The lived world of older urban Australians: Relating everyday living to GPS tracking data.

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ABSTRACT
Neighbourhood like the concept of liveability is usually measured by either subjective indicators using surveys of residents' perceptions or by objective means using secondary data or relative weights for objective indicators of the urban environment. Rarely, have objective and subjective indicators been related to one another in order to understand what constitutes a liveable urban neighbourhood both spatially and behaviourally. This paper explores the use of qualitative (diaries, in-depth interviews) and quantitative (Global Positioning Systems, Geographical Information Systems mapping) liveability research data to examine the perceptions and behaviour of 12 older residents living in six high density urban areas of Brisbane. Older urban Australians are one of the two principal groups highly attracted to high density urban living. The strength of the relationship between the qualitative and quantitative measures was examined. Results of the research indicate a weak relationship between subjective and objective indicators. Linking the two methods (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 the urban neighbourhood.

Author Keywords
Neighbourhood, liveability, high density, urban, quantitative, qualitative, older people, GIS, GPS, Brisbane

ACM Classification Keywords
H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION
This paper explores the concept of high density urban neighbourhood and neighbourhood liveability for older people by linking qualitative evaluations of the lived urban experience of older urban people and quantitative indicators of their use of and interface with their urban neighbourhood. There have been two principal groups attracted to high density urban Australian neighbourhoods including young, single and childless couples and older 'empty nest' people (Brisbane City Council and Queensland Government, 2010). It is the latter group who is the focus of this paper.

Like liveability, neighbourhood lacks a single accepted definition. In attempting to conceptualise neighbourhood and neighbourhood liveability, researchers use either quantitative or qualitative indicators. The term neighbourhood is used generally to describe vicinities, however, in common useage neighbourhoods are typically associated with home location, place-based communities and geographic domains (Anderson *et al*., 1999). The one definitional attribute agreed by most researchers, is that neighbourhoods require residents (Brower, 1996). Without residential use a neighbourhood does not exist, and is otherwise known as a zone, area or district (O'Sullivan, 1993). Apart from this requirement of place-based residence, there is no stated particular housing density, type, size, form or cost. However, with regard to the liveability of neighbourhoods, those particular characteristics become more important (Jacobs, 1993).

The concepts of neighbourhood and community are often synonymous with each other (Hillery, 1968). Their point of difference is the ability for communities to exist outside of place (community without propinquity, Webber, 1963), whereas neighbourhoods are grounded in place and geographical setting. Previous research into neighbourhoods, neighbourhood liveability and communities can be grouped into three categories (Hillery, 1968).

First is the objective measurement of neighbourhood as a geographical and placed-based identity with measures derived from primary field surveys or from analysis of secondary, normally census-based, data sets. Locality, physical characteristic, density, residences and resident populations, retail and recreational area, utilities and circulation space are all considered part of this physically-oriented notion (Jacobs, 1993). Physical approaches to neighbourhoods and neighbourhood liveability are often discussed relative to their walkable nearness or proximity to some form of centre, whether public facility, institutional, educational or retail. Proximity to the centre is measured either in walking distance or walking time (Stein, 1951). This physical notion of neighbourhood is acknowledged by most researchers (Brower, 1996; Keller, 1968). Deciphering the neighbourhood and neighbourhood liveability by means of 'objective' characteristics is one of two means of determining the concepts; the other is the more 'subjective' behavioural approach (Keller, 1968) which is outlined below as the second category.

The second category defines neighbourhoods and neighbourhood liveability by the subjective behavioural aspects of their use and activity. This incorporates private and public activity and the exchange of goods and services and information that structure neighbourhoods (Hillery, 1968). This category is informed by and

overlaps with the first category of physical concept of neighbourhood liveability. This view contends that neighbourhood and neighbourhood liveability is not inherent in the environment but is a behaviour related function of the interaction of neighbourhood characteristics and person characteristics (Anderson *et al*., 1999). Everyday household activities influence the perceived dimension of the neighbourhood, for example, how far people are willing to walk to public transport, banks, health facilities, shops and recreation. This suggests that neighbourhoods are identifiable through the linkage of their residential function and their non-residential uses that draw and encourage activity. Neighbourhood behavioural and use patterns may extend into other neighbourhoods. Behavioural use of the neighbourhood has been identified as being entrenched within hierarchies of ever-larger places; i.e., the housing unit situated on a parcel of land, which is situated within the home area, which is situated in the neighbourhoood, which is situated in the city, etc., (Brower, 1996).

Due to the difficulty of defining neighbourhoods spatially or behaviourally, the third category is one of a sociological approach. It includes community concepts of political and social organization, interpersonal and group cohesion and relationships, notions of inclusion or exclusion with social, ethnic, cultural and territorial identity (Hester, 1975; Gans, 1962). Communication and transport technological advances, housing turnover and the mobility and changing nature of work has resulted in decreased social capital and group participation. This has challenged place-based neighbourhoods through the growth of non-place-based communities of interest (Webber, 1963). It is suggested that because place-based communities appear to be on the decline, the social neighbourhood has been reduced to shared political interests against threats to property value and potential change (Putnam, 2000).

As discussed above, most social indicator research has employed either objective or subjective measures and rarely have the two been linked despite that one indicator can contribute to the interpretation of the other (McCrea *et al.*, 2006; Pacione, 2003). Also, there is no conclusive evidence of the superiority of one type of indicator over the other (Pacione, 2003). Both areas of research have contributed valuable insights into the concept of liveability, neighbourhood and communities. Thus, a more complete understanding of neighbourhood use and activity would be facilitated by corresponding data of peoples' perceptions of their use and activity within their neighbourhood. It is an axiom, therefore, that in order to determine a clearer understanding of urban neighbourhood, it would be beneficial to employ both qualitative and quantitative evaluations, thereby considering both the physical urban neighbourhood and the social urban neighbourhood.

Most advanced capitalist societies are keen to develop a more sustainable and liveable urban development pattern and their unit of focus is the urban neighbourhood. Changes or policies aimed at changing the objective, physical urban neighbourhood environment assume an improvement in the subjective experience of urban liveabililty for residents within that neighbourhood when there is little evidence of empirical strength to these associations (McCrea *et al.*, 2006). It is important to investigate these associations to provide greater clarity on the relationship between the two measures. The distinction between subjective and objective measures is the difference between the perceptions of behaviour and the actual behaviour of older people within their urban neighbourhoods. Thus, the purpose of this paper is to use quantitative and qualitative measures to explore the concept of high density urban neighbourhood and neighbourhood liveability for older people.

METHOD

The data presented is a sub-set of a larger project exploring active ageing and liveability in rural, regional and urban Queensland locations; this paper focuses specifically on the experiences of older Queenslander's residing in inner-urban, high-density Brisbane suburbs.

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. Seven 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 seven suburbs.

Participants

A total of 12 participants (6 men, 6 women) living in the selected high-density suburbs in Brisbane were interviewed. Their ages ranged from 55 to 80 years, with a mean age of 69.5 years and all but one lived in their current residence for over five years. Seven participants were married; two widowed and living alone and three single and living alone. Seven participants had annual incomes greater than A$70,000 (three were in full time employment); one had an income between A$40,000 and A$50,000; one had income of less than A$20,000 and two chose not indicate their income level. Participants were currently residing in different inner-urban suburbs with different typography and varying levels of infrastructure and services in each location.

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 analyzed and visualized 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 around 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 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, participant's diaries and time/space life path maps were also qualitatively analysed to identify key patterns in 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.

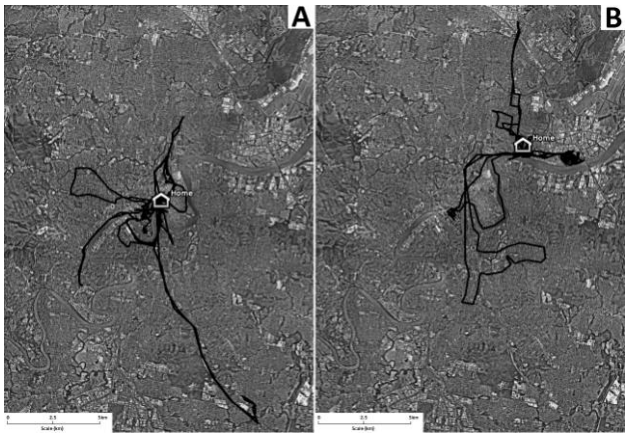

Figure 1 is an example of two weekly activity maps

RESULTS/DISCUSSION

The data reveal a weak link between the subjective perceived use of the local neighbourhood and the objective indicators of actual use. Older residents reported using their local neighbourhoods regularly, however the subjective assessment was incongruent with the GPS and GIS analysis indicating that they have very little local neighbourhood activity. Similarly, there is disparity between the subjective and objective indicators on their neighbourhood meeting all their needs. The third dissimilarity between the objective and subjective related to the geographic concept of local neighbourhood which goes some way to explaining the first two contradictions.

All participants reported that they used their local neighbourhoods regularly for goods and services and recreation. However, the GPS and GIS mapping as shown in Figure 1, demonstrates they spend very little time in their local neighbourhood outside their residence. Map A, in Figure 1, depicts the week's activity of a resident whose neighbourhood has limited available amenities and services which could explain the extensive use of her private vehicle. Map B is the week's activity of a participant, who lives in an urban neighbourhood well serviced with amenities within walkable distances, with similar vehicle use despite the availability of local amenities. When asked to identify walkability issues of their local neighbourhood, residents mentioned the weather, lack of shade and street seating, uneven pedestrian surfaces and topography, lack of hand rails on steps and lack of good quality public toilets.

All residents said that they loved their neighbourhoods and believed that their location met their needs. A widely acknowledged definitional attribute of liveable neighbourhoods is walkable proximity, measured in either distance or time spent walking, to satisfy everyday needs. The analysis indicated that the residents used their cars extensively to take them to other neighbourhoods to undertake everyday activities. The virtues of neighbourhood walking are particularly pertinent to older people. Walking is regarded as being accessible and convenient to everyone and an act of identity creation through the everyday use of space (Mayol in de Certeau *et al.,* 1998). Regular pedestrian use of neighbourhood space allows appropriation of community space into the realm of domestic life (Mayol in de Certeau *et al.,* 1998). All residents identified the importance of having facilities and activities within their urban neighbourhood, and yet they relied on vehicle transport for the majority of trips outside of their homes.

The final major disparity between the subjective and objective measures was the concept of their local neighbourhood. The concept of neighbourhood is one of walkability in addressing everyday needs. These residents undertook most of their everyday activity outside of their walkable neighbourhood. When asked to identify their neighbourhood on the Google Earth map during the interview, the residents indicated a much wider geographic region than their immediate walkable neighbourhood. One resident identified, the greater Brisbane area as his neighbourhood. The neighbourhood identified was in keeping with their everyday activity base which was with the use of a vehicle. They indicated a geographic radius comprising of their favorite locations that are generally within a 5-15 minute drive. This is in keeping with Brower (1996) who indicated that behavioural and use patterns often extend into other neighbourhoods. Access to familiar everyday type activities (for example, retail shopping, hairdressers, medical services and the like) appears unproblematic while there is easy availability and use of the vehicle but

this is unsustainable as the residents age and they or their partner can no longer drive.

The experience or perception of the neighbourhood is represented as a joint function of the objective physical conditions (for example, state of the footpaths, etc.) and the subjective interpretation of these conditions to the individual. If the perceived neighbourhood environment is outside the individual's comfort range then there is difficulty in the use of the neighbourhood for any activity whether for recreation or necessity.

Many factors, including personal and social characteristics such as age and health status interfere with an individual's subjective interpretation of their objective physical world and these may act as noise in distorting objective conditions (Pacione, 2003). A universal objective, for example, reducing car dependence, can be transformed by individual perceptions of, for example, how they view the extent of their personal use of the vehicle. Individual experience is also a factor which will affect the perception of a specific domain (Pacione, 2003). Experience of cyclists' rage along a shared pedestrian track, for example, is likely to have a lasting effect on the individual's perception of safety and enjoyment of his or her neighbourbood walkways. Another factor which may be of importance in the subjective-objective interpretation or understanding of neighbourhood liveability is the aspiration level or expectations of the individual. This helps explain the relatively high satisfaction with neighbourhood liveability expressed by individuals whose neighbourhoods do not appear to support their everyday needs. The notion of accommodation is another variable that may influence the relationship between objective and subjective conditions. This suggests that in a fixed situation an individual's satisfaction with a condition may increase over time by accommodation to that situation (Pacione, 2003).

Finally, 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 population.

In summary, neighbourhood liveability is supported by local walkable access for everyday needs. Data show that older urban residents are typically active participants in a variety of activities but they have very low levels of locally-based activity within walking distance of their residences. Those interviewed said that they loved their neighbourhood and several claimed to love the fact that it was so 'central to everything'. Close location of services and activities was regarded as important and this was given as a reason for choosing the neighbourhood/residence or as a reason for not wanting to move from their existing neighbourhoods. However, the GPS and GIS data indicated that they had minimal local neighbourhood contact and that they used their private vehicles extensively. This demonstrates the relativism that is implicit in the subjective nature of neighbourhood liveability. Where people choose to live and the areas that they behaviourally use can be considered 'liveable' according to the individual's own subjective filter.

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