

Transportation

How this domain relates to active ageing

Transportation is an important component of the physical environment and a key factor influencing active ageing (WHO, 2002). Transportation has an impact on the social participation, security, independence and overall health and well-being of older people.

Terminology: "mobility" and "transportation"

In the aging literature, the term "mobility" is often used in place of, or interchangeably with, the term "transportation". Mobility has several different meanings; when addressing the issue of transportation it is best understood as "the ability to move from one place to another" (Wallace & Frane, 1999).

Transportation, mobility and health:

"To live independently and age successfully, older Americans must be able to maintain a mobile lifestyle" (AARP, 2004).

Transportation/mobility has been linked to health and quality of life in myriad of ways including enhanced social functioning, engagement in life, independence, and access to health and other needed services (Rittner & Kirk, 1995). Transportation has been described as a "quality of life agenda" for older adults providing important opportunities for socialization as well as access to desired locations (National Center on Senior Transportation, 2008). Driving in particular has been associated with higher levels of life satisfaction, higher adjustment, less loneliness and better perceived control (RB Wallace & Franc, 2002). Walking, cycling and the use of public transit are forms of transportation that promote individual as well as societal health by providing exercise, reducing fatal accidents, increasing social contact and reducing air pollution (WHO, 2003).

Transportation options and older adults:

Older adults utilize a variety of transportation options including driving, walking, public transit, paratransit or access-a-ride services, private (taxi) and specialized transit services. In North America, driving, walking, and public transit are the main transportation options utilized by older adults.

Driving:

Regardless of where they live in the United States, most older adults (both men and women) rely on the automobile as their main mode of transportation and use driving to maintain connections in the community to friends and relatives, attend social activities, obtain medical care and shop (Stav, 2008). Eighty percent of Americans over the age of 65 are licensed to drive (Federal Highway Administration, 2002) and for 90% of older adults, the transportation mode of choice is the private automobile (Rosenbloom, 2004). There is considerable research dedicated to the various issues related to driving and aging including the impact of 'giving up the keys', safety and the prevalence of accidents, and the relationship between driving and life satisfaction among this age group. Findings from this work include:

- Evidence to suggest that decline in driving-related abilities are not a result of age per se, but rather are primarily the result of medical conditions such as Alzheimer's or Parkinson's disease (Dobbs & Carr, 2005).
- Compared to younger drivers, older drivers are at an increased crash risk per mile driven. According to a report by the CDC (online 2008), drivers ages 80 and older have higher crash rates per mile driven than all but teen drivers. Older drivers are also more likely than younger drivers to die from injuries sustained in motor vehicle crashes.
- Findings from a systematic review of the literature related to the effects of drivers license policies and community mobility programs on older adult participation illustrate it may be possible to reduce traffic crashes, traffic violations and traffic-related fatalities through re-licensing policies requiring in-person renewal and vision testing as well as driving restrictions (Stav, 2008).
- The most important functional abilities for safe driving are good vision (day and night), certain aspects of physical fitness (head-neck flexibility, leg strength), cognitive abilities (working memory, visual search and visualizing missing information (Staplin, Gish, & Wagner, 2003).
- Reviewing the literature on transportation and aging, Dickerson and colleagues (2007) report several areas of support for safe driving among older drivers – screening, rehabilitation (compensating for limitations), education and training, vehicle modifications, improved roadway design and signage, and finally, when necessary, supporting transitioning to non-driving.
- Driving cessation among older adults is a difficult transition with significant consequences; more than 50% of non-drivers age 65 and older – or 3.6 million Americans – stay home on any given day partially because they lack transportation (Bailey, 2004). Stopping driving can be deleterious for older people's depressive symptoms, and, according to some research, the negative consequences of driving cessation are not mitigated by having a spouse drive them (Fonda, Wallace, & Herzog, 2001). Driving cessation is described as most often occurring along a continuum and decisions to stop or reduce driving are influenced by a number of factors including physical health, mental health, and available financial resources (Dellinger, Sehgal, Sleet, & Barrett-Connor, 2001).

Walking:

More than half of older Americans walk as a regular activity however they use walking as transportation much less frequently than older adults in other countries. For example, Americans over 65 make 8% of their trips on foot or bicycle whereas in Germany older adults make 50-55% of all trips on foot or bicycle (Bailey, 2004). The benefits of walking for older adults are well-established in the literature and include improved cardiovascular fitness and physical performance, enhanced cognitive function, and higher levels of life satisfaction (Fisher & Li, 2004; Simonsick, Guralnik, Volpato, Balfour, & Fried, 2005; Weuve et al., 2004; Wong, Wong, Pang, Azizah, & Dass, 2003). Findings from the Women's Health and Aging Study (a longitudinal cohort study, n=1002) suggest that even a small amount of regular walking outside of the home can confer short-term protection from further mobility loss in functionally limited older women (Simonsick et al., 2005).

In other research, the relationship between neighborhood design and the walking behavior of older residents has been examined. Findings suggest that the 'walkability' of neighborhoods can have a significant impact on the health and well-being of older residents. Evaluating the association between neighborhood walkability and depression in older adults, Berke and colleagues (2007) report that in older men, walkable neighborhoods can provide a buffer or protect against depressive symptoms. Using 'home age' as a proxy for features of the urban environment (e.g., density and street design) that mediate walking behavior, Berrigan and Troiano (2002) report that walking is more common in neighborhoods with older homes, i.e., communities where there are more likely sidewalks, denser interconnected networks of streets, and mixed business/residential land use. Safety (street traffic and safe crossings) is one of the most significant characteristics of walkability and a key predictor of walking behavior for older adults (Balfour & Kaplan, 2002; Y. Michael, M. Green, & S. Farquhar, 2006; Nagel, Carlson, Bosworth, & Michael, 2008). According to AARP (2008), pedestrian fatality rates for older Americans are more than 70% higher than for those younger than 65. In addition, summarizing the literature that examines the relationship between the built environment and physical function among older adults, Brown et al., (2008) conclude that among community-dwelling elders, less walkable neighborhoods appear to be linked to reduced physical functioning (p.1300).

Public Transit:

According to the U.S. Census Bureau, more than 21% of Americans over the age of 65 do not drive and are twice as likely as younger people to have a disability. This trend, in combination with the increasing older adult population, will have a substantial impact on public transportation systems (Rosenbloom, 2003). In addition, community and public transportation systems are under pressure from two shifts in health care and service delivery – increasing number of chronic patients and increasing dependence on outpatient care. Together these phenomena are generating support for immediate planning to meet the needs of an aging population, as well as much more investment in public transportation (Tucker, 2005).

There are a limited number of studies exploring the relationship between public transit and aging experience and processes specifically. The work that has been conducted indicates that for older adults who live in the suburbs, a system that links the city core with outer regions is important (Fobker & Grotz, 2006). Research has also highlighted various public transit conditions that discourage use among older people including missing or late transit (buses, trains, subways) lack of shelters, problems getting on and off, dirty windows that restrict visibility, fear of injury, unsympathetic drivers and occasional confrontations with other passengers (Rittner & Kirk, 1995). In studies exploring the impact of neighborhood design on active aging, researchers report that the need for public transportation increases as ability to drive or health decreases, public transit is an important aspect of walkable neighborhoods, and public transportation service is sometimes limited in lower-income neighborhoods (Balfour & Kaplan, 2002; Y. Michael et al., 2006).

Older adults also use paratransit and private transit (e.g., taxis, limousines) services for their transportation needs although much less frequently than the private automobile, walking and public transit. For frail older persons, paratransit and specialized transportation are the only feasible modes of transportation, other than getting a ride for others (Bailey, 2004).

Key Factors influencing transportation patterns and use:

The empirical research on transportation use illustrates that the decisions, choices, patterns for use and overall experiences of transportation for older adults are based on a number of individual, social, and environmental factors. A summary of many of these and other important determinants of transportation use among older adults were highlighted in a report prepared by the Beverly Foundation (2003) – Transportation Alternatives for Seniors. Results from the foundations national research program on senior transportation and mobility illustrate transportation choices for these populations are determined by five key 'senior friendly' attributes:

1. **Availability:** Transportation exists and is available when needed (e.g., transportation is at hand, evenings and/or weekends).
2. **Accessibility:** Transportation can be reached and used (e.g., bus stairs can be negotiated; seats are high enough; bus stop is reachable).
3. **Acceptability:** Deals with standards relating to conditions such as cleanliness (e.g., the bus is not dirty); safety (e.g., bus stops are in safe areas); and user-friendliness (e.g., transit operators are courteous and helpful).
4. **Affordability:** Deals with costs (e.g., fees are affordable, fees are comparable to or less than driving a car; vouchers/coupons help defray out-of-pocket expenses).
5. **Adaptability:** Transportation can be modified or adjusted to meet special needs (e.g., wheelchair can be accommodated; trip chaining is possible).

Other research supports their conclusions, for example, gender, socioeconomic status and ethnicity have been found to play a role in transportation options and choices for the elderly. A study exploring gender and transportation access among community-dwelling seniors (n=839) reports women, older people, and those with lower incomes were more likely to experience problems accessing and using transportation than other older adults (Dupuis, Weiss, & Wolfson, 2007; Rosenbloom & Winsten-Bartlett, 2002).

Safety:

Safety is an important theme in the aging and transportation literature:

- Transportation safety has been linked to continued engagement in community life and to social interactions necessary for health and well-being (Dickerson et al., 2007). Safety can refer to issues related to safe travel (accidents) as well as to personal fear (fear of crime).
- Fear of crime and fear of falling are the most salient forms of fear affecting older people's transportation processes and experience. Fear of crime has been linked to personal characteristics such as age (increasing age=increasing fear) and sex (elderly women feel especially vulnerable) as well as the environmental factors (e.g, incivilities such as graffiti or poor lighting=increased perceptions of fear) (Davidson, 1999; Doran & Lees, 2005). Mobility patterns are affected, and opportunities for activity reduced, when elderly people feel unsafe (e.g., when waiting at a bus stop or using a public parking lot) (Fobker & Grotz, 2006). Among older adults, safety emerged as the most significant factor to limit walking for everyday activity as well as exercise (Y. Michael et al., 2006).
- Fear of falling has emerged as an important area of inquiry among gerontological researchers and practitioners. The link between fear of falling and the restriction of activity (mobility) has been explored and findings suggest that although more commonly limiting the activity of older people with a history of falls (Arfken, Lach, Birge, & Miller, 1994), this kind of fear also has an impact on the activity of non-fallers (Howland et al., 1998). There are both psychological as well as physiological factors that play a role in a person's fear of falling. Examining the associations between fear of falling and functional and psychological factors, researchers report physical factors and in particular visual disability were the most powerful determinants of "fear of falling limiting activity" (Martin, Hart, Spector, Doyle, & Harari, 2005).
- Safe travel research with older adult populations includes driving accidents and pedestrian safety. Pedestrian safety, especially as it relates to street and traffic design has been identified as an important transportation issue for all citizens and represents a particularly salient issue for older people whose mobility maybe slowed or impaired. Recent polls and studies report: 42% of Americans believe "dangerous intersections make crossing the street difficult in the area close to where [I] live" (Russonello, 2003) and studies illustrate traffic signals are out of sync with the walking speed of older pedestrians. In a study in Los Angeles researchers (Hoxie, Rubenstein, Hoenig, & Gallagher, 1994) found 27% of older pedestrians are unable to reach the opposite before the light changed; three-

quarters of older adults interviewed stated that fear kept them from crossing streets as often as they would like to. Traffic calming strategies such as roundabouts, installing walk signals and lengthening the signal times, and maintaining sidewalks have been found to dramatically increase safety in certain neighborhoods (Staplin, Lococo, Byington, & Harkey, 2001).

As well as improving transportation and mobility options through design strategies (such as the traffic calming strategies mentioned above as well as elevators in subways, 'kneeling' buses, well-lit pedestrian walkways), individual-level approaches also report success. In particular, the literature focuses on the use of mobility aides as an effective way for some older adults to negotiate transportation barriers.

Mobility aides are a type of assistive device (AD) (or assistive technology - AT) which are defined as "any device or system that allows an individual to perform a task that they would otherwise be unable to do, or increases the ease and safety with which the task can be performed" (Cowan & Turner-Smith 1999). Aides range from manual devices such as canes, crutches and walkers to motorized scooters and wheelchairs.

Research exploring mobility aides is predicated on the notion that mobility is a prerequisite for most of the activities of daily living and mobility aides are a viable and effective way in which to address the individual mobility needs among older populations. Findings from this research illustrate that the use of mobility aides among older people is common, the devices are used both inside and outside of the home, usage changes (increases) over time, they are often used in combination with each other, devices change over time and may be used in combination with each other (Lofqvist et al., 2007). Researchers indicate older people use MA's to support their mobility which, in turn, contributes to their ability to function independently, feel safe, and engage in life. Despite their widespread use and commercial visibility, researchers have identified a lack of awareness of AD's as a significant barrier to their use (Roelands et al, 2002).

Transportation from a NYC perspective and transportation for older New Yorkers specifically

In 2006 AARP New York conducted an extensive survey study to examine transportation issues among older New York residents. The random sample (n=1,128) included members age 75 and older from the following counties: New York, Queens, Kings, Bronx, Rockland, Nassau, Suffolk, Westchester, Putnam, Orange, and Richmond. Some of the key findings from this study include:

- The majority of respondents (60%) generally drive to the places they want to go.
- Those without a license are more likely to get a ride with others (58% vs. 27% licensed), walk (41% vs. 33% licensed), or use public transportation (40% vs. 29% licensed).

- More than eight in ten (81%) older New York metro respondents report getting out of their home three or more times per week. However, about one in six (16%) only get out once or twice—if at all—and those without licenses are twice as likely to be homebound this often (35%).
- Most respondents say transportation problems do not interfere with their ability to get to where they want to go. However, those with licenses are more apt to be satisfied with how they get around their community than those without a license (83% vs. 67%).
- More than eight in ten (81%) respondents indicate public transportation is available in their community. Of these, about two-thirds (67%) report a public transportation stop is less than one-quarter of a mile from their home. Few respondents report difficulties when using public transportation. The top three things liked most about public transportation are: it gets them where they want to go (69%); it is affordable (67%); and it is convenient (61%).
- Of respondents who are licensed and have driven during the past two months, more than half (55%) agree it would be difficult for them to remain in their current neighborhood if they were unable to drive. Nearly six in ten (58%) respondents indicate they would be likely to choose a new neighborhood with better public transportation if they were no longer able to live in their current neighborhood. The two modes of transportation most desirable in a new neighborhood are community/senior vans (37%) and buses (31%).
- **Race:** Compared to white respondents, African American respondents are less likely to have licenses (62% vs. 79%) and more often use public transportation as their primary mode of transit (48% vs. 29%). In addition, African Americans are more likely to report having problems while using public transportation, such as getting a seat (63% vs. 44%), having shelter from the weather (76% vs. 58%) and being worried about crime (61% vs. 35%). Moreover, African American respondents are less likely to say they have no problems getting to key destinations, such as medical appointments (59% vs. 70%) and activities with family (53% vs. 67%). All together, African American respondents get out of their homes less frequently than white respondents do (5 times/week: 37% vs. 54%).
- **Income:** Those with incomes below \$20,000 are least likely to get out of their homes more than five times a week (32% vs. 79%). In fact, those with incomes below \$20,000 are substantially more likely to have problems using public transportation and getting to places such as medical appointments (30% vs. 7%) and grocery shopping (18% vs. 8%). Not surprisingly then, those with low incomes are more likely to express dissatisfaction with their ability to get around in their communities (13% vs. 2%). However, high income drivers more often say they would have difficulty remaining in their current neighborhood if they were no longer able to drive (23% vs. 12%).
- **Residence:** City dwellers, suburbanites, and small town residents also experience transportation issues differently. Most notably, those who reside in suburbs or small towns are more likely than their city counterparts to say they could no longer reside in their current neighborhood if they were no longer able

to drive (suburb, 42%; town, 47%; city, 13%). Additional differences include: City dwellers are least likely to have a driver's license (city, 68%; suburb, 81%; and town, 88%), and are more likely to walk, (city, 52%; suburb, 25%; and town, 19%), ride public transportation, (city, 52%; suburb, 19%; town, 9%), or take taxis (city, 26%; suburb, 8%; town, 3%) to where they need and want to go. City-dwellers who use public transportation are more likely to experience difficulties with being able to find a seat, (city, 52% vs. suburb, 36%)⁴ and the condition of public transportation stations and vehicles (city, 42% vs. suburb, 35%).

Objective for Action: "Accessible and safe mobility for life" - To protect, develop and expand a variety of accessible transportation pathways and opportunities that enable older New Yorkers to fully access the city – its resources and its people. Transportation represents a basic human need for people of all ages and is linked to independence, autonomy, and quality of life (Dickerson et al, 2007). Accessible transportation and safe mobility are essential to continued engagement in civic, social and community life for older New Yorkers and therefore an important priority area for an age-friendly city.

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