

Transportation Planning Options for Elderly Mobility

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ABSTRACT

The population of the United States is aging, yet the current transportation system is not designed to accommodate the elderly. Reduced mobility has a profound impact on elderly well-being, and the transportation needs of older people will only increase as the baby boomer generation ages in the suburbs. Where transportation options do exist, few meet the standards of the private car that the baby boomers have come to expect.

I explore the mobility attitudes and habits of the baby boomers and the responses of communities and regions to an already apparent mobility gap. I then evaluate a sample of near-term policy options for decision makers, using case studies of public transportation, SilverRide™, ITNAmerica®, and villages. I argue that the options vary along the criteria of availability, acceptability, and affordability, and within a taxonomy of fiscal and social capacity. Diverse contexts mean that no one option is sufficient, and communities will ultimately decide which options to pursue based on their unique needs and resources. In the future, policy options will likely evolve to better address public funding constraints and build on informal forms of transportation. Both fiscal and social capacity are necessary for transportation policy options to function optimally over time, and communities can leverage existing social capacity to help enhance elderly well-being and address the unpreparedness of regions and individuals.

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INTRODUCTION

Over the course of the coming decades, the number of persons 65 and over in the United States will increase dramatically. By 2050, almost 90 million Americans will be considered elderly, more than one in five. A demographic shift is underway, yet the current transportation system remains largely unresponsive. In many auto-dependent suburbs, the elderly who no longer drive are often unable to be active, healthy, participating members of their communities. Lacking options, individuals continue to drive and may endanger themselves and others. Some elderly cobble together rides from family and neighbors, at the whim of others' commitments and busy schedules. The public sector has scarce resources to allocate to the issue, non-profits are limited in their ability to make large-scale impact, and the private sector has been slow to react.

The transportation needs of older people will only increase with the aging of the baby boomer generation. Current land use patterns are not designed to accommodate the elderly, and the baby boomers are aging in locations with few transportation alternatives. Where options do exist, few match the reliability, comfort, and flexibility of the car. Mobility support by family members is also becoming less certain as fertility rates fall and household sizes decrease. The baby boomers' mobility expectations coupled with their desire to remain independent will likely exacerbate a long-recognized transportation gap. Reduced mobility due to driving cessation is already widespread; almost everyone knows of an elderly family member or friend who is struggling to deal with the constraints of the transportation system. Mobility is linked to personal choice and control over one's situation, and thus has a critical impact on both mental and physical well-being.

In light of the imminent “aging tsunami,” I attempt to address the following questions:

- What are the mobility habits and attitudes of the baby boomers now and in the future? How do they perceive and use alternatives to the car?
- Are communities and regions aware of and addressing elderly mobility issues? What are the barriers to action?
- What options exist to address the mobility gap in the near term? How well do these options meet criteria of availability, acceptability, and affordability?

To explore these questions, I use a combination of case studies, personal interviews, and prior research to: 1) identify personal transportation attitudes, 2) establish current planning perspectives, and 3) develop a taxonomy of policy options for communities to pursue. I use the term *community* to mean networks of interacting individuals whose shared values or ties “provide sociability, support, information, a sense of belonging, and social identity” (Wellman 2005). Communities may be rooted in a geographically-based neighborhood or district, but the concepts do not necessarily overlap. Both territorial and relational communities play need-fulfilling roles for their members (McMillan and Chavis 1986), and the options I discuss may be as relevant to an organization whose membership spans jurisdictions as they are to a neighborhood association.

Here, the terms *elderly*, *older person*, and *senior* are used interchangeably, referring to those 65 and over. *Baby boomers* refers to those born between 1946 and 1964, though this group is often split into an older, leading edge cohort (1946–1954) and a younger cohort (1955–1964). Broad usage of these terms is not intended to obscure a diversity of travel needs. In fact, previous research distinguishes between the mobility of the young old (65–75), and the old old (over 75), noting that the former do not have significantly different travel patterns than other adults (Alsnih and Hensher 2003; Glasgow and Blakely 2000). This turning point in individual mobility suggests that communities have limited time to act before the leading edge boomers may experience reduced quality of life.

I begin by exploring baby boomer attitudes with focus group data from Zegras et al (2008). Although the original research focuses on the relationship between travel patterns and the physical and social characteristics of age-restricted neighborhoods, the responses of 55–65 year olds in suburban Massachusetts reveal an overall baby boomer perspective on transportation. Auto-mobility is the norm for baby boomers, and few are planning for driving cessation. The reluctantly-used transportation alternatives of previous generations are unacceptable in comparison to the car, adding to demand for flexible services that enable independent living.

After establishing the personal user perspective, I then investigate if and how regions and communities are responding to the challenge of elderly mobility. Nationwide survey responses from Metropolitan Planning Organizations (Coughlin 2010) and Area Agencies on Aging (National Center on Senior Transportation 2010) highlight discrepancies between elderly transportation options and planning priorities. Most regions understand the implications of the demographic shift, but inconsistent and insufficient funding seems inevitable. Elderly mobility is one of many competing social issues, an urgent but not yet immediate public concern.

Given personal attitudes and a lack of regional planning, I develop a taxonomy of fiscal and social capacity to identify near-term policy options for decision makers. Case studies of public transportation, SilverRide™, ITNAmerica®, and villages represent a sample of options in this taxonomy. I then evaluate the options from a consumer perspective using a variation on the “5 A's of Senior Friendly Transportation” (Beverly Foundation 2001). I also discuss ridesharing and carsharing as complementary and interrelated policy options, and project how the options may develop within the taxonomy in the future.

The case study methodology is not without limitations. The suburbs of the US are incredibly diverse, and the policy options selected function in specific places and contexts. The interviewees and their opinions are also not necessarily representative. However, communities must ultimately evaluate the strengths and weaknesses of the presented policy options in light of their particular circumstances, adapting them as necessary. The taxonomy serves to clarify and assist in this process. It is also important to note that the research questions are based on an underlying assumption that the current locational and travel preferences of the baby boomers will remain relatively constant into the future. Current projections for the aging of the suburbs do not account for possible long-term societal shifts about where and how to live. Successive cohorts may adapt their locational choices in anticipation of eventual constraints to driving, especially as the baby boomers become caregivers for aging family members and encounter struggles with mobility first hand. However, even if preferences evolve toward more walkable, urban living, some suburban homeowners may find that the current real estate market makes relocation unrealistic. Many baby boomers will likely find themselves with limited mobility options in the coming years.

Analysis of prior data combined with the case study evaluations lead to several conclusions. I argue that social capacity is an asset related to relationships within communities. I use the term *social capacity* to mean a resource formed through social connections, an application of social capital to the realm of policy. Both fiscal and social capacity are necessary for transportation options to function optimally over time, but social capacity is critical because it links mobility with well-being and engagement. No one policy option can address the transportation gap, but all can evolve to better address public funding constraints and build on existing and informal forms of transportation. In addition to adapting its own operations, government can support the policy options and their private and non-profit actors by reducing barriers, providing incentives, and promoting the importance of planning for driving cessation. The aging of the baby boomers is both an urgent challenge and a rare opportunity; advocates for elderly mobility now have a window to craft and advance innovative strategies that meet the standards of the baby boomers and sustain their independence. The options I present only begin to broach the elderly mobility dilemma, and I conclude with a discussion of policy issues and research questions that warrant further investigation.

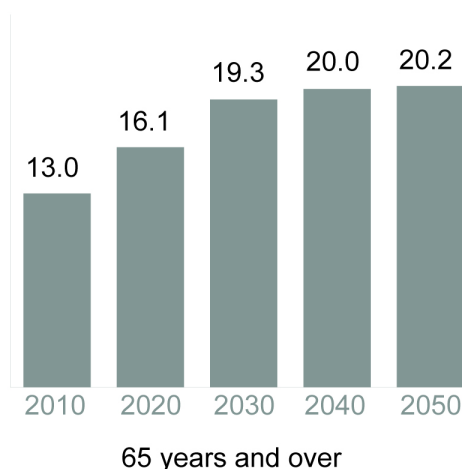
DEMOGRAPHIC TRENDS AND IMPLICATIONS

Planners in the United States and throughout the world are facing the challenge of rapidly aging populations. As of 2010, more than 40 million individuals were 65 and over in the United States (Vincent and Velkoff 2010). As seen in Figure 1, this represents thirteen percent of the population, a proportion that will continue to increase as the baby boomers reach 65. By 2050, almost 90 million Americans will be 65 and over, and more than 19 million will be among the oldest-old, 85 and over. Despite rising standards of health and longevity, a significant number in the latter group in particular will face physical and cognitive limitations that necessitate assistance in basic activities.

The geographic distribution of the elderly is one of several variables that shape how the country is aging. Roughly seventy percent of the baby boomer and older population lived in the suburbs in 2000, and almost eighty percent of those 65 and over lived in either suburbs or rural areas (Frey 2007; Rosenbloom 2003). The generations who moved to the suburbs to buy homes and raise families during the 1960s, 70s, and 80s are now aging in those locations. To a greater extent than migration, this trend of aging in place drives projections for the continued graying of the suburbs (Frey 2007). Aging in place is an overwhelming preference; the elderly of today are actually less likely to move after they retire than previous cohorts (Rosenbloom 2003).

Figure 1: Projections for the 65 and over US Population (Vincent and Velkoff 2010)

Percent of Total US Population: 2010 to 2050



Spatial realities and shifting demographics make the inadequacy of the current transportation system starkly apparent. Like other age groups, those over 65 are extremely dependent on the private car to accomplish daily tasks. However, the effects of aging impact driving ability and Americans now “outlive” their driving lives by six to ten years (Foley et al 2002). An inherent conflict exists between the desire of seniors to remain in their homes and their ability to function independently with age. Even in places where alternative transportation is available, many elderly are unable to use these services due to the same limitations that caused them to stop or scale back their driving. Prior research makes a strong case for both auto-dependence and automotive preference. As one focus group participant noted, “If Maryland tells me I can't drive, I'll move to Florida where they'll let me drive” (Burkhardt et al 2002). The elderly report dissatisfaction with driving alternatives, such as riding with family and friends, walking, bicycling, or taking taxis or transit. Glasgow and Blakely (2000) found that these modes were generally unsafe, inaccessible for the disabled, expensive, or “restrictive of spontaneity in trip taking.”

Reduced mobility has a profound impact on elderly well-being. Carp (1988) articulates this inextricable link:

“...well-being depends on success in meeting life-maintenance and higher-order needs. Satisfaction of any need depends on congruence between the need and the resources for meeting it. Mobility is a key factor in determining the degree of congruence, because community facilities and services are irrelevant if they are inaccessible.”

Mobility by all modes facilitates face-to-face contact, participation in cultural, recreational, and religious activities, and access to a full range of goods and services including health care and financial planning (Schaie 2003). Mobility can also influence mental and physical health by determining the extent to which the elderly interact with others and take advantage of various amenities (Cvitkovich and Wister 2001). Those who no longer drive may experience isolation, depression, and physical decline. In the face of limited resources, however, transportation providers prioritize trips that fulfill life-maintenance needs like going to the doctor or the grocery store. Although the elderly often express an equal desire for travel to beauty salons, entertainment and cultural venues, and social settings, these higher order trips fall by the wayside. In contrast, Carp (1988) explains that “...when well-being is at issue...trips for relaxation and enjoyment and religious activities are also 'essential'.”

The challenge of elderly mobility is shaped by the wants and needs of the aging population, and the population's changing nature has profound consequences for the current transportation system. Literature on elderly travel behavior emphasizes elder heterogeneity, as differences in health, income, education, household structure, sex, and race all impact transportation choices (Wachs 1979). Considerable variation exists within the baby boomers, and generalizations about this or any group are inaccurate as applied to the individual. However, exogenous political and economic forces (period effects) as well as unique social and cultural experiences (cohort effects) both impact how Americans live, age, and travel (Wachs 1979).

Broad shifts in health, income, education, and technology are especially relevant to the baby boomers. Cravit (2008) proposes that these factors are reinforcing the overall attitude of the “zoomers” (boomers with zip) and overturning the entire concept of aging. Advances in medicine mean that many 65 year olds can expect another three decades or more of life. Whereas previous generations have backed away from work and social commitments, the baby boomers see this time as one of activity, and thus one of travel. Many baby boomers are postponing traditional retirement and extending their careers both by choice and by economic necessity. Others are working informally, caring for parents and grandchildren. They are planning for the future and for new experiences, linking old age with “proactive pursuit, not passive withdrawal” (Cravit 2008).

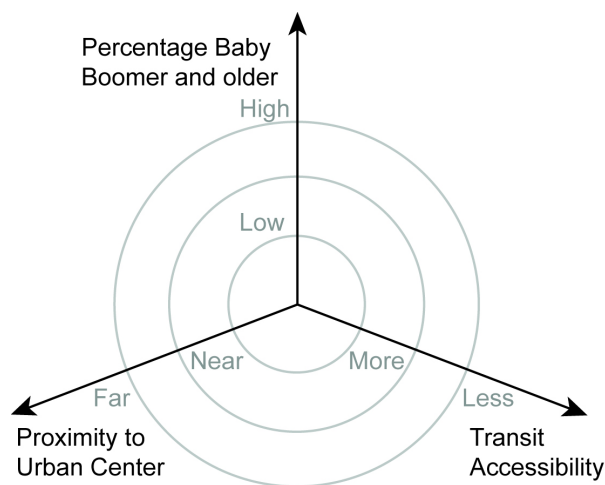
The baby boomers' determination to remain independent also affects the transportation equation. For many, the desire to age in place is a reaction to the institutionalization of a prior generation. The nursing homes and assisted living facilities where their parents grew old are symbols of helplessness and indignity (Cravit 2008). Multiple studies confirm that older adults want to remain in their homes as long as possible. When asked what they fear the most, the top responses for those 65 and over include losing independence and moving into a nursing home (Clarity 2007). More than seventy-five percent of those 65 and over strongly agree that they would like to stay in their current residences for as long as possible (Keenan 2010). Despite the popularity of aging in place, the role of transportation in this ideal is often overlooked. The increased activity and travel expectations of the tech-savvy, highly educated baby boomers coupled with their desire to age in place will likely widen the gap between transportation needs and available options.

LITERATURE REVIEW

The topics of urban structure, elderly mobility, and social capital all have important implications for current and emerging policy options to support the aging society. Aging occurs within neighborhoods, towns, and cities, and these settings in part determine the extent to which the elderly can maintain a

certain quality of life. The geographic separation of home, services, and social outlets that is common of the suburbs may create a mismatch between elderly competences and the demands of the environment (Lawton et al 1982). Theories of urban structure illustrate the dispersed spatial pattern, including Burgess' (1967) ecological model. Access is at a premium in the central business district, leading to dense development. The city expands outward in a series of concentric zones, and development density and non-auto accessibility falls. Figure 2 illustrates the ecological model as it applies to the baby boomers and their transportation options. In addition to those who are aging in place, some baby boomers are relocating to age-restricted neighborhoods in similarly auto-dependent, low-density locations. The ecological model is a simplified version of the many interrelated variables that influence growth in today's polycentric metropolitan areas. However, the reality of low suburban densities means a limited supply of public transit and greater auto dependence compared to urban areas.

Figure 2: The Ecological Model of the Aging Baby Boomers



A field unto itself has developed as planners propose responses to suburban dispersion as it relates to the elderly. Approaches fall under four general categories: land use and urban design solutions; transportation technology to make cars smarter and prolong elderly driving; regulation and assessment of older drivers to increase safety; and the promotion and improvement of public and alternative transportation (Trilling and Eberhard 2002). Dumbaugh (2008), for example, advocates for mixed land use clusters and universal urban design strategies, while Bookman (2008) argues for the restructuring of communities to strengthen social ties and support aging in place. Land use, design, technology, and policy are integral to healthy aging, but I do not attempt to tackle all of these components. I focus on mobility-based options because of their potential feasibility and implementation in suburban to rural settings.

It is important to clarify that, for the young and old alike, mobility is only one aspect of a broader objective of accessibility. *Mobility* refers to the physical overcoming of distance, while *accessibility* reflects a person's ability to take advantage of opportunities and attain the goods, information, and social contact he or she desires (Geurs and van Wee 2004). In addition to mobility, the spatial distribution of land uses, communications technology, and individual characteristics like age, race, and levels of income and education all determine accessibility. Different from its meaning of ease of use, accessibility concerns the extent to which individuals can fulfill their potential over the entire life course. Although I assess how well the policy options provide mobility, I consider enhanced accessibility a related and overarching goal.

The volunteer driving program is one approach to elderly mobility. Volunteer driving programs are often the outgrowth of discussion and planning by a base of concerned community members. The programs range widely in their design, but most are non-profits sponsored by a transit agency or a human

service, aging, or faith-based organization (Beverly Foundation 2008). Service extent and fare depend on community need and available resources. Some programs use a combination of volunteer and paid drivers, while others are purely volunteer. Most volunteer programs operate on a small scale, providing less than 40 rides per day (Hendricks et al 2008). The majority do not charge, although most request donations (Beverly Foundation 2004).

Volunteer driving programs formalize traditional networks of support: family, friends, and faith communities. Riding with grown children, neighbors, and fellow parishioners has long been the backbone of elderly transportation. After driving themselves, riding as a passenger is the next preferred mode for the elderly; roughly a quarter of those 75 and over rely on ridesharing as their primary mode of transportation (Coughlin 2001; Ritter, Straight, and Evans 2002). Indeed, elderly public transit use has an inverse relationship with the availability of transportation from family (Alsnih and Hensher 2003). Although these informal supports seem unexceptional, they are commonly “the glue that holds communities together” (Hardin).

Strong passenger-driver relationships are the basis for transportation by family, friends, and faith communities. The relationships are both the building blocks and the manifestations of a community's social capital. Described by Putnam (1996), *social capital* includes the “features of social life—networks, norms, and trust—that enable participants to act together more effectively to pursue shared objectives.” Social capital is made up of expectations of group identity, reciprocity, and security. Membership in organizations and rates of volunteerism and voting are some of its measures. Importantly, social capital is “widely shared,” with benefits extending beyond actual networks into the larger community (Cannuscio, Block, and Kawachi 2003).

Putnam's theory of “bowling alone” presents a bleak outlook for social capital in the United States. The author argues that younger generations are less engaged and trusting relative to those born prior to 1940; the “fabric of American community life” is fraying and unlikely to abate. Putnam pursues multiple explanatory factors, including suburbanization. However, “the downtrends in trusting and joining are virtually identical everywhere—in cities, big and small, in suburbs, in small towns, and in the countryside” (Putnam 1996). Putnam ultimately determines that television is eroding and suppressing community ties. As the first to grow up under television's influence, the baby boomers mark the beginning of the “post-civic” generation.

Regardless of the cause, Putnam's premise implies that the baby boomers will grow old in an atmosphere of low social capital. This phenomenon is extremely problematic given decreasing fertility rates and changing household structures. The elderly are increasingly likely to be living on their own and caring for themselves. Of the non-institutionalized 65 and over population, one in three lived alone as of 2000 (Cannuscio, Block, and Kawachi 2003). If the baby boomers do in fact have fewer community ties, they may also lack traditional mobility supports. As Cannuscio, Block, and Kawachi (2003) note, “social capital is declining at precisely the moment when it may be most needed.” If the transportation safety net is fragmenting, then formal options are all the more important.

UNDERSTANDING INDIVIDUAL PERSPECTIVES

Transportation patterns are in part the sum of multiple individual decisions. Thus, understanding baby boomer attitudes about transportation is a first step in evaluating and crafting options that fit the aging population's mobility needs. The following story is an attempt to summarize the individual perspective by creating rough baby boomer profiles. “Mrs. X” and “Mr. Y” are composites of the participants in focus groups conducted by Zegras et al (2008). Zegras et al analyzed the responses of suburban 55–65 year olds with an emphasis on the differences in travel behavior between typical and age-restricted neighborhoods. Residents of restricted neighborhoods were somewhat more social and physically active, but participants reported a high level of auto-dependence “regardless of neighborhood type and location” (Zegras et al 2008). The profiles suggest that many of the 75 million baby boomers have based their decisions about where and how to live on the premise that the car will always be a

mobility option.

Mrs. X and Mr. Y have never met, but their perspectives on mobility are similar. Mrs. X, in her late fifties, bought her condo ten years ago. Recently divorced and having raised two children, it was time for a change. Mrs. X was drawn by the neighborhood's main amenity, the water view. She loved the privacy and seclusion, the sense of safety that she had lacked in previous neighborhoods. Aside from a five month stint when her son hunted for jobs out of the spare room, Mrs. X lives alone. She works full time, but makes a point to swim laps at the gym to break up her hectic schedule.

Mr. Y lives with his wife in the home they have owned for more than 30 years. At 64, Mr. Y is reveling in his recent retirement, catching up on reading and golf. His wife is also retired, but never being one to sit still, just went back to work again part-time. As a young couple buying their first home, Mr. Y and his wife balanced location with affordability. The extra five miles to the grocery store seemed inconsequential when they considered asking prices. "When you're young and you want to own a home, you go where you can afford," he explains. The quality of the school system was important then too, and being on a street without through traffic so the kids could play. Mr. Y thoroughly assessed the neighborhood; no transients or crime near his family.

For both Mr. Y and Mrs. X, proximity to the highway was foremost in their minds as they bought their homes. Trying to make the commute as painless as possible, both measured accessibility in terms of the car, describing neighborhoods by exit number. Mrs. X still raves about being able to jump on the highway, bypassing local traffic and zipping to work. Transportation by foot or transit barely registered, although Mr. Y's wife used to take commuter rail into the city every day. She knew she would have to make the fifteen minute drive to the station early in the morning, before all the parking spaces filled.

Mrs. X and Mr. Y rarely consider how where they chose to live affects their everyday routine. What they do know is that their ideal neighborhood is exactly where they are. Both found what should be a contradiction: the quiet, woodsy feel of the country just a short car ride away from shopping and highways. "Off the beaten path, but accessible...close to major highways, yet remote." These comments reflect the neighborhoods' initial draw, and what Mrs. X and Mr. Y still value.

Mrs. X and Mr. Y are out and about to the usual destinations: the grocery store, the bank, church, doctors' appointments, visiting family. Miscellaneous errands mean being in the car for multiple trips per day, mostly for five to six miles in each direction. The time in the car seemed long at first, but now just seems normal. They got used to the distances, laughing a bit when the occasional "city" relative visits and asks how they do it. Mr. Y and his wife make trips together on the weekends, but driving alone is the norm. Sharing rides with neighbors is only for when the car is in the shop. Coordinating with neighborhood coworkers was never ideal either, since everyone left the office at different times or wanted to make stops on the way home.

Mrs. X and Mr. Y regularly walk in their neighborhoods, making loops around the block. Walking is for exercise, however, not for shopping or other destinations. "It's just neighborhoods" Mrs. X says, where would she go? Her development has sidewalks, but they end at the neighborhood entrance. Walking beyond that is dangerous, so sometimes she drives to other neighborhoods or to the old downtown for a longer route. A great bike trail runs about two miles away, but the hassle of loading the bike on the car makes that outing infrequent. Mr. Y's neighborhood has no sidewalks, but so little traffic comes through he and his dog take over the whole road.

The flexibility and convenience of driving makes other options beside the point for Mrs. X and Mr. Y. Both of their towns have local shuttle buses. They have never boarded these buses, and doubt they will anytime soon. Mrs. X lived in her town for four years before she even caught sight of the bus. "There's no local transportation worth mentioning" they say. The buses stop at the commuter rail station, but inevitably just after the train has pulled out. Mr. Y thinks he would take the bus if he could count on it to come every twenty minutes, but that type of schedule makes little economic sense for his area. To Mrs. X and Mr. Y, using public transit means taking the commuter rail into city on special occasions, or scheduling a ride with the airport shuttle. Driving is simply easiest; other modes are unnecessary. Besides, as new development comes to the area, stores pop up closer than ever, shortening regular car trips from fifteen minutes to ten. They like to know that the local buses run, but only as a backup, a "contingency

plan” for the future.

Mrs. X and Mr. Y have both watched their parents grow old, and they know that their current routines won't go on forever. Keeping up the house and the yard will become a hassle, a fact apparent to Mr. Y as he looks at his list of weekend projects. Part of the appeal of Mrs. X's condo was eliminating maintenance responsibilities. But she knows she might make a change eventually, finding a place where the washer and dryer are on the main level. The only reason Mr. Y would ever move would be to find a single-story home. That can wait, however, another ten years at least. Mr. Y's mother is in a nursing home, something he is determined will never happen to him. He will be independent to the end, in his home until he's “done.” Mrs. X sometimes thinks about moving to the next town over, to the small downtown where she could walk to buy groceries. She had to ask her father to stop driving at night not long ago, and his resentment has been in the back of her mind ever since. On the other hand, she just finished a costly renovation, and her condo is finally exactly as she had always planned.

Neither Mrs. X nor Mr. Y want to consider the driving necessary to stay in their homes, let alone start preparing to scale back or stop. “Next question,” they say, “I've got twenty years.” The reality of life without a car is stark, and denial is the current strategy. It will be until life forces them to change their transportation patterns: a broken hip, or failing vision. “We wouldn't function” if we had to stop driving, they say. “There's no way...” They acknowledge the predicament of aging, but for now their cars have made the advantages of suburbia outweigh any lack of non-auto accessibility. Continuous sidewalks and frequent bus service would be ideal, but it seems that these are the tradeoffs for privacy, peace of mind, and a bit of nature.

Mrs. X and Mr. Y know of some alternatives, if they absolutely had to stop driving. A shuttle stops in front of the senior center and then circles around to the grocery store, picking up the elderly women waiting on benches in the drafty front entrance. The churches have special transportation for doctor's appointments, nurses come directly to your home, and Meals on Wheels brings you hot food every afternoon. Mrs. X's neighbor relies on the senior center's volunteer drivers, who take her to dialysis and the pharmacy. “It's wonderful,” Mrs. X says, that the community supports the elderly. These services are not for them, however. The men and women who depend on community transportation are a different generation, a group that has all day to make it to the store in back, and has limited expectations for convenience and spontaneity. Sharing rides and taking the bus is fine when you are eighty, “because time wouldn't be important to you.” A disconnect exists between the mobility standards Mrs. X and Mr. Y currently have and what they think they will be satisfied with in the future.

The details above, some invented, some real, flesh out the attitudes and motivations of many individuals currently living and aging in place in the US suburbs. Exploring the Zegras et al (2008) results with an aim beyond the effects of neighborhood type reveals that few baby boomers prioritize and plan for non-auto mobility. Rather, the participants delay dealing with the issue, even as they acknowledge that their dependence on driving will inevitably devolve into dependence on family and friends. The boomers' location decisions understandably reflect their place in life at the time. Modes other than the car were, are, and will continue to be unnecessary into the distant future. In fact, the boomers' relationships with their cars made auto-accessibility primary to their neighborhood choice. Now the mental leap to a future without driving is almost impossible, easier to avoid than confront.

The Zegras et al (2008) focus groups took place in the suburbs of Boston, towns that are notably richer and whiter than the US as a whole. As New Englanders, the participants' auto-dependence may be less severe compared to those living in regions of the US developed post-widespread car ownership. However, the story of Mrs. X and Mr. Y does not attempt to capture the full socio-economic diversity of the baby boom generation. It instead serves as insight into an overall inability of the baby boomers as individuals to conceive of and plan for life without driving. Among other topics, the focus group participants discussed if their communities would be accommodating to non-drivers. Although a very small minority, some participants were relatively optimistic about driving cessation because they had the option of walking to the bank and the supermarket. Walking emerged as the acceptable alternative, the first line of defense. Participants had little faith in public transit, attributing infrequent, unreliable, inconvenient service to the nature of the suburbs. The boomers vaguely knew of other specialized transit

services. However, they appreciated the services as options for the very old, those in situations extremely different than their own.

The baby boomers were open to finding more physically accommodating housing in the near future, but their acknowledgment of a time when the knees give out did not translate to the realm of transportation. This may be because elderly friendly housing is available and acceptable to a somewhat greater extent than suburban, non-auto transportation options. Alternatives to driving were so limiting that the baby boomers seemed impelled to disassociate themselves from those currently struggling with driving cessation. Perhaps they told themselves that the expectations of the very old naturally lessen over time, or that the very old concede to reduced mobility as the price of aging in place.

Overall, the Zegras et al (2008) focus groups highlight that the baby boomers' longstanding relationship with the car has shaped their mobility preferences. Individuals judge transportation along the broad dimensions of availability, acceptability, and affordability, and the car remains unmatched in all three. Trips are unconstrained in time and the option to drive stretches far into the horizon. The car is private, comfortable, and only steps away. Although rising gas costs may begin influencing boomer travel patterns, for the most part car payments remain fixed and unperceived. These characteristics have the effect of relegating non-auto modes outside of the everyday baby boomer experience. Effortless and cost-effective, driving fades to the background, its relationship to well-being easily forgotten. Planners and policy makers are left hard-pressed to provide alternatives that approximate the attributes of the car.

The following summary distills the mobility perspectives of many baby boomers:

- Transportation is and should be seamless, immediate, and independent of others.
- Alternatives to the car are unnecessary now and in the foreseeable future.
- Alternatives fall far short of expectations, leading to avoidance of the driving cessation issue.

TRANSPORTATION PLANNING AND POLICY PERSPECTIVES

The transportation systems of the neighborhoods and regions where the baby boomers live frame individual travel habits and attitudes. The following section attempts to gauge the state of the nation in terms of planning for elderly mobility. By describing how relevant agencies and organizations perceive and act on the issue, I lay out the case that few are taking steps to prepare for imminent mobility needs and most are leaving individuals to rely on the personal car. An overall lack of action to date informs a subsequent discussion of policy options.

The baby boomers as a group have not demanded that policy makers prepare the transportation system for the coming demographic shift. In the absence of a widespread individual consciousness surrounding elderly mobility, a lack of government recognition and action seems to be an unfortunate but likely result. Among other prerequisites, advocates must frame social issues as deserving government priority in order for those issues to reach the public agenda (Rochefort and Cobb 1994). When organized interests and the citizenry at large are silent, public agencies have little incentive to add to their already overloaded mandates. In exploring whether or not planners are aware of and providing for the mobility needs of the aging population, two types of public entities serve as markers: Metropolitan Planning Organizations (MPOs) and Area Agencies on Aging (AAAs).

MPOs are federally designated organizations composed of local government officials and state transportation agencies. In every urbanized area with a population of 50,000 or more, MPOs allocate federal funding for transit and roadway projects. MPOs must develop and adopt a long range transportation plan and a complementary short range transportation improvement plan (TIP). The long range plan and the TIP are fiscally-constrained, meaning that both must realistically reflect available resources (Solof 1998). The varying interests within the MPO must decide on transportation priorities, determining which projects they will actually implement. Because only projects proposed in the TIP are eligible for federal funds, the agenda of the MPO reveals the transportation future of a region.

In a nationwide survey, Coughlin (2010) contrasts the expected baby boomer demand for

increased travel with the fact that a majority of MPOs feel ill-equipped to meet future elderly mobility needs. Surveys of all 381 MPOs conducted in 2004 and again in 2009 develop a baseline assessment of the transportation readiness of different regions and thus the country as a whole. Figure 3 shows MPO responses from a selection of illuminating survey questions. Of the ninety-three percent of MPOs responding, less than ten percent believe that their regions are adequately funding the infrastructure, vehicles, and services the baby boomers will need in twenty years. Rather than making gains, more MPOs actually feel pessimistic concerning their overall efforts compared to 2004. Based on the MPOs' planned transportation projects, over eighty percent agree that the aging baby boomers will remain auto-dependent, relying on friends and family when they can no longer drive. Although some MPOs have specific plans and projects underway that address future baby boomer demands, the majority do not.

The MPO survey responses do not reveal a blanket disconnect between demographic realities and transportation planning. A significant percentage of MPOs agree that their regional transportation systems will have to fundamentally change within twenty years in order to meet elderly need; only thirteen percent disagree with this statement. However, based on current planning, the baby boomers will need to look beyond public transportation, to other providers and their own pockets. The MPOs largely agree that it will be impossible for public authorities to meet the coming need alone, and that the baby boomers will very likely pay for a greater proportion of their transportation costs in comparison to today's elderly.

Awareness of the aging population has prompted many MPOs to work with other entities on the issue. The number of MPOs coordinating their planning efforts with state departments of transportation, city governments, non-profits, human service agencies, and universities has increased across the board over five years. However, coordination may not translate into the implementation of innovative strategies and solutions. Most regions are focusing on fixed-route transportation, services that accommodate only a limited portion of the elderly population. Many regions are planning and investing in curb to curb service, but far fewer have tackled door-to-door or escorted transportation.

Overall, the MPO surveys illustrate a significant gap between the coming need and the probable public response. Most MPOs understand the importance of elderly mobility, but the projects necessary to ensure readiness compete with other urgent issues and programs. Elderly needs are "critical but competing;" less than three percent of MPOs place transportation for the aging society in their top five priorities. Over ninety percent cite issues such as commuter transit, congestion, and air quality as vying for limited time, attention, and funding. Half of all regions do not maintain an on-going committee or task force to review elderly transportation needs, and more than half do not have a specific staff member assigned to the issue.

Figure 3: Selected MPO Survey Questions by Percent Responding (Coughlin 2010)

<i>My region is adequately funding infrastructure, vehicles, and services to meet the needs of aging baby boomers in 20 years.</i>		
Strongly Agree	1.0	0
Agree	9.2	7.1
Neither Agree nor Disagree	19.7	24.2
Disagree	52.7	51.5
Strongly Disagree	17.3	17.2
	2004	2009
<i>Despite best efforts, most older baby boomers will have to rely on their own car or the cars of family and friends to meet their transportation needs, even after the implementation of projects currently under consideration.</i>		
Strongly Agree	26.3	16.5
Agree	58.7	64.7
Neither Agree nor Disagree	10.9	12.9
Disagree	4.0	5.9
Strongly Disagree	0	0
	2004	2009
<i>It will be impossible for public authorities alone to meet the transportation needs of aging baby boomers in 20 years.</i>		
Strongly Agree	22.5	20.2
Agree	55.4	57.3
Neither Agree nor Disagree	13.7	13.5
Disagree	7.6	6.7
Strongly Disagree	0.8	2.2
	2004	2009
<i>In terms of projects on my MPO's Transportation Improvement Program, projects and plans to meet the needs of an aging society are among my region's:</i>		
Top 5 Priorities	3.3	2.4
Top 10 Priorities	4.6	6.0
Critical, but competing with other more urgent program needs	92.1	91.6
	2004	2009

MPOs provide a regional assessment of planning for elderly mobility, but AAAs present a picture of transportation need one step closer to on-the-ground providers. The AAAs are part of a national aging services network, established by the Older Americans Act of 1965 and its subsequent amendments. The Act created the Administration on Aging within the US Department of Health and Human Services, under which State Units on Aging, Tribal Organizations, and AAAs fall. Primarily taking the form of

independent agencies or branches of county or local government, the 629 AAAs advocate for seniors and their needs. Transportation has become a significant dimension of the AAAs' work, making them “key informants about the state of senior transportation at the community level” (National Center on Senior Transportation 2010).

A 2010 survey of the AAAs by the National Center on Senior Transportation sets out baseline conditions on the availability of services and assesses of the state of elderly mobility throughout the country. Of the AAAs responding, seventy-nine percent report having some type of fixed-route services in their area. Fifty percent report having volunteer driver programs, but only nineteen percent have door-through-door services (National Center on Senior Transportation 2010). Availability does not guarantee that all need is met; one respondent qualified that while her area has many types of services, the number of providers and the services themselves are limited.

The survey found that the elderly can most easily arrange for transportation to medical appointments. However, more than half the AAAs characterize other destinations as challenging for the elderly to access. About 30 percent said that it was “very difficult” for the elderly to find rides to worship services, for visits with family and friends, and for social events (National Center on Senior Transportation 2010). The survey notes a significant gap in transportation services, especially in more rural areas. Current need surpasses the AAAs' capacity to provide or contract for transportation services, jeopardizing elderly independence and well-being.

Taken together, the attitudes and actions of the MPOs and AAAs reveal a dearth of regional and community level planning and investment for the mobility of the aging society. The unpreparedness does not indicate an overall lack of awareness; it only highlights a scarcity of resources in the face of many other urgent issues. However, if aging is not on the agenda of the agencies responsible for future transportation needs, then there is little chance that public services will be in place to support the aging baby boomers. Little movement over the MPOs' five year survey period confirms that, in the short term especially, the US will need to explore alternative, innovative options for elderly mobility.

POLICY OPTIONS FOR THE AGING SOCIETY

Implementing regional scale transportation initiatives is a time intensive process, yet many projects reviewed by the MPOs have not materialized even in the planning stages. In addition, the number, location, and preferences of the aging baby boomers all underscore the urgency of the situation. The first of the baby boomers are turning 65, leaving at most a ten year interval before the travel patterns of many of these individuals significantly shift. Mobility challenges will not impact all older people equally, however. Four broad segments of the population may develop: 1) those that depend primarily on non-auto modes like transit and walking, 2) those that continue driving, muddling through by self-regulation, 3) those that forge informal transportation supports, securing rides from family and friends, and 4) those that are left with minimal to no formal alternatives and few community connections. This last group demands that planners and decision makers initiate near-term options. The 5 A's of Senior Friendly Transportation are a starting point to ensure that possible options align with elderly needs and are viable over time.

The overall predilection of the baby boomers for the private car indicates that many will continue to age in the suburbs, rejecting mobility alternatives until forced to do otherwise. The elderly and the baby boomers are transportation consumers who demand convenient, flexible, frequent service, and the 5 A's capture the importance of this user perspective. By considering how a transportation option meets the measures of availability, acceptability, accessibility, adaptability, and affordability, the 5 A's allow communities and regions to evaluate their inventory of transportation services.

The origins of the 5 A's lie in broader theories of public policy. Rochefort and Cobb (1994) describe a framework by which all social issues, from affordable housing to sexual harassment, gain both the engagement of the public and the formal attention of decision makers. The process is one of problem

definition, or “what we choose to identify as public issues and how we think and talk about these concerns” (Rocheftort and Cobb 1994). Problem definition includes determining causality, placing blame, measuring and tracking severity, and simplifying a problem's dialogue in a way that either legitimizes or undermines widespread support for action. Advocates vie with the opposition, each side attempting to either advance an issue or prevent it from reaching the legislative agenda (Cobb and Coughlin 1998).

Constructing solutions is another element of problem definition; advocates must frame solutions as being available, acceptable, and affordable (Rocheftort and Cobb 1994). The government will not act if it believes that no solution exists, if the solution does not conform to social norms and values, or if the solution requires an infeasible amount of resources. The availability, acceptability, and affordability criteria are a basis to evaluate problems like congestion in cities (Cobb and Coughlin 1997) and state regulation of elderly drivers (Cobb and Coughlin 1998). Questions concerning the level of bureaucratic effort involved and the ease of reaching an institutional setting led to additional concepts of adaptability and accessibility. Building on Cobb and Coughlin's (1998) analysis of elderly mobility, the Beverly Foundation (2001) applied and expanded the solutions criteria, resulting in the 5 A's.

The first A, *availability*, asks if the transportation exists at all, and if its days and times of service fill the needs of the users. The elderly should be able to reach the transportation service and take an unlimited number of trips at their convenience: on weekends, in the evenings, and even 24 hours a day.

Acceptability is based on the idea of customer satisfaction. It deals with the cleanliness, safety, and maintenance of vehicles and stops, plus the professionalism and sensitivity of staff and drivers. The service must be reliable, have reasonable wait times, and serve places users want to go. The vehicle type and the service in general must project a satisfactory image; rather than feeling stigmatized for being old, the user should be “happy to be seen riding this mode” (Burkhardt et al 2002).

Accessibility means that the elderly can reach and use the transportation service. The demands of boarding and riding must be minimal. Accessibility includes physical characteristics like stair and seat heights, distance to stops, and door-to-door or door-through-door service, as well as access to information through elderly travel training and easily understandable schedules and maps.

Adaptability asks if the service is responsive and meets the special needs of users, like accommodating wheelchairs and walkers or providing travel escorts. Although disability rates among the elderly are falling and successive cohorts are remaining healthier longer, overall increases in longevity mean a greater number of those who may need additional assistance throughout their trips. Adaptability also encompasses flexibility and ease of scheduling, and allowing individuals to make multiple stops.

The fifth A, *affordability*, concerns costs. Services should offer multiple payment plans and reduced fares and vouchers. Affordability also includes “more personal factors;” users should not feel that their trips inconvenience or create obligations to others (Burkhardt et al 2002).

Burkhardt et al (2002) cite the 5 A's as “a useful summary of criteria for transportation service quality.” Building on this framework with their own focus group results, the authors add three other concepts: alternatives, assessment, and achievement. Alternatives represent the users' dependency on a single transportation service; assessment, the users' willingness to recommend the service to others; and achievement, the overall impact of the service on the users' mobility and well-being. Although not incorporated into the overall evaluation, accomplishment is a possible ninth concept (Burkhardt et al 2002). Accomplishment concerns operator performance measures of efficiency and effectiveness, like cost per mile, trips per population served, and ratio of revenue to operating costs.

In order to understand how the elderly prioritize each concept, Burkhardt et al (2002) operationalize the eight A's using the measures listed in Figure 4. Focus group participants aged 70 to 89 rated the measures according to priority service attributes. Although the measures are not strictly quantitative, they aid the assessment process by clarifying the meaning of their associated concept. Four key measures emerged: reliability, proximity, comfort, and flexibility. Other important features included service responsiveness, assistance with special needs, and service frequency.

Figure 4: Assessment Measures for Transportation Options (Adapted from Burkhardt et al 2002)

<p>1. Availability</p> <ul style="list-style-type: none"> • Service span • Sufficiency • Frequency • Independence 	<p>4. Adaptability</p> <ul style="list-style-type: none"> • Flexibility • Responsiveness of service • Assistance with special needs • Eligibility
<p>2. Acceptability</p> <ul style="list-style-type: none"> • Reliability of departures, arrivals • Origin/destination connectivity • Trust and confidence of users • Image/amenities • Real and perceived security/safety • Vehicles are clean, comfortable • Drivers and staff are courteous 	<p>5. Affordability</p> <ul style="list-style-type: none"> • Dollar cost per ride • Time/level of effort required • Obligations to others
<p>3. Accessibility</p> <ul style="list-style-type: none"> • Can physically use the system • Proximity • Can get information on services 	<p>6. Alternatives</p> <ul style="list-style-type: none"> • Dependency on this mode
	<p>7. Assessment</p> <ul style="list-style-type: none"> • Overall rating/satisfaction • Recommends to others
	<p>8. Achievement</p> <ul style="list-style-type: none"> • Impacts on lives of users

All 5 A's, and even all nine, are valuable in a comprehensive assessment of elderly transportation. However, in an attempt to facilitate this evaluation, I consolidate the concepts and concentrate on Rochefort and Cobb's (1994) original three, as shown in Figure 5: availability, acceptability, and affordability.

Availability is the starting point. In many suburban places, transportation services have severely constrained hours and frequency of service, discouraging elderly use. The Burkhardt et al (2002) results under-emphasize the importance of availability; although the focus group locations ranged from urban to rural, all were described as “transit-friendly.” Availability explores if options are feasible in suburban locations, places where dispersed origins and destinations complicate transportation logistics.

Acceptability considers how the elderly perceive the service. Broadened to encompass dimensions of adaptability and accessibility, acceptability accounts for overlap among the concepts but still emphasizes consumer preference. Providing travel escorts, for example, can be an element of acceptability because consumer demand for this option is increasing. An attention to acceptability is key; the elderly and the baby boomers explain their travel habits as a function of the flexibility and convenience of driving alone relative to transit. Overall, baby boomers will continue to expect “exceptionally high levels of service,” valuing forms of transportation that enhance their independence as they age (Cravit 2008).

Affordability is the third evaluation concept. Affordability is a critical aspect of senior friendly transportation, especially when considering nationwide issues of mobility and inequality. The stereotype of the suburbs as solely high-income is simplistic, obscuring a considerable amount of socio-economic variation (Hanlon 2006). Affordability is also linked to issues of diversity and inclusion. The elderly in the US will become substantially more racially and ethnically diverse in the coming decades, and minorities are less likely to have the financial resources to cope with mobility problems (Rosenbloom 2003). Changes in family structure and an increase in single person households mean that elderly women in particular will be supporting themselves financially without the contributions of immediate family (Rosenbloom 2003).

The core A's highlight the potential of elderly mobility strategies from the consumer perspective. Although slightly modified to the context of elderly transportation, availability, acceptability, and affordability remain “the three components of a successful solution” (Cobb and Coughlin 1997). Options must prove able to adapt to the spatial and social characteristics of the suburbs, and they must confront and refine how Americans think about the private car.

Figure 5: Assessment Measures for Transportation Options (Chase Version)

1. Availability
 - Service span (hours/days)
 - Frequency (unlimited number/purpose)
2. Acceptability
 - Reliability
 - Proximity (door-to-door service)
 - Comfort/cleanliness/image/safety
 - Flexibility (on-demand service)
3. Affordability
 - Monetary cost
 - Required time/effort/obligation

Despite their utility, the 5 A's as a stand alone evaluation tool reveal little about the operations or effectiveness of a service (Kerschner 2011). The provider perspective is also critical. At the same time that the baby boomers are asserting their preference for the car, the AAAs are finding that local level providers are unable to manage current transportation demand. At the regional scale, MPOs are taking few substantive actions to plan for the future; elderly mobility is but one of many urgent matters at hand. Unfortunately, consumer attitudes towards transportation options are inconsequential if an agency or organization cannot sustain its operations.

MAPPING THE OPTIONS

Transportation options have differing levels of fiscal and social capacity, both of which impact their ability to meet the elderly mobility challenge. Before pursuing possible options to complement existing services and informal transportation, pragmatic decision makers must identify who will pay and if and how much community support is involved. These questions pick up where the 5 A's leave off. The two key axes of fiscal and social capacity emerged as reoccurring themes throughout this thesis, leading to the two-by-two framework for policy evaluation shown in Figure 6.

The first dimension, *fiscal capacity*, represents the public and/or private funding behind the service. On the public side, government supports transportation with tax payer dollars. The Department of Transportation provides funding through the New Freedom Program (§5317), the Capital Assistance Program for Elderly Persons and Persons with Disabilities (§5310), and the Urbanized Area Formula Program (§5307), among others. The Department of Health and Human Services also funds a significant amount of elderly medical transportation through Medicaid. Programs distribute money to state agencies, non-profits, and local providers. Funding also flows through the State Units on Aging and the AAAs.

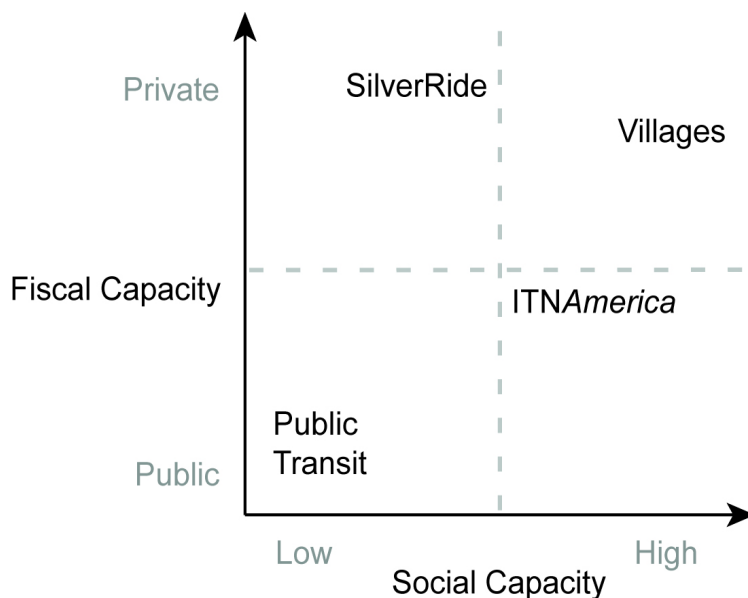
On the private side, money comes from individuals, foundations, and corporations. In-kind funding takes the form of volunteer labor and other donations. Private money for transportation is often more

readily available than public money, causing many communities seek out these resources. Regardless of the source, consistently funded programs have a better chance at lasting success than those with variable funding streams.

Social capacity is a second variable that differentiates policy options. Services and organizations draw on varying amounts of the social capital described by Putnam (1996). Though somewhat ambiguous, social capacity is a characteristic that intersects with fiscal capacity and influences operations. Transportation options with low social capacity focus on service provision rather than relationships between and among providers and users. Like conventional public transit, these options may achieve complex, high volume service.

In contrast, options with high social capacity tend to emphasize the same family and community ties that lie behind traditional and informal sources of transportation. Service may be more personal, involving a network of individuals with existing or developing connections. Volunteer labor, a form of social capacity, may also reduce costs and help maintain service availability over time. Providers with high social capacity may be better positioned to safeguard elderly mobility in the face of myriad competing policy concerns.

Figure 6: The Taxonomy



In confronting the challenge of elderly mobility, local and regional decision makers have several existing, near-term policy options to consider. Based on the dimensions of fiscal and social capacity, the following sections explore four options that exhibit different capacity permutations: 1) public transit, 2) SilverRide, 3) ITNAmerica, and 4) villages. The services described are by no means the only that meet elderly transportation needs. The choices do not ignore or discount the importance of other options; they only attempt to illustrate the proposed taxonomy. The boundaries between the quadrants are permeable, and the taxonomy itself is dynamic over time. It is an attempt to organize existing options and map out others that may form in the future. Following a description of each policy option and its place in the taxonomy, I evaluate the options by the assessment measures of availability, acceptability, and affordability.

THE ASSUMED ALTERNATIVE: PUBLIC TRANSPORTATION

The lower left quadrant of the taxonomy is characterized by public funding and low levels of social capacity. Services in this group draw almost entirely on tax payer dollars and operate in a systematic, formalized manner. Community commitment and involvement is at most ancillary. Public transportation in the form of bus, rail, and demand response is an example, as are taxi vouchers.

This analysis will focus on the public transportation services of established agencies as a representative taxonomy option. The line between conventional transit agencies and community organizations is blurry, and in suburban and rural areas especially, non-profits, Councils on Aging, AAAs, and Community Action Agencies are often primary system providers (Hardin 2011). Ride Connection, for example, a non-profit serving the area surrounding Portland, Oregon, coordinates a network of over thirty other organizations to provide 400,000 rides per year (Ride Connection). Despite this continuum, the following describes the operations of conventional agencies serving large populations in a regional context.

As of 2001, less than two percent of total trips by those 65 and over were made by public transportation (Rosenbloom 2003). However, the mode is still an important source of elderly mobility. Different sources report that the elderly take anywhere from 386 million to 645 million trips per year on fixed-route public transportation, which by conservative estimate is about seven percent of total transit trips (Koffman et al 2010). In addition to fixed-routes, paratransit under the Americans with Disabilities Act (ADA) makes up another portion of elderly trips. Passed in 1990, the ADA prohibits discrimination against the disabled. Title II of the legislation concerns discrimination in public services, including transportation (Davis 2003). Public entities must ensure the accessibility of their facilities and vehicles, as well as provide complementary paratransit comparable in service and response time within a $\frac{3}{4}$ mile radius of fixed routes. Many elderly do not qualify for ADA paratransit due to strict eligibility requirements.

Transportation under the ADA is the most widely known type of paratransit, but some providers also offer other demand response services. Unlike fixed-route services, demand response has an on-call, variable schedule that “tries to effectively adapt to the suburban-exurban landscape” (Cervero 1997). The oldest old in particular require this kind of service, making demand response the fastest growing segment of transit (Coughlin 2009). One study indicates that demand for transportation specifically geared towards the elderly will grow by about 80 percent in the next twenty years, from 217 million trips in 2010 to 393 million trips in 2030 (Koffman et al 2010). Based on rides currently provided, this projection does not account for unmet need and most likely understates future demand.

Fiscal Capacity

The fiscal capacity of public transportation is dependent on government funding. Inconsistent and insufficient funding is a continual challenge regardless of agency size and structure. Providing the demand response services that will be increasingly vital for an aging society is especially difficult. In comparison to fixed-route services, demand response faces high marginal costs. Additional passengers strain the system rather than increasing efficiency, causing operating costs to rise exponentially; a demand response trip is about eight times as expensive as a fixed-route trip (Cervero 1997; KFH Group 2008). In a survey of the thirty-two largest metropolitan area transit agencies in the US, Davis (2003) found that costs per passenger trip for ADA paratransit range from \$13 to \$50. The average cost is \$26, while the average fare is only \$2. Another national survey of demand response systems came to similar conclusions, finding a range of operating costs per passenger trip from \$8 to \$40 (KFH Group 2008). Systems generally accommodate two to four passengers per revenue hour, and costs tend to increase with system size.

Many factors influence demand response costs, including size and density of the service area, trip lengths, and ridership market (KFH Group 2008). Overwhelmed and underfunded, many transit agencies strongly oppose the idea of extending demand response beyond the minimum requirements of the ADA (Davis 2003). Indeed, the ADA is not directly funded by Congress, and meeting its mandate often comes

at the expense of services to elderly who do not qualify (Davis 2003; Rosenbloom 2003).

From the industry perspective, insufficient funding is one of the main challenges of meeting elderly mobility needs. The costs of ADA compliance combined with a lack of dedicated, stable funding means that improvements and strategies to accommodate the elderly are “not being actively pursued...” (Burkhardt et al 2002). To reduce costs, public transit agencies often contract demand response to other providers or attempt to reduce ADA paratransit demand in the first place by upgrading the accessibility of fixed routes (Suen 2004). The effort to provide economically viable demand response has been thwarted for decades due to the fundamental difficulty of serving multiple and dispersed origins and destinations (Giuliano 2004).

Social Capacity

For most conventional transportation providers, social capacity is limited. Publicly run systems are a result of government takeovers of floundering private companies in the mid-twentieth century. The established public agencies have generally taken a systems approach to service as opposed to one of customer satisfaction and relationships, emphasizing capital investments in infrastructure and vehicles (Burkhardt et al 2002; Kerschner and Hardin 2006). For many public transportation providers, organization size also influences the nature of the service and the degree of engagement and responsiveness to users. However, despite low social capacity, formal public systems play an important role as rider needs diversify and circumstances become more complex. For example, agencies may coordinate with regional employment boards to facilitate transportation to jobs. Some types of medical transportation also require established contacts with hospitals and clinics, as well as drivers with specialized training.

Availability

For many suburban baby boomers and elderly, public transportation simply does not exist as a mobility option. In 1995, forty percent of those 65 and over did not have access to public transportation (Burkhardt et al 2002). This lack of availability corresponds to the ecological model; lower densities and reduced accessibility radiate from city centers outward. Public transportation is also not an expectation for most individuals living in the suburbs; the Zegras et al (2008) focus groups discussed the implausibility of high levels of local fixed-route service. However, nonexistent to extremely limited public transportation options leave those who cannot drive in a dire position.

Both suburban auto-dependence and skepticism of transit investment has prompted reoccurring questions of if and where public transportation can succeed. Pushkarev and Zupan (1977) tackled the issue for the Regional Plan Association of New York, analyzing the minimum residential density necessary to support six types of transit. The authors make the case for a strong relationship between transit demand and density; density means a large passenger base, compressed origins and destinations, and disincentives for car ownership. Pushkarev and Zupan do not dismiss other interrelated variables, including household characteristics, transit service quality, and the proximity, mix of uses, and configuration of central business districts. However, they conclude that a density of at least seven dwelling units per acre is necessary for significant transit use.

Some researchers argue that density thresholds are “pseudo-scientific rationalization[s]” that reflect suburban disinterest and a lack of political will (Mees 2009). Thinking on density thresholds is further complicated by the difficulty of quantifying public transit's benefits. Standards of cost-effectiveness, economic feasibility, and farebox recovery become fuzzy in light of social and environmental value. Pushkarev and Zupan (1977) note that in low-density locations, the case for service “must be made on social grounds, ie, serving passengers who cannot drive.” Despite qualifications, the notion of density thresholds is still a given, and fixed-route suburban service continues to be rare or extremely limited (Guerra and Cervero 2010).

Where traditional public transportation does exist, stops may be well beyond the ¼ to ½ mile walking radius considered standard in transportation planning. Even within that range, transit is still unavailable to those elderly whose physical or cognitive health makes reaching stops impossible.

Restructuring public transit from fixed-route services to an emphasis on more flexible door-to-door service is not a task that many agencies embrace. Demand response services may better serve the elderly, but its provision is problematic for agencies that have historically concentrated on moving large numbers of people to limited numbers of destinations. Community organizations also struggle to meet the availability criteria. A lack of continuous funding and the costs of risk management further constrain geographic extent and time of service.

Acceptability

Public transportation does poorly on measures of acceptability. The elderly often associate public transportation with long waits, uncertainty, and hard to read schedules. As terminology suggests, mass transportation is generally unresponsive to individual preferences. The same features that increase effectiveness for providers make public transportation less attractive for users, creating a situation of “contradictory objectives” (KFH Group 2008). For example, picking up multiple passengers in a demand response service increases overall travel times.

Of the 65 and over population that do live in an area where public transportation is available, only about twenty percent actually use the services regularly (Burkhardt et al 2002). These riders tend to be poor, minority, free of disabilities, and living in city centers. The elderly strongly prefer driving over transit, as driving is associated with freedom, convenience, and independence (Burkhardt et al 2002; Coughlin 2001). About ninety percent of trips of those 65 and over are made as either a driver or passenger in a personal car. This figure only falls to eighty percent of trips for those over 85 (Rosenbloom 2003). Rather than shifting modes and traveling by transit, the elderly who limit their driving tend to forgo some trips and travel less overall (Coughlin 2001; Giuliano 2004).

Some providers have made efforts to increase acceptability through real time arrival information, driver sensitivity courses, and peer travel training. However, others mistakenly assume that the elderly have lower service standards or are less sensitive to travel times than younger users (Burkhardt et al 2002). Treating the elderly as consumers rather than captive riders is a fundamental and necessary shift. The elderly represent an overlooked market, and providers that fashion their services to appeal to older persons' needs and demands are likely to reach a growing customer base (Burkhardt et al 2002).

Affordability

Relative to car ownership or taking taxis, transit is an inexpensive option. In urban areas, federal law requires public transportation agencies to offer reduced fares for elderly and disabled riders during off-peak hours (Friedman 2008). However, almost twenty-five percent of those 65 and over lived in or near poverty in 2004 (Friedman 2008). As one provider notes, many elderly riders cannot even afford a suggested \$1 donation (Beverly Foundation 2004). The baby boomers as a whole may be better off than previous generations, but the economic reality for many older individuals is bleak. Financial security in retirement has become less certain as employers scale back and eliminate pension plans, and transit fares can become a greater percentage of total income over time (Friedman 2008). In addition, indirect routes and infrequent scheduling make the time cost of public transportation significant.

Figure 7: Public Transportation

Availability	
• Service span (hours/days)	- Limited, especially nights and weekends
• Frequency (unlimited number/purpose)	+/- Demand response may be restricted
Acceptability	
• Reliability	- Perceived as unreliable
• Proximity (door-to-door service)	+/- Contingent on general public demand response
• Comfort/cleanliness/image/safety	- Stigma of vans and buses, personal safety concerns
• Flexibility (on-demand service)	+/- Contingent on general public demand response
Affordability	
• Monetary cost	+ Inexpensive relative to other modes
• Required time/effort/obligation	- High time costs

THE PRIVATE SECTOR INNOVATION: SILVERRIDE

The upper left quadrant of the taxonomy covers options with private funding and low social capacity. These options are the result of discretionary payments by a growing number of elderly consumers. The elderly are becoming a significant force in terms of numbers and wealth, prompting new products and services geared to the “silver market.” Although these services fill a growing need, they generally do not necessitate personal relationships between providers and customers. Home Instead Senior Care, a franchise providing non-medical services, is illustrative of this quadrant. SilverRide, LLC is an example of a similarly positioned transportation service.

Founded in 2006, SilverRide is a for-profit company in the San Francisco Bay Area. With the mission of enabling seniors “to have a more connected, fulfilling, dignified and independent lifestyle after their driving retirement,” SilverRide serves over 650 clients (SilverRide; Beverly Foundation 2010). In contrast to volunteer driving programs, all of SilverRide's driver-escorts are paid employees. Rides take place in a “luxury cruiser” and include door-through-door assistance. The company holds interviews with potential members to assess need and create mobility plans, staying in close communication with members' families over time. In addition to using the Beverly Foundation's 5A's to evaluate its services, SilverRide requires its staff to reflect on and summarize each client outing, facilitating improvement (Beverly Foundation 2010). These features and others led SilverRide to receive the American Association on Aging's Business of the Year award in 2009 and a commendation award by the Beverly Foundation in 2010.

Fiscal Capacity

SilverRide is a reflection of market demand for elderly transportation. It is one of many companies that has recognized and responded to the growing number of elderly and baby boomers who hope to age independently. The baby boomers are a market opportunity, and companies are beginning to step up to the lucrative “business of old age” (Singer 2011). It is important to note that private fiscal capacity by no means precludes social good. Over the past two decades, social entrepreneurship has emerged as a distinct method of applying for-profit approaches to create social value and respond to market failures (Wolk 2008). The definition of social entrepreneurship can be ambiguous, and social

entrepreneurs lie along a continuum of social and commercial motivations (Peredo and McLean 2006). Addressing the need for elderly mobility with financially sustainable methods, the SilverRide founders are social entrepreneurs with prominent social goals. SilverRide is entirely self-financed, but it considers itself focused first and foremost on fulfilling its mission. For-profits often “get a bad rap,” but the structure ensures that SilverRide can devote its time to supporting its clients rather than constantly fundraising (Steiner Saal 2011).

Social Capacity

In theory, companies offering professional transportation have little to do with community building or relationships among customers. As a for-profit operation, SilverRide does not utilize community volunteers or depend on the elderly for leadership. However, SilverRide is somewhat of an outlier in the category of low social capacity. It differentiates itself from many other for-profit transportation services through its unique social focus and emphasis on community relationships (Kerschner 2011). The company measures its performance in part by how well it facilitates socialization. The “SilverMatch” feature, for example, lets members know about various events, contact other members with similar interests, and rideshare to common destinations. SilverRide also coordinates monthly events to destinations like museums and theaters, group outings that are “designed to keep SilverRide members connected to each other and to their community” (SilverRide).

Availability

SilverRide members can request trips at any time and for any purpose, leading to high marks on availability. The company currently operates throughout the Bay Area, including more suburban places like Palo Alto. According to Steiner Saal (2011), population density is not a limiting factor; if anything, suburban areas have greater demand for services like SilverRide due to a dearth of other options. However, service availability reflects the socio-economics of a place, and a certain number of able-to-pay customers is necessary for the business model to succeed. I was unable to identify other companies comparable to SilverRide currently operating in the United States. Unlike public transportation, SilverRide is a young company without an extensive history to evaluate. It is still early to judge how it will fair in the future. SilverRide has plans to franchise, however, and it is likely that other entrepreneurs will draw on the SilverRide model (Kerschner 2011).

Acceptability

SilverRide scores very high on measures of acceptability to its customers; the business is based on appealing to the desire of the elderly and their caregivers for reliable, conscientious service. Although the requested 24 hour notice somewhat limits flexibility for on-demand trips, other features of the service more than compensate. For example, every rider receives a needs assessment at the onset of their membership, matching them with appropriate driver-escorts. Door-through-door rides include an on-time guarantee within fifteen minutes of the scheduled departure time (SilverRide). SilverRide does not have wheelchair accessible vehicles, but unlike ADA paratransit, driver-escorts are able to assist riders into their homes or at their destinations. SilverRide also offers optional accompaniment for the trip duration, making the service accessible to the very frail. The company emphasizes that its thorough hiring practices create a safe and comfortable environment for riders. A structured driver training program includes finger printing, drug testing, and First Aid and CPR certification.

Affordability

A tradeoff exists between the financial sustainability of the company and affordability for elderly riders. SilverRide charges about \$55 round trip, covering the full cost of providing the ride (Steiner Saal 2011). This cost is significant, eliminating SilverRide as a viable choice for many elderly in the Bay Area. However, closing the gap between fares and operating costs means that the company can reliably and consistently meet the needs of those willing and able to pay. SilverRide's “high touch service” also greatly reduces the non-monetary costs of other models, like the time, effort, and obligation involved in taking

the bus or arranging a ride with a friend.

Recognizing the issue of affordability, SilverRide has extended its service to low-income seniors by contracting with communities and public agencies (Steiner Saal 2011). San Francisco's Human Services Agency, for example, has a Community Living Fund to support transportation for older adults that would otherwise face institutionalization. Thus SilverRide can offer its services to those normally unable to pay. SilverRide does not attempt to position itself as the only model; it fits into an “ecosystem of solutions” that are all critical to addressing elderly transportation (Steiner Saal 2011). Steiner Saal stresses that SilverRide works in conjunction with other options, filling the need for very specific types of travel. When an individual prioritizes an assisted ride and finds that no other service can deliver, SilverRide becomes an option. However, meeting the mobility needs of lower-income elderly through a for-profit like SilverRide generally involves other funding sources. It may include public subsidy or sponsorship by a non-profit or a private organization like a church.

Figure 8: SilverRide

Availability	
• Service span (hours/days)	+ 24/7 service
• Frequency (unlimited number/purpose)	+ Unlimited
Acceptability	
• Reliability	+ High reliability
• Proximity (door-to-door service)	+ Door-through-door and/or escorted
• Comfort/cleanliness/image/safety	+ Luxury cruisers, professional drivers
• Flexibility (on-demand service)	+/- Requested 24hr notice
Affordability	
• Monetary cost	- ~\$55 round trip, possible subsidies
• Required time/effort/obligation	+ Little to none

THE HYBRID MODEL: ITNAMERICA

The lower right quadrant of the taxonomy covers publicly funded policy options with high social capacity. These options often need public support in their early stages, and many rely on government grants continuously. However, unlike conventional for-profit services or public transit agencies, the options also involve networks of engaged community members and volunteers. Like the volunteer driving programs discussed above, the transportation services may be outcomes of community organizing and strong feelings of group identity. Faith-based organizations supported by the funding and administrative functions of the AAAs are examples. *ITNAmerica*, a membership-based non-profit, is also representative of the quadrant.

ITNAmerica provides rides in private vehicles at any time and for any purpose, organized on the premise that the elderly are consumers who expect the same of the transportation system as younger people. Supported by a roughly even combination of paid staff and volunteer drivers, *ITNAmerica* charges for rides based on mileage and time of day, with discounts for advanced scheduling and ridesharing. Notable features include the CarTrade™ program, in which members receive transportation credits in exchange for donating their vehicles, and the Transportation Social Security Program™, which

allows volunteer drivers to earn credits for future transportation. Founded in 1990 in Portland, Maine, the organization began franchising in 2005. ITNAmerica currently has about 1,500 members in 18 affiliates across 14 states (Freund 2010). Plans are also in development for expansion to Canada and Australia.

ITNAmerica offers its affiliates training and technical support, as well as a customizable website and the ITNRides™ enterprise software. ITNRides has multiple functionalities, including routing, rideshare matching, and fare calculation and billing. It is also comprehensive in that all affiliates are linked by the software. Volunteers and members can access their transportation accounts throughout the country, either while traveling or in the event of relocation. Each affiliate is a separate entity with its own board of directors, and each must commit that less than fifty percent of its total funding will come from public sources, phased out completely within five years. This emphasis on economic sustainability is based on ITNAmerica's firm belief that only private resources will ensure an enduring solution to the challenge of elderly mobility. Relying on public money adds to the tax burden, competes with public transportation, and is neither realistic nor reliable (Freund 2010).

Fiscal Capacity

As an example of social entrepreneurship, ITNAmerica does not neatly fit into the category of publicly funded organizations. Its nature as a non-profit volunteer and paid driver hybrid provides fiscal and logistical benefits, cutting costs for the organization and thus costs per ride. ITNAmerica draws on multiple private funding sources, including corporate sponsors like Liberty Mutual and foundations like the Atlantic Philanthropies and the AAA Foundation for Traffic Safety. Its core tenant of financial sustainability through private resources should not be understated, yet public money has factored into its creation and growth. ITNAmerica would be unable to leverage private resources today without past government support. The Transit IDEA program of the Federal Transit Administration provided ITNAmerica with the initial grants necessary for studies on senior travel habits and the development of applicable technology (Wolk 2008). State level funding has also contributed to the formation of many of the affiliates.

Social Capacity

ITNAmerica's structure promotes an engaged, relationship-based approach to transportation. In surveys conducted by the Atlantic Philanthropies, volunteers reported that driving had increased their quality of life and gave them the opportunity to build friendships with members. ITNAmerica responds to community requests and considers each affiliate based both on context and leadership, unlike a business that franchises strictly by market measures. Whether the driving force behind a program comes from a retiree, a minister, or a staff person in a foundation, community leadership is essential; unmet need is not enough (Freund 2011). Some communities find that affiliate status does not allow enough room for adaptation, opting instead to borrow selected features and craft their own programs. This view reflects the fact that ITNAmerica is a relatively young organization and is still refining how to best support its affiliates (Carlin-Rogers 2011). The franchise structure constrains some aspects of operations by requiring "core" elements, but it also ensures efficiencies and a consistent level of quality.

Availability

Availability in the broadest sense is based on affiliate locations. ITNAmerica has declined to start affiliates in the past, limiting itself to places where it believes affiliates have a good chance of success. Affiliate evaluation criteria include percentage of potential members 75 and over, percentage of potential volunteers 50 to 75, median income, and population size and density. Affiliates can cross jurisdictional boundaries, but they generally must have a population of 200,000 or more (Freund 2010). Areas over 400,000 are better suited to a multi-branch structure with one board of directors but multiple dispatch centers; ITNGreaterBoston™ is the first of this kind.

Freund (2011) contends that purely for-profit services rarely have an incentive to provide transportation outside of high density urban areas. Expanding to lower densities means more travel time without a paying passenger. In contrast, affiliate volunteers accommodate suburban settlement patterns

because they leave with their own vehicles from homes and offices “dispersed across the geography” (Freund 2011). Community support in various forms can subsidize fares, making non-profit service available where for-profit service may not be sustainable. Affiliates receive very few requests for midnight rides, but the value of *ITNAmerica's* round the clock service lies in its possibility. Unrestricted trip purposes also make ITN attractive to the elderly; the ride “filtering” that often occurs in other organizations has the effect of eroding consumer preference and casting judgment on what rides are essential and important (Carlin-Rogers 2011).

Acceptability

According to Freund (2004), all transportation solutions “succeed or fail in the context of consumer choice.” Thus *ITNAmerica* is built around the concept of elderly acceptability, striving to provide a dignified form of transportation that appeals to Americans' overwhelming preference for travel by the personal car. Similar to village membership discussed in the next section, *ITNAmerica* provides a sort of mobility confidence. Rides could be a weekly occurrence or used as backup for those who still drive selectively. *ITNAmerica* offers on-demand service, although less than three percent of all rides are scheduled on the same day (Freund 2010). *ITNAmerica's* member surveys also show that 95 percent of members are very satisfied with the quality of service. Complaints about drivers are extremely rare.

Affordability

ITNAmerica's annual membership fee is approximately \$40 for individuals and \$60 for a household. Affiliates have discretion over ride fees, but the average charge for a ride is \$9.54 each way (Freund 2010). Compared to traditional volunteer driver programs and public transit, members pay for a greater percentage of the total cost of the ride. On its face, this cost makes *ITNAmerica* a strategy for higher income individuals. However, *ITNAmerica's* Road Scholarship Program™ allows family members, volunteers, and businesses to donate credits to members in financial need. Member surveys indicate that forty-eight percent of current members have an annual income of less than \$25,000 (Freund 2011). Fewer than three percent report that ITN services are too expensive.

Fully volunteer driver programs meet the transportation needs of many older people, as do for-profit services. However, the vast elderly middle class may neither have the income to pay for private services like taxis nor qualify for travel vouchers or other subsidies (Freund 2011). As a hybrid, *ITNAmerica* feels that it offers the affordability of a volunteer program with the reliability of a for-profit. On the other hand, *ITNAmerica* is aware that it serves a narrow segment of the elderly population in terms of racial and ethnic diversity. Aside from *ITNCharlestonTrident*™ and the recently launched *ITNMemphis*™, most of its affiliates could be described as “vanilla” (Freund 2011). Past efforts to form affiliates in Miami and Seattle failed to take root. *ITNAmerica* responds to consumer demand for new affiliates, and in a sense this method shifts the responsibility of a diverse user profile to the communities themselves. However, the future of the United States is one of racial diversity, and minority access to ITN will no doubt become increasingly important.

Figure 9: ITNAmerica

Availability	
• Service span (hours/days)	+ 24/7 service
• Frequency (unlimited number/purpose)	+ Unlimited
Acceptability	
• Reliability	+ High reliability
• Proximity (door-to-door service)	+ Door-through-door and/or escorted
• Comfort/cleanliness/image/safety	+ Unmarked private cars, community volunteers
• Flexibility (on-demand service)	+ Same day service, discounts for prescheduling
Affordability	
• Monetary cost	+/- ~\$19 round trip, Road Scholarship Program
• Required time/effort/obligation	+ Little to none

THE NEIGHBORHOOD RESPONSE: VILLAGES

The upper right quadrant of the taxonomy includes privately funded policy options with high levels of social capacity. Individuals pay for these options with their own resources, just as they would for other products and services offered in the silver market. However, the people who provide and receive the services are often part of a mutually supportive community. Offering services beyond only transportation, the village model is an example of this type of policy option.

Membership-based villages facilitate access to consolidated services and offer avenues for social activities and member interaction. Part of a larger movement of aging in place, villages respond to the ineffective support systems that currently exist in cities and towns. The elderly may be unaware of or unable to find necessary services to address challenges such as isolation or the expense of home care. Formerly straightforward tasks can become overwhelming, forcing the elderly to either relocate to assisted living and nursing facilities or face diminished quality of life and compromised safety.

Like a large majority of older people, residents in the Beacon Hill neighborhood of Boston wanted to age in place. In 2001, a group of friends and neighbors founded Beacon Hill Village to provide the supports they lacked (McWhinney-Morse 2009). Beacon Hill assists its members by connecting them with volunteers and professionals who fulfill a range of requests. It is now a national model, coordinating an online Village to Village Network that disseminates information and helps interested communities establish new villages. According to Judy Willett (2011), Beacon Hill's Executive Director, 57 villages currently exist in the US, and more than 150 groups are in the early stages of research and formation.

Villages vary widely in size, resources, and structure; some have staff, while others are exclusively member operated. Each is a separate non-profit entity, organizing itself around member priorities. Rather than duplicating services, villages partner with providers who then offer discounts on things like home repair, cleaning, and health services. Transportation is only one of many services offered by villages, but for many it is both the greatest need and the greatest challenge (Willett 2011; Bohr and Bohr 2011). Most villages rely fully on volunteers for transportation, very similar to volunteer driving programs. A staff person coordinates trip requests and may also help members arrange their own trips through public transportation. If a volunteer cannot provide the ride, villages will often arrange for a paid professional.

Fiscal Capacity

Despite significant diversity among villages, the option is distinguished as self-supporting. Membership fees constitute the bulk of village funding, covering fifty-five to seventy-five percent or more of total operating expenses. Individual donations and foundation grants provide the remaining funds. Villages differ from a similar model, naturally occurring retirement communities (NORCs), in that NORCs are generally funded through social service agencies. Some villages receive state grants, but for the smallest and youngest villages in particular, fiscal capacity is based on private money rather than government assistance. Due in part to limited funds, many villages have adopted a “volunteer first” strategy. These villages respond to member requests by calling on volunteers prior to drawing on professional services. Capitol Hill Village in Washington, DC responds to over three-quarters of all requests with volunteers.

Social Capacity

The volunteer first practice is both a fiscal strategy and an expression of core ideas of reciprocal relationships and community building. Villages provide a framework for the informal help that is often already occurring in neighborhoods and communities. Beyond the provision of services, villages foster a sense of caring; members frequently offer their time and skills to others. For example, Lincoln Park Village in Chicago has a volunteer program in a local preschool. Volunteerism gives members a sense of purpose, as well as the opportunity to form friendships and meet new people. This type of engagement enforces connections within the village and to the larger community, potentially enhancing quality of life (Bookman 2008).

The high social capacity of villages is also linked to member input and involvement on boards, advisory councils, and committees. Members govern all aspects of the village, with staff members only acting to implement their ideas (Willett 2011). Villages may form out of actual neighborhood-based groups like home owners' associations, or from other organizations like church congregations. Regardless of origin, villages need a passionate and committed group of people in leadership positions in order to succeed (Crissman 2011). Some villages are stronger than others, but potential village leaders are found in all types of communities, spanning geography and socio-economics (Willett 2011).

Availability

Transportation through villages depends on the establishment of the villages themselves, and on the spatial extent of membership decided upon by each village. Over the past decade, community groups have organized villages in urban, suburban, and rural areas. Villages respond to member needs, and the need for transportation is especially salient outside of dense cities. Despite member fees, villages essentially operate volunteer driving programs within each village. Most villages only arrange for private providers in special cases. Many are small enough that a staff member matches each ride request by calling a list of available volunteers. Others use web-based systems; ElderHelp of San Diego uses software that allows volunteers to sign up for rides online. Villages often offer reimbursement for mileage, but volunteers rarely request it (Crissman 2011; Bohr and Bohr 2011).

Measures of transportation availability largely depend on volunteer recruitment and retainment; finding enough volunteers stands out as a primary challenge for many volunteer driving programs (Hendricks et al 2008; Beverly Foundation 2004). Ride quantity and service span are limited to volunteer schedules, and recruiting volunteers who are consistently willing to drive during overnight hours can be a particular challenge (Carlin-Rogers 2011). Volunteer burn-out is also a concern. It is unclear the extent to which the village structure alleviates volunteer constraints. In more established villages like Beacon Hill, members have the option of requesting and paying for professional service at the outset. Willett (2011) emphasizes that member requests are filled for medical appointments, funerals, bridge groups, and even ski trips. However, volunteerism within the village may be impractical if many members no longer feel comfortable driving. Conversely, strong village ties may incline members to take extra steps to fully meet other members' transportation needs.

Acceptability

Villages see themselves as member-driven organizations that attempt to provide “everything and anything” an individual may want or need (Willett 2011). Geared to meeting a variety of requests, villages act as a form of insurance, with members drawing on village services as often as they choose. Village transportation is acceptable from a comfort and safety perspective; all outside services are trusted and vetted. Volunteers undergo thorough background checks, and members may feel at even greater ease if their drivers are fellow members. The transportation may develop a social aspect, especially if members have reoccurring trips with consistent drivers and passengers. Like considerations of availability, the flexibility component of acceptability is contingent on volunteer scheduling. Some villages request multiple-day notice for rides, while others can arrange on-demand trips. In most cases, volunteers offer timely, door-to-door service, scoring high on measures of reliability and proximity. In certain circumstances, however, specially trained professionals may be necessary to ensure elderly safety and well-being. For example, volunteer drivers report that their greatest difficulties include transporting those who are incontinent or suffering from dementia (Kerschner, Rousseau, and Svensson 2008).

Affordability

Annual membership fees range widely among villages, from about \$100 to over \$1,000 for an individual or a household. Some core services are free, while others are discounted but not included in membership. Reliance on fees coupled with an association with Boston's wealthy Beacon Hill neighborhood can create an image of villages as organizations of the affluent. However, almost all villages offer reduced rates depending on income, and others may waive fees entirely. In addition to membership rates, qualifying individuals may also receive stipends for services.

Membership fees generally cover administrative costs, background checks, incorporation, and insurance. Villages that subsidize low-income members must still be able to meet these costs, either through the balance of fully paying members or other sources. Villages may take an entirely volunteer structure to reduce costs, or more aggressively pursue direct fundraising and foundation grants. The village movement is still in a relatively early stage of development, and questions remain as to if villages can thrive in entirely low-income communities, or in communities of significant diversity. Fees may also be problematic for the middle income elderly who do not qualify for subsidized membership. Costs in terms of time, effort, and obligations to others are at the discretion of members; volunteering within the village is very common but not required.

Figure 10: Villages

Availability	
• Service span (hours/days)	+/- Dependent on volunteers, possible private referrals
• Frequency (unlimited number/purpose)	+/- Dependent on volunteers, possible private referrals
Acceptability	
• Reliability	+ High reliability
• Proximity (door-to-door service)	+ Door-through-door and/or escorted
• Comfort/cleanliness/image/safety	+ Private cars, primarily community volunteers
• Flexibility (on-demand service)	+/- Dependent on volunteers, possible private referrals
Affordability	
• Monetary cost	+/- Wide range, reduced fee membership common
• Required time/effort/obligation	+ Opportunities for volunteerism

COMPLEMENTARY AND EMERGING OPTIONS

Public transportation, SilverRide, ITN*America*, and villages are examples of existing, short-term policy options for decision makers to consider. Other emerging options also have the potential to be viable strategies in their own right, and to complement and enhance those above. These options are gaining traction due to both technological innovation and adoption by younger cohorts, and communities have the opportunity to adapt them to meet the needs of the aging baby boomers. One such example, ridesharing, stands out as having multiple synergies and is therefore discussed in depth.

Ridesharing in the US has evolved through distinct phases over the past decades, but researchers and transportation providers have largely overlooked its potential as a formal strategy for elderly mobility. Beginning in the 1940s, employers organized car-sharing clubs in order to conserve rubber and fuel for the war effort. Ridesharing reemerged in response to the energy crises of the 1970s, and then to the traffic congestion and air quality concerns of the 1980s. Ridesharing moved online beginning in the late 90s, leading to the current phase of “technology-enabled ridematching” aided by the Internet, mobile phones, and social networking (Chan and Shaheen 2010). Until very recently, ridesharing has focused almost exclusively on commuters. This type of ridesharing is distinct from traditional ridesharing by the elderly because it usually involves an exchange of money for shared costs.

The lack of attention to ridesharing as a strategy for elderly mobility most likely reflects limited ridesharing by the overall population. Reaching a tipping point for successful matching is a challenge, symptomatic of multiple economic and behavioral barriers. I was able to find very little literature on ridesharing outside of the household as it pertains to the elderly. Of prior research, Silvis and Niemeier (2009) determine that non-driving elderly who do not live with a licensed driver have the greatest likelihood of ridesharing. The authors conclude that ridesharing is an adaptation strategy for driving cessation, a backup mode for individuals without immediate family on which to rely. However, elderly who live alone are less likely to rideshare than those in larger households (Kim and Ulfarsson 2004). This presents a paradox for those who have limited community connections but may be most in need of shared rides.

Fiscal Capacity

At its most basic, ridesharing is privately funded through the sharing of vehicles and trips. It is also initiated through a variety of on- and off-line ridematching services. As of 2010, 384 of these services operated in the US (Chan and Shaheen 2010). For-profit services rely on advertising, transaction fees, and the provision of portals to employers and institutions to produce revenue (Amey, Attanucci, and Mishalani 2010). Although not dependent on public funds, ridesharing also benefits from public sector initiatives. Local and state governments, transit agencies, and publicly funded transit management associations can establish ridesharing forums, match riders, provide incentives, and even supply vehicles (Kay 2010).

Social Capacity

Traditionally, ridesharing is based on high social capacity; drivers and passengers have common ties that enable the rideshare match. Online ridesharing systems in some ways decrease the necessity of personal relationships for ridesharing. One time matches can occur between strangers, leading to an expanded pool of drivers available to the elderly, as well as helping relieve feelings of guilt associated with asking friends and family for uncompensated rides. However, technology is also strengthening the social capacity involved in ridesharing. Sites like GoLoco, NuRide, and ZimRide use social networks to help connect those with similar routes and schedules. Users can limit their ridesharing to certain membership pools, using various affiliations to vet matches. A local AARP chapter, for example, could serve as a ridesharing pool (Hendricks et al 2008). For the elderly who are reluctant to rideshare outside of their own household, social networking may provide the “friend of a friend of a friend” connection necessary to build trust and address safety concerns.

Availability

Considerations of availability hinge on the ability to execute the rideshare match. The span of service and the frequency and purpose of rides are potentially limitless, depending on the balance of supply (drivers) and demand (passengers). The elderly who are unable or prefer to no longer drive obviously have a motivation to rideshare, filling the demand side of the equation. However, a critical mass of drivers looking for passengers may be lacking, exacerbated by dispersed origins and destinations in lower density suburban settings. Establishing rides can involve high transaction costs in terms of time. Ridesharing with elderly passengers also may not offer drivers the same time and monetary benefits involved in traditional commuter trips, like access to HOV lanes or split costs for tolls and parking.

Although online ridesharing sites are more robust in urban areas of higher population density, these tools can facilitate informal ridesharing in all geographic settings (Woodworth and Brusklund 2011). Whether a person picks up an elderly neighbor on the way to the grocery store or makes an extra trip to the bank with an elderly friend, an online, automated system can support neighbors and community organizations trying to connect riders and drivers. In the future, “ridematch aggregator” databases have the potential to increase overall availability by integrating multiple online systems, functioning in the same manner as travel sites like Kayak.com (Chan and Shaheen 2010).

Acceptability

Because ridesharing is based on personal vehicles, it closely approximates the proximity and comfort of driving oneself. However, other measures of acceptability may fall short. For example, a conflict exists between reliability and flexibility; although a one-time trip may approach on-demand transportation, the elderly may perceive the arrangement as unreliable. Ideally, ridesharing relationships are mutually dependent and beneficial, and a “power mismatch” may result when the elderly passenger is unable to reciprocate in the role of driver (Amey, Attanucci, and Mishalani 2010). A great deal of trust is necessary, and the elderly may feel especially vulnerable to exploitation. Outside of pools vetted through social networks, widespread use by seniors would most likely necessitate thorough background checks on all participants.

Although some organizations coordinate online matches for those uncomfortable with or unable

to access a computer, other ridesharing services are user-initiated. Widespread elderly acceptance of online platforms will play a major role in determining the success of ridesharing as a mobility strategy, and current trends indicate that this is not unrealistic. The elderly as a group are becoming more seasoned Internet users, and social networking is becoming increasingly popular with baby boomers and older generations. Fifty-eight percent of the Silent Generation (1937–1945) go online, as do seventy-six percent of older boomers (1946–1954) and eighty-one percent of younger boomers (1955–1964) (Zickuhr 2010). Twenty-six percent of Internet users 65 and over visited sites like Facebook and LinkedIn in 2010, in contrast to only five percent in 2005 (Madden 2010). Between 2008 and 2010, the fastest growth in social networking was actually adults 74 and over, whose use quadrupled from four percent to sixteen percent (Zickuhr 2010). Although rates of adoption reflect the aging population's comfort with and enthusiasm for technology, it is unclear if the Internet is a viable medium for the oldest old in the short term.

Affordability

From the user perspective, ridesharing is relatively affordable because passengers pay no more than their fair share of the ride. Some ridesharing sites like GoLoco facilitate financial transactions through their own online payment systems, while others calculate a recommended shared cost. Unfortunately, the same laws that result in affordability for ridesharing passengers also limit incentives for drivers. Most state insurance laws prevent individuals from accepting money for rides beyond shared costs. If drivers profit from the arrangement, their insurance may become void. According to Chase (2011), state insurance laws are a significant hurdle to ridesharing expansion. This is especially relevant in the effort to extend ridesharing to the elderly; drivers may need additional monetary incentive to account for the relatively greater time and effort involved in picking up older passengers.

Figure 11: Ridesharing

Availability	
• Service span (hours/days)	+/- Dependent on matching
• Frequency (unlimited number/purpose)	+/- Dependent on matching
Acceptability	
• Reliability	+/- Reliability with standing matches
• Proximity (door-to-door service)	+ Door-to-door
• Comfort/cleanliness/image/safety	+/- Possible safety concerns
• Flexibility (on-demand service)	+/- Dependent on matching
Affordability	
• Monetary cost	+ Drivers and passengers share costs
• Required time/effort/obligation	+/- Time costs to arrange, alleviated by technology

On its own, the potential of ridesharing as a policy option for elderly mobility is still uncertain. However, it may have beneficial implications for the four primary options discussed. In relation to public transportation, ridesharing is an appealing strategy because it increases the cost effectiveness of existing services. The staggering price of paratransit causes providers to seek out alternatives, and some are beginning to retool their commuter ridesharing programs to reach a larger audience (Woodworth and Brusklund 2011). For example, King County Metro Transit in Washington State is creating a new module for its already extensive three-state online ridesharing program. The system is currently geared toward

commuters, but in the near future will enable organizations like churches, senior centers, and volunteer driving programs to coordinate rides (Woodworth and Brusklund 2011).

SilverRide, ITNAmerica, and villages already draw on ridesharing, and they may do so increasingly in the future. In addition to reducing the cost per ride and providing more transportation with the same level of resources, ridesharing can be a source of socialization that enhances elderly well-being. Even if drivers and passengers initially are strangers, ridesharing may become “a method of connecting... a way of bridging different social groups or networks of people, and of creating social value” (Amey et al 2009). Linkages already exist between ridesharing and volunteer driving programs; the online volunteer driving software Assisted Rides, for example, is a customization of the ridesharing platform AlterNetRides.

Ridesharing as an elderly mobility option is also closely linked to another recent technology-enabled phenomenon, peer-to-peer carsharing. Carsharing programs offer individuals and organizations the use of vehicles on an hourly basis as an alternative to car ownership (Millard-Ball et al 2005). The past decade has seen program mainstreaming and the exponential growth of US carsharing; membership climbed from a grand total of 69 members in 1998 to 279,000 ten years later (Shaheen, Cohen, and Chung 2009). Peer-to-peer programs are an even more recent phenomenon; only a handful of providers currently operate in the US. I identified RelayRides in Boston and San Francisco, Gettaround and Spride in San Francisco, and Go-Op in Pittsburgh. Unlike traditional programs, peer-to-peer carsharing employs personal vehicles rather than a fleet maintained by the provider.

Peer-to-peer carsharing may seem to have limited relevance for those elderly who no longer drive at all. However, in addition to providing the elderly with income from their largely idle cars, person-to-person carsharing may encourage trusting relationships and ridesharing between elderly vehicle owners and younger vehicle users. The formal carsharing arrangement may lead to voluntary rides for the elderly in exchange for vehicle use, helping to alleviate the real and perceived vulnerability involved in riding with a stranger (Chase 2011). Peer-to-peer carsharing also addresses availability considerations. In traditional carsharing models, each car must achieve a certain “utilization rate” in order to offset provider operating costs, therefore limiting carsharing to areas of relatively high population density (Hampshire and Gaites 2010). Peer-to-peer reduces the costs of leasing or purchasing cars and thus becomes more feasible in lower density suburbs.

OVERALL ASSESSMENT AND FUTURE DIRECTIONS

The policy options described above have varying strengths and weaknesses from the consumer perspective, as shown in Figure 12. Outside of public transportation, the options score relatively well in availability and acceptability. Measures of affordability are mixed. For all of the options, however, a tension arises between maintaining affordability and enhancing availability. In the case of villages and ITNAmerica, providing rides with volunteers who use their own vehicles eliminates driver salaries and capital expenses, resulting in lower costs. However, villages may refer members to professional providers, and ITNAmerica maintains paid drivers. These measures help ensure service but increase user costs. In contrast, programs that only rely on volunteers risk “transportation rationing” (Freund 2011). Importantly, the options highlight the possibility of ride sponsorship and destination funding. Programs of all structures can use similar innovative mechanisms to support individuals with financial limitations.

Figure 12: Policy Options Summary

	Public Transit	SilverRide	ITNAmerica	Villages	Ridesharing
Fiscal Capacity	Public	Private	Public/Private	Private	Private
Social Capacity	Low	Moderate	High	High	High
Availability	Limited (-)	Unlimited (+)	Unlimited (+)	Limited by volunteers (+/-)	Limited by matching (+/-)
Acceptability	Negative perceptions (-)	Service focused (+)	Service focused (+)	Service focused (+)	Mostly positive perceptions (+)
Affordability	Low in \$ cost, high in time/effort (+/-)	High in \$ cost, low time/effort (+/-)	Moderate \$ cost, low time/effort (+)	Wide ranging \$ cost, voluntary time/effort (+)	Low in \$ cost, moderate in time/effort (+)

Ensuring elderly mobility is a complex, difficult endeavor that is exacerbated in the dispersed and auto-dependent suburbs where the baby boomers are aging. Both researchers and practitioners are in resounding agreement: no one policy option will fill the transportation gap. Communities “need it all” (Carlin-Rogers 2011). Whether it be fixed-route public transportation, paratransit, volunteer driving programs, membership-based services, or villages, all must support one another. It is only when one option claims to be the only answer does the potential for communication and collaboration dissolve (Hardin 2011). Given the scope of the problem, multiple strategies operating collectively in a single location still may not fully meet elderly mobility needs.

Partnerships are vital; individual providers must accept their capacity limitations and work with one another to better achieve elderly mobility. For example, volunteer driving programs benefit public transit agencies by relieving demand for paratransit. In turn, agencies can easily inform a program's routes and scheduling by drawing on internal mapping abilities and resources (Carlin-Rogers 2011). Providers can also partner among themselves for administrative efficiencies, eliminating duplicative costs associated with tasks like background checks. The process of identifying and taking advantage of these alliances strengthens community relationships, potentially creating positive feedback that further enhances capacity. Ties between different programs may lead to awareness among community members, simplifying the steps involved in both contributing to and utilizing multiple services.

Varied geographic, social, and economic contexts also mean that no one model is sufficient. Communities will ultimately decide which options to pursue based on their unique needs and resources. Different permutations of fiscal and social capacity will be more or less relevant, leading to a diversity of intervention strategies. For example, a small town with a close-knit and energized base of volunteers but limited means of attaining public money might look to villages and ridesharing over transit or a SilverRide or ITNAmerica model. Communities that chose publicly funded options must face a shrinking pool of government resources, but those that choose privately funded options must help ensure mobility for seniors of all incomes and races.

The policy options will also develop and shift within the taxonomy in the future, illustrated in Figure 13. Public transportation is likely to move towards private resources and greater reliance on social capacity. The uncertainty of public funding will necessitate this adjustment, especially if the industry attempts to offer more flexible, responsive service outside of urban areas. Meadowlink Commuter Services is an example of how public transportation may begin to innovate. Meadowlink is a non-profit

transportation management association based in northern New Jersey and funded primarily by local and state government. Introduced in 2008, Meadowlink's EZ Ride Community Cars program is part of an organizational shift from solely commuter programs towards issues of mobility for low income and elderly residents. Like *ITNAmerica*, Community Cars is a member-based service for those 60 and over. Volunteers provide rides and door-through-door assistance using cars from Meadowlink's carshare fleet. Unlike Meadowlink's standard commuter programs, Community Cars controls costs through the private resource of volunteer labor (Murthy 2010). In addition to integrating volunteers into the program, Community Cars also works with families and caregivers to arrange rides, adding a new dimension of social capacity to its traditional operations.

ITNAmerica is also likely to more fully express its commitment to private funding as it adds affiliates. As a social venture, *ITNAmerica* received government start-up and replication funds. However, the possibility of sharing private resources guides the future of the organization (Freund and Vine 2010). Private household expenditures for transportation are roughly five times that of government expenditures, making them critical to the challenge of elderly mobility (Freund 2011). *ITNAmerica's* next development phase, *ITNEverywhere*TM, attempts to further draw on private resources of all forms: volunteer capacity, private vehicles, and private trips. Similar to the temporal and spatial connectivity enabled through *ITNRides*, *ITNEverywhere* links and tracks multiple approaches to community mobility, including ridesharing and carsharing. All the components draw on private capacity: a neighbor who uses a shared car to give an elderly person a ride is meeting the same need as a volunteer driving program.

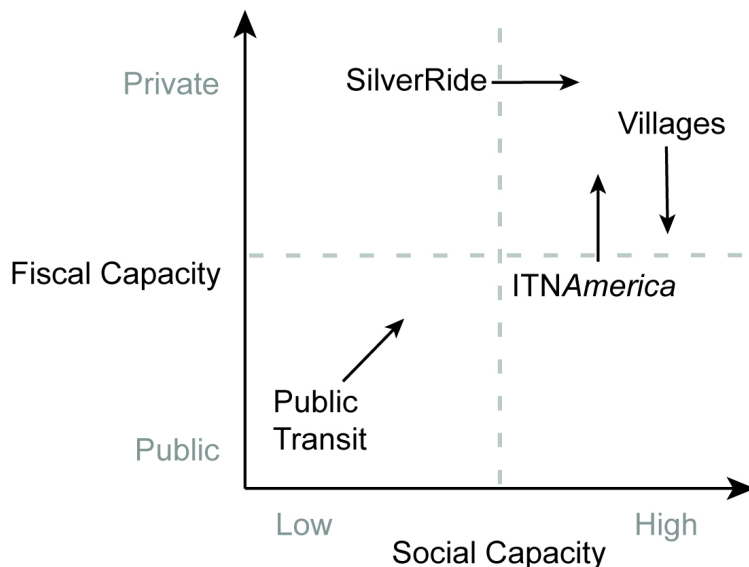
As SilverRide pursues plans to franchise, it is likely to emphasize the features of social capital that have contributed to its success to date. Similar companies may also begin offering elderly transportation services, prompted by a growing market. However, the strength of SilverRide's business model lies in highly personalized service and the outlets it provides for elderly socialization and engagement with drivers and other riders. As Steiner Saal (2011) explains, elderly transportation is more than moving people from point A to point B. In SilverRide's case, addressing elderly mobility through the lens of social entrepreneurship recognizes public funding constraints while retaining a fundamentally social mission. SilverRide may increasingly measure its performance based on providing for elderly independence and building client relationships.

The village model is likely to proliferate, continuing to stress financial self-support. However, it may begin offsetting costs through public money, due in part to the village role in coordinating health services. Currently, public money for long-term health care is largely directed to keeping the elderly in nursing facilities, mostly through Medicaid. However, this strategy is about twice as expensive as in-home care (Thomas and Blanchard 2009). Looking for a more cost-effective alternative to institutionalization, the federal government and the states may become receptive to the support system of villages. Government has an interest in relieving rising health care costs by keeping the elderly in their homes for as long as possible, and subsidizing villages could be a strategy to do so. For example, Support Network at Penn National, a village in rural Pennsylvania, received a grant from the Pennsylvania Department of Aging in recognition as a state model for aging in place (Crissman 2011). In addition, the typical village structure of fully paying members offsetting sponsored members may be unrealistic in majority low-income communities. Government may play a role in encouraging villages to take root in selected communities.

As a privately funded alternative based on high social capacity, ridesharing may develop into a distinct policy option for elderly mobility in the future. Many programs and models already incorporate elements of ridesharing because of its cost effectiveness. Harnessing existing resources of cars and drivers, ridesharing offers communities a policy option that may be both operationally pragmatic and inclusive of a wide socio-economic profile. In the low density suburbs where Americans are aging, the shared private resources involved in ridesharing and peer-to-peer carsharing may achieve greater efficiencies than a high-occupancy, publicly funded approach to transportation (Freund and Vine 2010). The wave of web-based ridesharing also illustrates how technology may help formalize the social capacity of traditional elderly transportation strategies. The assumption that the baby boomers will rely solely on family members as caregivers and transportation providers no longer holds given declining

fertility rates and changing household structure. Rather than substituting for or somehow weakening face-to-face socialization, online networking may allow individuals to solidify ties within their communities and cope with a tenuous transportation safety net.

Figure 13: The Taxonomy in Motion



CONCLUSIONS

Across the board, policy options must increasingly draw on collective community commitment to address transportation need, leveraging existing social capacity in response to the unpreparedness of regions and individuals. Even in an ideal atmosphere of dependable and abundant funding, social capacity is a critical dimension of transportation because it links mobility and well-being. When tied to relationships among neighbors and community members, transportation becomes a form of emotional support, with fellow passengers and drivers acting as confidants, mentors, and friends. A high degree of social capacity may then create positive feedback that helps sustain a service and its mission of meeting mobility needs. Like the village model, all the policy options must help empower the elderly to contribute to and maximize community assets, recognizing that they are sources and not only recipients of social capacity.

Addressing elderly mobility through the lens of social capacity takes place within a larger framework of aging friendly communities. Transportation policy options are only one aspect of an aging-oriented approach to planning that encompasses interrelated issues like housing, land use, and design. Communities must become proactive in all these domains, pursuing a comprehensive strategy that allows the elderly to remain engaged and active. Even within the realm of transportation, issues of economic inclusion, diversity, and “consumerism vs. community-building” beg further exploration (Bookman 2010). Overwhelmed by need, communities may welcome any feasible option, no matter the extent to which it fosters relationships or provides equality of access. However, by building on and giving structure to informal social capacity, communities can begin to address an outstanding dilemma: the same networks and interactions that form through mobility may be necessary to ensure the sources of mobility in the first place.

Regardless of the public sector's ability to directly provide or fund transportation services, it still has a role to play. Government can create incentives and remove policy barriers, encouraging and accelerating the efforts of social entrepreneurs like those behind SilverRide and ITNAmerica. For

example, in 2005, the Maine legislature amended a law that restricted donations of private vehicles to public and non-profit organizations. In certain towns in Massachusetts, residents 60 and over can claim property tax credits through their volunteer service. On the federal level, Congress can encourage volunteerism by adjusting the charitable rate for mileage reimbursement. Currently, volunteers are only able to claim tax deductions up to \$.14 per mile, much lower than the more flexible business rate (Hendricks et al 2008). The motivations of individuals to become volunteer drivers and the infrequency with which they actually accept reimbursement casts some doubt on the significance of the charitable deduction rate. However, it is still an issue that creates hassle for volunteer programs and is ripe for clarification (Kerschner 2011).

Government can also support elderly mobility through policies that reduce insurance and licensing barriers. Providers that charge for assisted rides and accompaniment face an uphill battle to find insurance coverage, as no clear insurance or licensing structure currently exists to support such businesses (Steiner Saal 2011). In addition, personal insurance becomes void in certain states if individuals accept money for rides beyond shared costs or if they rent out their cars through peer-to-peer carsharing programs. The vehicle owners must purchase livery insurance to prevent cancellation, as if they were using their vehicles and profiting in the same way as taxi or limousine drivers. The California legislature has taken the lead on this issue; it passed a law in 2010 that places the responsibility of insurance coverage and liability in a carsharing situation on the program rather than the vehicle owner.

All levels of government must also accelerate efforts to inform the public about a coming shift toward higher out-of-pocket costs. A common theme emerges in conversation with individuals in the field that Americans generally expect and feel entitled to some level of free or very low cost government-provided transportation to support them in old age (Freund 2011; Steiner Saal 2011). However, government may not provide that transportation, acceptable or otherwise. Relying on tax dollars becomes untenable with the confluence of transportation costs and the aging population, and scarcity of services is likely to continue given state budget crises. Although inexpensive public and paratransit fares extend service to a wide range of income groups, they also obscure the true cost of providing rides. The baby boomers may have to allocate substantial personal resources if they envision aging in place and sustaining their current level of auto-mobility (Steiner Saal 2011).

In addition to injecting a level of realism into the transportation debate, government must also promote a broader understanding of the value of transportation. One may argue that elderly mobility is not on the public agenda because individuals have not yet demanded it as a priority. However, a lack of individual consciousness surrounding mobility and well-being cannot relieve the government of its responsibility to take up the issue. A public education campaign incurs relatively minimal costs, yet is absolutely essential to propel a fundamental shift in how society thinks about driving cessation. Similar to campaigns against drunk driving and smoking, the government can facilitate public awareness.

The policy options evaluated in this thesis serve as examples for communities to draw on as they face the elderly mobility challenge. However, continued efforts at multiple levels are necessary given the magnitude of issue. Even in places where options are already established, a segment of the elderly population may still be left without mobility alternatives. For example, the Portland Area Comprehensive Transportation System is the MPO for the 192,094 residents of the Portland, Maine urbanized area (PACTS Regional Transportation Plan 2010). Assuming that thirteen percent of residents are 65 and over as of 2010, roughly 25,000 may need alternative transportation in the near future. Some may utilize the Greater Portland Transit District METRO bus system, the South Portland Bus Service, and non-profits like the county-wide Regional Transportation Program. Others may join the original ITNAmerica affiliate, ITNPortland™, adding to its membership of about 1,000. No villages have formed to date, but private transportation companies and taxis are also a possibility. This still leaves many Portlanders to secure rides with family and friends or continue driving themselves. If, like the country as a whole, about fifty percent of the 65 and over population has a disability (Brault 2008), then the residents' transportation choices become even more limited. Much work remains to ensure that these individuals can fulfill their potential and maintain their well-being long after 65.

Future Research Questions

Many questions persist surrounding the issue of elderly mobility. The following are some for further research:

- How can planners quantify the need for near-term transportation options? How many elderly will lack both formal and informal supports, and where will they be concentrated geographically?
- How can policy makers identify and cultivate social capacity? What methods can help extend informal community relationships to address transportation need?
- How can communities address issues of racial and economic diversity in the realm of elderly mobility? What strategies can promote an inclusive yet meaningful conception of “community”?
- What is the role of scale in addressing elderly transportation needs? Can the neighborhood (village), city (ITNAmerica, SilverRide), and regional (public transportation) scales all leverage social capacity effectively? Are policy options of a certain scale better suited to context-sensitive replication?

As a component of accessibility, mobility allows individuals to lead their lives as they chose and remain connected to others. Multiple policy options are necessary to support the aging baby boomers, and communities can better achieve mobility goals by giving structure to existing and informal sources of social capacity. Mrs. X and Mr. Y deserve nothing less.

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- Bookman, Anne. Adjunct Senior Lecturer, Brandeis University. Telephone interview. 18 March 2011.
- Carlin-Rogers, Fran. Carlin-Rogers Consulting LLC. Telephone interview. 21 March 2011.
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Telephone interview. 9 March 2011.
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