MAINTAINING MOBILITY OF OLDER ADULTS IN NORTH AMERICA

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1. SUMMARY

Fifty years from now, the demographic composition of North American will be quite different from the one today. The 65+ cohort will make up over one-fifth of the population with the 80+ group growing even faster. They represent a significant travel market not to be ignored. American seniors have long been extremely dependent on the automobile which accounts for 92% of their trips. Unfortunately, when they are no longer able to drive, there will be few transport options suitable for their use.

Safe mobility is the key to maintaining the quality of life and well-being of every individual. The majority of Americans want to grow old gracefully in their established communities without having to move out of their own homes for as long as possible.

The growing travel market of older adults, the gender difference in travel patterns between older males and females; and the increased diversity of culture and language of users, all pose challenges to transport operators for service delivery. Existing conventional public transit has difficulties in catering to the varied needs and diffused destinations of older adults in terms of service availability, convenience, safety and affordability. The recent economic downturn calls for ingenious solutions to be found to meet the mobility challenges of an increasingly older population.

This paper makes suggestions on the practices and strategies towards the development of age-friendly communities in the future. These include creating age-friendly built environments and infrastructure that cater to active transport modes and alternative travel modes, accommodate Personal Mobility Devices (PMDs), ensure the connectivity of intermodal and multimodal travel, implement new information/communication technologies, encourage travel substitution, and provide mobility counseling and training.

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Key Words: accessible, age-friendly, mobility, seniors, transportation

2. PURPOSE OF THE STUDY

By 2050, the demographic composition of North America will be quite different from the one today. The graying of the baby boomer generation and the increase in life expectancy of the 80+ age group is exerting tremendous pressure on the transportation system in a predominantly auto-oriented North American society.

The key to maintaining the quality of life and well-being of older adults is safe mobility, especially for those who have given up driving. The life style of the new generation of seniors tends to be quite different from their predecessors. On the one hand, many baby boomers are well educated, economically well-off and continue to travel independently. On the other hand, age and disability is closely correlated; those with mobility and economic issues will require affordable accessible transportation provided by third parties for their trips. Both groups have slightly different mobility needs and requirements that are not well understood. The recent economic downturn that has resulted in reduction in public transport services calls for innovative solutions to be found.

The purpose of this paper is to present the characteristics of mobility issues faced by North American seniors, to discuss the service options available, and to suggest new approaches towards maintaining mobility for older Americans.

2. PARAMETRES IN MOBILITY PLANNING

The following are important parameters to be considered when planning for mobility in an aging society in terms of service availability, convenience, safety and affordability:

2.1. Age in Place: American seniors prefer to “age in place” without having to move out of their homes or from their own community *[Coughlin, 2007].*

2.2. Significant Travel Market: The sheer size of the age 65+ cohort is a travel market that cannot be ignored. Twenty percent of the total population in the United States of America will be over 65 years old in 2050, up from 13% in 2008*.* The same age group in Canada is even more numerous at 25% by 2041 *[Millen, Glenn et al., 2007].*

2.3. Squaring of the Population Pyramid: Seniors over 85 in North America will multiply four times over the next 50 years *[Millen, Glenn et al., 2007],* a phenomenon known as the ”squaring” of the population pyramid. The majority of this group are non-drivers and likely to use mobility aids and to depend on accessible transportation.

2.4. Auto Dependency: Currently, 92%of trips made by American seniors are by car, either as drivers or passengers*.* Many seniors also tend to drive for as long as possible despite the drastic increase in fatal accident rates after age 75 *[Miller, 2008]*. This could be explained by the lack of public transportation available *[Rosenbloom, 2002],* especially in rural America where 38% of communities lack this service *[Community Transportation Association, 1994]*. This car dependency has significant impacts on seniors’ quality of life: on any given day, more than half of all non-drivers over age 65 were forced to stay at home because no other transportation means were available *[Bailey, 2004].* For seniors who relied on mobility aids, the situation was made worse by a

lack of accessible personal vehicles: a 2010 survey in the U.S. found that only 4% of persons using wheelchairs own an accessible vehicle [*Chan, 2012]*.

2.5. Reliance on Third Party Providers: As seniors age, they will increasingly have to rely on family, friends and third party providers for their travel needs. Forty percent of trips by seniors over 85 were as car passengers, versus 21% for those between 65 to 69 years. Female travelers are more vulnerable because they have distinct safety and security concerns when using public transit or as pedestrians. Frailty and fragility are more problematic for women, especially when they have to carry luggage or groceries.

2.6. Ethnicity Limits Options Available: Research indicated that ethnic seniors with disabilities often live in cities rather than suburbs *[Rosenbloom, 1995],* few female Hispanic seniors had driver licenses, and older African-Americans, Latinos, and Asian-Americans were similarly affected by the lack of transportation options *[Bailey, 2004].* This shows that ethnicity can be a limiting factor on the transportation alternatives available to seniors in the United States.

2.7. Income and Disability on Trip Patterns: Income and disability were found to have a significant impact on the frequency of daily trips made by older adults. Those who earned less than $15,000 per year made 2.9 trips per day as compared to 4.5 trips by those who earned above $55,000. Low income seniors with a disability made 1.6 trips per day as compared to 2.4 trips for those with an annual income of over $55,000 *[Straight, 2004].*

3. AGE-FRIENDLY COMMUNITY MOBILITY OPTIONS

Age-friendly mobility systems within a given community should be built and operated based on universal design (UD) principles to ensure that the complete trip chain is accessible from origin to destination. The means of travel can be by through individual or collective modes, and can be operated by public or private bodies. Schematically, trip-making within and between communities is illustrated in Fig. 1.

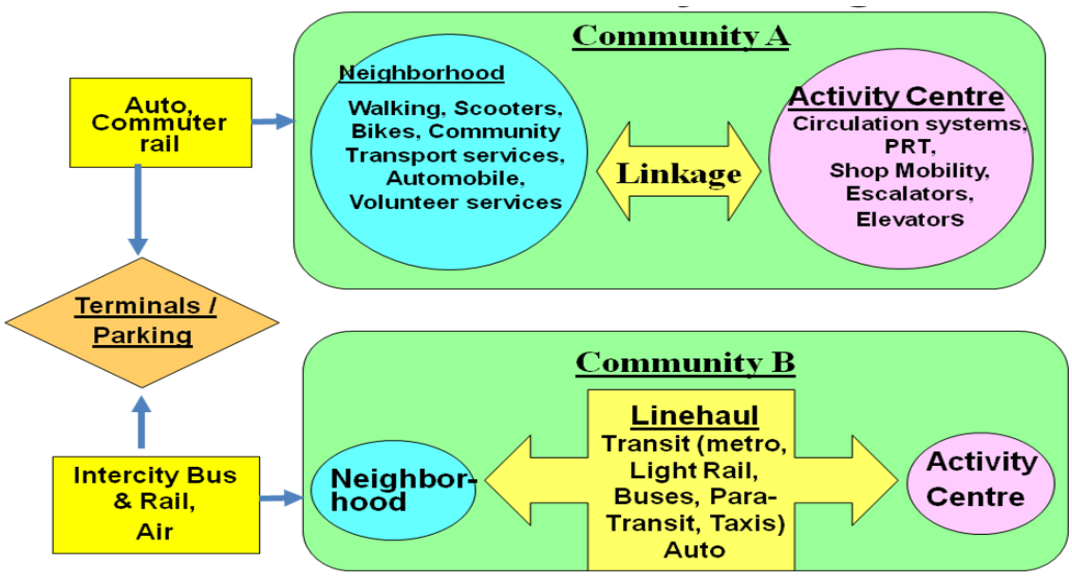

Figure 1: Accessible Community Linkages
Source: Suen et al, 2010. Building an Ideal Accessible Community TRANSED 2010 Proceedings, Montreal, Canada

3.1. Neighborhood and Suburban Transportation

In the U.S. the majority of trips are short: 25% of all trips are one mile or less, while 40% are less than two miles, regardless of age. If weather permits, active transportation modes such as walking and cycling are the preferred modal choice for seniors with sufficient stamina. The Montreal "BIXI" public bicycle system *[Le Colletter, 2012]* is so popular that it has been adopted in many cities worldwide. For those with mobility limitations or without driver licenses, Personal Mobility Devices (PMDs) such as Segway, golf carts, electric bikes and mobility scooters are increasingly used for short and even longer distance travel.

For trips between neighborhoods and activity centres, or to other destinations outside the community, a myriad of public transport services such as flex route/route deviations, flag stop, dial-a-ride, community buses, service routes, shared-ride taxis and limousines are possible alternatives to the private car.

In times of fiscal restraint, public transit services may not be sufficient to meet the travel demand. In many instances, private, ecumenical or voluntary services have stepped in to fill the service gaps or vacuum. For example:

- Transportation provided by family/friends/care-givers/religious associations;
- Public car-sharing systems (e.g. Zipcar or AutoShare in Toronto, Ontario, Canada) where paid members can reserve the cars for specific times on an hourly basis. Similarly, car-sharing systems are organized within condominiums/apartment buildings for resident members.
- Volunteer driver systems operated by non-profit organizations such as the Independent Transportation Network or ITN offers auto rides to paid members who are seniors or persons with disabilities. As of 2011, it has been replicated in 19 US cities within 15 states *[ITN America, 2011]*. ITN organizes training webinars for those interested in adopting the system and has implemented creative methods for seniors to finance their trips. Members can trade in their cars for rides while volunteer drivers can earn and store ride credits for their family members or themselves in the future.

3.2. Activity Center Circulation Systems

In order to enable older adults to participate in community activities offered in major destinations, such as shopping malls, large office building/sports complexes, university campuses, and city parks, people movers systems like Personal Rapid Transit (PRT) could be installed. Other transport systems such as horizontal or inclined automated walkways; loan/rent mobility scooters, manual/powered wheelchairs, bicycles and Segway are useful vehicles for traversing long distances within large activity centers.

3.3. Intermodal and Multimodal Travel

Travelling between communities or neighborhoods, longer distance may be involved. Public transport line-haul systems, ranging from fixed guideway systems (commuter rail, subway to light rail), dedicated rights-of-way Bus Rapid Transit (BRT), to low floor fixed route buses, paratransit, and taxis/limousines can be used by the older

traveler provided that vehicles and terminals are easily accessible. Transport modes described in Section 3.1 above are local feeders to the intra- and inter-urban transport systems.

A typical journey by an older adult may involve using a personal mobility device (e.g. bicycles and scooters) for access and egress and transferring it onto a bus, subway or commuter train for the line-haul portion of the trip. This is deemed intermodal travel. Older travelers using bicycles or mobility scooters should be made aware of the carriage policy of individual operators regarding their transportability during intermodal travel. At other times, he/she may use multiple travel modes to reach a destination, like walking to the bus stop, transferring to the bus or the subway, and walking to the final destination *[http://www.thefreedictionary.com/multi-modal, 2011].* In order to facilitate age-friendly and accessible travel with smooth transfers and seamless journeys, transit systems should allow bicycles, scooters and other PMDs to be transported onboard, in conjunction with integrated fare structures and appropriate amenities.

4. STRATEGIES TO MAINTAIN COMMUNITY MOBILITY

In order for the mobility options outlined in Section 3 above to function properly, several complementary strategies could be used to maintain mobility in an aging-society. These include:

4.1. Age-Friendly Transportation Infrastructure and Built Environment

Many automobile-oriented suburbs have wide arterial roads with no sidewalks. This can be hazardous for older pedestrians, cyclists or users of PMD. Communities should have adequate facilities for these active transportation modes through the provision of a pleasant, safe, and accessible walking and biking environment. Well-lit and well maintained sidewalks, streets, pathways, bikeways and crossings offer a safe and secure environment for all pedestrians, young and old, male and female.

Two facility accessibility design standards *[City of London, Ontario, 2006* and *City of Winnipeg*, *Manitoba 2010]* can be useful references in establishing benchmarks for improvements and retrofits to the existing infrastructure. Another creative approach towards participatory neighborhood accessibility planning where stakeholders took part in designing their own community bus routes was implemented in Arizona *[The Community Forum and HLB Decision Economics Inc, 2009].*

One technology of interest to communities with cold climates is heated pavements. Heated coils can be installed under the pavement to make a network of ice- and snow-free downtown streets *[Freed, 2011].* This technology can be useful to create an accessible downtown for all seasons, which benefits pedestrians, cyclists, PMD users and businesses alike *[Rohde, 2011].* Scandinavian cities in Sweden, Norway and Iceland have embraced this technology, as well as communities in some northern U.S. states like Wisconsin. The impediment to its widespread implementation is the cost factor for construction and energy consumption.

4.2. Age-friendly Travel Information

Anxiety and uncertainty of older travelers can be reduced by having the right information before embarking on a trip, such as route number and frequency, types of vehicles and fares structure. Travel information during the trip, such as stop announcements and on-time/delay notices, can be extremely useful. Upon reaching the destination, information on egress will allow the traveler to reach his/her destination promptly and safely. Easy-to-use telephone information systems and web-based trip planning programs, as well as traditional printed schedules, are useful tools in this regard.

Recent developments such as Intelligent Transportation Systems (ITS), Global Positioning System (GPS) and Geographic Information System (GIS) capabilities have enabled real-time and dynamic information to be provided in vehicles, at stops and at stations via the Internet. Some transportation providers are now upgrading their bus stop signage to include stop, route and destination information for use with phone and internet-based schedule or real-time stop identification/arrival systems *[Lehto, 2012].*

Transit providers in North America (e.g. Washington DC and Toronto, Canada) are increasingly inclined to use social media, such as Facebook and Twitter, to disseminate real-time information on delays, construction and other incidents to a wide audience as well as to solicit user feedback and suggestions.

It should be recognized that many older adults might not be comfortable with new information technologies or Smartphone and might have never used social media before. In 2010 only 26% of seniors over 65 used social media as compared to 86% of young adults aged 18-29. Nevertheless, this represents a 100% increase from 2009 when only 13% of seniors were social media users *[Madden, 2010].* Training for seniors is needed for them to keep up with these new technological developments.

4.3 Connectivity of Intermodal and Multimodal Travel

The increased use of bicycles and PMDs by older adults has implications for connectivity of the intermodal and multimodal segments of the trip chain. Both users and service providers should ensure that bicycles and PMDs can be transferred and transported on the public transport vehicles in terms of size and within the tariff policies. Mobility training is also needed to ensure that older adults can navigate throughout the entire trip chain.

4.4 Training and Mobility Counseling

In transitioning from driver to transit user, ideally older adults should receive personalized mobility counseling and training services so that they are aware of the transport options available and on how to use the services. The *"travel buddy system',* a personalized escort and guide service for the user from origin to destination, could help to reduce seniors' concern for safety and security. Mobility training is especially needed if transfers are involved. Likewise, both front-line and

management staff of the service provider must attend sensitivity training courses on how to deliver age-friendly services.

The American Association for Retired Persons (AARP) has published a body of work on travel tips and guidelines, and on how to identify travel alternatives and to build livable communities that support independent living *[AARP, 2010].* The Beverly Foundation provides training materials for those interested to launch volunteer programs. It has released a checklist calculator which can be used to evaluate a given transportation option on its degree of age-friendliness. *[Beverly Foundation 2008].*

One of the National Center on Senior Transportation (NCST) initiatives is the Older Driver Safety Coalitions Project, which provides ongoing technical assistance to various states on how to address older driver safety and mobility concerns. The present NCST focus is to develop age-friendly communities and on aging in place *[NCST, 2010]*

In British Columbia, Translink, the government agency that coordinates all public transportation in the Vancouver region, provides personalized travel training for seniors, people with disabilities and recent immigrants, either one-on-one or in group sessions *[Translink, 2012]*. In the U.S., Project Action hosts online courses for agencies to develop and run their own travel training programs *[Easter Seals Project Action, 2010].*

4.6. Accessible Information and Travel Substitution

The widespread use of the Internet and Smartphone (e.g. Blackberry and iPhone) has resulted in the phenomenon of "information transportation" and "travel substitution". Many older adults can now work, shop, talk with friends and family, or consult their doctors from home without travelling. Internet-based communication applications such as web telephone (e.g. Skype), webinars, or conferencing can be used from anywhere in the world. These are particularly beneficial for older adults with reduced mobility although training may be required for those unfamiliar with such applications *[Niles, 1994].*

Today we can buy nearly all daily essentials such as groceries and prescription medication by telephone or online. Amazon.com allows shoppers to order recurring shipments of hard-to- carry large or bulky items (e.g. toilet paper and detergent) *[Thomas, 2011].* Counseling and training are needed for the older users to master these new tools.

Medical visits constitute a significant number of trips that older adults make. Through wireless technology, patients can now consult with doctors from remote locations, self-measure blood pressure and other vital signs, and be reminded of medication times. Such technology can also track movements, sleep patterns and other health information on a daily basis. The advantages of telemedicine include fewer medical trips and less reliance on caregivers' support. It enables seniors to free up their limited travel budget for leisure trips *[Egan, 2010; Wolfe, 2010].*

5. CONCLUSION

The new generation of North American seniors, who are predominantly baby boomers, are expected to be keen followers of active lifestyles and to demand a high level of mobility. Meeting their transportation needs with reduced government funding in public transit during periods of economic downturn is a daunting task. In order to maintain the mobility of older adults, the dependence on private automobile travel will need to be replaced by or complemented with other alternatives. No single solution can act as a panacea: a myriad of customized services need to be in place. A number of approaches can be explored in community planning, such as adopting land use and transportation planning policies/strategies based on universal design principles to encourage active transportation options like walking and cycling for healthy seniors and PMD for those with mobility issues. Intermodal and multimodal nodes and linkages must be streamlined for connectivity and accessibility to complete the trip chain.

Mobilizing grassroots support and coalitions for transportation service delivery are critical to the success and survival of community-based travel options. Efforts should be made to recruit, train and retain volunteers to enable systems such as ITN to survive and flourish. Moreover, insurance and liability barriers that could dissuade volunteers from participating in mobility schemes must be overcome. Hopefully ingenious financing methods and partnerships such as those employed by the ITN will help to sustain operations that cater to the escalating mobility needs of North American seniors in the future.

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