Journal of Community Health* 17: 377–384. doi:[10.1007/BF01323999](https://doi.org/10.1007/BF01323999).
- Larkin, M. 2003. Can cities be designed to fight obesity? *Lancet* 362(9389): 1046–1047. doi:<http://dx.doi.org/10.1177/1466424006070466>
- Lee, I.M., et al. 2004. The ‘weekend warrior’ and risk of mortality. *American Journal of Epidemiology* 160: 636–641. doi:[10.1093/aje/kwh274](https://doi.org/10.1093/aje/kwh274).
- Leeson, G.W. 1992. General and specific aspects of emergency response systems in Denmark. In *Personal response systems: An international report of new home care services*, ed. A.S. Dibner, 41–55. New York: Haworth Press.
- Leeson, G.W. 2001a. Global ageing. *Journal of the Danish Society of Gerontology* 2: 28–30.
- Leeson, G.W. 2001b. *Nye Tider: Nye Ældre*, Ældre Sagens Fremtidsstudie. Copenhagen: Ældre Sagen.
- Leeson, G.W. 2004. *Danish longitudinal future study: 3rd phase results, v. 1 housing*. Copenhagen: DaneAge.
- Leeson, G.W. 2005. *Danish longitudinal future study: 3rd phase results, v. 4 social and familial networks*. Copenhagen: DaneAge.
- Leeson, G.W. 2006a. My home is my castle: Housing in old age: The Danish longitudinal future study. *Journal of Housing for the Elderly* 20(3): 61–75. doi:[10.1300/J081v20n03_05](https://doi.org/10.1300/J081v20n03_05).
- Leeson, G.W. 2006b. *One face of loneliness: Old, homeless and forgotten*. Copenhagen: EGV/Kirkens Korshaer.
- Leeson, G.W. 2009a. Demography, politics and policy in Europe. In *Setting EU priorities 2009*, ed. P. Ludlow, 102–124. Ponte de Lima: The European Strategy Forum.
- Leeson, G.W. 2009b. *Educacao e aprendizagem ao longo da vida*. Lisbon: Forum Gulbenkian de Saude sobre o Envelhecimento.
- Leeson, C. 2010 *People between robots, robots between people* (in Danish). Copenhagen: Anthropology Institute, University of Copenhagen.
- Leeson, G.W. 2011. *12 days without a home: A diary among older homeless people*. Copenhagen: OSI.

- Leeson, G.W., and S. Harper. 2006. *The Global Ageing Survey (GLAS): Attitudes to ageing and later life*, Research report 106. Oxford: Oxford Institute of Ageing, University of Ageing.
- Leeson, G.W., and S. Harper. 2007a. *The Global Ageing Survey (GLAS): Ageing and later life, United Kingdom and Europe*, Research report 107. Oxford: Oxford Institute of Ageing, University of Ageing.
- Leeson, G.W., and S. Harper. 2007b. *The Global Ageing Survey (GLAS): Ageing and later life, the Americas*, Research report 207. Oxford: Oxford Institute of Ageing, University of Ageing.
- Leeson, G.W., and S. Harper. 2007c. *The Global Ageing Survey (GLAS): Ageing and later life, Hong Kong and Asia*, Research report 307. Oxford: Oxford Institute of Ageing, University of Ageing.
- Leeson, G.W., and S. Harper. 2008. *Some descriptive findings from the Global Ageing Survey (GLAS): Investing in later life*, Research report 108. Oxford: Oxford Institute of Ageing, University of Ageing.
- Levy, S.B. 1998. The challenge of antibiotic resistance. *Scientific American* 278(3): 46–55.
- Lovasi, G.S., et al. 2007. Amount of leisure-time physical activity and risk of nonfatal myocardial infarction. *Annals of Epidemiology* 17(6): 410–416. doi:[10.1016/j.annepidem.2006.10.012](https://doi.org/10.1016/j.annepidem.2006.10.012).
- Lovasi, G.S., et al. 2009. Built environments and obesity in disadvantaged populations. *Epidemiol Reviews* 31: 7–20. doi:[10.1093/epirev/mxp005](https://doi.org/10.1093/epirev/mxp005).
- Lui, C.W., et al. 2009. What makes a community age-friendly? A review of international literature. *Australian Journal on Aging* 28(3): 116–121. doi:[10.1111/j.1741-6612.2009.00355.x](https://doi.org/10.1111/j.1741-6612.2009.00355.x).
- Mackett, R.L., K. Achuthan, and H. Titheridge. 2008. AMELIA: making streets more accessible for people with mobility difficulties. *Urban Design International* 13: 81–89. doi:[10.1057/udi.2008.12](https://doi.org/10.1057/udi.2008.12).
- Malthus, T.R. 1798. *An essay on the principle of population as it affects the future improvement of society*. Middlesex: Reprint, Pelican Books (1970).
- Manson, J.E., et al. 2002. Walking compared with vigorous exercise for the prevention of cardiovascular events in women. *New England Journal of Medicine* 347: 716–725. doi:[10.1056/NEJMoa021067](https://doi.org/10.1056/NEJMoa021067).
- McNicoll, G. 1990. Social organisation and ecological stability under demographic stress. In *Rural development and population: Institutions and policy*, ed. G. McNicoll and M. Cain, 147–160. New York: Oxford University Press.
- McNicoll, G. 1995. On population growth and revisionism: Further questions. *Population and Development Review* 21: 307–340.
- Olshansky, S.J., et al. 1997. Infectious diseases: New and ancient threats to world health. *Population Bulletin* 52(2): 1–52.
- Rao, M., et al. 2007. The built environment and health. *Lancet* 370(9593): 1111–1113.
- Reidpath, D.D., et al. 2002. An ecological study of the relationship between social and environmental determinants of obesity. *Health & Place* 8(2): 141–145. doi:[10.1016/S1353-8292\(01\)00028-4](https://doi.org/10.1016/S1353-8292(01)00028-4).
- Rowles, G.D. 1991. Beyond performance: Being in place as a component of occupational therapy. *American Journal of Occupational Therapy* 45(3): 265–271. doi:[10.5014/ajot.45.3.265](https://doi.org/10.5014/ajot.45.3.265).
- Rowles, G.D. 2000. Habituation and being in place. *Occupational Therapy Journal of Research* 20(Special Supplement): 52–67.
- Rowles, G.D., and M. Bernard. 2013. *Environmental gerontology: Making meaningful places in old age*. New York: Springer.
- Royal Society. 2012a. *People and the planet*. London: The Royal Society Science Policy Centre.
- Royal Society. 2012b. *People and the planet: Summary and recommendations*. London: The Royal Society Science Policy Centre.
- Rundle, A., et al. 2009. Neighbourhood food environment and walkability predict obesity. *Environmental Health Perspectives* 117(3): 442–447.

- Schwarz, B., and R.J. Scheidt. 2012. Environmental gerontology (special issue). *Journal of Housing for the Elderly* 26: 1–3.
- Sesso, H.D., et al. 1999. Physical activity and cardiovascular disease risk in middle-aged and older women. *American Journal of Epidemiology* 50: 408–416.
- Sofi, F., et al. 2008. Physical activity during leisure time and primary prevention of coronary heart disease: An updated meta-analysis of cohort studies. *European Journal of Cardiovascular Prevention and Rehabilitation* 15: 247–257. doi:[10.1097/HJR.0b013e3282f232ac](https://doi.org/10.1097/HJR.0b013e3282f232ac).
- Sofi, F., et al. 2010. Physical activity and risk of cognitive decline: A met-analysis of prospective studies. *Journal of Internal Medicine* 269: 107–117. doi:[10.1111/j.1365-2796.2010.02281.x](https://doi.org/10.1111/j.1365-2796.2010.02281.x).
- Tanasescu, M., et al. 2002. Exercise type and intensity in relation to coronary heart disease in men. *Journal of the American Medical Association* 288(16): 1994–2000. doi:[10.1001/jama.288.16.1994](https://doi.org/10.1001/jama.288.16.1994).
- United Nations. 2012. *World urbanisation prospects: 2011 revision*. New York: Department of Economic and Social Affairs, Population Division.
- United Nations. 2013. *World population prospects: The 2012 revision*. New York: Department of Economic and Social Affairs.
- Vallee, J., et al. 2011. The role of daily mobility in mental health inequalities: The interactive influence of activity space and neighbourhood of residence on depression. *Social Science & Medicine* 73(8): 1133–1144. doi:[10.1016/j.socscimed.2011.08.009](https://doi.org/10.1016/j.socscimed.2011.08.009).
- Vaupel, J.W., and K.G. Kistowski. 2005. Broken limits to life expectancy. *Ageing Horizons* 3: 6–13.
- WHO. 2010. *World health statistics 2010*. Geneva: World Health Organisation.

Chapter 6

Adjustments to Physical-Social Environment of the Elderly to Climate Change: Proposals from Environmental Gerontology

Diego Sánchez-González and Rosalía Chávez-Alvarado

6.1 Introduction¹

The elderly population exposed to the natural risks associated to climate change is forecast to rise in the twenty-first century, above all, in developing regions (IPCC 2007; Cutter et al. 2000). The scientific community is warning governments about this, because whenever there is a disaster, like a flood or heat wave, most of the victims are elderly people as they are far more vulnerable (Johnson 2008; Loke et al. 2012; Pekovic et al. 2008), a situation that is made even worse by the fact that only 1 % of humanitarian aid is allocated to this social group (HelpAge 2007).

In Latin America, the climate scenario coincides with the rise of population ageing. It is forecast that by 2050, 25 % of the region's total population will be aged 60 and over, that is to say, 187 million people, a fact which will be aggravated by their exposure to natural hazards (CEPAL 2002). This new demographic and climatic scenario poses important social, economic, health and environmental challenges, which regional and local governments have ignored to date, and provides a challenge for gerontology professionals (Ramírez and Cruz 2010).

Climate change and population ageing are two pressing issues, yet a review of the literature shows that these issues have been addressed on their own (Heller 2003;

¹The research is part of the research project "Environmental gerontology of vulnerable ageing in flood risk areas. Challenges of risk management and gerontology planning in the face of climate change" (No. 155757), Basic Science CONACYT (Mexico).

D. Sánchez-González, Ph.D. (✉)
Faculty of Architecture, Autonomous University of Nuevo León,
Monterrey, Nuevo León, Mexico
e-mail: diego.sanchezgn@uanl.edu.mx

R. Chávez-Alvarado, Ph.D.
School of Architecture, Autonomous University of Nuevo Leon, Monterrey, Mexico
e-mail: rosaliadf@gmail.com

Harvison et al. 2011). Recent studies are starting to relate population ageing and climate change perception, warning that the elderly feel sensitized by future climate effects (Haq et al. 2008), yet broadly speaking, this group does not take any preventive measures, as it believes that it will not be affected in the short term (Haq et al. 2010). Another recommendation is to make the most of elderly people's experience, skills and active participation in volunteer work, and in the upkeep and adaptation of community environments, moving away from the stereotype ideas of a dependent group that is uninterested in climate change (Gibson and Hayunga 2006).

Research is helping us to understand the importance of managing the mounting environmental pressures of urban areas and elderly people's adaptation processes. Yet environmental gerontology has paid little attention to the effects of climate change on population ageing environments. Today, looking for answers entails looking at the elderly's physical-social environment in risk areas, analysing their conditioning factors and dimensions (attributes and functions) to contribute to their management (Kahana et al. 2003; Wahl and Gitlin 2007). We need to find out more about the quality of elderly people's environment to make it easier for them to adapt to the effects of climate change, promoting the pursuit of healthy lifestyles in old age and, generally, in all ages.

This chapter reflects on the elderly's environment in a context of climate change, from the perspective of environmental gerontology. The study provides information about the attributes and functions of the elderly's physical and environments in the face of increasing natural environmental pressures, paying special attention to floods in developing regions such as Latin America and the Caribbean. The methodology consisted in an extensive literature review, placing particular emphasis on quantitative and empirical approaches, as well as on qualitative and non-empirical ones. The results indicate that adapting the attributes and functions of the elderly's physical-social environment promotes prevention strategies and boosts their resilience to climate change. It is proposed that future research contribute to the development of policies aimed at adapting the built, physical and social environment of ageing and reducing their vulnerability.

6.2 Climate Change and Vulnerable Demographic Ageing

Climate change² is bringing new and different environmental pressures, and ways to adapt. More than half of the world's population lives in disaster-prone areas³ that are now a constant source of concern for planners, policy makers and researchers on how people live in risk areas, how they tackle the danger and how to mitigate the direct and indirect effects of the disaster.

Different international institutions (IPCC 2007) have reported on the negative effects of climate change globally, noting its environmental, economic and social

²Climate change is defined as a change in the extent and/or properties state of the climate that persists for an extended period (IPCC 2007).

³Natural hazard-related disasters disrupt social and natural systems (infrastructure damage, drinking water contamination), increasing the potential for transmission of diseases already present in the region (Smith 1999), as well as raising the morbidity and mortality rates of vulnerable groups.

consequences, especially in developing countries, such as the increase in extreme hydro-meteorological events, the rising sea level, heat waves, forest fires, droughts, crop failure, increased public health risks and other direct and indirect damage yet to be estimated. Indeed, the geographical areas most exposed to the climate's effects are developing cities, coastal areas, depressions and those with uneven terrain (Chan et al. 2004; Brouwer et al. 2007; Balcu 2010). Forecasts point to the region facing ever more frequent extreme weather events and heat waves associated with uncontrolled urban growth,⁴ greenhouse gas emissions and further concentration of the vulnerable population (Thomalla et al. 2006; Sánchez-González 2011).

Despite the fact that there is an average of one natural hazard-related disaster a week around the world, prevention awareness remains low (Loke et al. 2012). In developing regions, this situation is exacerbated by rising poverty, limited access to technology and the politicization of risk management (Bankoff 2003). Some experts (Bankoff 2003; Artilles et al. 2012) believe that governments' lack of foresight and limited risk management will have negative social, economic and environmental impacts on the most vulnerable groups, such as children and the elderly.⁵

Risk management mistakes contribute significantly to promoting morbidity and mortality in the elderly. Yet there are no accurate estimates of how much these mistakes cost prevention and health systems in human and material terms. To date, inaccurate disaster assessment methods are based on the quantification of direct, tangible damages (injuries and deaths, damaged housing, food pantries, medicines, infrastructure repair), but ignore the indirect, intangible effects on the elderly (psychological problems, loss of their belongings, impairment of informal dependence support systems, increased insecurity, rising social exclusion).

Some risk management studies (Shultz et al. 2005) reveal the existence of high morbidity and mortality rates among the population aged 60 years old and over, more closely associated with exposure to natural hazards, such as heat waves and flooding. For example, in 2003 the European heat wave caused 35,000 deaths, most of whom were people aged 75 and over (Annan et al. 2009). Similarly, the floods triggered by tropical cyclones and extreme rainfall cause high levels of mortality among this population group (Bangladesh, Honduras, Japan and the United States), associated with drowning, falls and being crushed, as well as burns and electrocution related to the poor state of the dwelling's facilities (electricity, gas) (Chowdhury 1993). For example, after Hurricane Katrina hit the United States in 2005, 74 % of the deaths were people aged 60 and over (Mansilla 2005; Pekovic et al. 2008; Rothman and Brown 2008). In this respect, Yu (2004) indicates that in a climate emergency situation, stress tends to lower the elderly's adaptability, increasing their morbidity and mortality risk. Disasters also often show elderly victims in precarious and unhealthy environments located in risk areas.

⁴It is estimated that in 2050, 70 % of the population of developing countries will live in cities (OCDE 2009).

⁵Forecasts point to a 145 % rise in the population mortality rate associated with climate change effects between 2010 and 2030, this being especially significant in children and the elderly (DARA 2010; McMichael et al. 2006).

Most studies on the ageing population and natural hazards focus on understanding the post-disaster psychological problems such as depression and anxiety (Najarian et al. 2001; Kohn et al. 2005; Neumayer and Plümper 2007; Hoshii et al. 2007). They also evidence that elderly women living alone, with mobility, dependency and social exclusion issues are the group most vulnerable to risks (Smith 2009; Sánchez-González 2009). What has been underlined here is the importance of considering the idiosyncrasies and individual needs of the elderly people affected, avoiding more subjective aspects such as individual attitudes (Phillips et al. 2010).

In climate emergency situations, an elderly person can become far more vulnerable⁶ due to the onset of disease, loss of family support, damage to housing and the neighbourhood, damage to infrastructure (drainage, sewerage, roads, bridges), disruption of basic services (water, electricity) and public services (health, transport), the growing economic crisis and exclusion from humanitarian aid schemes (Shultz et al. 2005). In the same vein, evacuating them poses challenges linked to the physical and social environments, and to elderly people's vulnerability (Webb 2006; Tobin et al. 2007). Different research projects (Lavell 1999; HelpAge 2007) agree on the need to reverse the trend through increased attention and participation of vulnerable elderly people, and to ensure they know about their physical and social environment and strategies for coping in weather emergencies. What's more, making them less vulnerable does not mean setting up special services for them, but instead and essentially ensuring that they have equal access to vital services in their environment (HelpAge 2007).

Adapting an exposed environment can reduce environmental pressures, offsetting the individual's functional limitations (Van der Meer et al. 2008). So being familiar with the environment (housing, neighbourhood) is critical for elderly people's safety and, in general, quality of life (Danziger and Chaudhury 2009), because that is where the opportunities and/or difficulties for aging in place arise in emergency situations, enhancing their resilience⁷ or vulnerability.

⁶Vulnerability is regarded as a decisive factor when studying natural hazards (Cutter et al. 2003; Hutton and Haque 2004; Fekete 2009; Hoof et al. 2011; Appeaning et al. 2011); and can be taken as the level of danger that an elderly person faces of losing their life, property and livelihood system in a possible catastrophe (Neumayer and Plümper 2007). However, any vulnerability analysis entails a certain complexity, tied to the high degree of error in its estimates (Aguirre 2006; Sánchez and Egea 2011). Many authors agree that poverty increases vulnerability in old age through social exclusion (Chakraborty et al. 2005). It has been shown that environmental vulnerability associated with ageing, and derived from the urban environment's dangers (environmental pressures) and personal abilities, is built on socioeconomic and spatial subjectivity factors, so any reductionism limits their understanding (Sánchez-González 2009).

⁷Recent years have seen an upturn in interest in resilience, which is taken to mean the skills, strategies and assets that older adults have to anticipate, withstand and recover from a disaster experience (Sánchez and Egea 2011). Resilience refers to the way that the elderly cope with an extreme event and their ability to adapt to it (Wood et al. 2010), where the physical-social environment is a decisive factor.

6.3 Environmental Gerontology Approaches to the Elderly's Physical and Social Environment in Risk Areas

This section deals with the built, physical and social environment of the elderly exposed to natural hazards from an environmental gerontology approach. Based on the different theoretical and methodological approaches, the section takes another look at environmental attributes and functions so as to help promote safe and friendly environments for the elderly in risk management.

Almost since day one, environmental gerontology has sought to learn about and optimize the relationship between elderly people and their mainly institutionalized environment (residential homes, day centres), which is why more must be known about the community contexts (Kahana et al. 2003; Smith 1999), where the elderly face environmental pressures (architectural barriers, traffic, inaccessible housing, natural hazards) associated with the process of rapid urbanization. Recently, we have begun to understand the complex implications of the non-institutionalized environment (housing, urban space) in the elderly's daily lives, such as the risk of falls and problems of access to facilities and services (Wahl and Gitlin 2007; Phillips et al. 2010; Silva and Gómez-Conesa 2008).

Environmental gerontology has paid little attention to the study of environments threatened by the effects of climate change and their consequences in the elderly population (Byrnes et al. 2007). The lack of knowledge about disaster-prone physical and social environments contributes to the morbidity and mortality of the elderly. Nor have there been enough studies of the physical environment and how the elderly adapt to cope with environmental pressures. Nonetheless, interest in this subject has grown in recent years, revealing that the amount and intensity of attributes present in the environment, especially exposed to natural hazards, are related to the elderly's abilities and behaviour (Humpel et al. 2004), which explains their differing response to a given level of environmental pressure.⁸ Moreover, recent studies (Haq et al. 2010) indicate the extent to which the design of the built environment can support the adaptation processes of elderly people vulnerable to natural hazards. In this respect, the elderly have been found to identify their environment as their home and neighbourhood (Rubinstein and Medeiros 2003; Sánchez-González 2011), from which it follows that the risk management should include a detailed analysis of the attributes and functions of that everyday environment, so as to promote adjustments and enhance the elderly community's adaptation. In some Asian countries it has been found that knowing about the attributes and functions of the physical-social

⁸Old age brings a progressive loss of physical and psychological skills that hinders one's relationship with the environment, which helps to foster a negative perception of the environment's functions and attributes (Robinson and Rosher 2001). Indeed, the study of the elderly's spatial experiences indicates that the maintenance of daily activities promotes an individual's autonomy and adaptive capacities, increasing their perception of wellbeing and their relationship with the environment.

environment makes the elderly less vulnerable,⁹ and this has led to the implementation of housing and neighbourhood design policies that help to reduce environmental pressures and improve their welfare (Wu and Chan 2012; Yen et al. 2012).

A debate has arisen in environmental gerontology between those who advocate sticking to the current approaches, based on their practical application in public policy, and those who prefer scientific approaches for developing new knowledge, either through positivist logic and quantifiable measurements or else through interpretative perspectives focused on the subjective sense of the ageing environment (Schwarz 2012). At this point, we believe that this multidisciplinary field must combine the generation of new knowledge about ageing environments, particularly those exposed to natural hazards, with its practical application, by facilitating its assimilation by activists, professionals and civil servants.

Knowing about the ageing environment's attributes and functions can help improve risk management, by adjusting the environments and changing the elderly's abilities (strategies and assets) to adapt to climate change (Harvison et al. 2011). This entails conducting a comprehensive analysis of the relationship between the elderly and potentially hostile environment: starting with the attributes and functions of the built, physical and social environments through empirical and quantitative approaches, rather than empirical and qualitative ones; and continuing by assessing the elderly person's physical and psychological characteristics, as a vulnerable or resilient subject.¹⁰ Based on previous studies (Kahana et al. 2003), knowledge about the main attributes (accessibility, safety, privacy and orientation) and environmental functions (stimulation, support and maintenance) is reoriented to facilitate the design of safe environments that enhance the elderly's adaptive capacities during prevention, evacuation and mitigation phases.

6.3.1 Attributes of the Physical and Social Environment of Elderly People in Risk Areas

There follows a description of the key attributes of elderly people's physical-social environment from the risk management perspective (Figs. 6.1 and 6.2), the most studied attributes being accessibility, security and control (Pikora et al. 2003).

⁹Environmental gerontology has addressed environmental elements from empirical-quantitative approaches, proving that each attribute and function has a distinctive role (Kahana et al. 2003), and from non-empirical and qualitative approaches, indicating that they can be determined and prioritized by a subjective perception (Carp and Carp 1982). Thus, the environment's attributes and functions determine the elderly's site creation, adaptation, behaviour and action processes (Wahl and Glitin 2007). Through empirical research, Wahl and Weisman (2003) have found that the planned residential environment and residential decisions serve to offer the elderly maintenance, stimulation and support functions that can counteract potential environmental pressures.

¹⁰The vulnerable elderly take a docile and determinist attitude to environmental pressures (Lawton and Nahemow 1973), whereas resilient elderly are proactive, that is to say, they establish adaptation strategies and manage their assets to transform their environment, contributing to their security and risk management.

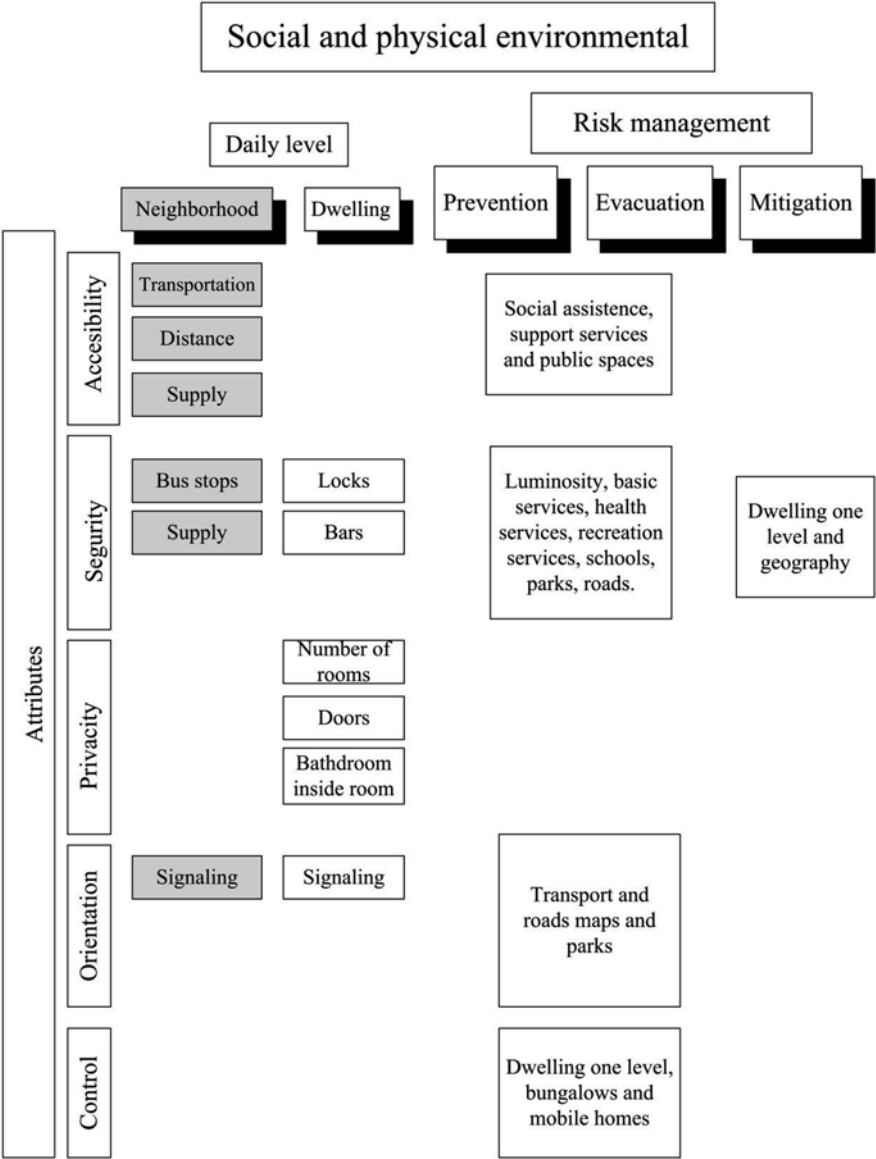


Fig. 6.1 Elderly environment attributes that contribute to risk management (Source: Author)

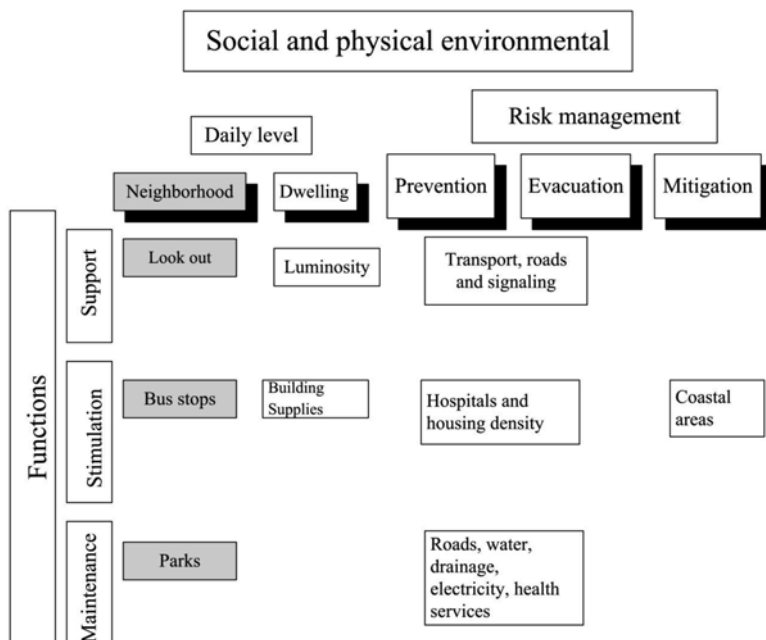


Fig. 6.2 Functions of the elderly's environment that contribute to risk management (Source: Author)

6.3.2 Accessibility

Accessibility is one of the best-known attributes of the elderly's environment and expresses the degree to which people access a place, or use a service or object, regardless of their abilities. This attribute is essential in climate emergency situations, as it conditions evacuation and distribution of humanitarian aid. Elderly people's accessibility issues have been confirmed to make them more vulnerable, and raise their morbidity and mortality rates, during disasters (Peek et al. 2012; Tolea et al. 2012). It is precisely in humanitarian contingencies that the elderly find it hardest to get help and aid (HelpAge 2007), on account of the limited prevention and support schemes,¹¹ the lack of professional training, and the elderly's own physical and psychological limitations.

Whether or not a building can be used as a shelter for the elderly hinges on its degree of accessibility. In some Asian countries such as Japan, public policies are in place to ensure that neighbourhoods are designed properly, by improving

¹¹ The region has been found to lack enough means of transport (boats, ambulances, adapted public transport) to evacuate dependent elderly population in risk areas. The frequent disasters show that the evacuation systems used, such as unadapted public transport and private vehicles used for cargo, are highly precarious.

accessibility to services and facilities (day care centres, public spaces), and to make it easier for the elderly to adapt in dangerous situations (Inoue et al. 2011; Wu and Chan 2012). Prevention planning necessarily involves analyzing possible evacuation routes and the time they take (Jonkman et al. 2009; Fekete 2009). One recommendation is that shelters should be less than 16 km away (Kar and Hodgson 2008), and that hospitals should not be more than 60 min away. Public transportation has also been found to be essential for accessing health services, social relationships and leisure practices, and is a decisive means of transport in the evacuation phase (Cvitkovich and Wister 2001); even so, its use is conditioned by how it is perceived throughout the neighbourhood (Kahana et al. 2003). Another important aspect of accessibility is proximity to relatives and friends, especially in the elderly's neighbourhood (Sugiyama et al. 2009; Sánchez-González 2009). This factor favours social relationships and exchange of informal help, which is crucial in the evacuation and mitigation phases.

6.3.3 *Safety*

An important attribute of risk management is safety, which refers to the absence of danger in a place. A safe environment is regarded as one that the elderly perceives as safe through their spatial experience and details in their memory, favouring their autonomy, orientation and privacy (Rowles and Bernard 2013). Certain elements of a place's geography are relevant to the over 60s perception of safety¹² and more so in their neighbourhood, like there being bus stops and train stations, self-service stores, clinics and hospitals, plazas and public parks,¹³ as well as being close to their relatives' and friends' homes (Gold and Goodey 1989; Humpel et al. 2004; Walker and Burningham 2011). Dangerous environments are generally associated with of citizen insecurity issues, generated by the mixture of land uses and social activities that the elderly consider unpleasant, such as alcohol sales and the existence of vacant lots (Bonnes et al. 2010; Jong et al. 2011), whereas other weather hazards such as floods and heat waves attract less attention, which increases their vulnerability (Haq et al. 2010).

Housing and the neighbourhood should be considered whenever analysing an environment's safety, and is an important residential satisfaction parameter (Kahana et al. 2003). The height of buildings contributes to the environment's safety in dangerous situations such as floods, and it is precisely bungalows and mobile homes

¹²The elderly's perception of safety is tied to gender and acceptance of activities in the environment (Jirovec et al. 1985) which is why these variables must be considered in risk management (Humpel et al. 2004).

¹³Green areas are urban facilities that promote everyday life and trigger a sense of safety because they allow the recreational activities and, especially, social relations (Culp 2011), that are essential for facilitating informal support in the case of an emergency. These amenities also have direct positive effects on health, fatigue and stress (Jong et al. 2011), and green areas absorb water, decreasing the height and duration of floods. However, the lack of maintenance of these amenities generates insecurity, through the build up of waste and sources of infection (dengue), as well as promoting crime and violence (Bonnes et al. 2010).

that are most prone to damage as they are so low and fragile (Walker and Burningham 2011). Experts, such as Jonkman et al. (2009), recommend designing two or more storey buildings in risk areas to prevent the death of elderly people and mitigate material losses (household goods, documentation, medications, pets). In the same vein, other studies agree that the bathroom is where most elderly people fall down in their homes, so accessible design (handrails, removal of architectural barriers) is decisive to ensure their safety and prevent falls (Lök and Akin 2013), especially in emergency situations.

In disaster contexts, the elderly's safety is determined by access to basic amenities,¹⁴ such as drinking water, electricity, gas, sewerage and drainage (Byrnes et al. 2007). Indeed, interventions in the physical and social environments of emergencies,¹⁵ such as shelters and hospitals (Chaudhury et al. 2009; Blanke and McGrady 2012), can help make the service work better and lower stress levels, reducing incorrect care for the elderly displaced after a disaster.

6.3.4 Control

This attribute is related to the safety and refers to environmental conditions that enhance or decrease the ability of autonomy of older adults to achieve personal changes, needs and goals in life (Rowles and Bernard 2013). Controlling the environment helps to mitigate negative feelings and cope with critical events (disasters), and is related to vulnerability and resilience (Gibbs et al. 1998). Likewise, this attribute is determined by the degree of local knowledge. In emergency situations, the elderly are forced to leave their residential environment and travel to unknown or seldom frequented places such as shelters, which limits their personal

¹⁴After a disaster, it takes at least 5 L of drinking water per person per day to cover basic needs (drinking, hygiene and nutrition). Emergency services (hospitals, shelters) also need drinking water to meet different diverse needs (hospitalization, surgery, food, cleaning) (Rodríguez and Terry 2002). Similarly, cuts in basic services such as clean water and electricity, increase morbidity and mortality in this group (Callaghan et al. 2007). For example, an environment's lighting conditions are associated with falls among the elderly (Lök and Akin 2013). Power cuts in homes, hospitals and shelters make it impossible to use the electrical appliances (artificial lighting, refrigerators, medical instruments) that are essential for caring for the elderly. Additionally, the more than likely power failures mean that shelters and hospitals need to be designed better, using natural light (large windows) and better spatial organization (removing architectural barriers, adapting spaces) (Andersson 2011).

¹⁵Different studies (Joseph 2006; Joseph and Rashid 2007) emphasize the importance of creating built physical environments for providing health care to elderly and dependent people. Yet few studies have analyzed the quality of emergency environments (shelters, and field hospitals), assessed how environmental factors impacts on nursing staff's health, or volunteers' effectiveness and mistakes. Errors in the delivery of humanitarian aid have been found to increase during natural disasters, on account of the hard work, lack of coordination and design of unsuitable environments (lighting problems, noise, crowding), which leads to physical and psychological implications (fatigue, stress) among emergency unit personnel.

autonomy and can trigger anxiety and depression (Stokols and Shumaker 1982; Brouwer et al. 2007).

Creating suitable spaces for identifying and providing immediate care to the dependent elderly will improve the control of this population at risk (Dyer et al. 2006). Shelters can accommodate elderly people with dementia and other psychological pathologies requiring special attention, as well as informal caregivers who need professional support (Burnett et al. 2008). In this regard, using photographs has been proven to make it easier for elderly dependent people to get acquainted with their environment; while proper use of lighting and colour in buildings and using photographs and cards with names enhances the personal autonomy and use of spaces by people with dementia, facilitating prevention (Gross et al. 2004).

6.3.5 Privacy

Privacy refers to the possibility of having a place of personal, undisturbed privacy (Wahl and Gitin 2007). The dimensions of the environment (bedrooms, bathrooms) determine the privacy and stimulation of the elderly (Kahana et al. 2003). Andersson (2011) mentions that separated rooms increases this attribute and is associated with residential satisfaction, which is why it has an influence on health.

The lack of privacy in shelters and hospitals is associated with overcrowding, which contributes to stress among the elderly (Stokols et al. 2002). The elderly also tend to perceive a loss of privacy and intimacy in residential homes and their relatives' homes, and this negatively impacts their welfare (Robinson and Rosher 2001). Having doors and a bathroom in their room provides privacy and raises their self-esteem, avoiding potential problems such as noise, infections¹⁶ and falls (Rojo et al. 2000; Lök and Akin 2013).

6.3.6 Orientation

This refers to the environment's attribute that enables one to locate and recognize one's surroundings, enhancing the elderly's spatial orientation through environmental points of reference, a decisive aspect in emergency situations.

In public and private settings, appropriate spatial distribution and signs allow the elderly to get their bearings, minimizing the risk of becoming disoriented and wandering around. These environments are especially important among frail, dependent elderly who have mobility and wandering disorders, because they promote their

¹⁶ In Peru and Latin America in general, many hospitals lack appropriate infrastructure and fail to adopt the infection control measures required during epidemics such as tuberculosis, meaning that they spread among health personnel and vulnerable patients, such as older adults (Del Castillo et al. 2009).

orientation and stimulate their motor activity, essential in emergency situations. The location of green areas can also serve as prevention landmarks, since they are positive elements of their daily lives that contribute to orientation, and can serve as evacuation points (Bonnes et al. 2010).

Evacuation maps and routes make it easier to locate and move the affected population to safe areas and shelters, yet their usefulness hinges on the elderly knowing and being able to interpret them. Not knowing prevention signs in risk areas has negative effects on evacuation, hindering aid and increasing vulnerability (Burnett et al. 2008), which is why experts recommend standardizing prevention signs and, above all, ensuring the population, especially vulnerable groups, are familiar with them.

6.3.7 Functions of the Elderly's Physical-Social Environment in Risk Areas

In turn, the main functions of the elderly's physical-social environment are described from the risk management perspective, with stimulation being the most closely analysed in the literature.

6.3.8 Stimulation

Stimulation is the physical-social environmental function that helps the elderly to engage in activities, improving their ability to cope with environmental pressures (Wahl and Gitlin 2007). This function is related to environments that encourage creativity, free expression and performing activities that contribute to improving autonomy and well-being in old age, but the degree of stimulation of an environment varies in line with the subject's abilities.¹⁷

An environment's aesthetic value is relevant to residential satisfaction, and to maintaining one's personal skills (Carp and Carp 1982; Jirovec et al. 1985). Proximity to public squares and parks fosters social relations and sports activities, which enhances one's autonomy and ability to adapt to the environment (Pikora et al. 2003). Yet the existence of unstimulating environments (architectural barriers, noise, bad smells) discourages people from engaging in activities and undermines well-being in old age (Kahana et al. 2003). In the same sense, a climatic event can turn a residential environment into an unstimulating environment, undermining the elderly's resilience, independence and family and social behaviour (Wahl and Weisman 2003; Brooks et al. 2005). For example, coastal areas are stimulating environments where the elderly find it easier to live together peacefully, yet in a disaster they are seen as dangerous and unstimulating environments (Walker and Burningham 2011).

¹⁷ Cognitively impaired individuals can find certain environments complex and stressful, even though other individuals find them stimulating (Kahana et al. 2003).

During an evacuation, a stimulating environment facilitates knowledge of the neighbourhood's landmarks, enhances the elderly's social relations and autonomy, increasing their strategies for adapting to unfamiliar situations and environments (shelters) and the sense of safety (Owen et al. 2004; Andersson 2011). So evacuating the elderly is easier when they are satisfied with the service received in shelters and hospitals (Claver et al. 2013).

6.3.9 Support

Support is the environmental function used to offset the individual's limited or lost abilities (Wahl and Gitlin 2007). The environment's design fosters supports the ageing population's use of spaces and amenities, and is decisive in emergency situations.

Building usability into the design of environments (shelters and hospitals) encourages the use of spaces and services and makes it easier to evacuate and look after the elderly. In cities with warm and bright climates, visual comfort in public spaces has been found to depend on adaptations of natural light (direct, diffuse, reflected) (Guzowski 2000; Córina and Pattini 2012), which supports or restricts the mobility of elderly pedestrians. The use of ramps and adapted furniture also makes spaces and amenities easier to use, which favours prevention. Indeed, accessible public transport benefits the mobility of dependent and disabled elderly people (Arma 2006).

During evacuation and mitigation phases, the informal help of relatives and friends is often relevant for elderly people, especially those who live alone, are disabled and dependent. With the loss of human life, the grief phase is a time when the elderly are accompanied and supported by their community. Likewise, the presence of security and emergency forces promotes formal aid and a sense of safety among the elderly, while making them less reluctant to evacuate their endangered home (Pikora et al. 2003).

6.3.10 Maintenance

Maintenance is a physical and social environmental function that suggests changes to maintain people's capabilities and lead their life independently (Rowles and Bernard 2013). The maintenance function is crucial in old age, because dynamism decreases in this stage of life (retirement) and a trend toward physical inactivity occurs. This function can also be modified by changes in the environment (Wahl and Weisman 2003).

Disasters make environments dangerous and limit the maintenance function, which can have negative consequences on the elderly's welfare. It is necessary to foster environments that promote the maintenance of the elderly's skills, which will

boost the success of prevention measures and their safety, reducing pharmaceutical and dependency-related expenditure. In this respect, the health service provides personal care and support that foster maintenance and autonomy among the elderly (Rothman and Brown 2008).

The maintenance function is deemed necessary in all phases of risk management, because the elderly need their physical and mental skills to respond independently to a natural hazard. Therefore, different experts agree on the need to increase awareness of the environment to promote the maintenance of daily activities in old age, the importance of which is reflected in the health and independence of the elderly, helping to improve adaptation strategies (Phillips et al. 2010).

6.4 Discussion and Conclusions

Natural hazard-related disasters are part of everyday life in developing regions such as Latin America and the Caribbean, while in developed regions they are regarded as exceptional events, despite the fact that crude figures begin to contradict that belief and confirm that they are more and more vulnerable to climate change.

The twenty-first century has commenced in a context of climate uncertainty and demographic ageing that society must tackle through social policies and prevention programmes backed by research, especially since it has been found that elderly people face an increased risk of morbidity and mortality. The few studies on the vulnerable elderly's environment in natural hazard areas are more descriptive than analytical, and have been conducted from the risk management perspective, referring to the three phases for coping with the danger: prevention, evacuation and mitigation (Burnett et al. 2008; Pekovic et al. 2008; Rothman and Brown 2008; Johnson 2008). In this regard, environmental gerontology should contribute to overcome the theoretical and methodological limitations associated with addressing the analysis of the physical built environment and its changing interactions with the elderly (Schwarz 2012). Today experts argue about the dominant theoretical approaches, acknowledging a certain amount of criticism towards the dominant positivist approach and the need to address the physical environment as an essential element in ageing (Wahl and Glitin 2007; Wahl and Oswald 2010; Sánchez-González 2015).

From the gerontological viewpoint, there is no evidence of studies linking its theoretical models with the new climate change challenges. So far, its approach has been limited to the environmental elements that contribute to the elderly's welfare where hazardous environments are absent. Hence the present and future knowledge of environmental gerontology needs to be adapted to the risk management field. In this regard, the literature shows methodological limitations based on cross-sectional designs that make it harder to understand the dynamics of ageing environments in a risk context, and to establish causal inferences. Indeed, longitudinal research could help explain the effects of climate uncertainty on changes in elderly people's health and lifestyles in areas exposed to danger. Longitudinal approaches would also make it easier to generate data, whose shortage still conditions the assessment and management of the social, economic, political and environmental imbalances that

remain to be tackled (Brooks et al. 2005). Similarly, direct damage assessments are limited to data regarding certain diseases and injuries, as well as types of causes of death in this age group (Cutter et al. 2000; Jonkman et al. 2009), excluding other pathologies and indirect effects that ought to be studied. That is why natural hazard assessments must be based on appropriate spatial and time scales to ensure that the endangered environment is analysed properly,¹⁸ helping to reduce the unwanted effects of improvised risk management.

One of the most controversial and complex aspects of analysing the attributes and functions of natural hazards-prone physical-social environments has to do with the elderly's perception, which is determined by their individual attitudes (Carp and Carp 1982; Kahana et al. 2003; Phillips et al. 2010) and their sense of community (Kearney 2006; Peace et al. 2006; Cram et al. 2012). It has also been found that elderly people can change their individual responses to and involvements in their environment (Schwarz 2012), making it harder for professionals to diagnose them and manage risks. That subjective difference between space and place in ageing has been mentioned (Stokols¹⁹ 1995; Stokols and Shumaker 1982; Rowles and Bernard 2013), yet gerontological research needs to become more involved with threatened environments.

Exposure to natural hazards affects elderly people's ability to adapt to and recover their environments. This group's influences lower resilience impacts the chronic disaster mitigation process (Van Der Meer et al. 2008). The elderly's adaptive capacities and opportunities to change their environment and improve their welfare expectations are limited to, a fact that is exacerbated by social exclusion, disability and dependency issues (Rojo et al. 2000; Phillipson 2002; Sánchez-González 2009). Future research should aim to consider the objective and subjective aspects of ageing's environmental needs, giving priority to addressing the relevant issues of the elderly's ability to adapt to disadvantaged and changing environments. At the same time, it is important to help to ensure that professionals, the elderly and their families play an active role in drawing up prevention plans, designing safe environments (shelters, hospitals, nursing homes, homes, neighbourhoods) and in the appropriate redistribution of humanitarian aid.

Today we are starting to understand that environmental variables, like spatial organization, lighting, temperature, sound and level of accessibility to help and basic amenities, condition the different phases of risk management, such as prevention, evacuation and mitigation. Likewise, studying the attributes and functions of the elderly's physical-social environment is providing the answers needed to reduce the factors that directly and indirectly contribute to errors in risk management before, during and after a disaster. For example, access to basic amenities, such as drinking water, is vital for the vulnerable elderly population because it determines

¹⁸Byrnes et al. (2007) stress the importance of including physical-social environment analysis tools that make it easier for planners and politicians to define the environment and understand socio-spatial interactions with the elderly, not to mention identify the everyday and extraordinary problems they face in their neighbourhoods, such as floods.

¹⁹Stokols (1995) refers to the interpretive transaction to explain the variation and importance of the elderly's feelings about the place, which makes it more complicated to assess their perception of the environment's attributes and functions, and risk management.

morbidity and mortality statistics (Cutter et al. 2003; Hutton and Haque 2004; Fekete 2009; Hoof et al. 2011; Appeaning et al. 2011).

In recent years, the steady influx of professionals such as architects, geographers and designers, has triggered new approaches to the attributes and functions of the elderly's built physical environment, through new tools (geographic information systems, environmental sensors and virtual reality) that are providing answers to the problem. However, today one of the great challenges of environmental gerontology remains to become a consolidated branch of gerontology through a multidisciplinary and interdisciplinary approach to the physical and social environment of ageing. No doubt, a comprehensive understanding of the ageing environment will be a key part of professionals' training and an essential factor in providing friendly spaces for the elderly people and, in general, for society as a whole. In the same way, answering the fascinating enigmas one comes across when studying the attributes and functions of the elderly's built physical environment and social environment will let us improve risk management in response to the effects of climate change, which cause social upheaval and can dramatically alter their environment.

Latin America urgently needs to understand and link the climate and demographic scenarios to one another, so as to pay more attention to elderly people and their hazard-prone environments. In the coming years, as the region's population ages faster in a context of climate change, governments will have to respond more actively, while environmental gerontology professionals will have to pay greater attention to this crucial issue.

It is time to accept that natural hazards are unpredictable to some extent. Yet a disaster is not a natural fate that one has to accept and assume as part of our human reality and condition. While the development of societies can minimize human error and technical failure, the truth is they cannot be neglected, because in a human contingency there is no absolute security. Once again, we forget about our human frailty as we are immersed in a society that is absorbed by consumption, and ageing in increasingly unpredictable climatic environments, and towards which no effort should be spared.

References

- Aguirre, Benigno E., and Jesús Manuel Macías. 2006. Las inundaciones de 1999 en Veracruz y el paradigma de la vulnerabilidad. *Revista Mexicana de Sociología* 68(2): 209–230.
- Andersson, Jonas E. 2011. Architecture for the silver generation: Exploring the meaning of appropriate space for ageing in a Swedish municipality. *Health and Place* 17: 572–587. doi:[10.1016/j.healthplace.2010.12.015](https://doi.org/10.1016/j.healthplace.2010.12.015).
- Annan, K., N. Desai, J. Egeland, S. Huq, A. Merkl, R. Pachauri, J. Rockstrom, J. Sachs, H. Schellnhuber, B. Stocking, K. Topfer, M. Wahlstromand, and W. Fust. 2009. *Human impact report: Climate change. The anatomy of a silent crisis*. Geneva: Global Humanitarian Forum.
- Appeaning Addo, K., Ll. Larbi, B. Amisigo, and P. Kwabena Ofori-Danson. 2011. Impacts of coastal inundation due to climate change in a CLUSTER of urban coastal communities in Ghana, West Africa. *Remote Sensing* 3(9): 2029–2050. doi:[10.3390/rs3092029](https://doi.org/10.3390/rs3092029).

- Arma, Iuliana. 2006. Earthquake risk perception in Bucharest. *Romania Risk Analysis* 26(5): 1223–1234.
- Artiles Dora, María, and Sangabriel Alejandra Samantha. 2012. Construyendo la vulnerabilidad: un riesgo para todos. *Arquitectura y Urbanismo* 33(2): 68–78.
- Balcu, Cosmin-Laurentiu. 2010. Environmental influence on natural and anthropogenic disasters. *Revista Academiei Fortelor Terestre NR* 59(3): 383–387.
- Bankoff, Greg. 2003. Constructing vulnerability: The historical, natural and social generation of flooding in Metropolitan Manila. *Disaster* 27(3): 224–238.
- Blanke, Sandra J., and Elizabeth McGrady. 2012. From hot ashes to a cool recovery: Reducing risk by acting on business continuity and disaster recovery lessons learned. *Home Health Care Management Practice* 24(2): 73–80. doi:[10.1177/1084822311425537](https://doi.org/10.1177/1084822311425537).
- Bonnes, Mirilia, Paola Passafaro, and Giuseppe Carrus. 2010. The ambivalence of attitudes toward urban green areas: Between pro environmental worldviews and daily residential experience. *Environmental and Behavior* 43(2): 207–232. doi:[10.1177/0013916509354699](https://doi.org/10.1177/0013916509354699).
- Brooks, Nick, W. Neil Adger, and P. Mick Kelly. 2005. The determinants of vulnerability and adaptive capacity at the national level and the implications for adaptation. *Global Environmental Change* 15: 151–163. doi:[10.1016/j.gloenvcha.2004.12.006](https://doi.org/10.1016/j.gloenvcha.2004.12.006).
- Brouwer, Roy, Akter Sonia, Brander Luke, and Haque Enamul. 2007. Socioeconomic vulnerability and adaptation to environmental risk: A case study of climate change and flooding in Bangladesh. *Risk Analysis* 27(2): 313–326. doi:[10.1111/j.1539-6924.2007.00884.x](https://doi.org/10.1111/j.1539-6924.2007.00884.x).
- Burnett, Jason, Carmel B. Dyer, and Sabrina Pickins. 2008. Rapid needs assessments for older adults in disasters. *Generations* 31(4): 10–15.
- Byrnes, Mary, Peter A. Lichtenberg, and Cathy Lysack. 2007. Environmental press, aging in place, and residential satisfaction of urban older adults. *Journal of Applied Social Science* 23(2): 50–77. doi:[10.1177/19367244062300204](https://doi.org/10.1177/19367244062300204).
- Callaghan, W., A. Sonja, D.J. Rasmussen, D.J. Jamieson, S.J. Ventura, S.L. Farr, P.D. Sutton, T.J. Mathews, B.E. Hamilton, K.R. Shealy, D. Brantley, S.F. Posner, et al. 2007. Health concerns of women and infants in times of natural disasters: Lessons learned from Hurricane Katrina. *Matern Child Health Journal* 11(4): 307–311. doi:[10.1007/s10995-007-0177-4](https://doi.org/10.1007/s10995-007-0177-4).
- Carp, F.M., and A. Carp. 1982. Ideal residential areas. *Research on Aging* 4(4): 411–439. doi:[10.1177/0164027582004004001](https://doi.org/10.1177/0164027582004004001).
- CEPAL. 2002. *Vulnerabilidad sociodemográfica: viejos y nuevos riesgos para comunidades, hogares y personas*. Santiago de Chile: División de Población de la CEPAL/CELADE.
- Chakraborty, Jayajit, Graham A. Tobin, and Burrell E. Montz. 2005. Population evacuation: Assessing spatial variability in geophysical risk and social vulnerability to natural hazards. *Natural Hazards Review* 6(1): 23–33. doi:[10.1061/\(ASCE\)1527-6988\(2005\)6:1\(23\)](https://doi.org/10.1061/(ASCE)1527-6988(2005)6:1(23)).
- Chan Ngai, Weng, Nor Azazi Zakaria, Aminduddin Ab Ghani, and Tan Yen Lian. 2004. *Integrating Official and Traditional Flood Hazard Management in Malaysia*, 1st international conference on managing rivers in the 21st century: Issues & Challenges, Rivers, 04.
- Chaudhury, H., A. Mahmood, and M. Valente. 2009. The effect of environmental design on reducing nursing errors and increasing efficiency in Acute Care Settings: A review and analysis of the literature. *Environment and Behavior* 41(6): 755–786. doi:[10.1177/0013916508330392](https://doi.org/10.1177/0013916508330392).
- Chowdhury, A.M.R. 1993. The Bangladesh cyclone of 1991: Why so many people died. *Disasters* 17(4): 291–304. doi:[10.1111/j.1467-7717.1993.tb00503.x](https://doi.org/10.1111/j.1467-7717.1993.tb00503.x).
- Claver, Maria, Aram Dobalian, Jacqueline J. Fickel, Karen A. Ricci, and Melanie Horn Mallers. 2013. Comprehensive care for vulnerable elderly veterans during disasters. *Archives of Gerontology and Geriatrics* 66(1): 205–213. doi:[10.1016/j.archger.2012.07.010](https://doi.org/10.1016/j.archger.2012.07.010).
- Córica, M.L., and A.E. Pattini. 2012. Estudio del factor ambiental luz natural en recintos urbanos de climas soleados, a partir de métricas de usabilidad de los espacios. XXXV Reunión de trabajo de Asociación Argentina de Energías Renovables y Ambiente. Rosario, Argentina: Asociación Argentina de Energías Renovables y Ambiente.
- Cram, Jane M., Hanna M. Van Dijk, and Anna P. Nieboer. 2012. The importance of neighborhood social cohesion and social capital for the well being of older adults in the community. *The Gerontologist* 53(1): 142–152. doi:[10.1093/geront/gns052](https://doi.org/10.1093/geront/gns052).

- Culp, Robert. 2011. Relocate then renovate: An empirical analysis of the role of environmental attributes in the home improvement decision. *Journal of Housing Research* 20(1): 53–66.
- Cutter, Susan L., Jerry T. Mitchell, and Michael S. Scott. 2000. Revealing the vulnerability of people and places: A case study of Georgetown county, South Carolina. *Annals of the Association of American Geographers* 90(4): 713–737. doi:[10.1111/0004-5608.00219](https://doi.org/10.1111/0004-5608.00219).
- Cutter, Susan L., Bryan J. Boruff, and W. Lynn Shirley. 2003. Social vulnerability to environmental hazards. *Social Science Quarterly* 84(2): 242–261. doi:[10.1111/1540-6237.8402002](https://doi.org/10.1111/1540-6237.8402002).
- Cvitkovich, Yuri, and Andrew Wister. 2001. The importance of transportation and prioritization of environmental needs to sustain well-being among older adults. *Environ Behav* 33(6): 809–829. doi:[10.1177/00139160121973250](https://doi.org/10.1177/00139160121973250).
- Cvitkovich, Yuri, and Andrew Wister. 2002. Bringing in the life course: A modification to Lawton's ecological model of aging. *Hallym International Journal of Aging* 4(1): 15–30. doi:[10.2190/L3LK-GD09-522R-7U22](https://doi.org/10.2190/L3LK-GD09-522R-7U22).
- Danziger, S., and H. Chaudhury. 2009. Older adults' use of adaptable design features in housing units: An exploratory study. *Journal of Housing for the Elderly* 23(3): 134–148. doi:[10.1080/02763890903035498](https://doi.org/10.1080/02763890903035498).
- DARA. 2010. *Climate vulnerability monitor 2010: The state of the climate crisis*. Cairns: DARA.
- de Jong, Kim, Maria Albin, Erik Skärbäck, Patrick Grahn, John Wadbro, Juan Merlo, and Jonas Björk. 2011. Area-aggregated assessments of perceived environmental attributes may overcome single-source bias in studies of green environments and health: Results from a cross-sectional survey in southern Sweden. *Environmental Health* 10(4): 11.
- Del, Castillo, H.A. Mendoza-Ticona, J.C. Saravia, and J.G. Somocurcio. 2009. Epidemia de tuberculosis multidrogo resistente y extensivamente resistente a drogas (TB MDR/XDR) en el Perú: situación y propuestas para su control. *Revista Peruana de Medicina Experimental y Salud Pública* 26(3): 380–386.
- Dyer, C., N.A. Festa, B. Cloyd, M. Regev, J.G. Schwartzberg, J. James, A. Khaime, L. Poythress, M. Vogel, J. Burnett, E.E. Seaton, N.L. Wilson, J. Edwards, S. Mitchell, M. Dix, et al. 2006. *Recommendations for best practices in the management of elderly disaster victims*. Houston: Baylor College of Medicine and the American Medical Association.
- Fekete, A. 2009. Validation of a social vulnerability index in context to river-floods in Germany. *Natural Hazards and Earth System Sciences* 9(2): 393–403.
- Gibbs, John J., M. Charles Puzzanchera, Kathleen J. Hanrahan, and Dennis Giever. 1998. The influence of personal safety and other environmental concerns on sense of control and emotional well-being. *Criminal Justice and Behavior* 25(4): 403–425. doi:[10.1177/0093854898025004001](https://doi.org/10.1177/0093854898025004001).
- Gibson, M., and M. Hayunga. 2006. *We can do better: Lessons learned for protecting older persons in disasters*. Washington, DC: AARP.
- Gold, John R., and Brian Goodey. 1989. Environmental perception: The relationship with age. *Progress in Human Geography* 13(99): 99–106.
- Gross, Jennifer, Mary E. Harmon, Rebecca A. Myers, Rachel L. Evans, Natalie R. Kay, Senez Rodriguez-Charbonier, and Thomas R. Herzog. 2004. Recognition of self among persons with dementia: Pictures versus names as environmental supports. *Environmental and Behavior* 36(3): 424–454. doi:[10.1177/0013916503262536](https://doi.org/10.1177/0013916503262536).
- Guzowski, M. 2000. *Daylighting for sustainable design*. New York: McGraw-Hill.
- Haq, G., J. Whitelegg, and M. Kohler. 2008. *Growing old in a changing climate: Meeting the challenges of an ageing population and climate change*. Stockholm: Stockholm Environment Institute.
- Haq, G., D. Brown, and S. Hards. 2010. *Older people and climate change: The case for better engagement*. Stockholm: Stockholm Environment Institute.
- Harvison, T, R. Newman, and B. Judd. 2011. *Ageing, the built environment and adaptation to climate change* (Discussion Paper, Node 3). Sydney: University of New South Wales.
- Heller, Peter S. 2003. *Who will pay? Coping with aging societies, climate change, and other long-term fiscal challenges*. Washington: International Monetary Fund.

- HelpAge International. 2007. *Personas mayores en desastres y crisis humanitarias: líneas directrices para la mejor práctica*. HelpAge International, UNHCR, United Nations, High Commissioner For Refugees.
- Hoshii, Tatsuhiko, Tsutomu Nishiyama, and Kota Takahashi. 2007. Influence of the great earthquake in the Chuetsu district on patients managing urination with clean intermittent self-urethral catheterization. *International Journal of Urology* 14: 875–878. doi:[10.1111/j.1442-2042.2007.01833.x](https://doi.org/10.1111/j.1442-2042.2007.01833.x).
- Humpel, Nancy, Alison L. Marshall, Eva Leslie, Adrian Bauman, and Neville Owen. 2004. Changes in neighborhood walking are related to changes in perceptions of environmental attributes. *Annals of Behavioral Medicine* 27(1): 60–67. doi:[10.1207/s15324796abm2701_8](https://doi.org/10.1207/s15324796abm2701_8).
- Hutton, David, and C. Emdad Haque. 2004. Human vulnerability, dislocation and resettlement: adaptation processes of river-bank erosion-induced displacees in Bangladesh. *Disasters* 28(1): 41–62. doi:[10.1111/j.0361-3666.2004.00242.x](https://doi.org/10.1111/j.0361-3666.2004.00242.x).
- Inoue, Shigeru, Yumiko Ohya, Yuko Odagiri, Tomoko Takamiya, Masamitsu Kamada, Shinpei Okada, Kohichiro Oka, Yoshinori Kitabatake, Tomoki Nakaya, James F. Sallis, and Teruichi Shimomitsu. 2011. Perceived neighborhood environment and walking for specific purposes among elderly Japanese. *Journal of Epidemiology* 21(6): 481–490. doi:[10.2188/jea.JE20110044](https://doi.org/10.2188/jea.JE20110044).
- IPCC. 2007. *Impacts, adaptation and vulnerability, contribution of working group II to the fourth assessment report of the intergovernmental panel on climate change*. Cambridge: Cambridge University Press.
- Jirovec, Ronald L., Mary Marmoll, and Raymond Bosse. 1985. Residential satisfaction as a function of micro and macro environmental conditions among urban elderly men. *Research on Aging* 7(4): 601–616. doi:[10.1177/0164027585007004006](https://doi.org/10.1177/0164027585007004006).
- Johnson, Glenn S. 2008. Environmental justice and Katrina: A senseless environmental disaster. *The Western Journal of Black Studies* 32(1): 42–52.
- Jonkman, Sebastian N., Bob Maaskant, Ezra Boyd, and Marc Lloyd Levitan. 2009. Loss of life caused by the flooding of New Orleans after hurricane Katrina: Analysis of the relationship between flood characteristics and mortality. *Risk Analysis* 29(5): 676–698. doi:[10.1111/j.1539-6924.2008.01190.x](https://doi.org/10.1111/j.1539-6924.2008.01190.x).
- Joseph, A. 2006. *The impact of the environment on infections in healthcare facilities*. Concord: The Center for Health Design.
- Joseph, A., and M. Rashid. 2007. The architecture of safety: Hospital design. *Current Opinion in Critical Care* 13(6): 714–719. doi:[10.1097/MCC.0b013e3282f1be6e](https://doi.org/10.1097/MCC.0b013e3282f1be6e).
- Kahana, Eva, Loren Lovegreen, Boaz Kahana, and Michael Kahana. 2003. Person, environment, and person environment fit as influences on residential satisfaction of elders. *Environ Behav* 35(3): 434–453. doi:[10.1177/0013916503035003007](https://doi.org/10.1177/0013916503035003007).
- Kar, Bandana, and Michael E. Hodgson. 2008. A GIS-based model to determine site suitability of emergency evacuation shelters. *Transaction in GIS* 12(2): 227–248. doi:[10.1111/j.1467-9671.2008.01097.x](https://doi.org/10.1111/j.1467-9671.2008.01097.x).
- Kearney, Anne R. 2006. Residential development patterns and neighborhood satisfaction : Impacts of density and nearby nature. *Environmental and Behavior* 38(1): 112–139. doi:[10.1177/0013916505277607](https://doi.org/10.1177/0013916505277607).
- Kohn, Robert, Itzhak Levav, Irma Donaíre García, Miguel E. Machuca, and Rita Tamashiro. 2005. Prevalence, risk factors and aging vulnerability for psychopathology following a natural disaster in a developing country. *International Journal of Geriatric Psychiatry* 20(9): 835–841. doi:[10.1002/gps.1369](https://doi.org/10.1002/gps.1369).
- Lavell, A. 1999. *Gestión de riesgos ambientales urbanos*. Facultad Latinoamericana de Ciencias Sociales y La Red de Estudios Sociales en Prevención de Desastres en America Latina-LA RED. <http://www.desenredando.org>. Accessed 08 Sept 2014.
- Lawton, M.P., and L. Nahemow. 1973. Ecology and the aging process. In *The psychology of adult development and aging*, ed. C. Eisdorfer and M.P. Lawton. Washington, DC: American Psychology Association.

- Lök, Neslihan, and Belgin Akin. 2013. Domestic environmental risk factors associated with falling in elderly. *Iranian Journal Public Health* 42(2): 120–128.
- Loke Alice, Yuen, Lai Claudia KY, and Fung Olivia Wai Man. 2012. At-home disaster preparedness of elderly people in Hong Kong. *Geriatric Gerontology International, Social Research, Planning and Practice* 12: 524–531. doi:[10.1111/j.1447-0594.2011.00778.x](https://doi.org/10.1111/j.1447-0594.2011.00778.x).
- Mansilla, Elizabeth. 2005. Katrina, Stan y Wilma: tres desastres en busca de un paradigma. *Revista El Cotidiano* 134: 11–19.
- McMichael, A.J., R.E. Woodruff, and S. Hales. 2006. Climate change and human health: Present and future risks. *Lancet* 367(9513): 859–869. doi:[10.1016/S0140-6736\(06\)68079-3](https://doi.org/10.1016/S0140-6736(06)68079-3).
- Najarian, L.M., A.K. Goenjian, D. Pelcovitz, F. Mandel, and B. Najarian. 2001. The effect of relocation after a natural disaster. *Journal of Traumatic Stress* 14(3): 511–526. doi:[10.1023/A:1011108622795](https://doi.org/10.1023/A:1011108622795).
- Neumayer, Eric, and Thomas Plümper. 2007. The gendered nature of natural disasters: The impact of catastrophic events on the gender gap in life expectancy, 1981–2002. *Annals of the Association of American Geographers* 97(3): 551–566. doi:[10.1111/j.1467-8306.2007.00563.x](https://doi.org/10.1111/j.1467-8306.2007.00563.x).
- OCDE. 2009. *Pensions at a glance: Retirement income systems in OECD countries*. Paris: OCDE.
- Owen, Neville, Nancy Humpel, Eva Leslie, Adrian Bauman, and James F. Sallis. 2004. Understanding environmental influences on walking: Review and research agenda. *American Journal Preventive Medicine* 27(1): 67–76. doi:[10.1016/j.amepre.2004.03.006](https://doi.org/10.1016/j.amepre.2004.03.006).
- Peace, Sh., C. Holland, and L. Kellaher. 2006. *Placing the self. Environment and identity in later life*. Maidenhead: Open University Press/McGraw-Hill Education.
- Peek, M. Kristen, Bret T. Howrey, Rafael Samper Terrent, Laura A. Ray, and Kenneth J. Ottenbacher. 2012. Social support, stressors, and frailty among older Mexican American adults. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 67(6): 755–764. doi:[10.1093/geronb/gbs081](https://doi.org/10.1093/geronb/gbs081).
- Pekovic, V., L. Seff, and M.B. Rothman. 2008. Planning for and responding to special needs of elders in natural disasters. *Generations* 31(4): 37–41.
- Phillips David, R., Kevin H.C. Cheng, Anthony G.O. Yeh, and Siu Oi-Ling. 2010. Person–environment (P–E) fit models and psychological well-being among older persons in Hong Kong. *Environment and Behavior* 42(2): 221–242. doi:[10.1177/0013916509333426](https://doi.org/10.1177/0013916509333426).
- Phillipson, C. 2002. Ageism and globalization: Citizenship and social rights in transnational settings. In *Cultural gerontology*, ed. L. Andersson, 45–59. Westport, Connecticut: Auburn House.
- Pikora, Terri, Giles-Corti Billie, Bull Fiona, Jamrozik Konrad, and Donovan Rob. 2003. Developing a framework for assessment of the environmental determinants of walking and cycling. *Social Science & Medicine* 66(8): 1693–1703. doi:[10.1016/S0277-9536\(02\)00163-6](https://doi.org/10.1016/S0277-9536(02)00163-6).
- Ramírez, Nohora Aydee, and Alba Lucía Cruz. 2010. Escenario conceptual para la formulación de política pública en vejez y envejecimiento. *Tendencia Retos* 15: 83–94.
- Robinson, Sherry B., and Richard B. Rosher. 2001. Effect of the “half-full aging simulation experience”: Medical students’ attitudes. *Gerontology & Geriatrics Education* 21(3): 3–12. doi:[10.1300/J021v21n03_02](https://doi.org/10.1300/J021v21n03_02).
- Rodríguez, Armando, and Terry Blanca. 2002. Guía práctica para la fase de emergencia en caso de desastres y poblaciones desplazadas. *Revista Cubana de Higiene y Epidemiología* 40(2): 112–120.
- Rojo, Fermina, Gloria Fernández-Mayoralas, and Enrique Pozo. 2000. Envejecer en casa: los predictores de la satisfacción con la casa, el barrio y el vecindario como componentes de la calidad de vida de los mayores en Madrid. *Revista Multidisciplinaria de Gerontología* 10(4): 222–233.
- Rothman, Marc, and Lisa M. Brown. 2008. The vulnerable geriatric casualty: medical needs of frail older adults during disasters. *Generations* 31(4): 16–20.
- Rowles, G.D., and M. Bernard. 2013. The meaning of place in residential and public spaces. In *Environmental gerontology. Making meaningful places in old age*, ed. G.D. Rowles and M. Bernard, 3–24. New York: Springer Publishing Company.

- Rubinstein, Robert L., and Kate De Medeiros. 2003. Ecology and the aging self. In *Annual review of gerontology and geriatrics: focus on aging in context: socio-physical environments*, ed. Wahl, Hans-Werner, Rick J. Scheidt, and Paul G. Windley, 23: 59–83. Nueva York: Springer.
- Sánchez-González, Diego. 2009. Environmental context and spatial experience of aging in place: The case of Granada. *Papeles de Población* 15(60): 175–213.
- Sánchez-González, Diego. 2011. *Geografía del envejecimiento y sus implicaciones en Gerontología. Contribuciones geográficas a la Gerontología Ambiental y el envejecimiento de la población*. Saarbrücken: Editorial Académica Española.
- Sánchez-González, Diego. 2015. Physical and social environment and aging from Environmental gerontology and geography. Socio-spatial implications in Latin America. *Revista de Geografía Norte Grande* 60: 93–110.
- Sánchez-González, Diego, and Carmen Egea. 2011. Social Vulnerability approach to investigate the social and environmental disadvantages. Its application in the study of elderly people. *Papeles de Población* 27(69): 151–185.
- Schwarz, Benyamin. 2012. Environmental gerontology: What now? *Journal of Housing for the Elderly* 26((1–3): 4–19. doi:[10.1080/02763893.2012.673374](https://doi.org/10.1080/02763893.2012.673374).
- Shultz, James M., Jill Russell, and Zelde Espinel. 2005. Epidemiology of tropical cyclones: The dynamics of disaster, disease, and development. *Epidemiologic Reviews* 27: 21–35. doi:[10.1093/epirev/mxi011](https://doi.org/10.1093/epirev/mxi011).
- Silva, Gama, Andréa Zenewton, and Gómez-Conesa Antonia. 2008. Risk factors for falls in the elderly: Systematic review. *Revista Saúde Pública* 42(5): 946–956. doi:[10.1590/S0034-89102008000500022](https://doi.org/10.1590/S0034-89102008000500022).
- Smith, G. 1999. *National environmental health forum monographs, counter disaster series No. 1-loods: An environmental health practitioner's emergency management guide*. Canberra: Department of Health Services, National Environmental Health Forum, Australian Government.
- Smith, E.A. 2009. *Ageing in urban neighbourhoods: Place attachment and social exclusion*. Bristol: The Policy Press-University of Bristol.
- Stokols, Daniel. 1995. The paradox of environmental psychology. *American Psychologist* 50: 821–837. doi:[10.1037/0003-066X.50.10.821](https://doi.org/10.1037/0003-066X.50.10.821).
- Stokols, Daniel, and Sally Ann Shumaker. 1982. The psychological context of residential mobility and well-being. *Journal of Social Issues* 38(3): 149–171. doi:[10.1111/j.1540-4560.1982.tb01776.x](https://doi.org/10.1111/j.1540-4560.1982.tb01776.x).
- Stokols, Daniel, Chip Clitheroe, and Mary Zmuidzinas. 2002. Qualities of work environments that promote perceived support for creativity. *Creativity Research Journal* 14(2): 137–147. doi:[10.1207/S15326934CRJ1402_1](https://doi.org/10.1207/S15326934CRJ1402_1).
- Sugiyama, Takemi, Catharine Ward Thompson, and Susana Alves. 2009. Associations between neighborhood open space attributes and quality of life for older people in Britain. *Environ Behav* 41(1): 3–21. doi:[10.1177/0013916507311688](https://doi.org/10.1177/0013916507311688).
- Thomalla, Frank, Downing Tom, Spanger-Siegfried Erika, Han Guoyi, and Rockström Johan. 2006. Reducing hazard vulnerability: Towards a common approach between disaster risk reduction and climate adaptation. *Disaster* 30(1): 39–48. doi:[10.1111/j.1467-9523.2006.00305.x](https://doi.org/10.1111/j.1467-9523.2006.00305.x).
- Tobin, Graham A., Linda M. Whiteford, Eric C. Jones, and Arthur D. Murphy. 2007. Chronic Hazard: Weighing risk against the effects of emergency evacuation from Popocatepetl, Mexico. Proceedings of the applied geography conference. [http://libres.uncg.edu/ir/uncg/f/E_Jones_Chronic_2007\(MULTI%20UNCG%20AUTHORS\).pdf](http://libres.uncg.edu/ir/uncg/f/E_Jones_Chronic_2007(MULTI%20UNCG%20AUTHORS).pdf). Accessed 09 Sept 2014.
- Tolea, Magdalena I., Luigi Ferrucci, Paul T. Costa, Kimberly Faulkner, Caterina Rosano, Suzanne Satterfield, Hilda N. Ayunayon, and Eleanor M. Simonsick. 2012. Personality and reduced incidence of walking limitation in late life: Findings from the health, aging, and body composition study. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 67(6): 712–719. doi:[10.1093/geronb/gbs001](https://doi.org/10.1093/geronb/gbs001).
- Treana, Wu., and Angelique Chan. 2012. Families, friends, and the neighborhood of older adults: Evidence from public housing in Singapore. *Journal of Aging Research* 2012: 7. doi:[10.1155/2012/659806](https://doi.org/10.1155/2012/659806).

- Van Der Meer, Marieke, Fortuijn Joos Droogleever, and Thissen Frans. 2008. Vulnerability and environmental stress of older adults in deprived neighbourhoods in the Netherlands. *Tijdschrift voor Economische en Sociale Geografie* 99(1): 53–64. doi:[10.1111/j.1467-9663.2008.00439.x](https://doi.org/10.1111/j.1467-9663.2008.00439.x).
- van Hoff, J., H.S.M. Kort, P.G.S. Rutten, and M.S.H. Duijnste. 2011. Ageing-in-place with the use of ambient intelligence technology: Perspectives of older users. *International Journal of Medical Informatics* 80: 310–331. doi:[10.1016/j.ijmedinf.2011.02.010](https://doi.org/10.1016/j.ijmedinf.2011.02.010).
- Wahl, H.W., and L.N. Gitlin. 2007. Environmental Gerontology. In *Encyclopedia of Gerontology*, 494–501. Economic Press.
- Wahl, Hans-Werner, and Oswald Frank. 2010. Environmental perspectives on ageing. In *The SAGE handbook of social gerontology*, ed. Dannefer Dale and Phillipson Chris, 111–123. London: SAGE Publications.
- Wahl, Hans-Werner, and Gerald D. Weisman. 2003. Environmental gerontology at the beginning of the new millennium: Reflections on its historical, empirical, and theoretical development. *The Gerontologist* 43(5): 616–627. doi:[10.1093/geront/43.5.616](https://doi.org/10.1093/geront/43.5.616).
- Walker, Gordon, and Kate Burningham. 2011. Flood risk, vulnerability and environmental justice: evidence and evaluation of inequality in a UK context. *Crit Soc Pol* 31(2): 216–240. doi:[10.1177/0261018310396149](https://doi.org/10.1177/0261018310396149).
- Webb, J.J. 2006. *Vulnerability to flooding in Columbia County, PA: The role of perception and experience among the elderly*. Binghamton: State University of New York at Binghamton.
- Wood, Nathan J., Christopher G. Burton, and Susan L. Cutter. 2010. Community variations in social vulnerability to Cascadia-related tsunamis in the U.S. Pacific Northwest. *Natural Hazards* 52: 369–389. doi:[10.1007/s11069-009-9376-1](https://doi.org/10.1007/s11069-009-9376-1).
- Yen, Irene H., Janet K. Shim, Airin D. Martínez, and Judith C. Barker. 2012. Older people and social connectedness: How place and activities keep people engaged. *Journal of Aging Research* 2012: 10. doi:[10.1155/2012/139523](https://doi.org/10.1155/2012/139523).
- Yu, B.P. 2004. Hormesis and intervention of aging. *Geriatrics and Gerontology International* 4(1): 81–83. doi:[10.1111/j.1447-0594.2004.00158.x](https://doi.org/10.1111/j.1447-0594.2004.00158.x).

Part II

Aging and the Urban Environments

Chapter 7

Urban Environment, Health and Ageing in Latin America

María Victoria Zunzunegui

7.1 Introduction

The concept of disability has evolved from a biomedical perspective with an individual-centred approach to an interdisciplinary perspective ranging from biology and medicine to geography, urban planning, sociology and even environmental sciences with a focus on interactions between the environment and the individual. In recent decades, numerous studies have sought to identify the neighbourhood or district characteristics that influence health, and some of these studies have focused specifically on the characteristics that can have an impact on disability in elderly people. Based on this research, the WHO identifies residential environments as places amenable to intervention to reduce disability and promote policies designed to increasing security, equitable access to services, and environments that foster social integration and physical activity.

This chapter aims to examine scientific evidence regarding neighbourhood effects that positively and negatively influence disability among the elderly and apply this knowledge to the neighbourhoods of Latin American cities.

The first part of this chapter examines the concepts and theoretical models of disability and physical and social environment. The second part reviews the evidence on environmental influences, primarily the neighbourhood's characteristics, on elderly people's disability. Part three presents our research results on these topics in two Latin American cities. We conclude with some recommendations on how to achieve districts or neighbourhoods that provide opportunities for older people to age actively, that is, safely, with social participation and health.

M.V. Zunzunegui, Ph.D. (✉)
Department of Preventive and Social Medicine, University of Montreal,
Montreal, QC, Canada
e-mail: maria.victoria.zunzunegui@umontreal.ca

7.2 Disability Models

Disability can be defined as a restriction in performing activities of daily living or social roles that arises from the interaction between the physical and social environment and the individual's characteristics including, among other factors, his or her physical, sensory and mental functional capacity.

Reaching this definition has involved examining some key references, of which we would quote Verbrugge and Jette's model, the WHO model, operationalized in the international classification of functioning, disability and health, and finally the model proposed by Balfour and Glass, which integrates the urban environment into disability.

7.2.1 *The Verbrugge and Jette Model*

Verbrugge and Jette (1994) based themselves on Nagi's work to establish the disability process. This process consists of a main road, represented by a temporal sequence that runs from pathology to deficiency, to the functional limit and ends in disability (Nagi 1976). Pathologies are disorders that have been diagnosed as an illness, injury or congenital malformation. Deficiencies are alterations caused by the pathology and can lead to the individual suffering a physical, mental or sensory malfunction. This malfunction or functional limitation triggers a disability to carry out the activities (or tasks) of daily living. The disability can be serious enough to make the individual need somebody else to help them, in other words, to create a dependence in daily life.

The main road from pathology to disability is modified by factors external to the individual, that is, their built and social environment, and internal factors, related to psychological issues and coping mechanisms. The disability process has its starting point and is determined by an individual's life course, the risk factors accumulated throughout their life, including living conditions during childhood, adulthood and old age, sex and gender, social class at every stage of life, labour and environmental exposures and health habits. Finally, the process is dynamic, i.e., there are aggravations and improvements, and sometimes the function can be recovered once lost.

Figure 7.1 displays an adaptation of Verbrugge and Jette's disability model (Verbrugge and Jette 1994), with an emphasis on the life course's importance. Verbrugge and Jette's original model considered the risk factors for chronic disorders. We have extended this concept to exposures throughout the life course, because today we know that most of the chronic conditions underlying disability originate in intrauterine privation, in social class throughout life and in one's gender.

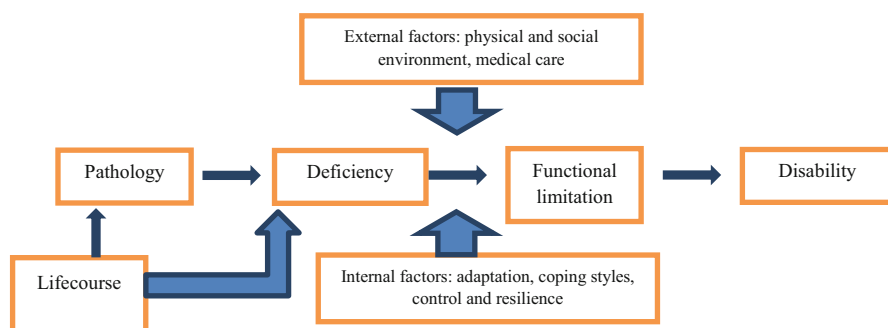


Fig. 7.1 Verbrugge and Jette's disability process model, modified by the authors to include exposures during the life course (Source: Author)

7.2.2 WHO Model

The WHO Model describes three stages after the pathology, illness or disorder: deficiency, disability and handicap. The term deficiency designates a physiological or anatomical alteration that affects a structure. Disability indicates a loss of the ability to perform certain activities and finally, handicap is used to designate the restriction in social roles that comes from the previous stages of the process. This model is important because it has been used to establish the international classification of impairments, disabilities and handicaps (WHO 1998), which was later modified to give the International Classification of functioning, disability and health (ICF), incorporating notions of activity and participation and differentiating individual or personal factors from environmental factors. Activity limitations refer to restrictions in performing an activity that is considered normal, while limits on participation relate to restrictions in real life situations that arise from the activity limitations. Figure 7.2 displays the ICF model.

7.2.3 Glass and Balfour Model

The environmental characteristics that can influence a person's health and functional capacity, and finally their level of disability, can be physical or of a social nature. The literature on the physical and social contextual determinants of elderly people's health, performance and, finally, disability is spread out among several disciplines and is not well integrated into the different stages of the disability process. By way of example, let's consider air pollution, which can cause asthma attacks or worsen a chronic respiratory disease, but also make it much harder to breathe for someone with respiratory disorders, to the extent that they cannot move even the very small distance it takes them to perform activities of daily living. Therefore the disease results in capacity losses that in turn lead to disability and

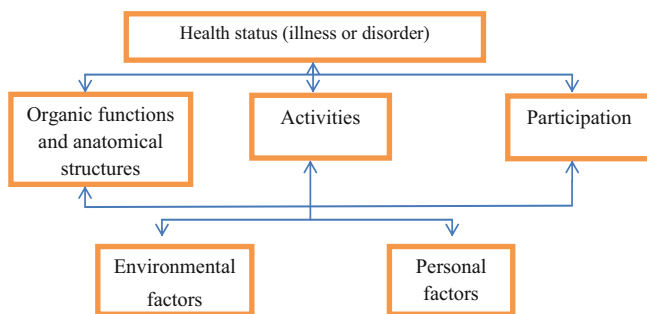


Fig. 7.2 WHO International Classification of Functioning model (Source: Author)

dependence. There is evidence on how air pollution affects respiratory diseases, but very few studies examine the causal pathway to disability and dependence.

In a seminal paper, Balfour and Kaplan acknowledged that the epidemiology of disability in elderly people had focused on individual demographic and socioeconomic characteristics, and also on chronic disorders (Balfour and Kaplan 2002). The characteristic environmental factors were forgotten about until recently. Even though the last decade has seen a large upturn in the number of publications on the neighbourhood's effect on elderly people's health, functional capacity and disability, this bibliography has been restricted to urban environments in rich countries, as discussed in the second part of this chapter.

The model proposed by Glass and Balfour is shown in Fig. 7.3 (Glass and Balfour 2003). According to this model, the neighbourhood aspects that influence disability can be classified into four categories, and the neighbourhood's socio-economic conditions act directly and through social integration, physical characteristics and the services and resources available, determining the types of interaction between elderly people and their environment. The environment produces demands and supports. The demands consist of physical barriers, insecurity, social stress (poverty) and inadequate health and social resources. The supports are social support and the social capital available to the neighbourhood's residents, and the environments that facilitate healthy behaviours. Demands and supports interact with the personal skills (control and resilience, gender, social class, age, and life course circumstances). Health disorders (cognitive deficit, depression, comorbidity) can increase vulnerability to environmental exposures. The result of the interactions between individuals and their environment gives rise to four types of behaviour, and adequate or inadequate adjustments to the environment: physical activity or passivity, social integration or isolation, active or passive reaction versus stress and, finally, use vs. non-use of available services. This inadequate or adequate response to the environment directly influences elderly people's health and functioning. In addition to the American results, studies need to be conducted in societies with different social and family networks and with different degrees of dependence on private transport, in particular on cars, and on communication technologies to obtain for consumer goods.

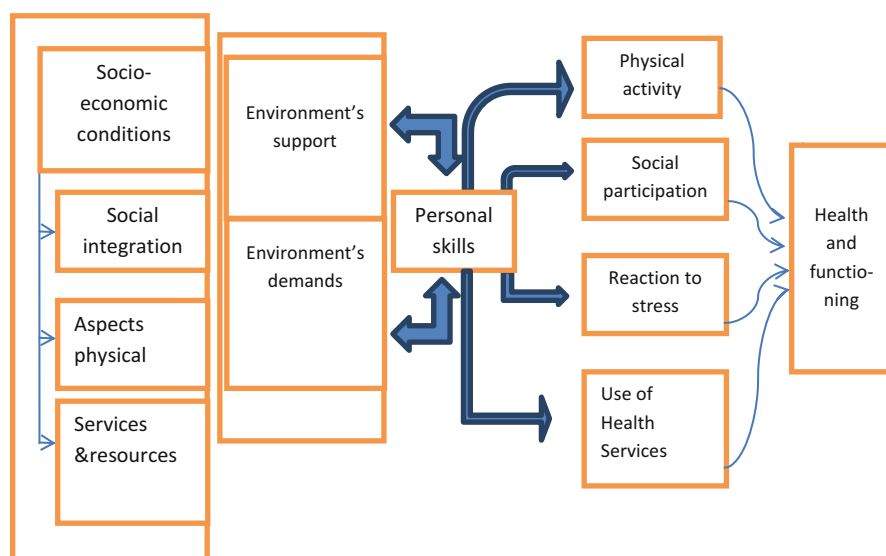


Fig. 7.3 Glass and Balfour's model of neighbourhood effects on elderly people's health and physical functioning (Source: Author)

7.3 Evidence on Neighbourhood's Effects on Elderly People's Health and Disability

Taking the Glass and Balfour model as a point of reference, we will present evidence according to the four aspects that describe neighbourhoods: socioeconomic conditions, social cohesion, the built environment, and available public services (Glass and Balfour 2003).

7.3.1 Socio-economic Aspects

Freedman's study, based on a large sample of elderly people over 55 years old in the United States, found that men and women who lived in more affluent neighbourhoods had fewer mobility problems than those living in poorer neighbourhoods, after very carefully controlling for other neighbourhood aspects and individual characteristics (Freedman et al. 2008).

In another United States study, Beard analysed New York census data regarding disability in people over 65 years old and found a strong association between objective measures of the neighbourhood's socio-economic status and the disability measures used. This association was the strongest among all the associations between the neighbourhood's characteristics and disability, even after controlling for all individual and contextual variables in the multivariate analysis (Beard et al. 2009).

However, at least three studies conducted in the United States have found no relationship between the neighbourhood's socioeconomic status and their residents' disability trajectories. The reason for this lack of positive findings could be that the studies used five census indicators that are not specific to the economic deprivation of elderly people, but to the families' situation (% of black people, % of household heads who are women, unemployment, % of poor families, % of families receiving social welfare). Analysing longitudinal data from the US Health and Retirement Survey, Glymour also failed to find any association between the neighbourhood's socioeconomic deprivation and the risk of disability, measuring economic deprivation with some of the census indicators that might not be relevant for elderly people because they are based on families (Glymour et al. 2010). Finally, positive associations were found between the neighbourhood's economic deprivation and disability in basic and instrumental activities, but these associations were reduced to the point of becoming insignificant when controlling for individual characteristics (Wight et al. 2006); this study also used the United States Census indicators to measure deprivation.

Bowling et al. (2006) analysed the population over 65 years in a British survey and found that the more affluent areas had better physical functioning indicators, although the statistical significance of these findings was attenuated when controlling for individual economic status indicators, showing that the affluent areas concentrate the population with higher levels of resources (Bowling and Stafford 2007).

The English Longitudinal Study of Ageing (ELSA) found a strong association between neighbourhood economic deprivation measured by 7 indicators grouped in an index (Index of Multiple Deprivation) and frailty, also measured by more than 30 indicators in multiple functional aspects. Although this study does not directly address physical functionality, we have retained it given the limited longitudinal evidence on the subject in Europe (Lang et al. 2008).

In China, data from the longitudinal health and nutrition study were analysed. This study followed 2,944 people in 209 communities in 9 provinces of China, and the findings point to a large difference in mobility between people living in urban areas and those living in rural areas, with urban populations enjoying major advantages. The community's wealth and services could not be shown to influence mobility, probably because they are strongly associated with rural/urban environment, which is the division that makes the difference in mobility (Wen et al. 2006).

7.3.2 *The Built Environment*

Several groups have conducted research into the neighbourhood's physical characteristics in North America. In 2002, Balfour and Kaplan published a path-breaking paper on associations between the neighbourhood's built environment and functional impairment of its residents aged over 55 in Alameda County in the San Francisco Bay Area, California (Balfour and Kaplan 2002). After 12 months of follow up, 3.9 % reported experiencing functional losses in their lower extremities

(impaired mobility) and this disability was strongly associated with mentions of multiple neighbourhood problems assessed by a list of six potential problems: crime, poor night lighting, heavy traffic, excessive noise, rubbish on the streets and not enough access to public transport. The incidence was 2 % among those who reported no problems in the neighbourhood, 4 % among those reporting a problem and, finally, 8 % among those reporting 2–6 problems, and these differences remained significant after controlling for sociodemographic and economic indicators, lifestyle and health indicators. The highest incidence of functional loss was observed in people who reported traffic problems, noise and poorly lit streets.

Beard's study in New York city distinguishes between disabilities in mobility and disability to leave the house. The street's characteristics (one-way intersections, trees in the streets and buses within walking distance) were protective factors for both types of disabilities (Beard et al. 2009). One subject recently studied is neighbourhoods "walkability", i.e., how easy it is to walk around each neighbourhood, and which is strongly related to walking as a and daily physical activity and the prevention of disability (King et al. 2011).

In North Carolina, Clarke and George found that the neighbourhood's physical aspects modulate transitions between functional limitations and disability in daily activities. Elderly people reported having more independence in instrumental activities when living in areas with diverse land uses (shops, cafes, green areas) and independence in daily activities was related to housing quality (Clarke and George 2005). Using US Health and Retirement Survey data, Freedman et al. found that street connectivity is associated with less disability in instrumental activities of daily living, coinciding with George and Clark's findings (Freedman et al. 2008).

Using data from Chicago, Clarke et al. report that among people with functional limitations of the lower limbs, the frequency of severe disability is four times higher in residents of streets with obstacles (cracks, steps, gaps), than residents of obstacle-free streets (Clarke et al. 2008; Clarke 2008).

Later, using longitudinal data from the American Changing Lives Study, Clarke et al. found that people over 75 years old living in high traffic density areas were more prone to mobility disability than those living in places better suited for walking (Clarke et al. 2009). Finally in 2013, using Google Earth in the streets of downtown Detroit, the authors confirmed their previous findings: people living in neighbourhoods with streets full of obstacles to walking have less mobility outside their homes, measured by the number of times people have left their homes in the last week (Clarke and Gallagher 2013).

Shootman et al. (2006) investigated the associations between characteristics of the built and the neighbourhood in a black part of St Louis (Shootman et al. 2006). The five selected indicators (home's condition, noise, air quality, street's condition, pavements) were associated longitudinally with the incidence of lower extremity limitations. The accumulation of these adverse environmental conditions was associated with mobility as an association of dose response.

In Europe, we have identified a study on the aforementioned UK survey. Neighbourhood problems (traffic, noise, crime, dirt, poor air quality and graffiti) were found not to be associated with disability in Activities of Daily Living (ADL)

(Bowling and Stafford 2007). Yet in Colombia, Parra et al. identified that the excessive traffic and noise in Bogotá's neighbourhoods were associated with worse physical functioning in people over 60 years old (Parra et al. 2010).

7.3.3 Social Aspects: Social Cohesion, Crime and Insecurity

Bowling et al.'s UK studies have examined how social cohesion impacts elderly residents' mobility and health with questions about whether the person knows and trusts people in the neighbourhood. This social cohesion seems to protect the physical function (Bowling et al. 2006). In his New York study, Beard too found that with collective efficacy, based on good relations with neighbours and a willingness to do something to keep up a good atmosphere in the neighbourhood, elderly people had less physical disability and an increased ability to leave home (Beard et al. 2009). The ways in which trust relationships with neighbours and neighbourhood activity (social cohesion) can influence the elderly's physical function will be discussed later on. Studies available to date have ignored families, who could act as intermediaries between the elderly and their neighbourhood, and this could be particularly true in Latin America, where parents and children very often live together.

Studies in North America have reported that crime in a neighbourhood and the perceived lack of insecurity can impact elderly people's mobility losses, restricting their movements outside the home, their living space and producing chronic stress as they feel subjected to daily violence. In Balfour and Kaplan's Alameda County study, 16 % of the sample reported that crime was a problem in the neighbourhood and was one of the most common items on the list of problems considered, although its association with the incidence of mobility disability was not statistically significant (Balfour and Kaplan 2002). Beard's New York study found that people who reported living in areas where crime was a problem were more likely to have physical disabilities and disability to leave their home (Beard et al. 2009). Freedman et al. found that neighbourhood crime have an effect on disability in instrumental activities of daily living, but these effects fade when the economic situation and other neighbourhood characteristics are included (Freedman et al. 2008). Unfortunately we do not have this type of study in Latin America, where street violence most likely plays an important role in restricting activity to inside one's own home.

Poverty interacts with insecurity. In a study conducted in New Haven, no relationship was found between the perception of insecurity and the incidence of mobility losses in the general population, yet when the analysis was restricted to the poor, insecurity was seen to have a strong effect on mobility losses (Clarke et al. 2009). Among rich people, the perception of insecurity was not seen to have any effect on their mobility. These results illustrate how vulnerable poor people feel to the perceived lack of security. The crime rate had no effect on the mobility, either in rich people or poor people. It was the perception of insecurity, not of crime measured by objective indicators that increased the risk of loss of mobility in the poor elderly.

7.3.4 Neighbourhood Amenities and Services

Some studies have been based on the elderly's perception on accessibility of services in their neighbourhood, if there are nice places to walk in, and if it is a friendly neighbourhood. Bowling and his colleagues have researched this subject in the UK with significant findings could be extrapolated to other places. Leisure facilities, the availability of good services in the neighbourhood, transport and having nice places to walk in were associated with good physical functioning (Bowling et al. 2006). In an analysis that included all types of neighbourhood features (objective ones such as its economic conditions and perceived ones such as the neighbourhood's problems, neighbourliness and the availability of services), it was observed that while the economic issues remained independently associated with physical functioning, neighbourhood problems and the availability of services were also associated with disability in daily activities: the more problems (traffic, noise, graffiti), the greater disability and the fewer quality services, the greater disability.

In conclusion, the followig results can be drawn from this brief review of some population studies on the subject: (1) There seems to be a relationship between a neighbourhood's socioeconomic characteristics and the prevalence and incidence of disability in its elderly residents, but in some studies this association decreases or disappears when the residents' individual characteristics are taken into account, indicating that the context is embedded in individuals and that social stratification is apparent in residential areas such that people with a good socioeconomic status live in richer neighbourhoods and also experience less disability. However, the separation between the effects of composition and contextual effects is neither possible nor desirable. While it is true that neighbourhoods improve when if their residents are well-off and neighbourhoods with good infrastructure and services attract upper-class people, it is reasonable to think that the effects of good infrastructure and good services will be maintained in all populations. (2) The characteristics of the built environment are associated with the prevalence and incidence of disability in the majority of studies reviewed. Reducing disability among elderly people will entail improving the state of streets and pavements, reducing noise levels, controlling motor traffic, ensuring proper lighting, and mixing land uses. (3) Social networks and social cohesion seem to have a beneficial effect, but this effect is probably indirect and perhaps acts through social participation and public security-boosting mechanisms that could trigger increases in physical activity and, secondly, through mental health and social welfare improvements. The perception of insecurity, rather than objectively measured crime, has direct effects on the incidence of disability in mobility in the most vulnerable people, those without any financial means; (4) The availability of services to make good use of leisure time and health and social services is associated with lower levels of disability.

7.4 Mechanisms Between Neighbourhood Characteristics and Disability

Following the Balfour and Glass model, now we will consider several neighbourhood mechanisms that can help to decrease the prevalence and incidence of disability in the population. We will present the hypotheses and evidence of these mechanisms: physical activity, social participation, stress reduction and use of services.

The last few years have seen an increase in “walkability” studies (Strath et al. 2007; Li et al. 2009; Sallis et al. 2009; de Melo et al. 2010; Boone-Heinonen and Gordon-Larsen 2011; King et al. 2011; Michael et al. 2011, 2014; Adams et al. 2012; Giehl et al. 2012; Saelens et al. 2012; Buman et al. 2013; Cerin et al. 2013, 2014;). The hypothesis is that one of the ways in which a neighbourhood’s physical and social characteristics can affect elderly’s people disability is how easy it is to walk about the neighbourhood. Many studies have shown that neighbourhoods with parks and green areas, the neighbourhoods that mix land uses (homes, residential homes, shops, services, parks) and neighbourhoods with low crime rates make it far easier for their residents, including their elderly, to go for walks. A recent international study including cities in Brazil, Colombia and Mexico has classified neighbourhoods into five major groups according to their physical activity amenities: ones that support all kinds of activity (City of Switzerland and Hong Kong), where walking is unsafe and there are no services (Bogota), safe and transport available (cities in Canada), traffic and shops but no services (Curitiba), safe but does not facilitate physical activity (cities in the United States) (Adams et al. 2013). A subsequent study that uses this classification has observed major variations in physical activity, in the places where people walk and in the places where older people do physical exercise in vigorous sports. In addition, all the neighbourhood characteristics examined showed associations with levels of physical activity, but aesthetic aspects and mixed land use appeared to be the most influential in making people engage in physical activity (Cerin et al. 2014).

A second mechanism through which neighbourhoods’ characteristics can impact the incidence of disability is *social participation*. Integration in the community where one lives is a mechanism that acts on one’s mental health and reduces the risk of depression, depression being a recognized risk factor for disability and for dementia too. Therefore, it can be concluded that preventing depression in elderly people will lead to better physical and mental functioning.

What Balfour and Glass refer to as stress reduction could be renamed as the fight against social inequalities. Equitable societies are characterized by a low frequency of street violence and by a social order where people can enjoy high levels of economic and personal security. Economic security is closely linked to a wealth redistribution system that allows universal pension coverage in sufficient amounts to lead a dignified life. For example, Canadian seniors enjoy generous pensions and the poverty rate in over 65s is lower than in any other age group in the Canadian population, without any appreciable differences between men and women. This contrasts

strongly with the situation of elderly people in Colombia, where only a minority have pensions and most of these pensions are below the poverty level. Personal safety is also closely linked to social order and in societies with high inequality like Brazil and Colombia, homicide rates are very high and the perception of safety in neighbourhoods is very low. This all triggers high levels of chronic stress in elderly people, to the extent that circadian cortisol curves in elderly Brazilians are very different from those expected and observed in North American countries, pointing to a lack of morning response and a low diurnal slope suggestive of exhaustion to cope with the challenges of daily living.

Last of all, and still following the pattern of the Balfour and Glass model, service utilization can act as a mechanism that shows how disability is influenced by the neighbourhood's characteristics. Large supermarkets often supply different kinds of food in hygienic conditions and cheaper than in local neighbourhood shops, that have no direct fresh food supplies. Affluent neighbourhoods have gyms and places to walk and play sports, while the poor neighbourhoods on the outskirts are full of unregulated housing (slums) that lack any access to health or social services, employment or leisure time. No research has been conducted in Latin America to link the lives of elderly people in these neighbourhoods and their health, but if we extrapolate what we know about them in the big cities of the United States, Canada and Europe, we can conclude that the situation in most of the cities in Latin America and the Caribbean is bad and could be improved by properly planned urban investment that would benefit people of all ages, but especially children and adults, because it is they who spend most or all of their time there.

7.5 Relations Between the City and Elderly People's Mobility in Two Latin American Cities

Our international study of elderly people's mobility includes two research sites in Latin America: Manizales in the coffee region of Colombia and Natal in the north-eastern Brazilian state of Rio Grande do Norte. These two cities differ in their geographical, social and economic aspects, as well as in their historic and cultural roots. A brief description follows.

In 2011 we conducted a pilot study to test measuring instruments and ascertain more about the characteristics of the elderly population in both places, including 300 people aged 65–74, 150 in Manizales and 150 in Natal (Curcio et al. 2013). The same recruitment procedure was used, namely to invite elderly people who visited the social centres for elderly people in the study areas. This excluded elderly people with mobility restricted to their home, but included a broad spectrum of physical functioning as discussed below.

Both populations displayed a low level of schooling, but higher illiteracy in Natal than in Manizales. A very marked difference was also seen in the proportion of elderly living below the poverty line, which is probably the result of the universal pension being introduced in Brazil in 2003. Major differences were also seen in

self-rated health, because while Natal only 13 % reported being in good health, in Manizales, this proportion reaches almost 50 %. To measure physical function, we used two self-report measures and an objective physical performance measure. The seven questions frequently used come from the Nagi questionnaire on functional limitations and the set of responses to a series of 12 videoclips, adapted by our team to the situation in Colombia and Brazil, of the MAT-sf developed in the United States. The objective physical performance measure is the Short Portable Physical Performance Battery, validated by our team in Santa Cruz (Rio Grande do Norte) and Manizales (Caldas, Colombia) (Freire et al. 2012). Briefly, the SPPB consists of three time-measured performance tests that involve walking, keeping one’s balance, and getting up from a chair without support. Each test is rated from 0 to 4 and the total score ranges from 0 to 12 (Guralnik et al. 1994, 1995, 2000).

Upon comparing these features, we observed that although the sample of Manizales (Colombia) is worse off financially than the Natal sample (Brazil), self-perceived health in Manizales is much better than in Natal. However, the self-reported mobility indicators (Functional limitations according to Nagi questions) and Mat-sf are worse in Manizales than in Natal, despite the virtually identical physical performance measures.

The analyses conducted to explain the MAT-sf score revealed a strong city-based effect, even when controlling for gender, perceived health and physical performance. That is, for equal health, and both in men and women, mobility (MAT-sf) in Manizales’ elderly people was significantly lower than the mobility of Natal’s elderly people, and after adjusting for physical performance, the change in the coefficient indicating the difference between cities was very small: the city coefficient dropped from 3.638 to 3.375 (Table 7.1).

Table 7.1 Descriptive characteristics of study participants

Characteristic	Mean ± SD or %	
	Natal (n = 150)	Manizales (n = 150)
Age	69.6 ± 3.0	69.1 ± 6.4
Illiterate	22.0 %	11.3 %
Years of education	6.4 ± 4.5	4.8 ± 3.5
Married or co-habiting partner	57.3 %	50.7 %
Insufficient monthly income	41.3 %	58.2 %
<i>Self-rated health</i>		
Very good/Good	13.3 %	49.3 %
Fair	34.0 %	42.7 %
Poor/Very poor	52.7 %	8.0 %
Short-form of the mobility assessment tool	60.7 ± 8.5	60.6 ± 8.5
Functional limitations (Nagi score)	2.0 ± 1.9	2.4 ± 2.0
Short physical performance battery	9.5 ± 1.8	9.7 ± 2.0

Source: Author

The explanation to this observation might lie in the dozens of architectural barriers to be found throughout Manizales, a city located in the Andes, on very hilly terrain, with heavy rainfall and landslides. All this means that the streets and pavements are in a very poor state, making it very hard to walk in many parts of the city (Guerra et al. 2013).

In our international longitudinal mobility study, the International Mobility in Aging Study (IMIAS), we have explored the physical and social characteristics of the neighbourhood from three dimensions: the built environment, social cohesion and social disorganization. The descriptive data of both cities are listed below.

Poorly kept pavements are very common in Natal, according to 85 % of respondents, but in Manizales approximately 20 % say there are lots of poorly kept pavements. There are also differences when reporting accessible walking areas: while 80 % of respondents in Natal say they have no access to such areas, 38 % do so in Manizales. In both cities very few people, 8 % in Manizales and 1 % in Natal, reported having many areas to go walking. When asked about the safety of areas to go walking, the data are similar. Asked about places where they can sit down and rest, such as benches and bus stops, respondents agreed that there are very few such rest areas. Public transport is available close to home for rather more of Manizales' respondents and a third of Natal's respondents. Finally, there is no disabled-friendly public transport or disabled parking areas, or they do not know about them (Tables 7.2, 7.3 and 7.4).

On social disorganization issues, drug dealing, gangs, rubbish and crime are mentioned most of all, while tensions between ethnic groups, empty homes, or poor lighting are not perceived as problems. Worth noting is that crime is regarded as a major problem by 20 % of Manizales' inhabitants and 37 % of Natal' inhabitants. Street gangs are also a major problem and respondents in Natal seem to be afraid to

Table 7.2 Analysis of the MAT-sf score in Manizales and Natal

	Coefficient	Standard error	p value
<i>Model 1</i>			
Constant	55,846	0,914	.000
Health very good vs. poor	8,669	1,331	.000
Fair vs. Poor	5,489	1,174	.000
Manizales vs. Natal	-3,638	1,047	.001
Men vs. women	3,684	0,895	.000
<i>Model 2</i>			
Constant	60,233	1,102	.000
Health: very good vs. poor	6,524	1,232	.000
Fair vs. Poor	3,942	1,076	.000
Manizales vs. Natal	-3,375	0,945	.001
Men vs. women	2,899	0,813	.000
SPPB 11 or 12 vs. <8	11,653	1,396	.000
SPPB 8-10 vs. <8	2,770	.892	.002

Source: Author

Table 7.3 Characteristics of the physical medium in (Colombia) and Natal (Brazil): IMIAS Study

To what extent does your neighbourhood have...?	Manizales (N=400)				Natal (N=402)			
	A lot	Some	None	No reply	A lot	Some	None	No reply
Poorly kept pavements	19.5	53.2	27.0	0.7	85.0	7.5	5.0	3.0
Easily accessible parks and walking areas	8.0	51.5	38.2	2.2	1.0	32.3	65.0	1.7
Safe parks and walking areas	8.2	46.5	42.7	2.5	0.5	15.7	80.0	4.0
Places for sitting down and resting at bus stops and in parks	9.0	37.0	50.0	4.0	4.0	43.3	50.0	2.7
Public transport that is close to home	56.5	37.0	6.0	0.5	33.0	53	12.0	2.0
Disabled-friendly public transport	0.2	6.7	84.7	8.2	3.5	39.3	49.0	8.0
Parking for disabled people	0.2	2.0	90.2	7.5	0.7	4.5	85.0	10.0

Source: Author

Table 7.4 Frequency of social problems in the neighbourhood in Manizales (Colombia) and Natal (Brazil): IMIAS Study

To what extent do you consider the following situations to be a problem in your neighbourhood	Manizales (N=400)				Natal (N=402)			
	Major	Minor	Not a problem	Doesn't know	Major	Minor	Not a problem	Doesn't know
Tensions between ethnic or religious groups	3.7	10.2	79.0	7.0	9.0	12.5	68.0	10.5
Garbage and broken glass on the street, pavements or courtyards	20.0	27.0	53.0	0.2	63.0	15.0	22.0	0.5
People selling and using drugs	20.5	19.0	52.0	8.5	57.0	11.0	19.0	14.0
Excessive drinking in public	12.5	25.0	61.0	2.2	49.0	18.0	32.0	2.0
Gangs	16.0	20.0	62.0	3.0	24.0	15.0	42.0	19.0
Poor lighting	7.0	15.0	77.0	1.0	20.0	34.0	45.0	1.0
Crime	20.0	33.0	46.0	1.0	37.0	27.0	34.0	1.7
Excessive noise	12.0	28.0	60.0	0.5	31.0	20.0	50.0	1.0
Heavy traffic	11.0	30.0	59.0	0.2	35.0	24.0	39.0	3.0
Empty or rundown houses	2.0	7.0	90.0	1.0	7.0	18.0	71.0	4.0

Source: Author

Table 7.5 Social capital characteristics in Manizales (Colombia) and Natal (Brazil): IMIAS Study

How often in your neighbourhood....?	Manizales (N=400)				Natal (N=402)			
	Often	Sometimes	Seldom or never	Doesn't know	Often	Sometimes	Seldom or never	Doesn't know
Do you see neighbours or friends talking in the street?	21.0	45.0	30.0	2.0	45.0	24.0	29.0	3.0
Do you see neighbours doing things for other neighbours, such as cleaning the courtyard or babysitting?	21.0	42.0	33.0	3.0	16.0	31.0	52.0	1.0
Do you see neighbours keeping watch or calling out if they see a problem?	24.0	41.0	30.0	4.0	15.0	32.0	51.0	1.0
Do you feel it is unsafe to walk around your neighbourhood?	9.0	26.0	64.0	0.2	39.0	27.0	34.0	0.5

Source: Author

talk about them, because 19 % of them did not respond. Other neighbourhood quality-related issues such as excessive noise and heavy traffic rank somewhere in the middle (Table 7.5).

Neighbours seem to keep in touch more in Natal, because nearly half say that neighbours talk to one another quite often. However, Manizales' neighbours seem to help and watch out for one another much more than neighbours in Natal. Natal is also perceived as being more dangerous: 39 % of respondents feel that their neighbourhood is unsafe to walk in, compared with 9 % in Manizales. This data shows that elderly people living in Manizales' and Natal's neighbourhoods face serious mobility barriers of two kinds: physical barriers, such as the poorly kept pavements and not having places to go for walks, and social barriers, such as their perception of crime and lack of personal safety.

We did not find any specific studies in the literature on what impact a neighbourhood's physical and social characteristics has on elderly people's mobility and disability, but our IMIAS team intends to research these issues further in the coming years. Last but not least, we would like to mention the *Academias de Ciudad*, a municipal initiative that has been launched in many cities in Brazil, including Natal. This initiative involves installing physical activity amenities in city parks to encourage people of all ages, and especially in the elderly, to keep physically fit. Despite

being an excellent initiative, there is very little support to show people how to use the equipment, which is why the extent to which it is used varies from one city to another. In Ipanema, non-governmental organizations provide training and supervise the activities, so there are plenty of participants, whereas elsewhere, such as in Natal, the equipment is used very seldom due to the lack of training and safety.

7.6 Conclusion

In this chapter, we have addressed the theories, conceptual frameworks and scientific evidence on how a neighbourhood's characteristics influence the disability of its older residents. We have adopted the model put forward by Balfour and Glass as a guideline for our literature review and to organize the knowledge that demonstrates that a neighbourhood's physical barriers, such as poorly kept pavements, the limited availability of safe places to walk in and insecurity associated to crime, gangs and drug trafficking, pose risks for the elderly's health and functional capacity. Lastly, the information available about the city of Manizales and five working middle class neighbourhoods of the city of Natal show that there is clearly room for improvement in their physical infrastructure and social organization. Municipal policies in Latin America should take into account that using the urban space as a place of life for all ages, promoting walking and active transport, mixed land use and public safety are powerful tools for achieving active and healthy ageing.

References

- Adams, M.A., J.F. Sallis, T.L. Conway, L.D. Frank, B.E. Saelens, J. Kerr, K.L. Cain, and A.C. King. 2012. Neighborhood environment profiles for physical activity among older adults. *International Journal of Behavioral Nutrition and Physical Activity* 36(6): 757–769.
- Adams, M.A., D. Ding, J.F. Sallis, H.R. Bowles, B.E. Ainsworth, P. Bergman, F.C. Bull, H. Carr, C.L. Craig, I. De Bourdeaudhuij, L.F. Gómez, M. Hagstromer, L. Klasson-Heggebo, S. Inoue, J. Lefevre, D.J. Macfarlane, S. Matsudo, V. Matsudo, G. McLean, N. Murase, M. Sjostrom, H. Tomten, V. Volbekiene, and A. Bauman. 2013. Patterns of neighborhood environment attributes related to physical activity across 11 countries: a latent class analysis. *International Journal of Behavioral Nutrition and Physical Activity* 10: 34.
- Balfour, J.L., and G.A. Kaplan. 2002. Neighborhood environment and loss of physical function in older adults: Evidence from the Alameda County study. *American Journal Epidemiology* 155(6): 507–515. doi:[10.1093/aje/155.6.507](https://doi.org/10.1093/aje/155.6.507).
- Beard, J.R., S. Blaney, M. Cerda, V. Frye, G.S. Lovasi, D. Ompad, A. Rundle, and D. Vlahov. 2009. Neighborhood characteristics and disability in older adults. *The Journals of Gerontology Psychological & Social Sciences* 64(2): 252–257. doi:[10.1093/geronb/gbn018](https://doi.org/10.1093/geronb/gbn018).
- Boone-Heinonen, J., and P. Gordon-Larsen. 2011. Life stage and sex specificity in relationships between the built and socioeconomic environments and physical activity. *Journal of Epidemiology Community Health* 65(10): 847–852. doi:[10.1136/jech.2009.105064](https://doi.org/10.1136/jech.2009.105064).
- Bowling, A., and M. Stafford. 2007. How do objective and subjective assessments of neighbourhood influence social and physical functioning in older age? Findings from a British survey of ageing. *Social Science & Medicine* 64(12): 2533–2549.

- Bowling, A., J. Barber, R. Morris, and S. Ebrahim. 2006. Do perceptions of neighbourhood environment influence health? Baseline findings from a British survey of aging. *Journal of Epidemiology Community Health* 60(6): 476–483. doi:[10.1136/jech.2005.039032](https://doi.org/10.1136/jech.2005.039032).
- Buman, M.P., S.J. Winter, J.L. Sheats, E.B. Hekler, J.J. Otten, L.A. Grieco, and A.C. King. 2013. The Stanford healthy neighborhood discovery tool: A computerized tool to assess active living environments. *American Journal of Preventive Medicine* 44(4): e41–e47.
- Cerin, E., C.H. Sit, A. Barnett, M.C. Cheung, and W.M. Chan. 2013. Walking for recreation and perceptions of the neighborhood environment in older Chinese urban dwellers. *Journal of Urban Health* 90(1): 56–66. doi:[10.1007/s11524-012-9704-8](https://doi.org/10.1007/s11524-012-9704-8).
- Cerin, E., K.L. Cain, T.L. Conway, D. Van Dyck, E. Hinckson, J. Schipperijn, I. De Bourdeaudhuij, N. Owen, R.C. Davey, A.A. Hino, J. Mitas, R. Orzanco-Garralda, D. Salvo, O.L. Sarmiento, L.B. Christiansen, D.J. Macfarlane, G. Schofield, and J.F. Sallis. 2014. Neighborhood environments and objectively measured physical activity in 11 countries. *Medicine and Science in Sports and Exercise*. doi:[10.1249/MSS.0000000000000367](https://doi.org/10.1249/MSS.0000000000000367).
- Clark, C.R., I. Kawachi, L. Ryan, K. Ertel, M.E. Fay, and L.F. Berkman. 2009. Perceived neighborhood safety and incident mobility disability among elders: The hazards of poverty. *BMC Public Health* 9: 162. doi:[10.1186/1471-2458-9-162](https://doi.org/10.1186/1471-2458-9-162).
- Clarke, P., and N.A. Gallagher. 2013. Optimizing mobility in later life: The role of the urban built environment for older adults aging in place. *Journal of Urban Health* 90(6): 997–1009. doi:[10.1007/s11524-013-9800-4](https://doi.org/10.1007/s11524-013-9800-4).
- Clarke, P., and L.K. George. 2005. The role of the built environment in the disablement process. *American Journal of Public Health* 95(11): 1933–1939. doi:[10.2105/AJPH.2004.054494](https://doi.org/10.2105/AJPH.2004.054494).
- Clarke, P., J.A. Ailshire, M. Bader, J.D. Morenoff, and J.S. House. 2008. Mobility disability and the urban built environment. *American Journal of Epidemiology* 168(5): 506–513.
- Clarke, P., J.A. Ailshire, and P. Lantz. 2009. Urban built environments and trajectories of mobility disability: Findings from a national sample of community-dwelling American adults (1986–2001). *Social Science & Medicine* 69(6): 964–970. doi:[10.1016/j.socscimed.2009.06.041](https://doi.org/10.1016/j.socscimed.2009.06.041).
- Curcio, C.L., B.E. Alvarado, F. Gómez, R. Guerra, J. Guralnik, and M.V. Zunzunegui. 2013. Life-space assessment scale to assess mobility: Validation in Latin American older women and men. *Aging Clinical and Experimental Research* 25(5): 553–560. doi:[10.1007/s40520-013-0121-y](https://doi.org/10.1007/s40520-013-0121-y).
- de Melo, L.L., V. Menec, M.M. Porter, and A.E. Ready. 2010. Personal factors, perceived environment, and objectively measured walking in old age. *Journal of Aging and Physical Activity* 18(3): 280–292.
- Freedman, V.A., I.B. Grafova, R.F. Schoeni, and J. Rogowski. 2008. Neighborhoods and disability in later life. *Social Science & Medicine* 66(11): 2253–2267. doi:[10.1016/j.socscimed.2008.01.013](https://doi.org/10.1016/j.socscimed.2008.01.013).
- Freire, A.N., R.O. Guerra, B. Alvarado, J.M. Guralnik, and M.V. Zunzunegui. 2012. Validity and reliability of the short physical performance battery in two diverse older adult populations in Quebec and Brazil. *Journal of Aging and Health* 24(5): 863–878. doi:[10.1177/0898264312438551](https://doi.org/10.1177/0898264312438551).
- Giehrl, M.W., I.J. Schneider, H.X. Corseuil, T.R. Benedetti, and E. d’Orsi. 2012. Physical activity and environment perception among older adults: A population study in Florianopolis, Brazil. *Revista Saude Publica* 46(3): 516–525. doi:[10.1590/S0034-89102012005000026](https://doi.org/10.1590/S0034-89102012005000026).
- Glass, T.A., and J.L. Balfour. 2003. Neighborhoods, aging and functional limitations. In *Neighborhoods and health*, ed. I. Kawachi and L.F. Berkman. Oxford: Oxford University Press.
- Glymour, M.M., M. Mujahid, Q. Wu, K. White, and E.J. Tchetgen Tchetgen. 2010. Neighborhood disadvantage and self-assessed health, disability, and depressive symptoms: Longitudinal results from the health and retirement study. *Annals of Epidemiology* 20(11): 856–861. doi:[10.1016/j.annepidem.2010.08.003](https://doi.org/10.1016/j.annepidem.2010.08.003).
- Guerra, R.O., B.S. Oliveira, B.E. Alvarado, C.L. Curcio, W.J. Rejeski, A.P. Marsh, E.H. Ip, R.T. Barnard, J.M. Guralnik, and M.V. Zunzunegui. 2013. Validity and applicability of a video-based animated tool to assess mobility in elderly Latin American populations. *Geriatrics & Gerontology International*. doi:[10.1111/ggi.12180](https://doi.org/10.1111/ggi.12180).

- Guralnik, J.M., E.M. Simonsick, L. Ferrucci, R.J. Glynn, L.F. Berkman, D.G. Blazer, P.A. Scherr, and R.B. Wallace. 1994. A short physical performance battery assessing lower extremity function: Association with self-reported disability and prediction of mortality and nursing home admission. *The Journal of Gerontology* 49(2): M85–M94. doi:[10.1093/geronj/49.2.M85](https://doi.org/10.1093/geronj/49.2.M85).
- Guralnik, J.M., L. Ferrucci, E.M. Simonsick, M.E. Salive, and R.B. Wallace. 1995. Lower-extremity function in persons over the age of 70 years as a predictor of subsequent disability. *The New England Journal of Medicine* 332(9): 556–561. doi:[10.1056/NEJM199503023320902](https://doi.org/10.1056/NEJM199503023320902).
- Guralnik, J.M., L. Ferrucci, C.F. Pieper, S.G. Leveille, K.S. Markides, G.V. Ostir, S. Studenski, L.F. Berkman, and R.B. Wallace. 2000. Lower extremity function and subsequent disability: Consistency across studies, predictive models, and value of gait speed alone compared with the short physical performance battery. *Journals of Gerontology: serie A* 55(4): M221–M231. doi:[10.1093/gerona/55.4.M221](https://doi.org/10.1093/gerona/55.4.M221).
- King, A.C., J.F. Sallis, L.D. Frank, B.E. Saelens, K. Cain, T.L. Conway, J.E. Chapman, D.K. Ahn, and J. Kerr. 2011. Aging in neighborhoods differing in walkability and income: Associations with physical activity and obesity in older adults. *Social Science & Medicine* 73(10): 1525–1533. doi:[10.1016/j.socscimed.2011.08.032](https://doi.org/10.1016/j.socscimed.2011.08.032).
- Lang, I.A., D.J. Llewellyn, K.M. Langa, R.B. Wallace, and D. Melzer. 2008. Neighbourhood deprivation and incident mobility disability in older adults. *Age and Ageing* 37(4): 403–410. doi:[10.1093/ageing/afn092](https://doi.org/10.1093/ageing/afn092).
- Li, F., P. Harmer, B.J. Cardinal, M. Bosworth, D. Johnson-Shelton, J.M. Moore, A. Acock, and N. Vongjaturapat. 2009. Built environment and 1-year change in weight and waist circumference in middle-aged and older adults: Portland neighborhood environment and health study. *American Journal of Epidemiology* 169(4): 401–408. doi:[10.1093/aje/kwn398](https://doi.org/10.1093/aje/kwn398).
- Michael, Y.L., R. Gold, N.A. Perrin, and T.A. Hillier. 2011. Built environment and lower extremity physical performance: Prospective findings from the study of osteoporotic fractures in women. *Journal of Aging and Health* 23(8): 1246–1262. doi:[10.1177/0898264311412597](https://doi.org/10.1177/0898264311412597).
- Michael, Y.L., C.L. Nagel, R. Gold, and T.A. Hillier. 2014. Does change in the neighborhood environment prevent obesity in older women? *Social Science & Medicine* 102: 129–137. doi:[10.1016/j.socscimed.2013.11.047](https://doi.org/10.1016/j.socscimed.2013.11.047).
- Nagi, S.Z. 1976. An epidemiology of disability among adults in the United States. *The Milbank Memorial Fund Quarterly. Health and Society* 54(4): 439–467.
- Parra, D.C., L.F. Gómez, O.L. Sarmiento, D. Buchner, R. Brownson, T. Schimdt, V. Gómez, and F. Lobelo. 2010. Perceived and objective neighborhood environment attributes and health related quality of life among the elderly in Bogota, Colombia. *Social Science & Medicine* 70(7): 1070–1076. doi:[10.1016/j.socscimed.2009.12.024](https://doi.org/10.1016/j.socscimed.2009.12.024).
- Saelens, B.E., J.F. Sallis, L.D. Frank, K.L. Cain, T.L. Conway, J.E. Chapman, D.J. Slymen, and J. Kerr. 2012. Neighborhood environment and psychosocial correlates of adults' physical activity. *Medicine and Science in Sports and Exercise* 44(4): 637–646. doi:[10.1249/MSS.0b013e318237fe18](https://doi.org/10.1249/MSS.0b013e318237fe18).
- Sallis, J.F., B.E. Saelens, L.D. Frank, T.L. Conway, D.J. Slymen, K.L. Cain, J.E. Chapman, and J. Kerr. 2009. Neighborhood built environment and income: examining multiple health outcomes. *Social Science & Medicine* 68(7): 1285–1293. doi:[10.1016/j.socscimed.2009.01.017](https://doi.org/10.1016/j.socscimed.2009.01.017).
- Schootman, M., E.M. Andresen, F.D. Wolinsky, T.K. Malmstrom, J.P. Miller, and D.K. Miller. 2006. Neighborhood conditions and risk of incident lower-body functional limitations among middle-aged African Americans. *American Journal of Epidemiology* 163(5): 450–458. doi:[10.1093/aje/kwj054](https://doi.org/10.1093/aje/kwj054).
- Strath, S., R. Isaacs, and M.J. Greenwald. 2007. Operationalizing environmental indicators for physical activity in older adults. *Journal of Aging and Physical Activity* 15(4): 412–424.
- Verbrugge, L.M., and A.M. Jette. 1994. The disablement process. *Social Science & Medicine* 38(1): 1–14. doi:[10.1016/0277-9536\(94\)90294-1](https://doi.org/10.1016/0277-9536(94)90294-1).
- Wen, M., L.C. Hawkey, and J.T. Cacioppo. 2006. Objective and perceived neighborhood environment, individual SES and psychosocial factors, and self-rated health: An analysis of older adults in Cook County, Illinois. *Social Science & Medicine* 63(10): 2575–2590. doi:[10.1016/j.socscimed.2006.06.025](https://doi.org/10.1016/j.socscimed.2006.06.025).

<http://www.who.int/classifications/icf/en/>.

Wight, R.G., C.S. Aneshensel, D. Miller-Martinez, A.L. Botticello, J.R. Cummings, A.S. Karlamangla, and T.E. Seeman. 2006. Urban neighborhood context, educational attainment, and cognitive function among older adults. *American Journal of Epidemiology* 163(12): 1071–1078. doi:[10.1093/aje/kwj176](https://doi.org/10.1093/aje/kwj176).

Chapter 8

Residential Environment and Health Conditions Among Older-Adults in Community-Dwelling in Spain: What Influences Quality of Life?

Fermina Rojo-Pérez, Gloria Fernández-Mayoralas, Maria-João Forjaz, María-Eugenia Prieto-Flores, and Pablo Martínez-Martín

8.1 Introduction and Background¹

Ageing in Place, which is also referred to as Ageing at Home (Callahan 1993; Andrews et al. 2007; Rojo-Pérez et al. 2001), living with autonomy and independence, is an expression which accurately summarises healthy (Bartlett and Peel 2005), active (World Health Organization 2002) and/or successful ageing (Rowe and Kahn 1997) of the population. These concepts require a broad definition and are found in the conceptual basis of quality of life in old age (Bartlett and Peel 2005).

¹This study has used the survey on Quality of Life of Older Adults in Spain (CadeViMa-Spain, 2008), inserted in the project financed by the Ministry of Science and Innovation (National R&D&I Plan. SEJ2006-15122-C02-00, 01 and 02), IPs. G. Fernandez-Mayoralas and M. J. Forjaz. An initial version of this paper was presented at the 52nd Congress of the Spanish Society of Geriatrics and Gerontology (Valladolid, Spain, 2010).

F. Rojo-Pérez, Ph.D. (✉) • G. Fernández-Mayoralas, Ph.D.
Institute of Economics, Geography and Demography (IEGD), Spanish National Research Council (CSIC), Madrid, Spain
e-mail: fermina.rojo@csic.es; gloria.fernandezmayoralas@csic.es

M.-J. Forjaz, Ph.D.
National School of Public Health and REDISSEC, Institute of Health Carlos III (ENS, ISCIII), Madrid, Spain
e-mail: forjaz@isciii.es

M.-E. Prieto-Flores, Ph.D.
Department of Geography, National University of Distance Education (UNED), Madrid, Spain
e-mail: meprietof@geo.uned.es

P. Martínez-Martín, Ph.D.
National Centre of Epidemiology, Carlos III Institute of Health and CIBERNED (CNE, ISCIII), Madrid, Spain
e-mail: pmartinez@isciii.es

In this context, ageing not only means living longer, but also, from a quality perspective, living better. It is from that perspective that European programmes, such as “More Years, Better Lives”, aim to promote research on Potential and Challenges of Demographic Change (http://www.jp-demographic.eu/?set_language=e).

As well as ageing in time, one ages in a place, which is why research on the place of residence has received special attention in relation to well-being and from various perspectives such as social epidemiology (Berkman and Kawachi 2000), health geography (Gatrell 2002), social ecology (Rosenberg 1998) or, more recently, geographical gerontology (Andrews et al. 2007).

From a geographical approach, the importance of the scale must be recognised, in that factors that might be important geographically might not be so at other levels (Gatrell 2002). Thus, the residential environment is one of the most important geographical spaces in the everyday life of older persons and with which they associate aspects of their daily life that affect their well-being and quality of life (Rojo-Pérez et al. 2007b).

Prior studies have shown that there are many different residential components, that they are multidimensional and that they are interrelated in a complex manner (Fernández-Mayoralas et al. 2004) into a model of residential satisfaction, where objective and subjective indicators, together with personal characteristics, should be considered (Rojo-Pérez et al. 2007b). Among the components of the residential environment, the house, normally designed and acquired at younger ages and for other personal circumstances, may become unsuitable for the elderly population, particularly for persons with a declining level of health and functioning (Rojo-Pérez et al. 2007b). Other residential environment components, such as the neighbourhood and social environment formed by neighbours, have been also stressed in studies about health, physical activity, life satisfaction, and quality of life (Morris et al. 2008; Patterson and Chapman 2004; Westaway et al. 2007). The significance of place in terms of satisfaction with the community services, with community attachment and with physical and social environment on quality of life has been also recognized by several authors (Forjaz et al. 2011; Sirgy et al. 2000).

The residential environment is not among the most important aspects for the quality of life of older persons, according to their own understanding of the phenomenon. Nevertheless, the older population feels high levels of satisfaction with each of its components: the house, neighbourhood and neighbours (Fernández-Mayoralas et al. 2011). Even so, despite reporting high and generalized levels of residential satisfaction, the elderly do not form a homogeneous group, and precisely their socio-demographic heterogeneity would be in the base of their different needs, aspirations and/or capacity to change their contexts (Fernández-Mayoralas et al. 2004).

One of the most important domains for the quality of life of the older population is related to family and social networks (Fernández-Mayoralas et al. 2011). In this context, the residential environment would not only represent a place for living but also sharing life with the family, neighbours and friends; this is where emotional ties are forged over time, giving the place meaning, or to put it another way, a sense of place or even a sense of well-being (Demiglio and Williams 2008). All of this could explain the high levels of satisfaction expressed by the older population towards

their residential environment, even though objective quality standards are not always met.

Geographers have recently incorporated the construct of sense of place into health research, recognizing the importance of the interrelationship between the residential environment and health on quality of life (Eyles and Williams 2008). Generational transfers of help and care take place in the most immediate environment, the home, and also help to define quality of life through the support networks in old age (Rojo-Pérez et al. 2009). Likewise, the ability of older adults to age in the place, their own home and neighbourhood, has been extensively studied in connection with health and care (Andrews et al. 2007).

Indeed, together with family and social conditions, level of health and functioning is the most important dimension for the quality of life of the older population most highly valued by individuals living in the community (Fernández-Mayoralas et al. 2007), which is why the interrelationship between health, residential environment and well-being has received special attention in ageing research (Fernández-Ballesteros et al. 1998; Fernández-Mayoralas et al. 2004; Oswald et al. 2007; Rojo-Pérez et al. 2007b; Wilson et al. 2004; Windle et al. 2006). Nonetheless, the understanding of the complex relationship between the home environment, well-being and daily functioning in the third age is currently weak (Kylén et al. 2014).

Within this framework, the objective of this chapter is to examine the personal and contextual conditions and their effect on overall satisfaction with life, as a quality of life indicator, in the older adult population living in family housing in Spain. It is taken as a premise that better conditions of the physical residential environment, the household and level of health and functioning are associated with a higher quality of life and are predictive factors of this in old age (Rojo-Pérez and Fernández-Mayoralas 2011; Fernández-Mayoralas 2011; Ahmed-Mohamed and Rojo-Pérez 2011).

8.2 Data Source and Methodology

The data came from the survey on Quality of Life in Older Adults in Spain (CadeViMa-España), conducted in 2008 among 1,106 individuals, who represent population aged 60 or over living in a family home in Spain (Instituto Nacional de Estadística 2007). The sample was obtained from multistage cluster sampling and was proportional to the geodemographic context. The first stage units were determined according to the Autonomous Region (14 regions, excluding the Balearic Islands, Canary Islands and La Rioja) and the size of the residential area (7 groups: <2,000 inhabitants, 2,000–5,000, 5,001–10,000, 10,001–50,000, 50,001–100,000, 100,001–500,000 and >500,000). The second stage units were obtained from sex (2 groups) and age (3 groups: 60–70 years old, 71–84 and 85 and over). The sampling error was $\pm 3.5\%$ for a confidence level of 95 %.

The ability to answer a semi-structured questionnaire, measured from the Short Portable Mental Status Questionnaire (SPMSQ), was another criterion for inclusion. The 4.4 % of subjects with suspected cognitive impairment (with 4 or more errors) were therefore excluded from the initial sample (Pfeiffer 1975). The subjects signed an informed consent, and the study was approved by the Ethics Committee of the Carlos III Institute of Health.

The survey was designed to compile objective and subjective information on quality of life from a multidimensional perspective. In this respect, information was collected on individual and national scale (The International Wellbeing Group 2006; Rodríguez-Blázquez et al. 2011), as well as on community quality of life (Forjaz et al. 2011, 2012); living arrangements and household structure; family and social networks; loneliness, receiving and providing support and perception of functional social support; health, functioning, depression and use of health and social services; recreation and leisure activities; residential environment; mobility and future residential prospects; economic resources and employment. In addition, information was collected on the socio-demographic characteristics of the respondents. A more detailed examination of the structure, content and technical characteristics of the survey and measurement instruments used can be seen in a previous work (Fernández-Mayoralas et al. 2012).

To achieve the research goal, overall quality of life was used as the dependent variable in this study. It is measured as level of satisfaction with life as a whole on a bipolar scale (from 0, which means completely dissatisfied, to 10, which means completely satisfied, with the value 5 as neutral), based on the Personal Wellbeing Index (The International Wellbeing Group 2006; Rodríguez-Blázquez et al. 2011). The values of this variable in the population analysed were from 0.0 to 10.0, with a statistical average of 6.94. The variables on partial satisfaction, or with each of the domains of life, used in this chapter followed the same bipolar structure.

Due to the non-linear nature of the dependent variable, the alternating least squares optimal scaling method was applied (Meulman 2000; Mair and De Leeuw 2010) to assign numerical quantifications to categories of satisfaction with life in order to maximize correlations with the regressor variables.

The independent variables were selected from the dimensions of quality of life related to personal characteristics (socio-demographic, household, health and functioning) and residential characteristics, namely: (i) household characteristics and living arrangements; (ii) level of competence in health and functioning; use of health services; (iii) housing characteristics; (iv) meaning of the house for residents; (v) perception of problems or obstacles in the neighbourhood or town of residence; (vi) accessibility to services in the neighbourhood or town of residence; (vii) perception and evaluation of neighbours; and (viii) residential satisfaction. A complete list of the variables used and their descriptive statistics can be seen in Table 8.1.

As a form of recurring performance in the analysis and interpretation of empirical data of complex phenomena (Mesbah et al. 2002), the Factor Analysis by Principal Components and varimax rotation technique was applied, with each of the clusters of independent variables, to explore the latent structures between the variables and reduce their dimensionality with the least loss of information. The scores

Table 8.1 Selected variables (descriptive statistics and principal component analysis)

	Descriptive statistics			Factor analysis (Extraction method: principal Components; rotation varimax with Kaiser normalization)		
	Min.	Max.	Mean		Components and loadings ^a (% of total variance explained)	
Household and living arrangements^b						
Household size (number of members)	1	8	2.3	Communities	Household size vs. average age of household members (44.4 %)	Perception of the household socioeconomic status and satisfaction with living arrangements (30.9 %)
Mean age of the household members	26	96	65.6	0.855	0.923	
Perception of the household socioeconomic status (0: very poor to 10: very rich)	0	10	5.7	0.847	-0.919	
Satisfaction with living arrangements (0: completely dissatisfied to 10: completely satisfied)	0	10	7.2	0.674		0.820
				0.635		0.785
Housing characteristics^c						
				Communities	Age of the house and length of stay in the same neighbourhood (41.3 %)	Amenities in the building and in the home (34.9 %)
Number of years living in the neighbourhood or municipality	0	95	49.9	0.840	0.913	

(continued)

Table 8.1 (continued)

	Descriptive statistics			Factor analysis (Extraction method: principal Components; rotation varimax with Kaiser normalization)		
	Min.	Max.	Mean		Components and loadings ^a (% of total variance explained)	
Number of years living in the home	0	93	37.2	0.822	0.885	
Number of amenities in the home	4	19	12.2	0.714	0.841	
Number of amenities in the building	0	5		0.675	0.803	
Meaning of house for the residents (based on the agreement with the items: 1: no agree at all to 5: strongly agree)^d				Communi- nalities	High degree habitability according to physical aspects of the house and perception and security in home (42.9 %)	Feeling lonely, confinement and low living conditions in the house (9.8 %)
The house has good lighting and ventilation	2	5	4.4	0.656	0.796	Lack of control and autonomy over decisions affecting home (8.5 %)
The house is well designed for example (for carrying out personal washing and hygiene activities, or domestic activities)	2	5	4.4	0.630	0.792	
The house for me is a comfortable place to live suited to my needs	1	5	4.4	0.646	0.782	
The size and distribution of the house are adapted to my situation	2	5	4.4	0.630	0.769	

The house is free of any barriers that might impede my mobility inside	1	5	4.3	0.625	0.768			
The house is in a good state of repair	1	5	4.3	0.588	0.764			
The house is well insulated from the cold, heat, dampness and noise	1	5	4.3	0.569	0.742			
The place where I live is well located and communicated	1	5	4.3	0.487	0.685			
The facilities of the building/property adapt to my needs	1	5	4.1	0.474	0.673			
It is a place where I feel safe and relaxed, where nobody bothers me	1	5	4.4	0.479	0.656			
The house is a place in which I feel confined, with poor habitability conditions	1	5	1.9	0.802		0.880		
A place where I feel alone	1	5	1.9	0.501		0.592	0.346	
Decisions regarding renovations, furniture, etc. in my house are taken by other people for me	1	5	2.6	0.870			0.933	
Perceived problems/worries/concerns in the neighbourhood/town of residence (based on the agreement with the items: 1: no agree at all to 5: strongly agree)*								
Your neighbourhood/town has clean streets, and no air and water pollution	1	5	4.0	0.769	0.828	Peacefulness and cleanliness in the home environment (27.9 %)	Provision of services and urban infrastructure (23.3 %)	Integration and security on the residential environment (21.2 %)

(continued)

Table 8.1 (continued)

	Descriptive statistics			Factor analysis (Extraction method: principal Components; rotation varimax with Kaiser normalization)		
	Min.	Max.	Mean		Components and loadings ^a (% of total variance explained)	
Your neighbourhood or town is quiet, pleasant and noise free	1	5	4.0	0.761	0.793	0.360
In your neighbourhood/town you easily find services such as shops, services for the elderly, social services, health services, sports facilities, parks and gardens, public transport	1	5	4.2	0.817	0.866	
Your neighbourhood/town has free-flowing traffic movement, streets well signposted for pedestrians or drivers, where pedestrians are respected, well indicated zebra crossings or traffic lights	1	5	4.0	0.713	0.467	0.704
Streets and pavements are in good condition, roadworks are well indicated and do not impede walking freely, the streets are well lit	1	5	4.0	0.573	0.513	0.531

You are well integrated in the neighbourhood/town where you live, because you know, mingle and communicate with the people that live there	1	5	4.3	0.776			0.856	
Neighbourhood problems: You feel you can go out on to the street safely, that you are not in a hostile environment with people you don't know	1	5	4.2	0.655	0.366		0.711	
Accessibility to the services in the neighbourhood/town of residence (measured in minutes of walking access)^f				Communities	Accessibility to neighbourhood services or frequent use services (33.5 %)	Accessibility to municipality services and leisure services (28.8 %)	Accessibility to health services (16.7 %)	
Bars, cafeterias, restaurants	1	60	6.6	0.866	0.883			
Accessibility to neighbourhood/town services: grocery stores, bakery, supermarket	1	60	7.1	0.827	0.852			
Means of transport: bus, underground, taxi, other public means of transport	0	60	8.3	0.788	0.843			
Parish church, other religious services	0	60	10.3	0.701	0.641	0.385	0.377	
Sports facilities: swimming pool, sports courts, basketball, tennis, soccer, etc.	0	60	16.8	0.789		0.824		
Cultural services: libraries, cinemas, theatres, exhibition centres, etc.	0	60	16.6	0.783		0.820		

(continued)

Table 8.1 (continued)

	Descriptive statistics			Factor analysis (Extraction method: principal Components; rotation varimax with Kaiser normalization)		
	Min.	Max.	Mean		Components and loadings ^a (% of total variance explained)	
Day care centres for the elderly	0	60	13.3	0.842	0.480	0.719 0.308
Elderly social centres	0	60	12.6	0.888	0.548	0.709
Gardens, green parks	0	60	8.4	0.658	0.563	0.569
Health centre of medical specialities	0	60	19.2	0.798		0.872
Primary health care centre	0	60	13.2	0.745	0.352	0.341 0.710
Perception of the neighbours (based on the agreement with the items: 1: no agree at all to 5: strongly agree)[#]						
The neighbours are people like oneself or who share similar interests	1	8	4.0	0.753	0.844	
The neighbours are people who you can ask for help in case of need	1	8	4.0	0.758	0.829	
The neighbours are friendly and educated people	1	8	4.4	0.735	0.790	0.334
Neighbours much get into the private lives of people, they are gossips	1	8	4.3	0.802		0.862
Neighbours cause great discomfort (noise, dirt, etc.)	1	8	4.4	0.783		0.834

Residential satisfaction (0: completely dissatisfied to 10: completely satisfied) ^b				Communi- nities	Residential satisfaction (house, neighbourhood and neighbours) (63.5 %)		
Satisfaction with house of residence	2	10	7.7	0.651	0.807		
Satisfaction with the neighbourhood	0	10	7.5	0.650	0.806		
Satisfaction with neighbour relations	1	10	7.4	0.605	0.778		
Health and functioning ^a				Communi- nities	Health: good objective and subjective health opposite to depression and illness (37.8 %)	Functioning: high level of independence and good state of health (23.8 %)	
Satisfaction with general health state (0: completely dissatisfied to 10: completely satisfied)	0	10	6.8	0.637	0.793		
EQ-5D Self-perceived health status (EQ-5D-VAS: Visual Analogue Scale: 0: the worst imaginable health state to 100: the best imaginable health state)	0	100	66.2	0.604	0.763		
Depression (Hospital Anxiety and Depression Scale- Depression subscale, HADS-D) (≥ 11: suspicion of depression)	0	21	4.9	0.578	-0.701		
Number of self-reported chronic medical conditions	0	15	3.3	0.479	-0.685		

(continued)

Table 8.1 (continued)

	Descriptive statistics			Factor analysis (Extraction method: principal Components; rotation varimax with Kaiser normalization)			
	Min.	Max.	Mean	Components and loadings ^a (% of total variance explained)			
Health-Related Quality of Life (EQ-5D-TTO time trade-off) (<0: worse than death to a 1: state of perfect health)	-0.6	1.0	0.8	0.708	0.677	0.500	
Health state today compared with health state in the past 12 months (1: better, 2: much the same, 3: worse)	1	3	2.2	0.353	-0.568		
Functional Independence Scale (21: total dependence to 69: total independence)	21	69	64.4	0.776		0.873	
The Barthel Functional Ability Index (0: completely dependent to 100: completely independent)	0	100	95.8	0.792		0.856	
Use of health services (1: Never; 2: A year or more; 3: More than 3 months/less than 12 months; 4: More than a month/less than 3 months; 5: Between 2 and 4 weeks; 6: 2 weeks or less)^j				Communi- nalities	Hospital and emergency services (22.1 %)	Primary health and specialties services (19.9 %)	Physiotherapy and nursing services (15.9 %)
Hospital services	1	6	1.9	0.761	0.854		Use of dental services (15.7 %)
Emergency services	1	6	2.2	0.736	0.836		
Primary health services	1	6	4.6	0.744		0.857	
Medical specialist	1	6	3.0	0.595		0.562	0.454
Physiotherapist	1	6	1.7	0.796		0.851	

Nursing	1	6	3.0	0.667		0.556	0.585
Dentist	1	6	2.4	0.851			0.909

Source: Author

^aLoadings $\geq \pm 0.300$ are shown

^bVA: 75.3 %. KMO: 0.511. BTS: Chi-Square 886.339; Sig.: 0.000; gl: 6

^cVA: 76.2 %. KMO: 0.588. BTS: Chi-Square 879.997; Sig.: 0.000; gl: 6

^dVA: 61.2 %. KMO: 0.938. BTS: Chi-Square 5834.796; Sig.: 0.000; gl: 78

^eVA: 72.4 %. KMO: 0.804. BTS: Chi-Square 2127.037; Sig.: 0.000; gl: 21

^fVA: 79.0 %. KMO: 0.885. BTS: Chi-Square 5672.291; Sig.: 0.000; gl: 55

^gVA: 76.6 %. KMO: 0.819. BTS: Chi-Square 2144.829; Sig.: 0.000; gl: 10

^hVA: 63.5 %. KMO: 0.675. BTS: Chi-Square 601.570; Sig.: 0.000; gl: 3

ⁱVA: 61.6 %. KMO: 0.839. BTS: Chi-Square 3112.117; Sig.: 0.000; gl: 28

^jVA: 73.6 %. KMO: 0.722. BTS: Chi-Square 949.586; Sig.: 0.000; gl: 21

Min. minimum, Max. maximum, VA variance accounted for, KMO Kaiser-Meyer-Olkin measure of sampling adequacy, BTS Bartlett's test of sphericity

for each factor in each subject were used as independent variables in the subsequent statistical analysis.

To examine the influence of the factors or principal components (as independent variables) on life satisfaction (dependent variable), Multiple Linear Regression Analysis was used. The stepwise selection method was chosen, with a probability of F-to-enter ≤ 0.05 , and a probability of F-to-remove of 0.1.

8.3 Results

The sample population consisted of 56.3 % women, with an average age of 72 years old (range: 60–96). A primary school level of education was achieved by four out of every ten people, with equal proportions between those who had not completed any studies and those who had achieved secondary or higher-level education. In this context, a little more than half of older adults were retired, 8.5 % were pensioners and an equal proportion said they were still working.

Older adults lived in households with an average size of 2.3 people (range: 1–8) with 71 % living in households of 1 or 2 members; the average age of members of the household is 65.6 years old. In a range from 0 to 10, where 0 means a very poor household and 10 a very rich household, older adults valued the economic situation of their household at 5.7, i.e., an intermediate position, and said they were very satisfied with their living arrangements (7.2/10) (Table 8.1).

Regarding the residential environment, almost three quarters of the population were located in urban areas and only 10 % in rural municipalities; thus, half of the respondents said that they had spent an average of nearly 50 years living in the same neighbourhood or municipality, and about 37 years in the same house. Out of a total of 19 facilities or amenities in the house and 5 in the building or property where it is located, they reported having an average of 12.0 and 0.8, respectively. In general, older adults agreed in considering that the house in which they live has an appropriate design, structure, adaptation, location and facilities, that they feel safe and do not feel confined or alone; on the other hand, they showed that they were not particularly in agreement concerning decisions on home modifications being taken by others on their behalf. The perception of obstacles or problems in the area of residence also offered relatively favourable results in terms of assessing the residential environment positively in relation to location, infrastructure, provision of services and personal integration into community life.

With regard to health conditions, the interviewed population is characterised by showing an average of 3.3 diseases, and a Health-Related Quality of Life index (Kind et al. 2005; The Euroqol Group 1990; Badia et al. 2001, 2005) of 0.8 (minimum: -0.6 , maximum: 1.0), with a perception of health on the Visual Analogue Scale of 66.2 out of 100, and 71.6 % of subjects rated their present health the same as they had had over the last 12 months (mean: 2.2). The functional independence scale showed an average value of 64.4 out of 69 (Martínez-Martín et al. 2009) and the Barthel functional capacity index was 95.8 (Mahoney and Barthel 1965), respec-

tively, indicating a high degree of independence and functional capacity. Depression (measured on the Hospital Anxiety and Depression Scale, Depression subscale) (Zigmond and Snaith 1983) reached an average of 4.9 out of 21, relatively far from the value 11 which indicates suspicion of depression. In this context, satisfaction with overall health was 6.8 over 10.

Of the factor analyses for each of the clusters of independent variables (Table 8.1), 22 principal components were obtained which explained between 61 and 79 % of the cumulative variance after rotation. The communalities of the variables in the factors are relatively high. Statistical adequacy was proved by the measure of sampling adequacy Kaiser-Meyer-Olkin (checks whether the partial correlations between variables are small) which ranged between 0.511 and 0.938, and the Bartlett sphericity test, enabling rejection ($p > 0.001$) of the null hypothesis (no correlation between the variables used in each cluster).

With regard to information concerning the home environment and way of living together, the variables used formed two principal components: a first component grouped household size opposite the average age of household members, and in a second component, of subjective type, grouped socio economics assessment of the household and satisfaction with living arrangements. These two factors jointly explained 75.3 % of the total variance.

The variables related to general characteristics of the house were grouped in two principal components regarding years of residence in the neighbourhood and in the house on the one hand, and the amenities that it has on the other, explaining 76.2 % of the cumulative total variance after rotation.

The meaning of the house for residents, based on level of agreement with each of the items examined, correlated in three principal components: (i) high degree of habitability, physical aspects and perception and security in the home; (ii) low habitability conditions in the home and feeling of loneliness; and (iii) lack of control over decisions that affect the home. Together, these three components explained 61.2 % of the cumulative variance.

In connection with the neighbourhood or town of residence, two sets of variables were used. The first was on perception of problems and the second accessibility to services measured as walking access time. In the first case, three principal components explained 72.4 % of the cumulative total variance after rotation: (i) tranquillity and cleanliness; (ii) provision of urban services and infrastructure; and (iii) security and integration in the area of residence. The second set of variables also were grouped in three components which explained 79.9 % of the cumulative variance concerning time of access to services of various kinds: (i) neighbourhood and frequently used; (ii) municipal level and leisure and recreation; and (iii) health.

The neighbourhood dimension or persons living in the same neighbourhood or town formed two principal components which explained 76.6 % of the cumulative variance after rotation: (i) agreement with positive opinions of neighbours; and (ii) disagreement with negative opinions of neighbours.

Satisfaction with each of the attributes or domains of the residential environment (home, neighbourhood, neighbours) formed a principal component which explained 63.5 % of the variance.

Table 8.2 The influence of personal conditions, health and residential environment in the quality of life of the older-adults in Spain (multiple linear regression model)

Predictors (Principal components)	Correlation between the criterion variable and each of independent variable (r)	Unstandardized coefficients (B)		Standardized coefficients (Beta)	t	R square change	Sig. F change
		B	Std. Error				
(Constant)		0.027	0.042		0.626		
Perception of the household socio-economic status and satisfaction with living arrangements	0.482	0.343	0.050	0.329	6.888	0.232	0.001
Health: good objective and subjective health opposite to depression and illness	0.417	0.253	0.048	0.240	5.255	0.054	0.001
Residential satisfaction (house, neighbourhood and neighbours)	0.322	0.139	0.047	0.131	2.934	0.014	0.004

Source: Author

Criterion variable: satisfaction with life as a whole

Independent variables: principal components obtained through FA

Stepwise method: F-to-enter: ≤ 0.05 ; F-to-remove: 0.1

Multiple correlation coefficient (R)=0.548

Coefficient of determination: R square=0.301; Adjusted R squared=0.296; Sig. F <0.005

Health and functioning variables were grouped in two principal components which jointly explained 61.6 % of the cumulative variance: (i) health, component explained by good objective and subjective health opposite to depression and illness; and (ii) functioning, where the two variables correlated on functional capacity and independence, indicating a high level of independence.

Finally, the domain on use of health services resulted in four principal components (with 73.6 % of the total cumulative variance): (i) use of hospital and emergency services; (ii) primary care and medical specialist; (iii) physiotherapy and nursing; and (iv) dental care. The variable on use of the nursing service also loaded in the second factor, and the variable on medical specialists in the fourth factor, with slightly lower factor loadings.

The factor scores of the 22 principal components obtained were retained for use as independent variables in the multiple linear regression model (Table 8.2). This model showed an adjusted R Square of 0.30, i.e. 30 % of the variance of the crite-

rion variable was explained by the three statistically significant predictors of the regression equation ($p \leq 0.05$), namely, (i) socioeconomic perception of the household and satisfaction with living arrangements (beta coefficient: 0.329; $p < 0.001$); (ii) subjective and objective health opposite to depression and/or illness (beta: 0.240; $p < 0.001$); and (iii) satisfaction with the residential environment in its three items of home, neighbourhood and neighbours (beta: 0.131; $p = 0.004$).

8.4 Discussion and Conclusions

In the context of ageing in place, or ageing at home, this paper has explored personal, health and residential environment conditions of community-dwelling older-adults in Spain. Interrelationships have been analysed between the variables of each of the domains considered through latent factors, as well as the determining factors of overall satisfaction with life, as a quality of life indicator in old age.

These dimensions are among those considered most important in quality of life in old age, according to the results of previous research, which used a methodology based on the opinions of individuals. For this, an extensive design instrument was used based on open questions on subjective and objective indicators of quality of life (Fernández-Mayoralas et al. 2011). Health and family were the first and second domains, respectively, in importance in the life of older persons, with the family the most highly valued in terms of satisfaction or functioning. The residential environment, in its housing, neighbourhood and neighbours elements, although not mentioned among the five most important domains, attained a high level of satisfaction (Rojo-Pérez 2011).

Household, home, neighbourhood, neighbours are all components of the geographical space on different scales, where the life of the population unfolds (Fernández-Mayoralas et al. 2004). However, for older persons, separated now from an active working life, the private space of the residential environment (household, home) and public environment (neighbourhood or town of residence, neighbours) (Rojo-Pérez et al. 2007a) have very special meanings (Rubenstein and De Medeiros 2004). Hence the interest of this chapter lies in the fact that living at home is the ideal form of ageing for most of the older population (Tanner et al. 2012), and in the same respect it has been observed that older persons in Spain prefer ageing in their usual house (Rojo-Pérez et al. 2001), either their own home or that of their family members (Costa-Font et al. 2009). For this demographic group, the house and place where it is located become an environment with a double meaning. On the one hand, it is a geographical space where people of these generations have lived almost all their lives because there has been little residential mobility of said generations (Puga González 2004). It also has an emotional, cognitive and social nature (Oswald and Wahl 2005), with which the population associates positive evaluations, feelings of attachment, identity and meeting place and activity (Demiglio and Williams 2008).

Apart from characterising personal conditions, health in the quality of life of older persons also shows a geographical component in that a deterioration in health

with age may result in a decline in personal abilities and, consequently, the more frequent use of health services (Fernández-Mayoralas et al. 2000), whether neighbourhood health services (primary health centre) or others of a higher hierarchy (medical specialties centre, hospitals). Furthermore, the older population, weaker and more vulnerable in terms of health and functioning (Collard et al. 2012; Drubbe et al. 2014), requires specific social and health facilities in their residential environment to facilitate integration in this environment and avoid journeys that are unnecessary or not recommended for vulnerable older persons.

To meet the goal of the study, in line with the diversity of ageing (Biggs and Daatland 2004) and the multidimensionality of the quality of life construct (Lassey and Lassey 2001; Walker and Mollenkopf 2007), it has been necessary to use broad and varied objective and subjective information on the quality of life attributes analysed.

In managing this broad set of data, the statistical techniques used were applied to support the objectives pursued, summarising the original information through their latent factors, minimising loss of information and maximising the explanation of the criterion variable. To this end, the choice and use of specific techniques has offered high explanatory value results in the research problem faced.

The factor analysis has therefore helped reduce the baseline information with a low loss of it, as a high proportion in the variance of the variables was explained (between 61 %, for sets of variables on the significance of the house and health, and 79 % for variables reporting on accessibility to neighbourhood services measured in walking access time). In the same respect, the Kaiser-Meyer-Olkin coefficient and the Bartlett sphericity test have shown the adequacy of the results obtained. The first reported good sampling adequacy, according to the accepted criteria (Kaiser 1974), apart from the household and housing characteristics, while the Bartlett test indicated that the analyses were adequate and significant in that there is a correlation between the variables retained in each factor.

The regression model has shown the existence of a series of factors that increase satisfaction with life and, therefore, quality of life. Overall satisfaction with life among the older adult population in Spain will therefore be greater the higher the socio-economic status of the household and satisfaction with its structure (Ahmed-Mohamed and Rojo-Pérez 2011), the better the objective health of the individual and their perception thereof (Martínez-Martín et al. 2012), the lower the morbidity and incidence of depression (Fernández-Mayoralas et al. 2011), and the higher the satisfaction with the three residential environmental elements (housing, neighbourhood and neighbours) (Rojo-Pérez and Fernández-Mayoralas 2011).

The baseline assumptions have been confirmed by these results, in that better personal and community conditions would result in a greater satisfaction with life and, therefore, higher quality of life (Voicu 2014 first online). The high predictive power of subjective information has also been noted, in line with other research on well-being and quality of life (Bowling and Windsor 2001; Diener 2006; Rojo-Pérez and Fernández-Mayoralas 2011), and satisfaction with housing in relation to environmental barriers and functional limitations (Iwarsson and Wilson 2006). The three explanatory factors of the regression model are perceptual type, if the vari-

ables on number of diseases or health conditions and functioning of the second significant predictor in the regression model are excluded.

The circumstances of the family and material environment have been reflected in the factor with most predictive power, i.e. that which reports on the socio-economic perception of the household and satisfaction with living arrangements. The higher the satisfaction with way of living together and economic position of the household, the higher the quality of life (Clarke et al. 2005). In this study, only a fourth of older adults live alone and just under 50 % in two-person households, as a result of a domestic partnership or “empty nest” (López Doblas 2005; López de Heredia and Montoro Gurich 1998), so the average size of the household was relatively low. This way of living together resulted in one of the highest satisfactions among the partial satisfactions or with each dimension, which could indicate that the quality of life of older persons is enhanced by residential independence (Ahmed-Mohamed et al. 2008; López Doblas and Díaz Conde 2011), considered here as spatial or physical independence without evaluating other meanings of this concept (Hillcoat-Nallétamby 2014).

The economic variable (perception of the socio-economic status of the household) revealed a relatively low average position, with the economic situation normally being inversely associated here with quality of life (Netuveli et al. 2006), insofar as a poorer personal and household socio-economic level will contribute to its reduction.

The desire to live autonomously in terms of spatial residential independence, but also the perception of a relatively low economic situation, are results that must be considered when designing social policies for the care of vulnerable older persons, or those living alone or in small households, and also for the provision of economic resources that promote the ideal way of living together and a better perception of other personal and life well-being circumstances (Rodríguez-Rodríguez et al. 2011).

Both objective and subjective health was another determining factor of overall satisfaction with life in the model obtained. Health conditions (in terms of morbidity and depression) correlated inversely with the criterion variable, so experiencing lower morbidity and depression will result in greater satisfaction with life as a whole. Using the Personal Wellbeing Index as a dependent variable (Cummins et al. 2003), depression was a predictive factor in the same population sample studied (Martínez-Martín et al. 2012). A review of the literature on quality of life and depression in old age, based on content analysis, showed that a reduction in the development of depression symptoms and depression will provide a higher quality of life in this demographic group (Muhura 2012). As a result, treatment to alleviate this health condition would be part of the basis for better satisfaction with life (Chan et al. 2009).

Health-related quality of life based on the EQ-5D-3L instrument in its three dimensions considered (descriptive system, health perception and comparative health over the last 12 months), in conjunction with self-evaluation of health, showed that good health is a predictor of life satisfaction. This result is consistent with the conceptualisation that older individuals have of quality of life, while health

is considered the most important dimension (Fernández-Mayoralas et al. 2007; Fernández-Mayoralas 2011).

The functioning factor was not retained in the model obtained. This information could be contained in the health factor, in that this factor covers the variable that reports on the states of health of the EQ-5D-3L instrument, which assesses functionality in relation to mobility, personal care, daily activities, pain/discomfort and anxiety/depression.

As regards the residential environment, the retained factor can be considered a summary of the conditions of the community environment (Forjaz et al. 2011) with respect to the perception of individuals. The population studied showed high satisfaction with their residential environment, irrespective of the element considered (housing, neighbourhood, neighbours). However, this subjective assessment would reflect, to a certain extent, a contrary situation to the objective indicators, in that older adults in Spain still occupy residential spaces often unsuited to their personal circumstances. In this respect, a direct relationship has been observed between the age of residents and the age of the houses they occupy, but inverse to the facilities or services of the houses and residential environment (Rojo-Pérez 2011) for the way of living in old age, often characterised by a deterioration in their functional capacity. The data from the Population and Housing Censuses of 2011 show that, of those people aged 60 or over, a little more than four out of ten still live in Spain in houses without heating, 86% live in houses on the second floor or higher and two thirds do not have a lift (Instituto Nacional de Estadística). Heating and lifts, as well as other characteristics and facilities of houses that facilitate mobility and habitability, are very important amenities for the population as a whole, particularly for older persons, since they are a vulnerable group (Sánchez González 2009). A lack of facilities in housing for older persons could act as inhibitors of subjective well-being (Phillips et al. 2005), in the same way as poor accessibility to services in the area of residence (Rioux and Werner 2011).

One of the limitations of this study lies in the failure to explain the apparent paradox in the fact that quality of life in Spanish older adults, which was self-assessed by five main areas among eleven reported by individuals (Fernández-Mayoralas et al. 2011), did not include the residential environment among the most frequently mentioned, even though this dimension provided high satisfaction in overall quality of life (Rojo-Pérez and Fernández-Mayoralas 2011). More detailed research is needed in this respect through qualitative information collection techniques that help ascertain how older persons express their understanding of quality of life in various relevant dimensions without considering among them the residential environment, with this being the geographical context that can either favour or inhibit living a healthy and active life (Sixsmith et al. 2014).

As displayed, satisfaction with life, as an indicator of overall quality of life, is not explained by a single factor, but rather a set of factors that can have an effect by increasing or reducing quality of life (Netuveli et al. 2006). The regression model obtained has shown that the criterion variable (satisfaction with life as a whole) has been explained in just under one third of its variance, in line with other studies (Oswald et al. 2011), based on three significant factors from the two broad sets of

factors of quality of life analysed. In this regard, future studies most look at in more detail a global model that considers other additional dimensions, their interrelationships and effects on quality of life, namely: networks of family and social relationships, leisure and free time, economic resources and all this according to the meaning of this quality of life construct in the Spanish older population (Fernández-Mayoralas et al. 2011). Other studies have shown the impact of housing conditions on health and the difficulties of accessing economic resources to make the necessary modifications or repairs to age independently in the usual family home (Windle et al. 2006).

Quality of life in old age should not be diminished by environmental factors related to the residential and community environment, which might represent potential obstacles or barriers to personal conditions (Abellán García and Olivera Poll 2004; Gómez Jiménez 2003). Potential risk factors must be reduced by making suitable modifications in the residential environment to minimise the consequences (Lord et al. 2006; Fausset et al. 2011) and achieve a balance between the personal conditions of older persons and characteristics and facilities of the residential environment (Barnes and Design in Caring Environments Study Group 2002). In this context, action policies to support a healthy, active and independent life of the older person in their usual residential space must consider actions to adapt the residential environment and promote the autonomy of the older person while health and functioning declines with age. Consequently, optimising the resources of the physical space, such as housing (Wahl et al. 2009; Orrell et al. 2013), will play a key role while the residential environment is the primary context on a geographical microscale for ageing. The effects of policies designed to improve the conditions of the residential environment will help delay institutionalisation (De Almeida Mello et al. 2012) and, therefore, reduce the costs associated with this.

References

- Abellán García, A., and A. Olivera Poll. 2004. Dificultades en el entorno vivido. *Revista Multidisciplinar de Gerontología* 14(3): 184–186.
- Ahmed-Mohamed, K., and F. Rojo-Pérez. 2011. Forma de convivencia y redes familiar y de amistad. In *Calidad de Vida y Envejecimiento: la visión de los mayores sobre sus condiciones de vida*, ed. F. Rojo-Pérez and G. Fernández-Mayoralas, 169–197. Bilbao: Fundación BBVA.
- Ahmed-Mohamed, K., F. Rojo-Pérez, G. Fernández-Mayoralas, M.E. Prieto-Flores, V. Rodríguez-Rodríguez, and R. Lardiés-Bosque. 2008. Red familiar y distancia afectiva en la Calidad de Vida de la población mayor. In *Envejecimiento, despoblación y territorio: un análisis sobre la población española*, ed. L. López Trigal, A. Abellán García, and D. Godenau, 375–385. León: Universidad de León, Área de Publicaciones.
- Andrews, G.J., M. Cutchin, K. McCracken, D.R. Phillips, and J. Wiles. 2007. Geographical gerontology: The constitution of a discipline. *Social Science & Medicine* 65(1): 151–168. doi:10.1016/j.socscimed.2007.02.047.
- Badia, X., M. Roset, M. Herdman, and P. Kind. 2001. A comparison of United Kingdom and Spanish general population time trade-off values for EQ-5D health states. *Medical Decision Making* 21(1): 7–16. doi:10.1177/0272989X0102100102.

- Badia, X., E. Fernández, and A. Segura. 2005. Influence of self-rated health and related variables on EuroQol-valuation of health states in a Spanish population. In *EQ-5D concepts and methods: A developmental history*, ed. P. Kind, R. Brooks, and R. Rabin, 63–80. Dordrecht: Springer. doi:[10.1007/1-4020-3712-0_6](https://doi.org/10.1007/1-4020-3712-0_6).
- Barnes, S., and Design in Caring Environments Study Group. 2002. The design of caring environments and the quality of life of older people. *Ageing & Society* 22(6): 775–789. doi:[10.1017/S0144686X02008899](https://doi.org/10.1017/S0144686X02008899).
- Bartlett, H., and N. Peel. 2005. Healthy ageing in the community. In *Ageing and place. Perspectives, policy, practice*, ed. G.J. Andrews and D.R. Phillips, 98–109. London: Routledge, Taylor & Francis Group.
- Berkman, L.F., and I. Kawachi. 2000. *Social epidemiology*. New York: Oxford University Press.
- Biggs, S., and S.O. Daatland. 2004. Ageing and diversity: A critical introduction. In *Ageing and diversity. Multiple pathways and cultural migrations*, ed. S.O. Daatland and S. Biggs, 1–12. Bristol: The Policy Press.
- Bowling, A., and J. Windsor. 2001. Towards the good life: A population survey of dimensions of quality of life. *Journal of Happiness Studies* 2(1): 55–81. doi:[10.1023/A:1011564713657](https://doi.org/10.1023/A:1011564713657).
- Callahan, J.J.J. 1993. Introduction: Aging in place. In *Aging in place*, ed. J.J.J. Callahan, 1–4. Amityville/New York: Baywood Publishing Company.
- Chan, S., H.F. Chiu, W.T. Chien, W. Goggins, D. Thompson, and B. Hong. 2009. Predictors of change in health-related quality of life among older people with depression: A longitudinal study. *International Psychogeriatrics* 21(6): 1171–1179. doi:[10.1017/S1041610209990950](https://doi.org/10.1017/S1041610209990950).
- Clarke, L., M. Evandrou, and P. Warr. 2005. Family and economic roles. In *Understanding quality of life in old age*, ed. A. Walker, 64–83. Maidenhead: Open University Press.
- Collard, R.M., H. Boter, R.A. Schoevers, and R.C.O. Voshaar. 2012. Prevalence of frailty in community-dwelling older persons: A systematic review. *Journal of the American Geriatric Society* 60(8): 1487–1492. doi:[10.1111/j.1532-5415.2012.04054.x](https://doi.org/10.1111/j.1532-5415.2012.04054.x).
- Costa-Font, J., D. Elvira, and O. Mascarilla-Miró. 2009. Ageing in place? Exploring elderly people's housing preferences in Spain. *Urban Studies* 46(2): 295–316. doi:[10.1177/0042098008099356](https://doi.org/10.1177/0042098008099356).
- Cummins, R.A., R. Eckersley, J. Pallant, J.V. Vugt, and R. Misajon. 2003. Developing a National Index of subjective wellbeing: The Australian unity wellbeing index. *Social Indicators Research* 64(2): 159–190. doi:[10.1023/A:1024704320683](https://doi.org/10.1023/A:1024704320683).
- De Almeida Mello, J., T. Van Durme, J. Macq, and A. Declercq. 2012. Interventions to delay institutionalization of frail older persons: Design of a longitudinal study in the home care setting. *BMC Public Health* 12(615): 1–13. doi:[10.1186/1471-2458-12-615](https://doi.org/10.1186/1471-2458-12-615).
- Demiglio, L., and A. Williams. 2008. A sense of place, a sense of well-being. In *Sense of place, health and quality of life*, ed. J. Eyles and A. Williams, 15–30. Hampshire: Ashgate.
- Diener, E. 2006. Guidelines for national indicators of subjective well-being and ill-being. *Applied Research in Quality of Life* 1(2): 151–157. doi:[10.1007/s11482-006-9007-x](https://doi.org/10.1007/s11482-006-9007-x).
- Drubbe, I., M.E. Numans, G. Kranenburg, N. Bleijenberg, N.J.D. Wit, and M.J. Schuurmans. 2014. Screening for frailty in primary care: A systematic review of the psychometric properties of the frailty index in community-dwelling older people. *BMC Geriatrics* 14(27): 1–13. doi:[10.1186/1471-2318-14-27](https://doi.org/10.1186/1471-2318-14-27).
- Eyles, J., and A. Williams (eds.). 2008. *Sense of place, health and quality of life*. Hampshire: Ashgate.
- Fausset, C.B., A.J. Kelly, W.A. Rogers, and A.D. Fisk. 2011. Challenges to aging in place: Understanding home maintenance difficulties. *Journal of Housing for the Elderly* 25(2): 125–141. doi:[10.1080/02763893.2011.571105](https://doi.org/10.1080/02763893.2011.571105).
- Fernández-Ballesteros, R., I. Montorio, and M.I. Fernández de Trocóniz. 1998. Personal and environmental relationships among the elderly living in residential settings. *Archives of Gerontology and Geriatrics* 26(2): 185–198. doi:[10.1016/S0167-4943\(98\)00002-8](https://doi.org/10.1016/S0167-4943(98)00002-8).
- Fernández-Mayoralas, G. 2011. La salud y el funcionamiento como dimensión de la calidad de vida. In *Calidad de Vida y Envejecimiento. La visión de los mayores sobre sus condiciones de vida*, ed. F. Rojo-Pérez and G. Fernández-Mayoralas, 113–167. Bilbao: Fundación BBVA.

- Fernández-Mayoralas, G., V. Rodríguez, and F. Rojo. 2000. Health services accessibility among the Spanish elderly. *Social Science & Medicine* 50(1): 17–26. doi:[10.1016/S0277-9536\(99\)00247-6](https://doi.org/10.1016/S0277-9536(99)00247-6).
- Fernández-Mayoralas, G., F. Rojo-Pérez, and J.M. Rojo-Abuin. 2004. Components of the residential environment and socio-demographic characteristics of the elderly. *Journal of Housing for the Elderly* 18(1): 25–49. doi:[10.1300/J081v18n01_03](https://doi.org/10.1300/J081v18n01_03).
- Fernández-Mayoralas, G., F. Rojo Pérez, M.E. Prieto Flores, B. León Salas, P. Martínez Martín, M.J. Forjaz et al. 2007. *El significado de la salud en la calidad de vida de los mayores*. Madrid: Portal Mayores, Informes Portal Mayores, 74.
- Fernández-Mayoralas, G., F. Rojo-Pérez, B. Frades-Payo, P. Martínez-Martín, and M.J. Forjaz. 2011. La calidad de vida de los mayores nominada y evaluada por ellos mismos a partir del instrumento SEIQoL-DW. In *Calidad de Vida y Envejecimiento. La visión de los mayores sobre sus condiciones de vida*, ed. F. Rojo-Pérez and G. Fernández-Mayoralas, 83–112. Bilbao: Fundación BBVA.
- Fernández-Mayoralas, G., C. Giraldez-García, M.J. Forjaz, F. Rojo-Pérez, P. Martínez-Martín, and M.E. Prieto-Flores. 2012. Design, measures and sample characteristics of the CadeViMa-Spain survey on quality of life in community-dwelling older adults. *International Psychogeriatrics* 24(3): 425–438. doi:[10.1017/S1041610211002018](https://doi.org/10.1017/S1041610211002018).
- Forjaz, M.J., M.E. Prieto-Flores, A. Ayala, C. Rodríguez-Blázquez, G. Fernández-Mayoralas, F. Rojo-Pérez, et al. 2011. Measurement properties of the Community Wellbeing Index in older adults. *Quality of Life Research* 20(5): 733–743. doi:[10.1007/s11136-010-9794-2](https://doi.org/10.1007/s11136-010-9794-2).
- Forjaz, M.J., A. Ayala, C. Rodríguez-Blázquez, M.E. Prieto-Flores, G. Fernández-Mayoralas, F. Rojo-Pérez, et al. 2012. Rasch analysis of the International Wellbeing Index in older adults. *International Psychogeriatrics* 24(02): 324–332. doi:[10.1017/S104161021100158X](https://doi.org/10.1017/S104161021100158X).
- Gatrell, A.C. 2002. *Geographies of health: An introduction*. Oxford: Blackwell Publishers.
- Gómez Jiménez, M.L. 2003. Las barreras arquitectónicas y las personas mayores: nuevos retos desde la intervención administrativa en la promoción de vivienda. *Scripta Nova, Revista Electrónica de Geografía y Ciencias Sociales* 7(146): 104. [http://www.ub.es/geocrit/sn/sn-146\(104\).htm](http://www.ub.es/geocrit/sn/sn-146(104).htm). Accessed 17 Sept 2014.
- Hillcoat-Nallétamby, S. 2014. The meaning of “independence” for older people in different residential settings. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 69(3): 419–430. doi:[10.1093/geronb/gbu008](https://doi.org/10.1093/geronb/gbu008).
- Instituto Nacional de Estadística. 2007. *Padrón Municipal de Habitantes: Cifras Oficiales de Población a 1 de Enero de 2007*. <http://www.ine.es/jaxi/menu.do?type=pcaxis&path=/t20/e245/&file=inebase>. Accessed 29 May 2007.
- Instituto Nacional de Estadística. *Censos de Población y Viviendas 2011*. Madrid: Instituto Nacional de Estadística. <http://www.ine.es/censos2011/tablas/Inicio.do>. Accessed 14 Jun 2013.
- Iwarsson, S., and G. Wilson. 2006. Environmental barriers, functional limitations, and housing satisfaction among older people in Sweden: A longitudinal perspective on housing accessibility. *Technology & Disability* 18(2): 57–66.
- Kaiser, H.F. 1974. An index of factorial simplicity. *Psychometrika* 39(1): 31–36. doi:[10.1007/BF02291575](https://doi.org/10.1007/BF02291575).
- Kind, P., R. Brooks, and R. Rabin (eds.). 2005. *EQ-5D concepts and methods: A developmental history*. Dordrecht: Springer.
- Kylén, M., H. Ekström, M. Haak, S. Elmståhl, and S. Iwarsson. 2014. Home and health in the third age: Methodological background and descriptive findings. *International Journal of Environmental Research and Public Health* 11: 7060–7080. doi:[10.3390/ijerph110707060#sthash.Pv1WZe7h.dpuf](https://doi.org/10.3390/ijerph110707060#sthash.Pv1WZe7h.dpuf).
- Lassey, W.R., and M.L. Lassey. 2001. *Quality of life for older people: An international perspective*. Upper Saddle River: Prentice Hall.
- López de Heredia, D., and C. Montoro Gurich. 1998. *El envejecimiento de la población en la Unión Europea*. Madrid: Rialp.

- López Doblas, J. 2005. *Personas mayores viviendo solas. La autonomía como valor en alza*, Col. Estudios, Serie Personas Mayores 11001. Madrid: Instituto de Mayores y Servicios Sociales (IMSERSO).
- López Doblas, J., and M.D.P. Díaz Conde. 2011. La modernización social de la vejez en España. *Revista Internacional de Sociología* 71(1): 65–89. doi:[10.1017/S0144686X1000098X](https://doi.org/10.1017/S0144686X1000098X).
- Lord, S.R., H.B. Menz, and C. Sherrington. 2006. Home environment risk factors for falls in older people and the efficacy of home modifications. *Age and Ageing* 35(suppl_2): ii55–ii59. doi:[10.1093/ageing/af088](https://doi.org/10.1093/ageing/af088).
- Mahoney, F.I., and D.W. Barthel. 1965. Functional evaluation: The Barthel Index. *Maryland State Medical Journal* 14: 61–65.
- Mair, P., and J. De Leeuw. 2010. A general framework for multivariate analysis with optimal scaling: The R package aspect. *Journal of Statistical Software* 32(9): 1–23.
- Martínez-Martín, P., G. Fernández-Mayoralas, G. Frades-Payo, F. Rojo-Pérez, R. Petidier, V. Rodríguez-Rodríguez, et al. 2009. Validación de la Escala de Independencia Funcional. *Gaceta Sanitaria* 23(1): 49–54.
- Martínez-Martín, P., M.E. Prieto-Flores, M.J. Forjaz, G. Fernández-Mayoralas, F. Rojo-Pérez, J.M. Rojo, et al. 2012. Components and determinants of quality of life in community-dwelling older adults. *European Journal of Ageing* 9(3): 255–263. doi:[10.1007/s10433-012-0232-x](https://doi.org/10.1007/s10433-012-0232-x).
- Mesbah, M., B.F. Cole, and M.L. Ting Lee (eds.). 2002. *Statistical methods for quality of life studies: Design, measurements and analysis*. Boston: Kluwer Academic Publishers.
- Meulman, J.J. 2000. *Optimal scaling methods for multivariate categorical data analysis*. Leiden: Leiden University.
- Morris, K.S., E. McAuley, and R.W. Motl. 2008. Neighborhood satisfaction, functional limitations, and self-efficacy influences on physical activity in older women. *BMC International Journal of Behavioral Nutrition and Physical Activity* 5(13): 1–8. doi:[10.1186/1479-5868-5-13](https://doi.org/10.1186/1479-5868-5-13).
- Muhura, E.L.K. 2012. *An exploration of quality of life and depression in old age. A literature review*. Helsinki: Kuustankartano Center for the Elderly.
- Netuveli, G., R.D. Wiggins, Z. Zoe Hildon, S.M. Montgomery, and D. Blane. 2006. Quality of life at older ages: Evidence from the English longitudinal study of aging (wave 1). *Journal of Epidemiology and Community Health* 60(4): 357–363. doi:[10.1136/jech.2005.040071](https://doi.org/10.1136/jech.2005.040071).
- Orrell, A., K. McKee, J. Torrington, S. Barnes, R. Darton, A. Netten, et al. 2013. The relationship between building design and residents' quality of life in extra care housing schemes. *Health & Place* 21(1): 52–64. doi:[10.1016/j.healthplace.2012.12.004](https://doi.org/10.1016/j.healthplace.2012.12.004).
- Oswald, F., and H.W. Wahl. 2005. Dimensions of the meaning of home in later life. In *Home and identity in late life: International perspectives*, ed. G.D. Rowles and H. Chaudhury, 21–45. New York: Springer.
- Oswald, F., H.W. Wahl, O. Schilling, C. Nygren, A. Fange, A. Sixsmith, et al. 2007. Relationships between housing and healthy aging in very old age. *The Gerontologist* 47(1): 96–107. doi:[10.1093/geront/47.1.96](https://doi.org/10.1093/geront/47.1.96).
- Oswald, F., D. Jopp, C. Rott, and H.W. Wahl. 2011. Is aging in place a resource for or risk to life satisfaction? *The Gerontologist* 51(2): 238–250. doi:[10.1093/geront/gnq096](https://doi.org/10.1093/geront/gnq096).
- Patterson, P.K., and N.J. Chapman. 2004. Urban form and older residents' service use, walking, driving, quality of life, and neighborhood satisfaction. *American Journal of Health Promotion* 19(1): 45–52. doi:[10.4278/0890-1171-19.1.45](https://doi.org/10.4278/0890-1171-19.1.45).
- Pfeiffer, E. 1975. A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. *Journal of American Geriatric Society* 23(10): 433–441.
- Phillips, D.R., O.L. Siu, A.G.O. Yeh, and K.H.C. Cheng. 2005. The impacts of dwelling conditions on older persons' psychological well-being in Hong Kong: The mediating role of residential satisfaction. *Social Science & Medicine* 60(12): 2785–2797. doi:[10.1016/j.socscimed.2004.11.027](https://doi.org/10.1016/j.socscimed.2004.11.027).
- Puga González, M.D. 2004. *Estrategias residenciales de las personas de edad. Movilidad y curso de vida*. Barcelona: Fundación La Caixa.
- Rioux, L., and C. Werner. 2011. Residential satisfaction among aging people living in place. *Journal of Environmental Psychology* 31(2): 158–169. doi:[10.1016/j.jenvp.2010.12.001](https://doi.org/10.1016/j.jenvp.2010.12.001).

- Rodríguez-Blázquez, C., B. Frades-Payo, M.J. Forjaz, A. Ayala, P. Martínez-Martín, G. Fernández-Mayoralas, et al. 2011. Psychometric properties of the International Wellbeing Index in community-dwelling older adults. *International Psychogeriatrics* 23(1): 161–169. doi:[10.1017/S104161021000092X](https://doi.org/10.1017/S104161021000092X).
- Rodríguez-Rodríguez, V., F. Rojo-Pérez, G. Fernández-Mayoralas, K. Ahmed-Mohamed, R. Lardiés-Bosque, M.E. Prieto-Flores, et al. 2011. Recursos económicos y calidad de vida en la población mayor. *Revista Internacional de Sociología* 69(1): 195–227.
- Rojo-Pérez, F. 2011. El entorno residencial como escenario del envejecimiento en casa y de calidad de vida en la vejez. In *Calidad de Vida y Envejecimiento. La visión de los mayores sobre sus condiciones de vida*, ed. F. Rojo-Pérez and G. Fernández-Mayoralas, 271–319. Bilbao: Fundación BBVA.
- Rojo-Pérez, F., and G. Fernández-Mayoralas. 2011. Los determinantes subjetivos en la calidad de vida en la vejez y factores explicativos. In *Calidad de Vida y Envejecimiento. La visión de los mayores sobre sus condiciones de vida*, ed. F. Rojo-Pérez and G. Fernández-Mayoralas, 339–360. Bilbao: Fundación BBVA.
- Rojo-Pérez, F., G. Fernández-Mayoralas, E. Pozo-Rivera, and J.M. Rojo-Abuín. 2001. Ageing in place: Predictors of residential satisfaction of elderly. *Social Indicators Research* 54(2): 173–208. doi:[10.1023/A:1010852607362](https://doi.org/10.1023/A:1010852607362).
- Rojo-Pérez, F., G. Fernández-Mayoralas, V. Rodríguez-Rodríguez, M.E. Prieto-Flores, and J.M. Rojo-Abuín. 2007a. Entorno residencial de los mayores en España. Hacia una clasificación municipal. *Boletín de la Asociación de Geógrafos Españoles* 43: 51–72.
- Rojo-Pérez, F., G. Fernández-Mayoralas, V. Rodríguez-Rodríguez, and J.M. Rojo-Abuín. 2007b. The environments of ageing in the context of the global quality of life among older people living in family housing. In *Quality of life in old age. International and multi-disciplinary perspectives*, Social indicators research series, vol. 31, ed. H. Mollenkopf and A. Walker, 123–150. Dordrecht: Springer.
- Rojo-Pérez, F., G. Fernández-Mayoralas, M.J. Forjaz, C. Delgado-Sanz, K. Ahmed-Mohamed, P. Martínez-Martín, et al. 2009. *Población mayor, calidad de vida y redes de apoyo: demanda y prestación de cuidados en el seno familiar*. Madrid: Escuela Nacional de Sanidad, Instituto de Salud Carlos III, Ministerio de Ciencia e Innovación. <http://gesdoc.isciii.es/gesdoccontoller?action=download&id=14/09/2012-db793c3d55>
- Rosenberg, M.W. 1998. Medical or health geography? Populations, peoples and places. *International Journal of Population Geography* 4(3): 211–226.
- Rowe, J.W., and R.L. Kahn. 1997. Successful aging. *The Gerontologist* 37(4): 433–440.
- Rubenstein, R., and K. De Medeiros. 2004. Ecology and the aging self. In *Annual review of gerontology and geriatrics. Aging in context: Socio-physical environments*, ed. H.W. Wahl, R. Scheidt, and P. Windley, 59–84. New York: Springer.
- Sánchez González, D. 2009. Geografía del envejecimiento vulnerable y su contexto ambiental en la ciudad de Granada: discapacidad, dependencia y exclusión social. *Cuadernos Geográficos* 45: 107–135.
- Sirgy, M.J., D.R. Rahtz, M. Cicic, and R. Underwood. 2000. A method for assessing residents' satisfaction with community-based services: A quality-of-life perspective. *Social Indicators Research* 49(3): 279–316. doi:[10.1023/A:1006990718673](https://doi.org/10.1023/A:1006990718673).
- Sixsmith, J., A. Sixsmith, A.M. Fänge, D. Naumann, C. Kucsera, S. Tomsone, et al. 2014. Healthy ageing and home: The perspectives of very old people in five European countries. *Social Science & Medicine* 106(1): 1–9. doi:[10.1016/j.socscimed.2014.01.006](https://doi.org/10.1016/j.socscimed.2014.01.006).
- Tanner, B., D. Jonge, and T. Aplin. 2012. Meanings of home for older people. In *International encyclopedia of housing and home*, ed. S.J. Smith, 246–250. Oxford: Elsevier.
- The Euroqol Group. 1990. EuroQol – A new facility for the measurement of health-related quality of life. *Health Policy* 16(3): 199–208. doi:[10.1016/0168-8510\(90\)90421-9](https://doi.org/10.1016/0168-8510(90)90421-9).
- The International Wellbeing Group. 2006. *Personal Wellbeing Index – Adult (PWI – A). Manual. 4th edition, revised 16-11-2006*. Melbourne: Australian Centre on Quality of Life, Deakin University.
- Voicu, B. 2014. Priming effects in measuring life satisfaction. *Social Indicators Research*, 1–21. doi:<http://dx.doi.org/10.1007/s11205-014-0818-0>. Accessed 17 Sept 2014.

- Wahl, H.-W., O. Schilling, F. Oswald, and S. Iwarsson. 2009. The home environment and quality of life-related outcomes in advanced old age: Findings of the ENABLE-AGE project. *European Journal of Ageing* 6(2): 101–111. doi:[10.1007/s10433-009-0114-z](https://doi.org/10.1007/s10433-009-0114-z).
- Walker, A., and H. Mollenkopf. 2007. International and multidisciplinary perspectives on quality of life in old age: Conceptual issues. In *Quality of life in old age. International and multidisciplinary perspectives*, Social indicators research series, vol. 31, ed. H. Mollenkopf and A. Walker, 3–13. Dordrecht: Springer.
- Westaway, M., S. Olorunju, and L.C. Rai. 2007. Which personal quality of life domains affect the happiness of older South Africans? *Quality of Life Research* 16(8): 1425–1438. doi:[10.1007/s11136-007-9245-x](https://doi.org/10.1007/s11136-007-9245-x).
- Wilson, K., S. Elliott, M. Law, J. Eyles, M. Jerrett, and S. Keller-Olaman. 2004. Linking perceptions of neighbourhood to health in Hamilton, Canada. *Journal of Epidemiology and Community Health* 58(3): 192–198. doi:[10.1136/jech.2003.014308](https://doi.org/10.1136/jech.2003.014308).
- Windle, G.S., V. Burholt, and R.T. Edwards. 2006. Housing related difficulties, housing tenure and variations in health status: Evidence from older people in Wales. *Health & Place* 12(3): 267–278. doi:[10.1016/j.healthplace.2004.08.010](https://doi.org/10.1016/j.healthplace.2004.08.010).
- World Health Organization. 2002. *Active ageing. A policy framework*, 1–60. Geneva: World Health Organization, Department of Health Promotion, Noncommunicable Disease Prevention and Surveillance.
- Zigmond, A.S., and R.P. Snaith. 1983. The hospital anxiety and depression scale. *Acta Psychiatrica Scandinavica* 67(6): 361–370. doi:[10.1111/j.1600-0447.1983.tb09716.x](https://doi.org/10.1111/j.1600-0447.1983.tb09716.x).

Chapter 9

Role and Function of Urban Habitat in the Quality of Life of Older People: The Case of Valparaíso, Chile

Giulietta Fadda, Alejandra Cortés, and Alessandra Olivi

9.1 Introduction

This chapter is based on research project FONDECYT No. 1061179, entitled “Quality of Life of Senior Citizens in an Urban Habitat: Valparaíso case study.” This research aimed to further our understanding of the interrelationships in Valparaíso, between urban structures, quality of life and ageing, thus contributing to consolidating its theoretical formulation. This implied finding out about the bearing that certain conditions of urban habitats have on the quality of life of the population’s oldest age group, the urban habitat being construed as a combination of natural spaces and the built environment, a product of relationships between natural and man-made elements and the social life platform. To explore its relationship with senior citizens’ quality of life, we analysed both the physical and objective conditions of the urban environment, and also the subjective and perceptual dimension of the relationship between space and individuals.

G. Fadda, Ph.D. (✉)

Faculty of Architecture, University of Valparaíso, Valparaíso, Chile

e-mail: gfadda@vtr.net

A. Cortés, Mcs

Faculty of Architecture and Planning, University of Chile, Santiago de Chile, Chile

e-mail: acortesfuentes@uchilefau.cl

A. Olivi, Ph.D.

Institute of Latin American Studies, University of Seville, Seville, Spain

e-mail: aolivi@us.es

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D. Sánchez-González, V. Rodríguez-Rodríguez (eds.), *Environmental Gerontology in Europe and Latin America*, International Perspectives on Aging 13, DOI 10.1007/978-3-319-21419-1_9

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9.1.1 Ageing, Quality of Life (QOL) and Urban Habitats

During the last decades of the twentieth century, the decline in levels of mortality and the relative weight of children and young people has impacted the overall ageing of the world's population. Ageing and urbanization are two global trends that, together, are important factors that characterize the twenty-first century (WHO 2007). Cities are growing, as is the proportion of senior citizens. Although both phenomena are the product of successful development during the twentieth century, their complex structural (demographic, economic and social) implications mean that the theoretical framework defining the concept of urban development has to be rethought.

According to Chackiel (2000), modern societies are marked by two outstanding demographic facts: people live far longer, on average, than ever before and the number of senior citizens is growing significantly. As connected as they may be, both aspects represent different concepts: "the first is the extension of individuals' life-span; the second refers to population ageing, which is generally expressed by an increase in the proportion of senior citizens."

Human population ageing has turned into one of the most significant demographic processes of the end of the twentieth century and of the next decades. Demographic ageing is defined as the relative increase in the elderly population, and "a phenomenon of such importance and magnitude, so new in human history, that one can only make educated guesses about its consequences" (Solari 1987; Chackiel 2000). The number of people aged over 60 has risen at an unprecedented rate, both in absolute and relative terms. The total number and the proportion of senior citizens are both growing all over the world at a hitherto unknown scale and at a spectacular pace: "in 1950, the number of people aged 60 or more was roughly 204 million. In 1998, the figure has reached 579 million and according to projections, by 2050 it will have risen to 2 billion, and will equal the child population" (WHO 2012a). Meanwhile, the ECLAC (2012) estimates that Latin America will have a total of 113.6 million senior citizens by 2030, representing 16.5 % of the total population.

In the context of the sweeping changes that have taken place in Latin America in recent decades, Chile too has undergone a substantial transformation in its population age structure, as the growth rate of its oldest age group has increased considerably and its life expectancy index has reached 79.57 years (WHO 2012b). For instance, in the twentieth century, while the total population and the under-60 population rose nearly five-fold, the senior citizens population grew seven and a half-fold, and is expected to have doubled in 20 years' time. According to ECLAC projections (2012: 60), by 2030, the 60 year and over age bracket will account for 23 % of the total population. One of the most crucial results of the latest census (INE 2012) is population ageing: *the number of people aged 60 and over soared from 1,717,478 in 2002, to 2,409,312 in 2012, and from 11.4 to 14 % of the total population, and in Valparaíso this percentage is now 17.11 %. Despite representing a historic achievement, these figures pose a huge challenge.* Alongside the quantum

leap have come other quality leaps, triggering new physical and social needs, and a solution is becoming increasingly necessary by the day. The population age structure “must be tackled with bold public policies, offering broad, caring and efficient coverage, that not only focus their efforts on senior citizens but also contribute to building a society for all ages in which security and QOL in old age are forged from youth” (Guzmán et al. 2003). Senior citizens’ situation and QOL will depend heavily on the “importance that society attributes to safe, satisfying and dignified ageing, which in turn depends on the information that is available about senior citizens’ expectations, values and living conditions” (Palomba 2003). These considerations point to the need to develop a social consciousness and find out about the experience and subjective experience of senior citizens themselves.

This change in the population’s demographic structure involves changes in society as a whole, triggering new physical and social requirements, and a solution is becoming increasingly necessary by the day: health system, education system, job market, pension needs, to name but a few (Oddone 1997). However, in our reality, this ageing process is occurring without a level of development capable of ensuring the conditions necessary to afford the oldest age groups an acceptable QOL, which depends, among other variables, on the features of the place where they live and the constraints specific to their habitat.

The QOL concept emerged in the 1970s as a reaction to the economicist and quantitative criteria employed in “social reports” or standard of living studies, placing the problem outside a purely technocratic approach (Rueda 1997). Although some have kept on using the QOL concept, and only associating it with objective conditions, a more current definition of the concept implies also including aspects that stem both from social relationships, developmental expectations and individuals’ perceptions.

From this perspective, the QOL concept encompasses tangible and intangible, objective and subjective, individual and collective aspects that condition people’s welfare in a given environment. Proposing a definition, Glatzer and Zapf (1984) suggested that the concept of QOL is a multidimensional welfare term that means the ‘objective’ living conditions are satisfactory and that there is a high degree of ‘subjective’ welfare; it also includes the individual satisfaction of needs, collective welfare. So studying a community’s QOL means analysing not only the physical and objective conditions, but subjective experiences that individuals have regarding their existence in their habitat or environment. It involves assessing how individuals live, to what extent they expect those conditions to change, and what degree of satisfaction is achieved. “Objective indicators are necessary yet not sufficient, because they require an unquestionable complement: to distinguish how objective aspects, which are largely linked to socioeconomic ones, are expressed within the individual and how much these indicators matter to them” (García-Viniegras 2008). This conception of QOL has been backed by the UN and UNESCO, for studying the welfare of groups living under certain circumstances.

In environmental gerontology studies, which focus on analysing the relationship between environmental resources and maintaining senior citizens’ autonomy

and welfare, the complementarity between objective and subjective aspects of QOL is particularly relevant for exploring the individual/environment relationship (Lawton 1999; Wahl and Lang 2004; Wahl et al. 2005; Wahl and Gitlin 2007). Several studies purport that personal life and ageing are invariably linked to specific environmental conditions, which in our case refer to the urban habitat. This relationship is a determining factor in QOL, and can improve or worsen senior citizens' quality of life, and even have a bearing on the prevention or worsening of disabilities.

The multiple dimensions of the QOL concept consider a set of conditions that are required for an environment to favour senior citizens' welfare (Wahl et al. 2005). The key aspects of a city that have a bearing on QOL include: segregation and isolation; density; the neighbourhood or environment's demographic profile; the location of amenities, services and infrastructure; urban traffic; citizen participation; water and air pollution; and risks of floods or landslides. It should be added that these problems do not affect all groups of inhabitants equally, because some groups are far more vulnerable, including senior citizens, the conclusion drawn being that there is inequality and discrimination in "the right to the city". To provide more specific details about these elements that negatively impact, and therefore restrict senior citizens' ability to function in the city, one could mention: limitations in availability and access to infrastructure and facilities; dispersion and segregation of the places of residence, supply, services and entertainment; the shortage of public transport, insecurity and the fact that decision-makers fail to take their opinions into account. The poor and oldest sectors are doubly discriminated against in terms of urban QOL. That is why, in certain circumstances, the urban environment leads to some activities becoming too difficult or even impossible to do, especially for the most vulnerable groups, and some authors go so far as to speak of "coercion of urban environments."

From an ecological perspective, which explains an optimal functioning in old age as an interaction between individual adaptation and environmental change (Bronfenbrenner 1979), various initiatives and trends in urban design and planning services for senior citizens have emerged. Some of the most outstanding, to name but a few, are: universal design, accessibility, healthy cities, livable communities, walkable communities and ageing in place. Emphasizing other determining factors of urban ecology, the WHO (2002) pointed out that a physical environment that takes account of older people's needs can be crucial in determining whether they are dependent or independent.

For its part, the Madrid International Plan of Action on Ageing (UN 2003) believes that creating an enabling environment for older people can encourage family and community structures and networks, supporting this age bracket's ageing process. Regionally, the Action Plan for Latin America and the Caribbean considers that a key course of action for coping with ageing is to promote an elderly-friendly urban environment. This shows why it is so important to study the situations that senior citizens face in big cities, so as to make improvements to urban design, renovating public spaces and urban settings to build elderly-friendly neighbourhoods and friendly cities (ECLAC 2003).

9.1.2 *Valparaíso and Its Neighbourhoods*

Due to its very peculiar characteristics, Valparaíso's topography has played a decisive factor in the city's very existence and development, making it very special both in terms of its physical form, urban structure, and its socio-cultural life. Valparaíso is "a city divided into a flat area (known as the 'plan') ... and an area of coastal relief, formed by a chain of hills of similar heights" (Waisberg 2000), with the cliff separating the Plan from the hills. Valparaíso city has been around a bay open to the north, on a narrow coastal plain and an "amphitheatre," formed by 42 hills, facing the Pacific Ocean. On account of this layout, one always comes across seascapes and viewpoints, and the city's architecture spans from monumental buildings to small houses scattered all along the amphitheatre of hills, forming a colourful and varied landscape, steeped in identity (Jiménez 2000). This range of hills is connected to the sea by a network of roads, and is crossed by a system of ravines that converge towards the city's flat area or plain (Álvarez 2001), a fact that turns each hill into an independent unit.

The Plan, with 5 % of the resident population and 80 % of the services and goods production activities, is home to the city's amenities, while the hills, with 95 % of the population and about 15 % of the services and goods production activities, have historically been limited to neighbourhood amenities. Its amphitheatre-like shape means that the commercial and financial district is not central, but spread out along a longitudinal axis, to which all of the hills' roads lead on a distributed, proportional and even basis. So the centre is not polarized or encapsulated at a single point or an edge of the city, and can be reached in similar ways from all the surrounding hills.

This layout could be regarded as a physical barrier to free movement of senior citizens, because they find it harder to get around, yet these urban elements could also be friendly, rewarding or positive for their QOL.

In order to devise a tool for analysing Valparaíso's urban habitat, the authors developed a theoretical approach to the neighbourhood concept, which has underpinned and complemented the production of the cartographic maps and the urban and architectural attribute registration forms, so as to define and characterize the neighbourhoods that make up Valparaíso city.

A first approach to the neighbourhood concept points to its exclusively urban nature (Gravano 2003) and, in this regard, there is a broad consensus among authors. A neighbourhood is a fragment of a conurbation, and is one of the parts, sectors, areas or portions into which a city is divided, regardless of its size. A neighbourhood is also characterized by its inclusiveness, as part of a whole, of a larger scenario, namely the city that encompasses it.

The researchers reviewed by Gallestegui and Galea (2004), place different degrees of emphasis on the delimitation of a neighbourhood. There is talk of more or less defined and more or less imprecise physical and/or symbolic boundaries, and ones that do not always match administrative boundaries. Reference is also made to the combination of topographic and/or administrative factors, with others of a

sociological nature. The latter are based on the proximity and neighbourhood notion. Alternatively, some talk about boundaries produced by a road system, which often do not match those created in the general public's mind.

Although “spatiality is the most tangible variable, a neighbourhood is not an organic, natural or purely physical community or spatial unit. Its significant symbolic and identity-related character downplays the problem of scale” (Gravano 2003). So even though a neighbourhood is usually defined by spatial markers that define it, those external markers are not enough. A neighbourhood is not a finished unit, but instead structured from a close relationship between its physical and social elements.

Another defining feature of a neighbourhood is its functionality, as it is “primarily residential, associated with industrial and commercial sites and also with cultural and social functions that form more general categories, such as lifestyle” (Gravano 2003). Additionally, a neighbourhood could be a unit with “its own personality” and an urban-social concept, which could constitute a “family of families”, representing a “micro city”. It could also represent be a step between a city and an individual, an environment that its inhabitant knows perfectly and is familiar with, that they feel is their own and defined through personal and social perception. What's more, its surface area would be limited to walkable distances.

In short, the notion of a neighbourhood denotes differentiation and inequality within a city, serving as an indicator of the process of segregation in the use and structuring of the urban environment, and contributing to build values and ideals associated with the environment and its social fabric.

For the purposes of our research, the boundaries of Valparaíso's neighbourhoods have been defined, first of all, by the city's division into six longitudinal sectors or zones, predefined by the Modification to the Master Plan. The Report regarding the “Modification to the Valparaíso Master Plan-Historic Preservation Zone” (O.J. 10th October 1997), divides the city into six “levels”, that run from the sea to the top of the hills and which are:

1. Sea Level Zone.
2. Plan Zone between Sea Level and Cliff Level.
3. Cliff Level Zone or foothill chain.
4. Zone between Cliff Level and Avenida Alemania.
5. Zone between Avenida Alemania and Nuevo Camino del Agua (current city limit).
6. Cima Level Zone (between city limit and La Pólvora).

Therefore the whole city is divided lengthways into six zones or levels (Fig. 9.1).

However, these zones still do not meet the dimensions required by a neighbourhood unit, where inhabitants feel familiar with their surroundings, know it perfectly, perceive it as their own or can explore it on foot. To try to meet these requirements, what is proposed is to overlay another zoning, perpendicular to the first, formed by the lines that cut through these levels and are represented by the main ravines that separate the different hills (Fig. 9.2).

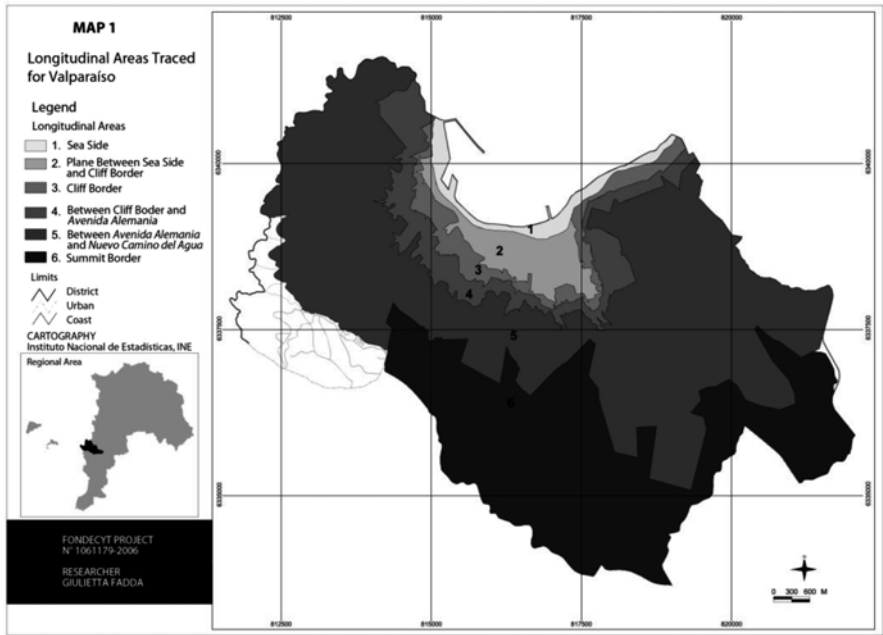


Fig. 9.1 Longitudinal zones in Valparaíso (Source: author)

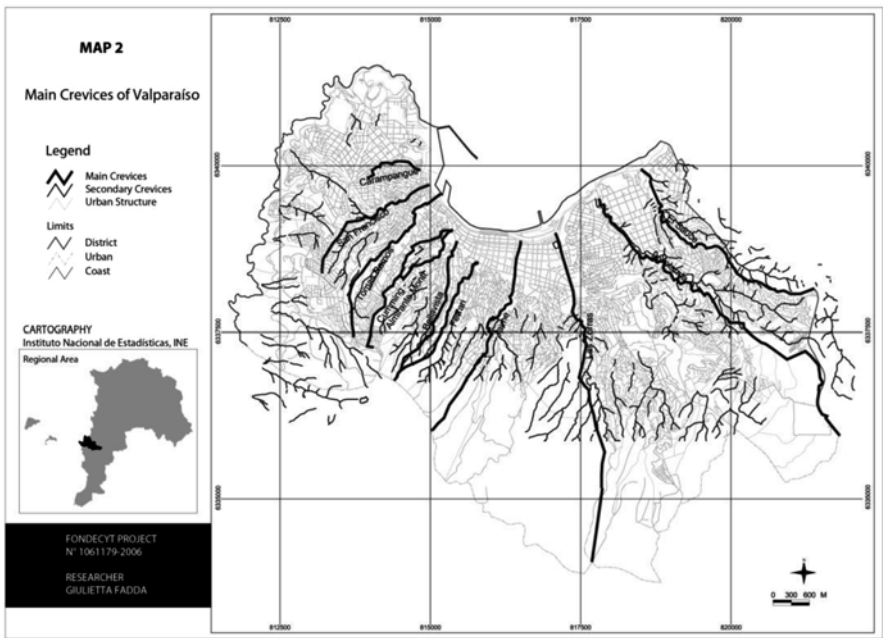


Fig. 9.2 Valparaíso's main ravines (Source: author)

So the resulting 98 neighbourhoods (Fig. 9.3), could potentially be units with “their own personality”, each one forming a “family of families” and representing a “micro city”. As well as representing a step between a city and an individual, an environment that its inhabitant knows perfectly and is familiar with, that they feel is their own and defined through personal and social perception. In general, they would mainly play a residential role, except in a few zones of the plan, where part of this role would be played by the financial, commercial and industrial sectors. Each of them could be a sociological reality based on the notion of proximity and neighbourhood.

The Plan distinguishes between three districts: Puerto, Comercio and Almendral. In the hills, it defined four longitudinal zones, matching zones 3, 4, 5 and 6 of the Valparaíso Master Plan. The result is 98 neighbourhoods: 3 in the Valparaíso plan and 95 in the hills.

After dividing the city into neighbourhoods this way, supplementary information was drawn from GIS maps that identified concentrations of substandard housing and densities of senior citizens per census block. To make the selection, the authors looked for neighbourhoods that met the following conditions: (1) higher densities of senior citizens; (2) socio-economic differences according to housing quality (financially stable and financially vulnerable); and (3) topographic locations: in the hills or in the plan. The selected neighbourhoods are illustrated in Fig. 9.4. After making this division and selecting the 13 neighbourhoods, qualitative and quantitative data surveys were conducted.

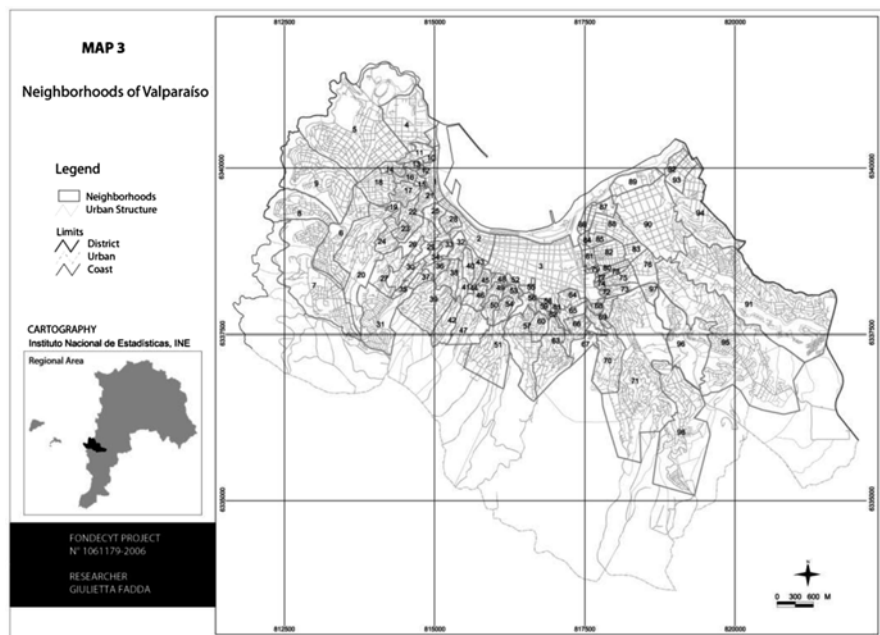


Fig. 9.3 Valparaíso's neighbourhoods (Source: author)

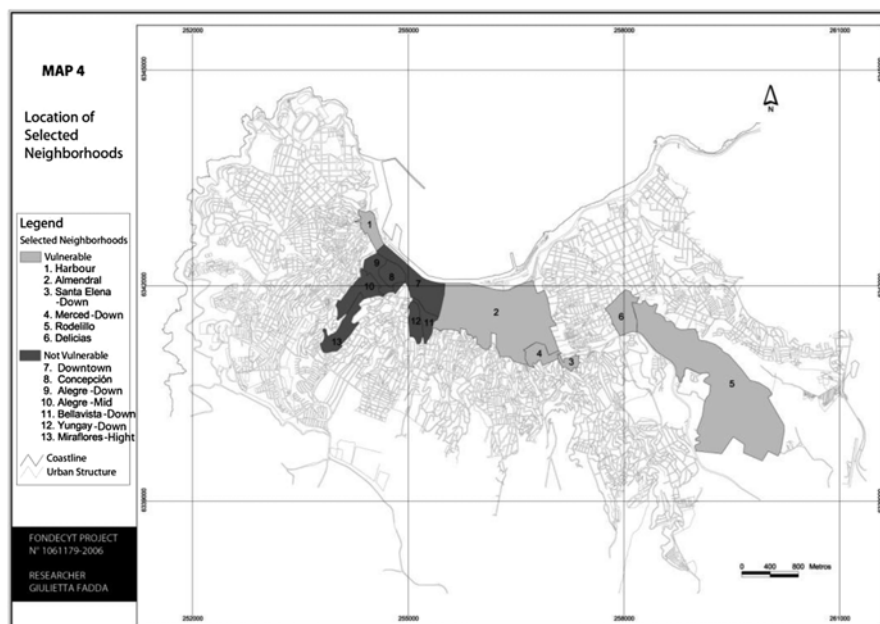


Fig. 9.4 Location of the selected neighbourhoods (Source: author)

9.2 Proposed Methodology for Analysing the Socio-spatial Dimension of Senior Citizens' QOL

To tackle the challenge posed by the complexity of the relationship between physical environment and senior citizens' QOL, the research resorted to the triangulation methodology option. Triangulation has proved a particularly effective strategy for analysing complex systems, insofar as it is not oriented merely to validation, but strives to broaden the boundaries of understanding of the reality under study. It helps to purify the inherent weaknesses of a single data collection method and control any personal bias by researchers. Triangulation of methods is often used in social sciences. Here it has been used to afford a comprehensive vision of the countless aspects involved in the relationship between urban habitats and senior citizens' QOL.

In line with the methodological approach adopted, a broad array of data collection methods and tools has been used, through the sequential and complementary use of qualitative and quantitative techniques. Taking into account the research interest descriptors, the data collection focused first on gathering information with which to characterize the objective conditions of the urban environment and socio-economic indicators regarding senior citizens. Secondly, on reconstructing the subjective perceptions and expectations that senior citizens have about their life in relation to the environment where they live.

So as to define and characterize the urban environment in question, the initial phase involved producing a map database, taking into account both the ecological and socio-demographic perspectives of the problem being researched. The vector geographic information system Arcview 3.2, combined with the Redatam+G4 system developed by CELADE/ECLAC (UN), were used to process the demographic, territorial and socio-economic information contained in the country's official statistics, regarding Valparaíso's senior citizens. This process produced 127 maps, divided into five thematic series¹ which have been the primary baseline for delimiting the neighbourhoods and selecting the areas in which to apply methodological tools chosen for the research.

In addition to the cartographic maps, urban and architectural attribute registration forms were drawn up, based on direct observation in 13 neighbourhoods in the city. The forms were used to record physical and topographic features, available amenities and/or infrastructure (nodes, landmarks, urban landscape features that are symbolic, representational, referential or of relevant interest; connection/disconnection networks) and information on the ways in which senior citizens use and interact with the urban environment. Some of the techniques used for recording the urban and architectural conditions were photographic recording, planimetric recording, GIS maps and sketches. A total of 232 records were produced (120 factsheets and 112 data analysis maps) and proved very useful in analysing and systematizing the study findings, as well as in selecting the neighbourhoods in which to apply the techniques for gathering information on senior citizens' subjective perceptions about their QOL in relation to their residential habitat.

Phase two of the research focused on gathering information to design the QOL Perception Survey questionnaire, through Focus Groups (FG) and a Delphi survey. The FG group dynamics served to identify the key elements, in conceptual and terminology terms, considered important or to define senior citizens' QOL in relation to the urban environment, which provided information that proved relevant for designing the survey. Focus group discussions revolved around the following main subjects: relationship with the physical environment (housing, neighbourhood, city) and relationship with the significant environment (formal and informal networks). A total of 4 FG were held with an intentional sample, based on four different criteria: density of senior citizens in each area of Valparaíso, socio-economic difference reflected by housing quality, ecological areas and location in different neighbourhoods of the city (plan/hill). To ensure maximum heterogeneity within the homogeneity, and project a comparative analysis capable of providing in-depth information

¹ Series A and B (21 maps) spatially represents the 2002 Population Census data. Series C (8 maps) represents the distribution of senior citizens by district, while Series D (78 maps) spatially represents 16 categories regarding senior citizens' QOL: health, education, housing, employment, cultural level, gender, community amenities, environmental features, transportation, political-administrative division, safety and security, property, demographic characteristics and basic services. Series E (20 maps) provides geographic information on indicators regarding construction sector investments, providing indications on trends in Valparaíso's urban development process.

on a larger number of issues, a certain balance was sought in the gender of participants and in the presence of both age groups (third and fourth age).

The information obtained from the research subjects through the FG technique was supplemented by experts' opinion on the matter, by consulting them via a Delphi survey. The Delphi method relies on individual consultation of a group of experts, through successive questionnaires, to reveal converging options and endeavour to reach a consensus. In order to obtain information for drawing up the general survey questionnaire, 30 experts from different fields of specialization (architects, town planners, doctors, nurses, sociologists, educators, social workers, economists, anthropologists and government officials) were consulted, about the following aspects: the main factors affecting senior citizens' QOL in urban habitats; which urban habitat elements or processes contribute to the senior citizens' segregation and/or marginalization in the city; priorities for an urban intervention policy to improve senior citizens' QOL in the city.

After the qualitative and quantitative information gathered by applying the aforementioned techniques were systematized, senior citizens' QOL fields and their respective indicators and sub-indicators were defined, and then served as the basis for designing the survey questionnaire. The survey covered five areas:

- (a) The human field, defined by the abilities, knowledge, job skills and health, included indicators such as: use of leisure time, privacy at home, the neighbourhood's needs, state of health, level of education, expectations, emotional support and perceived age-based discrimination.
- (b) The socio-cultural field, regarding social networks, capacity to take action (empowerment), roots and identity, consisted of indicators such as: their perception of the neighbourhood, neighbourhood insecurity issues, consideration of their opinions, their opinion about their neighbours, participation in organizations and offering support to others.
- (c) The natural field, concerning issues such as the environment, pollution, environmental health and vulnerability to disasters.
- (d) The physical field, regarding amenities and infrastructure, comprised the indicator called quality of neighbourhood services. This consisted of sub-indicators such as street cleaning, street lighting, garbage collection, sewers, fire and police service, road maintenance, health centres and clinics.
- (e) The financial-economic field, inherent to financial resources, was limited to indicators such as household income and perceived economic situation. The latter broke down into four sub-indicators: possibility of indulging oneself, possibility of saving moving, managing one's own money and financial freedom.

The survey, devised as a structured questionnaire, consisted of a set of preferably closed, multiple choice and degree-of-approval (attitude scale) questions, with regard to events and actions, and also to QOL opinions and perceptions, inquiring about respondents' perception of physical, socio-cultural and subjective elements and aspects of the urban environment. A total of 480 questionnaires were given to senior citizens (65.6 % men and 34.4 % women) living in the 13 districts selected according to the aforementioned study variables. In order to weight the survey

results, QOL indices were developed for each of the indicators and sub-indicators considered.

To complement the information provided by the survey, and shed further light on the most fundamental aspects of the urban habitat-senior citizens' QOL relationship, the ethnographic method was used, by conducting 27 in-depth interviews with key players, and holding informal conversations with senior citizens, engaging with them in public spaces and accompanying them on their daily trips around the city. This method also entailed using audiovisual recordings, not only as a recording tool, but as an interpretative tool. The interviews focused on rebuilding senior citizens' perception of their life in the city of Valparaíso, placing particular emphasis on the following dimensions: spatial representations and their significance; place making processes; access, use and control of urban spaces; spatialization of social networks. The information gathered through the ethnographic records provided relevant information about senior citizens' subjective experience in Valparaíso's urban fabric, exploring the attitudes, opinions, values, expectations, apprehensions, feelings and/or subjective perceptions of their QOL in relation to the city's structure and morphology.

Crossing the information provided by each of the instruments applied has helped produce relevant information about the research problem that will be discussed below.

9.3 Analysis of Factors that Condition Senior Citizens' Quality of Life

The research findings are the result of triangulating the different methodological tools employed. Although the questionnaire provides the quantitative framework of the analysis, its results have been interrelated with those of the other instruments: GIS maps, urban-architectural morphology observation forms, Focus Groups and in-depth interviews, placing special emphasis on the latter two on account of their qualitative nature.

After a statistical analysis of the survey data, QOL indices were developed for each of the indicators and sub-indicators, giving a quantified assessment of the results. Applying the result triangulation method, the assessments obtained were crossed with other qualitative data, to closer examine the meanings and interpretations that underlie the opinions expressed by the interviewed senior citizens.

The QOL index was constructed by selecting the survey questions that pointed directly to senior citizens' QOL. Each answer was assigned a QOL score: Very Poor (0–0.24); Poor (0.25–0.49); Good (0.50–0.74) and Very Good (0.75–1).

The results were broken down by sex, age, location (hill/plan), socio-economic status (vulnerable/stable) and ecological zone (financially stable hill/plan, financially vulnerable hill/plan) to obtain results for each of these categories.

Table 9.1 Senior citizens’ QOL field index

Field	Index
Economic-Financial	0.48
Natural-Environmental	0.48
Socio-Cultural	0.52
Physical	0.59
Human	0.68

Source: author

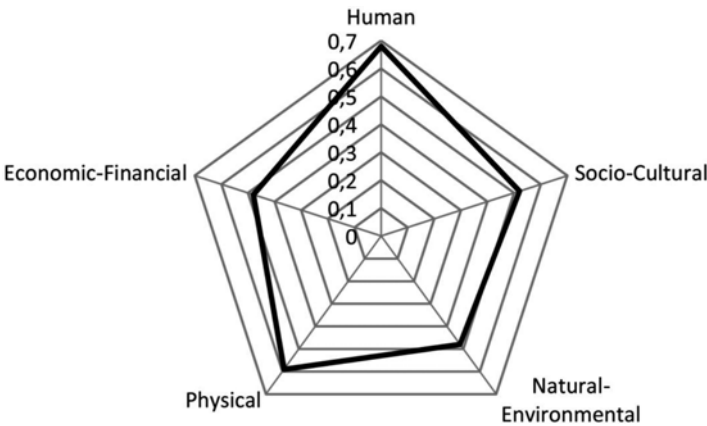


Fig. 9.5 Senior citizens’ QOL field index (Source: author)

Based on the broader aspects, and what it says about the five major fields into which the senior citizens’ QOL indicators were grouped, the Economic-Financial and Natural fields scored the worst, while as shown in Table 9.1 and Fig. 9.5, the Human field, which combines aspects such as the respondents’ abilities, knowledge, job skills and health, scored the highest.

To facilitate further analysis of the data, Tables 9.2 and 9.3 and Fig. 9.6 illustrate the results of the 21 indicators included in the 5 fields selected to assess the QOL of senior citizens in Valparaíso. Due to the large amount of information, the figures do not include the details of the sub-indicators mentioned above. These figures show the Indexes per indicator sorted in ascending order, from the worst-scoring (Participation in Organizations), to the best-scoring (Use of free time).

Table 9.2 breaks down the indices by Ecological Zone² plus the General Index value. Figure 9.6 displays the indices without discriminating by category and Table 9.4 distinguishes between them by Location (Hill and Plan) and differentiates the difference by ecological zone (Hill and Financially Stable Plan, Hill and Financially Vulnerable Plan).

²Name given in the project to designate internally homogeneous areas according to their location and socioeconomic status.

Table 9.2 Senior citizens' perceived QOL index

Perception	Indicator	Index value by urban zone				General index value
	Urban zone	HS ^a	HV ^b	Pl S ^c	Pl V ^d	
Very poor	Participation in organizations	0.09	0.06	0.11	0.08	0.09
	Neighborhood needs	0.23	0.09	0.19	0.27	0.20
	Neighborhood safety	0.33	0.17	0.18	0.17	0.21
Poor	Environmental contamination	0.33	0.35	0.22	0.20	0.28
	Your opinions taken into account	0.52	0.39	0.35	0.46	0.43
	Educational level	0.57	0.35	0.44	0.45	0.45
	Vulnerability to catastrophies	0.55	0.39	0.42	0.44	0.45
	Economic situation	0.50	0.43	0.39	0.5	0.46
	Family income	0.57	0.31	0.47	0.52	0.47
Good	Quality of services in your neighborhood	0.61	0.58	0.55	0.56	0.57
	Future expectations	0.69	0.56	0.60	0.59	0.61
	Health status	0.68	0.57	0.61	0.67	0.63
	Evaluation of your life experience	0.72	0.59	0.68	0.68	0.66
	Public hygiene	0.72	0.60	0.62	0.70	0.66
	Perception of your neighborhood	0.86	0.55	0.67	0.64	0.68
	Affective support	0.79	0.69	0.66	0.68	0.70
	Opinion of your neighbors	0.82	0.72	0.75	0.70	0.75
Very good	Age discrimination	0.88	0.82	0.78	0.81	0.82
	Support offered to others	0.88	0.74	0.91	0.87	0.85
	Privacy in the home	0.96	0.94	0.94	0.91	0.94
	Use of free time	1.00	0.96	1.00	0.96	0.98

Source: author

^aHS: economically stable hill^bHV: economically vulnerable hill^cPl V: economically vulnerable plan sector^dPl S: economically stable plan sector

The figures underscore how differently the range of aspects involved in senior citizens' QOL in Valparaíso are rated. The spiral in Fig. 9.6 shows that the lowest-scoring items (those closest to the centre=0) have to do with participation in organizations, amenity requirements and safety in the neighbourhood. They are followed, in ascending order, by pollution, lack of consideration of their opinions, household income, financial situation, educational level and vulnerability to disasters, whose scores remained below the midline of 0.5. On the other end of the scale, and perceived as very good, lack of age-based discrimination, the support that the elderly can give to others, privacy at home and the use of their free time. In general, it could be inferred that, unlike the worst-scoring items, the best-scoring ones depend more on senior citizens' individual initiative and social environment than actions by public authorities.

Table 9.3 Valparaíso senior citizens’ QOL indicator index

Indicator	QOL indicator index
Participation in organizations	0.08
Needs of the neighborhood	0.20
Factors of insecurity in the neighborhood	0.24
Contamination	0.30
Consideration of views	0.46
Educational level	0.47
Vulnerability to disasters	0.47
Perception of economic situation	0.48
Household income	0.48
Quality of services of the neighborhood	0.59
Expectations	0.62
Health	0.64
Perception of life experience	0.67
Environmental health	0.68
Perception of neighborhood	0.71
Emotional support	0.73
Opinion concerning neighbors	0.76
Perception of discrimination on grounds of age	0.84
Behaviors that effectively provides	0.84
Privacy housing	0.94
Use of leisure time	0.98

Source: author

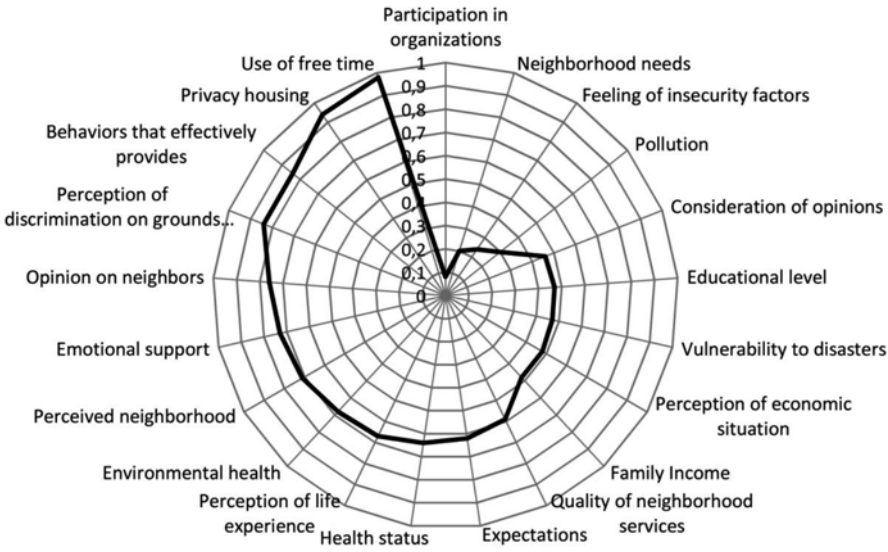


Fig. 9.6 Senior citizens’ QOL indicator according index total in Valparaíso (Source: author)

Table 9.4 Indices per senior citizens' QOL indicator according to ecological zone in Valparaíso

Indicator	Index			
	Hill financially Stable	Hill economically Vulnerable	Plan financially Stable	Plan economically Vulnerable
Participation in organizations	0.09	0.06	0.11	0.08
Needs of the neighborhood	0.23	0.09	0.19	0.27
Factors of insecurity in the neighborhood	0.33	0.17	0.18	0.17
Contamination	0.33	0.35	0.22	0.20
Consideration of views	0.50	0.43	0.39	0.50
Educational level	0.52	0.39	0.35	0.46
Vulnerability to disasters	0.55	0.39	0.42	0.44
Perception of economic situation	0.57	0.35	0.44	0.45
Household Income	0.57	0.31	0.47	0.52
Quality of services of the neighborhood	0.61	0.58	0.55	0.56
Expectations	0.68	0.57	0.61	0.67
Health	0.69	0.56	0.60	0.59
Perception of life experience	0.72	0.59	0.68	0.68
Environmental health	0.72	0.60	0.62	0.70
Perception of neighborhood	0.79	0.69	0.66	0.68
Emotional support	0.82	0.72	0.75	0.70
Opinion concerning neighbors	0.86	0.55	0.67	0.64
Perception of discrimination on grounds of age	0.88	0.82	0.78	0.81
Behaviors that effectively provides	0.88	0.74	0.91	0.87
Privacy housing	0.96	0.94	0.94	0.91
Use of leisure time	1.00	0.96	1.00	0.96

Source: author

When discriminating by location (hill/plan), the values are seen to be more positive on the hill than in the plan (Figs. 9.6 and 9.7), which would indicate that, broadly speaking, senior citizens living in the hills perceive a better QOL. The aspects that contribute most to this advantage are: the fewer factors of insecurity in the neighbourhood, the lower level of pollution, a better perception of the neighbourhood itself and better emotional support.

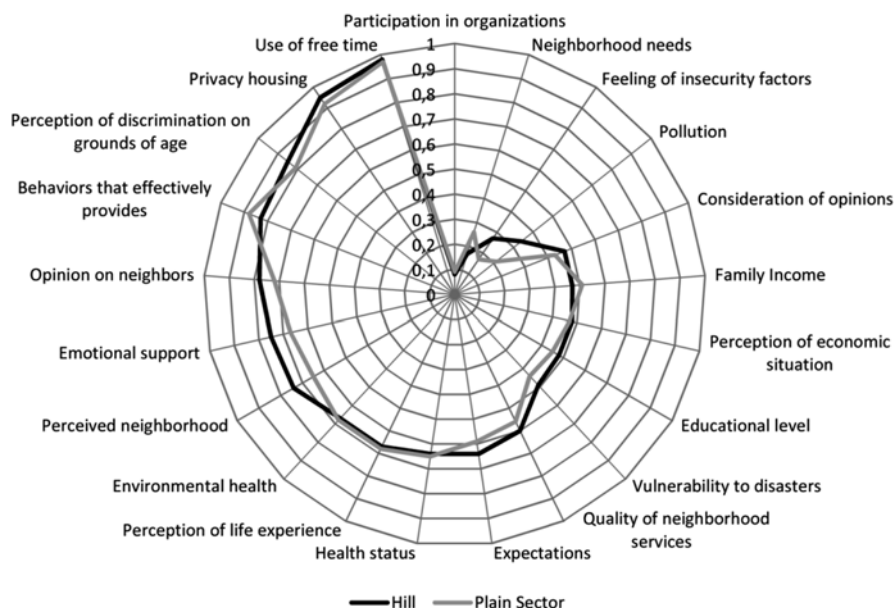


Fig. 9.7 Senior citizens' QOL indicator according index to location in Valparaíso (Source: author)

Nevertheless, after adding the socio-economic factor (Tables 9.2 and 9.4), the conclusion drawn is that the advantages of the hill are not homogeneous, and instead there is a big difference between the Financially Stable Hill and the Financially Vulnerable Hill. This implies that many advantages and just as many disadvantages have a different impact, depending on the inhabitants' socioeconomic status.

The general trends identified point to the existence of different degrees of relationship between the objective and subjective aspects of senior citizens' life context and the degree of autonomy and wellbeing that they experience. Crossing the survey data with the stories collected by conducting the Focus Groups and in-depth interviews³ shed further light on the spatial and social dimension of senior citizens' QOL and on the internal connections that spring up between these dimensions.

The neighbourhood, defined as the actual place inhabited by neighbours (Phillipson et al. 2001), is directly related to senior citizens' perception of their QOL. Senior citizens generally tend to view the neighbourhood where they live in positive terms. 67.3 % consider that their neighbourhood is not poor. Around 75 % consider their own neighbourhood a nice place, 75 % deem it an ideal place to live, about 65 % believe it is a safe place, and approximately 57 % would not be willing to change. Although considerable differences are seen between one socio-economic

³The following abbreviations are used in quotations taken from the interviewed senior citizens: FG/P (Plan Focus Group); FG/C (Hill Focus Group); I/P (Plan Interview) and I/C (Hills Interview).

area and another, the process of identifying with and feeling attached to one's own neighbourhood is far more marked in the hills.

...I was 22 when I came to live on this hill, in a house that's run down, has been hit by an earthquake and all that, but if they moved me from there, I'd die. Just imagine it: more than 60 years there, living in the same neighbourhood, on the same hill, I adore it. It doesn't matter that the houses aren't pretty anymore, because you get used to it (FG/H).

When senior citizens talk about it, the hills take on a positive dimension, unlike the plan, seen as a place where there is far less community life.

In the plan that doesn't happen, because nearly everyone from the plan works and comes home in the afternoon or evening, whereas on the hills we live more like a family, and there are closer ties between neighbours (FG/H).

The hill defines the space where places and meanings are shared; the subjects run into one another and meet up, forging daily and permanent ties. The fact that the hill feels like a community is valued highly, because it represents a way to "feel part of", to participate without having to move.

There is more communion among people who live on the hill, people get together more [...] either on the street corner or they get together in someone's house, there is more activity than in the plan, because here [in the plan] sometimes you don't even know who lives next door or talk to one another but up there⁴ almost everyone knows each other. They get together for one thing or another (FG/P).

The hill's very morphology seems to contribute to foster neighbourly relations, encouraging neighbours to interact with one another: the narrow streets, viewpoints, and the entrances through common steps and alleyways mean that people run into each other, fostering ongoing relationships that lead to ties of various kinds.

The fact that senior citizens rate their own neighbourhood positively is mirrored in the "Opinion about Your Neighbours" indicator (score of 0.75), showing an overall positive perception. 84 % of the respondents express the opinion that their neighbours are not conflictive. Despite no major differences being seen in this regard between the hill and the plan, in the financially vulnerable area there is a greater perception of neighbours as agents of conflict. Moreover, a significant percentage of senior citizens regard their neighbours to be friendly (70.8 %) and supportive (68.3 %). These opinions are more frequent among the senior citizens living on the hill and in the financially stable area because, as we have seen, such conditions make it easier to maintain stable ties and reciprocal relationships with neighbours.

The importance that senior citizens attach to relationships with neighbours is corroborated by the "Emotional Support"—related indicator (score of 0.70). Even though the most positive opinions focus on relatives (66 % feel very supported by their children, 53.9 % by their grandchildren and 34.6 % by a partner), senior citizens also attach great importance to friends and neighbours. 47 % of senior citizens feel very supported by friends and 40 % feel very supported by their neighbours, and the support provided by the latter is most appreciated in financially stable areas, a trend that is even stronger in the hills.

⁴The term "top" refers to the hills.

To assess the importance that senior citizens attach to the emotional support, and in many cases material support, of friends and neighbours, one must consider that almost half of senior citizens (49.8 %) do not have a partner and a fifth (19.6 %) live alone. To make up for or prevent their loneliness, often associated with the age condition itself, senior citizens tend to establish significant non-family ties.

I've got friends, see? When I was ill, they came to visit me at home ... they took me to see the doctor, because I don't have any children, and my relatives are dead (FG/H).

When I've had accidents, all the neighbours, that's 20 people ... coming running because I don't have anyone to me, now that I'm 80, I don't have anyone to me (FG/H).

The support of friends and neighbours helps to meet senior citizens' needs. For people who reach old age living totally on their own, these neighbourhood networks become crucial. Due to the lack of adequate social care, these networks become the only guarantee of conditions minimum of wellbeing.

We know that there are plenty of senior citizens who feel abandoned, others are bedridden, and if the neighbours weren't so supportive ... neighbours sometimes do work that isn't their responsibility [...] that's what the state agencies should be doing, yet the neighbours take on that work and the neighbours make sure he gets breakfast, look after him, sometimes wash him [...] That's why neighbours play such an important role in a senior citizen's life (FG/P).

Underlying these support networks is a reciprocity mechanism that not only lets them cope with life more confidently but also feel useful, helping to promote a positive perception of one's own age. The "Support Offered to others" indicator (score of 0.85) is generally assessed positively, especially in relation to patterns of behaviour such as: experience, allowing them to give good advice or make suggestions (31.5 %) and do things better (22.3 %) and the companionship and affection that are capable of giving (20.4 %). The ability to support others creates a virtuous circle that makes the present more satisfying on a personal level and the future less uncertain.

We have learned to be supportive too with our next-door neighbour, because we used to be sitting here and not have any idea what the guy next to us was called (FG/H).

The role that informal mutual support networks, formed by relatives and neighbours alike, play in the lives of this age group matters even more because senior citizens tend to take very little part in formal organizations. The "Participation in Organizations" indicator, regarding senior citizens' participation in neighbourhood associations, mothers' clubs, political parties, senior citizens' clubs, religious groups, sports clubs, block parties and local fetes, social gatherings, music or dance groups and other activities, is the worst rated and the lowest scoring at only 0.09. When discriminating by socioeconomic status, the senior citizens living in financially vulnerable areas, both on the hill and in the plan, are seen to be the least involved in formal organizations. This situation leads to further segregation of the most financially vulnerable people who, as we have seen, are the group that also receives less support from informal support networks.

Another aspect that contrasts and reinforces the importance of the ties and consideration that senior citizens enjoy in their immediate environment, is their lack of

recognition from society in general. While 73.5 % of senior citizens feel that their opinions are taken into account enough at home and 52.5 % in the district where they live, 57.5 % said that community organizations did not listen to their opinions and 53.5 % said that the Municipality did not take their opinions into account at all.

It can be said that, broadly speaking, senior citizens have a positive perception of the social and relational dimension associated to the neighbourhood and that this perception is stronger in the area of financially stable hills. Instead, their opinions about the environmental, physical and amenities dimension are not very homogeneous, marked differences appearing in terms of the residential areas, service area and socioeconomic status.

Of all the factors included under the “Quality of Neighbourhood Services” indicator (score of 0.57), lighting, the rubbish collection service, health service, and the police and fire brigade services rate highly overall. Yet their opinions about the quality of the road maintenance service differ a lot more: 50.4 % rate it positively (good and very good), while 49.2 % rate it negatively (very poor and poor).

The poor state of public roads is the issue that senior citizens identify as most problematic insofar as it hinders pedestrian movement, endangering people’s physical integrity when they move about the urban habitat.

The street that goes down there, that stretch has never had a handrail and some steps are shorter, and others longer, so I’ve never been able to walk down it, I go down other streets to get there (FG/H).

Since the majority of the city’s services are located in the plan, senior citizens living in the hills constantly “go down” to the plan to run their errands or do their shopping, transactions and purchases, either using public transport or walking, or both. To save on the cost of transport, people who are less well-off financially tend to walk down to the plan, and in doing so are more heavily exposed to the risks associated with the precarious roads and urban infrastructure.

We’re getting older and the city is deteriorating, the roads, you’re walking and fall over (I/H).

They forget about the streets, then come and resurface them but badly, then go off, take out the lampposts and dig up the street, the pavement and don’t leave it like it was before. Here there’s a huge hole. Why don’t they leave it the way it was? They leave holes all over the place and you fall down time and time again. Here it’s dangerous if an elderly person falls down, because they’ll roll all the way down the street, and then it’s goodbye (FG/H).

Despite the overall positive rating of neighbourhood services, these are insufficient to meet real needs. The “Neighbourhood Needs” indicator, which assesses urban amenities such as means of transport, green areas, clubs and health, sports, cultural and commercial facilities, is rated very negatively (score of 0.20). The residents of the financially vulnerable hills are who have the worst opinion, especially regarding means of transport, green areas and squares.

Another negatively rated indicator is “Neighbourhood Safety Factors” (score of 0.21). The main elements that result in the elderly seeing their neighbourhood as unsafe are crime, drugs, alcoholism and lack of street lighting. This perception is more negative in the plan than on the hills, this difference being especially stronger

with respect to the financially stable hill. The community and relational dimension, which characterizes the hill's habitat, is mentioned as a factor that makes senior citizens feel safer. The fact that people know each other personally, or have a friendly relationship with someone, operates as a protection mechanism.

I think it's safer here on the hill because everyone knows you, the "gang members" who live here on the hill know you, they say hello as if you're their auntie, so it's like having loads of nephews and kids.... the school children and even everyone else looks after you, yet down on the plan nobody knows you (FG/H).

Even the hills are seen as being a safer place, the stories shows that, generally speaking, senior citizens have a feeling of insecurity in public spaces, a feeling that they associate both with the environment itself, and to their age. In fact, they see themselves as a vulnerable group and easy target for urban petty crime. It is precisely this sense of insecurity and vulnerability that conditions what senior citizens do, determining the use of certain urban areas and preferably at certain times of day, leading in extreme cases to transform their perception of the neighbourhood itself and encouraging patterns of behaviour that denote distrust and self-segregation.

Another problem is that nowadays violence is so fashionable, right? That's terrible, because there are plenty of people who don't dare leave their homes. Senior citizens find it hard to go out because there's so much violence around (FG/P).

Another negatively regarded indicator is "Pollution" (score of 0.28). The main pollution factors that affect senior citizens are: rubbish, noise, animals and the smog. According to the results, the Plan is regarded as a more highly polluted area than the hills. While the Plan scores worse in terms of these four factors, the hills appear to be more affected by stray animals, insects and, to a lesser extent, drainage problems and bad smells.

The elderly are always complaining about how hard it is to get up the hill, about the street lighting, and about all the stray dogs, which is a really big problem, not only at the top but also at the bottom (I/P).

The dogs, mainly, and the other problem that is often has to do with the rubbish. Even though lots of policies have been adopted in this respect, but there's still a lot to be done before people understand how to act in that regard (FG/P).

Pollution from rubbish and smog is seen to mainly affect residents of the financially vulnerable areas, while noise pollution and the animals and insects problem is perceived as problematic factor in financially stable areas. Although nowhere is free from the pollution problem, air and noise pollution generally has far less of an impact on the hill, which is perceived as a healthier place.

The positive thing about living on the hill is the view, there's not so much noise and smog as in the plan, because in the plan you can hardly hear one another with all those cars ..you can't even hear yourself ... (I/C).

The negative perception associated with the "Vulnerability to Disasters" (index 0.45) is strongly connected with Valparaíso's morphology and climate, and earthquakes and storms are the phenomena that senior citizens perceive as most threatening. The perception regarding earthquakes is similar for all the areas: around 40 %

feel threatened by this type of phenomenon. As for sea-related disasters, and on account of Valparaíso's coastal position, it is the plan's inhabitants who perceive a greater sense of danger. Diversely, storms pose a greater threat to people who live in the financially vulnerable hill, a condition associated to the poor housing and the fragile sloping terrain, unsuitable for building on. Conversely, the better living conditions of the senior citizens who live in the financially stable hill and its relative distance from the coastline makes them less vulnerable to potential natural disasters. Broadly speaking, it can be said that an evident correlation exists between vulnerability and socio-economic situation.

As a corollary of the relationship between the objective and subjective aspects of the level of wellbeing and satisfaction of older people, it is clear that the life experience is judged far more positively in the financially stable areas, and more negatively in financially vulnerable areas. In addition, living conditions on the financially stable hill mean that senior citizens living in this sector have a more positive view of the future itself.

Analysing senior citizens' perception highlights the multidimensionality of the QOL concept. The conditions imposed by the physical environment and the socio-economic context are particularly important issues that affect the welfare and degree of satisfaction of senior citizens in urban areas. Their impact on defining the opportunities for creating social and reciprocal relations make them central factors in the process of identity construction and land appropriation of the population's oldest age group.

9.4 Conclusions

This study on how Valparaíso's senior citizens perceive their QOL, has shown a close relationship with the socio-spatial characteristics of the habitat in which they operate as active subjects. Their level of welfare is directly related to the process of territorial identification and appropriation. The important role that the spatial component plays in senior citizens' identity means that their experience varies in line with the characteristics of the socio-spatial context in which people age (Laws 1997). The characteristics of the environment, understood as the set of physical and morphological factors upon which social relation systems and structures materialize and form, have a strong impact on the ageing process and on senior citizens' QOL.

The evidence produced by the study shows that senior citizens constantly refer to the categories of neighbourhood and district as socio-spatial units that favour or hinder the social relationship-building process. For this age group, the neighbourhood idea is central to the individual and collective construction of their identity and their way of experiencing and perceiving old age (Phillipson et al. 2001).

The dimensions of Valparaíso's hill and plan are identified by senior citizens as two bodies that are physically and socially different, yet complementary at the same time. These bodies have different effects on the character and composition of social networks, defining the spaces in which older persons participate. In this hill-plan

division, topographic and administrative elements, together with physical, and sociological symbolic references, overlap one another. The plan and the hill distinguish and determine collective behaviours, and the elderly use them as coordinates to represent their membership of certain spaces and communities. Living up in the hill or down on the plan involves certain representations of the living space, of us and the others, of social networks, and together all these aspects determine senior citizens' QOL.

In this relational context, the ecological and social dimension of the hill is globally vested with positive meanings. What they appreciate about the hill is both its environmental conditions (sun, air, parks, views) and its physical size and social composition. These latter aspects are interpreted as elements that enhance the ability to keep up both casual and permanent community relations, making senior citizens feel safer and better protected. In contrast, the concentration of commercial services in the plan, coupled with the high volume of traffic and scattered housing estates are interpreted as aspects that encourage more closed lifestyles, making it difficult to maintain social relationships based on physical proximity. In this respect, the plan embodies the living conditions common to the senior citizens of many contemporary cities, where the specific realities of the built environment lead to individuals becoming less committed to the community where they live, eroding individuals' social capital (Putnam 2000).

In the context of this dichotomous interpretation of urban environment, while the plan is internally homogeneous, life on and inside the hill, on the contrary, is extremely varied, with a broad array of different environments and patterns of behaviour. The hills differ from one another, but inside one same hill there can be areas of differentiation, based on socio-economic variables. The distance from the plan serves as a social marker, fuelling the creation of discriminatory stereotypes. While the residential sectors at the bottom of the hill enjoy the best living conditions, as one moves to the top, these conditions become more vulnerable, and are associated with insecurity and widespread precarious situations. Therefore, the sense of attachment to their own neighbourhood and community experienced by the senior citizens who live in the financially stable hills does not extend evenly to the rest of the hills. Towards the summits, the residents' perception resembles the one experienced by the plan's residents, making senior citizens feel more vulnerable and insecure. In the most rundown neighbourhoods, there is also a stronger perception of crime-related risk, discouraging senior citizens from moving around and staying in public spaces. These unfavourable environmental conditions negatively impact the forging of bonds of trust and reciprocity, so the most vulnerable senior citizens become far more isolated and segregated.

Another aspect that interrelates Valparaíso's morphological structure with senior citizens' QOL involves movements between the hills and the plan. The plan is home to all the institutional and commercial services, public and entertainment spaces, so their accessibility is an essential factor for satisfying senior citizens' basic functional, recreational and identity needs, and for integrating them into city life. This issue is unique to the senior citizens living in the hill area, because the plan's residents have no need to go up to the hills and, in fact, very few people say that they

do. That is why there is a consensus in the opinions voiced by the senior citizens living in the hills, on the problems arising from the poor conditions of infrastructure and urban amenities. The same applies to public transport: there is not enough and it is too expensive, so this age group's needs are not met and/or they cannot afford it, which can lead to their spatial segregation. This makes matters even worse for the senior citizens who live at the very top of the hills.

Even so, despite Valparaíso's topographical conditions and poorly kept road infrastructure, there is also a positive perception about getting down to and around the city. Walking down to the plan or combining different means of transport is regarded as a healthy life habit, and also gives one more opportunities to meet people and socialize in urban spaces, facilitating senior citizens' integration into society. So ensuring the city has a physically accessible and affordable transport network, and infrastructure suited to this age group's characteristics and needs, should be a top priority on the agenda of public policies addressing urban accessibility.

The study shows that the levels of accessibility to the city's different socio-spatial units condition senior citizens' chances of socializing, having a direct bearing on their perception of themselves and others and encouraging a process of active and successful ageing at personal and group levels alike. In this sense, the environmental and social dimensions of the neighbourhoods of the hills nearest the plan are considered to afford the elderly a better QOL. These conditions, however, are heavily threatened by the urban restructuring process that Valparaíso has been undergoing ever since it was declared a UNESCO World Heritage Site in 2003. Since then, the city has undergone tourist and real estate-related improvements, especially in the best-located and most socio-financially stable hills. The courses of action taken in these areas have sought to renew and rejuvenate the image of traditional neighbourhoods, developing real estate and commercial products aimed at young people with a high purchasing power. These processes, as has been demonstrated in many cities throughout the world, trigger profound changes in the social composition of neighbourhoods, generating gentrification processes that tend to hurt the most vulnerable social groups, and senior citizens are one of the groups particularly affected by these dynamics. Although this research has not addressed these kinds of effects, the positive values for senior citizens' QOL associated with the hills' physical and social aspects underscore the importance of promoting urban policies that limit the effects of gentrification.

References

- Álvarez, L. 2001. *Origen de los espacios públicos en Valparaíso: discurso higienista y las condiciones ambientales en el siglo XIX*. Santiago de Chile: Universidad de Chile, Departamento de Urbanismo.
- Bronfenbrenner, U. 1979. *The ecology of human development experiments by nature and design*. Cambridge, MA: Harvard University Press.

- Chackiel, J. 2000. *El envejecimiento de la población latinoamericana: ¿hacia una relación de dependencia favorable? Encuentro latinoamericano y caribeño sobre las personas de edad*. Santiago de Chile: Naciones Unidas.
- ECLAC. 2003. *La situación de las personas mayores*. Conferencia regional intergubernamental sobre envejecimiento: hacia una estrategia regional de implementación para América Latina y el Caribe del Plan de Acción Internacional de Madrid sobre el envejecimiento, Santiago de Chile, 19 al 21 de Noviembre de 2003, CEPAL, Documento de Referencia DDR/1, Naciones Unidas.
- ECLAC. 2012. *Observatorio demográfico: proyecciones de población*. Santiago de Chile: NNUU.
- Gallestegui, J., and J. Galea. 2004. *Reflexiones sobre el concepto de barrio*. Valparaíso: Universidad de Playa Ancha, Facultad de Humanidades.
- García-Viniegras, C.V. 2008. *Calidad de Vida: aspectos teóricos y metodológicos*. Buenos Aires: Paidós.
- Glatzer, W.Y., and W. Zapf (eds.). 1984. *Lebensqualität in der Bundesrepublik: Objektive: Lebensbedingungen und subjektives Wohlbefinden*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Gravano, A. 2003. *Antropología de lo barrial. Estudios sobre producción simbólica de la vida urbana*. Buenos Aires: Espacio Editorial.
- Guzmán, J.M., S. Huenchuan, and V. Montes de Oca. 2003. Redes de apoyo social de las personas mayores: marco conceptual. *Notas de Población* 77: 35–70.
- INE. 2012. *Censo 2012*. <http://www.indh.cl/dia-mundial-de-la-salud-2012-dedicado-al-adulto-mayor>. Accessed 23 Apr 2013.
- Jiménez, C. 2000. Valparaíso patrimonio de la humanidad. *Revista de la Facultad de Arquitectura* 3(3): 12–14.
- Laws, G. 1997. Spatiality and age relations. In *Critical approaches to ageing and later life*, ed. A. Jamieson, S. Harper, and C. Victor. Buckingham: Open University Press.
- Lawton, M.P. 1999. Environmental taxonomy: Generalizations from research with older adult. In *Measuring environment cross the life span*, ed. S.L. Friedman and T.D. Wachs. Washington, DC: American Psychological Association.
- Oddone, J. 1997. Envejecimiento y sociedad. In *Dimensiones de la vejez en la sociedad*, ed. J. Knopoff. Buenos Aires: Centro Edit de A. Latina.
- Palomba, R. 2003. Recomendaciones para realizar investigaciones sobre redes de apoyo y CV: agenda de investigación y métodos e instrumentos para estudios cualitativos y cuantitativos. *Notas de Población* 77: 251–261.
- Phillipson, C., M. Bernard, J. Phillips, and J. Ogg. 2001. *The family and community life of older people: Social support and social networks in three urban areas*. London: Routledge.
- Putnam, R. 2000. *Bowling alone*. New York: Simon and Schuster.
- Rueda, S. 1997. Habitabilidad y Calidad de vida. In *La Construcción de la Ciudad Sostenible*. Madrid: Universidad Politécnica de Madrid. <http://habitat.aq.upm.es/cs/p2/a005.html>. Accessed 23 Jan 2013.
- Solari A (1987) El envejecimiento de la población uruguaya treinta años después. *Cuadernos del CLAEH* 43
- UN. 2003. *Declaración política y plan de acción internacional de Madrid sobre el envejecimiento. II Asamblea Mundial sobre el Envejecimiento*. Madrid: Naciones Unidas.
- Wahl, H.-W., and L.N. Gitlin. 2007. Environmental gerontology. In *Encyclopedia of gerontology: Age, aging, and the aged*, ed. J.E. Birren. Oxford: Elsevier.
- Wahl, H.W., and F.R. Lang. 2004. Aging in context across the adult life: Integrating physical and social research perspective. In *Annual review of gerontology and geriatrics*, ed. H.W. Wahl, R. Scheidt, and P.G. Windley. New York: Springer.
- Wahl, H.W., H. Mollenkopf, F. Oswald, and C. Claus. 2005. Environmental aspects of quality of life in old age. In *Quality of life in old age*, ed. H. Mallenkopf. Dordrecht: Springer.
- Waisberg, M. 2000. Valparaíso: El legado urbanístico y arquitectónico. *Revista de la Facultad de Arquitectura* 3(3): 5–9.

- WHO. 2002. Envejecimiento activo: un marco político. *Programa de Envejecimiento y Ciclo Vital de la OMS, Contribución a la Segunda Asamblea Mundial de las NN.UU para el Envejecimiento*. Madrid: OMS.
- WHO. 2007. *Global age-friendly cities: A guide*. Geneva: World Health Organization. <http://www.who.int/ageing/AFCSpanishfinal.pdf>. Accessed 23 Jan 2013.
- WHO. 2012a. 10 Datos sobre el envejecimiento de la población. <http://www.who.int/features/fact-files/ageing/es/>. Accessed 23 Jan 2013.
- WHO. 2012b. *Estadísticas Sanitarias Mundiales 2012*. Geneva: World Health Organization. http://apps.who.int/iris/bitstream/10665/44858/1/9789243564449_spa.pdf?ua=1. Accessed 26 July 2014.

Part III

Place, Housing and Aging

Chapter 10

Place Attachment and Perceived Environmental Uncertainty in Elder Adults Living in the Renewed Kibbutz

Hernan Casakin and Abira Reizer

10.1 Introduction

The kibbutz is a unique model of living for the Israeli society known for its egalitarian–communal lifestyle. Since the early eighties the kibbutz movement began to undergo a process of structural change with regard to many aspects of life. Due to these changes the kibbutz members faced a process of transformation from a collective community to a more individualistic one (Sheaffer et al. 2010). This phenomenon affected economic, residential, educational, healthcare areas, and more. The major changes revolved around three key areas: (i) Administrative method—from collaborative management style to a separation between the management and the community living in the kibbutz; (ii). Privatization—this process created personal and economic autonomy of the kibbutz member, but reduced the common services provided to the community. Economic rights were transferred to the members in a variety of areas such as education, personal pensions, home maintenance, health, and breed. Moreover, individuals were allowed to use their funds for personal needs. (iii) Weak and segregate collective system. This was reflected in the construction of neighborhoods, community expansion, incorporation of new residents, and insertion of qualified employees to work in industries available in the kibbutz, as well as the possibility to use services outside the kibbutz (Ben-Rafael 1997).

A consequence of the many and significant changes introduced in the living environment of the kibbutz was the creation of upheavals in the life of the residents.

H. Casakin, Ph.D. (✉)
School of Architecture, Ariel University, Ariel, Israel
e-mail: casakin@ariel.ac.il

A. Reizer, Ph.D.
Department of Behavioral Sciences, Ariel University, Ariel, Israel
e-mail: abirar@ariel.ac.il

Preliminary studies suggested that such changes generated feelings of anxiety, distress and uncertainty about the personal safety and employment of the individual (Avrahami 2002; Ben-Zur et al. 2005). A decline in solidarity, and lack of confidence followed by an increase in the sense of alienation and estrangement between the kibbutz members was reported: in many cases, the connection with the kibbutz became associated to material issues such as infrastructure and services available, rather than to emotional, spiritual, or way of life aspects. Some members decided to deal with the new situation by leaving the kibbutz, whereas others decided to remain at the cost of restraining their personal involvement in public activities (Avrahami 2002). However, the process of change was also characterized by positive consequences for the well-being of the residents. There has been an increase in population and capital as well as increased personal autonomy and satisfaction (Palgi and Reinhartz 2011).

In this regard, the new situation that took place in the last years offers an opportunity for exploring the effects of the above mentioned changes in the aged population living in the renewed kibbutz. Furthermore, the influence of such drastic changes in the living condition on place attachment of the population in general, and the elderly in particular was neither investigated yet.

Place attachment is considered a key aspect that affect the desire to continue living in the same place (Altman and Low 1992; Lewicka 2005). Place attachment is normally defined as an emotional tie that individuals develop towards the places in which they live (Brown et al. 2003; Manzo 2003), and keep close relations (Hidalgo and Hernández 2001). When individuals develop affective bonds with a place, they are likely to stay for extended periods of time (Hernández et al. 2007). However, when people do not manage to establish strong bonds with their place of residence, they tend to leave (Twigger-Ross and Uzzell 1996). As studies on place attachment continues to increase and develop, researchers begun to explore more specific predictors of people's emotional connection with place. One of such topics that are gaining considerable attention is concerned with place attachment among different age groups, and older adults in particular (McHugh and Mings 1996; Rubinstein and Parmelee 1992; Gilleard et al. 2007). According to extant literature, a preference for aging in place increases as adults get older (Chui 2008). This is often the case even in places characterized by poor social and supportive services available, or by a deteriorated physical condition. Fundamental issues on which these and other studies focus are how elder groups relate with place, and what is needed to successfully age in place (Smith and Cartlidge 2011). It has been showed that those aged people that are able to develop satisfactory bonds with place are prone to feel secure, in control, and with a positive sense of self (Golant 1984). Different environmental gerontological studies stressed the important role that place plays in the well-being and quality of life among elder (Wahl and Lang 2006). Attachment to place is believed to ease successful adjustments in the old age, and to help deal with the contingencies of ageing (Andrews and Phillips 2005; Cutchin 2005). Place attachment in the elder was also related to meaning and feelings of security (Wiles et al. 2009), as well as to familiarity, physical and social emotional comfort (Shenk et al. 2004).

Given the preference of the elder to age in place (Casakin and Neikrug 2012), it is essential to understand how they relate to their place of residence. We assume that the decision to stay in place is at least partly the result of perceptions, feelings and attitudes towards their habitat (Jorgensen and Stedman 2006). The traditional kibbutz was seen as an ideal community in which to age. This environment assured social security, a community framework, and meaningful belonging that allowed continuing productivity, collaboration, and participation (Rimmerman et al. 2003). The traditional kibbutz was a place where the elder could find a response to their social, physical and emotional needs (Gal 1995), and achieve social cohesion (Carmel et al. 1996). This framework and values may explain why, even after the profound changes that took place in the kibbutz, it is still a place where elder members report high rates of life satisfaction, and less help is needed compared to other elder groups in Israel (Katz 2009). Therefore, we assume that the elder members would prefer to remain in the renewed kibbutz, rather than looking for an alternative place of living. Despite that the kibbutz movement has been dealing with the changes in the last years, little attention was given to the impact of these changes on the elder (Asaf and Doron 2011). We supposed that despite the potential negative impact of the above mentioned changes, the elder will continue developing strong emotional ties with place, which will be even higher than the bonds established by the younger members. Thus, we hypothesize that:

H1: Place attachment in the renewed kibbutz will be higher in the elder than among younger group members

Due to the important role that certainty and uncertainty play in decision making in general (Kahneman and Tversky 1982), and in the place of residence in particular (Asaf and Doron 2011), in this study we examine the perceived environmental uncertainty (PEU) of the kibbutz members. Perceived environmental uncertainty is a cognitive decision making process that describes the state in which individuals do not have the information necessary to make accurate predictions due to existing ambiguous and unstable conditions of the environment (Milliken 1987). Researchers who adopted the uncertainty perspective (Duncan 1972; Milliken 1987) claimed that the presence of uncertainty in the environment is determined by the personal perceptions that people have on that environment, such as the individual's perceived inability to understand the direction in which an environment is changing, the potential impact of those changes on the individual's environment (e.g., the kibbutz), and whether or not his or her responses to the changing environment will be successful (Milliken 1987).

In general, most people dislike ambiguity and uncertainty (Lauriola and Levin 2001), and are willing to avoid it as much as possible (Curley et al. 1986) mainly because uncertainty has the potential to generate high levels of stress, anxiety, and lack of assuredness (Waldman et al. 2001). Researchers in many disciplines examined whether age can be associated with uncertainty. There has been, however, disagreement with regard to how and why uncertainty changes with age (Spear 2010; Tymula et al. 2013). Although older adults tend to avoid risk and uncertainty (Tymula et al. 2013), studies also suggest that in some situations they may seek risk and approach to uncertain environments (Henninger et al. 2010; Mohr et al. 2010).

The aged people of the kibbutz have spent their whole lives in a community where they have been educated under ethics and values that are in contraposition with the way of life dictated by the new reality (Asaf and Doron 2011). A large part of these individuals do not have a formal education, and have not been prepared with professional capabilities as requested by the competitive market of our days. Thus, considering the limited alternatives that are available to them in a rather unfamiliar and uncertain environment out there, remaining in the kibbutz seems to be the most convenient or acceptable option for them. In addition, most of them are retired and therefore not largely exposed to the institutional and environmental changes (Palgi and Reinharz 2011). In contrast, the younger living in the kibbutz are the new leaders responsible for implementing the changes that the new reality imposes (Orchan and Goldemberg 1994; Rosental 1998). It is probable that for these people, generating the change signifies being exposed to an uncertain reality (Asaf and Doron 2011). Furthermore, many younger and especially middle aged members have expressed feelings of frustration and failure about their working life, mainly because the stable system of values with which they grew up was jeopardized by the new order (Orchan and Goldemberg 1994; Russell et al. 2011). This resulted in a decaying confidence in their future in the kibbutz, as well as uncertainty feelings about the difficulties they would be likely to encounter if they try to begin a new life outside the kibbutz at that stage of life (Rosner et al. 1999). It thus seems important to empirically examine how age differences influence perceived uncertainty in a kibbutz facing dramatic changes. Based on the above we hypothesize that:

H2: Perceived environmental uncertainty in the renewed kibbutz will be lower in the elder compared to the younger group

The relation between place attachment and perceived environmental uncertainty has not yet been examined in depth, although strong relationships between perceived environmental uncertainty and the negative perceptions toward the environment have been acknowledged (Standifer et al. 2013; Waldman et al. 2001). Uncertainty was shown to have a negative effect on people, and to promote pessimistic judgments on the risks and benefits of taking certain actions (Kuhn 1997).

Perception of uncertainty impairs the sense of normalcy or stability in the everyday environments (Goffman 1952), and can potentially create negative feelings of attachment towards the place of living. Another argument is drawn from ideas about motivational processes and pressures that individuals feel towards their place of residence. Since perceived uncertainty can also be associated with worry (Koerner and Dugas 2008) and strain (O'Driscoll and Beehr 1994), a possible reaction is to leave the place, thus maintaining a more positive self-image and sense of control (Salancik and Meindl 1984). Furthermore, uncertainty can be the cause for engaging in effortful cognitive processes (Pelham and Wachsmuth 1995). Specifically, people engage in more effortful processing when an actual level of certainty is below the desired level, because certainty-appraisal serves as an internal cue to signal whether further thinking processes are necessary (Tiedens and Linton 2001). In contrast, experiencing certainty towards the environment signals that the situation is safe. Consequently, people are unlikely to sense a need for changing the current state, and prefer to stay in place (Yen and Chuang 2008).

The few studies that explored the relationship between perceived environmental uncertainty and place attachment mainly focused on environments belonging to work organizations (Standifer et al. 2013). To our knowledge, however, the relation between these two aspects was never investigated in the kibbutz. The major social change experienced in the way of life of the kibbutz led to appraisals of both threat and loss, apart from challenge and controllability. Kibbutz members, who used to live in a community that cared for their physical and social needs, suddenly found themselves involved in a situation in which they should take responsibility for finding a job, earning a satisfactory income, and managing their monetary expenses wisely (Palgi 2002), all of which may have weakened their place attachment. Based on the above, we hypothesize that:

H3: Perceived environmental uncertainty will be negatively associated with place attachment among both the elder and the younger members

Under uncertainty conditions, it is presumed that the elder would prefer options that cause no changes in the status quo of the situation (Samuelson and Zeckhauser 1988). A main reason for this assumption is that age is seen to be positively associated with loss aversion. Loss aversion is defined as people's tendency to perceive potential losses greater than potential gains. Thus, it seems likely that individuals have a strong tendency to remain in place since the perceived loss associated with leaving the place may be larger than the perceived advantages. A previous study indicated that an affective state associated with certainty led to a higher level of status quo, whereas uncertainty led to a willingness to change the situation (Yen and Chuang 2008). To extrapolate this idea it seems reasonable to assume that perceptions of uncertainty may mediate the associations between age and place attachment. That is, the elder may perceive lower levels of uncertainty, partly due to the welfare-policy and the communality values still present in the renewed kibbutz, as well as their lack of knowledge regarding the profound consequences of the change. From this we infer that certainty might be the mechanism that enables to bridge the effect of age on place attachment, and to maintain their status quo by enhancing their level of place attachment. We therefore hypothesize that:

H4: Environmental uncertainty can be considered as a mediator between age and place attachment. Specifically, we claim that the elder will perceive environmental changes as less uncertain than the younger. As a result, as age increases, perceived environmental uncertainty decreases, whereas place attachment increases.

Furthermore, in order to examine the elder perceptions and abilities to cope with major changes in the kibbutz, we have considered a number of control variables that were found to be relevant in the place attachment literature (Fig. 10.1). These include gender (Mesch and Manor 1998), age (Pretty et al. 2003), marital status (Gattino et al. 2013), and place of work (Inhalan and Finch 2011). Hidalgo and Hernández (2001) showed that women develop stronger place attachment than men. Taylor et al. (2012), on the other hand, found a negative relation between conflictive families and children place attachment. Considering the importance that the concept of family has for the kibbutz members (Doron 2011) it is expected that marriage

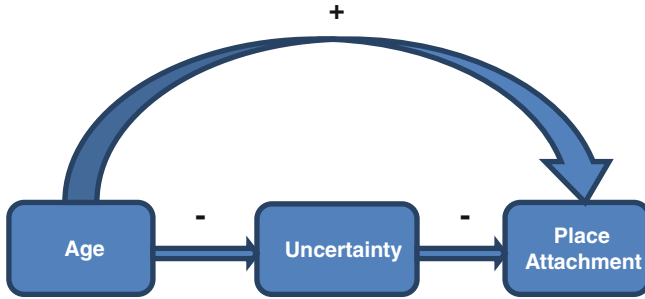


Fig. 10.1 Final theoretical model (Source: Author)

will play a positive role in place attachment. In the past and even today, early retirement from work rarely occurred in kibbutzim (Nechushtan 1997). Since work represented a highest value in the original vision of the kibbutz, elder members continued working even after retirement age, and this would probably affect attachment to place in a positive way.

10.2 Method

10.2.1 *Participants and Procedure*

The sample consisted of 100 Israeli kibbutz members living in a kibbutz that undergone major changes during the last year. The data were sampled approximately 1 year after the implementations of the major changes. 27 % were elder adults (from 61 to 89), 50 % were middle aged adults (35 thru 60) and 23 % were young adult (age 20–29). 58 % were men and 42 % were women. 79 % were married having approximately 4.38 children ($Sd=1.5$). 45 % were born in the kibbutz, and 86 % were employed in the kibbutz. Participants were recruited informally and agreed to participate in the study without monetary reward. They filled the questionnaires by pen and paper method, in presence of a research assistant. Questionnaires were delivered individually in the private houses of the kibbutz, and lasted from 20 to 60 min. In order to protect the anonymity of the respondents, upon completion they delivered the questionnaires to the research assistant in a closed envelope.

10.2.2 *Instruments*

10.2.2.1 **Place Attachment**

We designed a questionnaire that allowed to obtain a precise measure of place attachment; specifically, about the intentions that individuals have to leave or remain in place. People are not always conscious or aware about their emotional bonds of

place attachment till they distance themselves from that place (Proshansky et al. 1983). Thus, we looked for a measure to assess attachment to place in situations in which people are requested to imaginary leave their place of residence. According to Hidalgo and Hernández (2001), compelling people to think about leaving situations is a good way to disclose place attachment. A number of investigations developed measures for the evaluation of attachment focusing on leaving the place. For example McAndrew (1998) proposed a scale to measure place attachment of relocated people applying items such as “Moving from place to place is exciting and fun”, or “Most of the people that I knew when I was growing up have moved away”, whereas Hidalgo and Hernandez (2001) adapted these measures for assessing attachment to house, neighborhood, and city. In another study (Casakin et al. 2013) used items such as “I would be sorry to move out to another place” and “I would regret having to relocate to another place” to measure attachment in the neighborhood and the city. Based on the above studies, we designed a questionnaire composed of four items to measure intensity of bonds to place under hypothetical situations of staying or leaving place. These resulted in an overall score for intensity of attachment that was assessed in relation to the kibbutz where participants lived when the study was carried out. Participants responded on a scale of five points, where 1 was “Not at all” and 5 was “Quite a lot”. We averaged all items into one single factor (Cronbach’s $\alpha=0.65$).

10.2.2.2 Perceived Environmental Uncertainty

In this study we adopted a simple measure of perceived environmental uncertainty (PEU), as recommended in previous studies (Ashill and Jobber 2010). Accordingly, conceptualization and measurement of perceived environmental uncertainty (PEU) were based on Duncans’ (1972) work. This questionnaire has been translated to Hebrew by Goldrat (2000). Duncan’s 12-item instrument purports to measure three elements of uncertainty dealing with: lack of information, inability to predict outcomes, and inability to predict how environmental factors will affect success or failure. We modified all items to fit the organizational change in the renewed kibbutz. Each respondent was asked to assess the frequency of these elements of uncertainty in decision making process towards the new organizational change in the kibbutz (for example: “I believe that the information I have about the changes in the kibbutz is adequate”, “One cannot accurately assess the relative effectiveness of the change because there are so many unknowns that can influence the effectiveness of each alternative”, and “I have adequate information about the influence of the changes on my future security in the kibbutz”). Participants rated each item on a 5-point scale ranging from “strongly disagree” (1) to “strongly agree” (5). Principal components factor analysis of the uncertainty data confirmed the presence of one dimensional factor explaining 48 % of the variance. One final score was calculated for each participant by averaging all three scales into a single 12-item factor (Cronbach’s $\alpha=0.89$). As suggested by Ducan (1972), the scores of the three components of uncertainty are added to form a total uncertainty score.

10.2.2.3 Socio Demographic Data

Participants provided socio demographic included gender (coded 1 for female and 0 for male), age, work in the kibbutz (0=no, 1=yes), born in the kibbutz (0=no, 1=yes), and marital status (0=not married and 1=married).

10.3 Results

10.3.1 Preliminary Analyses

Descriptive statistics for each measure are shown in Table 10.1. The reliabilities for all measures were adequate. As indicated also in Table 10.1, and supporting hypothesis 3, there is a negative correlation between place attachment and perceived environmental uncertainty. On the other hand, place attachment was positively associated with age, marital status, and working in the kibbutz. Furthermore, age was negatively associated with perceived environmental uncertainty.

10.3.1.1 Age Differences

One-way ANOVAs were performed examining age differences in place attachment and perceived environmental uncertainty. The ANOVAs showed significant age differences in place attachment, supporting hypothesis 1 and in perceived environmental uncertainty, supporting hypothesis 2 as well (*F*s in Table 10.2). A Scheffe post hoc analysis revealed that elder and middle aged individuals scored higher than young adults in place attachment and lower in perceived environmental uncertainty.

Table 10.1 Means, standard deviations, and zero-order bivariate correlations

	Mean	SD	1	2	3	4	5	6
1. Place attachment	3.36	.88	(.63)					
2. Environmental uncertainty	3.20	.83	-.35***	(.89)				
3. Age (year)	48.15	16.95	.43***	-.21*	–			
4. Longevity in the kibbutz	37.44	14.98	.31**	-.14	.79***	–		
5. Gender	–	–	.11	.03	.13	.09	–	
6. Working in the kibbutz	–	–	.31**	.04	.15	.18	.09	–
7. Marital status	–	–	.43**	-.26*	.47***	.26*	.10	.07

Source: Author
Notes: Dummy variables were used for gender (with 0=male and 1=female), for working in the kibbutz (with 0=no and 1=yes), and for marital status (with 0=not married and 1=married). **p*<.05; ** *p*<.01; *** *p*<.001

Table 10.2 Means, SDs, and F-ratios of place attachment and perceived environmental uncertainty according to age

Scale	Young		Middle aged		Elder		F(2,96)	η^2 p
	M	SD	M	SD	M	SD		
Perceived environmental uncertainty	3.63	0.68	3.03	0.79	3.14	0.91	4.06*	.08
Place attachment	2.67	0.85	3.44	0.66	3.77	0.88	11.33***	.20

Source: Author
Notes: ** p<.01; *** p<.001

To examine whether age differences may exist with regard to their employment status kibbutz, a chi square test was performed. The analysis yielded non-significant results ($\chi^2(2)=2.67, p=.26$), showing that all three groups were working, and most participants (76 % among the young adults, 88 % among the middle age adults, and 92 % among the elders) were working in the kibbutz.

10.3.2 Predicting Place Attachment with Age, Perceived Environmental Uncertainty, and Socio-Demographic Variables

In order to assess whether socio-demographic variables and perceived environmental uncertainty predicted unique variance in place attachment, a hierarchal regression analysis was carried out (Table 10.3). To facilitate interpretation of the results and avoid multicollinearity, all measures were centered on their sample means. The first step of the regression included variables such as age, gender, marital status, and working in the kibbutz. In the second step, we entered perceived environmental uncertainty into the regression analysis. The regression was significant $F(5.94)=10.40, p<.001$. As can be seen from Table 10.2, the demographic variables contributed significantly to place attachment, accounting for 31 % of the variance. As expected, supporting hypothesis 1 age ($\beta=.26, p<.01$) contributed significantly to place attachment. Furthermore, married individuals and individuals working in the kibbutz tend to report higher levels of place attachment ($\beta=.28, p<.01$; $\beta=.24, p<.01$, respectively). Finally, perceived environmental uncertainty ($\beta=-.27, p<.001$) accounted for an additional 6 % of the variance, contributing significantly (but with a negative input) to place attachment as proposed in hypothesis 3. None of the control variables passed the significance threshold, and there were no signs of multicollinearity (tolerance values of .70 or higher) in all the coefficients, including both the significant as well as the non-significant ones.

Table 10.3 Standardized and unstandardized regression coefficients predicting place attachment

		b	SE	β	95 % CI	Tolerance
Step 1	Age	.23	.09	.26**	(.05, .40) (.4040, .40)	.76
	Gender	.03	.08	.03	(−.13, .18)	.98
	Married	.25	.09	.28**	(.08, .42)	.78
	Working in the kibbutz	.22	.08	.24**	(.06, .37)	.97
	Model ΔR^2			.31***		
Step 2	Age	.20	.09	.22*	(.03, .37)	.75
	Gender	.04	.08	.05	(−.11, .19)	.97
	Married	.20	.09	.23*	(.03, .37)	.75
	Working in the kibbutz	.23	.07	.26**	(.08, .38)	.97
	Environmental uncertainty	−.23	.08	−.26**	(−.38, −.08)	.92
	Model ΔR^2			.06**		
	Total R^2			.37***		

Source: Author

Notes: Dummy variables were used for gender (with 0=male and 1=female), for working in the kibbutz (with 0=no and 1=yes), and for marital status (with 0=not married and 1=married). * $p < .05$; ** $p < .01$; *** $p < .001$. Tolerance values below .20 indicate a problem of multicollinearity

10.3.3 Mediation Analyses

To inspect hypothesis 4, which predicted that the relationship between age and place attachment would be mediated by perceived environmental uncertainty, we conducted a mediation analysis, as developed by Preacher and Hayes (2008), based on Baron and Kenny (1986) five-step procedure. In the first step, we examined the total effect of age (*predictor*) on place attachment (*dependent variable*). In the second step, we examined whether age predicts perceived environmental uncertainty (*mediator*). The third step investigated whether perceived environmental uncertainty (*mediator*) predicts place attachment (*dependent variable*) controlling for age (*predictor*). The fourth step looked into the indirect effect of age on place attachment via perceived environmental uncertainty, and assessed their significance by accelerated bias-corrected bootstrap analyses. Bootstrapping procedure involves repeatedly sampling from the data set (5,000 bootstrap resamples), and estimating the indirect effect in each resampled data set. An empirical approximation of the sampling distribution of these bootstrap estimates was built, and used to obtain 95 % confidence intervals (CI) for the indirect effects. This procedure examines whether an indirect path is significantly different from 0 by producing a confidence interval (CI) for the indirect effect. A mediation path is significant when the CI does not include 0. The bootstrap analysis revealed a significant indirect path from age via perceived environmental uncertainty to place attachment (95 % CI [−.01, −.12]). Finally, in the fifth step, we examined whether perceived environmental uncertainty fully or partially mediated the link between age and place attachment. When controlling for perceived uncertainty, there was a direct association between age and place attachment ($b = -.03$, $p < .001$) indicating partial mediation model.

10.4 Discussion

As hypothesized, place attachment in the renewed kibbutz was higher in the elder compared to the younger kibbutz members. Moreover, place attachment was positively associated with age. It is interesting that the changes derived from the modernization of the kibbutz did not have a negative effect on the affective bonds that the elder develop with their place of residence along the years, at least when compared to the younger generations. This is in line with prior studies indicating an increasing preference of people to continue living in the same place as they get older (Chui 2008; Costa-Font et al. 2009), and others that showed place attachment as a critical aspect in the desire to age in place (Altman and Low 1992; Lewicka 2005). A strong place attachment, on the other hand, can be helpful in dealing with the eventualities of ageing (Andrews and Phillips 2005; Cutchin 2005), and in the case of the renewed kibbutz to face the contingencies of change. Traditionally, the kibbutz was the environment providing social security, and a meaningful communitarian framework (Rimmerman et al. 2003). It is therefore suggested that the familiarity and feelings of belonging to place, as well as the network of social and labor relationships (Shenk et al. 2004) that the elder developed through time contributed to enhancing their attachment.

Also in line with hypothesis 2, results confirmed that perceived environmental uncertainty in the renewed kibbutz was lower among the elder group compare to the younger kibbutz members. Likewise, age was negatively associated with perceived environmental uncertainty. These results seem to be in line with studies claiming that older adults prefer to avoid risk and uncertainty (Mata et al. 2011; Tymula et al. 2013), but on the other hand are in contraposition with those investigations maintaining that in some situations the elder may consider be involved in uncertain situations or environments (Denburg et al. 2006; Henninger et al. 2010). A possible justification for the obtained differences between the groups is that, as noted before, the younger are the ones who are in charge of the execution and accomplishment of all the institutional and environmental changes in the kibbutz (Orchan and Goldemberg 1994; Rosental 1998), and due to their role are more exposed to, and conscious about the risks and uncertainties derived from the changing situation. The younger probably feel at a crossroads, where the options that they have to face are to stay in the kibbutz despite the uncertainties and difficulties of the future, or to seek for anew and eventually more promissory life in an unfamiliar environment abroad, bearing in mind the existence of potential unknown risks. Many of them are uninterested in the protection provided by a kibbutz that strangled them, and are confident about their own abilities to distance themselves from the community organization (Asaf and Doron 2011). In contrast, the elder, most of whom do not possess a formal education (Palgi and Reinharz 2011), are retired and conscious about their limitations, disregard the possibility of starting a new life outside from the outset. Thus, they are more likely to convince themselves that, despite the challenges of change, the renewed kibbutz is still the best place to stay.

Furthermore, the relation between place attachment and perceived environmental uncertainty was examined. As predicted, environmental uncertainty was negatively associated with place attachment in both the elder and the younger. This confirms previous findings that perception of uncertainty harms the sense of normalcy in the daily environments (Standifer et al. 2013), and produces negative feelings of attachment towards place. From the findings it can be inferred that, independently of the age factor, a negative perception towards the environment impairs the emotional bonds develop with the renewed kibbutz, and enhances the desire to leave (Salancik and Meindl 1984). In contrast, experiencing environmental certainty despite the changes might reflect that the new situation in the kibbutz is still safe, and thus individuals at any age would prefer to stay in place (Yen and Chuang 2008).

The relationship between place attachment and working in the kibbutz can be attributed to the idea that historically, work and particularly communitarian work represented one of the traditional values of the kibbutz (Nechushtan 1997). It is therefore reasonable to argue that working in the kibbutz contributes to enhance the bonds developed with that place. Likewise, the positive association between place attachment and marital status suggests that married people manage to establish strong roots with place. The concepts of family and stability might have contributed to enhance the emotional links developed with the land (Doron 2011). The importance that the demographic variables of age, marriage, working in the kibbutz, and perceived environmental uncertainty have for the enhancement of affective bonds with place was reflected in their significant contribution as predictors of place attachment. As expected, the ability of the elder to deal effectively with uncertainty to environmental changes showed to have a significant contribution to their place attachment.

Finally, the hypothesis that perceived environmental uncertainty can be considered as a mediator between age and place attachment was supported. Results were in line with our claim that the elder will perceive environmental changes as less uncertain than the younger. Thus, as expected, whereas age increases, perceived environmental uncertainty decreases, and place attachment reaches higher levels. The rationale supporting the claim that elder people would perceive lower levels of uncertainty is in part due to their preference for no radical changes associated with a new life out of the kibbutz (Samuelson and Zeckhauser 1988), probably influenced by the idea that the perceived loss when leaving the place may be larger than the perceived advantages. Other aspects associated to the low levels of environmental uncertainty are the communality values that remained in the renewed kibbutz. As a consequence of the above, we maintain that certainty can be seen as the mechanism that allows the elder to bridge the effect of age on place attachment, and to keep their status quo by enhancing the level of place attachment. Maintaining status quo alternatives is easier (Samuelson and Zeckhauser 1988), and requires less mental effort (Eidelman and Crandall 2012) than opting for a totally new and unfamiliar environment. Since cognitive capacities decline with age (Plassman et al. 2008), elders might prefer to keep, defend and support their current status quo, and remain in place.

10.5 In Conclusion

This study contributed to gain further understanding into how elder people relate to the renewed kibbutz, and how they perceive the uncertainties derived from structural socio-economic changes. The investigation also shed additional light into the importance of variables that showed to be relevant in previous research on place attachment, to help the elder deal more effectively with the changes in the living condition of the renewed kibbutz, and showed differences with regard to this group and other groups of younger and middle-age people residing in the same place. Efforts should be done to design appropriate environments and adapt the existing ones to aid the elder successfully deal with the contingencies of ageing, provided their preference to age in place despite the changing situation of the kibbutz.

Some limitations of this study should be addressed. One of them is the small size of the sample, and another is that the investigation was carried out in only one kibbutz. Ideally, a larger size would enable to generalize current findings about the situation in other renewed kibbutzim. For a hierarchical regression analysis including four predictors, however, this sample size is acceptable, given a minimum demand of 15 predictors per participant (Field 2005). Despite this small sample size, perceived environmental uncertainty still emerged as a valid mediator between age and place attachment. A future study will extend current findings by comparing elder people living in renewed kibbutzim with those residing intraditional ones.

References

- Altman, I., and S. Low. 1992. *Place attachment*. New York: Plenum.
- Andrews, G.J., and D.R. Phillips (eds.). 2005. *Ageing and place: Perspectives, policy, practice*. London: Routledge.
- Asaf, Y., and I. Doron. 2011. The meaning of aging among mature kibbutz members. In *One hundred years of kibbutz life: A century of crises and reinvention*, ed. Michal Palgi and Shulamit Reinharz, 83–100. New Brunswick: Transaction Publishers.
- Ashill, N.J., and D. Jobber. 2010. Measuring state, effect, and response uncertainty: Theoretical construct development and empirical validation. *Journal of Management* 36(5): 1278–1308. doi:10.1177/0149206308329968.
- Avrahami, E. 2002. The changing kibbutz. Kibbutzim Site. www.kibbutz.org. Accessed 15 Mar 2014.
- Baron, R.M., and D.A. Kenny. 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology* 51(6): 1173–1182.
- Ben-Rafael, E. 1997. *Crisis and transformation: The Kibbutz at century's end*. New York: University Press.
- Ben-Zur, H., D. Yagil, and D. Oz. 2005. Coping strategies and leadership in the adaptation to social change: The Israeli kibbutz. *Anxiety, Stress and Coping* 18(2): 87–103. doi:10.1080/10615800500093702.
- Brown, B., D. Perkins, and G. Brown. 2003. Place attachment in a revitalizing neighborhood: Individual and block levels of analysis. *Journal of Environmental Psychology* 23(3): 259–271. doi:10.1016/S0272-4944(02)00117-2.

- Carmel, S., A. Lapidot, A. Motarn, and G. Shemi. 1996. Predicting subjective health evaluation among the aged in city and kibbutz. *Society and Welfare* 16(3): 361–380.
- Casakin, H., and S. Neikrug. 2012. Place identity in high and low-end neighborhoods as perceived by the elder. In *The role of place identity in the perception, understanding, and design of the built environment*, ed. Hernan Casakin and Fatima Bernardo, 107–119. Sharjah: Bentham Science Publishers.
- Casakin, H., C. Ruiz, and B. Hernandez. 2013. Diferencias en el desarrollo del apego y la identidad con el lugar en residentes no nativos de Israel y Tenerife. *Estudios de Psicología* 34(2): 287–297. doi:[10.1174/021093913808349325](https://doi.org/10.1174/021093913808349325).
- Chui, E. 2008. Introduction to special issue on 'Ageing in place'. *Ageing International* 32(3): 165–166. doi:[10.1007/s12126-008-9016-1](https://doi.org/10.1007/s12126-008-9016-1).
- Costa-Font, J., D. Elvira, and O. Mascarilla-Miro. 2009. Ageing in place'? Exploring elderly people's housing preferences in Spain. *Urban Studies* 46(2): 295–316. doi:[10.1177/0042098008099336](https://doi.org/10.1177/0042098008099336).
- Curley, S.P., J.F. Yates, and R.A. Abrams. 1986. Psychological sources of ambiguity avoidance. *Organizational Behavior and Human Decision Processes* 38(2): 230–256. doi:[10.1016/0749-5978\(86\)90018-X](https://doi.org/10.1016/0749-5978(86)90018-X).
- Cutchin, M.P. 2005. Spaces for inquiry into the role of place for older people's care. *Journal of Clinical Nursing* 14(2): 121–129. doi:[10.1111/j.1365-2702.2005.01280.x](https://doi.org/10.1111/j.1365-2702.2005.01280.x).
- Denburg, N.L., E.C. Recknor, A. Bechara, and D. Tranel. 2006. Psychophysiological anticipation of positive outcomes promotes advantageous decision-making in normal older persons. *International Journal of Psychophysiology* 61(1): 19–25.
- Doron, A. 2011. Varying spousal relations in the kibbutz and the moshav. In *One hundred years of kibbutz life: A century of crises and reinvention*, ed. Michal Palgi and Shulamit Reinharz, 101–122. New Brunswick: Transaction Publishers.
- Duncan, R.B. 1972. Characteristics of organizational environments and perceived environmental uncertainty. *Administrative Science Quarterly* 17(3): 313–327.
- Eidelman, S., and C.S. Crandall. 2012. Bias in favor of the status quo. *Social and Personality Psychology Compass* 6(3): 270–281. doi:[10.1111/j.1751-9004.2012.00427.x](https://doi.org/10.1111/j.1751-9004.2012.00427.x).
- Field, A. 2005. *Discovering statistics using SPSS*, 2nd ed. London: Sage.
- Gal, G. 1995. Pensions in the kibbutz: The existence of social problems. *Social Security* 44: 77–95.
- Gattino, S., N. Piccoli, O. Fassio, and C. Rollero. 2013. Quality of life and sense of community: A study on health and place of residence. *Journal of Community Psychology* 41(7): 811–826. doi:[10.1002/jcop.21575](https://doi.org/10.1002/jcop.21575).
- Gilleard, C., M. Hyde, and P. Higgs. 2007. The impact of age, place, aging in place, and attachment to place on the well-being of the over 50s in England. *Research on Aging* 29(6): 590–605. doi:[10.1177/0164027507305730](https://doi.org/10.1177/0164027507305730).
- Goffman, E. 1952. *On cooling the mark out: Same aspects of adaptation to failure*. Indianapolis: Bobbs-Merrill.
- Golant, S.M. 1984. *A place to grow old: The meaning of environment in old age*. New York: Columbia University Press.
- Goldrat, A. 2000. *The relationship between perception of uncertainty, tolerance for ambiguity, and sense of pressure, and the position of the workers towards organizational change*. Unpublished doctoral dissertation. Bar Ilan University.
- Henninger, D.E., D.J. Madden, and S.A. Huettel. 2010. Processing speed and memory mediate age-related differences in decision making. *Psychology and Aging* 25(2): 262–270. doi:[10.1037/a0019096](https://doi.org/10.1037/a0019096).
- Hernández, B., M.C. Hidalgo, M.E. Salazar-Laplace, and S. Hess. 2007. Place attachment and place identity in natives and non-natives. *Journal of Environmental Psychology* 27(4): 310–319. doi:[10.1016/j.jenvp.2007.06.003](https://doi.org/10.1016/j.jenvp.2007.06.003).
- Hidalgo, M.C., and B. Hernández. 2001. Place attachment: Conceptual and empirical questions. *Journal of Environmental Psychology* 21(3): 273–281. doi:[10.1006/jevp.2001.0221](https://doi.org/10.1006/jevp.2001.0221).
- Inhalan, G., and E. Finch. 2011. Change and attachment to place. In *Facilities change management*, ed. Edward Finch, 155–174. Malden: Wiley-Blackwell.
- Jorgensen, B.S., and R.C. Stedman. 2006. A comparative analysis of predictors of sense of place dimensions: Attachment to, dependence on, and identification with lakeshore properties. *Journal of Environmental Management* 79(3): 316–327.

- Kahneman, D., and A. Tversky. 1982. The psychology of preferences. *Scientific American* 246(1): 160–173.
- Katz, R. 2009. Intergenerational family relations and life satisfaction among three elderly population groups in transition in the Israeli multi-cultural society. *Journal of Cross-Cultural Gerontology* 24(1): 77–91.
- Koerner, N., and M.J. Dugas. 2008. An investigation of appraisals in individuals vulnerable to excessive worry: The role of intolerance of uncertainty. *Cognitive Therapy and Research* 32(5): 619–638. doi:[10.1007/s10608-007-9125-2](https://doi.org/10.1007/s10608-007-9125-2).
- Kuhn, K.M. 1997. Communicating uncertainty: Framing effects on responses to vague probabilities. *Organizational Behavior and Human Decision Process* 71(1): 55–83. doi:[10.1006/obhd.1997.2715](https://doi.org/10.1006/obhd.1997.2715).
- Lauriola, M., and I.P. Levin. 2001. Personality traits and risky decision-making in a controlled experimental task: An exploratory study. *Personality and Individual Differences* 31(2): 215–226. doi:[10.1016/S0191-8869\(00\)00130-6](https://doi.org/10.1016/S0191-8869(00)00130-6).
- Lewicka, M. 2005. Ways to make people active: The role of place attachment, cultural capital, and neighborhood ties. *Journal of Environmental Psychology* 25(4): 381–395. doi:[10.1016/j.jenvp.2005.10.004](https://doi.org/10.1016/j.jenvp.2005.10.004).
- Manzo, L.C. 2003. Beyond house and haven: Toward a revisioning of emotional relationships with places. *Journal of Environmental Psychology* 23(1): 47–61. doi:[10.1016/S0272-4944\(02\)00074-9](https://doi.org/10.1016/S0272-4944(02)00074-9).
- Mata, R., A.K. Josef, G.R. Samanez - Larkin, and R. Hertwig. 2011. Age differences in risky choice: A meta-analysis. *Annals of the New York Academy of Sciences* 1235(1): 18–29. doi:[10.1111/j.1749-6632.2011.06200.x](https://doi.org/10.1111/j.1749-6632.2011.06200.x).
- McAndrew, F.T. 1998. The measurement of ‘rootedness’ and the prediction of attachment to hometowns in college students. *The Journal of Environmental Psychology* 18(4): 409–417. doi:[10.1006/jevp.1998.0078](https://doi.org/10.1006/jevp.1998.0078).
- McHugh, K.E., and R.C. Mings. 1996. The circle of migration: Attachment to place in aging. *Annals of the Association of American Geographers* 86(3): 530–550. doi:[10.1111/j.1467-8306.1996.tb01765.x](https://doi.org/10.1111/j.1467-8306.1996.tb01765.x).
- Mesch, G.S., and O. Manor. 1998. Social ties, environmental perception, and local attachment. *Environment and Behavior* 30(4): 504–519.
- Milliken, F.J. 1987. Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management Review* 12(1): 133–143. doi:[10.5465/AMR.1987.4306502](https://doi.org/10.5465/AMR.1987.4306502).
- Mohr, P.N., S.C. Li, and H.R. Heekeren. 2010. Neuroeconomics and aging: Neuromodulation of economic decision making in old age. *Neuroscience & Biobehavioral Reviews* 34(5): 678–688. doi:[10.1016/j.neubiorev.2009.05.010](https://doi.org/10.1016/j.neubiorev.2009.05.010).
- Nechushtan, G. 1997. Aging in the Kibbutz: A time perspective. *Gerontology* 77: 44–55.
- O’Driscoll, M.P., and T.A. Beehr. 1994. Supervisor behaviors, role stressors and uncertainty as predictors of personal outcomes for subordinates. *Journal of Organizational Behavior* 15(2): 141–155.
- Orchan, E., and H. Goldemberg. 1994. *In the middle of life: The study of Kibbutz members aged 45–65 years old*. Haifa: The Institute for Research of the Kibbutz, the University of Haifa.
- Palgi, M. 2002. *Organizational change and ideology: The case of the Kibbutz*. Haifa: Institute for the Study of the Kibbutz and the Cooperative Idea, University of Haifa.
- Palgi, M., and S. Reinharz (eds.). 2011. *One hundred years of kibbutz life: A century of crises and reinvention*. New Brunswick: Transaction Publishers.
- Pelham, B.W., and J.O. Wachsmuth. 1995. The waxing and waning of the social self: Assimilation and contrast in social comparison. *Journal of Personality and Social Psychology* 69(5): 825–838. doi:[10.1037/0022-3514.69.5.825](https://doi.org/10.1037/0022-3514.69.5.825).
- Plassman, B.L., K.M. Langa, G.G. Fisher, S.G. Heeringa, D.R. Weir, M.B. Ofstedal, and R.B. Wallace. 2008. Prevalence of cognitive impairment without dementia in the United States. *Annals of Internal Medicine* 148(6): 427–434. doi:[10.7326/0003-4819-148-6-200803180-00005](https://doi.org/10.7326/0003-4819-148-6-200803180-00005).
- Preacher, K.J., and A.F. Hayes. 2008. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods* 40(3): 879–891. doi:[10.3758/BRM.40.3.879](https://doi.org/10.3758/BRM.40.3.879).

- Pretty, G.H., H.M. Chipuer, and P. Bramston. 2003. Sense of place amongst adolescents and adults in two rural Australian towns: The discriminating features of place attachment, sense of community and place dependence in relation to place identity. *Journal of Environmental Psychology* 23(3): 273–287. doi:[10.1016/S0272-4944\(02\)00079-8](https://doi.org/10.1016/S0272-4944(02)00079-8).
- Proshansky, H.M., A.K. Fabian, and R. Karminoff. 1983. Place identity: Physical world socialization of the self. *Journal of Environmental Psychology* 3(1): 57–84. doi:[10.1016/S0272-4944\(83\)80021-8](https://doi.org/10.1016/S0272-4944(83)80021-8).
- Rimmerman, A., L. Cozin-Disegni, and A. Griffel. 2003. Applying for general disability benefits among members with disabilities in the changing kibbutz. *Journal of Disability Policy Studies* 14(3): 148–153. doi:[10.1177/10442073030140030401](https://doi.org/10.1177/10442073030140030401).
- Rosental, R. 1998. The cracks that became a break-down. *Panim-Journal on Culture Society and Education* 4: 57–63.
- Rosner, M., D. Peleg, H. Goldenberg, and I. Glick. 1999. *Social security in the Kibbutz* 165. Haifa: The Institute for Research of the Kibbutz/The University of Haifa.
- Rubinstein, R.L., and P.A. Parmelee. 1992. Attachment to place and the representation of the life course by the elderly. In *Place attachment: Human behavior and environment*, ed. Irwin Altman and Setha M. Low, 139–163. New York: Plenum Press.
- Russell, R., R. Hanneman, and S. Getz. 2011. The transformation of the kibbutzim. *Israel Studies* 16(2): 109–126.
- Salancik, G.R., and J.R. Meindl. 1984. Corporate attributions as strategic illusions of management control. *Administrative Science Quarterly* 29(2): 238–254.
- Samuelson, W., and R. Zeckhauser. 1988. Status quo bias in decision making. *Journal of Risk and Uncertainty* 1(1): 7–59. doi:[10.1007/BF00055564](https://doi.org/10.1007/BF00055564).
- Sheaffer, Z., B. Honig, and A. Carmeli. 2010. Ideology, crisis intensity, organizational demography, and industrial type as determinants of organizational change in Kibbutzim. *The Journal of Applied Behavioral Science* 46(3): 388–414. doi:[10.1177/0021886310367945](https://doi.org/10.1177/0021886310367945).
- Shenk, D., K. Kuwahara, and D. Zablotzky. 2004. Older women's attachments to their home and possessions. *Journal of Aging Studies* 18(2): 157–169. doi:[10.1016/j.jaging.2004.01.006](https://doi.org/10.1016/j.jaging.2004.01.006).
- Smith, J.S., and M.R. Cartlidge. 2011. Place attachment among retirees in Greensburg, Kansas. *The Geographical Review* 101(4): 536–555. doi:[10.1111/j.1931-0846.2011.00116.x](https://doi.org/10.1111/j.1931-0846.2011.00116.x).
- Spear, L.P. 2010. *The behavioral neuroscience of adolescence*. New York: Norton.
- Standiford, R.L., S.W. Lester, N.J. Schultz, and J.M. Windsor. 2013. How age similarity preference, uncertainty, and workplace challenges affect conflict. *Human Relations* 66(12): 1597–1618. doi:[10.1177/0018726713482012](https://doi.org/10.1177/0018726713482012).
- Taylor, Z.E., D. Larsen-Rife, R.D. Conger, and K.F. Widaman. 2012. Familism, inter-parental conflict, and parenting in Mexican origin families: A cultural-contextual framework. *Journal of Marriage & Family* 74(2): 312–327. doi:[10.1111/j.1741-3737.2012.00958.x](https://doi.org/10.1111/j.1741-3737.2012.00958.x).
- Tiedens, L.Z., and S. Linton. 2001. Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology* 81(6): 973–988. doi:[10.1037/0022-3514.81.6.973](https://doi.org/10.1037/0022-3514.81.6.973).
- Twigger-Ross, C., and D.L. Uzzell. 1996. Place and identity processes. *Journal of Environmental Psychology* 16(3): 205–220. doi:[10.1006/jevp.1996.0017](https://doi.org/10.1006/jevp.1996.0017).
- Tymula, A., L.A.R. Belmaker, L. Ruderman, P.W. Glimcher, and I. Levy. 2013. Like cognitive function, decision making across the life span shows profound age-related changes. *Proceedings of the National Academy of Sciences* 110(42): 17143–17148. doi:[10.1073/pnas.1309909110](https://doi.org/10.1073/pnas.1309909110).
- Wahl, H.W., and F.R. Lang. 2006. Psychological aging: A contextual view. In *Handbook of models for human aging*, ed. P. Michael Conn, 881–896. Amsterdam: Elsevier.
- Waldman, D., Ramirez, G., House, R., & Puranam, P. (2001). Does leadership matter? CEO leadership attributes and profitability under conditions of perceived environmental uncertainty. *Academy of Management Journal*, 44, 134–143.
- Wiles, J.L., R.E.S. Allen, A.J. Palmer, K.J. Hayman, S. Keeling, and N. Kerse. 2009. Older people and their social spaces: A study of well-being and attachment to place in Aotearoa, New Zealand. *Social Science & Medicine* 68(4): 664–671. doi:[10.1016/j.socscimed.2008.11.030](https://doi.org/10.1016/j.socscimed.2008.11.030).
- Yen, H.R., and S.C. Chuang. 2008. The effect of incidental affect on preference for the status quo. *Journal of the Academy of Marketing Science* 36(4): 522–537. doi:[10.1007/s11747-008-0084-2](https://doi.org/10.1007/s11747-008-0084-2).

Chapter 11

Identity, Attachment and Roots in Aging

Alejandro Klein

11.1 The Place of the Elderly in Our Society: Expulsion

The traditional place of the elderly in our society has been expulsion and rejection. While this model is beginning to change (Klein 2009, 2010), old age has meant by and large the loss of citizen rights, worse quality of life and withdrawal from social relationships.

It seems especially important to emphasize that essential constructs of the link between the subject and society are lost: ending the *bearer* (they are no longer subject to social burden), the *supporter* (they no longer have representatives) and the *guardian* (they are no longer able to care for or preserve the social) (Kaës 1993; Klein 2006).

Therefore, in old-age it seems that the citizen and its individual character are substituted for a “cog in the wheel”, along the same vein as “replaceable”. Nevertheless, researchers indicate that during old age, the sense of independence and staying active is maintained as an essential value (Carp and Carp 1984):

There has been an important recognition of the constant interchange between the individual and their environmental and social circumstances that can lead to continued growth through maintaining expertise and control, and developing new skills that will support morale (Peace et al. 2006).

We may suppose that attachment and roots are substantial to human beings, within a permanent interaction with the other (Burkitt 1992; Wetherall 1996). At the same time, the sense of “being themselves”—a “self-identity”—is fundamental, where the social and individual stories are combined or become indivisible (Peace et al. 2006; Kaufman 1986). But this consolidated identity and what is left behind is

A. Klein, Ph.D. (✉)

Social Sciences Division, Guanajuato University, León, Guanajuato, Mexico

e-mail: alejandroklin@hotmail.com

also situational and includes the environment (Hockey and James 2003). In particular, psychological and psychoanalytical studies highlight the need to maintain the integrity of the self in this stage of life (Erikson 1965).

As we develop further on, we believe that depending on the circumstances, the elderly person oscillates between two opposite poles: a sense of Home that gives them strength and helps form their identity, roots and attachment and a sense of orphanhood, which makes them feel vulnerable and socially abandoned.

11.2 The Meaning of Home

Diverse authors have indicated that the concept of home is fundamental to human life and that this is especially true for elderly people. It is as if home were a kind of ‘anchor’ that protects and supports them in the face of the many, often irreversible, changes that they must face in this stage of life (Willcocks et al. 1987).

To accept that an elderly person is capable of living, sustaining and organizing oneself, alone or in a couple, in a home without the need to be institutionalized is to accept that they are not decrepit, nor is that person incapable of making decisions and maintaining their ability to be autonomous and independent (Peace et al. 2006).

In this space the elderly person maintains their preferred objects, their memories, routines, way of life and preferences and generates the conditions of their own environment while maintaining their quality of life (Cooper Marcus 1995):

Even for those who have become very frail and sometimes immobile, arranging and rearranging small objects and ornaments is important because it demonstrates the importance of agency that can be seriously eroded when others take over tasks that can still be managed (Peace et al. 2006).

The home has generally been defined as a place of refuge and protection, guaranteeing the dominium of the private and the separation from the public (Rapoport 1969).

Different theorists, working from the same general person–environment transaction view of human development, have emphasized different aspects of the meaning of home throughout the life span. Among them are the exploratory behaviors inherent to childhood play ...territoriality such as occupation and ownership in adulthood ... and age-related types of bonding in later life, such as autobiographical inclusion (the sense of belonging to and having one’s life expressed within a place that can stem from lifelong residence) (Rowles and Chaudhury 2005).

According to Hayward (Rowles and Chaudhury 2005), “the meaning of home may embrace home as a *physical structure*, as a *territory*, as a *locus in space*, as *self and self-identity*, and as a *social and cultural unit*”. We would like to contribute to this by emphasizing that the Home is a privileged space of emotional experience in relation to the preservation and the continuity of the self as an integrated experience of the subject regarding their ability to care for one’s self (Rubinstein 1989; Foucault 2004).

Winnicott points out that: *“Taking care to produce a state of things in which integration starts to become a fact and a whole person now exists”* (Winnicott 1979). Put another way, Home may be considered as the continuity and the synthesis of those paternal-maternal “good enough” affections that avoid the plain appearance of worries and uncertainty, in turn facilitating solid structures: self-truth, the feeling of security, a state of integration and continuity.

At the same time these elements of security allow for the prevalence of a zone in the mind that is associated to the capacity to consider or reflect, that marks the comprehension of one’s own behavior and that of the others in terms of mental states (Fonagy 1999, 2000). This concurrently increases the quality of life, whilst maintaining a calm and creative relationship with the environment. Lyons-Ruth (2004) indicates how emotional unavailability generates emotional vulnerability. In this way, we think that Home is not only the avoidance of the forced or voluntary institution, but is also related with the ability to maintain a good relationship with the environment, guaranteeing conditions of agency and mental health.

The sedentary model (Klein 2013) upon which subjectivity is based implies that Home is not only the synthesis of the biography of the course of life, from the past to the future. It also includes the real or symbolic idea and the emotional experience of ‘Home’ as a solid place, where it is possible to return, to be educated, and to find consolation. ‘Home’ does not seem like any other place, but it is an extraordinary space because of the daily sense of security.

Giddens observes that the daily sense of security arose from *“certain characteristics of childhood”* (Giddens 1997), related to the sense of “basic trust”: *“This trust does not only imply that one has learned to be rely on equity, equality and continuity of external agents, but one “may rely on oneself”* (Giddens 1997).

This trust is related to the experience of buffer spaces that they are able to care for and protect. It also includes the social. If the elderly person learns to trust in their environment, it is because the environment in turn may begin to trust in the executive and operative capacity of the elderly person. It deals with, then, a structure of continuity between the familiar, the social, and the subjective-intimately related among them- for which a brand of trust is established, experiences of trust, and reassurance.

The achievement of “basic trust” (Giddens 1997) explicitly relates this process to the quality and type of care that responds to the individual needs of the older adult. Care that concomitantly expresses the determined values and cultural and valued codes. Therefore, one condition of basic trust is that it has to have a sense of integration among elderly and the social component.

The transmission of positive determinate models of the environment, of roots and self-consolidation, reflect firm and solid processes of what it is to be an elderly person from a society capable of reflecting on their prejudices and stereotypes. At the same time, the elderly are capable of transmitting “basic trust” to their grandchildren through their role as grandparents.

Following on, these social structures that dignify the adult in the elderly need to be taken into account, in order to make this kind of feeling and education possible.

Education transmits through society and the elderly may identify themselves with it and equally feel dignified by it.

The elderly person becomes an “expert” self-caregiver, maintaining the capacity and pride of sustaining a Home, with the responsibilities that come with it, guaranteeing the conditions of their survival. This shows that between the home-society and subjectivity there is nothing but integration and creativity (Giddens 1997; Lawton 1989).

We may take a moment to consider that the caring techniques that provide the adequate environment definitely instill the skills that allow for the achievement of autonomy, security in one’s self, the ability to be alone, that is to say, psychological traces that allow for the insertion of the citizenship process with their interplaying rights—obligations, limits and skills.

11.3 Orphanhood

In contrast to Home, we designate orphanhood as a failure of the environment to provide adequate or good enough care:

Homelessness and rootlessness are related to social alienation and exclusion and to losing the sense of one’s past (and therefore, arguably, one’s future). This argument has been applied both to individuals and to displaced groups, where loss of place may also imply the loss of cultural heritage and community cohesion (Peace et al. 2006).

With the term “orphanhood” we are not only referring to situations where the elderly are institutionalized, but to all situations of sudden or gradual change that makes one loose the thread of continual existence, as the environment becomes a confusing, threatening or persecutory space.

Here we include the deterioration of community ties, the change in neighborhoods, the danger of walking on the streets, the feeling of insecurity in one’s own home, the violent crime rate, but also the lack of provision on the streets, in vehicles, public spaces, and government offices for the transit and comfort of the elderly.

All of these situations worsen when they happen faster, which impedes the capacity to deal with them adequately, it “is crucial to whether people can feel in control; rapid change can disrupt the congruence between personal identity and the place identity that is an important part of attachment to place” (Peace et al. 2006).

Subjectivity tends to be a disorganized attachment (Fonagy 2000), although it does not necessarily imply physical maltreatment, it does imply psychological maltreatment. The elderly person loses the guarantee that they can care for themselves, in other words, by default they become an expert self-caregiver. They become exhausted and do not feel protected, but on the opposite, they face chronic situations of abandonment and destitution.

Together with the “collapse” of the known world, the process of dialogue is fragile or interrupted by the social and the affected exchanges, symbolic and interactive (Lyons-Ruth 2004), with processes of confusion with the public, private and intimate environments (Probyn 2003).

The Home ceases to be a Home to transform into a strength, instead the elderly person locks themselves in and is afraid of leaving. It is no longer an intermediary between the public and the intimate, but a protective barrier in the face of what the public sees as an imminent threat, within an imminent catastrophic situation that becomes chronic (Klein 2006).

Negotiated and predictable situations change to non-negotiable and unpredictable. The construction of subjectivity in turn consolidates anxious expectation, insecurity prevails and compounds the difficulty of consolidating a cohesive and self-assured identity. In this way, the psychological device in charge of processes of discrimination and differentiation becomes a pathology.

Since Winnicott (1981) we may value the importance of being able to count on adequate frameworks that sustain a predictable and good enough environment that consolidates the feelings of control and recognition. The sensation of imminent danger resurges psychologically as a feeling of imminent collapse. The theory fits the research to the extent that these elderly people suffer mini panic attacks (Bleichmar 1997), in relation to invasive feelings, chaotic-fragmented selves and anxiety before the lived experiences such as out-growing, consolidating an unbalanced vegetative state of the nervous and psychic systems that can become exhausting.

One consequence is the difficulty of maintaining a “cohesive self”, “a representation, and a level of functioning in which the subject feels like a unit, in which the body and the mind are lived as insoluble parts of one’s self in the present, and in addition, with a feeling of temporal continuity” (Bleichmar 1997).

11.4 Collective Thought from Resilience

However it is necessary to highlight another positive aspect that also includes the notion of the environment in relation to the capacity of resilience that these elderly people demonstrate, which implies joint activities at an economic level, but also the capacity to share knowledge, beliefs, and actions collectively (Taylor et al. 2000):

For some people, including many older people, the reality is that day-to-day interactions with other people, especially in person, are confined to the immediate neighborhood (if not entirely to their own home in the case of people who are housebound) and for many of our respondents these communities based on neighborhood were essential to their well-being and sense of identity...Everyone in our study except those living in residential care homes had some level of involvement with their local community, ranging from shopping locally and a weekly appointment with a social club, to being a local councilor (Peace et al. 2006).

In this way the neighborhood is transformed into an essential point of reference, a “known” and “recognizable” place, which at the same time is important for the maintenance of the social wellbeing and the capacity of oneself to maintain their strength and integrity.

We could say that the collective facilitates a feeling structure (Fonagy 2000), that includes daily interactions but also those shared and thought about. These consider-

ations point out the supposed “vulnerability” and “fragility” of elderly people in the face of their environment may indicate, not infrequently, the existence of prejudices and stereotypes (Tuan 1974).

We suggest using the concept of resilience to understand these community activities that imply a sense of change and of being the protagonist. Resilience is as space where the other transforms into a significant person, an operator in which one can make and modify reality. Accept it within a public experience that opens guidelines of solidarity (Zuckerfeld 2003).

Community strategies are added as a network of support and auto-management processes. It has even been indicated that the social life of the united subject to the capacity of autonomy and security is a fundamental theme of the environment in older adults (Parmelee and Lawton 1990).

In this way it also deals with a way of updating the imagined and real acts of fraternity, essential to the society and the exchanges with older adults, which allows us to consolidate forms of auto-management, trust, and protection in the face of destitution processes:

Place being seen as important in allowing people to create and sustain a sense of self... Both individual and collective responses to such culturally significant places can include emotional and spiritual attachments to them in people who personally know them very little or not at all (Peace et al. 2006).

11.5 Conclusions

Zuckerfeld (2003) indicates, from a psychoanalytical point of view, that resilience is related to the promotion of answers in the face of traumatic facts. From this perspective it is considered part of the mechanisms of transformation from the adversary, with the capacity to use creative and unusual processes.

As such it is possible to consider how social practices and group decisions allow for the feelings of self-confidence, of expansion of the mind, of recognition of the other from a place of solidarity (Czernikowski et al. 2003), opposing a culture that does not protect them, whose expression for the elderly is “hindrance” or “useless”.

Points to consider are the creativity-creation pair that invokes a fundamental fact: the resilience at a social level is indivisible from changes in the ways of relating with the other. Which is at the same time, indivisible from a change in the way that we relate with oneself.

It also has something to do with the fundamental job of memory. It deals with the chance to transmit and generate a transmission, but also the chronology, the construction of projects and predictions among others. It implies re-arming one I from the We and vice versa; to offer indicators of identity; to reorganize the bringing together, re-articulating the ties that sustain the subject before situations of catastrophic rupture.

It is possible to locate resilience as an activity of simultaneous re-structuring of the subject and the bringing together, a mutual investment that contributes to the restoration, conservation and recuperation of a healthy environment that guarantees quality of life, together with processes of devotion, an integrated and cohesive self.

Acknowledgments The author wishes to thank the Directorate for Research Support and Postgraduate Programs at the University of Guanajuato for their support in the translation and editing of the English-language version of this article.

References

- Bleichmar, H. 1997. *Avances en Psicoterapia Psicoanalítica: Hacia una técnica de intervenciones específicas*. Madrid: Paidós.
- Burkitt, I. 1992. *Social selves: Theories of the social formation of personality*. London: Sage.
- Carp, F.M., and A. Carp. 1984. A complementary/congruence model of well-being or mental health for the community elderly. In *Human behaviour and environment*, vol. 7, ed. I. Altman et al., 278–336. New York: Plenum Press.
- Cooper, Marcus C. 1995. *House as a mirror of self: Exploring the deeper meaning of home*. Berkeley: Canari Press.
- Czernikowski, E., et al. 2003. *Entre hermanos: Sentido y efectos del vínculo fraterno*. Buenos Aires: Lugar Editorial.
- Erikson, E.H. 1965. *Childhood and society*. Harmondsworth: Penguin.
- Fonagy, P. 1999. Persistencias transgeneracionales del apego: una nueva teoría. *Aperturas Psicoanalíticas: Revista Internacional de Psicología* 3. <http://www.aperturas.org/3fonagy.html>. Accessed 15 Jan 2012.
- Fonagy, P. 2000. Apegos patológicos y acción terapéutica. *Aperturas Psicoanalíticas: Revista Internacional de Psicología* 4. <http://www.aperturas.org/4fonagy.html>. Accessed 10 Sept 2013.
- Foucault, M. 2004. A ética do cuidado de si como prática de liberdade. In *Ética, sexualidade, política*, ed. M.B. Motta, 264–287. Rio de Janeiro: Forense Universitária.
- Giddens, A. 1997. *Modernidad e Identidad del Yo*. Madrid: Península.
- Hockey, J., and A. James. 2003. *Social identities across the life course*. New York: Palgrave Macmillan.
- Kaës, R. 1993. *El grupo y el sujeto del grupo: elementos para una teoría psicoanalítica del grupo*. Buenos Aires: Amorrortu.
- Kaufman, S. 1986. *The ageless self: Sources of meaning in late life*. Madison: University of Wisconsin Press.
- Klein, A. 2006. *Adolescentes sin Adolescencia: Reflexiones en torno a la construcción de subjetividad adolescente bajo el contexto neoliberal*. Montevideo: Psicolibros-Universitario.
- Klein, A. 2009. Nuevas formas de relacionamiento abuelos-nietos adolescentes desde los cambios demográficos-sociales actuales. *Psicología Revista Universidad Católica de Sao Paulo* 18(1): 1–25. doi:10.1590/S0102-71822013000100023.
- Klein, A. 2010. Nuevas formas de familias, paternidades y relaciones familiares como modelo de intersecciones intergeneracionales. *Ageing Horizons* 2(9): 73–81.
- Klein, A. 2013. *Subjetividad, familias y lazo social: procesos psicosociales emergentes*. Buenos Aires: Ediciones Manantial.
- Lawton, M.P. 1989. Environmental proactivity in older people. In *The course of later life*, ed. V.L. Bengtson and K.W. Schaie, 15–23. New York: Springer.
- Lyons, Ruth K. 2004. La disociación y el diálogo infanto-parental: una perspectiva longitudinal a partir de la investigación sobre apego. *Revista Aperturas Psicoanalíticas* 17. <http://www.aperturas.org/17lyons.html>. Accessed 5 July 2013.

- Parmelee, P.A., and M.P. Lawton. 1990. The design of special environments for the aged. In *Handbook of the psychology of aging*, ed. J.E. Birren and K.W. Schaie, 464–488. San Diego: Academic.
- Peace, S., L. Kellaher, and C. Holland. 2006. *Environment and identity in later life*. London: The Open University.
- Probyn, E. 2003. The spatial imperative of subjectivity. In *Handbook of cultural geography*, ed. K. Anderson, M. Domosh, S. Pile, and N. Thrift, 290–299. London: Sage.
- Rapoport, A. 1969. *House form and culture*. Englewood Cliffs: Prentice-Hall.
- Rowles, G.D., and H. Chaudhury. 2005. *Home and identity in late life international perspectives*. New York: Springer.
- Rubinstein, R.L. 1989. The home environments of older people: A description of the psycho-social processes linking person to place. *Journal of Gerontology, Social Sciences* 44: 44–56.
- Taylor, M., A. Barr, and A. West. 2000. *Signposts to community development*. London: CDF Publications.
- Tuan, Yi-Fu. 1974. *Topophilia: a study of environmental perception, attitudes and values*. New York: Columbia University Press.
- Wetherall, M. (ed.). 1996. *Identities, groups and social issues*. London: Sage.
- Willcocks, D., S. Peace, and L. Kellaher. 1987. *Private lives in public places*. London: Tavistock Publications.
- Winnicott, D. 1979. *Escritos de pediatría y psicoanálisis*. Madrid: Laia.
- Winnicott, D. 1981. *El proceso de maduración en el niño*. Madrid: Laia.
- Zukerfeld, R. 2003. Procesos terciarios, creación, resiliencia y prácticas sociales transformadoras. *Revista Aperturas de Psicoanálisis* 14. www.aperturas.org/14zuckerfeldautorizado.html. Accessed 8 Oct 2013.

Chapter 12

The Spatial Practices of the Elderly in Rural Settings

Felipe R. Vázquez-Palacios

12.1 Living Space and Spatial Practices

As social analysts, we have always based ourselves on spatially arranged scenarios, such as the village, the location, site, community, locality or cultural area. This has enabled us to focus on various different socio-cultural processes, such as identities, migration, diversity of lifestyles, and even the phenomena of globalization. But there are few studies with empirical evidence that approach the analysis of actual living spaces and their socio-spatial practices of the elderly as a sector, and in relation to specific living conditions; the way in which these are accepted in the rural situation; the way they describe and interpret it, and attribute it memory, meaning and sense. That is why I consider it appropriate to propose an analysis of their living environment: their homes and plots of land; the community and the region as key variables, following the proposal for analysis by Lee Cuba and Hummon (1993), who show how the sense of belonging to a place, a home, a community and the region develops.¹ Its analysis enriches the symbolic and affective significance, as well as guiding and motivating; action and reaction; the rootedness and rootlessness that inhabiting a specific place, which those of us who work with the elderly would like to access, since it is there where the consciousness and the crossing point with all the spheres of reality occurs, and where public policy programmes must have an impact, if they are to have a real effect on the life of the elderly population.

¹I consider each of these to be living spaces, social constructions which are culturally designed with specific properties where the elderly person(s) ensure their reproduction and the satisfaction of their basic needs (which may be material and/or symbolic).

F.R. Vázquez-Palacios, Ph.D. (✉)
Center of Research and Advanced Studies in Social Anthropology of Gulf (CIESAS-Golfo),
Xalapa, Veracruz, Mexico
e-mail: fevaz19@gmail.com

In general, in rural areas in Mexico and in the Latin American – and even European – environment, the elderly as a sector have been invisible, even though in the last 50 years rural households have experienced a lengthening of life expectancy and the coexistence of several generations. Bengtson (1979) has noted this in the United States; similarly Reyes (2011), in the context of the Mexican indigenous population; Wengler (2001), in Great Britain; Quesnel (1998) and Quesnel and Del Rey (2001), in analyzing the social arrangements where the older generations and their children redefine their relationships in the context of increased life expectancy and longevity in the Mexican countryside.

According to the thirteenth Population and Housing Census in 2010, less than one quarter of Mexico's population is considered rural – the remainder live in cities. Other researchers (Sánchez 2009) claim that more than half of the world's population live in cities, and it is estimated that over 80 % of the elderly live in urban areas in developing countries. Meanwhile, Latin America and the Caribbean will be the home of one in every four people over 60 years of age on the planet by 2050, making it one of the region's most affected by ageing urban populations.

Studies on living space in Mexican and Latin American rural areas refer to the breakdown of the rural-urban divide; the feminization of the labour market; international migration, remittances, and multiple jobs for peasant farmers (Montes de Oca et al. 2008). Some researchers define this process as the 'deagrarización' (the break-up and disappearance of small holdings) of the countryside (Bryceson 2000; Escalante et al. 2007), while others speak of the emergence of post-agricultural rural families, where the members produce outside the locality or productive unit (Grammont and Arias 2008).

There is talk of a "new rural milieu", or many different forms of rural lifestyles, both in developing countries and those in the process of becoming developing, making profound changes due to the dynamics existing between country and city in the context of globalization (Paniagua-Mazorra 2013). The impoverishment of rural communities; the low levels of subsistence; social backwardness and the inadequate presence of social programmes, among other phenomena, characterise the lives of the elderly, described in Latin America and Europe as marginalized – destitute who, almost passively, face the changes in the social and economic context that they are forced to live in (Youmans 1977). Old age in the new rural setting is presented as a disadvantageous phenomenon associated with poverty, low education, high migration and poor healthcare, due to minimal access to healthcare centres, with multiple delays and hence the need for support programmes and public policies (Oddone 1997; Montes de Oca 2005).

Given this scenario, with reference to ethnography and environmental gerontology, I propose to show how the elderly live in the new rural context; which involves common action and values, both present and past, manifested in their daily lives, in their social interaction, and with their lifestyles in contexts that give them identity, relevance, and a sense of integration, and which lead us to ask the following questions: what are the key spatial practices of the elderly in rural settings? How have they developed their socio-cultural processes and in what specific situations? How has their knowledge been reinterpreted, respected and violated, and how have they

have stood up to the test of the changes that migration brings with it: is there resistance or adaptation?

The hypothesis put forward is that the spatial practices of the elderly are defined according to the jobs they undertake to achieve their own subsistence and cover residential needs, together with their ability for agency,² enabling them to bring significance and meaning to their existence.

The methodology used involved reviewing the literature, mainly concerning the Mexican countryside and comparing it with Latin American and European rural contexts. Empirical data is presented, based on fieldwork in the Gulf of Mexico, in order to further reflect on specific spatial practices.

Studies on the spatial behaviour of the elderly have focussed on understanding the living conditions of the study subjects and their relationship to the physical and social environment, from a geographical analysis, taken at different scales (Rowles 1978; Lawton 1983). From a gerontology-based, environmental approach, authors such as Cuba and Hummon (1993); Sánchez 2009), start off from the home, the city and the region, to address the various problems of the elderly, as well as their environmental and emotional perception of their own living space, highlighting the needs of their direct environment (home and city) and the demands of the elderly themselves.

For the purposes of this study, the living space is defined as a place of integration, where a combination of socio-cultural processes and spatial practices take place, referring to the individual, and shaped socio-culturally, replete with meaning, significance and the memory of practical life³ (Lindón 2009). Thus, when I refer to “property and farmland, community and region” I am referring to a living space that links the individual with their environment (Oswald and Wahl 2005),⁴ where each of the spatial practices undertaken affect to some extent the place inhabited.

The living space is not just physical or inert – but a set of common social relationships (Hargreaves 2004), where the elderly are related to things in a constant process of survival, creating and recreating memories and utopias contained within spatial practices, and socio-cultural interaction, that provide personalized meanings and identify everyday life. Here the elderly become familiarised with actions, feelings, concerns, trends and intentions, both past and present, anchored in them, and in their living space. Thus, people build up their concept and form of living space, at the interface between oneself and one’s world. The “us and them” takes shape, this becoming a historical process where specific contexts and content is filtered

²The notion of agency I build up following Long (2007: 48), defining it as: the ability of the elderly to process experience (from their own individual and group-based life), to design ways of coping with life, even under the most extreme conditions. Agency is usually produced and shaped within social interaction, directly influencing decision-making and action taken in any situation.

³De Certeau (1996) calls living spaces “practiced space,” “places of memory, identified and identifying”; symbolized places, full of inter-subjective meanings; with dimensions where experience contributes to subjectivising the place objectified by others; with actions, interactions, perceptions and meanings, linked to lifestyles, such as constructed environments (Rapoport 1978).

⁴Frank Oswald (2005). Note that in the US and Germany in more than 80 % of cases, the elderly spend all day at home.

through a wide range of individual and cultural peculiarities, with unique meaning and significance, which differentiate the inhabited space from the rest (Theano 1995: 327). There they will find the “self,” the body, the interiority, the capacity for agency. This is the bridge that indicates what is inside and what is outside.

The living space changes with the passage of time and the accumulation of age. According to Theano (1995: 331), for the elderly, the space becomes more limited but more intense, welcoming. Thus, there is an identification of values, feelings of “being at home”, being comfortable in a familiar environment. Residing in one place for a long period of time enhances and strengthens social bonds (Rowles 1983; Cuba and Hummon 1993).

The living space refers to complex assemblies (housing, farmland, community, region), where socio-cultural processes unfold, linked strongly to lifestyles that shape social identities from their interrelated elements with a whole system of meanings and significance in constant construction and deconstruction. Based on this analytical framework, I would like to focus on the spatial practices where these socio-cultural processes take place.

12.2 Spatial Practices and Socio-Cultural Processes

The historiography on the Mexican countryside, ranging from the traditional environment to the new rural milieu (Puig 1928; Monzón 1949; Bartra 1975; Stavenhagen 1977; Warman 1978; Bartra 1982; Mora 1996; Robles Berlanga 1999; Ramírez 2003); as well as some European settings (Godenau 2007; Droogleever 1999), show that the elderly have interacted and built bridges between their personal history, their location of residence and the global context. This is due to changes not only in their crops but in their social relationships, family members, support and institutional programmes and action; their lack of resources, isolation, poverty and lack of employment.

In Mexico, for example, in 1900, 72 % of the population lived and worked in the fields. According to the Agricultural Rights Certification Programme (PROCEDE), more than half of the holders of a share in common lands are now over the age of 50. If we break down the data by gender, we see that there is a higher proportion of elderly women: 61 % over 50 years, and 27.7 % over 65 years of age. Latin American countries such as Argentina, Chile, Venezuela, Colombia and Uruguay show roughly the same figures (Oddone 1997; De Lima 2003; Gómez et al. 1998).

Although Mexico and Latin American countries cannot be considered peasant farmer populations, due to the importance of agriculture in the economy of their countries, and the population working in the primary sector – less than in the secondary and tertiary sectors – the percentage of those working on the land is, nonetheless, high: one in four. According to Mexican demographers, it is in rural areas where approximately 58 % of the elderly live, despite the increasing fragmentation of rural families. The older generations, rather than benefitting from greater assets, due to population growth in the context of a domestic, region-based economy, they

are now facing the risk of increasing insecurity, due to the spread of family members, who are forced to leave their locality to find work and support themselves. Shared land, as a standard unit of reproduction in families, is now at risk of losing all authority over young people; heads of households who do not possess a plot. The financial support for farmers (PROCAMPO) and families in extreme poverty (formerly OPORTUNIDADES and now PROSPERA) has only painted the house when it is already falling down, thus increasing the inequality between the different domestic groups that undertake this work; breaking down intergenerational and inter/intra-family solidarity in private and public rural settings, and in the multiplicity of their children's immigration situations.

As we can see from before the existence of common/shared land and until the first half of the twentieth century, rural areas – rural family organization and production – was fully devoted to ensuring the biological existence of its members. Crops were mostly very small-scale: maize, along with, or followed by, black beans, pumpkin, peppers and chile, among others. Some peasant farmers also worked as labourers on others' land; others were engaged in pottery, tanning or processing both animal and vegetable-based food products, among other jobs directly related to production processes. Throughout the year most had work that kept them employed.

Several ethnographies on peasant societies of the 40s, 50s and 60s in Mexico and several Latin American countries indicate that children at that time were beginning to work at a very young age. Along with their parents, they learned to work the land and be directly related to the process, not only of production but also socio-cultural, such as the feast of the patron saint and community organization, among other elements. The living space, through the use of the land, was considered a guarantor of forming part of a community, which shared values, customs, principles and beliefs. Together with their descendants, the elderly made of their living space the public sphere for all kinds of (social, production-based, religious) spatial practices, including being the head of the family and community. For this, good empirical knowledge was required which meant clearly manifesting the lifestyles and experience these spaces required. Similar processes have been described by Oddone (1997) in Argentina; Droogleever (1999) in Switzerland; De Lima (2003) in Venezuela; and Gómez et al. (1998) in Colombia; Vázquez (2013) in México, where the old man, as the head of the extended family, is to be found in the farming community, where two or more generations live together.

The most experienced elderly people were the direct references people went to when seeking help or advice, especially where there was no coverage by institutional services. It was common to find elderly people occupying the role of authorities and presiding over situations where they passed on social norms based on tradition and experience. They were the cohesive fabric of the family and group order. The old man was respected, even in situations of poverty. The ageing process was experienced close at hand, where the elderly were cared for by family, neighbours and the entire community – for this was the duty of everyone, especially the offspring, who took charge of their grandparents if the parents were sick. Cohabitation of children with elderly people, according to their children, offset loneliness, sadness, and the distress of the elderly when ill and dying, as at all times they were surrounded by people close to them.

The reproduction of conditions for family-based production gradually increased and it became necessary to expand and prefer certain spatial practices for specific living spaces, not only in terms of production work but also in relation to socio-cultural activities. For example, it became imperative to extend the size of land available for sowing to other new crops, thus producing significant changes in lifestyles; lifestyles and social organization that disrupted all aspects of the rural environment. Uninhabited spaces took on new value, accelerating their occupation, but not for living purposes. Community and regional networks had to be rearranged, as they were now dependent on the continual flow of loans for the various work on the new crops, which now also involved the almost constant use of paid labour. Peasant farmers and their families were now partners and day labourers in agribusiness (subject to the ingenuity of hoarders and other companies), which gave them loans for sowing, weeding and harvesting the product. They began to buy corn, pumpkin and black beans – products which they had formerly produced themselves and which had kept them busy throughout the year. According to reports, the new organization brought notorious periods of inactivity in agricultural production. Although they still owned the physical space, they no longer controlled it. Now an agreement would be signed with representatives of agribusinesses, who unlawfully held back resources and managed the tasks to be undertaken. The women and the children, as well as the elderly, were separated from the production facilities, thereby delimiting the spaces they had earlier inhabited, reducing their communal and regional spatial practices and confining them to their homes. Now the work required both the momentum of the machines and the strength of young people, not the traditional skill and experience needed for working in the fields. If the old man of the family was in sufficiently strong physical condition, he was the administrator who “controlled” the resources from home.

With this more restricted demarcation of living spaces, a process of individualization developed in the social organization, which affected socio-cultural processes involving the elderly. And this happened not only in developing countries but also in Europe (Droogleever 1999: 189). While benefits were obtained, as now the elderly could be entitled to access to the Mexican Social Security Institute (IMSS), obtain medication and, over time, a pension, these were not enough, however, to transfer the family for the care and attention of the elderly. In the decades from 1980 to 2000, the disabled elderly began to be noticeable (not because they did not exist earlier but simply because they died off); for example, one began to see peasant farmers on crutches, in wheelchairs, and even ambulances arriving to collect someone seriously ill. And these limitations in health care and difficulties in providing care in rural environments occur not only in Latin America but also in rural contexts in Europe (Glasgow 1998). Over the course of these three decades the elderly, in both their homes and environments, have seen a marked decline in their decision-making and a reduction in their active involvement in land use, as the elderly saw new conditions that they did not form part of. Perhaps in their traditional crop tending there had been lighter activities which they could perform very well (such as

shelling corn, weeding, harvesting), but with the change to crops such as sugar cane, oranges and coffee, they state, for instance, that “old people became useless”. And the fact is that working with inventiveness, with the juice extractors, and even on coffee plantations, and a number of other crops where agribusiness took control of production using machines and industrial technology, this took them out of the production process.

The benefits of crops promoted by agribusiness briefly maintained relative prosperity for the families of farm workers. Unfortunately, however, the fluctuating prices of agricultural products and the subsequent recession in the markets and agricultural policies – as well as the sale of the plots – gradually forced family members (mostly men) to work away from their home area. In Mexico, it was very noticeable that the children of elderly peasant farmers migrated, since migration became the only option for obtaining income (Montes de Oca et al. 2008). Others peasant farmers sold off their land to outsiders, a circumstance which came to alter their communal living space, particularly communal and regional spatial practices. This was manifested in the social organization of rural areas, since those who bought the land were not aware that the right of usufruct of the land implied certain obligations involving the community, religious practices, and involvement in common tasks, festivals, ceremonies and other ways of working together for the benefit of and coexistence with others living in the community.

Population pressure was patently evident on farmland, limiting and hindering agricultural tasks, particularly access to land for future generations (those born after the sixties). In addition, people began to feel government neglect, which started to become patent with the establishment of the neoliberal economic model for the production of major agricultural products. This meant that families were challenged with major problems in facing up to the spread of their members due to migration. With respect to migration, the dual role women had to play should be highlighted, both in the private sphere, within the family, where they were both father and mother at the same time, and within the public sphere in the community, where they had to take on an active role with regard to farming, attending meetings, making deals, hiring labourers (cleaners and cutters), and supervising work in the fields. The elderly, for their part, had to return to their former role, in the absence of children, and some once again took over the decision-making role, accompanied by their daughters, daughter-in-laws or grandchildren to get the work done.

Spatial practices for the elderly in family coexistence were more difficult since, apart from fighting to keep their children, they faced disputes with daughters and grandchildren over how little or much money was being sent by those who had emigrated, although this did, indeed, serve to meet some of the basic needs of the family, such as food, clothing, medicine, covering debts, repairing the home, payment for services, buying appliances or small vans, however this was little to compensate for the lack of attention, loneliness and abandonment, especially in times of pain and sorrow.

12.3 Discussion

Through these spatial practices, I have wanted to show how varied the spaces inhabited by the rural elderly were: housing and farmland, community, region. According to the information presented, three spatial practices are observed that have an impact on rural life.

The first of these practices is seen in the strong cohesiveness of the rural elderly in their homes and fields, and their communities and regions, forming a unit. Their spatial practices are linked to the logic of subsistence, traditions, customs, family and community which the elderly were in control of through their knowledge. Spatial practices revolve and are structured around the land, as the main means of production, which not only produces, but also embodies strong emotional and sacred values. Living on and cultivating the land is vital as a means of identity and respect: one existed, in that one shared with others – the same problems, rights and obligations. There is a significant correlation between the respect for the elderly, the role they played, the value given to the land, and the social dynamics that developed due to the relationships created. The elderly not only served the purpose of capitalizing element of agricultural knowledge, but also as the custodian of the collective experience; they were the element of filiation and family identification. Special mention is deserved for religious and festive activities that make up the ethos of the population in the home and which was the element of identification with other villages and towns in the same region.

The second spatial practice concerns the fact that the elderly live in their home environment but do not work or control it; they are pressurized by fluctuations in the prices of their products, causing them uncertainty as to how much they are left with at the end of the entire production process. This produces physical and social instability, manifested in the loss of traditions, values, customs, authority and control, care and attention to parents – not to mention the grandparents (Gómez et al. 1998, for the case of Colombia, and Vázquez 2011, in the case of Mexico).

Before, when your parents were sick, you yourself were the one who took care of them: preparing their food, supporting them morally. Now your children get tired of you really quickly and although they do help us, they do it reluctantly. If we're lucky, they send us to the hospital (Francisca, 78 years).

Gradually, spatial practices, as well as living space in both their homes, and the structure of their rural communities, become gradually blurred, with the elderly losing control of productive and social processes, giving these up to the employees of agro-industries and institutions within government offices. In these urban environments literacy was required to resolve any land, loan or legal problem; do the accounts; negotiate the price of products; make contacts; and know how to get around the city. All this created new prestigious positions, previously held by the elderly, enabling the inclusion of young people who, thought they did not have the experience, were literate and could move more rapidly around the city and were not afraid of ridicule, stigma or discredit. Segmentation of homes and communities became increasingly evident, and this had a direct impact on spatial practices, where

the customs, routines, lifestyles, traditions and beliefs of the elderly begin to fall to pieces; social interaction begins to decouple itself from the symbolic elements that gave meaning and significance to being together. A before and after takes shape:

“There used to be a river here”, “...in these hills they used to hunt deer, rabbits...” “On the hills there were fruit trees of all kinds.” “The festival was more cheerful,” “the children respected us. It wasn’t the way the grandchildren are now with their parents”, “...the village looked better, it was cleaner.” “Everyone helped us in the harvest season.”

The third spatial practice is linked to the agricultural recession and migration within an ageing rural context and transformation. There has been an impressive openness and adaptation to the new socio-cultural processes that invade rural settings. The elderly attempt to maximize flexibility in their lifestyles and everyday forms of organization, attempting to balance the demands of two environments that arrange their spaces following different logic: a rural and an urban logic. And the situation forces them to develop flexible lifestyles that enable them to adapt to the demands and practices of the city and its communities of origin. Migration, along with declining rural production, the emergence of informal business transactions, and the sale of their labour, have led the elderly to seek strategies and negotiations in two different environments.

Until a few years ago the children went to work close-by and at least every week or every month we saw them. Now they go increasingly farther and farther away and for longer, some even don’t come back now. And when they suddenly come back, they come with new habits, new ideas; they don’t even feel at home with us and after a few months they get bored and decide to go away again (Juan A. 79 years).

Spatial practices are no longer focussed only on living spaces, which means physical effort and exceptional emotional strength, since these people are forced to leave their family. This sometimes means breaking with their social support networks in their community and region and creating other new ones in the city. This involves changing their patterns of behaviour and family customs and becoming involved in dynamic and city-based patterns of behaviour. And this is without even considering cases where migration is to the United States, where for the elderly this means a completely unknown environment, only cherished by the stories of family members who have been there, hoping that one day they will return and that they themselves will thus achieve a better quality of life, surrounded by their children.

12.4 Final Considerations

According to these three spatial practices, we see the capacity for agency in the rural elderly, especially their ability to find in their home environment (housing, farmland, community and region) and their socio-spatial practices, the minimum necessary situations and conditions for survival. Through their capacity for agency the elderly weave their hopes, and measure and evaluate the potential effects on the entire living space, always trying to stabilize its precarious economy. This agency is

underlying in its customs, values and traditions, clearly manifested through their conversations and actions, thoughts and ideas, as well as the sufferings, sorrows, uncertainties, fears, pain and memories of conflict when changing over crops; when giving up the plough and mounting the tractor; when giving up making tortillas and buying machine-produced ones; when changing their eating habits and their meal routines, etc.

It has been shown that experiencing old age in a rural setting does not usually mean living in an isolated but warm place where everyone knows each other; where there are strong networks of solidarity; where the elderly maintain their status and their traditions; and where they can find better living conditions, peace and happiness. According to the spatial practices presented, the rural elderly reveal their capacity for agency, given the complexity and difficulty of life in these contexts of constant change in the structure of the environment, community and family, as a result of political and economic changes globally. Their ability for agency makes them introduce technology and communications into their living space, as well as into lifestyles and behavioural patterns. The same is the case regarding their attitudes, values and needs, which are perceived through an overlapping set of interrelationships where they have to decide which behavioural attitudes and mindsets they must be committed to, and why they are going to do so, and confront the continuities and discontinuities which these decisions represent. Perhaps for this reason, the rural elderly are clear that the living space is a product always in the process, something never completed, nor a closed totality. We are always going to find them following spatial practices aimed at their survival, whether they decide to move towards labour markets where their children are working, or continue working in their rural environment; or assisting with the care of grandchildren, cleaning and household care in outlying areas; or remaining in their home community, working or living on the goodwill of people and State-funded programmes; rationing their use of remittances sent by their children; or living in two different settings: rural and urban, with a fair amount of work and degree of uncertainty.

Although the home and farmland, the community and the region are becoming increasingly blurred, their spatial practices show greater restructuring, with a greater capacity for agency that enables them to adapt quickly and efficiently to the specific needs they face, especially at this late stage of life. Hence, their spatial practices turn out to be the laboratories where the social scientist is required to be more and more specific; to clearly distinguish between their elements in order to understand the new social processes that the elderly embark on to locate resources and networks, and understand their most pressing needs. And here our task as social scientists is to understand how these spatial practices are delineated and how they interface with those inhabited spaces; to locate and understand the logic, modes of organization, incompatibilities and new constructions embedded within the processes of globalization, especially in contexts that will become increasingly homogenized and aged, with greater dependence, abrupt changes in their family relationships and need for support, as well as formal and informal attention that will

aggravate the problem of dependency, vulnerability, marginalization and poverty, due to the scarcity of resources and social support and the inadequacy of environments.⁵ And this is not just for Latin American rural contexts but also for transatlantic rural contexts (Mazorra Paniagua 2013).

Faced with this challenge, the ability the elderly have for agency will be crucial. It was observed that in the home, especially in the case of women and men over 75 years old, the living space is more significant and more meaningful for its residents, where their agency can exercise creativity, freedom and support from their strong social networks, by adapting their homes, the organization of their time, lifestyles, thoughts and feelings to their poverty and marginalization; adapting practical solutions for their illnesses, loneliness, family problems and economic needs and even counteracting – in their homes – the dominant logic that subordinates and controls them.

On the farmland it is the men of 60–75 years of age who find ways to start negotiating, exercising agency capacity and managing to resolve their main subsistence needs, giving them roots and a sense of belonging to the community and the region, as opposed to the institutions, especially those that provide social and economic support. Also, it is these spaces where they may obtain the highest level of significance and sense as rural workers. This is where agency capacity may have more weight in maintaining their identities.

With regard to living space as a community, I look particularly at those of 60–75 years of age; the area where the rural setting can be constructed. This is the space where social networks exist, where they can put into practice a series of negotiations that enable them to externalize their personality, and together choose the most appropriate decisions for their families. There they find the meaning of important group identity for their development and the construction of group-based projects. It is the space that gives structure to the collective memory, where the “us” versus the “them” is built, and the values, traditions, festivals and beliefs are exhibited, as opposed to the “others.” Within the community, the elderly can develop clear elements for their common welfare and the environmental context they form part of.

The region, for its part, is a space which, as age advances, is dissociated and restricts considerably: it is observed by the elderly as the space where institutions are located, programmes where they can find support for the dependency and marginalization they find themselves in, and accessibility primarily to health services. But it is also seen as the place where the elderly bear the heaviest burden as a result of their demands within social organization, their lifestyles – but also where they can find counterweights and bargaining strategies that lift them out of the monotonous routine of their spatial practices.

⁵Wengler and Burholt (2001) states that apparently living in small communities is good in the third age but on entering the fourth age (when physical strength weakens considerably) living in villages or rural communities is quite problematic, due to the lack of healthcare and services.

References

- Bartra, R. 1975. *Caciquismo y poder político en el México rural*. México: Siglo XXI.
- Bartra, A. 1982. *El comportamiento económico de la producción campesina*. México: Universidad Autónoma de Chapingo.
- Bengtson, V.L. 1979. Ethnicity and aging: Problems and issues in current social science inquiry. In *Ethnicity and aging: Theory, research, and policy*, ed. D.E. Gelfand and A.J. Kutzik. New York: Springer Publishing.
- Bryceson, D. 2000. Peasant theories and small holder policies: Past and present. In *Disappearing peasantries? Rural labour in Africa, Asia and Latin America*, comps, ed. D. Bryceson, C. Kay, and J. Mooij. London: ITDG Publishing.
- Cuba, Lee, and David M. Hummon. 1993. A place to Cali home: Identification with dwelling, community, and region. *The Sociological Quarterly* 34(1): 111–131. doi:[10.1111/j.1533-8525.1993.tb00133.x](https://doi.org/10.1111/j.1533-8525.1993.tb00133.x).
- De Certeau, M. 1996. *La invención de lo cotidiano*. México: Universidad Iberoamericana.
- De Lima, B. 2003. Venezuela: envejecer en la pobreza. *Congreso de ciencias sociales en Chile*. Universidad Nacional Experimental Francisco de Miranda.
- Dröogleever, Fortuijn Joos. 1999. Daily life of elderly women in a rural area in the Netherlands. *GeoJournal* 48(3): 187–193. doi:[10.1023/A:1007027625248](https://doi.org/10.1023/A:1007027625248).
- Escalante, R.H., L.M. Galindo Catalán, and O. Reyes. 2007. Desagrarización en México: tendencias actuales y retos hacia el futuro. *Cuadernos de Desarrollo Rural* 59: 87–116.
- Glasgow, N., and D.L. Brown. 1998. Older, rural, and poor. In *Ageing in rural settings: Life circumstances and distinctive features*, ed. R.T. Coward and J.A. Krout, 187–207. New York: Springer.
- Godenau, D. 2007. *Inmigración en Canarias: contexto, tendencias y retos*. Santa Cruz de Tenerife: Editorial Fundación Pedro García Cabrera.
- Gómez, J.F., C.L. Curcio, J.E. Orjuela, and J.J. Ramírez. 1998. Envejecimiento en comunidades campesinas: proyecto envejecer en el campo. *Colombia Médica* 29(4): 121–124.
- Grammont, H., and E. Arias. 2008. La familia rural post-agrícola. *LASA Congress*, Río de Janeiro, Brasil, del 11 al 14 junio.
- Hargreaves, Andrew. 2004. Building communities of place: Habitual movement around significant places. *Journal of Housing and the Built Environment* 19(1): 49–65. doi:[10.1023/B:JOHO.0000017706.38123.43](https://doi.org/10.1023/B:JOHO.0000017706.38123.43).
- Lawton, M.P. 1983. Environment and other determinants of well-being in older people. *The Gerontologist* 23. Washington, DC: Oxford University Press.
- Lindón, Alicia. 2009. “La construcción socio-espacial de la ciudad: el sujeto cuerpo y el sujeto sentimiento” *Cuerpos, emociones y Sociedad. Córdoba* 1(1): 6–20.
- Long, N. 2007. *Sociología del desarrollo: una perspectiva centrada en el actor*. México: Colegio de San Luis y CIESAS.
- Montes de Oca, V. 2005. Envejecimientos y ruralidades. *Primer Congreso Latinoamericano de Antropología*, Rosario: Argentina.
- Montes de Oca, V., A. Molina, and R. Avalos. 2008. *Migración, redes transnacionales y envejecimiento: Migración, redes transnacionales y envejecimiento*. México: Coedición UNAM, Instituto de Investigaciones Sociales y el Gobierno de Guanajuato.
- Monzón, A. 1949. *El calpulli en la organización social de los Tenochcas*. México: Instituto de Investigaciones Históricas.
- Mora, T. 1996. *Nduandiki y la sociedad de Allende en México: un caso de migración rural-urbana*. México: Instituto Nacional de Antropología e Historia.
- Oddone, Julieta. 1997. Vejez y pobreza en el área rural. Estudio comparativo entre una unidad pastoril y una agricultora. Universidad Nacional de Quilmes Argentina. <http://www.naya.org.ar/congresos/contenido/quilmes/P2/51.htm>. Accessed 19 Oct 2014.

- Oswald, F., and H.W. Wahl. 2005. Dimensions of the meaning of home. In *Home and identity in late life: International perspectives*, ed. G.D. Rowles and H. Chaudhury, 21–45. New York: Springer.
- Paniagua-Mazorra, A. 2013. Repensar el espacio (rural): entre la individualización y el campo global. *Economía, Sociedad y Territorio* 13(41): 245–267.
- Puig, J. 1928. *Educación rural y programa de la escuela rural*. México: Secretaría de Educación Pública-Talleres Gráficos de la Nación.
- Quesnel, A., and A del Rey. 2001. Les réseaux familiaux en changement. *XXIV Congrès Général de la Population*, Salvador-Brasil.
- Quesnel, A., and P. Vimard. 1998. Recomposición familiar y transformaciones agrarias. *Estudios Demográficos y Urbanos* 3(1): 113–139.
- Ramírez, B. 2003. La vieja agricultura y la nueva ruralidad: enfoques y categorías desde el urbanismo y la sociología rural. *Sociológica* 18(51): 49–71.
- Rapoport, A. 1978. *Aspectos humanos de la forma urbana. Hacia una confrontación de las Ciencias Sociales con el diseño de la forma urbana*. España: Gustavo Gili.
- Reyes, G.L. 2011. Vejez en contextos indígenas y pobreza extrema en Chiapas. *Pedagogia i Treball Social. Revista de Ciències Socials Aplicades* 2: 112–135. file:///C:/Users/Felipe%20V%C3%A1lquez/Downloads/Dialnet-VejezEnContextosIndigenasYPobrezaExtremaEnChiapas-3876276.pdf. Accessed 1 Jan 2014.
- Robles Berlanga, H. 1999. Tendencias del campo mexicano. *Estudios Agrarios* 13: 31–60.
- Rowles, Graham D. 1978. *Prisoners of space? Exploring the geographical experience of older people*. Boulder: Westview Press.
- Rowles, Graham D. 1983. Geographical dimensions of social support in rural appalachia. In *Aging and Milieu: environmental perspectives on growing old*, ed. G.D. Rowles, 11–129. New York: Academic Press.
- Sánchez-González, Diego. 2009. Contexto ambiental y experiencia espacial de envejecer en el lugar: el caso de Granada. *Papeles de Población* 15(60): 175–213.
- Stavenhagen, R. 1977. El campesinado y las estrategias de desarrollo rural. *Cuadernos del CES* 12:1–31.
- Theano, S. Terkenli. 1995. Home as a region. *American Geographical Society* 85(3): 325–334.
- Vázquez Palacios, F. 2011. *Antropología del envejecimiento en las ruralidades veracruzanas. El caso de los maiceros, cafecultores, cañeros y citrícolas*. Saarbrücken: Editorial Académica Española.
- Vázquez Palacios, F. 2013. Envejeciendo en las tradicionales y nuevas ruralidades. *Intersticios*, México, 3(5): 1–29.
- Warman, A. 1978. *Y venimos a contradecir. Los campesinos de Morelos y el Estado Nacional*. México: Casa Chata.
- Wengler, Clare, and Vanessa Burholt. 2001. Myths and realities of ageing in rural Britain. *Ageing and Society* 21: 117–130.
- Youmans, G. 1977. The rural aged. *Annals of the American Academy of Political and Social Sciences* 429: 432–450.

Part IV
Public Policies, Planning and Practices
on Built Environment and Aging

Chapter 13

Public Policies on Housing, Environment and Ageing in Latin America

María Elena Acosta-Maldonado

13.1 Introduction

In Latin America and the Caribbean, reflecting on the older adult population requires understanding the social, cultural, economic and political context. This helps determine what this population experiences in this stage of its life and what role the family, society and State should play.

This document presents elements that will help establish the state of public policies on housing, environment and ageing in the region, determining the challenges that must be assumed to change the living conditions of the older adult population.

An analysis is carried out of the demographic context and ageing trend in the region, as well as the approaches and effects, the spatial physical movement and the emotional situation of the adult population, and the public policies on housing and environment, and current legislation. This helps to establish several final conclusions.

13.2 Context in Latin America: Demographic Trends and Ageing

In Latin America and the Caribbean, 80 % of the population lives in cities, making it one of the most urbanised regions in the world. It is currently undergoing a major demographic transition and has an average annual growth of less than 2 %. In this region, the active population is proportionally greater than that of children and older adults, situation which will not last more than 30 years according to (UN 2012a).

M.E. Acosta-Maldonado (✉)

Ministry of Urban Development and Housing, Quito, Ecuador

e-mail: malenaacostam@yahoo.com

© Springer International Publishing Switzerland 2016
D. Sánchez-González, V. Rodríguez-Rodríguez (eds.), *Environmental Gerontology in Europe and Latin America*, International Perspectives on Aging 13, DOI 10.1007/978-3-319-21419-1_13

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Urban physical expansion tends to grow two to three times faster than the population density.

The demographic trend in Latin America is population ageing. The population tends to thin at the base (the young people) and widen at the top, the elderly. What contributes to this population transformation in the region is decreased fertility, migratory movements, low mortality and an increase in life expectancy, among other factors. In Latin America, the over 60s population is growing at a faster rate than in developed countries according to (UN 2012b). Currently, 10 % of the population is over 60, with women outnumbering men and the “female face” being identified in old age. 47 % of men over 60 and 24 % of women are in the workforce. By 2050 it is calculated that 25 % of the population in Latin America and the Caribbean will be over 60 and 5.5 % over 80. According to the UN, if this projection is fulfilled, there will be a higher number of senior citizens than children in Latin America and the Caribbean. This situation must be considered by the States in order to implement public policies that address this population composition, particularly in countries where being an older adult is a challenge, as they do not have the necessary conditions to cope with and integrate this population. It should be noted most of the constitutions of Latin American countries establish the right to decent housing and a secure habitat, as well as access to opportunities and protection of the entire population, regardless of sex, ethnic background, age, religion, political affiliation, etc. even if they are described differently. In practice, however, there are no major actions on this matter.

Considering the efforts made by countries to address the older adult population, a differentiation can be made between countries with a more aged population such as Cuba, Uruguay, Chile and Argentina, where policies have been implemented to ensure well-being and access to housing and public space for older adults, and countries which are in intermediate stages of population ageing, that would have between 10 and 20 years to prepare for this process. This is shown in Demographic Bulletin No. 62, issued by the Latin American and Caribbean Demographic Centre (CELADE-CEPAL) (Table 13.1), which states that currently countries in relation to the population ageing process are in a four-stages transition.

Table 13.1 Countries according to ageing transition stage

Incipient	Moderate	Full transition	Advanced transition
Bolivia	El Salvador	Brazil	Argentina
Haiti	Guatemala	Colombia	Chile
	Honduras	Dominican Republic	Cuba
	Nicaragua	Ecuador	Uruguay
	Paraguay	Mexico	
		Panamá	
		Peru	
		Venezuela	

Source: CEPAL (1998)

13.3 Approaches and Effects: Spatial Physical Movement and Emotional Situation of the Older Adult Population in Latin America

Although population ageing refers to the increasing number of people over 60, thanks to the progressive increase in life expectancy, old age helps identify the gradual passage of individuals through the stages of their life cycle, considering that this is the seventh stage.¹

The analysis requires at this point locating the different approaches and the emotional situation and spatial physical movement that the older adult population experiences in the context of social, economic, political and cultural relations in Latin American societies. Although presented differently, it is necessary to emphasise that emotional and spatial aspects are closely linked.

13.3.1 Approaches

Latin America and the Caribbean, just like other regions, have experienced a change in the assessment of the role of the older adult, a characteristic of the so-called modern societies which, according to Cowgill and Holmes (1972), give less value to knowledge-wisdom, as a reference and adviser, and greater value to the amount of studies completed, the accumulation of certificates and qualifications in general.

Critical Gerontology (1970) is presented as a proposal that contrasts the approaches of the functionalist perspective on the inferior social status and problems of “adaptation of the elderly”. It calls into question the theory of modernity. The theory of modernity and the functionalist perspective have attempted to standardise older adults, without cultural differences, with the biological element prevailing, not the social construct. Consequently, old age must be addressed as a state or stage, not as a problem or social phenomenon.

The Critical Gerontology approach proposes that old age is more a social construct than a psychobiological phenomenon, and suggests that social, economic, cultural and political determinants condition and shape living conditions and the social images of older adults.² The commitment to promote the full and adequate participation of older people in all aspects of research, public policy and everyday practice is at the heart of critical gerontology.³

According to Aranibar (2001), this results in the need to refer to two theories: activity and the vacating of roles. The first maintains that old age leads to a reduction in the interaction between the individual and society. The second suggests that the individual loses their roles during old age, the norms associated with those roles and fails to distinguish between right and wrong in the field of their social behaviour, with the risk of social withdrawal or utilitarianism of older adults.

¹ Prenatal, infancy, childhood, adolescence, youth, adulthood and old age.

² Rodríguez (1995).

³ Holstein and Minkler (2007).

The “active” approach promoted by the WHO should be assumed to achieve physical, social and mental well-being throughout their life-cycle.⁴ This approach refers to the continuous participation of the older adult in all areas of society and not only to the ability to be physically active, but above all to be emotionally and socially integrated.

13.3.2 Effects: Emotional and Spatial Physical Movement

Quality of life for the older adult population varies due to chronological, physiological and social changes, being the first related to the passing years. Older adults have to deal with loss of job opportunities and social activity; they feel displaced and excluded. With physiological changes, where physical force is reduced, they gradually lose their mobility, moving around physical spaces becomes slower and more difficult, so they require more support, affection and suitable physical spaces.

Social changes are related to factors (chronological and physiological), but are particularly associated with the social construct of the role of older adults, who express different family structures. The region is moving from an extended family to a nuclear family (father, mother and children). This is reflected by the fact that each family has its home, without considering the possibility that the older adult shares the home too. As a result, emotional relations are distant, so the older adult lives an independence, which in many cases is involuntary, affecting them emotionally.

It is common today to witness the utilitarian role that has been given to elderly women, called “Granny Slave Syndrome”. In the case of males, it is the labour exploitation, because they are forced to keep working. Older adults tend to give in to this type of relationship to avoid loneliness.

The most important changes are observed in the occupation of the home itself. Whether the family increases or decreases, the same does not happen with the home itself, which generates the feeling of empty and abandoned space. Despite that, older adults do not want to leave their home as it is full of references and symbols, it is not just physical space, each corner has its memories, each object a reference over the years, it marks a feeling of nostalgia, but also of appropriation.

This is why the home needs to be treated as a flexible resource. When family members leave, there are two possibilities: older adults continue to live in the house or to move to another home to which parts of what they had can be moved. In cases where the family stays, occupying the home, they should respect physical spaces, not change objects, avoid cornering older adults into one room when they previously had control of the home and decisions; it is these actions that affect their mental health and cause their physical health to deteriorate faster. The home must be adapted to the new needs of the older adult to allow them to move around adequately and achieve true social and emotional integration.

⁴WHO (2002).

A focus is therefore required on restructuring the role of older adults in this stage of their lives, regaining a sense of appreciation, rediscovering alongside them the contributions that they can continue to give and, in particular, designing suitable and integrated homes and environments, not gestures that lead to physical, social and emotional isolation; a challenge for the States and societies in Latin America.

13.4 Public Policies on Housing and Environment for Older Adults in Latin America

In societies with an ageing tendency such as Latin America, public policies should focus on investments that consider increasing longevity in terms of quality and in relation to the needs of the older adult population, not solely from the perspective of providing assistance and care, or looking at actions purely economically, related to retirement and pensions because, albeit important, this is not enough to ensure full incorporation into society and the family.

Latin American states must assume the challenge of developing and implementing public policies designed for older adults, so that the population is prepared to assume chronological, physiological and psychological changes positively, to value their role based on experience and knowledge gained throughout life. Public policy should consider the older adult as a priority group rather than a vulnerable group because it is a productive population, if appropriate policies are established.

The development of public policies in Latin America considered over the past two decades is part of a process, which can be broken down into three stages. The first stage is based on theoretical approaches to old age, starting with the functionalist theory, the declaration of human rights in 1948, when this population was openly recognised, passing through the theory of modernity before arriving at current thoughts and the dissemination today of the theory of Critical Gerontology in an active approach. The second is marked by the demands of the older adult population, supported by human rights groups, NGOs, Humanitarian Aid Institutions, proposals that were collected progressively in the agreements signed by the countries and promoted by international bodies (Table 13.2), having a strong impact on various Latin American countries.

The World Health Organization WHO published in 2007 the document “Age-Friendly Cities: A Guide”,⁵ which clearly establishes the aspects to be considered and evaluated by in Latin America and the Caribbean states to establish appropriate actions in relation to the external environment and public buildings, as well as aspects related to housing.

In the third stage it is observed that from 2000 onwards, governments of Latin American countries began to adopt laws and regulations (Table 13.3) in their Constitutions on respecting the rights of the older adult population. Aspects related to housing and the environment are considered in this.

⁵WHO (2007).

Table 13.2 International agreements for the older adult population

Documents, events, processes,...	Year
Universal Declaration of Human Rights. Art. 25.1 <i>Everyone has the right to a standard of living adequate for the health and well-being and the right to security in the event of old age....</i>	1948
First World Assembly on Ageing, United Nations, convened in its resolution 33/52	1978
International Plan of Action on Ageing. <i>Recommendation 19 Housing for the elderly must be viewed as more than mere shelter. In addition to the physical, it has psychological and social significance, which should be taken into account.</i>	1982
The Protocol of San Salvador, Convention on Human Rights. Art. 17	1988
<i>Protection of the Elderly. Everyone has the right to special protection in old age</i>	
The United Nations General Assembly, resolution 46/91. Principles for Older Persons. <i>Independence 1. Older persons should have access to ...shelter,</i>	1991
Resolution 47/5, declaring 1999 as the International Year of Older Persons	1992
United Nations establishes implementing policies and programmes as general obligations of States Parties	1995
Resolution No. 50/141 United Nations, International Year of Older Persons: towards a society for all ages.	1996
International Year of Older Persons. A lack of legislation and little availability of resources were observed.	1999
Second World Assembly on Ageing. The Madrid International Plan of Action on Ageing and the Political Declaration.	2002
Regional Intergovernmental Conference on Ageing (Chile). Towards a regional strategy for the implementation in Latin America and the Caribbean of the Madrid International Plan of Action on Ageing	2003
World Health Organization, resolution EB115.R7. Preparation and assessment of public policies for Active and Healthy Ageing – HOUSING	2005
Second Regional Intergovernmental Conference on Ageing in Latin America and the Caribbean (Brasilia). Ensuring the quality of life of older persons is one of the obligations and priorities of social policies	2007
General Assembly set up UN Working Group on Ageing. Resolution 65/182. Strengthening the protection of the human rights of older persons	2010
Regional Intergovernmental Conference on Ageing. Rights of older persons in Latin America and the Caribbean. Costa Rica. Charter on the rights of older persons in Latin America and the Caribbean	2012

Source: Adapted from international agreements by author

Argentina has a bill introduced in 2012 whose aim is to ensure older persons the enjoyment of a full, healthy, safe and active participatory life in the economic, social, political and cultural life of the country. Guideline 144 of the Economic and Social Policy was established at the 6th Congress of the Communist Party in Cuba in 2011. Its purpose was to provide particular attention to the study and implementation of strategies in all sectors of society to address the high levels of population ageing.

In developed countries, most of older persons have a better standard of living, receive benefits from the States, and have access to pensions, health, recreation and other services. In fact, in many of these countries, there are employment opportuni-

Table 13.3 Regulations for the older adult population

Country – purpose	Housing and environment
Bolivia	
2007. Law of Universal Old Age Pension (Dignity Pension). Law No. 3791. Purpose: Establish the Universal Old Age Pension (Dignity Pension) in the non-contributory Social Security Scheme.	Access to social housing. Carrying out of recreational and social occupation activities, providing the necessary infrastructure, equipment and resources for their sustainability.
2013. Law 369 on Older Persons of 1 May. Purpose: Regulate the rights, guarantees and duties of older persons and the institutions for their protection.	
Brazil	
2003. Statute for the Elderly. Law No. 10.741, of 1 October. Purpose: The older adult population should enjoy all the rights inherent in human beings, without prejudice to the integrity of the protection of the law, what is guaranteed by law or other opportunities and facilities to preserve their physical, intellectual, spiritual, mental, social and moral health in free and dignified conditions.	The policy establishes a section on housing, in which it stipulates that: Older persons have the right to a decent home within the natural or surrogate family or not accompanied by their family members, when so desired, or even in a public or private institution.
2010. National Policy for the Elderly.	In public or publicly subsidised housing programmes, they will be given priority in the acquisition of property; residential care for the elderly, implementation of urban services, a community designed for older persons, the elimination of architectural barriers and urban planning, to ensure accessibility.
Purpose: Guarantee the social rights of the elderly, the creation of conditions for promoting their autonomy, integration and effective participation in society.	The over 65s are assured of free urban and semi-urban public transport.

(continued)

Table 13.3 (continued)

Country – purpose	Housing and environment
Colombia	
2008. Law 1251.	The policy provides that: Public services should have adequate infrastructure and access for the older adult; provide housing programmes that enable older adults to obtain their own home or remodel it if they already have a home; produce strategies to enable access to social housing projects that offer equal opportunities to couples made up of older adults, single individuals or heads of household; promote the construction of special housing according to the habitability, security and accessibility needs of older adults; develop actions designed to generate urban spaces with physical-spatial characteristics that create a secure and accessible environment.
Purpose: To protect, promote, re-establish and defend the rights of older adults, design policies that take into account the ageing process, plans and programmes by the State, civil society and the family, and govern the functioning of institutions that provide care services.	
2007–2019. National Policy on Ageing and Old Age.	
Purpose: Actively influence at an intersectoral and territorial level the social, economic and cultural development conditions of individuals, the family and society, as a means of helping to achieve a dignified, healthy and integrated old age for old people today and in the future within the framework of human rights.	
Costa Rica	
1999. Integral Law for Older Persons. Law No. 7935, 25 Oct.	The strategic lines of the policy propose: creating and enabling friendly and safe public spaces that ensure the elimination of architectural barriers for the accessibility of older persons; promoting the development of intensive decent and accessible housing programmes for older persons; strengthening initiatives that allow older persons access to financing to purchase a home or adapt their own home to their new habitability and safety needs.
Purpose: Ensure older persons greater equality of opportunities and a decent life in all areas.	
2011–2021. National Policy on Ageing and Old Age. Purpose: Eliminate all forms of age-related employment discrimination, promote in equal conditions the opening up of new sources of decent, sustainable and paid work for their independence, decision-making and personal development.	
Ecuador	
1991. Special Law on the Elderly Person, Law 127.	The law provides that all people aged over 65 years old and with an estimated monthly income of no more than five times the basic salary or whose assets do not exceed five hundred times the basic salary will be exempt of paying all types of tax and municipal tax.

<p>The main objective is to guarantee the right to a standard of living that ensures physical and psychological health, food, clothing, shelter, medical care, geriatric and comprehensive gerontological care and the social services necessary for a useful and dignified existence.</p> <p>2008. The rights of adults and older adults are established in Section One (Art. 37, 38 and 39) of Chapter Three, on the rights of priority care people and groups, in the Country's Constitution.</p> <p>2012–2012. Equality agenda for older adults. Ministry of Economic and Social Inclusion “priority care group” presents proposed strategies that provide for an improvement in the quality of life of older persons.</p>	<p>Art. 37, No. 7 provides that the State will guarantee the following right, among others, to older persons: Access to a house that ensures a decent life, with respect for their opinion and consent.</p> <p>The Housing Agenda provides: Ensure access of older persons to the physical environment, decent and safe housing, transport and basic services.</p> <p>In the guidelines: Promote decent housing for older persons according to their conditions; design appropriate construction regulations for housing programmes intended for older persons that consider their limitations; bring into widespread use the provision of a housing allowance for older persons in poverty and extreme poverty; create accessible, safe and inclusive spaces in the home and community for older persons.</p>
<p>El Salvador</p> <p>2002. Integral Law for Older Persons, Legislative Decree No. 717 of 23 January.</p> <p>Purpose: Guarantee and ensure comprehensive care for the protection of older persons and contribute to the strengthening and integration of the family.</p>	<p>The family will be primarily responsible for caring for older persons. Older adults have the right to live with dignity in an environment, which fully satisfies their needs and provides them peace of mind.</p> <p>The State will be obliged to provide support through the respective authorities. Older adults have the right to receive food, transport and adequate housing.</p>
<p>Guatemala</p> <p>1996. Law of Protection for Senior Citizens, Decree 80, 21 October.</p> <p>Purpose: Protect the interests of senior citizens, whereby the State ensures and promotes the rights of the elderly to an adequate standard of living in conditions that offer them education, food, shelter, clothing, geriatric medical and comprehensive gerontological care, recreation and relaxation, and the necessary social services for a useful and dignified existence.</p>	<p>This law provides two articles: (a) The State will promote publicly and privately housing programmes in which the elderly person is considered as creditworthy and which takes into consideration, in the planning of housing complexes, the physical and psychological needs of senior citizens for their physical and social life in healthy environments suited to their economic situation.</p> <p>And (b) The State will promote the creation of temporary shelters when the elderly need them, or create those old people's homes needed, which will be free of charge and under the responsibility of the government and the municipalities where they are located.</p>

(continued)

Table 13.3 (continued)

Country – purpose	Housing and environment
Honduras	
2006. Integral Law for Protecting Older Persons and the Retired. Legislative Decree No. 199. Purpose: Promote and protect the development of older persons and the retired, guaranteeing the exercise of their rights and punishing natural persons or legal entities that violate this law.	Discount of two percentage points in the interest rate on mortgage loans for housing for its use by the right holder and their family, except social welfare systems or taxpayers of preferential rates agreed by special laws. 25 % discount on passenger fares. 50 % discount on recreation and entertainment activities.
Mexico	
2002. Law on the rights of older persons, 25 June. 2012. Last reform published DOF 25–04. Purpose: Guarantee the exercise of the rights of older persons and establish the terms and provisions for their fulfilment, through regulation of the national public policy; the principles, objectives, programmes, responsibilities and instruments of the public administration; and the National Institute of Older Persons.	It provides that it is the responsibility of social housing institutions to ensure: The necessary actions to design housing programmes that allow older persons to obtain affordable credit to acquire their own home or remodel an already existing home; the access to social housing projects that offer equal opportunity to couples made up of older persons, single individuals or heads of household.
Nicaragua	
2010. Law of the older adult, Law No. 720 of 6 May. Purpose: Establish the legal and institutional system of protection and guarantees for older adults, in order to ensure effective compliance with the provisions of Article 77 of the Constitution of the Republic of Nicaragua.	The section on rights provides that: The older adult is given preferential treatment for the acquisition and enjoyment of a decent home in social housing projects. They will also be given financing facilities for the purchase or remodelling of their home. Access to an alternative home to older adults exposed to risks. Free urban public transport. Urban public transport units with hydraulic platforms or facilities for the boarding and disembarking of older adults. 50 % discount on admissions to leisure, tourist, cultural and sports centres.

Paraguay	2009. Law No. 3. 728/09, which establishes the right to alimony for older persons in poverty. All native Paraguayans, over 65 years old in poverty living in Paraguay, will receive a monthly payment from the State of no less than a quarter of the current minimum wage.	All native Paraguayans, over 65 years old in poverty living in Paraguay will receive a monthly payment from the State of no less than a quarter of the current minimum wage.
Peru	2006. Law of Older Persons. It provides a regulatory framework which ensures the legal mechanisms for the full exercise of rights recognised in the political constitution and current international treaties on older persons to improve their quality of life and for their full integration in social, economic, political and cultural development, helping to gain respect for their dignity. 2013–2017. National Plan for Older Persons. Improve the quality of life of older persons through full satisfaction of their needs, their active participation and the promotion of their rights, developing mutual actions between various levels of the State and civil society.	In the law, with regard to Urban Development Works: The municipalities establish the necessary provisions so that public establishments, those that provide a public service and recreational facilities and/or centres, adapt their architectural infrastructure for the free access and movement of older persons. The same provision applies for granting building permits for these types of establishments. The National Plan establishes strategies of action for promoting and implementing cultural, recreational and sports activities for the use of leisure time and an active life in the older adult population. The Fundamental Rights state that: The ageing people has the right to a decent and adequate house; public institutions related to housing will provide that person greater financing facilities to obtain their home and all other benefits that institutions offer their protected individuals.

(continued)

Table 13.3 (continued)

Country – purpose	Housing and environment
Purpose: Establish the institutional bases and procedures that enable full protection of the ageing person. This is the segment of the population that requires greatest care, due to their vulnerable nature, so they cannot be discriminated against in any way by virtue of their age, health, religion, political beliefs or ethnic background.	Also it statue to help the ageing person to remain in their own home as long as possible through restoration, development and adaptation programmes of their home, and adapting public and private works to facilitate access for older persons, as well credit facilities according to the situation, geographical location and other conditions. Finally, it establish to improve the architectural infrastructure, bearing in mind the functional capacity of the ageing person and ensure facilitation of mobility and communication, and to eliminate all physical obstacles that impede the easy movement of the ageing person. All construction plans for public and private service, retail or entertainment establishments must contain special provisions for the needs of the ageing person.
Uruguay	
2013–2015. National Plan on Ageing and Old Age. It establishes for the first time the guidelines of the State’s strategies and actions for the well-being of all older persons.	The plan establishes supportive and favourable environments; accessibility to culture, physical environments, information, communication, sport and recreation for all generations. Its aim is to support nomination initiatives for the WHO Age-Friendly Cities project. ^a
2009. Text of Law No. 18.617. It was created under the Ministry of Social Development, the National Institute for Older Adults, which will be chaired by a director appointed by the President of the Republic among professionals and public figures of renowned expertise on the matter.	It foster to promote the adaptation of homes in terms of accessibility; to promote a programme of loans and technical assistance to repair houses to make them more accessible to the needs of older persons; to ensure the adequacy of housing to the needs of older persons; to develop specific lines of credit and technical assistance for repairing and/or equipping the homes of older persons on middle and low incomes.

Source: Adapted from regulatory framework of recorded countries by author; Federación Iberoamericana de Asociaciones de Personas Adultas Mayores (FIAPAM) (2012)
^aWHO (2007)

ties without discrimination, valuing experience and ability. In 1993, the Netherlands, Sweden, the UK, Austria, Germany, Denmark, Ireland, Italy and Belgium were already receiving special subsidies for the needs of elderly people.⁶

Denmark has implemented housing restoration programmes, the provision of rental allowances for those on low incomes and the promotion of adapted and assisted homes. England is the country where most progress has been made in aspects of life models, housing security, facilities for the enjoyment of indoor and outdoor space, maintenance facilities and urban facilities.

Catalonia, Spain has developed assisted, sheltered and service-provided housing programmes. Sheltered houses are reduced or complete homes, with use services, such as laundry, home hygiene or others to enable the full autonomy of the older adult.

In Australia, home ownership is a traditional value among older persons. According to Olsberg and Winters (2005), 80 % of people over 65 years old were owners, rich because of the assets they have, but poor in terms of income, as a result of which many prefer to move to units, village houses, small houses, cheap locations or other families, retirement villages and elderly persons' care institutions, generally located near the coast.

On the other hand, according to T. Wu and A. Chan (2011) from the health service and research system of Singapore, 87 % of all adults lived in public housing programmes (apartments) which, according to the research conducted, has generated an appropriate environment for older adults and reduced the risk of social isolation, enabling interaction of adults and children.

The formulation of the regulatory framework in various Latin American countries has resulted in the undertaking of care and assistance related programmes and projects. Historically, the so-called old people's homes have been implemented. In the past decade, there has been a focus on recreation, sports and leisure, free time, healthy life, cultural, travel, educational and literacy activities, particularly with regard to retirement and pension systems, for that part of the population that has worked formally as an employee, which is not the case for most of the population.

However, the States have taken less of a role when it comes to appropriate housing (design, lighting, ease of movement), facilities and public space that considers the needs of the older adult population and seeks to prevent accidents, assaults, blackmail, prejudices. Some experiences in the private sector have been identified and specific cases where the States have worked along these lines observed.

The Comprehensive Positive Ageing Policy has been introduced in Chile, promoted by President Sebastián Piñera (2010–2014), who has sought to strengthen abilities to prevent or delay their deterioration. This policy considers the formulation of the Housing for the Older Adult Policy and builds condominiums that have a registered office in order to encourage participation and group activities in the residence. The homes are designed to ensure the functionality of older persons, are single floor, have a dining room-kitchen, bedroom and bathroom.

This residence, which is part of the Protected Housing Programme, arises from an intersectoral agreement between the Ministry of Housing and Urban Development

⁶ Bosch Meda (2006).

(MINVU) and the National Service for Older Adults (SENAMA).⁷ The aim of the initiative is for older persons in a vulnerable situation that require a housing solution and support and/or care services, to be able to access a comprehensive solution through the public sector. Their socio-economic vulnerability conditions, situation of the family network and levels of functionality and/or dependence are all considered for this.

In Latin America and the Caribbean there are still aspects to be considered in the formulation of the public policy and implementing programmes and projects in:

Housing:

- The sense of belonging, privacy, enjoyment and autonomy that housing projects should consider.
- Establish lines of credit for rental, service or purchase of housing; most countries do not consider this population as creditworthy.
- Housing projects designed for this population should consider having close by a bus stop or taxi rank, church, health centre, chemists, banks and pension payments centers.
- The States should promote both privately and publicly the implementation of permanent or temporary housing or accommodation solutions, which consider forms of access, such as renting, purchasing or right to occupation, but which allows them social integration, tranquillity, recreational areas and which can have a laundry, shopping, kitchen, rubbish collection, cleaning support and personal help service. Housing plans should not locate houses at height – maximum mid-height flats.
- Psychological, contact and sense of belonging needs, the feeling of being protected, possibility of seeing what is going on outside and having common rooms should all be considered in social housing programmes for the older adult population.
- Consider the design of the home so that there is a space for lifelong furniture and for helping occupants to find their way around. Confusing designs should be avoided. There should be an emphasis on architectural resources in the design that help identify each place and which should not be changed.

Environment:

- Physical environments that meet the characteristics and needs of older persons for achieving a harmonious and integrated life in society, not isolation.
- All interior or exterior public spaces must have large clocks, railings and enough seats, avoid dispersed steps and stairs with more than five steps, have an alternative ramp for access.
- The urban form and function of the city should consider the creation of habitable communities and neighbourhoods that integrate people of diverse social groups and economic status, and that do not promote exclusion or isolation.
- Ensure that public spaces, infrastructure and urban facilities adapt to the needs of older persons with open roads, adequate benches, safe streets, squares or parks with ramps and non-slip floors, but which are not exclusive generating isolation;

⁷Viveros Madariaga (2001).

introduce visible and easy to read public signs and modernise the traffic light network of urban areas.

- Public transport with the appropriate equipment to provide safety and comfort.

It is important to define the responsibilities of the various levels of government, society and family. Some countries emphasise the role of the family, but the role of governments is very weak and society is absent in many actions.

There must be investment in producing updated and universal information about this population, specifically the situation of older adults with disabilities, prisoners, alcoholics, drug addicts, single people and the sick, according to the role they played in the family.

While establishing proposals that consider the above-mentioned aspects, a positive image of old age must be promoted that helps eliminate all forms of discrimination against older adults with road safety education, urban etiquette and respect for older persons campaigns.

In addition, public policies should have housing and suitable environment indicators that help measure changes and progress in their application, such as number of adequate housing programmes promoting active and healthy ageing that consider the integration of different ages, measurement of the quality of services in hostels or residences, number of integrative urban actions that consider the needs of older adults, establishing the number of campaigns that promote a positive image of old age and enhancement of knowledge and social integration.

13.5 Conclusions

Latin America is undergoing major and varied demographic changes among its countries, but with an increasing trend in the over 60s population. Despite efforts made, the States still have challenges to meet, particularly in matters of access to permanent or temporary housing, the use and occupation of public spaces, a suitable environment, with a focus on comprehensive integration in society and the family, breaking the isolationist trend of older adults.

Policies should be promoted that help generate changes in the social perception of this population, legislation and assignment of budgets to investing in housing and an environment suited to spatial physical and emotional needs.

Urban planning in Latin America and the Caribbean, and the city itself, must be conceived and designed considering the older adult population density and its growth trend. There should be an emphasis on creating habitable communities, neighbourhoods that integrate people of diverse social groups and economic status, avoiding ghettos or proposals that generate isolation.

In housing schemes in general, but especially social housing for the older adult population, the States should consider the psychological, contact, sense of belonging, security and integration needs of older adults. They should integrate concepts such as ease of mobility, lighting, possibility of keeping symbolic physical items that have accompanied them throughout their life, access to more frequent services such as chemists, the church, markets, etc.

Old age should not be assumed as a burden or considered a disgrace, nor far less the end of one's life. The "inconveniences" generated are not down to age but rather customs, changes in the assessment of the role of older adults. The time factor is increasingly scarce in so-called modern societies where value is placed on the amount of money generated, with space being lost for conversion, which is the principal need of older adults, even though they were economically self-sufficient, gave affection and supported members of the family and contributed to society, which at this stage of their lives they forget. Being appreciated once again is a challenge for all of them.

In Latin America, rules on the older adult population have been formulated but are only starting to be applied. Moving into the implementation stage with an integrative social, physical and emotional vision is a challenge for the region. The actions and experiences of countries like Chile, Cuba, Uruguay and Argentina which have the biggest older adult population need to be reviewed, assessing the actions in each of the countries, specifically in areas of housing and environment.

References

- Aranibar, Paula. 2001. *Acercamiento conceptual a la situación del adulto mayor en América Latina*. Chile: CEPAL–SERIE Población y desarrollo.
- Bosch Meda, Jordi. 2006. El problema de la vivienda en la vejez en Cataluña. *Arquitectura, Diseño y Entorno*. ACE 1(1): 80–101.
- CEPAL. 1998. América Latina: Proyecciones de Población 1970–2050. *Boletín Demográfico* 62: 168.
- Cowgill, D.O., and D.H. Holmes. 1972. *Aging and modernization*. New York: Appleton-Century-Crofts.
- Federación Iberoamericana de Asociaciones de Personas Adultas Mayores (FIAPAM). 2012. *Políticas sociales y legislación*. Costa Rica. http://fiapam.org/?page_id=350. Accessed 28 Sept 2014.
- Holstein, M.B., and M. Minkler. 2007. *Critical gerontology: Reflections for the 21st century*. Bristol: The Policy Press.
- Olsberg, Diana, and Mark Winters. 2005. *Ageing in place: Intergenerational and intrafamilial housing transfers and shifts in later life*. Australian Housing and Urban Research Institute. AHURI Final Report 88. Melbourne: AHURI.
- Rodríguez, Pilar. 1995. *Investigación-Acción participativa como estímulo a la participación de las personas mayores, Voluntariado y Personas Mayores*. Madrid: IMSERSO.
- United Nations. 2012a. *State of Latin American and Caribbean cities report. Towards a new urban transition*. New York: UN-HABITAT.
- United Nations. 2012b. *World population prospects: The 2012 revision*. New York: Department of Economic and Social Affairs – Population Division, Population Estimates and Projections Section – World Population Prospects.
- Viveros Madariaga, Alberto. 2001. *Envejecimiento y vejez en América Latina y el Caribe: políticas públicas y las acciones de la sociedad*. CEPAL. Chile 2001. <http://www.eclac.org/publicaciones/xml/8/9258/LCL1657p.pdf>. Accessed 28 Sept 2014.
- WHO. 2002. *Active approach*. Geneva: World Health Organization.
- WHO. 2007. *Elderly-friendly global cities: A guide*. Geneva: World Health Organization.
- Wu, Treena, and Chan Angelique. 2011. *Families, friends, and the neighborhood of older adults: Evidence from public housing in Singapore*. Research article. Academic Editor: Lindy Clemson. Singapore: Hindawi Publishing Corporation.

Chapter 14

Planning the Built Environment, Institutions and Aging in Latin America

Sergio Luiz Valente Tomasini, Sergio Antonio Carlos, Beatriz Fedrizzi, and Johannes Doll

14.1 Introduction

Brazilian population ageing can be observed in the diminishing base of the population pyramid and the increase in the number of people aged 60 or over. In 1980, people aged 60 or over represented 6.6 % of the Brazilian population; 8.1 % in 1991 and 9.6 % in 2000 (Christophe 2009). The most recent demographic census (IBGE 2010) shows a population of 190,755,799, of which 20,590,599 are aged 60 or over, representing 10.79 % of the total population. The percentage of elderly people increased 63.48 % between 1980 and 2010. In 2010, the majority of elderly people fell into the 60–69 age group, and those aged 80 or more represented 5.5 % of the Brazilian senior citizens. It can be said that the Brazilian elderly are predominantly urban residents (84.14 %) and, as in other countries, is subject to the phenomenon of feminisation.

S.L. Valente Tomasini, Ph.D. (✉)
Department of Environment of Porto Alegre (SMAM), Porto Alegre, Brazil
e-mail: sergiiovtomasini@yahoo.com.br

S.A. Carlos, Ph.D.
Social Work Department, Federal University of Rio Grande do Sul (UFRGS),
Porto Alegre, RS, Brazil
e-mail: sacarlos@ufrgs.br

B. Fedrizzi, Ph.D.
Horticulture and Silviculture Department, Federal University of Rio Grande do Sul (UFRGS),
Porto Alegre, RS, Brazil
e-mail: beatrizfedrizzi@gmail.com

J. Doll, Ph.D.
School of Education, Federal University of Rio Grande do Sul (UFRGS),
Porto Alegre, RS, Brazil
e-mail: johannes.doll@ufrgs.br

Brazilian legislation, according to the *Instituto de Pesquisa Econômica Aplicada* (Institute of Applied Economic Research or IPEA) (2011) “establishes that the family are the main caregivers for the elderly.” This position is presented both in the Federal Constitution (Brasil 1988), the National Policy on Aging (Brasil 1994) and the Statutes for the Elderly (Brasil 2003).

With the changes in family configuration, modern families are younger, with children—mainly women, working outside the home. One of the questions presented by the picture of the aging Brazilian population is: who is going to take care of this ageing and/or dependent population? One solution is a network for the attention and protection of the elderly, either formal or informal. The informal network, in general, consists of solidarity among family, friends and/or neighbours. The formal network is already a part of care policies for the elderly, consisting of governmental and non-governmental organisations.

The Law SEAS 73 (Ministério da Previdência e Assistência Social 2001), promoted by the Federal Government, establishes operational rules for care services for the elderly in Brazil and proposes new organisational formats. This law prioritises services that allow “the elderly to remain in the family home” considering “full institutional care as the last resort.” The law accommodates services such as “Natural Family”, “Foster Family”, “Home Assistance”, “Day Centre”, “Temporary Residence”, “Republic”, “Sheltered Housing”, and “Integral Institutional Care”.

The first three of these concepts are family-focused, while the Day Centre and Temporary Residence provide specialised care for the elderly, but from the perspective of ongoing connection with the family, or for a temporary period only. The Republic and Sheltered Housing provide greater autonomy for the elderly, living with other people in the same conditions. At the extreme, we have Integral Institutionalised Care, where the elderly person has been removed from the family and home environment. These institutions were subsequently renamed Long Term Institutions for the Elderly (ILPIs), considered an alternative for caring for the very elderly “physically and/or mentally impaired, with no income, no family and/or suffering abuse in the family home.” (IPEA 2011).

The running of ILPIs is regulated by the health departments of the Federal, State and Municipal governments. At federal level, the facilities for ILPIs are basically covered by three legal documents: (a) Law 810 (Ministério da Saúde 1989), (b) Official Directorate Act-RDC N1 283 (ANVISA 2005), (c) Law SEAS 73 (Ministério da Previdência e Assistência Social 2001).

The analysis of these documents leads to the conclusion that greater attention from the Brazilian authorities to the quality of the environment in ILPIs focuses on regulations to be met by the buildings, while outdoor areas are treated somewhat superficially. Furthermore, the authors of this chapter are not aware of any current government initiatives for the development of public national policies, schemes or projects aimed at regulating the outdoor areas at ILPIs. A certain lack of attention can be seen on the part of the authorities with regard to universities and other organisations connected to the production and transfer of social awareness. A careful review of the results of research relating to the topic published in recent decades identifies only a few isolated initiatives.

In research conducted in 2007 the Institute for Applied Economic Research (IPEA), studied ILPIs throughout Brazil. The reports were drawn up by regions. In the southern region, including the states of Paraná, Santa Catarina and Rio Grande do Sul, for the 505 institutions that responded to research, the physical area occupied varied from 192 to 100,000 m². In the state of Rio Grande do Sul, the constructed area represented on average 41.9 % of the total area, showing a large amount of available grounds (IPEA 2008a). The results of this research showed that the majority of institutions in Brazil claim to have garden areas. In the southern region 89.4 % of institutions (IPEA 2008a), 93 % in the north eastern region (IPEA 2008b) and 71 in the central-western region (IPEA 2008c). For the south eastern region, almost all the institutions studied had a garden and 51 % had kitchen gardens or orchards (IPEA 2010).

The quality of the grounds at ILPIs was the target of a pioneering case study completed by Tomasini and Fedrizzi (2003), involving the inspection of physical features and observations on a sample of 12 institutions located in Porto Alegre, in the south of Brazil. The study revealed, in general, that the institutions barely made use of the potential available for their residents in the grounds around their buildings. Evidence was found of a lack of planning focusing on resident needs, even in institutions with ample outside areas, where the spaces were organised and provided with infrastructures meeting the needs of staff and visitors. These spaces lacked landscaping and leisure equipment for the elderly, making them unappealing and rarely used by residents.

The shortage of available research, together with the aforementioned lack of public policies focusing on this topic, shows how rudimentarily it is still being handled in the country. At global level, however, the importance of outdoor areas around institutions similar to Brazilian ILPIs is upheld by a significant set of publications covering everything from theoretical reflections and the results of research to design recommendations relating to this issue (Carstens 1993; Stoneham and Thoday 1994; Wells 1997; Rodiek and Schwarz 2005).

The theoretical references presented by these publications, in general, are based on contributions from two fields of research relating to the larger domain of environment-behavioural studies: studies on the relationship between people and nature, and environmental gerontology. These fields present different trajectories and specific research focuses; however in terms of the search for the practical application of available knowledge for improving people's relationships with their environment. In this way, regarding studies on the relationship between people and nature, these were based on the beneficial effects of the contact with nature on human well-being and health (Ulrich 1999; Grahn 1994; Kaplan and Talbot 1983) for environmental gerontology, the quality of life for the elderly depends, among other factors, on the availability of more supportive environments for people as they age (Lawton 1983).

Windley and Weisman (2003) present an interesting review of examples of the application of results of research in environmental gerontology. They organise the papers reviewed into four levels: (a) regional, community and neighbourhood; (b) location and landscape; (c) buildings; and (d) interior design. The papers identified regarding location and landscape are mainly focused on the design of outdoor areas

in environments planned for the elderly, such as Brazilian ILPIs. One of the main pieces reviewed by the authors on this topic is the paper by Cooper-Marcus and Barnes (1999) based on the concept of healing gardens. This concept also represents one of the main practical applications of the studies on people/nature relationship, working on the premise that gardens can have healing and restorative effects on people (Stigsdotter and Grahn 2002; Ulrich 1999).

Windley and Weisman (2003) still attempt to classify the papers reviewed in line with the type of strategy used to promote the transfer of research results into practice. These categories are presented along a continuum, ranging from more passive and generic strategies to more active and project-specific ones. They place the action research strategy at the more active end of the scale, giving priority to the connection between research and practice in environmental gerontology. As regards location and landscape, however, neither of the two examples presented in this review were based on this strategy.

Another important publication relating to the design of outdoor areas in facilities for the elderly is the book entitled “The Role of the Outdoors in Residential Environments for Aging” published by Rodiek and Schwarz (2005). It collates studies from a range of authors who, in general, include assessments using real locations, attempting to identify the needs and preferences of the users for guiding future projects or improvements in existing area (Kearny and Winterbottom 2005; Bengtsson and Carlsson 2005; Cranz and Young 2005; Alves et al. 2005). However, as with the papers reviewed Windley and Weisman (2003), none of these deal with the design process from a participative approach, in a preconceived manner for the action research strategy.

Encouraged by the observation of this gap in research, Tomasini et al. (2011) proposed a piece of action research, the main purpose of which was to develop a garden project for an ILPI using a method that allowed the residents to become directly involved. This chapter has essentially been organised with the intention of presenting the development of this project. The first matter to be dealt with, therefore, is an introduction to the project, dealing with the set of theoretical reflections behind it, while the last section is devoted to presenting the project itself.

14.2 Environmental Gerontology and Studies on the Relationship Between People and Nature

In the early 1970s, Lawton and Nahemow put forward a theoretical model to explain the adaptation of the elderly to their environment that remains one of the most significant benchmarks today in the study of environmental gerontology (Lawton and Nahemow 1973). Based on this model, known as the environmental press model, as people age and their personal capacity is reduced, their environment begins to exert greater pressure on their behaviour. In this way, each individual has a level or zone of environmental demands; if met, this allows them to reach ideal levels of adaptation, comfort and performance.

The authors suggest that the unsatisfactory adaptation of a person to the environment can be altered using adjustments both in the environment and in the individual. In both cases, the subject can play a passive or an active role (Table 14.1). Therefore, both a passive and an active result can be used to reduce environmental and auxiliary stress in the reestablishment of a level of adaptation within a range of positive results.

One of the ways in which literature on outdoor areas in facilities designed for the elderly may be related to the model proposed by Lawton and Nahemow (1973) and through the concept of healing gardens (Cooper-Marcus and Barnes 1999; Stigsdotter and Grahn 2002). Based on this concept, Ulrich (1999) put forward the theory of supportive gardens, according to which the capacity of gardens to have a therapeutic influence on people relates mainly to their efficiency in encouraging recover and the development of coping strategies to handle stress.

These effects involve the following restorative resources provided by gardens: (a) sense of control: by representing the chance for temporary escape from the stresses of daily life, and by offering privacy when this is not possible inside the buildings; (b) social support: by providing a place and an opportunity for activities allowing social interaction; (c) physical movement and exercise: allowing outdoor physical exercise, reducing symptoms of depression, and (d) access to nature and other positive distractions: by allowing a view of and contact with the elements found in open spaces, associated with recovering from stress, according to the results of some research (Ulrich 1984; Kaplan 1973; Grahn 1994; Grahn and Stigsdotter 2003).

The therapeutic effects of gardens are closely related to appropriate design. An inappropriate design, on the other hand, can result in their barely being used (Rodiek 2005; Cranz and Young 2005), and even increase stress levels rather than having restorative effects (Ulrich 1999). A considerable part of research into this matter has focused on investigating principles for guiding the design of areas more congruous with user needs, as a way of encouraging use and thus ensuring the desired therapeutic effects. These studies are based on existing locations and frequently include surveys and observations of people using outdoor areas (Barnes and Cooper-Marcus 1999).

Gardens designed based on recommendations resulting from this type of assessment tend to provide better for the needs and preferences of the elderly and therefore are more likely to offer the preconceived restorative effects of supportive

Table 14.1 Adjustments in individuals playing active or passive roles and points of application on the environment or on the individual

Application point	The individual develops a passive role	The individual develops an active role
Environment	Environmental engineering and social	The individual sets your environment
Individual	Rehabilitation, prosthesis	Self-therapy, discovery of opportunities for personal growth

Source: Author

gardens (Ulrich 1999). In line with this rationalisation, access to well-planned gardens could be considered an effective adaptive move to improve the adaptation of the elderly to their environment, as per the Lawton and Nahemow Environmental Press model (1973). According to the classification shown in Table 14.1, this move would be positioned on the environmental level at the point of application to the subject playing a passive role in the process.

14.3 Social Design

However, how could the elderly play a more active role in defining their environment, in terms of the planning of existing outdoor spaces at ILPIs? The answer to this question covers the identification of approaches to the design process that can include a greater level of user participation.

Participative design approaches have been being discussed since the 1960s (Reich et al. 1996; Sommer 1983). Such approaches have been recognised as allowing people—more commonly referred to as users—to be involved in the design process, thus reducing the divided between designers and users (Luck 2003). Participative design approaches are commonly associated with the action research methodology, which originates in the work of Kurt Lewin (Sommer 1983; Luck 2003).

In literature on the topic of environment-behaviour relations studies, the concept of social design is referred to as a participative design method that differs from other approaches, as it is based not only on user participation, but also on the use of methods and concepts from social sciences (Sommer 1983; Gifford 1997). Zeisel (1997) describes design as a five-phase process: planning, design, construction, use and adaptation, and assessment. Gifford (1997), following a social design-based approach, believes that social surveyors can play a key role in each of the stages of this process, mainly in the planning and assessment phases.

In social design, the planning phase consists of three stages: study of user needs, involvement of users in design options, and the transfer of their needs into design guidelines. The first stage involves discerning user needs through tools such as surveys and interviews, observations of their habits and the study of the physical trace left behind by people. The second stage involves the direct participation of the user in the design process, including motivation, action-taking and user information. Finally, the third stage consists of establishing specific guidelines for environmental design (Gifford 1997).

During the design phase itself, these guidelines are transformed into environmental projects. After the construction and handover of these environments, the social surveyor returns to the location to assess the behaviour of the users and any possible modifications that they may have made to the final environment (taking place during the use and adaptation phase). This phase, known as post-occupancy assessment, examines the efficacy of the planning and design, using a series of tools relating to social sciences (Gifford 1997).

Led in this way, the process allows for the ongoing development of projects, with the post-occupancy assessment acting as a feedback mechanism for the planning phase in future projects. The cycle created by this process of progressive improvements in projects can be seen as a spiral, just as in the “spiral metaphor” put forward by Zeisel (1997). This spiral is based on the dynamic of cooperation between design and research.

The post-occupancy assessment constitutes an important phase in the design process, looking at the results of projects in use and coming up with recommendations for future projects. Based on a social design approach, however, the possibilities for more active involvement of users arise in the early stages of the process.

We therefore propose reflecting on the possibilities of involving users during the planning and actual design process, i.e. the phases immediately prior to the construction and use of the projects. In the context of ILPIs, these opportunities for involvement require a radical change in the habitually passive role played by the elderly in defining their living environment.

14.4 Planning the Garden with User Participation

This section presents a summary of action research developed between 2005 and 2008 as part of the first author’s doctoral thesis, focusing on the study of the qualification of existing outdoor spaces at ILPIs (Tomasini 2008). This action research was developed with the primary objective of applying the concept of social design to the planning of outdoor areas at an ILPI, through the involvement of the elderly residents in the planning and design phases (Tomasini et al. 2011).

Firstly we present a brief description of the institution involved in the research. We then address the development of the action research, through the adaptation of the planning and design phases of the social design process to the planning of a small garden area at the institution in question. Finally, the results of the assessment by residents on their involvement in the planning of the garden are presented, discussed based on theoretical reflections addressed at the beginning of the chapter.

14.4.1 Participating Institution

The research took place at an ILPI located in the town of Porto Alegre, in the southern region of Brazil. The institution had 22 resident’s places, housing only women aged over 65. The people cared for had low incomes, and the residents were paying monthly fees starting at 340 dollars, depending on the facilities used (private room or sharing).

Figure 14.1 shows the ground floor of the institution, based on surveys completed at the time the research took place. The institution was in an area outside the town centre with grounds measuring 5,900 m². Landscape planning had never been

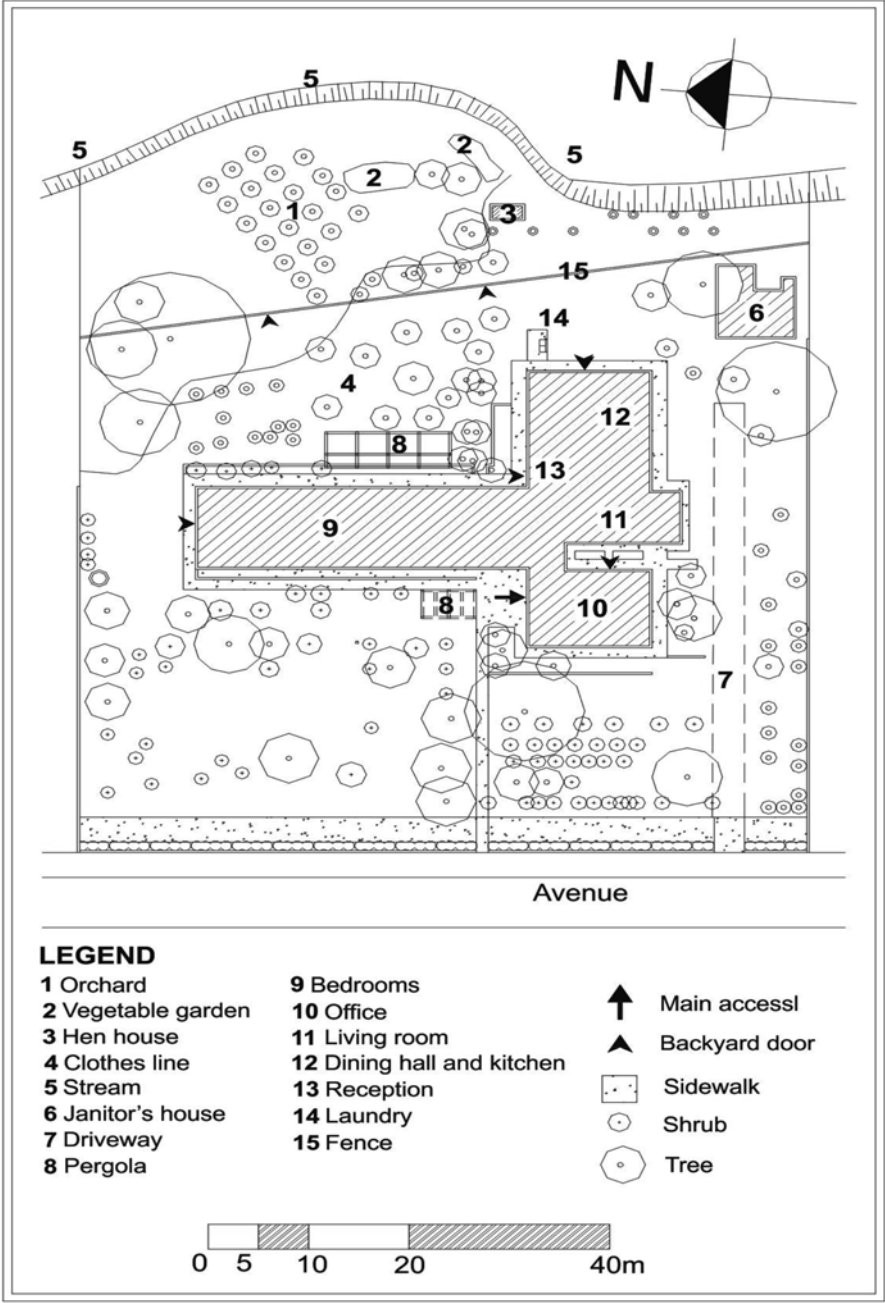


Fig. 14.1 Ground floor (outdoor areas) (Source: Author)

completed for these areas until the start of this research. Although the institution had plenty of outdoor space, the areas available were barely functional and difficult for residents to access. The vegetation predominantly contained randomly scattered trees and bushes. At the far end, some distance from the main building, there was a kitchen garden and an orchard. The only paving was along the front of the property and around the perimeter of the building.

14.4.2 Adaptation of the Concept of Social Design

The action research consisted of the development of a garden project for one of the areas making up the grounds of the institution through the adaptation of the initial phases of social design (Sommer 1983): planning and design.

14.4.3 Planning

The adaptation of the planning phase started with behaviour studies involving the completion of interviews and observations. The interviews were semi-structured and dealt with the use by the elderly residents of the current outdoor space at the institution, their past experiences with gardens and their idea of “the ideal garden”. The observations were systematic and took place at different times of day. The different uses made of the outdoor space by residents were observed, and recorded spatially by drawing up behaviour maps. The purpose of these studies was to generate funding for the subsequent planning stage.

The next stage consisted of a series of meetings seeking to involve the residents in the choice of the area to be worked on and the definition of requirements for guiding the development of a garden project for that area. These meetings were organised and led by a multi-discipline group of researchers consisting of an agronomist, an architect and a teacher.

The initial meetings were intended to make the residents aware of the potential use of the outdoor areas of the institution. Almost all the residents took part, although only eight decided to continue attending subsequent meetings. These residents were aged between 68 and 101. Secondly, the meetings focused on increasing the participants’ awareness of gardens and in particular, of possible design adaptations for the elderly. The later meetings were devoted to involving the users in the decision-making process regarding the choice of area for building the garden and defining the requirements and solutions for the project.

One of the concerns of the research team was for the meetings to be associated with interesting and enjoyable activities for the residents. During one of the first awareness meetings, for example, it was suggested that a tree be planted to mark “tree day”. During another meeting, a kind of game was played, where the participants were invited to look at photographs taken by the researchers based on the

details of the outdoor areas at the institution, such as plant in flower or an interesting view nearby. They were then asked to walk around the grounds to find the images in the photographs. Another two meetings involved using landscaping and gardening magazines and books and a visit to a garden centre, respectively.

After these awareness meetings to inform the participants on the design possibilities (end of the planning process), a vote was organised for the residents to choose a specific area of the grounds for consideration for the garden project. To the surprise of the researchers and institution managers, the residents chose an under-used area, which nevertheless had great potential for exploration given its position in relation to the main building and access to the bedrooms.

The next step was another series of meetings with a view to drawing up a schedule of needs for the chosen area. The starting point for this task was the information obtained through the behavioural studies completed at the start of the planning phase. This information allowed the definition of key themes on which to base the discussion of requirements and solutions for the garden project (topics such as accessibility, comfort, growing of medicinal plants, flowers, vegetables, and others). The meetings were held outdoors, in the location chosen for the garden. Tables and chairs were laid out in the shade of the trees already growing there, and with the aid of landscaping magazines and books, researchers and residents discussed the needs and design possibilities for that space.

14.4.4 Design

Based on the requirement programme drawn up with the residents, the researchers developed an initial design proposal for the chosen area. In order to facilitate the communication of their proposed plans to the elderly users, a model was made of the institution with the suggested garden design. A further meeting was held at the location, with the model placed on a table, and the researchers transferred the garden design into the actual space using stakes and plastic marker tape. The researchers were thus able to present their proposal by marking out each of the main components in their actual location. This methodology also helped the researchers to understand all the modifications and new ideas put forward by the participants for inclusion in the design.

Figure 14.2 shows a summary of the final garden project developed with input from the residents. It is a garden area measuring approximately 200 m², which aims to cover all the key items on the list of requirements. Firstly, there is a private area marked out, using the proposed construction of hedges using plant species associated with the memories of the users, such as azaleas and hydrangea. Secondly, there are raised beds, to act as vegetable patches, flowerbeds and herb gardens.

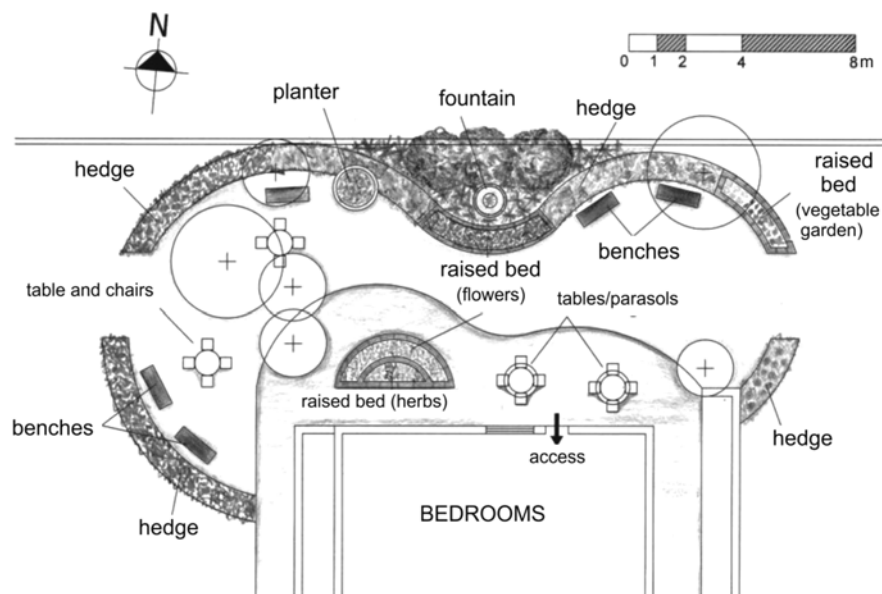


Fig. 14.2 Design proposal for the space chosen by the users (Source: Author)

14.4.5 User Perception of the Process

After completing the design and presenting it to the other members of the institution, non-structured individual interviews were carried out with the users involved in the research process. The users were invited to speak freely about the project development process and their involvement in it. The interviews were recorded, transcribed and analysed using the condensation of meaning method proposed by Kvale (1996).

The analysis of the interviews helped to identify four topics about which the residents expressed their perception and feelings regarding their involvement in the process:

(a) Possibility of creating their own space at the institution.

This refers to the expression of a feeling of ownership about the area worked on by the participating users. This feeling is summed up very well in the words of Mrs. E:

Everyone feels the same... it's as if it's everyone's home. It's like people are making their own home, and so everyone's feeling a sense of longing. I used to do a lot, I grew a lot of things at home... plants, greenery, it was full of things. And now there's nothing. So getting involved in this, it's like it belongs to us, so...

(b) Possibility of developing an active role in the institution.

This refers to the participants' feeling of being able to get involved in a significant activity for the institution. The topic is related to the association of the activities proposed by the researchers with a break in the monotony of life at the institution, as told by Mrs. L:

I've been here for over 15 years. Something like this was needed to get people interested. They have to take part in the meetings, because this is good for us. People get interested out there: Oh...that flower is so lovely!!What flower is that? What is it called? How do people grow it? Do you have to buy seeds? Where can we get seeds?

(c) Acquisition of knowledge.

This topic talks about the perception of the activities taking place during the meetings as opportunities to learn new things and "recycle" their knowledge, as expressed by some of the interviewees. The following illustrates that association:

Look, those raised beds; I'd never seen that before. I like it a lot. I think it's good. Because most of us can't bend over any more, can we...I liked that idea of raising them up, making high beds so people don't have to bend over so much. (Mrs. L.)

(d) Encouraging social relationships.

Almost all the participants expressed the perception that their involvement in the process created moments of togetherness with other residents, giving them the chance to get to know each other better and make new friends. This perception is made quite clear in the words of one of the residents:

People got talking more, spent more time together. People spent time sitting there, chatting, listening to each other. Because sometimes people want to make friends with others, but don't know how they work and this way people began to understand each other... it was really good (Mrs. R.).

Under the above topics, a reflection was presented on the potential of the use of well-planned gardens in the grounds of ILPIs as an adaptive measure that can reduce environmental stress for the elderly residents of those places. A further proposal was made for the application of the social design concept into the planning process to expand its potential as an adaptive measure, especially at individual level, as it allowed the users to play more active roles in the definition of their own environment.

The issues emerging from the interviews dealt with here corroborate that proposal. Overall, it can be said that the perception and feelings of those interviewed about their involvement in the process are associated with a strengthening of their personal skills for coping with the institutional environment.

As already mentioned, according to Lawton and Nahemow's environmental press model (1973), individual adaptive results to a certain environment can be improved in two ways: reducing the demand made by the environment on the individual, or strengthening the individual's personal ability to cope with that environment. The theories relating to the study of the relationship between people and nature, such as the supportive gardens theory (Ulrich 1999) suggest that well-planned outdoor spaces can reduce environmental pressure in institutional settings. The results of this research action also seem to suggest that the direct involvement

of the users in the planning process can strengthen the beneficial effects of these spaces on the other side of the environmental press model, i.e. the individual's personal skills.

These benefits are particularly important when considering ILPIs, where the influence of the environment on the behaviour of the residents is particularly critical. Institutional settings are examples of environmental press that do not depend on personal preference or choice (Kahana et al. 2003) and constitute environments that differ enormously from those experienced by the majority of the residents before admission (Lawton 1986).

One of the most marked feature of the institutional setting is the issue of control, related to the extent to which the administration and the staff determine the behaviour of the resident, in comparison to their self-determination (Robert Kleemeier 1959; Lawton 1986). It can be said that the first three topics identified in the interviews—the opportunity to create one's own space within the institution; the opportunity to develop an active role in the institution and the acquisition of knowledge—are related to the strengthening of a feeling of control over the environment at the institution. Overall, these issues showed how the involvement of the users in the process of defining the outdoor areas at the institution appears to be connected to encouraging a change in their perspective with regard to that environment, including the incentive to take it over, use it and manage its resources.

These results match those of a well-known study completed by Langer and Rodin (1976), who showed that even small planned activities offering the chance to choose, control and take responsibility for everyday events can improve the adaptive performance of institutional residents. Through their field work, the authors stimulated feelings of control in a group of residents at an institution by giving them the chance to decide when they wanted to watch films and to choose plants for their own rooms. Three weeks later, it was seen that, in comparison with the control group, to whom these opportunities were not offered, the participating group showed significant improvements in alertness, active participation and overall sense of wellbeing. A further assessment completed by the researchers with the same subjects showed that these benefits remained true in comparison with the control group even 18 months after the process (Rodin and Langer 1977).

The final topic emerging from the interviews—promotion of social relationships—complements and corroborates the set of effects proposed by Sommer (1983) on the behaviour of users involved in planning processes that use the concept of social design. In the words of the author:

Involvement in the design helps to satisfy the need to create and to control, and is a way of generating environments that respond to the requirements of its users. It brings people together to talk about shared problems, which can be extremely beneficial in a disjointed community or in a large bureaucratic organisation where people do not know each other. Participation in design creates a bond between people and their physical surroundings and creates a sense of community between those who are engaged in the planning process (Sommer 1983).

According to Lawton (1983), social behaviour constitutes one of the categories that defines an individual's behavioural skills. In the light of Ulrich's supportive gardens theory (1999), well-planned outdoor areas can also improve the adaptation

of the elderly to institutional environments as they are places that can stimulate social contact (between residents, between residents and staff, and between residents and visitors). The results of the interviews with participants in the research action discussed here suggest, however, that the use of participative procedures in the planning of these spaces may act as a catalyst for the formation and consolidation of the user's social network.

14.5 Final Considerations

The confirmation that well-planned gardens can improve the adaptation of the elderly to the environment of an institutional setting is well supported by theory and empirical evidence both in environmental gerontology and in studies of the relationship between people and nature. The results of the research presented in this chapter suggests that the use of participative planning methods such as social design can reinforce the beneficial effects of these spaces on the personal aspect of institutional residents, thus deepening the theoretical articulation of the aforementioned reference points.

The application of the concept of social design to the planning of outdoor spaces in environments for the elderly therefore requires a change in focus for the application of research presented so far on this matter. This means transferring the current, and most common, search for design requirements or recommendations, based on existing project studies, to research into the design process itself, including the development of appropriate ways of involving the elderly in the design phases prior to the construction and use of the schemes. It also means the generation of a large number of research possibilities and problems; in short, a significant opportunity to expand research on this subject.

It is acknowledged, however that the research action presented here is of an experimental nature, and there is a need for research to delve deeper into its findings using more precise and systematic methods. It is also necessary to consider the gender element with the regard to these results, as this research only involved women due to the policy of the institution in question. Finally, it is admissible that the beneficial effects of involving the elderly in the process of planning their own environment on their personal skills, as suggested by the results of this research, may be short-lived if not supported by proposals for ongoing action by the institutions.

References

- Alves, S.M., G.B. Gulwadi, and U. Cohen. 2005. Accommodating culturally meaningful activities in outdoor settings for older adults. In *The role of the outdoors in residential environments for aging*, ed. S. Rodiek and B. Schwarz, 109–140. New York: The Haworth Press.

- ANVISA-Agência Nacional de Vigilância Sanitária. 2005. Resolução 283. Brasília. http://www.mp.gov.br/portalweb/hp/2/docs/resolucao_283_idosos.pdf. Accessed 10 Apr 2014.
- Barnes, M., and C. Cooper-Marcus. 1999. Design philosophy. In *Healing gardens: Therapeutic benefits and design recommendations*, ed. C. Cooper-Marcus, and M. Barnes, 87–114. New York: Wiley.
- Bengtsson, A., and G. Carlsson. 2005. Outdoor environments at three nursing homes: Focus group interviews with staff. In *The role of the outdoors in residential environments for aging*, ed. S. Rodiek and B. Schwarz, 49–69. New York: The Haworth Press.
- Brasil. 1988. Constituição da República Federativa do Brasil de 1988. Brasília, Presidência da República. http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm. Accessed 6 June 2014.
- Brasil. 1994. Lei n. 8.842, de 4 de janeiro de 1994 que dispõe sobre a política nacional do idoso, cria o Conselho Nacional do Idoso e dá outras providências. Brasília, Presidência da República. http://www.planalto.gov.br/ccivil_03/leis/l8842.htm. Accessed 6 June 2014.
- Brasil. 2003. Lei n. 10.741, de 1º de outubro de 2003 que dispõe sobre o Estatuto do Idoso e dá outras providências. Brasília, Presidência da República. http://www.planalto.gov.br/ccivil_03/leis/2003/110.741.htm. Accessed 2 June 2014.
- Carstens, D. 1993. *Site planning and design for the elderly: Issues, guidelines, and alternatives*. New York: Van Nostrand Reinhold.
- Christophe, M. 2009. *Instituições de longa permanência para idosos no Brasil: uma opção de cuidados de longa duração?* Rio de Janeiro: Escola Nacional de Ciências Estatísticas do IBGE. Dissertação de Mestrado.
- Cooper-Marcus, C., and M. Barnes (eds.). 1999. *Healing gardens: Therapeutic benefits and design recommendations*. New York: Wiley.
- Cranz, G., and L. Young. 2005. The role of design in inhibiting or promoting use of common open space: The case of redwood gardens. In *The role of the outdoors in residential environments for aging*, ed. S. Rodiek and B. Schwarz, 71–93. New York: The Haworth Press.
- Gifford, R. 1997. *Environmental psychology: Principles and practices*, 2nd ed. Needham Heights: Allyn and Bacon.
- Grahn, P. 1994. The importance of green urban areas for people's well-being. *European Regional Planning* 56: 89–112.
- Grahn, P., and U. Stigsdotter. 2003. Landscape planning and stress. *Urban Forestry and Urban Greening* 2: 1–18.
- IBGE – Instituto Brasileiro de Geografia e Estatística. 2010. Censo de 2010. Banco de dados agregados. <http://www.sidra.ibge.gov.br/cd/cd2010rupu.asp?o=6&i=P>. Accessed 27 Jan 2014.
- IPEA-Instituto de Pesquisa Econômica Aplicada. 2008a. *Condições de funcionamento e de infraestrutura nas instituições de longa permanência no Brasil*. Região Sul, Brasília: IPEA; Presidência da República. http://www.ipea.gov.br/sites/000/2/livros/Livro_%20CaractdasInstituicoesRegiao_Sul.pdf. Accessed 10 Apr 2014.
- IPEA-Instituto de Pesquisa Econômica Aplicada. 2008b. *Condições de funcionamento e de infraestrutura nas instituições de longa permanência no Brasil*. Região Nordeste, Brasília: IPEA; Presidência da República. http://www.ipea.gov.br/portal/images/stories/PDFs/livros/Livro_CaractdasInstituicoesRegiao_Nordeste.pdf. Accessed 10 Apr 2014.
- IPEA-Instituto de Pesquisa Econômica Aplicada. 2008c. *Condições de funcionamento e de infraestrutura nas instituições de longa permanência no Brasil*. Região Centro-Oeste, Brasília: IPEA; Presidência da República. http://www.ipea.gov.br/portal/images/stories/PDFs/livros/Livro_CaractdasInstituicoesRegiao_CentroOeste.pdf. Accessed 10 Apr 2014.
- IPEA – Instituto de Pesquisa Econômica Aplicada. 2010. *Condições de funcionamento e de infraestrutura nas instituições de longa permanência no Brasil*. Região Sudeste, Brasília: IPEA; Presidência da República. http://www.ipea.gov.br/portal/images/stories/PDFs/livros/livro_caractdasinstituicoesregiao1.pdf. Accessed 10 Apr 2014.
- IPEA – Instituto de Pesquisa Econômica Aplicada. 2011. *Condições de funcionamento e infraestrutura das instituições de longa permanência para idosos no Brasil*. Brasília: IPEA. Presidência da República. Comunicados do IPEA n. 93. http://www.ipea.gov.br/agencia/images/stories/PDFs/comunicado/110524_comunicadoipea93.pdf. Accessed 10 Apr 2014.

- Kahana, E., L. Lovegreen, B. Kahana, and M. Kahana. 2003. Person, environment, and person-environment fit as influences on residential satisfaction of elders. *Environment and Behavior* 35(3): 434–453. doi:[10.1177/0013916503035003007](https://doi.org/10.1177/0013916503035003007).
- Kaplan, R. 1973. Some psychological benefits of gardening. *Environment and Behavior* 5: 145–162.
- Kaplan, R., and J.F. Talbot. 1983. Psychological benefits of a wilderness experience. In *Human behavior and the environment*, ed. I. Altman and J.F. Wohlwill, 163–203. New York: Plenum.
- Kearny, A.R., and D. Winterbottom. 2005. Nearby nature and long-term care facility residents: Benefits and design recommendations. In *The role of the outdoors in residential environments for aging*, ed. S. Rodiek and B. Schwarz, 7–28. New York: The Haworth Press.
- Kleeimer, R.W. 1959. Behavior and the organization of bodily and external environment. In *Handbook of aging and the individual*, ed. J.E. Birren, 400–451. Chicago: The University of Chicago Press.
- Kvale, S. 1996. *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks: Sage.
- Langer, E.J., and J. Rodin. 1976. The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology* 34(2): 191–198.
- Lawton, M.P. 1983. Environmental and other determinants of well-being in older people. *The Gerontologist* 23(4): 349–357.
- Lawton, M. P. 1986. *Environment and aging*. Classics in Aging Reprinted. Series I; v. 1. New York: The Center for the Study of Aging.
- Lawton, M.P., and L. Nahemow. 1973. Ecology and the aging process. In *Psychology of adult development and aging*, ed. C. Eisdorfer and M.P. Lawton, 619–674. Washington, DC: American Psychological Association.
- Luck, R. 2003. Dialogue in participatory design. *Design Studies* 24: 523–535.
- Ministério da Previdência e Assistência Social–Secretaria de Estado de Assistência Social. 2001. Portaria 73. Brasília.<http://www.idoso.mppr.mp.br/modules/conteudo/conteudo.php?conteudo=39>. Accessed 10 Apr 2014.
- Ministério da Saúde. 1989. Portaria 810. Brasília. <http://portal.anvisa.gov.br/wps/wcm/connect/1d0c748047458d179617d63fbc4c6735/PORTARIA+N%C2%B0+810-1989.pdf?MOD=AJPERES>. Accessed 10 Apr 2014.
- Reich, Y., S. Konda, and S. Levy. 1996. Varieties and issues of participation and design. *Design Studies* 17: 165–180.
- Rodiek, S. 2005. Resident perceptions of physical environment features that influence outdoor usage at assisted living facilities. In *Role of the outdoors in residential environments for aging*, ed. S. Rodiek and B. Schwarz, 95–107. New York: The Haworth Press.
- Rodiek, S., and B. Schwarz (eds.). 2005. *The role of the outdoors in residential environments for aging*. New York: The Haworth Press.
- Rodin, J., and E.J. Langer. 1977. Long-term effects of a control-relevant intervention with the institutionalized aged. *Journal of Personality and Social Psychology* 35(12): 897–902.
- Sommer, R. 1983. *Social design: Creating buildings with people in mind*. Englewood Cliffs: Prentice-Hall.
- Stigsdotter, U., and P. Grahn. 2002. What makes a garden a healing garden? *Journal of Therapeutic Horticulture* 13: 60–69.
- Stoneham, J., and P. Thoday. 1994. *Landscape design for elderly and disabled people*. Suffolk: Garden Art Press.
- Tomasini, S.L.V., B. Fedrizzi, J. Doll, S. Alves, V. Rojas, and S. A. Carlos. 2011. Participatory planning of open spaces in long-term care institutions. Open Space: People Space 3. In *An international conference on research into inclusive outdoor environments for all*. Edinburgh: Open Space Research Center, 112–112.
- Tomasini, S.L.V., and B. Fedrizzi. 2003. Espaços abertos em instituições para idosos. *Estudos Interdisciplinares sobre o Envelhecimento* 5: 101–117.
- Tomasini, S.L.V. 2008. *Qualificação de espaços abertos em instituições de longa permanência para idosos*. Tese de Doutorado. Porto Alegre: Universidade Federal do Rio Grande do Sul.

- Ulrich, R.S. 1984. View through a window may influence recovery from surgery. *Science* 224: 420–421.
- Ulrich, R.S. 1999. Effects of gardens on health outcomes: Theory and research. In *Healing gardens: Therapeutic benefits and design recommendations*, ed. C. Cooper-Marcus and M. Barnes, 27–86. New York: Wiley.
- Wells, S.E. (ed.). 1997. *Horticultural therapy and the older adult population*. New York: The Haworth Press.
- Windley, P.G., and G.D. Weisman. 2003. Environmental gerontology research and practice: The challenge of application. In *Annual review of gerontology and geriatrics*, ed. H.W. Wahl, R.J. Scheidt, and P.G. Windley, 334–365. New York: Springer.
- Zeisel, J. 1997. *Inquiry by design: Tools for environment-behavior research*. Cambridge: Cambridge University Press.

Chapter 15

Developing Age-Friendly Cities: Case Studies from Brussels and Manchester and Implications for Policy and Practice

Tine Buffel, Paul McGarry, Chris Phillipson, Liesbeth De Donder, Sarah Dury, Nico De Witte, An-Sofie Smetcoren, and Dominique Verté

15.1 Introduction¹

Developing age-friendly communities has become a significant dimension in debates in social policy (Buffel et al. 2012, 2014). A variety of factors have stimulated discussion around this topic, including: first, the impact of demographic change across the global north and south (Menec et al. 2011); second, awareness of the impact of urban change on older people, notably in areas experiencing social and economic deprivation (Buffel et al. 2013a); and, third, debates about good or

¹Originally published in Tine Buffel, Paul McGarry, Chris Phillipson, Liesbeth De Donder, Sarah Dury, Nico De Witte, An-Sofie Smetcoren & Dominique Verté. 2014. Developing Age-Friendly Cities: Case Studies From Brussels and Manchester and Implications for Policy and Practice. Journal of Aging & Social Policy 26(1–2): 52–72. doi:[10.1080/08959420.2014.855043](https://doi.org/10.1080/08959420.2014.855043). Reprinted by permission of Â© Taylor & Francis LLC 2014. All Rights Reserved.

T. Buffel, Ph.D. (✉)

The University of Manchester, Manchester, UK

Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

e-mail: tine.buffel@manchester.ac.uk

P. McGarry, Ph.D.

Public Health Manchester, Manchester City Council, Manchester, UK

e-mail: P.McGarry@manchester.gov.uk

C. Phillipson, Ph.D.

The University of Manchester, Manchester, UK

e-mail: christopher.phillipson@manchester.ac.uk

L. De Donder • S. Dury, Ph.D. • N. De Witte, Ph.D. • A.-S. Smetcoren • D. Verté, Ph.D.

Adult Educational Sciences, Vrije Universiteit Brussel, Ixelles, Belgium

e-mail: liesbeth.dedonder@vub.ac.be; sarah.dury@vub.ac.be; Nico.DeWitte@hogent.be; asmetcor@vub.ac.be; dverte@vub.ac.be

optimal places to age, as reflected in debates around lifetime homes and lifetime neighborhoods (Scharlach and Lehning 2013).

The issue of developing age-friendly communities arose from a number of policy initiatives launched by the WHO during the 1990s and early-2000s. A central theme concerned the idea of active ageing, originally developed during the United Nations' Year of Older People in 1999. Here, the notion of "active" was taken as referring to participation across a range of areas—social, cultural, spiritual and economic—in addition to those associated with physical activity. Policies and programs directed at achieving active aging were considered to require a range of interventions, including actions at the level of the social and physical environment. This idea was taken further in 2006 when the WHO launched the "Global Age-Friendly Cities" project. In 33 cities around the world, focus groups with older people, caregivers, and service providers were formed to identify those factors that make urban environments age-friendly. A resulting checklist of action points (WHO 2007a) addressed aspects of service provision (e.g., health services, transportation), as well as dimensions of the built environment (e.g., housing, outdoor spaces, and buildings), and social aspects (e.g., civic and social participation). Building on this work, in 2010 the WHO launched the Global Network of Age-Friendly Cities and Communities in an attempt to encourage implementation of policy recommendations from the 2006 project. By 2015, membership spanned over 21 countries with a total of 285 cities and communities engaged in the Network.

Lui and colleagues (2009) suggest that there are many different approaches to how favorable environments for older citizens may be sustained, ranging from emphasis on physical infrastructure on the one hand to the quality of social relations that promote participation on the other. There is also discussion in the literature about the governance processes necessary for defining and building age-friendly communities, with older people seen to have a key role in contributing to their distinctive features (Lui et al. 2009; Menec et al. 2011). This implies the bottom-up participation and involvement of older citizens in voicing their concerns as well as their participation in decision-making and planning. The concept of "rights to the city" is also relevant when addressing the role of older people in developing age-friendly communities. This idea is linked with the work of Lefebvre (1991) and points to the need for developing the rights of citizens to participate in decision-making regarding the production of space and access to resources (e.g., in aspects such as public transportation and neighborhood regeneration) (Purcell 2003). Such rights to the city may be particularly important for older people who become reliant on their immediate environments. Yet the evidence suggests that they are often the last to be engaged when it comes to decision-making processes within their neighborhoods (Buffel et al. 2012). The global age-friendly movement (WHO 2009) has been highly influential in raising awareness of the potential of involving older people in shaping strategies for urban planning and community regeneration. However, this approach is a relatively new development and has yet to receive systematic evaluation. In particular, research is needed that identifies the various approaches to building age-friendly communities relevant to different cultural and socio-political contexts (Menec et al. 2011).

Given the above, this chapter aims to provide a comparison of the age-friendly approaches in two European cities, Brussels and Manchester, with a particular focus on policies and initiatives that promote active ageing in an urban context. Both cities are members of the WHO Global Network of Age-Friendly Cities and Communities and have demonstrated their commitment to “a cycle of continually assessing and improving their ‘age-friendliness’” (WHO 2009). The opportunity to compare these cities arose from collaborative work between researchers from Brussels and Manchester investigating the impact of social deprivation in the respective cities (Buffel et al. 2013b; Buffel and Phillipson 2011). Three important benefits of a comparative study can be identified: first, it generates knowledge about the various ways in which the age-friendliness of a city can be assessed, drawing on contrasting urban environments. Second, a comparative approach is valuable in improving our understanding of success factors and barriers to implementing age-friendly programs across different socio-political, cultural, and policy-contexts. Third, it may foster mutual learning between cities and inspire others striving to meet the needs of their older residents.

This paper examines: first, the demographic, social, and multicultural contexts of Brussels and Manchester; second, the ways in which both cities became members of the WHO Global Network of Age-Friendly Cities and Communities; third, similarities and differences in the age-friendly approach and actions adopted by both cities; and, fourth, opportunities and barriers to the implementation of age-friendly policies and initiatives. The article concludes by discussing key elements and resources needed to develop age-friendly cities. Exploration of these areas will be used to develop a framework for examining the range of factors that can assist as well as impede implementation of the age-friendly approach.

15.2 The Demographic and Social Contexts of Brussels and Manchester

15.2.1 *Brussels: Population and Social Dimensions*

Brussels is both a region and a city. The *Brussels-Capital Region* is one of the three federated regions of Belgium, alongside Wallonia and the Flemish Region, and serves as the *de facto* capital of the European Union, hosting principal EU institutions as well as other international organizations such as NATO. It covers just 161.4 km² or half a per cent of Belgium’s territory, but the population is equivalent to more than 10 % of the population (1,104,346 inhabitants recorded in 2010) (Deboosere 2010). The Region of Brussels-Capital, an enclave within the Flemish Region, is an official bilingual region. Both the Flemish and the Francophone communities have jurisdiction in the Brussels-Capital Region. In this respect, Brussels can be seen as an essential part of the “Belgian compromise,” which integrates the different visions of both language groups about the territorial organization of the

country. It has a complex political structure with institutions that relate to a number of different levels² (Delwit and Deschouwer 2009). In addition, the Brussels-Capital Region comprises 19 autonomous municipalities, each of which has its own government responsible for the handling of local-level duties. One of those municipalities is officially named the *City of Brussels*. It is the largest municipality, with 163,210 residents, of whom 16 % (or 25,669 residents) are aged 60 and over. The City of Brussels is the official capital of Belgium (Deboosere 2010).

Brussels is currently the fastest growing region of Belgium. Migration flows continue to be the largest influence on the region's composition, although a natural increase (births exceeding deaths) continues to be an important factor in population growth. Taking nationality at birth into account, 46 % of the Brussels population is not of Belgian origin, with especially large populations of people of Moroccan, Italian, Spanish, Turkish and Portuguese origin, alongside a rapid increase in immigration from Eastern European countries (e.g., Poland and Romania) and Sub-Saharan Africa (Deboosere et al. 2009). The Brussels-Capital Region has a relatively young age structure, with a constantly increasing birth rate and decline in the median age. The average age in the City of Brussels (36.5 years) is even lower than the Brussels Region (37.7 years)—compared with 40.68 for Belgium as a whole. Unlike the rest of the country, the number of residents aged 65 and over has decreased over the last 15 years in the Capital Region (−9 %) (Brussels-Capital Health and Social Observatory 2008). In contrast, Brussels Region has proportionately more people aged 80 years and over. It is projected that the “ageing of the aged” will further increase: by 2050, the number of older people aged 80 and over will account for 40 % of the over 60s, compared with 27 % in 2008 (De Spiegelaere et al. 2009).

Older residents in Brussels tend to be in a more favorable position regarding socio-economic status compared to those in the rest of Belgium. However, this situation is gradually changing as those between the ages of 50 and 65 appear less well-placed on these indicators when compared with the national average (De Spiegelaere et al. 2009). A study of poverty in Brussels revealed a significantly higher percentage of older people reliant on the minimum income set for elderly people (7.5 % compared to 4.8 % in the rest of Belgium); an increase in the number of those living on very low incomes; and rising numbers of unemployed people aged 50 and over (Brussels-Capital Health and Social Observatory 2008). Older people who live alone and who do not own their homes are especially vulnerable to problems arising from low incomes. The socio-economic situation of those living in the inner city is especially precarious. At the same time, inequalities in the older population are intensifying, partly because of the growing numbers of older migrants and non-EU

²That is, *regional* or territorial competences, exercised by the institutions of the Brussels-Capital Region; and *community* or linguistically determined, cultural and political competences, exercised by the Flemish Community Commission (VGC); the French Community Commission (COCOF) and the Common Community Commission (GGC/COCON).

ethnic minorities, many of whom face higher risks of discrimination, poverty and health problems. By 2020, it is expected that half of the older population in Brussels will be of foreign origin (Vanmechelen et al. 2012). Many older migrants who are financially vulnerable tend to live in neighborhoods with concentrations of immigrant communities. Brussels has the highest number of deprived neighborhoods in Belgium, with a clearly defined socio-economic spatial residential pattern that has determined the settlement patterns of newcomers for a number of decades (Deboosere et al. 2009).

15.2.2 *Manchester: Population and Social Dimensions*

Manchester is a city and a metropolitan borough of Greater Manchester, England. *Greater Manchester* has a population of approximately 2.68 million and comprises ten metropolitan districts, each of which has a major town Centre and outlying suburbs. Out of the ten districts, the *City of Manchester* has the largest population (at around 503 thousand). Manchester City Centre is the city-region's primary cultural, business, and retail Centre. Population fell during the 1970s and 1980s but subsequently recovered, showing a growth rate of nearly 2 % per annum over the period 2001–2011. The growth in population has not been equally spread all across age groups. In comparison to the national age profile, Manchester has a smaller proportion of residents aged 65 and over –9.6 % in Manchester compared to 16.9 % in England and Wales (2011 figures). This is a result of natural losses and older people migrating to other areas in Greater Manchester. A study by the Audit Commission in 2008 found that: "...the older population...tends to be...poorer, isolated and more vulnerable with a lower life expectancy and a need for acute interventions" (Audit Commission 2008). The strong growth in Manchester's young and working-age populations over the last decade will have exacerbated this pattern (Bullen et al. 2012). Research has also shown that older people in these environments face higher levels of disadvantage and social exclusion (Scharf et al. 2003). While the probability of surviving to age 75 has slightly increased over the last decade, rates of survival in Manchester and Greater Manchester are still lower than those of England as a whole. Men and women born in Manchester have the lowest chance of survival to age 75 of any local authority area in England and Wales. The age-standardized mortality rate for all causes of death in 2008–2010 among people aged 65–74 years in Manchester (2,793 per 100,000) was 64 % higher than that of England as a whole (1,703 per 100,000). Bullen et al. (2012) conclude that the characteristics of Manchester's older residents mean that they are more likely to place high demands on hospital emergency services, mental health services and suffer from long-term limiting illnesses at an earlier stage in their old age than seen nationally.

15.3 Manchester and Brussels: Participation in the WHO Global Network of Age-Friendly Cities and Communities

A growing number of cities and communities worldwide are striving to develop new approaches to meeting the needs of their older residents. The WHO document (2007b) *Global Age-friendly Cities: A Guide* outlines a framework for assessing the “age-friendliness” of a city and defines an age-friendly city as an “inclusive and accessible urban environment that promotes active ageing.” It identifies eight domains of urban life that might influence the quality of life of older people as shown in Table 15.1. Along with 11 other cities around the world, Brussels and Manchester were among the first cities³ to be admitted into the WHO Global Network of Age-friendly Cities and Communities. To become a member of the program, both cities completed application forms and formalized their commitments to the Network cycle of continual improvement. Figure 15.1 shows the WHO five-year membership cycle of the WHO planning in year one to two; implementation in years three to five; and evaluation in year five (WHO 2009). To join the network, Manchester and Brussels were committed to following the four steps in the planning phase: first, establishment of mechanisms to involve older people in all stages of the age-friendly cities process; second, a comprehensive and inclusive baseline assessment of the age-friendliness of the city; third, development of a 3—year city—wide action plan based on assessment of findings; and fourth, identification of indicators to monitor progress against this plan.

15.3.1 *The Involvement of Brussels in the Who Global Network*

In the case of Brussels, the immediate cause for the City Council to apply for membership in the WHO Global Network was the city’s participation in a research project called the “Belgian Ageing Studies” (BAS). This project addressed the first three steps of the planning phase in the WHO membership cycle (see Fig. 15.1) using, first, a participatory method involving older people to assess the age-friendliness of the city and, second, developing a senior action plan based on an assessment of the findings. The BAS project is a research program that has been executed in over 120 municipalities in Belgium, with the aim of monitoring local challenges and opportunities as well as issues of quality of life among home-dwelling people aged 60 and over. In 2008, the City Council of Brussels decided to participate in the BAS project in order to provide tools for evidenced-based age-friendly policies at local level.

³ Note: The *cities* of Brussels and Manchester (not the Region of Brussels and Greater Manchester) applied for membership in the WHO global network.

Table 15.1 Frameworks of age-friendly approaches by the WHO, Brussels & Manchester City Council

WHO's age-friendly city framework ^a	Brussels' age-friendly city framework ^b	Manchester's age-friendly city framework ^c
Outdoor spaces and buildings	Community safety	Lifetime neighbourhoods
	Organising information sessions about crime prevention	Working towards accessible and well-designed living environments in which residents are not excluded by age
	Increasing feelings of safety through the presence of city guards (i.e. prevention agents)	Working towards becoming an environmentally-friendly Green City, with older people as important partners in achieving this
	Promoting cooperation between the police, the city council, court of justice and local associations	Community safety Preventing doorstep crime
	Coordinated police actions in response to missing older people (cf. project 'senior focus')	Expanding initiatives to reduce crime and anti-social behaviour on and around public transport
Housing	Housing	Housing
	Ensuring that ordinary homes are suitable for older people	Ensuring that ordinary homes are suitable for older people
	Promoting home adaptations and modifications	Promoting Design for Access standards
	Supporting alternative housing options (e.g. group living schemes, intergenerational house-sharing)	Delivering additional new homes and affordable housing Delivering new-care units
Transportation	Mobility	Transport
	Making community transport more accessible and flexible including demand-responsive services	Making community transport more accessible and flexible including demand-responsive services
	Ensuring a seniors' lens in urban mobility plans	Improving general bus services with better driving and more shelters with seats
	Supporting traffic-calming initiatives	'Bikeability' training for older workers
	Promoting existing car sharing and bike sharing initiatives	Improving road safety and pavements
	Improving the 'walkability' of the city	

(continued)

Table 15.1 (continued)

WHO's age-friendly city framework ^a	Brussels' age-friendly city framework ^b	Manchester's age-friendly city framework ^c
Social participation	Social life	Cross-cutting themes: improving engagement; improving relationships
	Improving information about activities and events	Extending opportunities for older people's involvement in decision-making, project delivery and service design
	Offering a wide variety of activities (e.g. in local pavilions/meeting places for older people)	Expanding alliances of frontline staff, community groups and older people
	Promoting older people's participation in projects and actions concerning public life in the city (e.g. in district forums)	Extending opportunities for volunteering
	Supporting initiatives aimed at combating social isolation	Completing connected Generations Together programmes and evaluating their impact
	Actively recruiting older volunteers	Reviewing best practice for a guide to tackle loneliness
	Organising an annual 'Seniors week' with various activities	
Respect and social inclusion	Actively involving the senior advisory board in all age-friendly projects and policies	Cross-cutting theme: promoting equality
Civic participation and employment	Socio-economical situation	Income and employment
	Combating poverty through coordinated provision of social housing for older people	Support to over 50s to stay in work
	Promoting volunteering and engagement in associations	Support over 50s steps towards the world of work (especially men who are made redundant and people on benefits due to mental health problems)
	Recognising the wide range of capacities and resources among older people	Promote and support over 50s volunteering and learning opportunities

(continued)

Table 15.1 (continued)

WHO's age-friendly city framework ^a	Brussels' age-friendly city framework ^b	Manchester's age-friendly city framework ^c
Communication and information	Information	Culture and learning
	Centralising information regarding services, activities and organisations for older people in a 'senior guide'	Promoting more accessible and better marketed activities
	Providing a two-monthly magazine offering an overview of leisure activities for older people	Supporting community-based and intergenerational learning activities
	Facilitating information access (information sessions in senior centres and 'pavillions'; internet courses in libraries; easy access to/discount purchases and rents of computers)	Reaching minority ethnic elders and those from disadvantaged areas
Community support and health services	Health	Healthy ageing
	Improving information about and access to available services	Care and support services
	Better coordination of the fragmented supply of home care services	Developing intermediate care best practice
		Introducing more integrated teams and multifactorial assessment
		Improving homecare and developing more comprehensive, flexible and culturally sensitive services
		Removing barriers to minority ethnic elders

^aFor a more detailed description of the WHO framework and domains, see the document 'Global Age-friendly Cities: A guide' (2007b)

^bThe analysis for the Brussels age-friendly city framework is based on internal documents that have been developed by the City Council on the basis of the research findings of the Belgian Ageing Studies project in order to be admitted into the WHO Global Network of Age-friendly Cities and Communities

^cThe analysis for the Manchester age-friendly city framework is based on the Manchester Ageing Strategy as developed in the policy document 'Manchester: A great place to grow older 2010–2020' (McGarry and Morris 2011)

The project was a result of a close collaboration between a research team, the city council, senior advisory board, local social services, and other stakeholders.

Drawing upon a participatory methodology, older people were actively involved as actors at all stages of the project. They played crucial roles in the planning, design, and realization of the research project, as well as in the development of a local policy plan based on the findings of the research. Forty older volunteers were

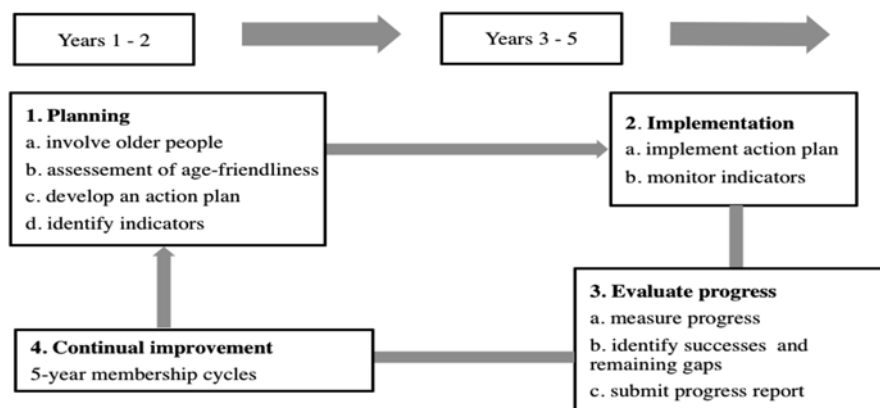


Fig. 15.1 Cycle of World Health Organisation Global Network of age friendly cities and communities (Source: Author)

recruited who facilitated and monitored the research process, for instance through delivering questionnaires to respondents personally and collecting them when completed. The research was viewed as a tool for creating community networks on the one hand and empowerment of older people on the other. The creation of a community network among the City Council, the senior advisory board, members of local senior organizations, third sector agencies, and other community stakeholders was crucial for developing broadly based support around the theme of age-friendly policies and environments. Empowerment was promoted through a cycle of research, participation, education, community action, and policymaking (Verté et al. 2009).

15.3.1.1 Key Initiatives Developed in the Brussels Programme

When this project was successfully completed in 2009, the councilor for Senior Affairs and her cabinet completed the WHO application form showing that the BAS program succeeded in addressing all four planning criteria to join the Global Network of Age-Friendly Cities and Communities (Fig. 15.1). The local ageing policy/action plan developed on the basis of the findings of the research formed the basis for the application. Similar to the WHO framework, the BAS program identified various domains of city life (community safety, housing, mobility, social life, socio-economic development, information, and health) that might influence the quality of life of older people as shown in Table 15.1, with a range of initiatives identified for each domain. In line with the city's ageing policy/action plan, an important initiative from this work was the development of a joint publication between the Mayor and elected councilors (Ville de Bruxelles 2010), highlighting their commitment to the aging agenda in the city and describing some of the age-friendly initiatives to be undertaken by their respective departments. Given that

“lack of information” was identified as a major problem by many older people who participated in the BAS research program, one of the initiatives concerned a range of actions to improve older people’s access to information about services, social and cultural activities, etc., both through the distribution of a senior guide as well as targeted information sessions for older people in senior centers, community centers and local libraries.

Another initiative was developed by the department concerned with Neighborhood Renewal, introducing a range of interventions aimed at combating older people’s fear of crime, an issue that was identified by older people as important in the BAS research project. Examples include: information sessions about crime prevention for older people; social activities and intergenerational meetings in community centers; and coordinated police actions in response to missing older people. In summary, the city’s progress in terms of mainstreaming ageing issues—or integrating the ageing dimension within different policy fields to ensure that the needs of all age groups are met—might be considered as one of the most important achievements to improve the age-friendliness of Brussels.

As a result of the activity described above, the City of Brussels became the first Belgian city to join the WHO Global Network in 2011. The launch of “age-friendly Brussels” took place at the international day of older people in October 2011, where the City Council announced its engagement to adapt the city’s structures and services so that they become more age-friendly. The City Council and Senior Advisory Board further committed to the next steps of the WHO cycle of continuing improvement, including further implementation and evaluation of the Senior Action Plan.

A number of factors have determined the structure and focus of the Brussels program. First, it has received *political and practical support* from elected councilors, particularly the Councilor of Senior Affairs, as well as the Senior Service and the Senior Advisory Board. Together they took a leading role in bringing together stakeholders who wanted innovative solutions to support active and healthy ageing and to improve the age-friendliness of the city. A second factor is the development of a “*citizenship*” perspective on engagement rather than a “deficit model” of ageing: older people were leaders of the BAS project in Brussels, not passive participants. Third, as a result of the BAS research project, the Council has developed insights into older residents’ situations as well as their needs and desires for ageing well in the city. The nature of the BAS project makes it possible to compare findings from Brussels with other cities that participated in the research,⁴ highlighting a number of specific features of the older population in the city. Among others, these include: a significantly higher percentage of elders (15.5 %) experiencing “severe difficulties” in getting by on their incomes (compared with 6 % in Flanders); a

⁴Over 140 municipalities participated in the BAS project, the large majority of which is located in the Flemish Region of Belgium. In each of these municipalities, a random sample from the population register was drawn, applying stratified quota where the proportion of features such as gender and age (60–69, 70–79 and 80 years and over) are identical to the underlying population (total N = 64,737). Due to the participatory method involving older volunteers, the first response rate was between 65 and 85 % in each of the municipalities. (see further, www.belgianageingstudies.be)

higher percentage of older people who rent in the private market (29.6 % vs. 8.28 %) and social housing (17.7 % vs. 3.94 %); and significantly higher levels of fear of crime and feelings of loneliness. At the same time, the research also demonstrates that despite high levels of social exclusion experienced by older people in Brussels, the city also contains resources—such as close family ties, neighbors, and services—that combine to offer the potential for active and fulfilling lives (Verté et al. 2009). Such insights are crucial to identify constraints and opportunities, both existing and potential, of the city for older people.

15.3.2 *Manchester's Participation in the WHO Global Network*

In the case of Manchester, work on age-friendly issues was linked to activities during the 1993 European Union year of older people. This prompted the City Council to create a multi-departmental working group charged with promoting a broader range of opportunities and services for older people. The Manchester program was consolidated in 1998 with the establishment of the Better Government for Older People (BGOP) group⁵. In 2003, the Valuing Older People (VOP) partnership was launched, designed to accelerate work, developing partnerships with older people and a variety of organizations within the community. Between 2003 and 2010, the VOP program developed a variety of initiatives on the age-friendly theme. The first was an *engagement* program aimed at involving older residents in the leadership of VOP work. This involved setting up a representative older people's Board, a wider Forum of older people's groups, a community development program, and a small grants scheme aimed at developing these groups. The engagement program also featured a communication strategy organized around positive images of ageing. The second work area was *strategic, partnership, and policy development* across the Council and with external partners such as universities and agencies representing.

15.3.2.1 **Key Initiatives Developed in the Manchester Programme**

The Manchester Ageing Strategy (MAS) following extensive consultation with older residents, elected council members, and a panel of nationally recognized experts (Manchester City Council 2009). The conceptual framework used by the MAS is similar to that developed by the WHO Global Network of Age-friendly Cities and Communities, with objectives focused on ensuring that older citizens will be more active and engaged; experience less inequality; receive better quality care and support; and live in lifetime neighborhoods with flexible, affordable housing options. Under the auspices of the VOP program, the Council and its partners have implemented initiatives to support the program: abroad program of healthy ageing

⁵ BGOP was a Government-initiated programme of 32 'pilot' local government projects in the UK developing new approaches to developing the engagement of older people within the community.

initiatives; a sexual health program aimed at those in mid and later-life; a training program for front-line staff on alcohol and ageing; the development of a “Cultural Offer for older people” involving 15 arts organizations aiming to promote activities for older people, especially those in disadvantaged communities; and campaigns to promote entitlement and benefit take-up. Other activities have focused on extending opportunities for older people’s involvement in decision-making, project delivery, and service design, for example, through extending opportunities for volunteering, expanding the VOP networks (alliances of frontline staff, community groups, and older people working in neighborhoods across the city) and supporting local groups through small grants.

As a consequence of the above, Manchester became the first UK city to join the WHO Global Network of Age-Friendly Cities and Communities in 2010, and work was consolidated with the official launch of the program in 2012. By this point, the VOP workgroup consisted of staff from the NHS, local government, a housing trust, an arts agency, a national charity, and a local university. The team was now located in the newly established Public Health Manchester service in Manchester City Council.

A range of factors may be identified that assisted the development of the program, with three of particular importance: first, *political leadership*: Throughout the lifetime of the program high-level political support was received from elected Council members, principally the Council’s Deputy Leader with lead responsibility for equality strategies and the VOP lead Councilor, a backbench politician who has day-to-day contact with the VOP team. Second, a *local narrative*: An important aspect of the work has been the development of an account of urban ageing rooted in the city’s disadvantaged communities, built around a combination of research findings and conceptual insights. Importantly, there are features of the city’s older population that are atypical of older populations in most other local authority areas, including lower proportions and numbers of older people; a significant proportion of black and minority ethnic elders; higher levels of social exclusion and ill-health; and high levels of population turnover. Third, a *partnership strategy*: the city has published two strategic statements creating a framework in which agencies can combine at city-wide and neighborhood levels to achieve common objectives.

15.4 Similarities and Differences in the Age-Friendly Approaches of Brussels and Manchester

The conceptual frameworks used by the City Councils of Brussels and Manchester are similar to that developed by the WHO Global Network. Table 15.1 compares the domains of the approaches and sets out the examples of initiatives being taken by Manchester and Brussels agencies in pursuit of the age-friendly objectives. A number of similarities and differences between the approaches can be identified. A first similarity: Both cities have dedicated teams of people influencing the delivery of

policy directly or indirectly affecting older people. In Brussels, the “Senior Service” was established in 2007 with three members of staff, but now has reached a total staff of seven dedicated to improving the quality of life of older people in the city. Manchester City Council’s Valuing Older People (VOP) team was formed in 2003 and works with council departments and organizations across the city to implement policies aimed at improving the age-friendliness of the city. It comprises (2013 figures) five team members and five associate members. Both the Senior Service and the VOP team are overseen by a board made up entirely of older volunteers: the Senior Advisory Board in Brussels and the VOP board in Manchester. From the outset, both teams sought to develop strategic partnerships and networks with the public sector and with voluntary and community organizations, and collaborated with universities and researchers to assess the age-friendliness of the city. Both teams have also developed specific program and initiatives aimed at extending opportunities for older people’s involvement in decision-making, project delivery, and service design.

A second similarity between age-friendly approaches in Brussels and Manchester are the initiatives around social participation and inclusion (Table 15.1), both of which focus on extending opportunities for volunteering and involving older people in the development of age-friendly and intergenerational projects. In Brussels, the Senior Service team has developed interventions that aim to link the needs of younger and older people, for example, by involving older adults in guiding children in their school activities, accompanying them to the swimming pool by bike, and related activities. *Shared Places and Spaces* is an example of a similar program in Manchester. This involves students from the Manchester School of Architecture who are looking at the practicalities of using shared spaces (e.g., inner-city parks) which link younger and older residents. Finally, similarities can also be noted in the theme of housing, with activity around expanding home improvement services, housing support services, and affordable housing schemes. Both cities aim to provide improved housing options with a better mix and choice of homes. This work was taken forward through the development of a practical guide aimed to raise awareness about the different housing options in Brussels (Makay and Lampaert 2012) and through the Council’s strategic housing and social care group in the case of Manchester.

A number of differences can also be identified between the cities. The first concerns the way in which ageing programs have been “branded” and communicated. In the case of Brussels, the notion of “age-friendly Brussels” (“leef tijdsvriendelijk Brussel” in Dutch and “ville amie des aînés Bruxelles” in French) is not well-known to the general public. Instead, older people tend to identify the city’s ageing program with the BAS project rather than the notion of “age-friendly.” The reason behind this is that the BAS project involved bottom-up participation of older people and thus implied a broadly based public support, whereas the application to become an age-friendly member of the WHO network was a somewhat top-down initiative from the councilor of Senior Affairs and her Cabinet. Moreover, the age-friendly city framework is only available as an internal working document (in only one of the national languages) and there are few references to “age-friendly Brussels” on the

city's website or at public events in the city. In contrast, the Manchester Ageing Strategy 2010–2020 is available on the city council's website and addresses the age-friendly domains using questions such as “Where we are now?”; “Where we want to be?”; “How we're going to get there?”; and “Who's involved?” Moreover, the term “Age-Friendly Manchester” is explicitly used in public events and has become a brand or umbrella term for all initiatives in the city that aim to improve older people's quality of life.

A second contrast between Brussels and Manchester's age-friendly city framework concerns the extent to which attention is paid to specific groups such as minority ethnic groups and older people living in poverty. While Brussels is a highly ethnically diverse city with an increasing proportion of the older population foreign origin, there is substantially less attention in the city's approach to developing policies on ageing. The provision of social housing is seen as one of the main instruments to combat poverty, but other than that, work seems to be largely focused on the average white older person. In contrast, the Manchester Ageing Strategy includes a number of targeted interventions and projects (especially in the domains of “promoting equality” and “healthy ageing”) aimed, for example, at “developing culturally sensitive services,” “removing barriers to ethnic minority elders,” and “reaching older people living in disadvantaged areas.”

Third, a number of differences can be identified in relation to the age-friendly domain “Outdoor spaces and buildings” in that the focus in Brussels is entirely on issues of community safety and crime prevention, whereas Manchester has adopted a broader approach highlighting the importance of developing lifetime neighborhoods. A lifetime neighborhood is defined as a “place where a person's age doesn't affect their chances of having a good quality of life” with “services, infrastructure, housing, and public spaces that are designed to meet everyone's needs, regardless of how old they are” (Manchester City Council 2009). This approach is being tested via a number of projects labeled as “age-friendly demonstrator” sites. In Brussels, the WHO domain of “Outdoor Spaces” is mainly covered by specific actions aimed to improve the community safety—an issue that was identified by older people as a main priority for Brussels in the BAS research project. “Senior Focus” is one example of such a project that promotes cooperation and networking among the police, the city council, the court of justice, and community organizations to increase older people's feelings of safety, as well as to develop coordinated police actions in response to missing older people.

15.5 Discussion: Barriers to Implementing Age-Friendly Policies and Initiatives

This paper has reviewed age-friendly initiatives in Brussels and Manchester as well as similarities and differences between the respective programs. Cultivating and maintaining the existing partnerships that the two cities have established and promoting broad-based collaboration with multiple stakeholders will be especially

important to realize the potential benefit that the age-friendly initiatives have to offer. Another issue will be to further involve older people and those approaching old age as significant actors in setting the agenda for age-friendly developments. The fact that both cities have a dedicated team of people (the Senior Service in Brussels and the VOP team in Manchester) supporting varied initiatives and partnerships to improve older people's quality of life presents a major opportunity to reinforce a city-wide, age-friendly approach. Despite the opportunities, a number of barriers—both existing and potential—to implementing age-friendly programs can also be identified, these including, first, the prevalence of ageist attitudes and stereotypes; second, economic and political barriers; third, potential limitations associated with the concept of “age-friendliness.” The first of these may contribute to various forms of exclusion in later life, and may undermine the work of age-friendly programs in promoting social participation. Older people may, for example, remain excluded from policymaking processes due to prejudices and stereotypes that label them as “care dependent.” In Brussels, older people reported that while they have considerable influence over policies on *care-related issues* (such as homecare, social services, and health care), they feel that they are often denied a voice on decisions concerning *housing issues, neighborhood design and planning* (Vanmechelen et al. 2012). Similarly, evidence from Manchester (Scharf et al. 2003) suggests that urban regeneration policies could greatly benefit from the skills and experience of older people and the attachments they bring to their communities. Yet the evidence is that they often tend to be “invisible” in the implementation of such programs.

A second set of issues relates to economic and political barriers facing age-friendliness of cities. On the former, given a context of economic austerity, there are significant pressures to reduce funding for what might be called preventative programs. Taking the example of Brussels, there are recession-linked pressures in that the council has been unable to increase public spending on community health and social care in line with increasing demand. There is growing consensus that much more investment is required to improve support to carers and home-helpers; to secure the availability of (semi-)residential services (especially in densely populated and deprived urban districts); and to develop more flexible and culturally-sensitive services in response to the challenges posed by increasing ethnic and economic diversity in the older population. A key issue will be how to increase investment in prevention to reduce *future* increases in demand when available budgets are under pressure to meet *existing* levels of demand. In the case of Manchester, plans to promote age-friendly neighborhoods may be compromised by budget cuts, which reduce public services such as libraries, information and advice centers, and day care facilities for older people. Threats to services may also lead to a public perception that the age-friendly brand is unrealistic and unlikely to be implemented given restrictions on public spending.

In terms of political barriers, Brussels and Manchester are cities experiencing a range of demands from their respective populations and aspirations to create “world-class” environments that compete for investment with other national and international centers. The idea of age-friendliness thus has to compete with wider objectives

associated with economic growth and development and in consequence may appear marginal to both. One of the major questions for both cities is the struggle for living space, not only between households, but also between the wide range of functions of the city as an economic and educational center (and in the case of Brussels, as a diplomatic and political one). In this respect, cities need a more integrated strategy to achieve age-friendliness. One way forward could be to make age-friendliness a central part of policymaking with a view to promoting sustainable urban development across its broad environmental, social, and economic dimensions. Successful implementation of such policies, however, will rely on the support of a range of stakeholders—including multiple levels of government, public, private, and third sector organizations and non-governmental organizations. Reconciling the different interests and values of these groups will be a key issue for the age friendly city movement to address.

Finally, the idea of age-friendliness itself carries limitations unless linked to wider debates about rights and citizenship within the urban environment. The concept of “the right to the city” is closely associated (as noted in the Introduction to the paper) with the work of Lefebvre (1991) and has become a keyword for analyzing the struggles over the shape of the city and access to public space, or, in Harvey’s terms (2009), the right to “make and remake our cities and ourselves” under circumstances in which private capital is dominating the urban process. Purcell (2003) argues that “the right to the city” implies two main rights for its inhabitants. The first is to *appropriate* urban space; the right to “full and complete usage” of the city. The second concerns the right to *participate* centrally in decision-making surrounding the production of urban space. Such issues may be of particular importance for older people who become reliant on their immediate environment for achieving a fulfilling existence in old age. However, the so-called “paradox of neighborhood participation” (Buffel et al. 2012) applies especially well to older people; that is, they tend to spend a lot of time in their neighborhoods (*being part of the city*), but are often among the last to be engaged when it comes to decision-making processes within their neighborhoods (*taking part in the city*). While cities are increasingly viewed as key drivers of a nation’s economic and cultural success, their reconstruction is often to the detriment of those outside the labor market, especially those with low socio-economic status. Achieving recognition of the needs of different generations within cities and exploiting the potential of the city for groups of all ages will be central to the process of making cities more age-friendly.

At the same time, the concept of “age-friendliness” must itself be kept under critical scrutiny given the impact of economic austerity (as already noted) on many urban areas. Many of the cities in the WHO program are themselves experiencing substantial reductions in physical infrastructure and services. The handling of these will be a major test for the ideals and initiatives associated with building supportive communities for older people. Whether applying the age-friendly approach makes a significant difference to the quality of people’s lives, given the challenges facing cities, will need careful attention over the next phase of the movement’s development.

15.6 Conclusion

This article has provided a comparison of the age-friendly approaches in two European cities, Brussels and Manchester, with a particular focus on initiatives that promote active ageing in an urban context. Both cities have demonstrated their commitment to a cycle of continually assessing and improving their age-friendliness, and as members of the WHO Global Network of Age-Friendly Cities and Communities, are striving to become more age-friendly (WHO 2009). The analysis in this paper suggests that both cities would benefit from an exchange of experience as well as from mutual learning. Promoting a dialogue between the city councils of Brussels and Manchester, together with the different stakeholder groups, could drive the age-friendly agenda forward in a number of ways. First, it could provide a repository of best practice cases, which would increase our understanding of what works and what doesn't work in particular policy areas. Second, it could support the development and implementation of smart and innovative solutions to support active and healthy aging and develop age-friendly communities. Third, Brussels and Manchester would be able to share methodologies and indicators to monitor and evaluate the wider socio-economic impact of investing in innovative services for living environments. Finally, providing a strong cross-national evidence base may also stimulate other cities to incorporate an explicit age-friendly focus into public policy.

The comparative analysis suggests that Manchester has a stronger tradition compared with Brussels in promoting age-friendly policies. This is especially the case in relation to, first, Manchester's culturally-sensitive and targeted approaches towards minority ethnic elders and those in deprived urban areas; second, the city's development of "lifetime neighborhoods," including the integration of ageing-friendly principles into the regeneration and design of urban spaces; and, third, the way in which Manchester is able to brand and promote the age-friendly approach at public events, as well as through its ageing strategy document available on the city council's website. Manchester, on the other hand, could draw on the experience of work such as the Belgian Ageing Studies (BAS), which has been significant in facilitating the development of the age-friendly approach. The development of BAS has been important in clarifying methodologies for working with diverse groups of older people living in urban communities. Promoting the exchange of experience between both cities would offer a way forward in understanding key questions such as: "What are inclusive communities and how can we best achieve them?" and "How do individuals and communities most effectively make their voices heard?" These are especially relevant for aging populations, with older people often representing marginalized groups in urban contexts.

To conclude, both cities also share a number of key success factors, which may prove to be helpful for other cities to develop age-friendly strategies. The first concerns an initial attempt to integrate policies for older people into those focusing on urban (re)development and the management of cities. Mainstreaming aging issues, a strategy of integrating ageing issues into different policy fields, represents a major challenge for social and public policy as well as for community organizations and

older people to ensure that the needs of all age groups are met in urban policy fields. A second factor relates to the focus on involving older people as significant actors in setting the agenda for age-friendly developments. A significant issue in this respect is the recognition that older adults are not just the beneficiaries of age-friendly communities; they have key roles to play in defining and fostering their distinctive features. As Menec et al. (2011) have argued, implicit in the notion of age-friendly communities is the idea that older adults are an integral part of ensuring that a seniors' lens is applied in decisions, policies, and planning: "Older adults must be part of identifying areas of need, prioritizing key issues, and ensuring appropriate implementation." Finally, both approaches have demonstrated the importance of building synergies and promoting partnerships with multiple stakeholders. This includes the involvement of public, private, and third sector organizations and NGOs involved with developing age-friendly strategies. Within such joint efforts, leadership and coordination by local authorities has proved to be a critical factor in developing age-friendly Manchester and Brussels.

References

- Audit Commission. 2008. *Don't stop me now: Preparing for an ageing population*. London: Audit Commission.
- Brussels-Capital Health and Social Observatory. 2008. *Poverty and ageing*. Brussels: GGC.
- Buffel, T., and C. Phillipson. 2011. Experiences of place among older migrants living in inner-city neighbourhoods in Belgium and England. *Diversité urbaine* 11(1): 13. doi:[10.7202/1007742ar](https://doi.org/10.7202/1007742ar).
- Buffel, T., C. Phillipson, and T. Scharf. 2012. Ageing in urban environments: Developing "age-friendly" cities. *Critical Social Policy* 32(4): 597–617.
- Buffel, T., C. Phillipson, and T. Scharf. 2013a. Experiences of neighbourhood exclusion and inclusion among older people living in deprived inner-city areas in Belgium and England. *Ageing & Society* 33(Special Issue 01): 89–109. doi:[10.1017/S0144686X12000542](https://doi.org/10.1017/S0144686X12000542).
- Buffel, T., P. McGarry, C. Phillipson, L. De Donder, N. De Witte, A.-S. Smetcoran, and D. Verte. 2014. Developing age-friendly cities: Case studies from Brussels and Manchester and implications for policy and practice. *Journal of Aging and Social Policy* 26: 52–72.
- Bullen, E., N. Bendel, and P. McGarry. 2012. *Older people in Manchester. A profile of residents aged 65 and over*. Manchester: Manchester City Council.
- de Bruxelles, Ville. 2010. *Plan seniors 2010*. Brussels: Ville de Bruxelles.
- De Spiegelaere, M., M.-C. Closon, Deboosere, and P. Humblet. 2009. Health and quality of life in Brussels. *Brussels Studies*, (Synopsis 11). <http://www.brusselsstudies.be/en/brussels-studies-the-e-journal-for-academic-research-on-brussels>. Accessed 3 Jan 2014.
- Deboosere, P. 2010. Brussels: A city, a region, a place to live. In *E-book 7: What does geography teach us about the future of Belgium's institutions?* Brussels: Re-Bel initiative.
- Deboosere, P., T. Eggerickx, E. Van Hecke, and B. Wayens. 2009. The population of Brussels: A demographic overview. *Brussels Studies, Synopsis nr. 3*. <http://www.brusselsstudies.be/en/brussels-studies-the-e-journal-for-academic-research-on-brussels>. Accessed 3 Jan 2014.
- Delwit, P., and K. Deschouwer. 2009. The institutions of Brussels. *Brussels Studies, Synopsis nr. 14*. <http://www.brusselsstudies.be/en/brussels-studies-the-e-journal-for-academic-research-on-brussels>. Accessed 3 Jan 2014.
- Harvey, D. 2009. *Social Justice in the city* (revised ed.). Athens: University of Georgia Press.
- Lefebvre, H. 1991. *The production of space*, 1st ed. Oxford: Wiley-Blackwell.

- Lui, C.-W., J.-A. Everingham, J. Warburton, M. Cuthill, and H. Bartlett. 2009. What makes a community age-friendly: A review of international literature. *Australasian Journal on Ageing* 28(3): 116–121. doi:[10.1111/j.1741-6612.2009.00355.x](https://doi.org/10.1111/j.1741-6612.2009.00355.x).
- Makay, I., and L. Lampaert. 2012. *Wonen zonder zorg(en). 10 woonvormen om over na te denken*. Brussels: Kenniscentrum Woonzorg Brussel.
- Manchester City Council. 2009. *Manchester: A great place to grow older. 2010–2002*. Manchester: Joint Health Unit.
- McGarry, P., and J. Morris. 2011. A great place to grow older: A case study of how Manchester is developing an age-friendly city. *Working with Older People* 15(1): 38–46. doi:[10.5042/wwop.2011.0119](https://doi.org/10.5042/wwop.2011.0119).
- Menec, V.H., R. Means, N. Keating, G. Parkhurst, and J. Eales. 2011. Conceptualizing age-friendly communities. *Canadian Journal on Aging/La Revue canadienne du vieillissement* 30(03): 479–493. doi:[10.1017/S0714980811000237](https://doi.org/10.1017/S0714980811000237).
- Purcell, M. 2003. Citizenship and the right to the global city: Reimagining the capitalist world order. *International Journal of Urban and Regional Research* 27(3): 564–590. doi:[10.1111/1468-2427.00467](https://doi.org/10.1111/1468-2427.00467).
- Scharf, T., C. Phillipson, and A. Smith. 2003. Older people's perceptions of the neighbourhood: Evidence from socially deprived urban areas. *Sociological Research Online* 8(4): www.socresonline.org.uk/8/4/scharf.html.
- Scharlach, A.E., and A.J. Lehning. 2013. Ageing-friendly communities and social inclusion in the United States of America. *Ageing & Society* 33(Special Issue 01): 110–136. doi:[10.1017/S0144686X12000578](https://doi.org/10.1017/S0144686X12000578).
- Vanmechelen, O., D. Verte, H. Teugels, T. Buffel, L. De Donder, M. Glorieux, and E. Verté. 2012. *Zorgnoden en -behoeften: de kijk van de Brusselaar. Analyse van sterktes, zwaktes, kansen en bedreigingen van de Brusselse woonzorg*. Brussel: Kenniscentrum Woonzorg Brussel.
- Verté, D., S. Dury, N. De Witte, T. Buffel, and L. De Donder. 2009. *Rapport van het ouderenbehoefteonderzoek Brussel. Monitor voor de stad en al zijn inwoners*. Brussel: Vrije Universiteit Brussel.
- WHO. 2007a. *Checklist of essential features of age-friendly cities*. Geneva: World Health Organization.
- WHO. 2007b. *Global age-friendly cities: A guide*. Geneva: World Health Organization.
- WHO. 2009. *WHO Global network of age-friendly cities*. Geneva: World Health Organization.

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