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Longevity, Lifestyle, and Anticipating the New Demands of Aging on the Transportation System

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The baby boomers, 77 million people born between 1946 and 1964, are the single largest generation in American history. They have changed the face of the United States while placing new demands on the transportation sector. Today, America's "youth generation" is aging. Although older driver safety is a perennial issue, this article does not address this topic; instead, the focus is on the following: Who are the baby boomers, how are they different from previous generations of older people, and what difference does it make for transportation? What will they be doing in old age? Where will they live, and how will they get around? What role might new technologies play in their mobility? What does their retirement mean for the transportation workforce in both government and industry? This article identifies key transportation research questions, policy issues, and practical implications associated with an aging America.

Keywords: *aging; baby boomers; transportation; mobility; lifestyle*

America's population is aging. The baby boomers, Americans born between 1946 and 1964, are the nation's single largest generation in history (U.S. Census Bureau, 2006). Numbering nearly 80,000,000 people, this generation has defined and characterized the demand on the country's transportation enterprise: its infrastructure, vehicles, land use, and public as well as private institutions.

The interstate highway system and the baby boomers were born and have grown older together. The car and its intimate relationship with the post–World War II American dream is something that the baby boomers grew up with and is now part of their 60+ year history and legacy (Flink, 1980). Busy boomers both in the city and the suburbs have characterized the new demands on public transportation, giving rise to express bus ways and commuter and high-speed rail, enabling the nation's largest workforce to move within an evolving urban form that requires seamless movement between suburbs and city and—more recently–from suburb to suburb.

The boomers have shaped the vehicles in which all of us ride. Beginning at a young age, the baby boomers filled the back seat of station wagons designed to carry them into young adulthood. Later, vehicles designed to capture youthful fun and power, such as the Mustang, reflected the new energy of a new (auto) mobile generation. By the early 1970s and 1980s, the baby boomers had their own children giving rise to the first life stage vehicle—the minivan.

In addition to infrastructure and vehicles, the baby boomers have also shaped the work of our transportation institutions. At a young age their numbers dictated expansion of streets, public transportation, sidewalks, and all the public assets that make up a community—from schools to parks. Today's land use patterns and infrastructure reflects their life course as much as it is a product of post-War economic development.

As the largest single generation, spanning 18 years, they currently fill middle and senior management as well as leadership positions in both public and private sectors. Today, they are the human capital and working knowledge of the transportation enterprise.

For more than six decades the boomer generation has forged the very shape and operation of America's transportation system. Today, one baby boomer is turning 63

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every 7 seconds. Many discussions of transportation and aging turn to safety—clearly, a critical issue. This article, however, looks beyond safety and seeks to identify how demographic transition from a predominantly young population to an older population may affect transportation broadly. How will the boomers' aging, transportation demands, expectations, and transition from the workforce shape the future of the U.S. transportation system? What are some of the key questions for research, policy, and practice to keep an aging America on the move?

From Generation Gap to Expectations Gap: A New Look at Old Age

Beyond their sheer numbers, the baby boomers have a number of characteristics and behaviors that suggest that their later years will not be their "parent's old age." Perhaps the most striking difference between the baby boomer generation and previous generations is their expectations. Throughout their lives, they have experienced seamless affordable mobility, new technology, high style, and the constant promise of improvement. Surveys of what the baby boomers expect in their older age suggest a population that has been moving since they were in diapers and one that plans to continue an active, engaged mobile lifestyle in the future.

Popular images provide some insight. *Vogue* magazine's annual "age issue" has steadily increased the upper number as to what is "old age." Only a year ago *Vogue* writers suggested the promise of "Levi's and pearls at age 90." A survey of the next generation of retirees conducted by a collaboration of the *Wall Street Journal*, NBC, and the Rehabilitation Institute of Chicago shows that nearly 90% of baby boomers surveyed expect to continue to learn, travel, and study. Nearly 80% plan to continue volunteer activities, and at least 60% believe that they will be engaged in part-time work. In fact, the high expectations of baby boomers for the future of old age can be best characterized by the nearly 80% of respondents who did not see "serious limits on their activity until after age 70," and nearly half believe that they will be "active and going strong over age 80" (Rehabilitation Institute of Chicago, 2003). But before they do anything they will have to get there first.

Are expectations and desire alone going to drive the transportation demands of the "new old?" Will they really be different from their parents? What activities will older people be undertaking tomorrow?

Martin Wachs (1979) in his now classic book forecasting the future travel demands of older adults identified a number of motility factors—the desire for travel. These included health, education, and income. In addition to these motility factors, the baby boomers add additional characteristics that are likely to influence and drive demand. These include their experience and expectation for technology; their multiple and complex roles in later life, such as caregiving; and the likelihood of extended work throughout the lifespan.

Improved Health

The baby boomer generation has enjoyed improvements in medicine, nutrition, and health care delivery. Catastrophic health events and the effects of disease are better responded to and managed. This has not only enabled longer life but has also given a better quality of life (Cutler, 2002). Trends suggest that disability rates may actually decrease—or at the very least remain constant—in the coming decades (Manton, Corder, & Stallard, 1997; Manton & Gu, 2001). Although disability rates may provide reason for optimism, chronic disease may give reason for pause.

The obesity epidemic and related problems with chronic diseases such as diabetes, hypertension, and related comorbidities suggests that people will have a longer period of relative wellness into old age; but they will be managing multiple chronic diseases. More than 100 million Americans of all ages suffer from at least one chronic disease. Another 60 million manage two; an estimated 20 million Americans manage three or more diseases. Although chronically ill, the older baby boomer is not as likely to be "sick" in a way that precludes active living and therefore will continue to have significant mobility demands (Carp, 1988).

Higher Education and Tech Savvy

Education can be measured in years of schooling. However, education is more than time in the classroom. It is a foundation of curiosity and pursuit of new interests. More education is likely to be fertile ground for doing and exploring more throughout the lifespan. The number of older adults with 4 years of college education or more has doubled in the past 20 years (Goldin, 1998; Goldin & Katz, 2001). Among the fastest-growing areas of education is a demand now for nontraditional learning for people 50 and older. The baby boomers have both "time-in-school" and a demonstrated interest in continuing to learn, explore, and do more. And, "doing more" is often doing more with technology.

Innovations across the baby boomers life experience have not only driven their expectations that technology will be in place to help them manage their lives but

also that technology may be in place to compensate for diminished capacity. In the workplace we have seen the dramatic productivity improvements made possible by the personal computer. In the home we see many appliances that make our lives easier. According to the Pew Research Center, the greatest gains in Internet use have been among boomers and people 70 years and older. In only 3 years, between 2005 and 2008, the percentage of Americans aged between 70 and 75 years and using the Internet increased from 26% to 45% (Fox, 2004; Jones, 2009). And, we have seen how intelligent transportation systems can improve the operation and performance of public transportation, highways, and now private vehicles. This is a generation where technology is not something apart from their lives; instead, this is the first generation where technological change has always been and will always be central to their lives. Given how technology has influenced every other dimension of their life, new technology to meet their transportation needs, either to make a trip or to substitute for a trip, is an expectation, not a novelty.

Larger Incomes

Despite the recent economic downturn, the baby boomers still hold the vast majority of wealth in the United States. According to the Washington Business Group on Health, the 50+ alone control nearly 40% of all disposable income. Three quarters of the nation's assets are controlled by people aged 50 and older. In fact, a recent examination of the impact on economic slowdown suggests that although the boomers have lost considerable wealth, they have fared far better than those in their 20s and 30s.

The economic power of the baby boomer consumer is not lost on the automobile industry (Smith & Clurman, 1997). From leisure to luxury the baby boomer consumer is the primary target for the high-tech, high-style, and high-priced car. The average buyer of today's luxury automobiles—Audi, BMW, Cadillac—is in his or her 40s, whereas the primary premium buyer is in his or her mid-50s and older. Lexus and Mercedes share similar if not older buyers. Although no longer young, the baby boomer seems perpetually youthful. Nissan, for example, revived its Fairlady Z sports car for the older baby boomer. Nissan's Fairlady Z recaptures youthful memories of 30 years ago, while attracting middle age discretionary income today. One of Nissan's designers noted that consumers 50 and older will be the core volume generation (of buyers) in the future.

Future Travel Demand of Older Boomers

We know approximately how many older people will be in the United States over the coming decades. Generally, we can say that they will be healthier, better educated, and have greater incomes than previous generations. These core motility characteristics may predict greater demand for mobility, but it does not inform what type of activities and lifestyles older boomers may lead. It is a combination of the desire to travel and future activities that will shape future transportation demand (Bowman, 1998). So it is not just who the baby boomers are but also what they will be doing tomorrow that is likely to shape future travel demand.

Research over the past decade has identified the travel demand of older adults as a significant issue. Most of these studies, however, have been on the context of driver safety. Less work has been done on understanding what type of trips older adults will undertake in the future and how that travel behavior will be different from previous generations of older people. For example, it is well known that social visits, trips to the grocery store, and medical visits are indeed important to older adults today. Although these trips will continue to be important for future generations, what is not known is how important they will be compared with other activities. Will a population with better health, more education, and greater income exhibit travel demands similar to their parents but in far greater numbers and miles?

Many travel demand studies have focused on the most common trip—the journey to work. This focus is not so much incorrect as it is incomplete. It is often assumed that because older adults are most likely to be retired they will travel less. However, there are a number of factors that can be seen today that would suggest that travel may be only moderately less or in many cases may remain the same far longer in life than the experience of previous generations at retirement age.

Four nascent factors may influence future travel behaviors: travel behaviors of older boomer women, caregiving expanding across the lifespan, extended work life, and the future of fun and leisure.

Active Older Boomer Women

Older women in the next generation are likely to be different from their mothers. Today, women are more educated than any previous generation of women and hold more advanced degrees than men in nearly all disciplines, an estimated 70% of women work either part-time or full-time. Perhaps most important to transportation,

women conduct the majority of household management and related activities. Quite clearly the next generation of older women are likely to want to continue to do more, work longer, and manage many of the activities that support quality living for themselves, friends, and families (Bauer Adler, Kuskowski, & Rottunda, 2003; Brown & Orsborn, 2006).

Caregiving

Many boomers find themselves sandwiched between child care and elder care. As people live longer, caregiving will not be for a short period of life but for an extended period well into what would have been considered one's own retirement years.

A study conducted by the National Alliance for Caregiving and AARP (2004) suggests that more than one in four families provide care for an older adult. Nearly 12 to 18 hours a week may be invested in providing for the needs of an older adult, daily errands such as shopping, and more extreme care ranging from health to nutrition. Transportation ranks among the top five caregiver supports provided to an older adult family member, loved one, or friend. The Conference Board reports that nearly half of all American workers in *Fortune* 1000 companies identify elder care as more critical today than child care.

Working Retirement

Although many may point to the economic downturn as a reason for longer work life, many baby boomers were already indicating their desire to retire from one job so that they may move onto something else. Management sage Peter Drucker forecasted nearly 10 years ago that within 25 years industrialized nations around the world will have to keep people working until the mid-70s. One survey conducted by the OECD revealed that most people continue working for income, continuing challenge, personal meaning, and a sense of social connectedness. Together, these ageless values combined with basic economics suggest that extended or at least flexible work is the new future of old age. Many baby boomers may opt for work opportunities that are no longer strictly 9-5; their desire for "flexible" work arrangements will place new transportation demands on highways and public transportation systems around the clock instead of the traditional "journey-to-work" hours (Dykewald, 2003).

Fun and Leisure

Longer work life may in fact be the future for many older adults. However, it does not mean that the traditional vision of leisure in one's later years will be totally absent. Age may predict fewer physical activities of fun, but not necessarily limit other activities. For example, an older population with more education may predict a boom in lifelong learning. Remaining engaged in life may mean increased importance placed on volunteering, visiting friends and family, trips to the library, or associated activities with local schools or alumni associations.

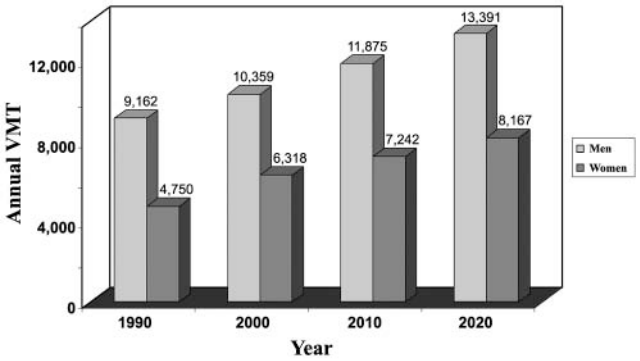
Several studies have pointed to travel survey data indicating how older adults travel and spend their time today (Burkhardt & McGavock, 1999; Kostyniuk & Kitamura, 1987; Rosenbloom, 1999, 2003; Spain, 1997). Few researchers have attempted to predict what the future demand will be. Burkhardt, Berger, Creedon, and McGavock (1998) conducted one of the more comprehensive studies of future travel behavior. Sponsored by the U.S. Department of Transportation and Department of Health and Human Services, Burkhardt and his colleagues forecasted vehicle miles traveled between 1990 and 2020. The study focused on both preserving older adult independence and predicting future safety related issues. As shown in Figure 1, Burkhardt's analysis suggests that baby boomer men age 65 and older are likely to drive 35% more vehicle miles traveled in 2020 than the 65+ in 1990. As might be expected, an even greater increase is expected in women age 65 and older. Burkhardt suggests that there could be as much as a 42% increase in vehicle miles traveled for baby boomer women.

Bush (2005) built on Burkhardt's work to develop a travel demand model to predict future travel demand in 2030. By 2030, baby boomers will be between 65 and 84 years of age. Bush focused on trip making rather than vehicle miles traveled. Like Burkhardt, she forecasts an increase in overall older baby boomer travel. In 1995, Americans aged 65 to 84 made on average 2.3 trips per day. Bush forecasts that by 2030 the same age group will be making approximately 2.7 trips per day. Baby boomer women age 65 and older are likely to see the greatest jump in the number of trips, moving from 2.1 trips in 1995 to an estimated 2.7 trips in 2030. Unlike their female boomer partners, Bush forecasts essentially no change in older male travel demand of 2.6 trips per day in both 1995 and 2030.

Aging In Place or Aging In No Place?

Land use and related housing patterns provide the contours of daily life. For many, a lifetime of work is captured in the symbol of success that is the home. However, a home that is not supported by accessible and

Figure 1
Forecasted Travel Demand of 65+



Source: Burkhardt, et al.,(1998)

seamless mobility can be a prison rather than a place that supports quality living across the lifespan.

The current transportation gerontology literature provides a strong foundation for aging in place. For most adults, age 50 and older, their marriages, mortgages, and memories are in the place that they live. Very few, perhaps less than 10%, will choose to move to another location.

Rosenbloom (2004) has indicated that nearly 75% of older Americans today live in suburban or rural areas. In fact, more people live in rural America today than in center cities of the major metropolitan areas in the United States. Transit typically does not serve well or does not serve at all in many of these regions, thus requiring greater reliance on the automobile for all types of travel. It remains unclear as to whether the baby boomers will choose to age in place in the same way as their parents. What is clear is that if they do age in place, major transit investments will be necessary to provide alternatives to the car.

Even if they do choose to "downsize" or move to another location, the transportation options are not clear. For example, many popular retirement destinations are in sun-soaked locations such as the nation's south and southwest. Although weather and, in some cases, affordability make these regions attractive, they are frequently built around the automobile—making driving a must.

Communities built for retirees in otherwise transit-rich regions of the country may not necessarily provide better alternatives. Ironically, some communities designed for older residents to spend their retirement years may, in fact, be locations to "age in no place." Coughlin (2006) conducted a GIS analysis of retirement communities in metropolitan Boston where transit is typically a readily available and attractive alternative. As shown in Figure 2, the majority of these properties were not within standard distances of accessibility (0.25-0.5 mile) of public transportation. Even if "within range," many retirement communities are set in bucolic suburban settings on relatively affordable tracks of land where sidewalks, lighting, or other facilities are not available making real access (at any distance) impossible.

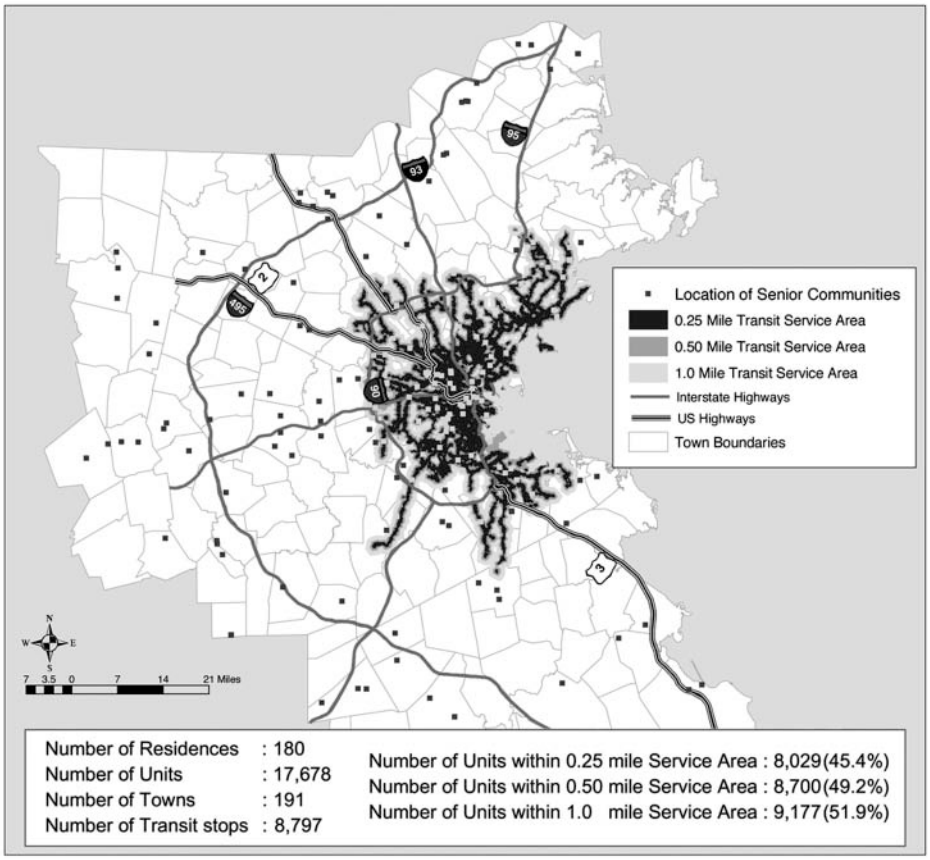
Other community options that are developing as an act of conscious planning or occurring naturally are "livable communities" and "naturally occurring retirement communities." Many of these are derived from new urbanism models and characteristics found in transit-oriented development. Livable communities are not necessarily designed for older people as much as they provide many characteristics that facilitate high quality of life (Abbott, Carman, Carman, & Scarfo, 2008; Kochera, Straight, & Guterbock, 2005; U.S. Senate 109th Congress, 2006). According to the Federal Transit Administration, livable communities include an inclusive planning process that produces well-planned and designed neighborhoods with the following characteristics:

- Housing, schools, and parks are within easy walking distance of user-friendly transit and link residents to job opportunities and social services transit
- Pedestrian and bicycle access that is compatible with land use, zoning, and urban design to reduce dependence on the automobile
- Mixed-use neighborhoods that complement residential areas with commercial, recreational, educational, health, and other social services
- Transit services and facilities that provide safety, security, and accessibility for all passengers, including disabled persons and elderly members of the community
- Sound environmental practices including careful parking and traffic management techniques to reduce auto trips, conserve space, encourage green areas, avoid gridlock, and improve air quality

Looking Forward: Regional Transportation Planning for an Aging Society

Unlike many other factors that affect transportation, such as energy, economic conditions, new technology, and migration and immigration patterns, demographic transition from a younger population to an older population is generally stable and foreseeable. The regional transportation planning process must harmonize multiple levels of government priorities and funding to respond to these changes. Metropolitan planning organizations (MPOs)

Figure 2
Retirement Communities and Transit Access in Metropolitan Boston



Source: Coughlin (2006)

are responsible for planning for future transportation needs. Consequently, their plans are indicative of the preparation of individual regions and cumulatively the preparation of a nation for an aging society.

An online survey was conducted of all MPOs nationwide (93% responding) to understand where "aging" was on their planning agenda as well as what projects were in their 2-year and long-range strategic plans (Coughlin, 2006). Among others, the following questions were asked:

My region is adequately funding infrastructure, vehicles, and services to meet the needs of aging baby boomers in 20 years.

Strongly agree	1%
Agree	10%
Neither	20%
Disagree	52%
Strongly disagree	17%

The perception of responding MPOs is that current plans are not adequately funding projects that will meet the demands of older boomers. In fact, the relative intensity of the respondents suggests that funding of infrastructure projects that might contribute to livable communities, public transportation vehicles, and services to provide adequate alternative to driving are falling far short of what will be needed by the next generation of older Americans. A second question from the study was the following:

Most baby boomers will have to rely on their own car or the cars of family and friends to meet their transportation needs.

Strongly agree	25%
Agree	60%
Neither agree nor disagree	12%
Disagree	4%
Strongly disagree	0%

So what does this mean for the future mobility of older baby boomers? When asked if current plans will leave future boomers as "auto dependent," respondents overwhelming agreed (60%) or strongly agreed (25%) that most baby boomers will be dependent on driving or on rides provided by family and friends. Given the relative glacial pace of

transportation planning, programming, and construction, a real public policy question, with profound personal implications, is whether there will be a transportation system in place to support the needs of older boomers.

New Transportation Technologies With Older Users in Mind

The baby boomers have seen some of the most dramatic applications of technology in nearly every domain of their life. Creative design and integration of technology have improved the form and function of everyday environments, including the workplace, home, retail, hospital, and transportation (Charness & Warner Schaie, 2003; Coughlin, 2007).

A New Car for Older Drivers

Intelligent transportation systems (ITS) offer considerable promise to help older drivers compensate for diminished capacity, for example, collision-warning systems to assist with judging the distance of an oncoming vehicle; blind spot detection to help with merging, night vision to extend mobility beyond the daytime; automatic breaking for slower or distracted reflexes; and more common devices such as wider mirrors to help stiffer necks and torsos (Caird, 2004; Coughlin & Reimer, 2006; Eby & Kostyniuk, 1998; Mitchell, 1997; Stamatiadis, 1998).

Although ITS and related technologies offer benefit, they are also a "double-edged sword" (Coughlin & Tallon, 1998; Henderson & Suen, 1999; Stamatiadis, 2001). Many of these systems introduce new mental models of driving to drivers who have been driving for 40, 50, or more years (AAA Foundation for Traffic Safety, 2008; Burdick & Kwon, 2004; Cottè, Meyer, & Coughlin, 2001; Hitchcock, Lockyer, Cook, & Quiglery, 2001). For example, BMW introduced the iDrive—a hand control device on the center consol that navigates a computer screen. The system enables the driver to manage multiple functions from climate control, sound system, seat control, wheel pressure, phone and navigation, as well as 700 other devices and settings. The iDrive fundamentally changed how drivers interfaced with devices as commonplace as the radio; rather than touching or looking at the radio to adjust sound or station, the radio is now controlled through the iDrive. The initial response to the iDrive was not positive (Whitfield, 2002). The average BMW driver—baby boomers and older—found the device confusing and a distraction from the driving task. Ironically, the primary purpose of the iDrive was to simplify the driving experience and to clean the dashboard from an exploding array of displays, dials, and knobs.

Since its introduction nearly 8 years ago, the iDrive has been improved, and drivers have "learned" the system. BMW's courage to introduce a new design metaphor has been met with the highest form of flattery—iDrive-like systems have since emerged in Daimler, Audi, and other platforms. However, the iDrive also illustrates a collision of user needs and new technology. As consumer electronics and new design enter the car in near "Internet time," driver education (or simply awareness) throughout the lifespan may become the new norm to learn and optimize new technologies that provide improved safety, comfort, and experience for drivers of all ages (D'Ambrosio, Coughlin, Pratt, & Mohyde, in press; Silverstein, Gottlieb, & Van Ranst, 2005).

Sustainable "Personalized" Public Transportation

Public transportation and human services transportation have invested heavily in new technology. Improved fare collection systems, improved design to provide optimal accessibility, automatic vehicle location systems, and advanced traveler information systems are all contributing to a next-generation public transportation platform that provides an alternative to driving (Burkhardt, McGavock, & Nelson, 2002) Most transit-related technologies have sought to improve the efficiency of operations. Perhaps the greatest improvements have been seen in line haul transit. However, the fastest growing part of transit has been demand response reflecting in part the growth in an aging population and the need for human services transportation (Transportation Research Board, 1998).

Demand response is also among the most costly of transit services to provide. Davis (2005) examined the total cost per trip on demand response systems in 32 major metropolitan areas representing more than 50% of the U.S. population. Her findings revealed that the cost to provide these services ranges from $15.00 to more than $50.00 per ride—at an average of only $2.00 to the user. Over the next 20 years, nearly 70 million Americans will be placing varying degrees of demand on these systems; thus, accelerating the integration of technology to improve the service and economic sustainability of these systems is a national imperative.

Technology has enabled baby boomers to personalize many aspects of their lives, such as cell phones that can be customized to the user, health devices in the home to provide instant connectivity to clinicians, on-demand entertainment, and even the nearly ubiquitous personal

computer reflects the preferences of the user. Even the automobile has become far more than choosing color and equipment. Volkswagen now produces their Jetta so that more than 100,000 configurations can be done at the point of delivery, enabling ultimate personalization by the dealer to excite and delight the consumer. The boomers may be described as a group. However, their buying behaviors have demonstrated that they prefer to be treated as nearly 80 million segments of one.

As baby boomers enter older age they are likely to demand more than a public transportation alternative from Point A to Point B. They are likely to desire systems that offer design, comfort, and ways of managing their use of transit alternatives 24/7 by mobile phone, Internet, cable television, or any other virtual touch point that may be envisioned. Although applications of ITS to public transportation are crucial to manage costs and efficient operations, the successful use (and capacity to tap discretionary income) of these services may rely on how well they match up to the boomer's expectation of a service they *want* rather than a service they *need*.

An Older Transportation Workforce and Lost Knowledge

Policy and research on aging and transportation have primarily focused on mobility and safety. Although well justified, these topics overshadow another critical implication of aging on the transportation enterprise—an older transportation workforce. An older transportation workforce has at least three dimensions to be addressed:

- Ensuring an adequate supply of skilled transportation workers
- Rapid and comprehensive integration of knowledge management and transfer systems
- Management of workforce health and wellness

Wanted: Transportation Workers

The United States has been fortunate to have a large and skilled workforce. However, the boomers had fewer children than their parents. As a result, there may be critical shortages in selected areas of transportation—touching both people and freight movement. For example, the U.S. General Accounting Office (2001) has estimated that over the next decade nearly 50% of state transportation workers will be eligible to retire. Likewise, the Federal transportation workforce may see losses in multiple areas, including critical positions, such as air traffic control.

In addition to government workers, the freight logistics community is confronting a shortage of truck drivers. The American Trucking Association has identified a need for nearly 20,000 drivers today and is forecasting a 100,000 driver shortfall by the end of this decade (Global Insight, 2005). Other reports suggest a shortage in the skilled trades, for example, welders and electricians, critical to the construction and maintenance of infrastructure (Kebede, 2008).

Transportation relies on a robust energy sector—especially the petroleum industry. According to a 2007 study conducted by the National Petroleum Council, the majority of the nation's energy workers will be eligible to retire over the next 10 years. However, it is more than workers that may be in short supply (Kebede, 2008).

Lost Knowledge

Delong (2002) argues that the real threat of the aging workforce may be "lost knowledge." Retirement is the exiting of both people and know-how. Not every practice, technique, process, or lesson learned is documented or taught. Paraphrasing the chief technology officer of a major information technology firm, "If we only knew, what we know." As the workforce ages and transitions into retirement, the transportation enterprise will need to invest more in "knowledge retention," that is,

> "*knowledge acquisition* through education, management of practices, etc., *storage*, which includes the processes and facilities to keep knowledge and information, and *retrieval,* which include behaviors, routines and processes to access and reuse information. (Delong, 2002, p. 24)

Health and Wellness

Because of personal economic pressure and public need, more numbers of older workers are likely to be on the job. Their health, safety, and productivity will become a more important issue across government and industry. Older workers are generally in good health and are less likely to be injured at work. However, their older age also correlates with a greater likelihood of chronic disease and related conditions. Consequently, when injured it may take twice as long to recover, and they may suffer additional complications associated with diabetes, heart disease, osteoporosis, and so on. The management of an older transportation workforce will require greater investment by government, industry, and individuals in overall health and well-being to ensure both worker and system safety and productivity.

Summary and Future Directions

Old age is new. Although there have always been older people, there have never been the number of vital older people with the expectations and efficacy to live longer better. Seamless safe mobility is more than a policy objective; it is part of the American identity. The baby boomers and the remaining World War II generation are nearly 50% of the American population today. As this population ages, it will place new demands and strains across the transportation enterprise. New thinking, urgency, and action are required of both the public and private sectors to keep an older America on the move. In addition to the issues identified and observations made throughout the article, the following research questions, policy considerations, and private initiatives should be considered.

Research Questions

- How might a nationwide travel demand forecast for older people in urban, suburban, and rural regions be conducted? What are today's data gaps?
- What are emerging transportation workforce knowledge and skills gaps across the enterprise, for example, construction, energy, manufacturing, government, logistics, and so on? Are new transportation teaching and learning models necessary to facilitate lifelong learning?
- How might boomer social networks (family, friends, community groups, faith organizations) emerge to provide mobility options? Does gender matter regardless of age cohort?
- What role might technology play in facilitating safe efficient mobility (IVI, ITS with older adults in mind) or in replacing the need for a trip, for example, home-based telemedicine to substitute for an in-person visit to a clinician?

Policy Recommendations

- Rapidly institute cross-generational programs and advanced information systems to manage transfer of knowledge from older workers to the next generation of transportation professionals. In addition, development of education/training programs to ensure productivity and state-of-the-practice knowledge for transportation workers across the lifespan in both government and business.
- Mandate development of lifelong driver education/learning of new vehicle systems for all drivers.
- Require integration of older adult mobility needs into regional plans as well as land use regulations for housing 50+ communities.
- Deploy demonstration programs showcasing creative use of technology to improve consumer use and navigation of the transportation system, for example, transit, airports, walking.

Private Initiatives

- Personal transportation planning should be recognized to be as important as health and financial security in old age. An integrated approach to "longevity planning" should be considered, for example, "even if I have money and my health, where will I live and how will I get around with and without a car?"
- If the boomers choose to age in place mostly in suburban, rural, or even smaller city settings, is this an opportunity for public–private partnerships to develop new transportation services to meet *desired* transportation needs, for example, going to a movie, in addition to *required* travel needs, for example, medical trips?
- Retailers, automobile manufacturers, housing, and others have built their business models on the mobility and vitality of the boomers. What new technologies or services might they develop to respond to a new older lifestyle that is congruent with an aging generation's transportation needs and capabilities?

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