Understanding neighbourhood liveability for older urban Australians

Desley Vine, School of Design, QUT
Laurie Buys, School of Design, QUT

Abstract

As with other major developed cities, the sub-tropical and fastest growing Australian capital city of Brisbane has adopted policies designed to increase residential densities and meet the liveability and sustainability goal of decreasing car dependence and greenhouse gas emissions. This goal hinges on a pedestrian friendly environment and walkable proximity to satisfy everyday needs. While older people are particularly attracted to sub-tropical urban environments, there has been little empirical evidence linking liveability satisfaction and perceived and actual use of older people's urban neighbourhood. Using qualitative (diaries and in-depth interviews) and quantitative (Global Positioning Systems and Geographical Information Systems mapping) liveability research data this paper explores whether high density supports liveability and is sustainable for older people living in a sub-tropical urban environment. This paper links satisfaction and perceived use of the sub-tropical urban Brisbane environment with actual mapped characteristics and use. Linking the two methods (both quantitative and qualitative) is important in obtaining a greater understanding of human behaviour and the lived world of older urban Australians and in providing a wider picture of sub-tropical urban neighbourhoods for a significant population group within those neighbourhoods. What emerges from the research is an uneven standard of design, provision of amenities and maintenance of the public realm which negatively impacts on local neighbourhood participation by older urban Australians. By highlighting these issues this research furthers the understanding of design factors which make the sub-tropical urban neighbourhood more liveable and sustainable for older people and will inform actionable and implementable policies, programs and designs.

Introduction

The state and local governments of the subtropical city of Brisbane, Queensland, like most capitalist societies, are keen to develop a more sustainable and liveable urban development pattern by adopting policies to increase residential densities and reduce motor vehicle dependence thereby reducing greenhouse emissions. Urban consolidation policies and initiatives are designed to increase the capacity of urban areas by promoting higher density, transit-oriented and mixed use development to facilitate urban amenity, diversity, reduced travel demand and lively and walkable streets. These initiatives have been very successful in attracting two population groups predominantly to the high density urban areas of this fastest growing Australian capital city, including the young, either single or childless couples and older people (Brisbane City Council and Queensland Government, 2010). It is the latter group that is the focus of this paper.

Liveability, while lacking a universally accepted definition, can be broadly defined as community well being represented by characteristics that make a place where people want to live now and in the future (Victorian Competition and Efficiency Commission, 2008). Liveable high density typically has the defining feature of ease of movement for

people and goods via walkable proximity to transport, amenities and access to green space (Frank *et al*., 2003).

Walking is regarded as being accessible and convenient to everyone and an act of identity creation through the everyday use of space (de Certeau, 1998). Walkability is an essential attribute of a liveable city (Peirce, 2007), and has been defined as:

> …the extent to which the built environment supports and encourages walking by providing for pedestrian comfort and safety, connecting people with varied destinations within a reasonable amount of time and effort, and offering visual interest in journeys throughout the network (Southworth, 2005, p. 248).

Higher densities, greater street connectivity and greater land use mix are key correlates in the decision to walk (Behan *et al.*, 2008). Urban consolidation policies should produce an accessible, time efficient, safe and comfortable transport network of public transport nodes, transport corridors and available and interconnected cycling and walking infrastructure (Leslie *et al*., 2007). It is important therefore, that issues such as availability, comfort, safety and time efficiency be addressed when designing environments that promote accessible and sustainable mobility.

Everyday, regular and easy pedestrian use of urban neighbourhood streets by residents is an objective of both sustainability and liveability practice (Wheeler, 1999). With regard to the objective of sustainability, improved pedestrian amenity produces less automobile use and pollution, improved public transportation options and increased walk-up business for local businesses (Moreno and Ruiz, 2008). The liveability objective is achieved through more pleasant walking conditions, healthier residents, greater opportunity for spontaneous and planned encounters; increased property values; improved personal safety and a stronger sense of place-based identity (du Toit *et al.*, 2007). Regular pedestrian use provides a sense of ownership expanding beyond the physical walls of the home (Mayol in de Certeau, 1998). The importance of physical conditions, aesthetics, and comfort of the pedestrian realm itself provide a useful strategy for tackling walkability issues in support of sustainability and liveability goals within neighbourhoods (Maoh and Kanaroglou, 2009).

Research in public health, urban planning and transportation highlights the link between urban form, physical activity and public health (Frank *et al.*, 2003). Walking has been shown to have a positive influence on a range of health outcomes - including chronic conditions such as heart disease, some cancers and diabetes (Prohaska *et al.*, 2006). Physical activity among older Australians has been found to be significantly influenced by the availability of safe footpaths and access to facilities (Booth *et al*., 2000). The quality of the neighbourhood environment (e.g. pedestrian paths) is particularly important to older people as walking difficulty and fear of falling have been found to be some of the factors restricting outside activity by older people (Weuve *et al*., 2004). Environments which are conducive to decisions to walk are important for older people to remain active and independent.

Older people choose to live in high density for a variety of reasons related to individual lifestyle priorities including the desire to live in a high amenity urban neighbourhood (Olsberg and Winters, 2005). Liveability is generally conceived to rest on the functioning of place to meet the daily needs of residents. However, there is currently little empirical evidence that is able to confirm whether or not liveability is achieved by older people within high density settings. This paper seeks to address this gap in the literature and explore whether or not high density neighbourhoods support liveability for older residents.

Methodology

The data used for this study comprises a sub-set of data related to the experiences of older Australians residing in inner-urban, high density suburbs, which were gathered as part of a larger project exploring active ageing and liveability in rural, regional and urban locations. The research methodology used for the current study involves three different data collection methods: time-use diaries, Global Positioning Systems (GPS) mapping, and in-depth qualitative interviews. Two weeks prior to the semi-structured in-depth interviews, participants were given a GPS tracking device and paper diary and were asked to carry the GPS everywhere they went and to complete a daily diary on their activities for that one week period in 2010. Ethical approval for this project was obtained from a university Human Research Ethics Committee, with all case study participants providing written informed consent prior to their participation in the current study.

Case Study Location

The case study location is Brisbane, Queensland, the fastest growing city in Australia and the second fastest growing city in the western world with a population of almost one million people. Six inner-urban higher-density suburbs (defined as 30 or more dwellings per hectare) fall within this area (Hamilton, Highgate Hill, West End, Newstead,/Teneriffe, Kangaroo Point and Kelvin Grove) and participants were selected to ensure that the data represents all six suburbs. Figure 1 is a map of the inner-urban high density areas included in this study.

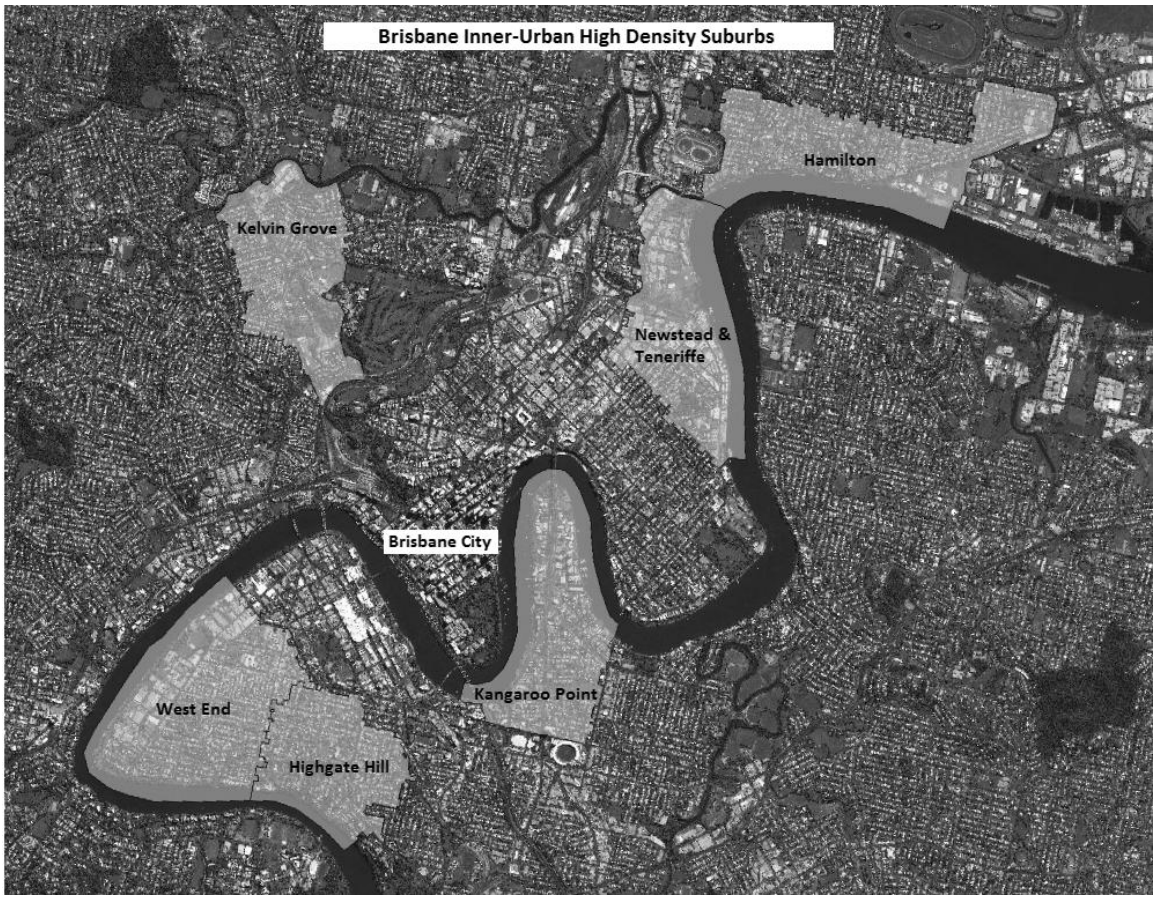

Figure 1 Map of the inner-urban high density areas included in this study

Participants

A total of 12 participants (6 men, 6 women) living in selected high density areas were used for this research with all but one of the sample drawn from a database of a past project ('*Living in the City'*) (see Table 1 for a summary of respondents' profile). This previous study utilised a proportionate sampling technique for a postal survey completed by 636 inner urban residents (28% response rate) in 2007, involving research that focussed on the social, environmental and economic aspects of inner-city life. Using this database, participants who had indicated a willingness to participate in further research and were now aged 55 years or older were contacted and invited to participate, ensuring that those recruited allowed exploration of differences that might emerge as a function of age or gender. Since the original sample from which these participants were drawn lacked any persons of low socioeconomic status (SES), a twelfth participant was recruited through a community group to facilitate a case study within this particular demographic.

Table 1: Summary Table of Case Study (CS) Respondents and Location Profile

Person	Age	Gender	Marital Status	Income	Working/ Retired	Length of time in residence	Location[#]	Population *	Land mass	Distance from GPO, Brisbane
CS1	57	Male	Married	>70K	Works**	> 11 years	Newstead [+]	4818	1.3km^2	3kms NE
CS2	62	Female	Single	>70K	Works**	> 9 years	West End^	6206	1.9km^2	3kms SW
CS3	64	Female	Married	40-50K	Retired	2 years	Kelvin Grove Urban Village+	4246 for all of KG	Urban Village 16ha	3kms NW
CS4	65	Female	Married	>70K	Retired	> 6 years	Kangaroo Point[+]	6868	1.3km^2	0.75km SW
CS5	70	Male	Single	>70K	Works**	8 years	Highgate Hill^	5428	1.2km^2	2kms SE
CS6	72	Female	Widowed	<20K	Retired	49 years	West End^	6206	1.9km^2	3kms SW
CS7	73	Male	Single	>70K	Retired	9 years	Hamilton^	4366	1.7kms ^{2}	5kms NE
CS8	75	Female	Widowed	Unknown[†]	Retired	35 yeas	Highgate Hill^	5428	1.2km^2	2kms SE
CS9	78	Male	Married	Unknown[†]	Retired	10 years	Kangaroo Point[+]	6868	1.3km^2	0.75km SW
CS10	79	Male	Married	>70K	Retired	9 years	Kangaroo Point[+]	6868	1.3km^2	0.75km SW
CS11	80	Female	Married	50-70K	Retired	10 years	Kangaroo Point[+]	6868	1.3km^2	0.75km SW
CS12	80	Male	Married	>70K	Retired	> 6 years	Hamilton^	4366	1.7kms ^{2}	5kms NE

*Population data from 2006 Census, gathered by the Australian Bureau of Statistics (2007)

[†] Income not disclosed

[#] Each of these areas are targeted for further urban renewal and being developed specifically for high density living. The different inner-urban areas have different topography and varying levels of infrastructure and available services

^Hamilton, Highgate Hill, West End, (well established residential areas)

[+]Newstead, Kangaroo Point and Kelvin Grove Urban Village (areas which have undergone massive transformation from semi-industrial to high residential density)

**One quarter of respondents were in full- or part-time work, representing a growing and new breed of wealthy workers who reject retirement, coined 'nevertirees' (Barclays Wealth, 2010). Cities have the defining feature of occupational cadres (Hamnett, 2005) who have highly remunerative employment from economic activities characteristic of major cities (Webber, 2007).

Apparatus - Global Positioning Systems

Objective and accurate measurements of the participant's physical movements throughout the seven day trial periods were obtained by issuing participants with portable autonomous Global Positioning Systems (GPS) devices. Following the trials, the recorded spatial data was analysed and visualised using a Geographical Information Systems (GIS): Google Earth.

Daily Diaries

Participants kept a daily diary of activities/destinations for the week prior to the interview. The diary recorded demographics, daily travel and activities for each participant.

In-depth Interviews

The in-depth interview explored a number of open-ended questions regarding their level of activity and instrumental and non-instrumental social behaviour within the immediate urban environment. Using the diary and map information, the interviews explored the experiences of participants in relation to social inclusion, frequency of planned and spontaneous encounters and urban community social support and engagement. All interviews were recorded and lasted on average approximately 90 minutes.

Data Analysis

The data from the interviews, diaries and maps was compared and analysed using qualitative research methods. The audio recordings were fully transcribed and then analysed using a thematic approach, identifying key categories, themes and patterns (Liamputtong, 2009). An iterative process was utilised, with the transcripts being read and reread in order to code the data and identify emerging themes and meaningful categories. To enable understanding and interpretation, participants' diaries and time/space life path maps were also qualitatively analysed to identify key patterns regarding where and how participants moved in the monitored week.

In this study, objective indicators were gathered using Global Positioning Systems (GPS) to track the respondents' movements and then to map their movements using Geographical Information Systems (GIS) and also to gather objective indicators about their urban environment with regard to services and facilities. This data was then analysed for the second phase of subjective measurement through semi-structured in-depth interviews.

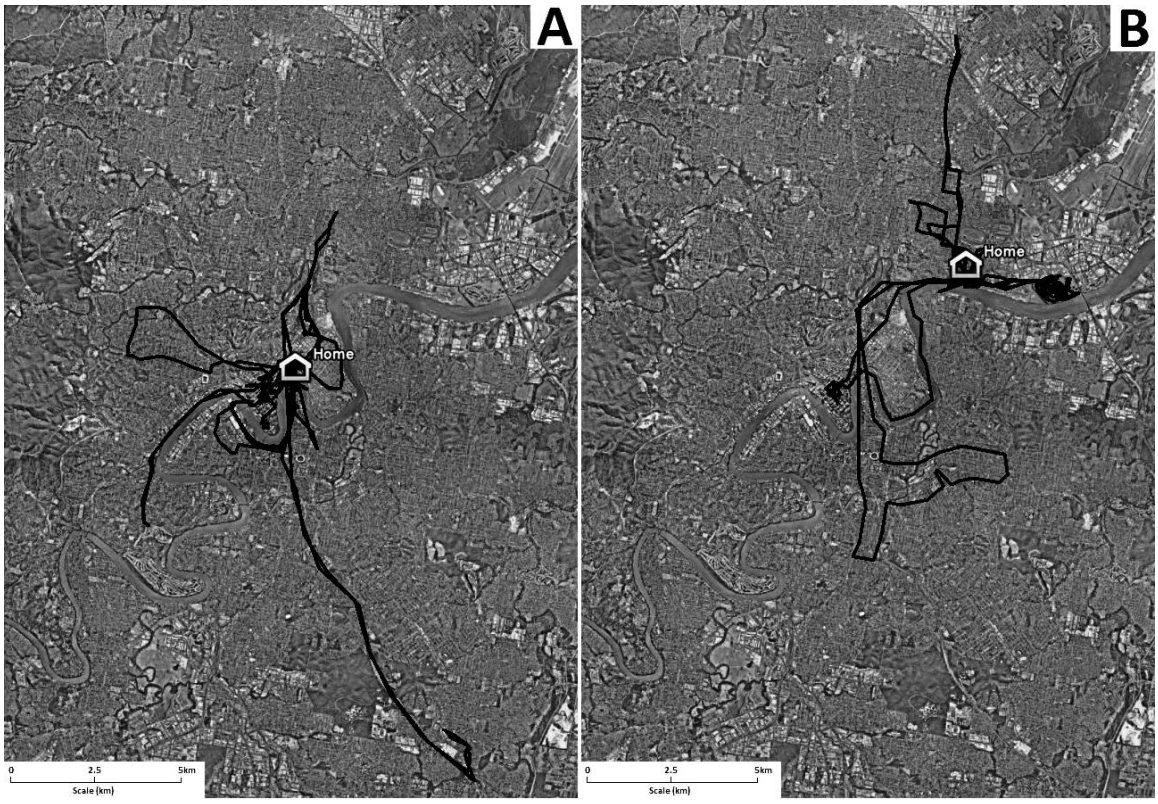

Figure 2 is an example of two weekly activity maps

Results/Discussion

The key research question set for this study was whether or not high density neighbourhoods support liveability for older residents. A liveable high density neighbourhood is one that meets the everyday needs of residents within the walkable local neighbourhood thereby reducing automobile-dependence. The two activity maps depicted in Figure 2 are representative of the weekly activity maps for all study participants. The dark lines show the movement for each participant during the week of study. As can be seen from these maps, the participants are leaving their local neighbourhoods to undertake everyday activities, therefore requiring extensive use of their private motor vehicle for transportation. This study has identified issues within local high density neighbourhoods which inhibit full participation by local older residents. The findings of this study are presented under the three key themes: *the built environment, public transport availability and accessibility and motor vehicle dependency.*

The built environment

The experience of the neighbourhood for these residents was negatively affected by issues with steep topography, traffic and pedestrian crossings and streetscape. Weather conditions and hilly topography were mentioned and need to be controlled for to further enhance our understanding of how built environments influences travel (Cervero and Duncan, 2003).

The proximity of walking paths to major roads was identified as a significant issue as older people report being shaken by the noise and the movement of the traffic. Previously researchers have found that attentional resources are drained by the demands of traffic whizzing by (Kaplan and Kaplan, 2003). Similarly, the residents identified inadequate numbers of pedestrian crossing opportunities, ambiguous crossing cues or insufficient time to cross at traffic lights on very busy roads. One resident reported that this has resulted in pedestrian fatalities. This has been borne out in previous research which found that older people are at relatively high risk of fatalities and injuries from motor vehicle accidents at crossings (Koepsell *et al*., 2002).

> *That is the problem, crossing (that major road)…There's lights on the corner with pedestrian crossing. I tried to get across as fast as I can and I can't get across in one change of the lights. People on the walking sticks haven't got a hope....we have taken it up with the council. They have increased the time to 2 seconds, but that's still not enough time.* (CS12)

Streetscape issues were identified as deterrents to walking in subtropical urban neighbourhoods for older people. Lack of shade, missing handrails beside steps, inadequate or damaged public seating and or toilets and little or no access to drinking water along footpaths were all identified as deterrents. Several of these issues like shade and drinking fountains are particularly pertinent given Brisbane's subtropical weather. What emerges from the research is an uneven standard of design, provision of amenities and maintenance of the public realm. These factors increase reliance on motor vehicles to which older urban people appear to be strongly attached.

> *It has got no shade. It's got no seating for older people, strollers I call them. People who want to stroll rather than - so it's for, you know, the 15 to 50 age group but they forget about the - beyond that.* (CS12)

Public Transport Availability and Accessibility

There were a number of barriers to public transport use for older people which were identified, including: a lack of services in some urban neighbourhoods: *"they* [the buses] *cut it out after 9 o'clock"* (CS8); terrain or distance to transport nodes: *"I could not walk to the bus stop because I live on a hill"* (CS5); inconvenient bus routes or connections: *"they don't all go the way that you want to go"* (CS8); queues, crowding and lack of seating on buses and at bus stops; problem with negotiating steps onto public transport and difficulties with walking supports on buses: *"if it's a good driver and he goes right to the kerb I can get off* [the bus] *easily, but usually they don't"* (CS6). Use of public transport was also found to be limited to certain destinations and locations, such as inner-city travel. The findings from interviews provided further context highlighting that choice of travel mode was largely affected by perceptions of convenience related to time efficiency, seamless journeys and journey destination or purpose. Previous research has identified similar issues with public transport including the perceived quality of the transport service, such as trip lengths (Van Exel and Rietveld, 2009); the potentially negative health outcomes of crowding in over-subscribed public transport services (Cox *et al*., 2006); and the demanding nature of

waiting long periods for public transport exposed to the elements and constant traffic (Kaplan and Kaplan, 2003). Continuing improvement in public transport services, access and infrastructure are necessary for older people to voluntarily abandon their motor vehicle and find public transport more attractive.

Motor vehicle dependency

Many factors conspire against walking in contemporary urban Australia including a near total dependence on the automobile which has prevailed since World War Two (Filion, 2003). There does not appear to be any sign of a reversal of growing levels of automobile dependence especially amongst older urban Australians. Driving offers older people a means of mobility together with feelings of independence, well-being, status and control (Coughlin, 2001; Handy *et al*., 2005). There is a significant association between motor vehicle ownership and positive and psychosocial health outcomes (Rosenbloom, 2001; Ellaway *et al*. in Therese *et al*., 2010). Motor vehicles offer older people independence and freedom in an environment that has walkability issues for them. However, dependence on private motor vehicles has been linked to loss of urban qualities such as walkability and efficient public transport (Newman and Kenworthy in Therese *et al*., 2010) further exacerbating the neighbourhood walkability issues for older people.

The results have shown that older people extensively use their motor vehicle for all their activities outside of their homes. At the thought of being without a motor vehicle and relying on public transport, one resident exclaimed: "*Oh, horrors, like anybody else"* (CS8).

Conclusion

Urban environments are dynamic and exciting promising great opportunities for social engagement and activity. However, they can also be harsh, risky environments requiring stamina, strength and agility, abilities that older people are losing as part of the aging process. Many of the issues raised by the residents are aspects that affect urban liveability which can be improved upon in the short to medium term. For example, the local walkable neighbourhood could be improved by simply planting more trees for shade along pedestrian paths or to act as a buffer from road traffic; by installing more drinking fountains and implementing more regular scheduled maintenance and repair of pedestrian paths, public toilets and seating.

It is important to acknowledge the research limitations. Although the sample is generally representative of high density older residents of inner urban areas and is unusual by incorporating both objective and subjective indicators, our findings are based on a relatively small and potentially unique Australian population. Clearly further qualitative, quantitative and longitudinal research is needed to explore, in more depth, the urban experience and opinion of older people living in an urban environment. In particular, more research is needed to understand the particular attributes that enhance the experience of walking for older people in subtropical urban neighbourhoods.

This study adds to the growing body of literature regarding walkable neighbourhoods and health. Older people are particularly at risk of functional decline and an urban

environment which makes walking easy and enjoyable, is conducive to a more active lifestyle and better health. It is likely with the increasing percentage of older people in urban neighbourhoods that their political influence will grow. The results shown here are important in identifying and corroborating the relevance of built environment barriers to older people's walking behaviour in an urban environment. As discussed above, promoting physical activity in older populations holds the promise of promoting health and reducing the risk of disablement. Studies of individual interaction with the environment are more challenging but potentially more valuable than the study of the role of the built environment or the individual alone in the promotion of physical activity (Satariano and McAuley, 2003). By highlighting issues that impact on the liveability and sustainability of older people as high density residents, this research furthers the understanding of the specific design factors which make the urban neighbourhood more liveable and sustainable for everyone. Such studies inform actionable and implementable policies, programs and designs to help preserve the independence and function of older people.

Acknowledgements
This research was funded by an Australian Research Council (ARC) Linkage Project, "The neglected dimension of community liveability: Impact on social connectedness and active ageing".

Reference List

Behan, K., Maoh, H., & Kanaroglou, P. (2008). Smart growth strategies, transportation and urban sprawl: simulated futures for Hamilton, Ontario. *The Canadian Geographer, 52*(3), 291-308.

Booth, M. L., Owen, N., Bauman, A., Clavisi, O., & Leslie, E. (2000). Social-Cognitive and Perceived Environment Influences Associated with Physical Activity in Older Australians. *Preventive medicine, 31*(1), 15-22.

Brisbane City Council, & Queensland Government. (2010, June 2010). River City Blueprint. *River City Blueprint Forum - Background Paper*, from http://www.brisbane.qld.gov.au/BCC:BASE::pc=PC_6257

Cervero, R., & Duncan, M. (2003). Walking, Bicycling, and Urban Landscapes: Evidence From the San Francisco Bay Area. *Am J Public Health, 93*(9), 1478-1483.

Coughlin, J. (2001). Transportation and Older Persons : Perceptions and Preferences Available from http://assets.aarp.org/rgcenter/il/2001_05_transport.pdf

Cox, T., Houdmont, J., & Griffiths, A. (2006). Rail passenger crowding, stress, health and safety in Britain. *Transportation Research Part A: Policy and Practice, 40*(3), 244-258.

de Certeau, M., Giard, L., & Mayol, P. (1998). *The Practice of Everyday Life, Volume 2: Living and Cooking*. Minneapolis MN: University of Minnesota Press.

du Toit, L., Cerin, E., Leslie, E., & Owen, N. (2007). Does Walking in the Neighbourhood Enhance Local Sociability? *Urban Studies, 44*(9), 1677-1695.

Filion, P. (2003). Towards Smart Growth? The Difficult Impleemntation of Alternatives to Urban Dispersion. *Canadian Journal of Urban Research, 12*(1), Supplement pages 48-70.

Frank, L. D., Engelke, P. O., & Schmid, T. L. (2003). *Health and community design : the impact of the built environment on physical activity*. Washington, DC ; London Island Press.

Handy, S., Weston, L. Mokhtarian, P. L. (2005). Driving by choice or necessity ? *Transportation Research A, 39*(2), 183–203.

Kaplan, S., & Kaplan, R. (2003). Health, Supportive Environments, and the Reasonable Person Model. *Am J Public Health, 93*(9), 1484-1489.

Koepsell, T., McCloskey, L., Wolf, M., Moudon, A. V., Buchner, D., Kraus, J., et al. (2002). Crosswalk Markings and the Risk of Pedestrian-Motor Vehicle Collisions in Older Pedestrians. *JAMA, 288*(17), 2136-2143.

Leslie, E., McCrea, R., Cerin, E., & Stimson, R. (2007). Regional Variations in Walking for Different Purposes: The South East Queensland Quality of Life Study. *Environment and Behavior, 39*(4), 557-577.

Liamputtong, P. (2009). *Qualitative research methods* (3rd ed. ed.). Melbourne, Vic: Oxford University Press.

Maoh, H., & Kanaroglou, P. (2009). A Tool for Evaluating Urban Sustainability via Integrated Transportation and Land Use Simulation Models. *Environnement Urbain/Urban Environment, 3*, a-28- a-46.

Moreno, M., & Ruiz, J. P. (2008). Sustainability of Urban Transport: Common Strategies and Individual Actions / In L. C. Heberle & S. M. Opp (Eds.), *Local sustainable urban development in a globalized world* Aldershot, England: Ashgate.

Olsberg, D., & Winters, M. (2005). *Ageing in place: intergenerational and intrafamilial housing transfers and shifts in later life* (No. 1445-3428). Melbourne, Vic: Australian Housing and Urban Research Institute.

Peirce, N. (2007). Walkability = Livability = Billions. *Nation's Cities Weekly, 30*(49), 2-2.

Prohaska, T., Belansky, E., Belza, B., & Buchner, D. (2006). Physical Activity, Public Health, and Aging: Critical Issues and Research Priorities. *The Journals of Gerontology, 61B*(5), S267.

Rosenbloom, S. (2001). Sustainability and automobility among the elderly: An international assessment. *Transportation, 28*(4), 375-408.

Satariano, W. A., & McAuley, E. (2003). Promoting physical activity among older adults: From ecology to the individual. *American Journal of Preventive Medicine, 25*(3, Supplement 2), 184-192.

Southworth, M. (2005). Designing the Walkable City. *Journal of Urban Planning and Development, 131*(4), 246-257.

Therese, S. A., Buys, L., Bell, L., & Miller, E. (2010). The role of land use and psycho-social factors in high density residents' work travel mode choices: implications for sustainable transport policy. *World Review of Intermodal Transportation Research 3*(1-2), 46-72.

Van Exel, N. J. A., & Rietveld, P. (2009). Could you also have made this trip by another mode? An investigation of perceived travel possibilities of car and train travellers on the main travel corridors to the city of Amsterdam, The Netherlands. *Transportation Research Part A: Policy and Practice, 43*(4), 374-385.

Victorian Competition and Efficiency Commission. (2008). A State of Liveability: An Inquiry into Enhancing Victoria's Liveability, Victorian Competition and Efficiency, Commission's Final Report. Retrieved 1 November 2009, from http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/Govtresponse-liveability/$File/Govt%20response%20-%20liveability.pdf

Weuve, J., Kang, J. H., Manson, J. E., Breteler, M. M. B., Ware, J. H., & Grodstein, F. (2004). Physical Activity, Including Walking, and Cognitive Function in Older Women. *JAMA, 292*(12), 1454-1461.

Wheeler, S. (1999). Planning Sustainable and Livable Cites. In R. T. LeGates & F. Stout (Eds.), *The City Reader* (pp. 434-445). London Routledge.