Heart Foundation

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Walkability and the built environment

Increasing physical activity levels and improving heart health for people living in Australia

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About this paper

This evidence paper provides research and recommendations to embed heart health in built environment outcomes.

For more than a decade, the National Heart Foundation of Australia (Heart Foundation) has recognised the important link between heart health, physical activity and the built environment where people live, study, work and play. This evidence paper builds on our previous work and the 2009 position statement, *Built environment and walking.*[1]

In this updated paper, we bring together the most recent evidence on built environment features that support walking for both transport and recreation. We also highlight specific considerations for priority populations including school-aged children, older adults, people living with disability, people experiencing socioeconomic disadvantage and those living in regional and remote communities.

We discuss a range of environmental factors influencing walking and heart health that extend beyond traditional considerations of walkable built environments. These include access to green and blue spaces, exposure to climate-related risks and air pollution, and the concentration of unhealthy food outlets. We also discuss the potential economic benefits of improving walkability, highlight the importance of community advocacy in creating more walkable neighbourhoods, and emphasise the need to advocate for advances in urban planning and city-wide transport reforms to build healthier communities.

The evidence and recommendations provided in this paper are for built environment industry practitioners, policymakers and other key decision-makers across all levels of government, health professionals, researchers and community members to consider the health benefits of walkable local neighbourhoods.

This evidence paper was produced as part of the Heart Foundation's Healthy Active by Design program, which is supported by the Australian Government.[2]

Executive summary

Physical inactivity is a serious public health concern in Australia, with four in five people not getting enough physical activity to benefit their health and wellbeing.[3] Promoting walking is a simple and effective strategy that could help to address this issue and increase physical activity at the population level. Walking is one of the most popular, cheapest, simplest and accessible forms of physical activity.[4]

While walking has well-established health benefits, a range of barriers prevent many people from choosing walking as a regular form of physical activity. One such barrier is the built environment where people live, study, work and play, which does not always enable or prioritise walking. Local neighbourhoods should be convenient, safe, and appealing places to walk for transport and for recreation.[5]

Walkable neighbourhoods typically feature higher residential density, diverse land uses with access to key destinations such as shops, parks and public transport stops, and include well-connected street networks.[6] Walkable streets also provide well-maintained footpaths, shade, aesthetic design, and traffic safety features.[7]

More walkable neighbourhoods across the country can help support more people to choose walking wherever they live. Not everyone lives in a walkable neighbourhood or in one that meets the needs of people of all ages and abilities, including young children, adolescents, older adults, and people living with a disability. Creating walkable neighbourhoods in less advantaged[8] and regional and remote areas requires interventions that overcome circumstances unique to these areas.[9]

Other environmental factors that can affect walking behaviours and health include access to green and blue spaces,[10] air pollution,[11] climate-related risks such as extreme heat[12] and the concentration of unhealthy food outlets.[13]

Overcoming these challenges to create more walkable neighbourhoods can not only bring significant health benefits but also generates economic and environmental co-benefits.[14]

This paper highlights the key drivers and barriers that shape walkable environments, including the specific challenges and opportunities across inner, middle, and outer suburban areas. Practical recommendations are presented for industry practitioners, all levels of government, community members, researchers and health practitioners to help create walkable neighbourhoods.

By improving walkability, we can support people across Australia to be active and achieve better heart health.

Summary of recommendations

Full recommendations are provided at the end of this paper.

For built environment practitioners

1. Design and deliver built environments that:
   - improve walkability by targeting both macro- and micro-scale features
   - support walking for all age groups and abilities
   - integrate more green and blue spaces to enhance walkability
   - incorporate climate-resilient walking infrastructure.

For governments (all levels)

1. Ensure that urban and transport design policy provides a people-first approach.
2. Embed walkability as a core health objective in planning and transport policies, strategies and codes.
3. Evaluate public health benefits of walkability in transport modelling and business cases.

For health professionals

1. Promote walking as a key part of preventive health care.
2. Discuss neighbourhood walkability with clients to encourage them to be physically active and to advocate for improvements.

For researchers

1. Prioritise research that addresses current evidence gaps related to walkability, including micro-scale features, priority populations, and interactions with other environmental factors.
2. Collaborate across disciplines to advance research and practice relating to walkability.
3. Strategically communicate research evidence to maximise uptake among policymakers and planning practitioners.

For community members

1. Include more walking as part of daily life.
2. Assess how walkable your neighbourhood is.
3. Participate in community advocacy for walkable neighbourhoods.
4. Reduce use of private cars where possible.

Definitions/glossary

Active travel/active transport: travel in which the sustained physical exertion of the traveller directly contributes to their motion. This includes modes of travel such as walking, wheeling or riding using a traditional bike, skateboarding and kick scootering. Active travel also includes the use of e-mobility devices such as e-bikes even though their use typically requires less physical effort. In this paper we also include wheeling and other micro-mobility devices as these modes often move through pedestrianised environments. Active travel is primarily used as a verb (action word); and active transport as a noun.

Advocacy: a combination of social actions designed to gain political commitment, policy support, social acceptance and broader systems support for a particular goal or program. In public health, advocacy is considered as a form of social action aimed at influencing legislation, public policy, and environments that support active living and better health.[15]

Built environment: the human-made structures and places in which we live, work and play, including land uses, transportation systems and design features.

Citizen science: a research approach that involves community members in the process of collecting, analysing, and/or interpreting data, fostering public engagement and advocacy.

Climate-sensitive urban design: urban planning and infrastructure design that considers and mitigates the impacts of climate change, which include warming, rising sea levels, and more extreme weather.

Green and blue spaces: green spaces refer to natural or planted areas of vegetation, such as parks, gardens and street trees. Blue spaces refer to natural or human-made environments characterised by the presence of surface water, such as lakes, rivers and beaches.

Household Travel Survey: a large-scale survey that collects detailed information on the travel behaviour of individuals within selected households over a specified period, typically 24 hours. It captures trip purposes, modes of transport, distances, and travel times.

Macro-scale built environment: urban form characteristics that shape the overall structure and layout of an area. These include population/residential density, land use mix, destination accessibility and street connectivity.

Micro-scale built environment: street-level urban design elements such as characteristics of the footpaths, tree canopy, traffic calming measures and street lighting.

People-first approach: An approach to traffic engineering, urban and transport planning and road design that prioritises community health and wellbeing. This is achieved through the creation of safe, convenient and connected transport options for all people, including those who are walking, wheeling, bike riding, using public transport and driving cars.

Polycentric urban development: an urban form characterised by the presence of multiple local city centres across the metropolitan region, rather than a single dominant central business district (monocentric).

Public transport accessibility: the ease with which people can reach and use buses, trains, trams, or other forms of mass transit.

Recreational walking: walking undertaken voluntarily for enjoyment, leisure, fitness or health, rather than to reach a specific destination.

Traffic calming: the combination of predominantly physical measures to limit negative impacts from cars. It seeks to change driver behaviour and improve conditions for other users of streets, such as people walking or riding bikes. Objectives include slowing speeds, improving safety (including perceptions of safety for those on foot or bike), enhancing the street environment and increasing access for a range of transport modes.

Transport-oriented development: locating residential, commercial, and mixed-use developments close to high-quality public transport hubs, characterised by reliability, frequency, convenience, affordability, and safety.

Transport walking: walking to reach a destination such as work, school, shops, or transit stops; usually motivated by necessity.

Urban heat island effect: phenomenon where urban areas are warmer than surrounding areas due to greater trapping and absorption of heat from the presence of roads, buildings and dark roofs, as opposed to green and blue surfaces such as parks and rivers.

Urban sprawl: expansion of urban areas into surrounding undeveloped land, typically characterised by low-density, single-use residential developments.

Walkability: how well an area supports and encourages walking (as well as wheeling and bike riding). It typically consists of three urban design factors: residential density, street connectivity and land use mix, which combine to create an environment that makes walking between destinations easier and more convenient.

Wheeling: the action of moving as a pedestrian or walking pace, using manual or self-assisted modes of transport including the use of wheelchairs, mobility aids, scooters and others.

1. Background

Physical activity is core to better health and wellbeing. However, most people living in Australia are not sufficiently physically active to realise health benefits. Recent data from the National Health Survey indicates that four in five adults in Australia are not getting enough physical activity to benefit their health and wellbeing.[3] Meeting this evidence-based guideline is fundamental to better heart health and can help prevent a range of chronic diseases, including stroke, Type 2 diabetes, cancers and dementia.[16]

Promoting walking is a simple and effective strategy that could increase the number of people who engage in physical activity at the population-level. Walking is an affordable and inclusive form of exercise that does not require specialised equipment or training. It can be easily integrated into daily routines, whether through active travel, such as walking to local destinations, or through recreational walking. Walking is accessible to most people and, fundamentally, is not constrained by cultural, social, or economic barriers.

Given its versatility and broad appeal, walking has been referred to as the 'nearest activity to perfect exercise'.[17] However, less than half of adults in Australia engage in walking for transport or recreation.[3]

Given its versatility and broad appeal, walking has been referred to as the 'nearest activity to perfect exercise.'
Image credit: National Heart Foundation of Australia; Cameron Murray Photography.

A wide range of factors can influence walking behaviour. These include individual characteristics, interpersonal relationships, social norms, and built environment features that interconnect with broader city planning, transport and public health policies.[18] Among these factors, the built environment is one of the key determinants of walking.[19]

The built environment is defined as the human-made structures and places in which we live, work and play, including land uses, transportation systems and design features.

Designing built environments that support walking as a convenient, safe and appealing activity is widely regarded as one of the most promising strategies for increasing physical activity at the population level.[5]

Built environment features relevant to walking are commonly conceptualised at two levels: the macro-scale and the micro-scale.

Macro-scale features of the built environment shape the overall structure and layout of an area and are largely influenced by city planning and transport policy decisions.[20] Key macro-scale built environment features include:

- Population and residential densities – how many people or dwellings are located within a given area
- Land use diversity – the integration of different types of land uses such as residential, commercial, institutional and recreational lands in an area
- Access to a variety of destinations – such as shops, schools, public transport stops, green and blue spaces, and community services
- Street connectivity – how well pedestrian-accessible street networks in an area link to destinations and enable more direct routes.

Neighbourhoods that offer a mix of destinations and well-connected pedestrian-accessible street networks make walking a more convenient activity.[21] A commonly used measure in both research and practice in this context is the Walkability Index. Developed in the United States,[22,23] this index combines three key features of the built environment: residential density, land use diversity and street connectivity. The Walkability Index has since been adapted for use in the Australian context.[6,24]

Micro-scale features of the built environment refer to street-level design elements that shape how pleasant, comfortable and safe the walking experience is.[7] Key micro-scale built environment features include:

- Well-maintained, continuous footpaths – separated from motor vehicle traffic and micro-mobility users (e.g., people riding bikes and using e-scooters)
- Traffic-calming and safety measures for people walking – such as clear and prioritised pedestrian crossings
- Adequate street lighting – for better visibility and safety at night
- Tree canopy coverage – provides shade, reduces heat, and contributes to pleasing streetscapes
- Streetscape aesthetics and design – including benches, public art and other aesthetic elements that enhance the walking experience.

The overall aesthetics of an area are an important micro-scale feature that contributes to walkability.
Image credit: National Heart Foundation of Australia.

2. Walking for transport and walking for recreation

Transport and recreational walking are distinct behaviours, with different motivations. Features of the built environment relevant to these two types of walking are also different.

Transport walking is typically motivated by the need to reach a destination, whereas recreational walking results from a desire to be active and healthy.[25] The built environment can play an important role in both the purpose of walking and how much people walk.

2.1 Walking for transport

A substantial body of evidence, synthesised in several systematic reviews, [26-28] has found that macro-scale built environment features are key determinants of transport walking. These features include population (or residential) density, land use diversity, destination accessibility and street connectivity.

Further, a review of longitudinal and natural experiment studies reported that improvements to these macro-scale built environment features were associated with increased levels of transport walking.[29] Empirical studies conducted across various Australian urban settings have consistently shown that residents are more likely to walk for transport when their neighbourhoods contain more of these macro-scale built environment features.[30-33]

Similarly, greater access to public transport stops within neighbourhoods can encourage transport walking, as people often walk to and from transit.[34,35] Household Travel Survey data shows that people typically (i.e., median distance) walk up to 400 metres to bus stops and 800 metres to train stations.[36]

Although research on micro-scale built environment features and transport walking is limited, existing Australian research suggests that street-level features, such as the presence of well-maintained footpaths[37] and adequate lighting[38], are important for supporting transport walking.

Residents are more likely to walk for transport where there is sufficient density, land use diversity, accessibility and street connectivity.
Image credit: National Heart Foundation of Australia; Cameron Murray Photography

2.2 Walking for recreation

A recent review of 23 studies, including several from Australia, found that access to recreational destinations such as parks is a key factor in promoting recreational walking.[39] This review also noted that evidence on micro-scale built environment attributes and recreational walking remains insufficient, warranting further research.[39]

An eight-year follow-up study in Perth (the RESIDE project) found that increases in local recreational walking were associated with greater access to large parks, beach access, and well-connected streets, as well as neighbourhood aesthetics and safety from crime.[40] Frequent park visits are associated with higher levels of recreational walking[41] and positive perceptions of the presence, proximity and size of green spaces are linked to maintaining higher levels of recreational walking over time.[42]

Recreational walking is positively influenced by neighbourhood access to large parks, appealing aesthetics, and safety from crime.
Image credit: National heart Foundation of Australia; Cameron Murray Photography

3. Specific considerations for priority populations

Some population groups may face additional barriers to walking. This needs to be addressed to ensure everyone can enjoy the benefits of a walkable neighbourhood. These priority populations include children and adolescents, older adults, people living with disability, individuals and communities experiencing socioeconomic disadvantage and residents of regional and remote areas.

3.1 Children and adolescents

Physical activity, especially walking, among children of all age groups (preschoolers through to adolescents) can be influenced by the built environment features surrounding their residential neighbourhoods, schools and childcare centres.

Over the last few decades, walking, bike riding and scooting to school among children in Australia has declined.[43,44] Meanwhile, travel to school by car has increased.[43] Children are now less likely to walk or ride to school,[45,46] even if they live close enough to do so.[46] The walkability of school neighbourhoods is positively associated with greater levels of active transport among children.[47] Access to diverse destinations,[47-49] and shorter distance to the school they attend[46, 50-52] have been related to greater levels of walking and active travel among school children.

Some aspects of walkability may influence younger children and adolescents differently.

For younger children, parents and carers act as gatekeepers of mobility, whereas adolescents tend to have higher levels of independent mobility, as they are generally permitted to travel alone.[53]

Better neighbourhood street connectivity, i.e. areas with well-connected routes and fewer cul-de-sacs, is associated with higher levels of walking among adolescents.[54] However, neighbourhoods with more cul-de-sacs can provide greater opportunities for young children to engage in active play near home due to lower traffic exposure.[55]

Personal and traffic safety are important factors for children's walking.[54] Relationships between walkability indicators and walking may depend on both parent and child perceptions of safety.[56] For example, children are more likely to walk to school when greater street connectivity coexists with low traffic volumes, rather than when well-connected streets have high traffic volumes.[57] Among adolescents, residential density has been positively associated with active transport to school, particularly where the traffic environment is perceived as safer.[50]

A more detailed discussion on built environment features relevant to active school travel is available in the companion Heart Foundation evidence paper *Active school travel.*[58] Readers are encouraged to refer to it for further insights related to this topic.

Relationships between walkability indicators and walking may depend on levels of parent and child perceived safety. Image credit: National Heart Foundation of Australia; Cameron Murray Photography.

3.2 Older adults

Promoting walking is a key strategy for supporting healthy ageing.[59] With Australia's population of adults over 65 steadily increasing,[60] it is important to understand how neighbourhood environments can be designed to support walking and, in turn, help older adults maintain their health, independence, and quality of life.

A study using the Queensland Travel Survey found that higher neighbourhood walkability is associated with greater odds of any walking and of walking for 30 minutes or more per day among older adults aged 65-84 years.[61] In Brisbane, adults aged 65 years and over who perceived greater access to destinations in their neighbourhoods were found to be more likely to walk for transport and recreation.[62] Similarly, a study involving older adults from Western Australia found that they were willing to walk beyond their immediate surroundings, even up to 1.6 km, when such areas included supportive walkability features.[63]

Well-maintained, shaded paths support walking for older adults.
Image Credit: iStock.com; miodrag ignjatovic

Access to high-quality parks within neighbourhoods can promote walking among older adults. For example, a study involving older adults in Melbourne, Sydney and Adelaide found that the availability of shady trees and a peaceful, relaxed park setting encouraged more park visits.[64] In addition, well-maintained walking paths in parks were identified as an important factor for higher levels of walking among older adults.[64]

Another important consideration for older adults is the walkability features of retirement village neighbourhoods, as many people spend their later years living in these settings. A study conducted in Perth found that residents of retirement villages with access to age-friendly walking infrastructure and a variety of nearby destinations were more likely to engage in transport walking for more than 150 minutes per week.[65]

3.3 People living with disability

About one in five individuals live with a disability, which may include impairments and mobility limitation that can lead to participation restrictions.[66] People living with disability often experience poorer health and wellbeing compared with those without disability.[67] The poorer health outcomes among people living with disability are strongly linked to persistent experiences of social exclusion and material hardship, as well as living in neighbourhoods with limited opportunities that support health and wellbeing.[68]

Universal design principles for people living with disability have commonly been applied to buildings but are often overlooked when planning built environments at a neighbourhood level. To ensure accessibility for all, neighbourhood design must prioritise walkability for the needs of people with diverse abilities.[69] The Australian National Disability Strategy 2021–2031 recognises this need, highlighting the critical role of the built environment in supporting the health and wellbeing of people living with disability.[70]

Research into the links between neighbourhood environments and active living for people living with disability is limited but expanding. For example, a study conducted in the United States found that higher neighbourhood walkability, characterised by greater residential density, well-connected street networks, and a greater mix of land uses, is associated with higher levels of public transport use among people living with disability.[71] This association is stronger for people living with disability than that observed among people without disability, suggesting that neighbourhood walkability can playa particularly beneficial role in supporting independence and mobility for people living with disability.[71]

Similarly, a study conducted in Israel found that living in more walkable neighbourhoods was positively associated with participation in daily activities (e.g., social, cultural, and leisure activities) among people living with disabilities.[72] Given the limited evidence base, particularly from Australia, further research is needed to inform the planning and design of neighbourhoods that better support walkability and inclusion for all, particularly people living with disability.[69]

Design principles for people living with disability should be applied at a neighbourhood scale to improve walkability and ensure that built environments are inclusive and accessible for all. Image credit: iStock.com; Solstock.

3.4 People experiencing socioeconomic disadvantage

Walking behaviour varies across socioeconomic groups. Research findings consistently show that individuals with lower socioeconomic advantage (e.g., lower levels of education or income) are less likely to engage in walking than people of higher socioeconomic advantage.[73,74]

For example, a survey conducted in Adelaide found that walking for recreation is more prevalent among individuals with higher socioeconomic status (SES).[74] Further, a longitudinal study of mid to older aged adults in Brisbane (the HABITAT study) found that individuals with lower education levels, lower incomes, or in trades-based or manual occupations walked less for transport.[73] Over a four-year period, that study also observed a general decline in walking for transport across all SES groups as participants aged, with the steepest declines among those experiencing socioeconomic disadvantage.[73] The combined impact of socioeconomic disadvantage and ageing therefore has implications for the amount of walking an individual is likely to do.

These socioeconomic inequalities in walking are influenced by unequal access to supportive built environments.[8] In many Australian cities, socioeconomically disadvantaged areas—where many lower-SES individuals reside—tend to have lower levels of walkability.[75] These areas often feature low residential density, limited street connectivity, and poor access to key neighbourhood destinations such as shops, services, public transport, recreational facilities, and social infrastructure.[75]

As a result, residents in these environments may have limited opportunities for active transport and recreational physical activity. Improving walkability in socioeconomically disadvantaged areas can therefore be a key strategy for reducing health inequalities. For further insights on this topic, see the Heart Foundation report *Walkability in less advantaged areas*.[8]

Continuous footpaths and regular maintenance can lead to higher levels of walking.
Image credit: National Heart Foundation of Australia.

3.5 Communities in regional and remote areas

Regional and remote areas are home to about 30% of people living in Australia.[76] Residents of regional and remote areas tend to be older, have lower levels of education and income, and experience poorer health and wellbeing compared to urban residents.[77] Promoting walking and overall physical activity in these communities should be a public health priority. This could prevent an estimated 113,326 cases of cardiovascular disease in regional and remote Australia over the next decade.[78]

Research on the built environment and walking in regional and remote communities in Australia is limited.[79] The few studies that have examined this have reported mixed findings.[80,81] For instance, a study conducted in two remote regions of South Australia found that in one regional community, higher levels of perceived neighbourhood walkability, safety, and a pleasant community atmosphere were associated with more daily steps.[80] However, in the other region, these associations were not observed. Another South Australian study also found that greater perceived neighbourhood walkability was not associated with walking in regional settings.[81]

It is important to recognise that regional and remote environments differ significantly from urban environments.[82,83] Built environment indicators commonly used in urban contexts, such as population density, street connectivity, and land use diversity, may not be directly applicable in regional and remote settings.[84] In response, Australian researchers have developed and tested a tailored instrument that assesses environmental characteristics (e.g., access to recreational spaces, perceptions of safety) that are relevant for engaging in physical activity in non-urban settings.[85] This is a promising step toward understanding the role of the environment for physical activity within regional and remote communities.

Improving walkability in regional and rural areas requires a different approach to urban areas, reflecting a different built environment and also reflecting different needs of the population. Image credit: iStock.com; Chris Gordon.

4. Walkability and its broader impacts: further considerations

The commonly used Walkability Index assesses the walkability of a neighbourhood based on three macro-scale built environment features: residential density, street connectivity and land use diversity.[22] Together, these features determine the proximity and ease of access to key daily destinations.[6]

However, high-density neighbourhoods may also pose health challenges if other environmental risk factors are present in such areas. These can include limited access to green and blue spaces, exposure to air pollution, climate-related risks such as urban heat, and the availability of unhealthy food outlets.

This section reviews the growing body of research on how walkability influences these factors, which have implications on health behaviours and outcomes.

Higher density residential areas are an important characteristic of walkable neighbourhoods but must be carefully planned to avoid unintended consequences.
Image credit: National Heart Foundation of Australia; Cameron Murray Photography.

4.1 Walkability and exposure to green and blue spaces

Green and blue spaces include a range of human-made or modified built and natural environments, such as parks, street trees, lakes, rivers, and beaches.[10] Access to such green and blue spaces in urban areas can provide opportunities for physical activity and social interaction,[86,87] help reduce psychological stress,[64] support relaxation,[88] mitigate heat exposure[89] and increase engagement with nature.[90]

Access to green and blue spaces in urban areas can areas can provide opportunities for physical activity and social interaction, reduce stress, support relaxation, mitigate heat exposure, and provide opportunities to engage with nature. Image credits: iStock.com, JohnnyGreig and iStock.com, Daniiielc

However, in efforts to create more walkable neighbourhoods where there are higher dwelling densities and mixed land uses, access to green and blue spaces can be compromised. Research from Australia and internationally confirms that most neighbourhoods that are considered walkable based on commonly used walkability indices, have fewer green spaces.[91-93]

Identifying neighbourhoods that are both high in walkability and have greater exposure to green and blue space is important to realise their full potential to support health and well-being. In line with this, recent Australian research has developed a new green and blue Walkability Index.[10] This index builds on traditional walkability indices and additionally incorporates proximity to trees, parks, rivers, lakes, and the ocean. Findings from this new index also highlight spatial inequalities. Socioeconomically advantaged neighbourhoods tend to have higher green and blue walkability scores than disadvantaged areas.[10]

The integration of green and blue spaces in all neighbourhoods is crucial to increasing walkability and providing more opportunities for people to increase daily physical activity. This goal can be advanced through a range of traditional and innovative nature-based urban design strategies,[94] including planting street trees, improving the quality of parks, building community gardens, and greening rooftops and building façades. It also involves enhancing biodiversity, improving access to existing blue spaces such as rivers and beaches, and developing new publicly accessible water features such as ponds and lakes.[95]

4.2 Walkability and air pollution

Walkable neighbourhoods generally have a greater concentration of retail destinations. While this is beneficial for transport walking, it can also attract more motor vehicle traffic.[96] As a result, these neighbourhoods may experience higher levels of air pollution, such as fine particulate matter PM2.5 (particulate matter of diameter 2.5 µm or less) and nitrogen dioxide (NO_2). These are both linked to respiratory, cardiovascular and metabolic diseases.[97]

A study from Sydney found that approximately 20% of walkable neighbourhoods were located near high-traffic roads, exposing residents to elevated levels of air pollution.[96] A Melbourne-based study found lower prevalence of diabetes among residents of walkable neighbourhoods but only in areas with lower levels of fine particulate matter (PM2.5).[11]

Thus, when designing more walkable neighbourhoods, it is important to take actions to reduce motor vehicle traffic to lower exposure to air pollution. Strategies can include enhancing walking, wheeling and cycling infrastructure, improving access to regular public transport services, implementing car-free or low-traffic streets, and establishing low-emission zones.[98]

When designing walkable neighbourhoods, it is necessary to incorporate initiatives that reduce exposure to air pollution, such as car-free zones or low-traffic streets. Image credit: iStock.com; Kiara Bloom

4.3 Walkability and climate change impacts

Australian cities face growing climate and extreme weather events, including more frequent and intense heatwaves, and more intense storms, heavy rainfall, and flooding.[99] Prioritising the design and delivery of more walkable neighbourhoods can, if done well, offer dual climate benefits: they help mitigate climate change and support adaptation to its impacts.

Denser, more walkable neighbourhoods can become urban heat hotspots because they contain more heat-absorbing surfaces, such as asphalt and concrete, as well as heat generated by vehicles and buildings.[12] Heat exposure can reduce thermal comfort, make walking less practical and appealing, and increase the risk of heat-related illnesses, such as heat stroke, as well as impacting mental health.[100]

Large amounts of concrete and asphalt in higher-density, walkable neighbourhoods can contribute to urban heat island effects. Image credit: iStock.com; Delectus.

Additionally, extreme weather events can damage or destroy walking infrastructure and public open spaces, reducing their usability and accessibility.[101] As a result, walking and other forms of outdoor physical activity may become less desirable and feasible.[102]

This underscores the importance of designing walkable neighbourhoods not only for destination accessibility, but also for resilience in the face of climate change by applying climate-sensitive urban design strategies. This can be achieved by integrating more green infrastructure for shade, reducing the use of heat-absorbing materials, and taking action to minimise heat from buildings.[103]

Greenery can help mitigate the severity of urban heat island effects and enhance both the comfort and feasibility of walking.

Image credit: iStock.com; Anchiy.

4.4 Walkability and exposure to unhealthy food outlets

Walkable neighbourhoods make it easier for people to access nearby destinations, including food outlets—which may offer either or both healthy and unhealthy food choices.

Residents of walkable neighbourhoods in socioeconomically disadvantaged areas have been found to have less healthy eating patterns, including greater consumption of takeaway foods and higher overall energy intake.[13] This is likely because the food environment in these areas is disproportionately dominated by unhealthy food outlets compared to healthier alternatives.[104]

This means walkability might unintentionally contribute to unhealthy dietary behaviours and health inequalities. Urban planning and public health policies must address this issue by promoting access to healthier food options and by limiting the concentration of unhealthy food outlets—particularly in communities with lower socioeconomic advantage.[105]

Planning and policy practices must consider enhancing access to healthierfood environments alongside walkability improvements in less advantaged areas.
Image credit: National Heart Foundation of Australia; Cameron Murray Photography.

5. The economic case for prioritising walkability

Walkable neighbourhoods are traditionally recognised for their role in promoting healthy behaviours. However, the benefits of walkability extend beyond health and can include contributions to the local economy and cost savings across the health, transport, and environmental sectors.[106]

The Heart Foundation's 2025 publication, *Good for business*, brings together national and international evidence and case studies demonstrating the economic benefits of improving walkability in main streets and town centres.[107]

On the other hand, low-walkable, car-dependent neighbourhoods that lack frequent public transport services can increase financial burdens on residents by leading to few choices other than car ownership.[108] Forced car ownership occurs when residents have few or no alternative transport options for day-to-day travel, thus, making car use a necessity rather than a choice. This adds to the financial burden of low-income households, especially when private vehicle expenditures are steadily increasing.[109]

Streetscape upgrades and walking-friendly interventions can benefit local economies. Image credit: iStock.com; FiledIMAGE.

Modelling from the Transport Health Assessment Tool for Brisbane estimated that replacing short car trips (under 2 km) with walking could save approximately $118,000 per 1,000 people by reducing cases of ischaemic heart disease.[110] Additionally, the avoidable social costs of traffic congestion across eight metropolitan areas in Australia were estimated at $16.5 billion in 2015, with projections indicating this could rise to $30 billion by 2030.[111]

Transport projects are typically assessed based on travel time savings—a metric that favours faster, car-based modes of travel.[112] This approach overlooks the harder-to-measure intangible public benefits and economic value associated with walkability and active travel infrastructure, such as improved public health, reduced emissions, enhanced social connection, increased productivity, and better quality of life.[14] These benefits must be properly measured and prioritised in transport infrastructure business cases and policy decisions.

6. The role of community action in creating more walkable neighbourhoods

Improving walkability is not the responsibility of any one group or sector—it requires coordinated action from a wide range of stakeholders. This includes communities, advocacy organisations, built environment practitioners and decision-makers at all levels of government.

When done well, community advocacy can shape policy, influence planning decisions, and help create built environments that support walking.
Image credit: iStock.com; SDI Productions.

Australian walkability research is increasingly adopting citizen science approaches, which are particularly valuable for supporting and promoting community advocacy. Citizen science refers to a research method that actively involves community members in the process, rather than conducting research on or for them.[114] Participants contribute to the collection, analysis, and interpretation of data.

Community action includes both citizen science and community advocacy. These are effective strategies already underway in many areas across Australia to improve walkability.

Community advocacy involves a range of social actions aimed at gaining public support, influencing policies, securing political commitment, and driving systemic change to achieve a specific goal.[13] Education and awareness campaigns, backed by a strong body of evidence, can empower communities with the skills, knowledge and tools that can influence decision makers to take actions.[15] When done well, community advocacy can shape policy, influence planning decisions, and help to create built environments that support walking.[15]

Engaging communities through citizen science initiatives and community advocacy enhances local knowledge, strengthens social connections, fosters ownership and engagement, helps identify local issues, and enables greater participation and equity in decision-making.[114] Examples include the Toowoomba Healthy Town Project in Queensland[115] and the Communities for Walkability Project in Tasmania.[116] Both projects identified local built environment issues, informed decision-makers, and contributed to improved walkability outcomes.

National and state-based health advocacy organisations such as the Heart Foundation, Queensland Walks, Victoria Walks and the Council on the Ageing play a key role in supporting community advocacy for improving neighbourhood walkability. These organisations not only raise awareness across all levels of government but also equip communities with practical tools to identify issues and drive change.

The Heart Foundation's community walkability resources have been developed to mobilise community members to advocate for more walkable built environments.[117] These resources enable community members to assess walkability in their local area and advocate for improvements. The suite of resources includes community fact sheets, an interactive community walkability map, a community walkability checklist and petition to give support for improved walkability. This comprehensive approach is an important step toward improving walkability in Australia, making advocacy more accessible and impactful.

Health professionals, including general practitioners, nurses, exercise physiologists and other allied health practitioners have an important role in promoting physical activity by considering the broader environmental contexts in which their clients live. While prescribing physical activity remains a widely recommended strategy for preventing and managing chronic diseases such as heart disease, such advice may be less effective if people live in neighbourhoods that do not support physical activity.[118] By being aware of local walkability and related barriers, health professionals can better tailor physical activity advice to suit individual circumstances.

7. Strategies for creating walkable neighbourhoods

As outlined in this paper, strong evidence—particularly from Australia—shows that creating walkable neighbourhoods delivers a wide range of benefits, extending beyond increased walking to include broader population health, environmental sustainability, and economic co-benefits.

Improving walkability requires built environments—at both macro and micro scales—to support walking. Building on the evidence presented in this paper, this section outlines practical strategies for enhancing walkability across different contexts in Australia.

Australia's metropolitan areas span a broad urban spectrum, from compact inner-city suburbs to sprawling outer suburbs. Population density is a foundational macro-scale component of walkability. As illustrated in Figure 1, population density typically declines with increasing distance from the central business district (CBD), creating three common urban forms:[119]

- **Inner-city suburbs** – higher-density neighbourhoods located within approximately 5 km of the CBD, typically offering greater access to key destinations
- **Middle-ring suburbs** – medium-density neighbourhoods situated between about 5 to 20 km from the CBD, often with somewhat limited access to key destinations
- **Outer suburbs** – low-density neighbourhoods located about 20 km or more from the CBD, lacking access to key daily destinations, and largely designed for private car use.

Recognising the unique challenges and opportunities within each of these contexts is essential to tailoring walkability strategies effectively across metropolitan areas.

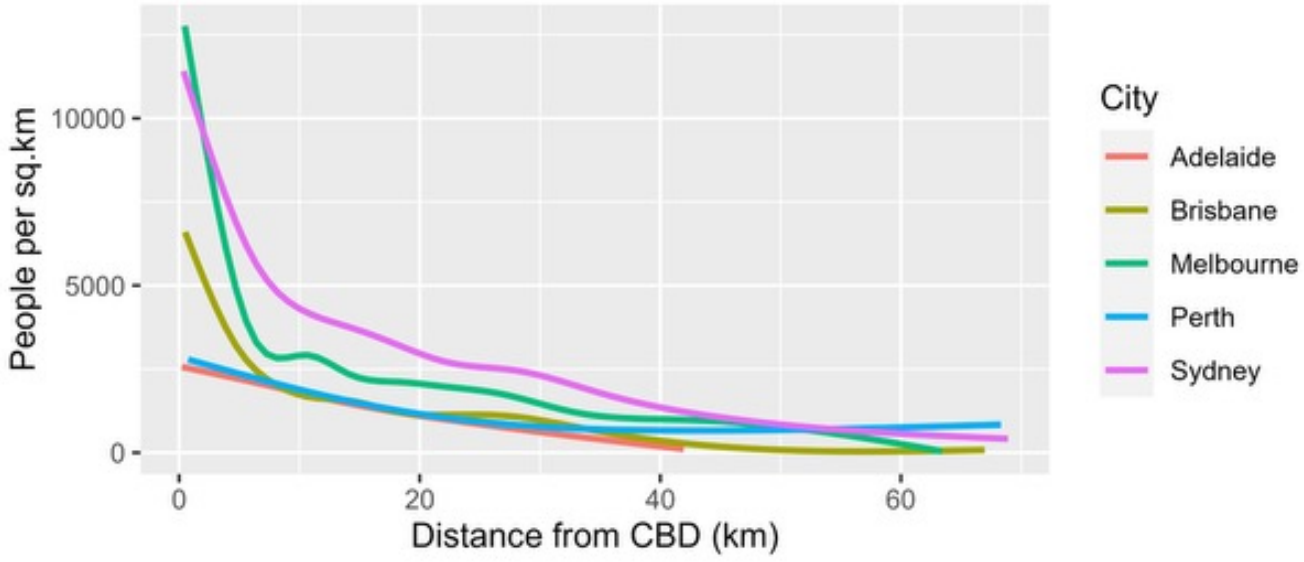

Figure 1: Population density of local areas by distance from CBD in five Australian cities (data source: 2021 Census. [118])

7.1 Inner-city suburbs

Inner-city suburbs and their neighbourhoods typically score well on macro-scale walkability features such as residential density, land use diversity and street connectivity.[120] However, several aspects, such as limited green and blue infrastructure, traffic-related safety risks, air pollution, personal safety concerns and urban heat island effects can still undermine the feasibility of walking in such settings.

Enhancing neighbourhood walkability in inner-city suburbs requires the reallocation of street space to prioritise people walking, wheeling, and bike riding, as well as public transport, over private vehicle use. The Heart Foundation's evidence paper *The Heart of road use* outlines a range of interventions to prioritise people over cars on streets.[121] These include the adoption of Barcelona-style superblocks, which restrict private car traffic within clusters of city blocks and reduce vehicle speeds.[122]

Additional walkability enhancements in inner-city suburbs can involve widening footpaths, implementing traffic-calming measures, and creating separated routes for micromobility users (e.g., people riding bikes or using e-scooters). Integrating green infrastructure such as street trees and parks, as well as blue infrastructure, is essential to support thermal comfort, aesthetics, and climate adaptation. Climate-sensitive urban design is key to mitigating urban heat island effects and maintaining walkability in a changing climate.

Integrating green infrastructure such as street trees, pocket parks and green corridors, as well as blue infrastructure, is essential to support walking environments.
Image credit: National Heart Foundation of Australia; Cameron Murray Photography.

7.2 Middle-ring suburbs

Middle-ring suburbs, typically medium-density areas developed during the mid-20th century, often feature segregated land uses, street networks with limited connectivity, and dispersed destinations.[33] Nonetheless, these suburbs offer strong potential to improve macro-scale walkability components through increasing population density along with establishment of more destinations, additional public open spaces, and adaptable street layouts.[123] Strategic retrofitting is essential. For example, the *Plan for Victoria* strategy aims to densify middle suburbs and create local activity centres with good access to diverse jobs, shops, public transport, facilities and services by 2050.[124]

A shift toward polycentric urban development—creating multiple local centres across the metropolitan region by densifying existing medium-density suburbs—can reduce reliance on a single CBD and enhance access to employment, services, and transport options.[119] Improving connectivity by identifying and addressing missing links in walking networks and creating new mid-block walkways is also important. Applying strategies outlined above for inner-city neighbourhoods, such as reallocating street space to prioritise people over cars and integrating green and blue infrastructure, is equally important in middle-ring suburbs to enhance walkability.

7.3 Outer suburbs

Outer suburban areas are often more than 20 km from city centres and include new urban growth zones. These areas present the greatest challenge for improving walkability due to their typical characteristics of low-density housing estates, less-connected street networks, and stricter separation of residential and commercial zones.[120] Many outer suburban neighbourhoods also lack basic walking and other active travel infrastructure, green and blue spaces, and public transport.[120]

Greenfield development and urban sprawl can result in situations where residents must drive to reach most destinations to undertake daily activities.[125] Ensuring that urban design practices in urban growth zones support the development of walkable outer-suburban neighbourhoods is essential.[126]

Key strategies include targeted densification, the development of walking, wheeling and cycling infrastructure, and the establishment of small-scale shops and community facilities within residential areas. Enhancing street connectivity by creating walking and cycling paths that link cul-de-sacs is also important. These initiatives should be supported by adequate green and blue infrastructure, climate-sensitive design, and safeguards to prevent unintended consequences such as traffic-related air pollution and urban heat.

Much of Australia's current urban development occurs in growth-fringe areas, providing an opportunity to prioritise walkability in new communities. These areas should be designed around major transport hubs using transit-oriented development principles, making it easier to incorporate macro-scale built environment features essential for walkability. Unlike existing outer suburbs, where such features can be difficult to retrofit, new developments offer a unique opportunity to get it right from the start.

There is unique opportunity in urban growth fringe areas for walkability - to get it right from the start, by incorporating density, green spaces and walking infrastructure. Image credit: iStock.com; Elias Bitar

8. Conclusions

Promoting walkability is a simple and effective strategy for increasing population-level physical activity and improving heart health in Australia. One impactful way to encourage walking is by designing built environments that make walking a convenient, safe and appealing choice for regular transport and recreation.

Key macro-scale built environment features that support walkability include higher residential density, diverse land use with access to key destinations, well-connected street networks and high-quality green and blue spaces. At the micro-scale well-maintained footpaths, shade, streetscape aesthetics and traffic safety are also important.

Walkable environments must be inclusive of priority populations, including young children and adolescents, older adults, people living with disability, those experiencing socioeconomic disadvantage and people living in regional and remote areas.

Walkability strategies should also align with broader environmental and public health goals such as integrating green and blue spaces, reducing exposure to air pollution and unhealthy food outlets, and supporting climate resilience.

It is important to note that improving walkability is not a one-size-fits-all approach. Emerging evidence suggests the need for further consideration of context-specific strategies for both existing and new neighbourhoods. As cities continue to expand, it is essential in planning and development phases to avoid low walkable environments on urban fringes.

Finally, advocacy is essential to advance toward healthier, more walkable communities across Australia. Strong partnerships between communities, advocacy organisations, governments and researchers are vital for achieving this goal.

9. Recommendations

Based on the evidence and discussion presented in this report, the following recommendations are provided.

For built environment professionals (urban and transport planners, urban designers, architects, traffic engineers, public works and asset managers and others)

1. Design the built environment to **improve walkability by targeting both macro- and micro-scale features:**
   - At the macro level, focus on increasing residential density, **improving street connectivity, and ensuring easier access to key destinations.**
   - At the micro level, **incorporate high-quality separated walking and cycling paths, attractive street aesthetics, generous tree canopy coverage, and traffic-calming measures** to create a safer and more pleasant walking experience.
2. Prioritise built environments that **support walking for all age groups and abilities.**
3. **Integrate more green and blue spaces** into urban environments to enhance walkability by promoting physical activity, providing psychological benefits, supporting ecological resilience, and helping reduce urban heat island effects.
4. **Build climate-resilient walking infrastructure** that supports safe walking in all weather conditions, using climate-adaptive materials, shade trees, and design strategies to manage heat, rain, and flooding.

For governments (all levels)

1. **Ensure that urban and transport design policy adopts a people-first approach** by prioritising walking, wheeling, bike riding and public transport use, while de-prioritising approaches that favour car use.
2. **Prioritise 'improving walkability' as a core objective in planning and transport strategies,** aligning housing and infrastructure investments to create built environments that promote walking.
3. **Properly evaluate and prioritise the public health and other benefits** associated with walkability in transport infrastructure business cases, modelling and policy decisions.

For health professionals

1. **Promote walking as a part of preventive care,** by encouraging people to increase their physical activity by using their local neighbourhood features, such as parks and public transport. This can help more people engage in regular walking while reducing reliance on private vehicles.
2. **Discuss neighbourhood walkability** by encouraging people to consider their local area and identify how easy it is to be physically active, as well as to advocate for improvements, where needed.

For researchers

1. **Prioritise research that addresses current evidence gaps** in the field of 'built environment and physical activity', particularly in the following areas:
   - **Micro-scale walkability features** (e.g., footpath quality, shade, street aesthetics)
   - **Priority populations,** specifically older adults, people living with disability, and communities in regional and remote areas
   - **Intersections between walkability and other environmental factors,** such as green and blue spaces, pollutions, the food environment, and climate-related risks (e.g., heat).
2. **Collaborate across disciplines,** including public health, urban planning, transport, environmental sciences, and other relevant fields—while **also incorporating citizen science approaches**—to generate integrated and robust evidence that more effectively informs walkability-related policy and practice.
3. **Communicate research evidence strategically** to maximise uptake among policymakers and planning practitioners by translating findings into clear, actionable messages and delivering them through accessible, fit-for-purpose formats (e.g., concise policy briefs, infographics).

For community members

1. **Include more walking as part of daily life.** This can be for transport (to get to shops, parks, or public transport stops) and also for recreation and exercise.
2. **Use walkability assessment tools,** such as the Heart Foundation's community walkability resources, to assess how walkable your neighbourhood is, and to identify areas for improvement.
3. **Participate in community advocacy efforts** aimed at creating more walkable, people-friendly, heart-healthy neighbourhoods that are less car-dependent and designed to promote active living.
4. **Reduce use of private cars** where possible by walking, wheeling, bike riding and/or using public transport instead.

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