

CHAPTER 12

LIVEABLE, SUSTAINABLE AND WALKABLE BOOMTOWN

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INTRODUCTION

Globally, more people now live in manmade urban environments than in rural and agricultural areas. This mass movement of people towards urban centres reached 50 per cent of the world's population by 2010, although Australia passed this mark much earlier. Indeed, Australia is now recognised as one of the world's most urbanised nations with 75 per cent of Australians living in the nation's eighteen major cities (that is those with over 100,000 people; National Sustainability Council, 2013). But how liveable are our cities and what does liveable actually mean?

In 1965 Perth had a population of just under half a million; this more than doubled between the period 1979 to 2000, reaching approximately 1.3 million. This increase was largely accommodated through the expansion of the northern suburbs and the availability of land (Weller, 2009). The current population of Perth now stands at 2 million and is estimated to reach 3.5 million by 2050 (Western Australian Planning Commission, 2015; see chapter 3). Recognised as one of the fastest growing cities in Australia, it is timely to critique how liveable Perth is.

This chapter aims to provide the reader with an introduction to the concept of liveability, an overview of recent research undertaken locally and aimed at measuring liveability and walkability as well as provide a frame of reference for other chapters that explore other dimensions of liveability in more detail (see chapters 8, 10 and 14).

The next section introduces the concept of liveability and reviews different liveability metrics and their respective ranking of cities, including Perth. It has been said that a liveable city is a walkable city and the following section introduces the concept of a walkable city and presents research from a ten-year ‘natural experiment’ undertaken in Perth assessing the relationships between walkable neighbourhoods and health outcomes. The chapter then briefly explores the broader concept of sustainable cities and how this links with liveability and walkability. Across Australia there is a shift towards compact urban design and one of the earliest policies was the WA State Government planning policy *Liveable Neighbourhoods Guidelines* (Western Australian Planning Commission, 2009). The remaining sections summarise the research examining both the impact of the policy on selected health outcomes and the level of policy implementation and provide recommendations for current planning policy and outlines research gaps and future directions.

WHAT IS ‘LIVEABILITY’?

A selection of definitions of liveability that show the diversity and breadth of understanding is shown in Appendix 1 of this chapter. The variation between definitions reveals that liveability means different things to different people, yet there is evidence of some common elements and a shared vision. Overall, liveable cities are presented as places that are compact, vibrant, safe, diverse, inclusive, attractive and unique. Furthermore, they are places that support health, offer social connections, are creative and engaging, are people-friendly and provide for a quality of life.

Several definitions highlight that liveability is about the experience of a place and this can be at different scales: household, neighbourhood, city or region. Other perspectives highlight that the very concept of a liveable place is itself context specific, to the place, the population and the time. Pacione (1990) notes that liveability is not a static set of characteristics but rather a product of the interaction between the people, their behaviours and the

environment. Newton (2012) provides a more comprehensive definition, capturing the dimensions of scale, amenities that might be quantitatively assessed qualitative experiences as well as overarching satisfaction and happiness. However, like many of these definitions of liveability, Newton (2012) does not indicate what specific attributes of the urban realm are most relevant nor indicate how they might be assessed.

Reporting on the liveability of cities has become popular within industry and media and the methods used to assess this construct are receiving an increase in research attention. Currently there are quite a few different metrics which rank cities on liveability or what is sometimes referred to as quality of life; the most renowned being those from the Economist Intelligence Unit (EIU; 2014), Forbes (2015), Mercer (2015) and, more recently, Tuck (2015). Appendix 2 provides a summary of the key features of three of these metrics.

There is notable variation between the measures and methods used to assess liveability (Appendix 2) with the composition of each index reflecting the authors' perspective, priorities and intended audience. Common dimensions are evident, such as social, cultural, economic, housing and infrastructure, but it is not transparent as to exactly what specific indicators are deemed important within a dimension and how these should be measured and quantified. Nor is it clear what data sources are used or whether a weighting system is employed. Although some details are available on each index, given the proprietary nature of their publishers, large gaps often remain. However, some indices are more transparent than others. For example, the EIU (2014) outlines details of the weighting applied to its five dimensions: Stability (25 per cent), Healthcare (20 per cent), Culture & Environment (25 per cent), Education (10 per cent) and Infrastructure (20 per cent); although the rationale for this allocation is not publically available. Weighting dimensions, or even the indicators within a dimension, is a contentious issue. Ruth and Franklin (2014) rightly query the basis for one aspect to be more or less important and in what

context this will apply, for whom and who judges. Another conceptual issue arising in the construction of a liveability metric is whether one indicator can compensate for another. Is it acceptable for a city to do well in one dimension (e.g. public open space), poorly in another attribute (e.g. transport) and yet still rank highly in an overall summary measure? To date, there is no agreement on these issues although advanced computational methods are being developed to make provision for options such as weighting, substitution and normalisation (Miller, Witlox & Tribby, 2013).

Several liveability indices integrate qualitative ratings of a city with data provided by experts, but frequently there are very limited details available on the reliability and consistency within and between expert raters and over time (see Appendix 2). However, the inclusion of any qualitative data is contested, with debates focussed on who should provide the qualitative assessment. There is a division between those developing indicators using a ‘top down’ (expert-led) approach and those preferring a ‘bottom up’ (citizen-led) approach that draws on local expertise and involves the general public. There are obvious merits in both approaches as each provides a different perspective: local and experiential compared with professional and independent. These tensions between expert-led and citizen-led models of liveability are well documented but as yet remain unresolved (Turcu, 2013). An untested idea might be to integrate qualitative assessments from multiple sources.

Two common dimensions of liveability metrics are ‘social’ and ‘cultural’, which are both inherently subjective constructs. We each have our own personal preferences and interests and one’s family context and life situation will shape our cultural and social needs, which also change overtime. Capturing these subjective dimensions in a liveability metric would seem difficult without direct engagement with the local communities themselves to seek their values and perceptions. Yet this poses a conceptual issue of whether local views and values specific to one local neighbourhood and context should be aggregated (and therefore probably averaged) across a

metropolitan city and still remain useful. Cities have considerable diversity within and between neighbourhoods and different people will value different attributes. In the USA, the American National League of Cities (a professional network of US municipalities and city leaders) circumvented this problem by developing a series of city metrics tailored to different needs and life stages (National League of Cities, 2013). Examples include ranking US cities as the best city to bring up your family, have your baby, find a job or, in the case of retirement, for cycling and even as an overall 'healthiest' (National League of Cities, 2013). Whilst these tailored metrics may be popular with the media and some communities, they also serve to illustrate what Ruth and Franklin reported as a burgeoning 'cottage industry' of metrics (Ruth & Franklin, 2014).

Another common, but often poorly described, dimension is the environment. This appears to generally refer to qualities of the urban form and can be as diverse as access to public transport, quantity of green space or a measure of air quality (see Appendix 2). Rarely is this dimension presented as a holistic assessment of the cities' urban (environmental) systems. Such an approach is broader and would warrant the inclusion of other components such as water (availability, quality, cost, recycling), air quality (from industry and traffic), energy sources (renewable or other) and even biodiversity (protection of native flora and fauna). Few of the current liveability indices include an explicit environmental ecosystem perspective. Indeed, quite the reverse, with the focus of most current liveability indices noted to be anthropocentric, with a primacy on meeting the needs of the people, not the wider ecosystem as a whole (Ruth & Franklin, 2014). Furthermore, the focus is almost exclusively on the current population and the 'here and now' (Ruth & Franklin, 2014) with little apparent regard for the environmental cost and impact of how finite resources are used to achieve high levels of liveability. This perspective is in stark contrast to the related but distinctively different agenda of environmental sustainability and the concept of sustainable

cities. This field has also spawned a burgeoning set of measures and metrics as is discussed in more detail below.

The appeal of measures of liveability may lie in their personal relevance and focus on the places where we live and work, our homes and neighbourhoods and the provision of a relatively simple score by which cities can be compared in the present time. Furthermore, the metrics appear credible and imply a set of actions that can improve a city and that largely fall within the mandate of city governments, planners and policy makers to enforce (Ruth & Franklin, 2014). Yet some observers have noted an underlying shift in focus of the construct of liveability from a measure of need to a measure of wants; from what could be viewed as the minimum requirements for a city to be liveable, to a measure of the ‘desirable city’. Ruth and Franklin (2014) warn this may be the ‘conceptual crack’ that creates confusion in this field.

So, noting the above varying definitions and measures of liveability, how does Perth rank? How liveable is Perth? Figure 1 shows selected results for three liveability indices and the ranking of Perth. Not surprisingly, the results illustrate that what and how you measure liveability makes a big difference to the ranking and with these selected (yet well known) measures, city comparisons are rather capricious. In 2015, the EIU index placed four Australian cities in the global top ten, with Perth ranked in eighth position. Melbourne was ranked first, followed by Vienna and Vancouver (which had dropped from first place in 2012). In contrast, *Monocle’s* top cities for 2015 were Copenhagen, Tokyo, Berlin and Melbourne, with Perth not reaching their ‘top 25’ metric. Cities ranked highly by EIU were notably lower in *Monocle*. Vancouver’s varied ranking serves to illustrate not only the variation in metrics, but also that cities do change, for better or worse.

It is also important to highlight that, despite their widespread use, none of the currently available composite scores of liveability have any established or published empirical evidence demonstrating whether the index is associated with any health-related outcomes – one important and implied outcome of a liveable community.

Liveable, Sustainable and Walkable Boomtown

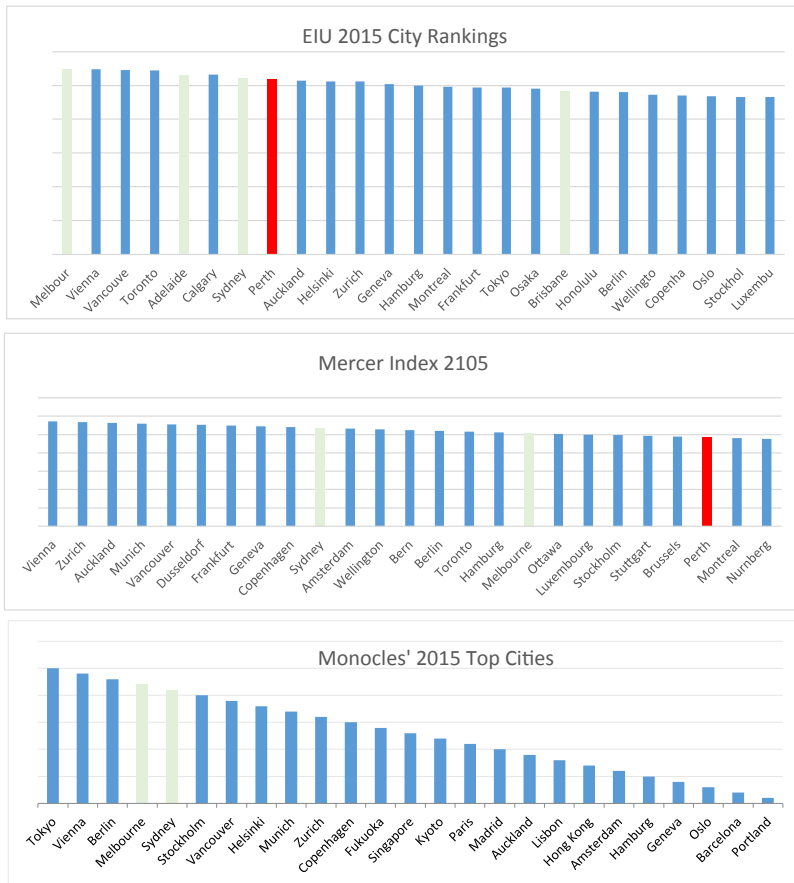


Figure 1: Rankings of the most liveable cities in 2015.

There is indeed a need for a stronger empirical and scientific base for the composition and construction of a liveability index. This gap is currently being addressed through work underway in Australia by the Victorian Liveability Research Program, the NHMRC Centre for Research Excellence in Healthy, Liveable Communities, the Australian Prevention Partnership Centre (funded by the Sax Institute) and the Clean Air and Urban Landscapes research collaboration. This work has developed a conceptual framework and defined seven domains of liveability: employment, food, housing, public open space, social

infrastructure, transport and walkability (an index comprising land-use mix, connectivity and density). The goal is to create an empirically based liveability index. Current work is identifying the urban planning policies and their relevant standards from each state for each of the domains after which spatial measures will be developed and tested using carefully selected large state datasets to identify which (if any) are associated with health and wellbeing outcomes (Badland et al., 2014; Giles-Corti, Foster, Koohsari, Francis & Hooper, 2015). This work will report on an empirically based measure of liveability in Australian cities in 2017.

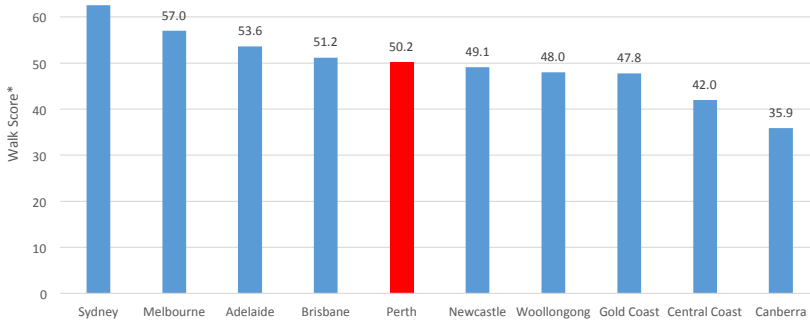


Figure 2: Walk Score® rankings of the ten largest cities in Australia (Reproduced graph using data available from www.walkscore.com/cities-and-neighborhoods/).

WALKABLE CITIES

A concept closely related to liveability is ‘walkability’, a term often used interchangeably with liveability and frequently highlighted in debates about what makes a city a good place to live. The synergies between walkability and liveability are clear given that the liveable cities agenda promotes compact urban design, provision of good access within and between neighbourhoods and town centres, and non-motorised forms of travel such as walking and cycling. As the features required for a city to be walkable are consistent elements of a liveable city, walkability may be viewed as both a proxy indicator for a liveable city and as a prerequisite for a liveable city.

Unlike the liveability indices outlined above, the development and measurement of walkability have been the focus of considerable research and empirical testing notably in Australia, North America and Europe. This large body of research has established that levels of walking are strongly associated with three key characteristics of the built environment: 1) land-use (or access to local destinations); 2) residential density; and 3) street connectivity (Giles-Corti, Foster, et al., 2015; Saelens, Sallis & Frank, 2003).

Larry Frank and colleagues in the USA (Frank et al., 2009; Frank, Schmid, Sallis & Chapman, 2005) proposed the development of a walkability index by combining scores of spatial measures of connectivity, residential density and land-use mix (later modified to include retail floor area ratio; Frank et al., 2006). Results from testing showed that individuals living in more walkable neighbourhoods (that is, compact, with a mix of land-uses and interconnected street networks) were 2.4 times more likely than individuals living in the least walkable neighbourhoods to meet national recommendations on levels of physical activity (Frank et al., 2005). Work along these lines has been pioneered at the University of Western Australia through project RESIDE, a longitudinal study undertaken over ten years to test the walkability concept in an Australian city. Results showed that neighbourhoods (defined as 1,600 metres of road network buffer around a participant's residential address) with higher levels of walkability were associated with a higher likelihood of walking. Indeed, compared with residents living in areas of low walkability, RESIDE participants living in areas with high levels of walkability were twice as likely to do any walking for transport and were more likely to achieve the Australian recommendations for regular physical activity (150 minutes or more each week) (Christian et al., 2011; Foster, Giles-Corti & Knuiman, 2014; Learnihan, Van Niel, Giles-Corti & Knuiman, 2011).

Although study methodologies differ, there is now strong and consistent evidence showing a positive association between the level of neighbourhood walkability and levels of walking in men

and women and across different age groups and socioeconomic environments (Giles-Corti, Foster, et al., 2015; Hooper, Foster, Nathan & Giles-Corti, 2012; Saelens & Handy, 2008).

The concept of a walkable city has been popularised and commercialised. Recently, the Walk Score[®] (www.walkscore.com), a Google-based application providing scores out of 100 for 3,000 cities across the USA, Canada and Australia, has been increasingly applied in transport and health studies. Scores under fifty are indicative of the location being car-dependent. Scores from fifty to sixty-nine indicate an area is 'somewhat' walkable, seventy to eighty-nine 'very' walkable and scores above ninety are classified as a 'walkers' paradise'. The Walk Score[®] has also become a popular, easy-to-use application adopted quickly by real estate professionals, as it provides customers with another way to select and compare their house purchase and it has helped popularise the idea of walkable neighbourhoods. Walk Score[®] was developed based on work by Frank et al. (2009) and, as indicated, has been the subject of further validation studies using health outcomes (Carr, Dunsiger & Marcus, 2010; Duncan, 2013; Duncan, Aldstadt, Whalen, Melly & Gortmaker, 2011). Results have shown that a ten-point increase in Walk Score[®] was associated with six more minutes of walking per week (Hirsch, Moore, Evenson, Rodriguez & Roux, 2013).

In 2013, Walk Score[®] rated the walkability of more than 100 Australian cities and 3,000 suburbs and compiled its first rankings of the Most Walkable Australian Cities and Suburbs. The ranking from Australia (see Figure 2) reveals that Perth, with a Walk Score[®] of 50.2 is ranked in fifth place after Sydney (62.6), Melbourne (57), Adelaide (53.6) and Brisbane (51.2). Within Perth the top most walkable neighbourhoods are Northbridge (95), Perth City (89) and Highgate (87).

In Australia, work has been undertaken to develop a national walkability tool using open-source software architecture within the Australian Urban Research Infrastructure Network (AURIN) framework (aurin.org.au). Development of this national index was

based on the original work undertaken in project RESIDE in WA and incorporates three key sub-components, namely street connectivity, density and land-use mix. Replication of the methods used for the collection of the Victorian data was successful, although completion of a national metric for all Australian cities is currently delayed due to the poor quality of a national land-use dataset (Giles-Corti, Sallis, et al., 2015). Addressing this data limitation is widely recognised as a matter of priority.

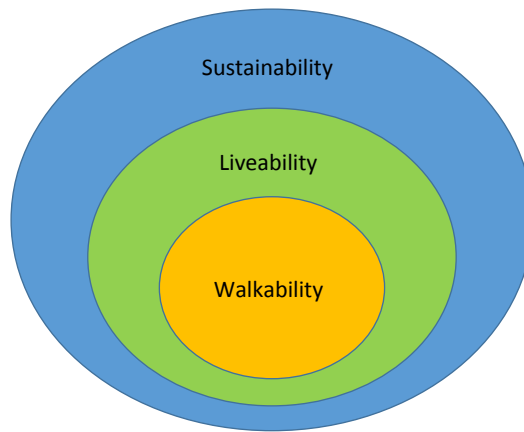


Figure 3: Schematic representation of the relationship between Sustainability, Liveability and Walkability (Reproduced from Shamsuddin et al. (2012), p. 169, citing the University of Winconsin Transportation Analysis Team (2011)).

The rapid uptake of walkability indices lies in its simplicity as a metric and its intuitive appeal and ease of understanding. This is despite the variability that currently exists in how walkability is computed. However, one limitation is that few, if any, of the current walkability indices include micro scale features of the built environment that can affect the practical experience, comfort and aesthetics of walking in a neighbourhood. For example, features at the street scale, such as vegetation (trees, grass, soft landscaping), verge width, street lighting and pedestrian crossings all shape the pedestrian ‘friendliness’ of an area and can either enhance or reduce the walking experience. These attributes

combine to influence our overall desire and motivation to choose to walk when alternatives exist. Some street audits developed for use with schools, workplaces or local communities do exist and these can include micro scale features, but because they usually require completion by individuals in specific locations and for specific routes, they lack the scale of assessment that the larger scale computations of neighbourhood walkability include. Research and development is progressing rapidly in this field and is increasingly incorporating international comparisons of diverse contexts (Adams et al., 2014). The practical application is to identify the macro, meso and micro scale features that can best predict walking and disseminate these results to inform better urban planning, transport and land-use decisions.

CAN A LIVEABLE CITY BE A SUSTAINABLE CITY?

The above section outlined how walkability is a core dimension of a liveable city. However, both liveability and walkability may be viewed as requirements for a sustainable city as shown in Figure 3.

There is considerable political – at the federal, state and local levels of government across Australia – and media attention on planning for both liveable and sustainable cities. So, can a liveable city also be a sustainable city? Results from a recent study suggest not. Newton (2012) compared a group of cities on their rankings of liveability and environmental sustainability. His findings revealed a striking negative relationship, with the majority of cities ranked highly on liveability ranking poorly on sustainability, thus suggesting that liveability was achieved at the expense of environmental sustainability (Newton, 2012). Melbourne, Sydney, Perth, Copenhagen and Auckland all had high levels of resource consumption, which are considered unsustainable within the constraints of a twenty-first century sustainable city (Newton, 2008). These results indicate that other cities aspiring to match or beat the currently top-ranked liveable cities will create levels

of consumption of goods and services that would require the resources equivalent to three planet Earths – clearly unsustainable.

Perth has not fared well on measures of sustainability. In 2010 Perth was identified as Australia's least sustainable city by the Australian Conservation Foundation (ACF; Trigg, Richter, McMillan, O'Rourke & Wong, 2010). The ACF Sustainable Cities Index measures fifteen different indicators across three broad areas: Environmental Performance (air quality, ecological footprint, biodiversity, water and green buildings); Quality of Life (health, density, transport, employment, subjective wellbeing); and Resilience (climate change, public participation, education, food production, household repayments). Perth's high water use, car ownership (641 private vehicles per 1,000 people) and ecological footprint per person are elements that need substantially more attention. Darwin was the most sustainable city, followed closely by the Sunshine Coast and Brisbane.

The key challenge is how to develop cities that are both liveable and environmentally sustainable. In Australia, sustainability is viewed as concerning the future and 'the ability to maintain certain values, assets or capabilities over the long term' (National Sustainability Council, 2013). It is seen to involve the interaction between environmental, social and economic domains and, as such, requires choices to be made and consideration of equity within society and across generations (National Sustainability Council, 2013). The first report of the Sustainable Australia Council in 2013 placed a central focus on the goal of quality of life and wellbeing, both at the individual and community level. Wellbeing was defined broadly as 'a combination of community liveability, environmental sustainability and economic prosperity' (National Sustainability Council, 2013). Further, it outlined that wellbeing was the product of 'the availability, quality and use of a range of resources, including financial (e.g. income and savings), built (e.g. housing and infrastructure), natural (e.g. clean air and water, healthy food) and social (e.g. educational and other institutions, social networks and security) resources' (National

Sustainability Council, 2013, p.10). These resources were viewed as different forms of capital and that a communities' current and future wellbeing depended on the ability to maintain these resources (or capital) over time and that the balance of capital left to future generations is being determined by the decisions and trade-offs that we are making now (National Sustainability Council, 2013). This clear emphasis on the future is central to the sustainability agenda and discourse and is a key departure from the general focus within the current liveability agenda focussed solely on the present (be it implied or explicit). Current research under the National Environment Science Program and the Clean Air and Urban Landscape hub (www.nespurban.edu.au) is one example of bringing together the concepts of liveability and sustainability and integrating a holistic ecosystems perspective. The research program covers conceptual frameworks, development of measurement methods and tools, empirical testing and natural experiments as well as dissemination of practical applications to implement the new knowledge in communities across Australia. Funded for six years (2015 to 2021), this represents one of the largest multi-disciplinary research efforts in recent years to improve urban environments.

This section has reviewed liveability indices highlighting the variability in current definitions, the complexities of its measurement and several of the unresolved conceptual issues. Liveability, walkability and sustainability are related but the breadth of their definitions present challenges which include the availability of adequate and appropriate data for each dimension and indicator, with the relevant temporal and spatial alignment. The scale at which the indicators are needed, or are most appropriate, depends on each dimension. For example, measures of the social dimension may be most relevant at the local level where access to community amenities and interaction with others takes place; in contrast transport or urban mobility may include the quality of public transport and require assessment at the city or sub-regional level. Accessing and integrating these different data into a useable

format to produce meaningful outputs is the subject of ongoing research collaboration.

EVALUATING THE IMPACT AND IMPLEMENTATION OF 'LIVEABLE NEIGHBOURHOODS' PLANNING POLICY IN PERTH

Over the last decade there has been an increase in the dialogue and policy statements within state government and urban planning to create walkable, liveable and sustainable communities, including amongst planning authorities in Perth. In February 1998, the WA State Government began trialling the *Liveable Neighbourhoods Community Design Guidelines* (Western Australian Planning Commission, 2000). Based on a local interpretation of New Urbanism, it was introduced to replace the conventional design codes that had facilitated car dependence and sprawl and to stimulate the development of more sustainable suburban communities. Indeed, the key principles of the policy address the notion of both walkability and sustainability as key components in the creation of 'liveable neighbourhoods'. A key intended (and stipulated) outcome of the policy was to reduce the footprint of the sprawling suburbs as well as car dependence and to encourage more walking, cycling and public transport use (Western Australian Planning Commission, 2000). The second edition of the guidelines published in 2000 set out six general design elements, four of which (community design/urban structure, movement network, lot layout and public parkland) provided guidance to assist in the design of more compact, self-sufficient, walkable, 'liveable' suburban communities (Western Australian Planning Commission, 2000).

The introduction of the Liveable Neighbourhoods (LN) policy represented a unique opportunity for a natural experiment to evaluate the implementation and impact of these new design guidelines on local residents' health- and travel-related outcomes (Giles-Corti et al., 2008). In 2003, the RESIDential Environments (RESIDE)

study commenced, which, in brief, recruited people building new homes in the selected study areas (new greenfield residential estates) and asked them to complete a health survey on four occasions (before they moved into their new home and then approximately twelve, thirty-six and forty-eight months later). The results from the longitudinal analyses revealed that those participants whose neighbourhood was more supportive of walking reported higher levels of walking on both transport and recreation walking (Giles-Corti et al., 2013; Knuiman et al., 2014).

A second aim of the RESIDE project was to evaluate the 'on-the-ground' delivery of the LN policy and its success in terms of creating more 'liveable' suburban neighbourhoods. A specific focus of the study investigated whether greater implementation of the LN policy was associated with better walking outcomes (Hooper, Giles-Corti & Knuiman, 2014). Full methods are available elsewhere (Giles-Corti et al., 2008), however, in brief, measures of forty-three urban design features specified in the LN policy elements were developed and computed for thirty-six RESIDE housing developments in 2009, representing a period of six years since the building of the new neighbourhoods commenced (Hooper et al., 2014). Measures of compliance were developed and these quantified the degree to which the development had adhered to the stated policy requirements of each element. The level of compliance (for each element and overall) was calculated as the percentage of the maximum policy implementation score attainable.

The results showed that none of the thirty-six developments implemented the full suite of policy requirements for any of the four elements. Indeed, on average only about one half (47 per cent) of the urban design features had been realised (range 27 per cent to 55 per cent). Average (and range) of compliance scores for each of the four elements were as follows: community design 27 per cent (0 per cent to 68 per cent); movement network 48 per cent (37 per cent to 59 per cent); lot layout 58 per cent (19 per cent to 81 per cent); and public parkland 47 per cent (5 per cent to 69 per cent)

(Hooper et al., 2014). These results reveal incomplete implementation of the WA state urban design planning policy.

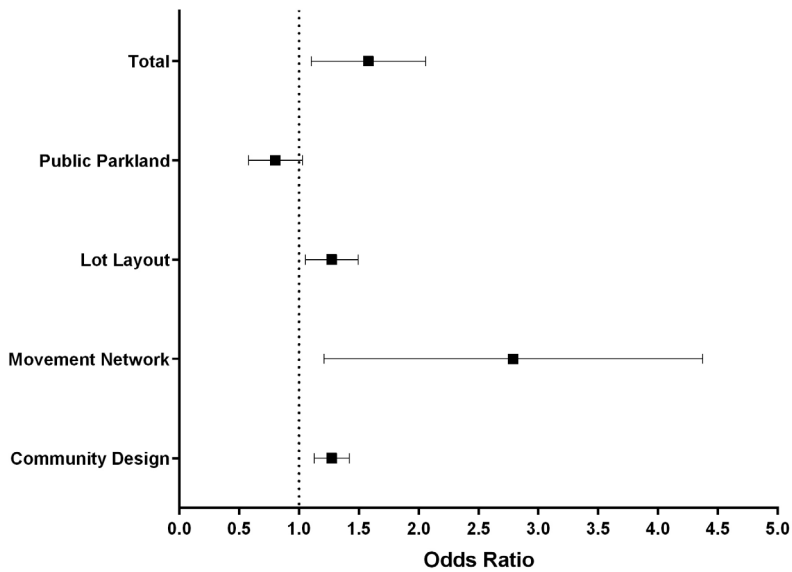


Figure 4: Likelihood of walking as transport for a 10 percentage point increase in policy compliance of Liveable Neighbourhoods for four elements and overall (total) (Data reproduced from results published in Hooper, Giles-Corti et al., 2014).

Another important question is whether the level of policy implementation was associated with achieving the stated policy outcomes and specifically those related to health such as increased levels of walking? Figure 4 shows the (adjusted) odds ratios (OR) of doing any walking as transport for a 10 per cent point increase in the level of LN policy compliance. Despite incomplete implementation of the policy, these results showed a strong positive dose–response relationship between policy compliance and walking (Hooper et al., 2014). Namely that, for every 10 per cent increase in LN policy compliance, the likelihood of residents walking as transport within their neighbourhood increased by 50 per cent (OR 1.53; 90 per cent confidence interval 1.13–2.08). Moreover, for every 10 per cent increment in compliance in each of the specific elements (community design, movement network, lot

layout and public parkland), the likelihood of walking as transport was increased. Most notable was the strong impact of implementation of the design features specified under the movement network element, where a 10 per cent increase in implementation was associated with a more than doubling of walking. (OR 2.48; 95 per cent confidence interval 1.38–4.50; Hooper et al., 2014).

Overall, these results from one of the first prospective longitudinal studies on the impact of urban design on health outcomes provides empirical evidence that ‘liveable’ neighbourhoods can encourage people to walk more and that implementation of a known set of urban design features can create more walkable and liveable communities. RESIDE also revealed that the state planning policy was not achieving its full potential because implementation was incomplete. Identifying and addressing the factors that limit LN policy adoption and compliance is required. New research is commencing in partnership with the WA Department of Planning to review the gaps in implementation and the state and local planning approval processes to identify effective corrective actions.

The shortfall in policy implementation may be due to a number of factors and each will require effective actions by different stakeholders. It is probable that during the various review stages of plans (sub-regional, scheme and local structure plans), negotiations, concessions and trade-offs may compromise the implementation of the LN design principles and result in a reduced potential to deliver a liveable and walkable community. These practices and other identified inconsistencies between planning approval processes at the state and local levels need close investigation and modification where required. Furthermore, to encourage and support a systemic change within the planning system, adequate training and stronger enforcement of the liveable neighbourhoods policy is required.

Limited training opportunities were provided following the introduction of the LN policy, however, in recent years this gap has been addressed. *Healthy Active By Design* (www.healthyactivebydesign.com.au).

healthyactivebydesign.com.au) was developed through a collaboration between academics, nongovernment, private industry and government to provide a 'one stop' source of sound evidenced-based information on the principles and design features of healthy, walkable and liveable neighbourhoods. To complement the already available summaries of evidence, case studies and practitioner checklists, training opportunities are under development to support current and future professionals in urban and town planning. Additional training opportunities are planned for elected local officials as well as links with professional accreditation schemes such as those run by the Planning Institute of Australia. Developing an informed and skilled professional community underpins effective implementation of LN in the future.

SUMMARY

Interest and concern about the liveability and sustainability of our cities is timely; some might say much overdue. With the global population forecast to increase to nine billion by mid-century and the majority of those people living in urban centres, the design and development of cities is a priority. This agenda is critical for Perth, a city with much natural beauty and amenity, yet facing its own combination of demographic changes, impact of globalisation on its economy and society and significant ecological and environmental pressures. This chapter has reviewed the concepts of liveability, walkability and sustainability and shown the interconnected nature of these constructs and their component parts. Developing robust metrics is important and the conceptual and methodological challenges posed are the focus of research groups and institutions nationally and globally. Outputs will provide an improved understanding of liveability, its utility and applications. Rapid growth in new technologies, real time data collection, data linkage, systems modelling and data visualisation will help advance the development of practical tools for communities, planners and decision-makers.

The research undertaken in Perth and reported in this chapter provided an introduction to the evidence base that supports the positive health benefits that arise from good urban design. This empirical and independent evidence is being used to support calls for increased efforts to deliver better and more compact urban design as Perth grows as well as an emphasis on the need for ‘walk friendliness’ in our local neighbourhoods across the city. Although this agenda is shared by most state and local governments, much needs to be done if Perth is to achieve the vision of being a liveable and sustainable global city. Accomplishing this goal requires the alignment of policy and practice by many stakeholders. A clear starting point, however, is to ensure that the health of people, now and in the future, is central to the planning system.

Appendix 1: A Sample of Definitions of Liveability

Examples from Western Australian policy documents.

‘a world class liveable city: green, vibrant, more compact and accessible with a unique sense of place.’ (Western Australian Planning Commission, 2009)

‘A city with an enviable quality of life characterised by a community which is diverse and inclusive; engaged and creative; safe and healthy.’ (Western Australian Planning Commission, 2015)

Examples with a people focus.

‘The foundation of a liveable place is its people. Therefore each community will place different levels of importance on the individual elements that constitute liveability or may identify other aspects of importance to it. Each community needs to develop its own unique strategy to reflect its own unique definition of liveability.’ (Partners for Livable Communities Australia, 2013)

‘More people friendly.’ (Wetzstein, 2010)

‘A measure of the city’s liveability is how good it is for children and youth. If a city lacks liveability they are the first to suffer.’ (Partners for Livable Communities Australia, 2013)

Examples with focus on quality of life and sum of parts.

‘Liveability is the sum of the aspects that add up to the quality of life of a place.’ (Partners for Livable Communities Australia, 2013)

‘relates to those attributes of a place ranging in scale from dwelling and neighbourhood to a city and its region that contribute to the residents’ quality of life and wellbeing. As such [liveability] embraces measures of residential amenity, human capital, social capital, human health and the more qualitative elements of personal satisfaction and happiness.’ (Newton, 2012)

Examples with focus on interaction between people and place.

‘a quality that is not an attribute inherent in the environment but is a behaviour-related function of the interaction between environmental characteristics and personal characteristics.’ (Pacione, 1990)

‘Residents’ evaluation of the living environment.’ (Marsman & Leidelmeijer, 2001)

‘(Liveability) relates to those attributes of a place, ranging in scale from dwelling and neighbourhood to a city and its region that contribute to residents’ quality of life and well-being. As such, the concept embraces measures of residential amenity, human capital, social capital, human health, and the more qualitative elements of personal satisfaction and happiness.’ (Newton, 2012)

Examples linking liveability with sustainability.

‘Provides a vibrant, attractive and secure environment for people to live and work and environmentally sustainable’. (Centre for Liveable Cities 2014)

Example from NHMRC CRE on Healthy Liveable Communities.

‘A liveable city is safe, attractive, socially cohesive and inclusive and environmentally sustainable, with affordable and diverse housing linked via public transport, walking and cycling to employment, education, public open space, local shops, health and community services and leisure and cultural opportunities.’ (Badland et al., 2014)

Appendix 2: Summary Descriptions of Selected Industry-developed Liveability Indices

The Economist Intelligence Unit (EIU) Liveability Survey (EIU, 2014)

The (EIU) survey ranks 140 cities across five categories with a focus on economic and business issues. The EIU liveability ranking is computed from scores of ‘relative comfort’ on over thirty qualitative and quantitative indicators in five key areas: 1) stability; 2) health care; 3) culture and environment; 4) education; and 5) infrastructure. For quantitative indicators, scores are derived from the relative performance on a number of external data sources. For qualitative indicators, scores are based on the judgement of ‘in-house analysts and in-city contributors’. Each indicator is rated as acceptable, tolerable, uncomfortable, undesirable or intolerable. Final scores are weighted to produce a Final Rating, where 100 means that liveability in a city is ideal and 1 means that it is intolerable. (EIU, 2014)

Mercer Quality of Living Worldwide City Rankings Survey (Mercer, 2015)

The Mercer Quality of Living Worldwide City Rankings survey is an annual survey conducted to help multinational companies compensate employees fairly when placing them on international assignments. Mercer scores over 200 cities according to thirty-nine factors grouped in ten categories which include: environment, recreation, personal safety, hygiene, health care, education, transportation, political and economic stability and public transportation. Although the full methods are not available to non-clients, the website indicates that the scores for each factor are weighted to reflect ‘their importance to expatriates’ and ‘allow for objective city-to-city comparisons’. This metric is aimed at multinational business communities, governments and city leaders (Mercer, 2015).

Monocle Annual Quality of Life Survey (Tuck, 2015)

Monocle (a global affairs/lifestyle magazine) has conducted an annual survey for the past nine years, although the methodology does change between years. In 2015 *Monocle* focussed attention on ‘the top 25 cities to call home’ and added twenty-two new metrics. The criteria included: social and economic circumstances for residents; public health; culture; green space; and ease and availability of local transport. Also included are a number of ‘softer indicators’ such as sunshine (hours); international flight connections; tolerance; upcoming developments; electric car charging points; and ‘eating out for dinner on a Sunday’. *Monocle* defines the highest ranked cities as ‘places that are benchmarks for urban renaissance and rigorous reinvention in everything from environmental policy to transport’. Scoring protocols and data sources are not clear.

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