Global Benchmarking of Accessible and Inclusive Cities

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Abstract

Globally, many built environments fail to meet the accessibility needs of people with disability. This is despite people with disability agitating for built environment accessibility improvement for many decades. This paper applies a grounded thematic analysis to review global literature to determine what constitutes an accessible and inclusive city and to discover global benchmarks of accessible and inclusive cities for people with disability. We identified five (composite) domains that an accessible and inclusive city would include: 1. Connectivity (spatial & digital); 2. Economic participation, employment and education; 3. Housing; 4. Community and social infrastructure; and 5. Processes of engagement and inclusion. We also identified a number of global accessible and inclusive city exemplars, including Breda, the Netherlands and Gdynia, Poland. From the global review of exemplars and definitions, domains and indicators, areas of practical action were identified that require multi-entity, multisector collaborations with influential partners addressing all prioritised domains. These actions included: the need to include those with lived experience of disability in the planning and design of environments and services; the need to work across the linked domains of the built form, services, attitudes, and economic participation; and the need to revise construction, design, planning and architectural education to foreground the needs and requirements of those with disability.

Key words: disability, inclusion, accessibility, cities, lived experience.

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Introduction

Globally, the contemporary built environment (the human-made surroundings where people live and work, Coleman 2017) continues to fail in meeting the accessibility needs of people with disability. This is despite: (1) people with disability agitating for built environment accessibility improvement for many decades and particularly since World War 2 (Berghs *et al*., 2016; Quinn *et al.*, 2002; Banning-Lover *et al*., 2016); (2) international and in-country anti-discrimination and built environment accessibility legislation being in place; and (3) improvement in built environment 'sustainability' performance receiving much attention (Ameen *et al*., 2015; Arcadis 2017; Boeing 2017; Castanheira & Bragança 2014; Gibberd 2015; Newton 2016; Newton *et al*., 2017; Park *et al*., 2017; UN-Habitat 2017). The continued inaccessibility of the built environment at a neighbourhood scale can be explained partly by built environment practitioners' lack of understanding of disability issues, policy, legislation and the rights of people with disability (Jackson 2018). This lack of understanding is often perpetuated by built environment practitioners' lack of interaction with people with disability and lack of understanding of existing conditions (Jackson 2018).

Furthermore, current assumptions about the design of built environments may prevent them from being inclusive because the notion of wellbeing in this context is often modelled on a healthy, middle-aged man and this is not representative of the entire population, particularly people with a disability (Carnemolla & Bridge 2016). Although there has been greater legislative enforcement and many initiatives over the last decade (e.g., Smart Cities in Amsterdam, Madrid and Barcelona), cities still tend to be designed in a way that fit the needs of an active, fully abled person (Rebernik *et al*., 2020). This is surprising given the trend towards a global ageing population who may be more likely to experience disability (United Nations - Department of Economic and Social Affairs Disability, n.d.). Despite the promise of inclusive design approaches (those that aim to provide design solutions that directly address diversity), inclusive design is yet to make a substantial mark on the built environment. Thus, our paper informs how fully accessible environments can be applied in practice to ensure the needs of all are recognised and accommodated.

Measuring accessible and inclusive cities

Despite its resonant face validity, 'accessibility' is a slippery concept even when applied only to the built environment. While the United Nations (2006) Convention on the Rights of Persons with Disabilities (CRPD) did much to set a benchmark definition of inclusion and equal access, there are multiple Articles that explain this in relation to domestic, civic, social, recreational, cultural, and vocational life, all of which have implications for built environment accessibility. Article 9 (Accessibility) provides the most direct explanation of built environment accessibility but defines access only in terms of the comparator of 'equal' access, the elimination of 'obstacles and barriers', the 'implementation of minimum standards and guidelines', and the provision of 'appropriate forms of assistance and support' (United Nations 2006).

Although people with disability are well aware of their day-to-day experience, there is a need to define and measure accessibility in order to improve it. However, empirical evaluation of the accessibility of the built environment, particularly at a neighbourhood scale, is lacking due to the paucity of evaluation tools (Handy and Niemeier 1997). Accessibility has conventionally been measured via a range of different indices, such as travel time and distance to key destinations, thus ignoring user perceptions and not giving primacy to, or even focus on, the

experience of disability. Similarly, Church and Marston (2003) suggested that traditional measurements of accessibility are flawed because they do not account for mobility and physical differences among people. Their study argued for 'the use of a relative access measurement, so that removing barriers can be done in the order that provides the greatest improvement in access for a given level of expenditure' (p.83). Recently, the Victorian Transport Institute in Australia concluded that 'no single method can evaluate all accessibility factors: a variety of methods are needed reflecting different impacts, scales and perspectives' (Litman 2019:52). It suggested that such a combination needs to evaluate six factors: mobility, proximity, transportation system connectivity, affordability, convenience and social acceptability.

A linked and sometimes transferable concept to accessibility is that of 'inclusion'. While many different measurement and data collection techniques have been used in the literature for measuring social inclusion, there has been no agreed way to measure it (Neely-Barnes and Elswick 2016). Taken together, this lack of clarity, overlap and differentiation about the concepts of accessibility and inclusion when applied to the built environment poses significant difficulties when then further applied to the task of defining the characteristics of an accessible or inclusive city for people with disability. Additionally, there is clearly overlap between the terms accessibility and inclusion, but inadequacy of only using one in relation to the built environment. These deficiencies are major gaps in the evidence base for monitoring and benchmarking the accessibility and inclusivity of cities that hinder effective evidence-based policy development and service provision. As Purdam and colleagues have pointed out, effective policy development for ensuring the rights and freedoms of people with disability requires understanding of what leads to positive change in peoples' quality of life (Purdam, Afkhami, Olsen, & Thornton 2008). The lack of holistic definition of accessibility and inclusivity in cities, and thus of robust evidence to allow for comparison across time or understanding of how access and inclusion in one location compares to other locations, pose major barriers to advancing social justice for people with disability. The aims of our paper therefore are to provide a working definition of an accessible and inclusive city, review global benchmarks of accessible and inclusive cities for people with disability, and to identify global exemplars of accessible and inclusive cities for people with disability.

Methods

To address the aims of our paper, we set out to explore and build the concept of an 'accessible and inclusive city' through a grounded thematic analysis of the literature. The analysis sought to answer the research questions: what constitutes an accessible and inclusive city, and how is this manifested in global exemplars? We did not conduct a scoping or systematic review (with the latter requiring a quality assessment of the literature), but rather our process involved drawing from a range of data sources (research literature, policy statements, legislation, city exemplars) to propose a definition and to theorise the concept. Definitions, domains and indicators of access/accessible cities and inclusion/inclusive cities were collated through extensive review and analysis of international policy documents, online statements and visions aligned to accessibility and inclusivity. Global cities described as the 'most' accessible were identified and examined. A review of online grey literature, such as city-based policies and plans, was included to identify actions undertaken to improve accessibility and inclusion.

Specific steps in our approach were as follows:

1. Collated definitions/criteria/indicators - A 'mapping' of the key literature across 'Disability', 'Inclusive Cities' and 'Accessible Built Environment' domains was undertaken. Search terms were paired with 'city/cities' and included: sustainable,

healthy, smart, resilient, livable, age-friendly, child-friendly, 8-80, welcoming, just, ethical, slow, disability-friendly, dementia-friendly, walkable, disability-inclusive, inclusive. Literature included scholarly literature as well as existing city-scale/ built environment performance measures, such as the Sustainable Cities Mobility Index, and Access and Inclusion indices.

2. Collated list of cities that self-identify as 'accessible and inclusive' – By reviewing organisational websites and their associated documents, we looked at what sorts of (general) statements cities are making, identified most common objectives and actions, and identified most important/ most prioritised actions.
3. Identified cities that contain good examples - We looked at what sort of cities (large, small, old, new etc.), what's good about them, on what basis they are good examples (won awards, written about in media, published research etc.).
4. Collated list of relevant legislation and policy – Based on the expert knowledge of the team, we reviewed forty international and national (Australian) documents, visions and statements (e.g. United Nations Convention on Rights of Persons with Disabilities, New Urban Agenda), accessed from relevant websites.
5. Grassroots searching - Mostly sourced from digital news sites, disability organisation reports, and personal communication. These illustrated that there is still a substantial gulf between city administrations' accessibility and inclusion aspirations and the on-the-ground lived experience of people with disability.
6. Conducted grounded thematic analysis of the literature/city examples/legislation and used this to theorise and understand the concepts of accessible and inclusive cities for people with disability. Given the diversity of literature and focus, we commenced by organising data from the literature into multiple columns (codes): Context (Original topic/category such as 'Healthy Cities'); Focus area (e.g. Economic, Political, Social, or other content focus); Indicators (where present); and Actions (where identified). Laying out the data in this way helped identify the main intents or themes where the indicators and actions were particularly useful in 'grounding' the meaning of each. The Context code was later renamed 'Definitions/Descriptors' (as reported below), and the Focus area column re-named 'Domains' and 14 thematic areas identified within it.

An early version of the emerging domain codes was circulated to team members to enable independent checking of codes. This resulted in some re-naming of codes, for example, identifying a code for 'Processes of inclusion and engagement' to encompass deliberate focus on inclusive culture and co-design activities (see Table 1).

Results

Our review of the definitions relevant to accessible and inclusive cities found that they are described in innumerable ways and nuanced to suit particular contexts (Albino *et al.,* 2015; Arundel *et al.,* 2017; Barrett *et al*., 2016; Forsyth 2015; Ramprasad *et al.,* 2017). Benchmarking performance of cities is similarly diverse (CoM 2011; CommSydney 2018; Pinheiro *et al.,* 2015). Nevertheless, we suggest that the various and current headline descriptors in the global discourse can be grouped as follows:

- Future Cities –sustainable (ecologically, economically and culturally), healthy, smart, resilient, liveable
- Inclusive Cities –including various foci e.g. age-friendly, child-friendly, 8–80; and
- Nurturing and Innovative Cities –welcoming, just, ethical, slow, creative.

We now provide an overview of the relevant groups of definitions/descriptors.

Future Cities

Sustainable City definitions tend to be some variant of the Brundtland Commission's sustainable development definition. Sustainable cities should : i) minimise the use of resources, ii) be responsive to local environments and to make open space attractive and useable, iii) minimise the need for car travel by maximising low-energy modes such as walking, cycling and public transport, iv) be accessible by allowing people to enter, move and leave the site easily, v) provide personal safety in public spaces, and vi) be affordable and inclusive by providing housing of different price ranges and housing that is suitable for people with disabilities, and from varying cultures (Low *et al.,* 2005:70).

Underpinned by the World Health Organisation (WHO), *Healthy Cities* is a long-term, global, development project seeking to embed public health at the local level. Many cities worldwide have translated the healthy city concept into their public health strategic plans, envisioning 'a healthy city for all', see, for example, Vancouver's Healthy City Strategy 2014 – 2025 and City of Melbourne's Municipal Public Health and Wellbeing Plan 2017-2021.

Smart City definitions abound (Albino *et al.,* 2015, Ramaprasad, Sánchez-Ortiz & Syn 2017). Although original understandings were distinctly technology-oriented, contemporary takes on Smart Cities flag the intrinsic importance of people, community and governance (Albino *et al.,* 2015). Notions of 'for all', 'accessibility', and 'inclusion', are also increasingly common in contemporary smart cities dialogues.

Although resilience in itself is not a new concept, use of the term resilience in connection with urban development and cities appears to have become widespread from around the turn of the 21st century. Pioneered by The Rockefeller Foundation in 2013, the 100 *Resilient Cities* (100 RC) network, rather than defining a Resilient City per se, defines urban resilience as 'the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience' (C40 Cities n.d.: para.2).

Arundel and colleagues (2017:20) provide a useful '*Liveable Cities*' definition, being: 'safe, attractive, socially cohesive and inclusive, and environmentally sustainable; with affordable and diverse housing linked by convenient public transport, walking and cycling infrastructure to employment, education, public open space, local shops, health and community services, and leisure and cultural opportunities'.

Inclusive Cities

Coming to attention in the mid-2000s, the notion of *Age-friendly* cities (AFC) is bound up with the WHO European Healthy Cities Network's Active Ageing project. The WHO (2007: 5) suggests that 'In an age-friendly city, policies, services, settings and structures support and enable people to age actively'. They do so by acknowledging the range of capabilities and resources among older people (WHO 2007).

Habitat II 'declared that the well-being of children is the ultimate indicator of a healthy habitat, a democratic society and good governance' (UNICEF 2018: 8). UNICEF and UN-Habitat subsequently launched The *Child Friendly Cities* Initiative (CFCI) and this is defined as: 'a city, town, community or any system of local governance committed to fulfilling child rights as articulated in the Convention on the Rights of the Child'. (UNICEF 2018:10).

The *8-80 Cities* movement was initiated by Gil Penalosa who featured prominently in Bogota's late 1990s, world-renowned, urban transformation projects which demonstrated the power of investing in sustainable mobility, parks, and public spaces. The non-profit organisation 8-80 Cities is based on the notion of public spaces being accessible to people aged 8 through to 80 years to 'bring citizens together to enhance mobility and public space so that together we can create more vibrant, healthy, and equitable communities' (8-80 Cities 2020).

Nurturing and Innovative Cities

Welcoming Cities recognise that 'supporting local governments to advance communities where everyone can belong and participate in social, cultural, economic and civic life' (Welcoming Cities, 2020: para. 1) is important for residents' inclusivity. These cities are designed to be welcoming, prosperous and inclusive, especially for multi-cultural populations.

Lopes De Souza (2015: para. 12) defines a *Just City* as 'a city in which spatial resources and natural amenities will be available and accessible to all'. Just cities aim to promote urban justice and examine how design and planning contribute to the conditions of justice and injustice in cities, neighborhoods and the public realm.
In putting forward the *Ethical City*, Barrett, Horne, and Fein (2016: 5) repudiate the neoliberal city; believing that 'unequal, fossil-intensive, undemocratic cities [are] morally wrong' and that 'cities that fail to build ethical futures, social inclusion and citizen engagement will become less attractive, less sustainable and more vulnerable to the negative effects of shocks and mega-trends over time'.

Slow Cities (which must be less than 50,000 residents) commit to improving their inhabitants' quality of life by adhering to the Cittaslow International Charter (Cittaslow 2016). Mandatory requirements of interest to this project include: plans favouring alternative mobility over private transportation and for the integration of traffic with public means of transportation and pedestrian areas, and verification of infrastructures to guarantee that public places and those of public interest are accessible for people with disability along with the removal of architectural barriers and access to technologies (Cittaslow n.d.:26).

Rather than creative being a city descriptor/ typology, *Creative Cities* is a specific United Nations Educational, Scientific and Cultural Organisation (UNESCO) initiative, launched in 2004 as the UNESCO Creative Cities Network (UCCN). UCCN's mission is 'to strengthen cooperation with and among cities that have recognized creativity as a strategic factor of sustainable development as regards economic, social, cultural and environmental aspects'.

What constitutes an accessible and inclusive city?

From our review of the relevant city definitions/descriptions, we concluded that the singular focus of many can be considered deficient if their aim is to capture the inherently multifaceted dimension of inclusion and accessibility. Dual terms such as 'smart sustainable', 'healthy age-friendly', 'healthy liveable' and 'inclusive smart' have thus become common adages in the literature around accessible cities (Chelleri 2012; Höjer & Wangel 2014; Jackisch *et al.,* 2015; RMIT 2019). Accessible and inclusive are not common headline city descriptors and even less commonly paired. Notions of accessibility and inclusivity are often implicit or aspirational descriptions of the contemporary city, rather than characteristics that are evidenced via outcomes that are tangible and have been evaluated, although the goals, strategies, plans and actions underpinning city visions invariably require cities to be both accessible and inclusive.

By compiling descriptors within the academic literature that we reviewed, we found that an accessible and inclusive city could be described via 14 thematic domains and success can be

evaluated against over 100 indicators related to these. The following table lists the 14 domains and some of the corresponding relevant indicators. While the primary focus is on people with disability, indicators that speak to intersectional elements of this cohort, for example, recognition of the diverse age or cultural background, have also been included.

Table 1 **Accessible and inclusive cities: domains and indicators**

Domains of inclusion and access	**Descriptors / indicators**
1. Political and civic	• (Child) Engagement in decision making. • Co-created spaces. • Recognising and celebrating diverse volunteer contributions that may not be reflected in formal and traditional concepts of volunteering. • Favourable urban planning laws and regulations. • Presence of children in the public realm. • Assessing development applications against non-discriminatory access requirements regulated under various regulatory processes. • Ensuring that the development, implementation and review of council policies, strategies, programs and initiatives are compliant with Federal and State legislation for racial and religious non-discrimination and taking into account the principles of substantive equality. • Conducting reviews to identify and revise any policies or practices that exclude or disenfranchise migrant communities. • Government support provided for access to housing/land • Number of units granted funding annually from residential assistance funding for people with disability.
2. Spatial, environment, neighbourhood, movement networks	• Availability and accessibility of activities and services. • Public spaces and facilities are safe and accessible to all residents. • Public spaces and facilities encourage community interaction, and facilitate diverse cultural expression and celebration. • Implementation of accessibility standards into green building design and energy conservation. • Number of development applications and site plan approvals for public buildings (stores, restaurants, community buildings, health, education, culture arts and heritage, leisure, tourism etc.) which incorporate barrier free or universal design. • Number of retail stores which are accessible or incorporated some accessibility features (e.g. barrier free changing rooms, shopping assistants, lowered counters, training in serving people with developmental disabilities, etc.). • Number of local restaurant and hospitality establishments which are accessible or incorporate some accessibility features.

	• Number of local banks which are accessible or incorporate some accessibility features. • Number of local hotel, motel and other short term accommodation spaces which are accessible or incorporate some accessibility features. • Properties [that] can be entered independently in a 'dignified' manner by people using wheelchairs, walking frames and other mobility aids. • Encouraging design standards appropriate to the community context. • Plan for mixed land-use patterns that are walkable and bikeable. • Co-created spaces. • Valuing of green infrastructure. • Time spent to access services. • Residential segregation. • Housing/land availability. • Access to basic services (water, sanitation, sewerage, solid waste, transportation, basic healthcare, education, day-care, pre-school, etc.). • Percent of municipal recreation intended for the general population which provides accommodations for people with disabilities in additional to barrier free space. • Percent of need satisfied for childcare for special needs children (Percent of spaces divided by # of children with special needs) (Compared to general population).
3. Transport	• The local council/shire partners with government, business, and community stakeholders to promote affordable, safe and accessible transport services for all residents. • Accessible and safe public transportation in all parts of the city available. • Plan for multimodal transportation. • Plan for transit-oriented development. • Percent of municipal public transit buses/streetcars which are accessible. • Percent of municipal public transit routes which use accessible vehicles. • Percent of stations which incorporate accessibility and universal design. • Percent of stops which incorporate accessibility and universal design. • Number of complaints of transportation system accessibility features not working (e.g. low floor ramp not extending, automatic door opener malfunctioning, ramp not shovelled).

	• Number of municipal public transportation staff who have received disability awareness training (particular attention to staff dealing with the public, communications, system design and planning). • A regulation or an action plan has been published and is being implemented on public transportation. • Persons with disabilities can access public transportation vehicles. The city provides necessary accessible infrastructure including bus stops. • Advising stakeholders and transport services to identify accessible and affordable transportation services.
4. Economic participation and employment	• Equity and reduced deprivation. • Employs a workforce that is inclusive and diverse. • Identifying and addressing barriers and unconscious bias, which may limit diversity and inclusion in employment practices. • Highlighting the value of a diverse workforce and encouraging applicants from diverse backgrounds to apply. • Exploring innovative ways of promoting job opportunities to reach a broad and diverse range of potential applicants. • Employers are providing facilities, equipment, flexible schedules or other accommodations for people with disabilities. • Number of local funders and decision makers who have procurement and request for proposal policies which encourage inclusive employment in the private and voluntary sectors (e.g. requirement that successful bidders of a certain size have an employment equity policy in place). • Advocating for and supporting programs and initiatives that connect diverse migrant communities to existing support services including education, health, and settlement services. • Programs to assist migrants and homeless population.
5. Education	• Inclusive education on all education levels is available. • Access to public schools is free and no hidden costs. • Gender inclusion in education. • Accessible education facilities. • Inclusion of urban poor in education. • Educational achievement of people with disability. • Proportion of people with disability in mainstream schools. • Number of children with disability in state funded Kindergarten

	• Proportion of people with disability with post-school qualifications.
6. Housing	• The local council/shire partners with government, business and community stakeholders to promote affordable, safe and accessible housing for all residents. • Access to safe and affordable land, housing and services. • Provide a range of housing types. • Number and percent of rental housing units which are accessible, modified or incorporate universal design. • Number and percent of accessible/ modified social housing units. • Number and percentage of units in new development applications/site plan approvals in which accessibility was considered (i.e. assessed) in the approval process. • Number of newly constructed accessible or modified units (including universal design), and percent of the total new construction. • Number and percent of newly constructed accessible or modified units (including universal design) which are subsidized or are affordable (according to the municipality's definition of 'affordable'). • Number of development applications and site plan approvals for housing which incorporate barrier free design units. • Number of development applications and site plan approvals for housing which incorporate 'visitability' (i.e. barrier free design into and throughout the building). • Ownership status of housing/land. • Net increase of supported/ supportive housing units, through construction or through new provision of services in existing housing.
7. Social	• Availability and accessibility of activities and services. • Providing accessible information on, or referral to, community support services and programs. • Enabling the use of public spaces and facilities by people who represent the diversity of the community. • Number of people with disabilities refused a service in the community because they have a service animal with them.
8. Health	• The local council/shire partners with government, business and community stakeholders to promote affordable, safe and accessible, health services for all residents.

	• Provide accessible and quality public services, facilities, and health care. • Number of local doctors who accommodate people with disabilities (e.g. by booking sign language interpreters).
9. Arts and Culture	• Facilitates diverse cultural expression through a range of activities and observances. • Celebrating community festivals, cultural events, and religious observances that represent diversity and encourage dialogue. • Encouraging programs and initiatives that bring together diverse cultures and support opportunities for cultural expression and intercultural understanding. • Have the opportunity to express themselves through art and music in public spaces. • Have access to cultural activities, and public and private cultural centres. • Number of cultural and heritage facilities which have barrier free design. • Advocating for and supporting programs and initiatives that connect diverse migrant communities to existing support services including education, health, and settlement services.
10. Recreation, Sport, Leisure and Tourism	• Access to inclusive sport facilities and inclusive sport associations. • Access to public recreational areas. • Use of public services related to art, sport and recreation. • Percent of municipal recreation intended for the general population which provides accommodations for people with disabilities in addition to barrier free space. • Physical activity levels. • Intergenerational activities.
11. Justice and Law	• The local council/shire partners with government, business and community stakeholders to promote affordable, safe and accessible justice services for all residents. • Access to legal help in case of legal issues.
12. Safety and security	• Safety: An environment that minimizes physical and emotional vulnerability and threats to wellbeing. • Security: Social and spatial conditions that support the freedom from danger, exclusion, and harm. • Access to safe housing. • Percent of people with disabilities who report that they 'feel safe' in their home and their neighbourhood. • Road traffic accidents.

	• (Child) Pedestrian casualties.
13. Freedom of expression and communication	• Facilitates language access. • Supporting initiatives that empower individuals to prevent, and respond effectively to, racism and discrimination.
14. Processes of inclusion and engagement	• Promote a welcoming culture through advocacy and communication activities across various platforms. • Messaging that communicates the community-wide benefit of cultural diversity and inclusion. • Supporting and promoting events and activities representative of the diversity of the local community. • Identifying and delivering professional development … that increases capacity and skills to engage with and respond appropriately and effectively to the needs of a culturally diverse community. • Supporting and promoting activities and initiatives that nurture connections between diverse people. • Strategies that address barriers to access and inclusion and the additional challenges of inter-sectionality in policy and practice, across a range of areas. • Consistently uses positive messaging to develop an inclusive narrative for the city which informs and drives practice. • Consulting with culturally diverse groups to explore how council spaces and facilities may be more accessible, inclusive, and responsive to community needs and aspirations. • Engaging stakeholders at all stages of the planning process. • Seeking diverse participation in the plan development process.

After our review of the 14 relevant domains and indicators, we then collapsed these into five composite domains that an accessible and inclusive city would include: 1. Connectivity (spatial & digital); 2. Economic participation, employment and education; 3. Housing; 4. Community and social infrastructure; and 5. Processes of engagement and inclusion. Drawing on these domains and the definitions/descriptors previously reviewed, we developed a working definition of an accessible and inclusive city:

> An accessible and inclusive city is a clever and creative city that is designed to provide equal opportunities for connectivity (spatial and digital), education, economic participation, employment, housing, and community and social infrastructure that meet the needs and aspirations of all.

Global exemplars

Based on the documents reviewed, access and inclusion interventions can be loosely

categorised as technological, inclusion processes, rating systems, built environment works programs, grants programs, awareness raising and support, and legislation and policy strengthening. Worldwide, we found a large array of examples exist such as, Bunbury (Australia), New York (USA), Toronto (Canada) and Évreux (France). Four examples are presented here that usefully explicate both the definitional domains presented earlier, as well as a breadth of intervention types.

Breda, the Netherlands

The city of Breda in the Netherlands has a population of 185,000 people and was the 2019 winner of the Access City Award due to the work of its monitoring agency and community-based foundation called Breda Gelijk, which translates from Dutch as 'Breda Equal'. The organisation is divided into two working groups: Accessibility and Information. Breda Gelijk carried out a three-year audit beginning in 2016, evaluating over 800 shops and bars in the city for their level of accessibility. This process led to a series of upgrades to the built environment, but also raised awareness in the retail and commercial sector. In focusing on accessibility, Breda Gelijk provides advice (from access experts and people with lived experience of disability) on outdoor areas and public buildings. Advice is often sought by institutions or companies, but Breda Gelijk also takes a proactive, autonomous approach to access and independently evaluates to show how design and construction can be made more accessible. Work is often carried out on transport infrastructure, providing advice and recommendations on how to make public transport, and taxis, more accessible. The organisation is staffed predominantly by experienced expert volunteers, who draw on their own lived experience to instruct upgrades for people with disability.

A key component of Breda Gelijk is its Accessibility Fund, which provides an incentive for owners of businesses and buildings to increase their accessibility for people with disability. It is intended for carrying out modifications to non-municipal buildings with a public function and the immediate environment. To be eligible for this, operators can have an extensive accessibility check or inspection carried out. Based on this review, architectural advice can be given for the necessary adjustments and an application can be submitted to fund upgrades. Breda Gelijk places a very big emphasis on providing information and regularly visits primary schools and shares stories with students about personal lived experience of disability. Students are offered simulations of the experience of disability in the built environment, such as via using a wheelchair or guide stick. Courses are given to people who work with and regularly encounter people with disability, and training is offered to politicians and officials of the municipality to give an embodied experience of what it is like to have a disability, to improve policy. Breda Gelijk also organises an annual sporting event where children with and without disabilities from participating schools exercise together and raise awareness.

Breda for Everyone is an organisation similar to a stakeholder collective that brings together local city representatives (local government) with members of the tourism sector, educational institutions and community stakeholder groups that represent people with disability. They have created the Living Without Barriers initiative, which has implemented the following changes to the built environment: all buses and bus stops are accessible; all buses and bus stops have digital information and smartphone navigation apps; drivers are provided with step-free access and disability-awareness training; new railway station is fully accessible; accessible minibuses and electric wheelchairs are provided; additional focus on upgrades to houses; flattened walkways, including redesign of cobbled pathways; ramps at every threshold; and digital wayfinding across the city. Breda for Everyone is also implementing its aim to become a leader in accessible tourism and has created a website that includes reliable information on access

to tourism, sports, arts facilities and events. There are examples of accessibility hotels such as Hotel Merlinde, which provides 24/7 care, wellness and physiotherapy services, and accessible rooms with lowered wardrobes and mirrors, wheel-in showers and seated baths. The city is a signatory to the Special Olympics pledge and hosts an annual Accessibility Week in October to highlight actions to improve accessibility. Each December, an Awareness Day awards a prize to the best accessibility initiative.

Gdynia, Poland

Gdynia in Poland is a port city with a population of just under 250,000 people and, in 2021, was awarded third place in the Access City Awards for its focus on and commitment to people with intellectual disability. Through pioneering social policy developed in the 1990s, Gdynia has progressively addressed a historical neglect of people with intellectual disability. This was most evident in 2013 when the city developed accessibility standards based upon Universal Design principles for people with disability and aged populations. In 2014, an accessibility expert role was created in the city to oversee all implementation of design standards across upgrades and new construction projects. Gdynia provides audio commentary for blind spectators at sporting events, while the theatre provides sign language and has facilities to help persons with hearing loss. Selected films at the multiplex cinema have an audio description, while all outdoor events and festivals are accessible. All the city's methods of public transport (buses and trolley buses) are accessible and bus stops include tactile guidance and colour contrast, as well as wheelchair access. The railway station has also been modernised to meet accessibility standards. In addition, a door-to-door service is available for those unable to use public transport. The introduction of the Barrier-Free Gdynia Act 2000, legislated accessibility in the built environment but also ensured that people with disability are equal partners in relevant planning processes and social policy. Through the Gdynia for All project, people with disability work with city officials to evaluate the accessibility of public spaces across all districts of the city. In addition to this, a high-profile advocacy role, with authority, was created called the Mayor's Plenipotentiary for Persons with Disabilities, which serves as an office within the local government organisation.

Kathmandu, Nepal

A large number of people with disability live in the Jorpati area of Kathmandu and in 2011, the local community collaborated with Khagendra New Life Center and Spinal Injury Rehabilitation Center to implement the Khagendra Accessible Road project (National Federation of the Disabled – Nepal 2022). The community raised funds and designed a100-meter stretch of road that was considered disability-friendly and included accessible sidewalks and other facilities. This project was predicted to benefit more than five thousand people with disabilities in the Kathmandu area.

Bunbury and Geelong, Australia

Research on accessibility in the built environment has been conceived and conducted independently with remarkably similar aims in two regional cities in Australia: Bunbury and Geelong. In Western Australia in 2014, The City of Bunbury's aspiration was to become the *Most Accessible Regional City in Australia* (MARCIA); a goal underpinned by a desire to understand how disability access and inclusion in the city compared to other similar-sized regional cities in Australia (Johnson, 2019). Notably, Geelong, in Victoria, was identified in the early stages of the Bunbury project as appropriate for comparison because both cities had similar geographical relationships with their state capitals: Bunbury being approximately 175 kilometres south of Perth, and Geelong being around 75 kilometres south-west of Melbourne. The need for benchmarking in Bunbury was due to a lack indicators by which a local community

could make comparative self-assessment regarding disability access and inclusion. Five years later, the *Accessible & Inclusive Geelong Feasibility Study* sought to ascertain the feasibility of making Geelong 'a world-class accessible and inclusive city aligned with global benchmarks' (Tucker, Kelly, Johnson, de Jong, & Watchorn, 2021). Like Bunbury's aim, this was a high aspiration, benchmark-directed goal, which remains difficult to measure progress against.

In Bunbury, the study used Participatory Action Research to investigate the facilitators of disability access in local government. The methodology sought to empower those most affected by the research problem by facilitating their involvement as co-researchers, regardless of ability, expertise or qualifications (Johnson, 2019). Similarly in Geelong, inclusive research provided a conceptual, ethical and methodological starting point. This necessitated methods that included people with disability throughout the research to ensure that the issues examined were those identified by people with disability and that the outcomes and findings would be owned by and more easily translated to inform social change by people with disability themselves. Training and technical support for inclusive design, and co-design with people with disabilities were identified as key tools that might facilitate change towards improving the inclusive qualities of design outcomes in Bunbury. In Geelong, the study informed a collective plan of action, supported by a wide range of community stakeholders, to address the causes of and obstacles to accessibility and inclusion in their city. This plan included interventions connecting urban planning policy to education, public transport, housing provision, co-design of public buildings, community infrastructure and inclusive employment practices.

Discussion

The Disability Inclusive and Accessible Urban Development Network (DIAUDN 2017: 6–7) maintains that 'accessibility is the key to inclusive cities'. Internationally, there is an abundance of legislative items and policy directives that aim to increase accessibility, including in the built environment. Accessibility and inclusion are consistently called for in legislation and policy, and in regular public-facing pronouncements (Degener 2016). Despite strong inclusive city policy internationally (e.g. the Sustainable Development Goals and the New Urban Agenda), access and inclusion specifically for people with disability is not well developed, with the Global Compact for Inclusive and Accessible Cities being the exception. Built environment accessibility legislation and policy usually entail broad performance statements and are siloed within standalone documents rather than linked to the relevant disability legislation and policy. This continued disconnect fails to recognise that the accessibility and inclusiveness of the built environment underpins access and inclusion in life activities within cities more generally.

The ongoing lack of meaningful participation of people with disability in this arena is well-documented (Imrie 2015; Wiman and Sandhu 2004). Moreover, there appears to be a continuing lack of action towards changing the accessible built environment legislative status quo concerning buildings and the public realm. For example, recent changes to the National Construction Code in Australia are adopting mandatory accessibility standards but several states have reportedly elected to opt out (Convery 2021). However, some examples exist such as the United Kingdom's Part M Building Regulations that now include mandated requirements for accessible housing (British Government 2016). . We argue that if building practice is to move towards the type of approach described by the elements of an accessible and inclusive city, as described here, it is incumbent upon those responsible for the built environment to directly engage with people with disability and to increase their knowledge about solutions to barriers that disable (Jackson 2018; Tasioulas 2017; UNDP 2012; UNFPA 2014). Such change requires education systems to be in place to improve disability design knowledge across the construction industry (Larkin *et al.*, 2015). Furthermore, social inclusion strategies and the benefits for people with disability are well promoted, particularly from a policy perspective

(Gooding et al. 2013). However, lack of enforcement, inconsistency or misinterpretation of existing legislation continue to compound social inclusion issues globally. In almost all regions of the world, many people with disability struggle to navigate and negotiate their everyday environments (Jackson 2018).

From the global review of exemplars and definitions, domains and indicators, we have posited a new definition of an inclusive and accessible city, underpinned by a set of domains or core ingredients:

1. Connectivity (spatial & digital);
2. Economic participation, employment and education;
3. Housing;
4. Community and social infrastructure; and
5. Processes of engagement and inclusion.

Identifying the domains in which change is required and accessibility and inclusion are to be attained, focuses attention on the whole of life impact of cities, and aligns with the requirements of the CRPD. This set of core domains provides a clear focus for the future. Alongside these domains, from the review of literature, we have identified several areas of targeted action to inform future development of cities. Change will require multi-entity, multisector collaborations with influential partners addressing all prioritised domains. Change actions need to be underpinned by the need to:

- include those with lived experience of disability in the planning and design of environments and services;
- work across the linked domains of the built form, services, attitudes and economic participation;
- revise construction, design, planning and architectural education to foreground the needs and requirements of those with disability; and
- revise existing planning and building regulations at state and local levels to better centre on the needs of those with disability.

Despite the discernments, awareness and deep understandings gained through the many insights revealed through this research, limitations must be acknowledged pertaining to the study scope. Most importantly, while an international perspective of accessibility and inclusivity at the scale of cities is examined, the examples cited (reflecting the body of evidence) are restricted to developed countries. As Banda-Chalwe and colleagues have drawn attention to when exploring accessibility in a Zambia (Banda-Chalwe, Nitz, & de Jonge, 2012), accessibility concepts, which have been developed in ‘western’ or high income countries, must be presented with caution and acknowledge geographical, social–cultural and economic differences. We suggest there is an opportunity for future research to inform approaches for low- and middle-income countries.

Conclusion

In conclusion, measuring change over time is vital in examining the extent of barriers to accessibility and inclusion and the impact of initiatives to overcome these barriers. Yet only limited comparative analyses have been conducted on the success of measures to improve accessibility and inclusion in different cities and countries internationally. A main obstacle is the lack of agreement of the factors that comprise accessibility and inclusion in the contexts of cities and the differences in reporting that this inevitably leads to. Our paper has therefore reviewed relevant global benchmarks of accessible and inclusive cities to provide a working definition of an accessible and inclusive city and has identified some global exemplars. We hope our discussion about accessible and inclusive cities highlights ways to enhance the lived

experiences of people with disability – people whose lives and opportunities to 'belong' in the city are impacted by complex intertwined social, attitudinal and physical barriers.

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