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Article

Comparative Analysis of 20-Minute Neighbourhood Policies and Practices in Melbourne and Scotland

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Abstract
Twenty-minute neighbourhoods highlight the importance of well-connected and mixed-used neighbourhoods and communities with proximate access to employment, essential services, public transport, and open spaces. Shorter distances together with re-prioritised public spaces encourage more active transport choices, resulting in public health benefits and reduced environmental pollution. Higher liveability brought about by mixed-use developments enables people to have equitable access to local facilities, amenities, and employment opportunities, promoting vibrancy, social cohesion, and intergenerational connections. The attributes of 20-minute neighbourhoods also combine to create places, that are acknowledged as friendly for all ages, address changing needs across the life course, and provide better support for the ageing population. Furthermore, there are indications that 20-minute neighbourhoods may be more resilient against many of the negative impacts of stringent public health protocols such as those implemented in periods of lockdown during the Covid-19 pandemic. In this article, we evaluate and compare planning policies and practices aimed at establishing 20-minute neighbourhoods in Melbourne (Australia) and Scotland (the UK). Using case studies, we discuss similarities and differences involved in using place-based approaches of 20-minute neighbourhoods to address 21st-century challenges in key areas of health and wellbeing, equity, environmental sustainability, and community resilience.

Keywords
20-minute neighbourhood; accessibility; active transport; age-friendly; Australia; climate change; Covid-19; liveability; Scotland; walkability

Issue
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1. Background

In the last decade, there has been a renewed interest in walkable compact places. Similar concepts emerged around the globe, from "20-minute neighbourhoods" in Portland, Oregon in the US, Melbourne in Australia, and Scotland in the UK (City of Portland, 2012; Department of Environment, Land, Water and Planning [DELWP], 2019a; Royal Town Planning Institute, 2021), "15-minute neighbourhoods" in Ottawa, Canada (City of Ottawa, 2021) to "20-minute towns" in Singapore (Land Transport Authority, 2019), and a "15-minute city" in Paris (Moreno et al., 2021). Despite different terminologies, the aim is to provide well-connected and mixed-used neighbourhoods and communities with proximate access to employment, essential services, public transport, and open spaces. This idea is not new to urban planning, with towns developed before the invention of motor vehicles tending to have good walkability. The idea of having mixed-use places with good access to parklands was reit-

erated by Ebenezer Howard in the garden city movement in 1898 (Howard, 1898/2006), whilst the importance of "neighbourhood units" was also highlighted by Clarence Perry in 1929 (Perry, 1929/1998).

The prevalence of modernist urban planning over the last century has led to car dependent cities divided into segregated mono-functional zones. This movement was heavily influenced by the 1929 *Plan Voisin*, by the Swiss-French architect, Le Corbusier (Charles-Édouard Jeanneret-Gris) who proposed to demolish a large part of central Paris and replace it with a group of office skyscrapers for urban renewal. The city was to be divided into residential, commercial, industrial, and cultural areas. Wide motorways were to be built to encourage the use of vehicles as a means of transportation (Le Corbusier, 1929). Le Corbusier's radical urban planning ideas were respected and implemented in cities all over the world, especially in the decades following the Second World War.

The modernist zoning demarcation and tower typology were criticised by Jane Jacobs in her seminal work, *The Death and Life of Great American Cities*. Jacobs (1961) advocated a low-rise-high-density approach and stressed the importance of having dense concentration of people of different ages, abilities, and ethnicities for land mix diversity and flourishing street life. Similarly, Jan Gehl, in his book, *Life Between Buildings*, criticised car dependency resulting in the loss of pedestrian-oriented environments and encouraged social life in public spaces and mixed land-use in urban areas leading to the liveliness of communities (Gehl, 2011).

2. Literature Review

After almost a century of rapid car-dependent urbanisation, policy makers are attempting to address the deficiencies of modernist urban planning. The City of Portland in the US promoted the framework of a 20-minute neighbourhood in 2012 for a prosperous, healthy, and equitable Portland. According to the *Portland Plan*, a 20-minute neighbourhood is defined as "a place with convenient, safe, and pedestrian-oriented access to the places people need to go and the services people use nearly every day: transit, shopping, healthy food, school, parks, and social activities" (City of Portland, 2012, p. 4). Walkable neighbourhoods and vibrant neighbourhoods are emphasised with respect to health and wellbeing, equity, environmental sustainability, and community resilience.

The benefits of walkability to human health and wellbeing are widely recognised. High walkability neighbourhoods have reduced numbers of overweight and obese residents (Sallis et al., 2009). They spend less time driving and are more likely to meet or exceed health recommendations for moderate-to-vigorous physical activity (Arvidsson et al., 2012; Cerin et al., 2014). The walkability of a neighbourhood depends on several factors, including land-use mix, residential density, street connectivity, and pedestrian safety (Dovey & Pafka, 2020). A variety of walkable destinations motivate people to go outdoors at different times of the day (Gauvin et al., 2008; Jamei et al., 2021). Nearby greenery spaces encourage people to engage in walking and other relaxation activities, contributing to reduced stress and increased physical fitness (Aziz et al., 2021; Song et al., 2014). The proximity to leisure centres and facilities has a close relationship with increased physical activity practices (Hobbs et al., 2021). The availability of well-connected bike tracks facilitates increased levels of cycling, which is positively associated with public health (Teschke et al., 2017; Van Holle et al., 2014).

The idea of enabling people to live locally with ease of access to essential services is considered fundamental to achieve equity (Calafiore et al., 2022). The increased use of active transport (walking and cycling) and the reduced need of long commutes for work, education, recreation, shopping, and health services are crucial in an equitable environment. There has been rising attention to transport equity and justice over the past decades (Martens, 2017; Pereira et al., 2017). Where established neighbourhoods have developed high levels of walkability, this can trigger gentrification (Markley, 2018). However, the increased prices and rents may not be affordable to people with low socio-economic status (Graells-Garrido et al., 2021). Special attention is required to be paid to vulnerable groups, such as disabled and older adults, with an aim to provide an inclusive, age-friendly built environment to enhance the quality of life of people regardless of their age or ability (Almeida, 2016; Chau & Jamei, 2021).

Mixed-use walkable neighbourhoods are beneficial for reducing air pollution but may be less successful were this is only implemented within isolated neighbourhoods. Considering that motor vehicle exhaust contributes significantly to $PM_{2.5}$ air pollution, any local reductions in motor vehicle emissions could help to reduce or prevent numerous poor health outcomes for people in the community (Chaney et al., 2017). The proximity of localised amenities and services is therefore a key factor in reducing the use of private motor vehicles and reducing the environmental pollution that they cause. However, neighbourhoods which possess many attributes of the 20-minute neighbourhood may, still, experience higher concentrations of air and noise pollution due to factors such as higher volumes of vehicular through-transit or visitors from a wider car-dependent geographic area (Higgins et al., 2019). This is one of the potential pitfalls of planning individual 20-minute neighbourhoods in isolation from each other. This is an "emblematic case of socio-ecological trade-off between benefits and costs of agglomerations" (Da Schio et al., 2019, p. 180). However, with proper widely implemented policies and well-connected networks for encouraging walking and cycling as non-motorised modes of mobility, it is possible to achieve high accessibility with lower levels of pollution. The promotion of active transport also mitigates

greenhouse gas emissions and urban heat island effects against climate change and contributes to public health co-benefits (Maizlish et al., 2017).

The emergency of the pandemic has exposed the vulnerability of the city and highlighted the resilience of walkable neighbourhoods (Moreno et al., 2021). Under lockdown measures and travel restrictions, there were fewer vehicles on roads, reduced use of public transport, more teleworking, and almost no tourists (Nieuwenhuijsen et al., 2022). The experience of Covid-19 restrictions in cities worldwide varied significantly, but broadly correlated with the extent to which residents of a neighbourhood could avail of local access to day to day goods and services. Lockdowns showed the importance of local greenery, open spaces, cycling, and walking infrastructure as a means of enabling residents to safely engage in physical activity, and maintain mental health, within the bounds of movement limitations (Kraus & Koch, 2021). Widespread lessons from this period stress the need for urban planners to ensure that high quality public realm is prioritised to restore and protect the right of pedestrians in streets, and to promote sustainable mobility of walking and cycling for a liveable and healthy community after the pandemic (Rajabifard et al., 2021; Salih & Hussein, 2021).

This article is based on a desk-top review of published literature, including comparative analyses of policies and practices from the 20-minute neighbourhood programs in Melbourne and Scotland. The selection of Melbourne and Scotland for comparative analysis was based on the geographical backgrounds of co-authors and the associated ease of obtaining first-hand accounts of case studies. Considering that the concept of 20-minute neighbourhoods has been increasingly adopted worldwide (Gower & Grodach, 2022; Thornton et al., 2022), the findings in this article are useful for the implementation of mixed-use compact places and neighbourhoods in other cities and countries.

3. Case Studies

3.1. 20-Minute Neighbourhoods in Melbourne, Australia

In Australia, there is no national policy on 20-minute neighbourhoods, but policies which employ a 20-minute neighbourhood basis can be found in different states. Examples include the *30-Year Plan for Greater Adelaide* (Government of South Australia, 2017) and the mandatory *Planning (Walkable Neighbourhoods) Amendments Regulation 2020* in Queensland (Queensland Treasury, 2020). In Melbourne, the principle of 20-minute neighbourhoods was first mentioned in *Plan Melbourne* published by the Department of Transport, Planning and Local Infrastructure in 2014 after the 2012 *Portland Plan*. Compared with the pedestrian-oriented *Portland Plan*, *Plan Melbourne* originally aimed to provide safe and convenient access to goods and services within 20 minutes of where people live, travelling by foot, bicycle, or public transport (Department of Transport, Planning and Local Infrastructure, 2014). Such understanding was refined in *Plan Melbourne Refresh: Discussion Paper* published in 2015 with a particular emphasis on meeting "daily (non-work) needs locally, primarily within a 20-minute walk" (Victoria State Government, 2015, p. 18). The metropolitan planning strategy, *Plan Melbourne 2017–2050* published by the DELWP in 2017 returned to the original aim in 2014 by meeting most of people's "everyday needs within a 20-minute walk, cycle or local public transport trip of home" (DELWP, 2017, p. 98).The discrepancy of the definition of 20-minute neighbourhoods has been clarified by the introduction of "an 800 m catchment of social infrastructure and destinations" as the "spatial accessibility measure of a walkable neighbourhood" (DELWP, 2019a, p. 25). Although cycling and local transport provide alternative active travel options to walking, they do not extend neighbourhoods because the "20-minute journey represents an 800 m walk from home to a destination and back again" (DELWP, 2019a, p. 25).

According to the Global Liveability Index, Melbourne was ranked as the most liveable location of the 140 cities surveyed worldwide for seven consecutive years, from 2011 to 2017 (The Economist Intelligence Unit, 2017). However, the population of the Greater Melbourne is projected to increase by four million people from five million in 2018 to nine million in 2056 (DELWP, 2019e). This creates pressure on local infrastructure and poses a challenge for maintaining the city's liveability and sustainable development. Urban liveability is enhanced by walkable 20-minute neighbourhoods with mixed land-uses, effective residential density, street connectivity, and safety (Arundel et al., 2017).

Melbourne has been criticised as a monocentric city with a high concentration of employment, key facilities, and services in the central business district (Gu & Saberi, 2019). The radial public transport network from the city centre with few connections on orbital routes have negative impacts, including longer travel distance and commuting time, limited access to services, and increased traffic congestion (City of Melbourne, 2019). According to International Energy Agency (2019), Australia is also one of the countries with high greenhouse gas emissions per capita in the developed world. Facing the impacts of climate change, the Victoria State Government is committed to transition pathways to achieve net-zero emissions by 2050 (DELWP, 2021e). If this results in 20-minute neighbourhoods across Melbourne, daily greenhouse gas emissions will be lowered by more than 370,000 tonnes (DELWP, 2017).

During the Covid-19 pandemic, Melbourne experienced the longest lockdown in the world (Miller, 2021). Strict health protocols and severe stay-at-home rules were enforced affecting people's daily life. Most Melbourne residents were required to work from home and access necessary services within a 5 km radius of their home. Lockdown measures highlighted the benefits

of having core facilities and amenities within walking distance to enable residents to shop, work, and exercise locally for better quality of life and greater convenience, which demonstrate the benefits of resilient communities.

Three pilot programs in the metropolitan area of Melbourne were launched in 2018 to test the practical delivery of 20-minute neighbourhoods. These pilot programs were in three suburbs: Croydon South in the east, Sunshine West in the west, and Strathmore to the north of the central business district. Since each neighbourhood varies in demographic profile and character, a place-based approach has been adopted to address different contexts and needs at a local level. On-site walkability assessments of these three pilot sites were conducted by Victoria Walks to identify pedestrian infrastructure issues, and from this safer road design for older pedestrians has been taken into consideration when implementing the pilot programs (Victoria Walks, 2016). Through community engagement in collaboration with local councils, residents' ideas were collected for better understanding of their concerns to formulate appropriate strategies. Activation plans for neighbourhood activity centres in the three pilot programs were then developed to incorporate locally led initiatives. Neighbourhood activity centres with local high streets, shops, cafes, community services, and public spaces are an integral part of a community life. Technical assessments were undertaken on walkability, housing density, land use, and transport network towards walkable, accessible, and viable neighbourhoods for people of different ages, abilities, and backgrounds (DELWP, 2019a). Considering that local shops, cafes, and small businesses have been hit hardest by the pandemic, there are some initiatives to help traders in walkable locations recover from impacts of Covid-19 and support economic recovery of the neighbourhoods (DELWP, 2021a).

The neighbourhood activity centre of Croydon South is the Eastfield shops, located at the intersection of two major arterial roads and predominately vehicle-based with local cafes and services. The major public space is a large open car park with impermeable asphalt paving. The activation plan is to convert the town centre to become more accessible and walkable by reducing vehicle speed, adding signalised pedestrian crossings, and relocating bus stops to be closer to new signalised crossings. An open car park is to be transformed into a green public space with shelters, picnic tables, and fitness and children play equipment, becoming flexible enough for local community events. Some roadside parking lots will be removed for widening footpaths, planting trees, and allowing traders to extend their businesses onto the street. Connectivity to adjacent parks and a recreation reserve will also be upgraded with improved bike tracks and widened shared paths for pedestrians and cyclists to encourage active transport (DELWP, 2019b, 2021b).

Glengala Village in Sunshine West is a local business precinct with small retail and hospitality outlets. The activation plan aims to encourage more people to walk and cycle in the local neighbourhood with inviting streetscapes and community co-working spaces. Existing angled parking spaces are to be removed and some streets will be converted for one-way traffic to provide wider footpaths, additional bike parking and more landscaping. Other upgrades include outdoor seating and dining, extra space for street trading, raised pedestrian crossings, and traffic calming road art on the main street (DELWP, 2019d, 2021d).

Woodland Street is the main thoroughfare in front of Strathmore Station. The activation plan aims to revitalise the Strathmore Station precinct to improve accessibility and liveliness by having safer station connectivity, prioritising walking, promoting cycling, and encouraging retail variety. Existing residential planning controls will be reviewed to achieve higher density and greater housing diversity. A green boulevard along Woodland Street will be created through tree planting and greening initiatives (DELWP, 2019c, 2021c).

The three pilot programs in Melbourne are mainly focused on neighbourhood activity centres of each of the three suburbs. Besides infrastructure opportunities identified for each neighbourhood, there were temporary activation initiatives in engagement with residents, such as a community workshop, street party, movie night, shop local campaign, and pop-up park. A monitoring process is in place for continuous evaluation and there is a long-term commitment from the state government for implementing 20-minute neighbourhoods according to the metropolitan planning strategy in Melbourne including the availability of public funding to support localised upgrades of road safety, side street enhancements, cycle paths, public transport, and green spaces.

3.2. 20-Minute Neighbourhoods in Scotland

The Scottish Government priority to "make Scotland more equal and socially just" is underpinned by the *National Performance Framework*, which sets out national wellbeing outcomes such as to "live in communities that are inclusive, empowered, resilient and safe" (Scottish Government, 2021a, p. 1). In 2019, the Scottish Government adopted Place Principles, a formal commitment to support a place-based approach to national development and service provision.

Accordingly, the 20-minute neighbourhood concept is a key policy directive, being embedded into several Scottish Government policy commitments, with aligned strategies and frameworks. Most notably, future decisions on development across the country are expected to be underpinned by place-based planning principles which have been embedded into the *National Planning Framework Four*. The implementation of these principles is supported by a place-based investment programme of £325 million of capital investment to support grass roots/local co-development to be undertaken through private and third sector organisations (Scottish Government, 2022).

Scotland 2045: Our Fourth National Planning Framework (NPF4) published by the Scottish Government defines a 20-minute neighbourhood as being "designed in such a way that all people can meet most of their daily needs within a reasonable walk, wheel or cycle (within approx. 800 m) of their home" (Scottish Government, 2021b, p. 73). Upon adoption, the NPF4 will see all regional spatial strategies, local development plans, and local place plans in Scotland adopt the principle of 20-minute neighbourhoods. Free public transport is provided for young persons under 22, which is likely to contribute to a generational shift in transport habits and possibly car ownership (Transport Scotland, 2022). Consideration is also given to safe walking, wheeling, and cycling networks, affordable housing, local amenities, commerce, integration of blue/green infrastructure, employment opportunities, and services. Housing diversity and the ability to "age in place" are also key considerations of this policy and subsequently root the 20-minute neighbourhood concept as a mechanism to support ageing populations to remain active within their community (Scottish Government, 2021b). Urban planning recommendations to support healthy ageing have existed for several years but recognition and integration to national policy is novel (Mitchell et al., 2004).

The Granton Waterfront Development is 5 km north of Edinburgh City Centre on the shores of the Firth of Forth. The site comprises of 200 ha of open space and parkland and 50 ha of contaminated, derelict, industrial land. The development builds on the site's ecological and cultural significance as a post-industrial area and an area of multiple deprivation. The proposal is for a new "Coastal Quarter" of Edinburgh with 20,000 m^2 of mixed-use spaces for leisure, work, learning, enterprise, health, retail, and approximately 3,000 new, affordable, homes of mixed size, typology, and tenure. A new school, cultural facilities, commerce, and parks are integrated, connected via "human scaled" streets and avenues. Public transport stops with direct and frequent services are distributed to ensure provision within a five-minute walk. Public green spaces are provided within a two-minute walk of housing, of which 75% provision will be car free. Existing infrastructure is enhanced with green-blue connections. A 10 ha flood resilient coastal park will be formed to the coastal northern edge of the development which will give the water's edge back to the community (as opposed to maximising land values for private housing). Active travel routes reconnect the waterfront back to the city, the neighbourhood, and existing communities. At the outset of the project, a sustainability strategy was developed based on seven "principles" which combine the physical, spatial, social, and cultural aspects of placemaking (Scottish Design Awards, 2020). These are rooted in connectivity/walkability, blue-green infrastructure and a low carbon approach with safe, active streets and shared parks/landscapes that enhance biodiversity and promote active travel and increase health, and well-being opportunities for all, important tenets of the 20-minute neighbourhood concept.

Stewarton is a rural town in East Ayrshire and has recently experienced significant rise in residential demand and development. Consequently, this growth has contributed to infrastructural capacity issues relating to local health, social care, and education services, as well as pressures with roads, digital connectivity, water, and sewerage, to the extent that the character of community is under threat. To address this, East Ayrshire Council along with the Scottish Government Digital Planning Team and Architecture and Design Scotland translated and shared data and mapping, to understand the location and distance of existing services, facilities, and infrastructure. Furthermore, they undertook collaborative cross departmental and agency workshops to raise awareness of what is required for Stewarton to perform as a 20-minute neighbourhood, recommending a wide range of interlinked actions from new cycle lanes to public realm improvements, in addition to addressing education and health facilities. This collaborative whole-place method is considered a sustainable and infrastructure-first approach to development, aligned with expectations noted by the local community and the policies of NPF4.

The two Scottish case studies vary in scale and response to their specific socio-economic, health, and placemaking needs but are unified in their prioritisation of health, wellbeing, and local connectivity. In both case studies, the Scottish Government's place-based directive shifts the balance of urban planning policies which have dominated for the last century to a novel focus on person-centred, relational urban design.

4. Results and Discussion

The comparative analysis has identified similarities and differences of 20-minute neighbourhood policies and practices in Melbourne and Scotland. Findings are summarised in Table 1 below.

In terms of similarities, both Melbourne and Scotland have integrated the 20-minute neighbourhood concepts in their long-term planning objectives, setting targets for 2050. Scotland has the national policy, *Scotland 2045: Our Fourth National Planning Framework*. Despite the lack of a national policy in Australia on 20-minute neighbourhoods, different states have similar policies. In Melbourne, *Plan Melbourne 2017–2050* is the metropolitan planning strategy underpinned by the key principle of living locally.

Regarding the definition of 20-minute neighbourhoods, there has been an evolution in Melbourne: from 20-minute travel by foot, bicycle, or public transport in 2014 to primarily within a 20-minute walk in 2015. Although cycling and public transport were included again in 2017, the definition has been further clarified in 2019 to an 800 m catchment of social infrastructure and destinations involving an 800 m walk from home to a destination and back again. Compared with the

Table 1. Comparison of 20-minute neighbourhoods in Melbourne and Scotland.

	Melbourne	Scotland
Long-term planning policy	*Plan Melbourne 2017–2050*—The 20-minute neighbourhood is a key objective of this plan to create accessible, safe, and attractive local areas for people to live locally	*Scotland 2045: Our Fourth National Planning Framework*—The 20-minute neighbourhood is a new policy area within this framework, to enable a place-based approach to have effect within wider development plans
	Without national policy, but similar policies in different states	With national policy (*National Performance Framework*)
Goal-oriented radius	800 m walk from home to a destination and back again	A reasonable walk, wheel, or cycle within approximately 800 m
Place-based	Reconnect planning, infrastructure, and service decision-making with the place and the needs of a community at a local level	Promote innovative place-based solutions with a focus on liveable places and solutions to localism
Co-production	Collaboration with councils and residents for community partnership and local-led initiatives	Collaboration with councils and residents with the use of Place Standard tool
Equity	Locally accessible services and affordable housing for different stakeholders, including people with low socio-economic status, as well as older and disabled people	Locally accessible services and affordable housing for different stakeholders, including people with low socio-economic status, as well as older and disabled people
	Walkability assessment of pedestrian infrastructure for people with mobility limitations	Accessibility and inclusion are embedded in the Place Standard tool
Active travel and net-zero emission target	Optimisation of active transport for pedestrians and cyclists to reduce greenhouse gas emissions towards net-zero emissions by 2050	Delivery of strategic active travel networks through community-led active travel plans towards a net-zero sustainable Scotland by 2045
	Urban greening and increase of tree cover to reduce energy consumption	Enhancement of natural (green and blue) infrastructure provision
Data-led planning approach	Technical assessments on walkability, transport network, land use, housing density, and vegetation cover to inform decision-making with the place and to cater for community needs at a local level according to a place-based planning approach	Multi-disciplinary and inter-agency relational based approach to data mapping of services, facilitates, and infrastructure for evidence-based planning; adoption of Place Principle across government departments reinforces a data-led, place-based approach
Pilot programs	Croydon South, Sunshine West, Strathmore	Granton Waterfront, Stewarton
Location and scale	Sub-urban, smaller in scale	Outer urban and rural, larger in scale

evolving definition in Melbourne, 20-minute neighbourhoods in Scotland consider a reasonable walk, wheel, or cycle from home, but the goal-oriented radius remains approximately 800 m. There is no significant difference between Melbourne and Scotland in terms of the goal-oriented radius.

Both Melbourne and Scotland have adopted a place-based approach to neighbourhood design. In Melbourne, the place-based approach aims to reconnect planning, infrastructure, and service decision-making with the place and the needs of a community at a local level. This reflects the need for more flexible, locally led solutions to neighbourhood challenges (DELWP, 2019a). Likewise, in Scotland, innovative place-based solutions are promoted to take all aspects of a place into consideration to improve the lives of people, support inclusive growth, and create more successful places (Royal Town Planning Institute, 2021).

Consistent with place-based planning, co-production with various stakeholders has been incorporated in Melbourne and Scotland. In Melbourne, the Victoria State Government works closely with local governments, developers, industry, and community stakeholders through an ongoing consultation process to create sustainable, liveable, and attractive places (DELWP, 2017). Community partnerships have been developed at local levels to enable communities to be a part of the decision-making process (DELWP, 2019a). In Scotland, the use of the Place Standard tool is embedded in the planning process to reflect the importance of public involvement and recognise the need for collaborative approaches to community engagement (Scottish Government, 2020, 2021b).

Particular attention is paid to vulnerable groups including people with low socio-economic status and disabled and older adults in both Melbourne and Scotland to achieve equity through the provision of locally accessible services and affordable housing for a variety of stakeholders, including people with low socio-economic status, as well as older and disabled people. In Melbourne, walkability assessments by Victoria Walks were carried out for the three pilot programs to ensure the quality and identify areas of improvement of pedestrian infrastructure to cater for people with mobility limitations (DELWP, 2019a). Similarly, in Scotland, accessibility and inclusion are embedded in the Place Standard tool to take into consideration the specific needs of disabled and older people (Scottish Government, 2020).

Both Melbourne and Scotland promote active transport through the provision of safe, accessible, and well-connected networks for pedestrians and cyclists as a sustainable choice for daily travel. The transition to a low-carbon living will contribute to the goal of achieving the net-zero emissions by 2050 in Melbourne (DELWP, 2017). Comparably, community-led active travel plans in Scotland provide locally driven solutions towards the net-zero emission target by 2045 (Scottish Government, 2021b). The increase of urban greening and tree cover in Melbourne reduces the energy consumption for heating and cooling (DELWP, 2019a). Besides green infrastructure, blue infrastructure is also promoted in Scotland (Royal Town Planning Institute, 2021).

A data-led approach is adopted in Melbourne and Scotland for evidence-based planning. The advancements in data-led planning approaches and adoption of evidence-based planning enable accurate mapping of existing infrastructure and apply planning mitigation strategies which advocate for 20-minute neighbourhood principles. In Melbourne, technical assessments undertaken cover walkability, transport network, land use, housing density, and vegetation cover (DELWP, 2019a). The Digital Planning Strategy of the Scottish Government aims to develop shared data resources which support Place Standard Tool and Understanding Scotland's Places databases (Royal Town Planning Institute, 2021).

The three pilot programs in Melbourne are suburban in nature and smaller in scale. Community feedback, workshops and technical assessments have contributed to future opportunities for the three activity centres in Croydon South, Sunshine West, and Strathmore to improve liveability and create 20-minute neighbourhoods (DELWP, 2019b, 2019c, 2019d). Comparatively, the two pilot sites in Scotland (Granton Waterfront and Stewarton) are outer urban and larger in scale. The land values were reported as being higher within walkable neighbourhoods in comparison to less-connected neighbourhoods and in time, the increased provision of 20-minute neighbourhoods anticipated by the adoption of government policy may help rebalance the current inequalities. The equitable approach to land use and the access to amenity demonstrated in the Granton Waterfront Development provides a useful precedent and framework for future projects.

Observing the similarities across case studies, the consensus on the principles of the 20-minute neighbourhood are to be walkable and well connected to optimise active travel, to provide services that support local living, to facilitate access to quality public transport that connect people to wider economic and life-long learning opportunities, to offer high quality public realm and open spaces which integrate natural infrastructure, and to facilitate thriving local economies. Integration of the 20-minute neighbourhood concept into long-term planning policy will deliver direct and indirect health benefits to the population. The proximity of services within a walkable distance and subsequent anticipated reduction in car use coupled with increased adoption of active travel will lower carbon emissions, improve air quality, increase physical activities, and, consequently, reduce the prevalence of some chronic conditions. The alignment of 20-minute neighbourhood policies with active travel objectives and net-zero targets goes to reinforce the environmental benefits of this urban planning approach.

The 20-minute neighbourhood is defined as an 800 m goal-oriented activity radius. This assumes a speed of 2.4 km/hour. Providing neighbourhoods which are planned and designed to be walkable are considered preconditions to support social interaction, community engagement, activeness, and independence in old age (Wennberg et al., 2018) and can enhance support for people living with cognitive decline (Gan et al., 2021). In a time of increased population ageing, there is a need to provide age-friendly urban environments. However, gait speed varies across age and declines with age. Therefore, we recommend consideration of site characteristics and varying gait speed/user ability in the development of walkable neighbourhoods.

The "stay at home" and "stay local" policies of the Covid-19 pandemic highlighted the importance of well-connected and serviced walkable neighbourhoods. Implementation of 20-minute neighbourhood concept in future planning could create resilience in our communities in the event of future pandemics and local lockdowns.

5. Limitations

This comparative analysis is mainly focused on Melbourne and Scotland. The relevant literature reviewed is limited to articles and materials written in English only. Due to international travel restrictions, it was not possible to visit each case study and, therefore, comparative analysis was undertaken through desk-top review, published literature, and the first-hand accounts of the researchers from each country. The limitations of this analysis are acknowledged, and further cross-national comparisons are recommended to evaluate policies and practices of 20-minute neighbourhoods in other countries and cultures.

6. Conclusion

Twenty-minute neighbourhoods highlight the importance of well-connected and mixed-used neighbourhoods and communities with proximate access to employment, essential services, public transport, and open spaces. Shorter distances together with re-prioritised public spaces encourage more active transport choices, resulting in public health benefits and reduced environmental pollution. Higher liveability brought about by mixed use developments that enable people to have equitable access to local facilities, amenities, and employment opportunities, promoting vibrancy, social cohesion, and intergenerational connections.

The attributes of 20-minute neighbourhoods combine to create places that are acknowledged as friendly for all ages, address changing needs across the life course, and provide better support for an ageing population. There are indications that 20-minute neighbourhoods may be more resilient against many of the negative impacts of stringent public health protocols such as those implemented in periods of lockdown during the Covid-19 pandemic.

In this article, we evaluate and compare planning policies and practices aimed at establishing 20-minute neighbourhoods in Melbourne and Scotland. Using case studies, we discuss similarities and differences involved in using place-based approaches of 20-minute neighbourhoods to address 21st-century challenges in key areas of health and wellbeing, equity, environmental sustainability, and community resilience.

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Conflict of Interests

There is no data associated with this research beyond the referenced literature. The authors declare no conflict of interests.

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