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Ageing in a low-density urban city: transportation mobility as a social equity issue

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ABSTRACT
The purpose of this study was to examine older adults' experiences and perspectives regarding transportation mobility. Using a community-based participatory research approach, residents of Arlington, Texas, age 55 and older, participated in individual interviews (N = 15) or one of six focus groups (N = 45) as part of an overall study about ageing well in a large ethnically diverse city in the United States of America. Thematic analysis was conducted using inductive and deductive qualitative methods and social equity as a sensitising concept. Findings indicate that older adults who are transportation-disadvantaged experience limited access to health care, goods and services and are isolated from familiar lifestyle habits and social networks. Access to affordable, adequate transportation is compromised through social and political forces, which marginalise historically disadvantaged populations. Implications for cross-disciplinary practice and future research on sustainable transportation and policy development are discussed within a social justice and social equity framework.

KEY WORDS – transportation, ageing, older adults, ageing well, social equity.

Introduction

In 2007, the World Health Organization (WHO) began a liveable community's initiative, a global effort to address ageing well through optimising city structures and services to enhance health and quality of life for all older adults. By promoting age-friendly physical (*e.g.* affordable housing, neighbourhood walkability) and social (*e.g.* participation in local decision-making, positive attitude towards older adults) environments that enhance the lives of older adults, the WHO hopes cities can improve the quality of life of their older citizens. The WHO (1997: 1) defines quality

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of life as 'an individual's perception of their position in life in the context of the culture and value system in which they live and in relation to their goals, expectation, standards and concerns', and it links quality of life directly to an individual's wellbeing across multiple domains – physical, mental, emotional, financial, social and spiritual.

As efforts increase in Europe and the United States of America (USA) to evaluate a city's 'age-friendly' barometer, transportation mobility enters the conversation as one component of a dynamic interchange amongst multiple domains of liveability (*i.e.* outdoor spaces, social connectivity, communication and information, health and community, civic participation and employment, housing, respect and inclusion) (AARP 2007; WHO 2007*a*). As such, transportation mobility is increasingly a concern across multiple disciplines with respect to the quality of life of older adults and the contexts in which they live (Banister and Bowling 2004; Kim and Ulfarsson 2013; Rosso, Auchincloss and Michael 2011; Spinney, Scott and Newbold 2009). The purpose of this article is to report context-specific findings from an age-friendly community assessment of Arlington, Texas, in which transportation mobility surfaced as the primary factor that older adults associated with maintaining independence, ageing well and ageing in place in their community.

Estimates indicate that over 600,000 adults age 70 and older in the USA will stop driving each year (Foley *et al.* 2002). Driving cessation is often related to declines in physical and mental health such as frailty, vision problems or cognitive impairment (Torres-Davis 2008). Hence, a growing proportion of older adults will be considered transportation disadvantaged, a term which refers to adults regardless of age 'who cannot drive or have limited their driving and have an income constraint, disability, or medical condition that limits their ability to travel' (US Government Accountability Office (2004: 2). Those who are transportation disadvantaged must depend on other means of transportation mobility (*e.g.* family or friends, public or private transportation, transportation for aged and disabled person). These modes of transit may be inaccessible or unavailable to many older adults depending on context-specific factors (*e.g.* health, social support, transportation deficiencies and structural barriers in the built environment).

In Canada and the USA, older non-drivers who do not live with a driver are particularly vulnerable to transportation challenges (Weeks *et al.* 2013) as are older adults with minor children in the home, suggesting that older care-givers may be at higher risk for transportation deficiencies (Kim 2011). Though personal health plays a role on the path to driving cessation, evidence suggests that older non-drivers and those who have never

driven are at higher risk for long-term care placement even after accounting for health issues and demographics (Freeman *et al.* 2006).

Moreover, gender differences in life expectancy suggest that women will require more years of support for transportation, on average, than men (Choi *et al.* 2012). For example, one study found that males aged 70–74 years who stop driving will be dependent on alternative sources of transportation for another seven years while females of the same age, and who are similarly transportation disadvantaged, will be dependent on alternative sources of transportation for ten years (Foley *et al.* 2002). Research supports gender differences in transportation mobility among older adults in other countries as well. In a national survey of Norwegian adults, Hjorthol (2013) found that older men who did not drive were more likely to report giving up driving due to doctor's orders while women who did not drive had done so because they felt insecure in traffic. He concluded that older men seem to cease driving due to external influences, while older women are doing so in response to internalised pressures.

Research also shows that racial disparities in driving cessation widen in older age, a finding consistent with health and disability disparities in later life (Kostyniuk, Trombley and Shope 1998). In particular, older minority females face higher risk of transportation disadvantage than non-minority women (Kim 2011). This relationship among race, gender and transportation disadvantage highlights the importance of understanding the intersectionality at the core of the issue (Cho, Crenshaw and McCall 2013; Crenshaw 1989). As the US population continues to age and communities become more racially and ethnically diverse, transportation disparities amongst older adults will exacerbate (Mann *et al.* 2005).

Another factor placing older adults at risk for transportation disadvantage is the prevalence of low-density urban environments (Hanson and Giuliano 2004) consistent with urban sprawl (Jacobs 1961). Accelerated population growth and development have pushed movement haphazardly outwards from the city centre. Many older adults who live in low-density urban environments are at particular risk for transportation disadvantage and adverse consequences of transportation deficiencies since automobile dependency remains high and public transportation is limited in service (Zeitler and Buys 2015). Inadequate public transportation systems in low-density urban environments may also reinforce social exclusion of non-car-driving older adults (Engels and Liu 2011). Other consequences involve poor access to health-care resources, nutritional food, and social and civic engagement (Torres-Davis 2008). These outcomes undermine overall quality of life, diminish intellectual stimulation and accelerate declines in personal health, leading to difficulties in independent living. Isolation due to transportation disadvantage and transportation deficiencies can

also lead to unreported abuse and neglect, untreated medical conditions, self-neglect and depression (Hensher 2007; Torres-Davis 2008).

When driving becomes problematic for older adults who wish to age in their own homes and communities, innovative transportation options can mean the difference between social exclusion and dependency, or continued engagement and a sense of positive identity (Rosso, Auchincloss and Michael 2011; Scharlach and Lehning 2013; Spinney, Scott and Newbold 2009; Webber, Porter and Menec 2010).

Historical background – transportation and justice issues

Automobile dependence remains strongly tied to US ideals of autonomy, independence and freedom (Mercier 2009), but there is a burgeoning awareness of environmental consequences and the need for sustainable transportation, which supports mobility independence while still maintaining a low environmental impact. Early incorporation of justice concepts into transportation planning and policy were largely woven around environmental effects such as air quality, safety, noise reduction and land use patterns (Deka 2006). Rosenbloom (2001) suggests that an important aspect of sustainability and automobility is designing environmentally responsible communities and neighbourhoods (*e.g.* green cars). Retrofitting neighbourhoods for improved mobility may also offer sustainable solutions for older adults who are ageing in place (Rosenbloom 2001). However, sustainability in transportation mobility became narrowly defined by focusing primarily on environmental justice outcomes (Manaugh 2013), perhaps to the disadvantage of older adults with limited transportation mobility.

Social equity provides a lens through which to understand these older adults' experiences. Social equity within a sustainability framework is broadly defined as people having equal opportunity in a safe and healthy environment (The President's Council on Sustainable Development 1996). In a transportation planning context, equity means to 'influence opinion, mobilizing underrepresented constituencies, and advancing and implementing policies and programs that redistribute public and private resources to the poor and working class' (Metzger 1996: 113). In operational terms, this means increased accessibility to transportation mobility and choices for disadvantaged populations, such as older adults, regardless of economic circumstances (Manaugh 2013). Unfortunately, social equity is under-utilised in transportation planning, in part because social equity indicators and outcomes of sustainable transportation programmes are difficult to measure or monetise (Manaugh 2013). Furthermore, a strong focus on social equity is often lacking in urban transportation planning due to challenges of measurement and assessment (Manaugh, Badami and El-Geneidy

2015). As the relevance of the dynamic influence of social determinants on community and individual health gains ground, application of social justice principles such as social equity becomes critical in collaborative planning around the transportation needs of an older population (Li, Casey and Brewer 2015).

In sum, research is needed to understand how unique experiences and contextual factors that define the landscape of American community life, specifically low-density environments, facilitate or inhibit transportation mobility, particularly from a social equity standpoint. The purpose of this article is to present findings about transportation mobility using a social justice and social equity lens. We focus on the perceptions and experiences of older adults regarding the meaning of transportation to them as they age in their current environment. This article contributes to our knowledge about the experiences of older adults who are transportation disadvantaged or who may anticipate such status and the meanings of transportation mobility to current and anticipated lifestyles.

Research design

The present study is part of a larger community-based participatory research (Israel *et al.* 2008) project conducted in collaboration with Tarrant County Area Agency on Ageing and The United Way of Arlington (Adorno *et al.* 2015). This academic–community partnership incorporated expertise from community residents, social service organisations and researchers throughout each phase of the research process. The overall aim was to understand the perspectives of older residents regarding the extent to which Arlington, Texas, is an age-friendly community. Three older residents who possessed local knowledge and strong social networks in their respective ethnic communities (*e.g.* Vietnamese, African-American and Hispanic) functioned as community liaisons and lay research personnel in the planning, recruitment, data collection and analysis phases of the study. This study received approval from the Institutional Review Board at the University of Texas Arlington.

Community of identity

Arlington, Texas, is the third largest city in the north-central Texas Metroplex of Dallas-Fort Worth, and is located equidistantly between the two main cities. Described as a 'Boomburb' (Lang and LeFurgy 2007), Arlington can be characterised as a major urban centre by its scale and rate of growth. As an entertainment destination, Arlington is home to two major professional sports teams and their respective stadiums and two

large amusement parks. The city is also home to a General Motors Assembly automobile plant and one of the largest privately owned car dealerships in the USA. The political climate is notably conservative and oppositional with respect to sustainable development (Whittemore 2013). The city's population of 388,125 (US Census Bureau 2015) is anticipated to grow by another 31 per cent by 2030, making the area more populous than major cities such as St. Louis and Atlanta (Lang and LeFurgy 2007). While Arlington remains predominantly White (59%), the population is rapidly diversifying with a 50 per cent increase among African Americans (currently 18.8%), nearly 65 per cent increase in Hispanic/Latino residents (27.4%), and more than 24 per cent increase among Asians (8.0%) between 2000 and 2010 (CensusViewer 2015). The proportion of Arlington residents who are age 55 and older (currently 17.6%) grew by over 40 per cent between 2000 and 2010. These trends suggest that Arlington's older population will continue to grow and become increasingly diverse.

Despite its central location in the Metroplex, Arlington holds the distinction of being the largest metropolitan community in the USA without a comprehensive public transportation system, save for one fixed bus route that runs from the city's largest major university to a Metroplex rail centre stop. Currently, the city subsidises a door-to-door paratransit service for older and disabled adults who lack alternate transportation for instrumental activities of daily living (IADLs). IADLs consist of more complex activities, such as accessing physician appointments or other health-care services, grocery shopping or obtaining medications from a pharmacy, that support community-dwelling older adults to remain independent (Lawton and Brody 1969).

In the USA, paratransit services are for individuals who are unable to use regular public transportation because of a disability and/or other health condition (US Government General Services Administration 2016). The paratransit service only runs until 5.00 pm and not on Sundays. There is one public bus, the Metro Arlington Express, the primary purpose of which is to transport individuals to and from the regional train station north of the city and the campus of a large state university located in the city centre. The bus route includes four stops, none of which access primary shopping or medical facilities.

Participants

A maximum variation sampling strategy (Lincoln and Guba 1985) was used to recruit a heterogeneous sample of Arlington residents, age 55 and older, who varied across age categories (young-old, middle-old oldest-old), race and ethnicity, functional ability and geographical residency. This approach was essential to identify both shared and unique aspects of community

experience in keeping with the purpose of our overall study. Participants who were homebound due to illness or disability were recruited through case managers from Tarrant County Meals on Wheels for individual interviews (N = 15). The majority of these participants were female (53%) and White (73%). Two individuals reported to be African American and two were Hispanic. Average age among the homebound participants was 71.2 (standard deviation (SD) = 9.45). They had lived in Arlington for an average of 29 years (SD = 19.46) at the time of the study. Non-homebound older adults were recruited to participate in one of six focus groups (N = 45). These individuals were recruited through the three community liaisons, invitations (*i.e.* flyers, email, telephone) disseminated to local churches and community agencies, older adult volunteers via a neighbourhood listserv and word of mouth. Table 1 provides the sample characteristics for the focus groups.

Data collection and procedures

We collected data through semi-structured interview guides and a demographic questionnaire between May and August 2014. The individual, homebound interview guide and focus group guide paralleled one another and contained broad questions related to what it means to 'age well' in the community. The demographic questionnaire was the same for both the individual interviews and focus groups and contained items related to: age, race/ethnicity, marital status and years of residency in the community. Following informed consent, all homebound interviews and focus groups were audio-recorded and transcribed verbatim.

Homebound interviews. A semi-structured interview guide was developed for the homebound participants based on input from key stakeholders (*e.g.* social service agency providers who work with older adults, the community liaisons) and the literature on age-friendly communities (Plouffe and Kalache 2010; Scharlach and Lehning 2013; WHO 2007*a*). Individual interviews were conducted by a member of the research team in tandem with a community liaison, if available. Participants were asked broad questions such as 'What does the phrase "ageing well" mean to you?', 'What is important to "ageing well" in your community?', and 'What does maintaining your independence mean to you?' Probing questions elicited specific details and elaboration. Interviewers also used summarising statements and asked participants to clarify their responses using examples. Each interview, which lasted approximately 60–90 minutes, was conducted in the participant's home, inclusive of a care-giver if present. Homebound participants received a US $20 gift card for participation.

TABLE 1. *Descriptions of the six focus groups*

Focus group target population	Number of participants	Mean age	Mean years of residency[1]
African American	7	69.14	37
Vietnamese	10	81.00	31
Disability	3	67.00	35
Hispanic	9	62.89	21
White	8	72.25	33.63
White	8	70.13	40.5

Note: 1. Average number of years as a resident of Arlington, Texas.

Focus groups. Similarly, we developed a semi-structured interview guide for the focus groups using our broad questions and specific probes that paralleled the homebound participant guide with respect to participants' anticipated needs as they age in the community. Focus groups which each targeted a specific population were held at a church and Arlington senior centres. The Hispanic and Vietnamese focus groups were facilitated in the participants' native language by two members of the research team and translated by each groups' respective bi-lingual community liaison. Similarly, two members of the research team (one of whom was a community liaison) facilitated the African-American focus group. A fourth focus group focused on functional ability and did not have an assigned community liaison; therefore, two members of the research team facilitated it. Lastly, the overwhelming response to study recruitment from historically White areas of central Arlington necessitated two concurrent focus groups. A research member facilitated each of these groups. An observer/note taker was present at five of the six focus groups. Focus group participants received a US $10 gift card for participation.

Data analysis

For the purposes of the present analysis, data from a specific sub-category, *transportation mobility*, drawn from a broader category, *mobility*, were analysed. The Vietnamese and Hispanic focus groups were translated by their respective bi-lingual community liaisons and transcribed by a member of the research team prior to analysis. We used qualitative software, Atlas.ti v.7.2, for data management and relied on deductive and inductive methods for coding (Saldana 2013).

The researchers convened to establish a preliminary, deductive coding framework based upon the WHO Age-friendly Checklist which includes outdoor spaces and buildings, transportation, housing, social participation,

respect and social inclusion, civic participation and employment, communication and information, community and health services (WHO 2007*b*). The research team independently read the same transcripts and then coded data segments using open and *in vivo* coding (Corbin and Strauss 2008) and then met for discussion and further codebook development. The research team also established sub-codes inductively (*i.e.* open coding was used for themes that did not fit within the established WHO framework). This process was iterative until consensus was reached regarding coding categories and sub-categories. Subsequently, the remaining transcripts were coded using the codebook. As additional categories and sub-categories arose, we amended the codebook to reflect new categories. After the initial coding, all transcripts were reviewed again and recoded using the final version of the codebook. The concepts of social justice and social equity, as sensitising concepts, guided the analysis and the structure of the Results section (Bowen 2006).

We employed several strategies to support the veracity of our analysis and subsequent findings such as an iterative, consensus coding process to identify researcher bias and continuous clarification about their meaning with participants during interviews and focus groups (Maxwell 2013). Members of the research team conducted member checks with study participants and the community liaison to obtain feedback on the preliminary themes, to establish trustworthiness of the data and to increase the credibility of the findings (Lincoln and Guba 1985; Saldana 2013). As recommended by Creswell (2009), participants and community liaisons were given themes rather than the actual transcripts as a part of the member checking process in order to verify preliminary interpretations of the data.

Results

In our study, older residents describe transportation mobility as vital to maintaining independence, but they perceive that community structures do not value their needs for such. Four primary themes were identified: (a) An inadequate system: I can take you, but I can't get you home; (b) People and places: transitioning in different directions; (c) Being 'stuck': the political economy of transportation; and (d) If we're shut out, we're shut in.

An inadequate system: I can take you, but I can't get you home

Older adults nearly unanimously agreed that transportation mobility is a key resource for remaining independent. As one participant said, '[T]here's no

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public transportation in Arlington … So that's a concern of ageing … But even if there was public transportation, how do you get to it?' A Vietnamese resident spoke of his personal need, but also a global need for citywide public transportation regardless of ability or age:

> The Arlington system does not have transportation for all people, but the older people need transportation. I need transportation from my house to the [Vietnamese Senior] Center. I also need other transportation … like the doctors and shopping.

Older residents, regardless of age, ability and ethnicity, expressed disappointment in the paratransit service and perceive it as inadequate to meet the unique needs of an older population. For older adults who rely primarily on this service for their health-related transportation needs, scheduling drop-off and pick-up times for medical appointments is difficult due to unpredictable waiting times. According to a 60-year-old, Hispanic focus group participant:

> They [the paratransit system] have too many rules. We have to call a week or ten days before the appointment. I have to have the reservation two weeks ahead of time and they pick me up to go to my doctor. When I get to the doctor, I have to sit and wait a long time before they pick me up again. I have to take my lunch in order to have food before they pick me up and bring me back home.

The existing paratransit service cannot accommodate many specific requests. Thus, older adults find themselves negotiating between their medical provider and the paratransit service to access health-care services or simply cancel their appointments. As one 69-year-old, homebound White female explained,

> Many times I've had to change or miss doctor's appointments, because there just wasn't a slot open. 'Can't go that day at that time … it's too early in the morning. I can't get you a ride for an 8.00 doctor appointment.'

More than a lack of 'fit' between older adults with health-care needs and existing transportation resources, the paratransit service's restricted hours means that activities which support linkages to the community (*e.g.* church, leisure, social) in the evening or a weekend day are outside the reach of those relying on its services. Consequently, those participants, for whom the paratransit system is their only source of transportation, described feeling 'hampered, because it [transportation] ain't there'.

A 60-year-old, Hispanic male described a strong need for transportation resources in his ethnic community:

> I went to several of my neighbours in the neighbourhood where I live. They could not come [to Hispanic focus group] because they are elderly, like 70 years old, but the first thing they said was that they need transportation … I have a friend, a

neighbour, she is widowed and she is 78. I asked her the question about transportation, and she said she broke her hip and she had to go to the doctor and call [paratransit service] about a week before. She said they did come pick her up and they did take her to the doctor, but then she had to wait three hours at the office to be picked up so there was no guarantee.

Avenues for social outings into the larger community for dining or shopping become cumbersome events when rider availability is limited and tight rules inhibit spontaneity. For older adults with chronic illness who want to seize opportunities to be active on their 'good' days, the current system is not able to accommodate the freedom to 'go and do what I want to do when I want'.

These limitations led older adults with viable resources (*e.g.* social, economic) to opt for alternate means of transportation. A 61-year-old, White, homebound female on a Medicaid waiver programme who owns a vehicle explained, 'I have an aide … she drives me.' Others may rely on their social networks. As one older adult explained, 'you can usually bum a ride if you absolutely have to, or, you know, you put the word out'. Several African-American women stated that their church community provides transportation for Sunday services. Although their freedom to come and go is curtailed when relying on others for a ride, older adults who have instrumental social support or economic means have some choice, a hallmark for feeling independent and in control, and many choose not to rely on the paratransit system.

People and places: transitioning in different directions

A majority of long-time Arlington residents interviewed for this study have experienced personal transitions associated with ageing, health and retirement. Some are widowed and/or no longer drive, while others have taken on a care-giving role for a spouse and must preserve their ability to drive as long as possible. Those who describe themselves as *active seniors* continue to enjoy the vitality that comes with continuing to drive, but they anticipate the eventual possibility of driving cessation and insufficient resources to maintain transportation independence.

The personal experiences expressed are at odds with the city's social mores and environmental transitions. Both homebound older adults who no longer drive and focus group participants who continue to drive identify challenges to transportation mobility in the city's changing landscape. According to a 61-year-old, homebound White widow:

I like Arlington. I have lived here a long time, you know. It's just getting bigger and bigger and bigger, and the traffic is getting worse and worse … It's just bumper-to-bumper and congested … . And you don't know how the traffic is going to be from day to day … And everybody drives so fast.

One homebound White male described his location in a centralised section of the city as an advantage, while recognising the limitations placed on residents living in other areas of the city:

> This is an old neighbourhood and we have grown up here having all this, all these stores and services nearby. And, boy, it would be tough if we didn't have that. So Arlington as a town has expanded so much that now people live in Arlington, but don't have this advantage. We live in the old Arlington which has all these advantages, to me.

Several women and men stopped driving due to illness and disability. In one circumstance, a woman voluntarily stopped driving after health problems and noticeable changes in her reaction time:

> I can still drive. I'm sure I could still get down to Walmart or Walgreens, but I'd be a nervous wreck the whole way … After I had my stroke, and after I was in rehab for a period of time … I couldn't react fast enough. My brain couldn't process fast enough what another driver was doing and what my move should be.

Likewise, an 82-year-old, White male who now cares for his wife in their home of over 50 years, describes transportation mobility as a primary need for ageing in place:

> I've had two heart attacks and one stroke. I think I'm fairly healthy … But, you know, anything could happen. And if that happens, what do we do now? Meals on Wheels is going to take care of some things, but still, we have to go to the grocery store to get bread, margarine, that sort of thing. Dog food, even though they do bring dog food, but it's like once a month and that doesn't last her hardly at all … As long as I can still drive, I think it would be [okay]. If we had to start taking [paratransit service] and driving groceries back, I think it would be very difficult.

Still others never anticipated some of the mobility problems they would encounter at a relatively young age and their loss of independence. As one 60-year-old, White homebound woman expressed:

> Well, the image that kind of pops into my mind is like a dancing granny, which is how I expected to age. It's not what has happened to me. But I think of 'ageing well' as being active, you know, being able to drive and get where you want to go.

Being 'stuck': the political economy of transportation

For older residents who previously resided in or visited cities where affordable, accessible transportation is available, they now find themselves disadvantaged as they age in Arlington. As one 61-year-old, homebound African-American female said, 'I was in Chicago a couple years ago, and their transportation is so fantastic. I mean, they have the subways, and then they have the "L" [rapid transit system] … and it's all wheelchair accessible.' Similarly, a White male from a focus group explained, 'Transportation is a big problem, I think, for a lot of people in my age

group and like … some cities seem to take that as a problem and solve it, but Arlington has never seemed to be able to.'

An African-American female from a focus group described the consequences when ageing residents find support lacking in Arlington:

> …two of my neighbours on my street have moved off my street into Fort Worth [a neighbouring city] … They didn't have to maintain their yard and their house, and they had public transportation. That was the two reasons that they gave. So Arlington is going to lose more of its senior citizens who could be adding to the community if they don't do something about transportation. I mean, that's just, it's just off the charts bad.

Several participants, many of whom are longtime Arlington residents, pointed to the complex historical and political response to the public transportation need with dismay and veiled anger. According to one White female from a focus group, the issue is not new:

> I've lived here since I was about ten and a half months old, with the exception of about three years where we lived other places. As early as about ten, I can remember, I think, citywide elections about public transportation. It's not new. It has never passed. And I don't know whether it's really not been promoted properly, or whether it's because who's going to be in charge of it, everybody was against that. I'm not sure what all the reasons were, but this has been my entire life. I'm 71.

Several participants who witnessed the defeat of three referendums over three decades for a city-wide public transportation system identify racial discrimination and classism as driving the resistance. This 82-year-old, homebound White male stated bluntly:

> There have been two or three referendums on transportation here. And they've been soundly defeated by the populace. And there are racial overturns, overtones to it. People would, you know, ask them, why did you vote against, for or against this? Oh, I don't want those people having public transportation, and it will ruin the neighbourhood, and, you know, just on and on like that. You hear that.

A White female focus group participant suggested that there is bias against low-income residents, 'Arlington is the largest city in the United States without public transportation, and it's entirely because the lower-income people would be using it, of which we have plenty.' Additionally, a White male focus group participant argued, 'What I see as a part of the problem of trying to get public transportation and putting it on a ballot, is the people that are voting are people that have a vehicle, and they can get around. So they don't find the need for it.'

Both homebound and focus group participants perceived that older adults are 'forgotten' and 'invisible' within the larger community, noting the economic priority placed on branding Arlington as an entertainment destination. As an African-American female focus group participant voiced:

The transportation is a big issue with me … it's my personal opinion that a city of the size of Arlington, with the centres of tourist attraction and entertainment, the stadium, the ballpark, Six Flags, I think it's really pretty tacky to not have a good public transportation system … I live halfway between Cowboy Stadium, excuse me, AT&T Stadium … I think it's sinful that a city like this, of this size, in this location, with these entertainment centres, doesn't have a proper public transportation system.

As the growth of the city and its populace accelerates and ages, transportation-disadvantaged persons find themselves increasingly marginalised. Access to leisure activities such as community-sponsored events, social networks, and other indicators of engagement and wellbeing become unattainable. An African-American homebound female complained:

But it takes so much money to use a taxicab, and we don't got that much money. You know, you figure most of us are living on no more than US $1,000 a month income, and some of it's less than that … But still, most of us are living on US $10,000, $11,000 a year. We don't have the money to take taxicabs every place we want to go. If I want to go to a concert in the park, hello, the concert may be free, but getting there sure ain't.

Perhaps even more importantly, accessing critical health-care resources becomes a financial hardship on older adults. For example, one 71-year-old, homebound Hispanic male with chronic renal failure described the costs and choices made to get to his thrice-weekly dialysis treatments.

Mary [a friend] has been very nice in driving me back, but before she came, I was paying US $15 [each way] every other day to come … and they [paratransit service] say that first of all I need to send US $10, but they says there was a long waiting … very long. So I never, I never sent them the US $10 [application fee].

A 61-year-old, African-American, homebound female described changing her Medicaid coverage, which provided transportation to see a specialist outside the service area of the paratransit service, to a Medicaid health maintenance organisation which offers expanded prescription coverage but no transportation resources. Consequently, she is unable to locate a specialist for her condition within the paratransit service delivery parameters, now her sole means of transportation.

Now this is where my problem came. If I decide to go straight Medicaid … I would only be able to get three prescriptions a month … so I chose to go with the Amerigroup so I could get my medications free, however many I need. But when it comes to doctors, no. So you kind of have to make a choice … right now, I've been searching and searching and searching, trying to find a rheumatologist because I have lupus, and they're the only ones that could help me.

When asked to what extent culture and society affect ageing well and maintaining independence in the community, African-American focus group

participants framed transportation-disadvantage as a significant mediator of health disparities among racial and ethnic minorities:

> African Americans, you know, basically don't [age well] because we generally have more health issues. If you don't have that [transportation] mobility, you're not getting to the doctor, and you're not going out. So yeah, there is a definite discrepancy between the races on how we're ageing and how it's affecting us. And it's impacting African Americans negatively.

If we're shut out, we're shut in

The perception of the larger community as being unsupportive towards persons who are economically and transportation disadvantaged is particularly salient for ageing adults with disabilities. Homebound older adults and those from the disability-focused group expressed isolation and disconnection as a result. A 64-year-old, White, homebound male summed this sense of stigma and isolation:

> I know you have two senior citizen places here in Arlington. But the transportation [to access the senior centres] is only for people with canes or can walk. People with chairs like this, we've got to pay [paratransit service] US $4 a day to go someplace … So, I mean, it would be a lot nicer if the community was more acting in helping the senior citizens get to functions. I know they put these things on … But not every senior citizen has vehicles, and I'm thinking on the disability people right now because that's what I am. But some of the other senior citizens, they can't drive anymore … So, I mean, we're kind of stuck here in jail.

One's ability to drive is critical to freedom of movement, spontaneity and a sense of connectedness to a larger community. As this 83-year-old, White, homebound female said, 'I miss that part of just getting in the car and going.' The desire to go where I want to when I want to go, in this case perhaps for essential household items or social engagement remains important even when mobility is hazardous. One African-American female from a focus group shared that, 'I have a lot of friends also that go to Wal-Mart from Claremont [senior apartment complex], and they go in their electric chairs, which, to me, is pretty dangerous.' For others who wish to contribute to their community, lack of transportation hampers their ability to serve. A 61-year-old, African-American female expressed this frustration, 'I would love to be able to go out and participate and do, help other people, you know, like in the nursing homes and hospitals.'

According to a 69-year-old, African-American, homebound female, the current state of Arlington's transportation situation hinders her social and spiritual connections:

> For somebody like me to be able to go to the movies at the mall for an afternoon or something, or to get to the mall, like Christmastime to go shopping, that would be

such an enormous help to me … But how can you use [paratransit service] to go to the movies? I can't use it to go to church … So that really limits my ability to get out … being able to go to the mall, being able to go to church, to my church, not just any old church, but to my church and that sort of thing.

In sum, transportation mobility means equal access to daily resources and opportunities, and it is lacking in Arlington for lower-income seniors, as one homebound female stated succinctly:

I think the older people in Arlington would like to have access to services that everybody is able to get to. I mean, you know, anybody age 50, 45, whatever, they like to, hey, let's shoot up to the mall and have lunch, us girls. You know, they'd like to be able to do that, but you can't always do that … we seniors would like to be able to do anything that anybody else [can] … and have access to it. That's all we ask for, I ask, is just to have access. There is no access. If you do not have a car, a lot of time, or money for a taxi, you don't get that.

Discussion

The purpose of this article was to examine older adults' experiences regarding transportation mobility in their low-density urban community as part of a larger study on ageing well in Arlington, Texas. Although this study was specific to one particular city, the study findings may be generalised to other environments that lack comprehensive public transportation systems. As demographics shift across the world and the global population ages, the number of transportation-disadvantaged older adults who face challenges such as social exclusion and/or barriers to accessing services and supports that maintain or enhance quality of life will only increase (WHO 2007*a*). Inadequate public transportation programmes often characterise transportation policies in communities with urban sprawl, as well as rural communities. Thus, for these communities to meet the WHO's liveable communities initiative, they must consider how to reform existing services and implement new services that allow older adults to age in place.

Our findings indicate that transportation mobility is a critical conduit for participation in leisure activities and recreation, social and civic engagement, shopping for essential needs, accessing health care or attending one's place of worship. Within a context of urban sprawl and community segregation, older adults, particularly those who are on a low income, face significant barriers to transportation access (Power 2012). Several contextual issues are highlighted: (a) the paucity and inadequacy of transportation mobility services and congested driving conditions for older residents facing transitions due to ageing; (b) transportation disadvantage and its impact on quality of life (*e.g.* social exclusion, isolation); and (c) the politicisation of

transportation mobility perceived as a means of cordoning the city from groups considered undesirable (*e.g.* low-income residents, minorities).

A significant number of older adults, especially residents of low-density urban environments, will continue to drive as long as possible to meet their transit mobility needs (Zeitler and Buys 2015). Even communities with progressive environmental polices intended to decrease automobile-dependence (*e.g.* walkability, cycling, public transportation) generally do not address the transit mobility needs of older adults whose cognitive or physical limitations prevent them from using these otherwise sustainable resources (Nakanishi and Black 2015). While our findings indicate that some homebound older adults engage in self-regulation to modify their driving behaviours, older adults will maintain automobile use for longer than they may feel safe in sprawling environments, such as Arlington, Texas, without viable transportation alternatives. Self-regulation is a complex process of modifying/adjusting driving patterns by driving less or avoiding challenging driving situations (Molnar and Eby 2008). Contextual factors which influence older drivers to continue driving despite personal safety concerns merit examination in future research with respect to older adults' decisions to modify or cease driving.

That transportation mobility emerged as an overall theme for ageing well and ageing in place (Adorno *et al.* 2015) indicates that this is not only a central factor but that its importance may be understated in its low-density urban context. In our study, poor transportation mobility obstructed five of the six indicators representing age-friendly communities identified by Smith, Lehning and Dunkle (2013): access to business and leisure, social interaction, access to health care, social support and community engagement. Our findings confirm evidence that reliable transportation mobility is critical to ageing well (Kim and Ulfarsson 2013; Spinney, Scott and Newbold 2009; Sylvestre and Cardona Claros 2008). Indeed, poor transportation mobility presents a barrier to accessing health resources and can contribute to health problems and social isolation, both of which are strongly associated with lower quality of life (Choi, Lohman and Mezuk 2014; Scharlach and Lehning 2013). The results strengthen an understanding of the interplay amongst transportation mobility, individual and environmental contexts, and quality of life. While social recognition, inclusion and community engagement receive greater emphasis in the age-friendly literature (Lui *et al.* 2009), transportation mobility has been under-recognised as an essential mechanism by which to age well (Hjorthol 2013). Research in other countries supports this idea. For example, transportation mobility may have new dimensions in the baby-boomer era, as older adults in Denmark report increased demand for transportation during later life for leisure and travel purposes compared to prior

generations (Siren and Haustein 2016). Moreover, for Swedish older adults in retirement, transportation mobility simply allows them to get out of the house (Berg *et al.* 2014). As a structural barrier, transportation mobility is dynamically influenced by historical, economic and socio-political factors, which contribute to inequalities at both individual and community levels. When examined through a lens of social justice and social equity, the themes identified in this study build upon each other and highlight a justice issue that cuts across age, disability, and race or ethnicity.

Transportation mobility: relevance to homebound and active seniors

In the present study, the paratransit service is one of the only funded transportation options for older non-drivers with limited income who have working family or limited social support for ride assistance. An inflexible, limited service, the existing paratransit programme contributes further suffering to older residents with acute or chronic illness who have no opportunities for essential travel, much less for desired travel. As such, our findings highlight a neglected segment of a city's older population, homebound older adults, who are virtually invisible in community life and marginalised in the political discourse and electoral process for transportation planning. Yet, older drivers who anticipate driving cessation in the future also question their quality of life and ability to age in their own homes under circumstances of transportation disadvantage. The city's economic interests are perceived by both homebound and active seniors, especially long-term residents, to favour the city's thriving status as a youth-oriented entertainment destination. Older residents perceive themselves as 'forgotten' and devalued; lacking economic viability in the city's development.

Collectively, these results highlight the challenges older adults face, regardless of cultural background, with limited transportation mobility in contexts of uncontrolled growth and decentralisation where proximal access to goods and services is limited. Older residents who once enjoyed the freedom that comes with driver status or access to transit systems in other cities, now find themselves marginalised from 'place' regardless of age, race/ethnicity or functional ability. Moreover, our findings underscore the importance of recognising the intersectionality of race, ethnicity and gender when examining disparities in transportation mobility and subsequent relationships to health disparities (Johnstone and Kanitsaki 2008). The results amplify a growing body of critical cross-disciplinary literature identifying systemic structural forces (*e.g.* social, political, economic) in the environment as interactive influences on the creation of social inequities and health disparities (Metzl and Hansen 2014). In addition, while our results are based within the context of a low-density urban environment, the implications may be relevant for rural communities

as well. In their national survey of Finnish older adults, Siren and Hakamies-Blomqvist (2004) found that living in rural settings was one of the strongest predictors of reduced transportation mobility. Thus, while the solutions may differ, the issue of transportation disadvantage is not isolated to lower-density urban environments.

For several older residents in our study, their lifecourse trajectory has been intertwined for decades with their community, *i.e.* raising families, employment and residential attachment. For many participants, transitions and new challenges brought about by ageing conflict with their community's developmental trajectory and, thus, may lead to stigmatisation. Phillipson (2007) noted that although some older adults have the necessary resources to choose where they live, others are ageing in place in neighbourhoods undergoing a rapid transformation in residents and businesses. Transportation-disadvantaged persons may be 'stuck-in-place' (Torres-Gil and Hofland 2012) due to income constraints and a poor supply of affordable, accessible housing.

A lifecourse approach to planning for driving cessation among older adults is making its way into the transportation planning and policy literature (Nakanishi and Black 2015) with an emphasis on transitioning healthy older adults who anticipate less automobile dependence to utilise sustainable modes such as walking or using public transit systems. While this represents an important approach that supports sustainable communities, environmental justice and active lifestyles, its focus solely on successful ageing models negates the needs of homebound frail older adults who consider themselves 'shut in' and 'shut out'.

Sustainable transportation planning and socio-political culture

In the historical socio-political climate of Arlington, Texas, economic sustainability is over-emphasised at the cost of social equity and environmental issues (Whittemore 2013). Historical events and the subsequent community narratives that prevail point to a majority political voting base, which values economic growth in lieu of serving the community's transportation disadvantaged, regardless of age. Since 1980, several voter referendums to bring a mass public transit system to Arlington have failed miserably and efforts to develop innovative transportation solutions have fallen flat (Faria and Smith 1996). In contrast, city voters in 2004 approved a plan to enact new taxes to help fund a city-owned stadium for the professional football team.

Implications for practice and research

Planning for innovative, sustainable transportation solutions, which provide equal opportunity (*i.e.* access) for all individuals, builds towards an inclusive

community. Sustainable mobility and transportation innovations for everyone, including older adults, may include connected vehicles that communicate through the digital cloud, shared vehicles such as Uber in the USA and driverless vehicles (Burns 2013). These efforts can also mean the difference between increased morbidity and mortality among older adults or thriving despite chronic illness and disability. Little evidence exists to understand the interdependencies among lifecourse, social determinants of quality of life, and the nature of transit mobility disadvantage among older adults within a social justice and social equity framework. In conservative sociopolitical environments such as Arlington, Texas, advocating for sustainable, innovative transportation solutions for older adults, regardless of transportation disadvantage, requires collective effort from community stakeholders (*e.g.* urban planners, city leadership, representation from diverse ethnic communities, older residents, advocates for frail elders, business leaders, academic partners, social service agencies). First, make relevant to advocates and working groups pedagogical concepts such as structural competency (Metzl and Hansen 2014), which involves the ability to discern how a plethora of issues we label as symptoms, attitudes or diseases (*e.g.* depression, hypertension, obesity, isolation) also represent the downstream implications of a number of upstream decisions about matters such as healthcare and food delivery systems, zoning laws, urban and rural infrastructures. Second, for social scientists, who may eschew monetising social inequities, the reality in conservative, business-driven governance is the need to translate social inequities of transportation disadvantage into economic costs and benefits in terms of the entire community. Third, this approach will require new, non-traditional collaborations among disciplines taking place already in the classroom and in communities (Gilbert 2014), often in spite of formidable barriers (Li, Casey and Brewer 2015). Grassroots efforts by activists and communities to create paradigm shifts are possible, as our study and others (Li, Casey and Brewer 2015), which utilise a community-based participatory research design, demonstrate. Indeed, we find this approach to be essential for collective change through mechanisms of capacity building and empowerment among older residents to propel a natural coalescence of leadership across disciplines and traditional power structures, making them equal partners in person-centred communities.

Limitations

The findings from this study are relevant to the specific context of study, Arlington, Texas, and are only transferable to communities grappling with similar context-specific approaches to transportation mobility and seniors. Although our sampling strategy sought to mirror the demographic

composition of the community's heterogeneous older population, selection bias may also have occurred through the community liaisons' recruitment of older adults in their ethnic communities. Additionally, we were unsuccessful in recruiting lesbian, gay, bisexual and transgender (LGBT) participants for a focus group and in hindsight future research in this area would benefit from a community liaison from the LGBT community.

Conclusions

Our findings indicate that certain older adult groups are disproportionately at risk of social exclusion due to limited transit mobility options. The reciprocal fit between transit mobility needs and environment is critical to freedom, independence and healthy ageing for older adults in low-density urban settings. Thus, it is imperative for the ageing research community to begin to explore innovative, sustainable transportation options through a social justice and social equity framework for all older persons regardless of transportation resources and abilities. Our results contribute to the knowledge about the socio-political environment as a target for change to improve the quality of life among communities and its impact on barriers to health and wellbeing as we age.

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