

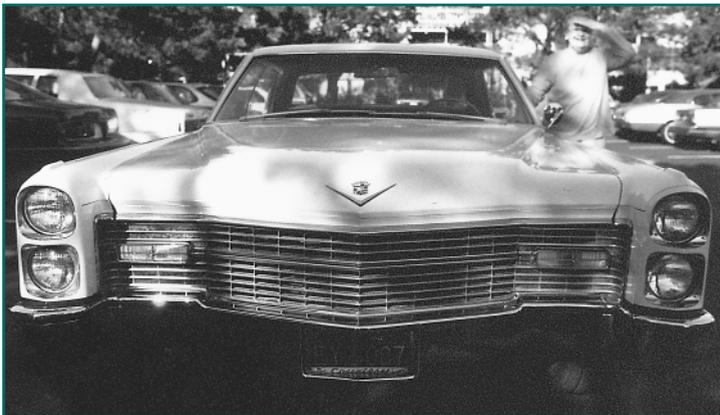
# GENERATIONS

JOURNAL OF THE AMERICAN SOCIETY ON AGING

*In-Depth Views of Issues in Aging*

Summer 2003

## The Mobile Elder: Getting Around in Later Life



- ❧ *Myths and facts about older drivers*
- ❧ *Public transportation options that work*
- ❧ *Driving and dementia*
- ❧ *A national policy agenda*



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# Introduction

By Jeff Finn and Harvey L. Sterns, guest editors

From the front porch of his one-room wooden cabin in Wolff County, Kentucky, the man looks across the holler in the direction of his car sitting on the side of the country road half a mile away. A bilateral amputee below the knees, the man is a testament to the power of mobility, the inner drive to stay connected to community, the connection between mobility and self-reliance.

On this morning—and several times each week—he rolls his wheelchair to the edge of the porch, whistles, and waits. In a few minutes, his mule, Betsy, walks to the edge of the porch, and he positions his wheelchair next to her. The cabin has no wheelchair ramp. Once he grasps the rope halter, he swings his leg stumps over the back of the mule and rides across the creek to his car.

After sidling into the car, he uses his tobacco stick to control the gas and brake, and he heads into town to collect groceries and mail. Pulling onto the main street of town, the man stops outside the grocery store and honks his car horn. The clerk soon comes out with the satchel of groceries and mail. By mid-day, the man has returned home and settled back to life in the holler.

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*Achieving and maintaining  
mobility enables us to  
participate fully and  
meaningfully in the  
activities of our lives.*

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Movement. Freedom. Growth. Movement is at the center of our life journey. Movement links us to our families, our communities, and ourselves. Movement supports our needs for exploration and, in doing so, expands our physical, social, and spiritual universe.

This issue of *Generations*, “The Mobile Elder,”

examines the many ways that the ability of older adults to get around defines and shapes their world. Their concept of self, their relationships with family and friends, their continuing connection and contribution to their communities—all are affected. As for most Americans, for older adults, the personal automobile remains firmly entrenched as the primary means of getting around. That fact in itself presents major challenges for families, healthcare providers, aging-services professionals, and policy makers seeking to intervene when functional declines or other factors render continued, unbridled use of the personal automobile an impractical or irresponsible option. But “The Mobile Elder” is not simply focused on older drivers.

This issue presents portraits of today’s older adults exploring an increasingly diverse—though

still sparse—array of options and technologies to meet their mobility needs and wants. In addition, “The Mobile Elder” discusses the implications of older-adult transportation for aging-services organizations and public policy makers as they seek to plan for and respond to an increasingly large and diverse population of older adults in the United States.

With the anticipated doubling of the older-adult population within the next three decades, fashioning viable responses to the need to keep older adults mobile within their communities will require creative and compassionate thinking. The task will demand that aging-services professionals recast and broaden their thinking about transportation and mobility as integral parts of “elder friendly” communities—made all the more difficult in the face of constrained resources at the local, state, and federal level.

In the classical riddle of the three ages of man, the Sphinx asks, “What walks on four feet in the morning, on two at noon, and on three in the evening?” The hero answers unswerving:

man. He describes the journey of individuals through the process of life—on all fours as a baby, upright in the prime of life, and with a staff in old age. The outward and visible serves as the symbol of the inward and spiritual. With each step, the longest journey continues.

The ability of individuals to get to where they wish to go in ways and at times that they want to get there has motivated individual actions and sparked creativity to achieve those ends throughout civilization. Achieving and maintaining mobility enables us to participate fully and meaningfully in the activities of our lives. Mobility enables us to forge relationships, to sustain our health and well-being, and to enhance our quality of life.

But, ideally, the journey is more than simply maintaining our mobility. Dignity and perceived self-worth serve as powerful motivation to keep us engaged in our communities of interest.

This issue of *Generations* explores the power of the journey for older adults and the power of maintaining mobility to transform lives and communities. ☪

# The Freedom of the Open Road: Driving and Older Adults

*By A. James McKnight*

The traffic safety community, as well as the public at large, has long recognized that older adults are at elevated risk of being killed or injured in a motor vehicle crash.

The exhortation to “get the old folks off the road” is frequently heard, particularly after a well-publicized incident in which a superannuated driver is clearly at fault.

This concern for the risks that older drivers face—and pose—is magnified by the anticipation that their numbers will increase over the coming decades. As a result of longer life spans and the aging of the baby boom generation, the proportion of Americans age 65 and older is expected to increase by some 60 percent by the year 2030. Also anticipated is an increase in the proportion of this age group who are still driving. Though only two thirds of women age 65 and older are currently licensed, more than 90 percent of the women who will be 65 or older in 2030 now hold driver’s licenses. Since women live longer than men, this change will have a disproportionate effect upon the percentage of older adults who are still driving: It is estimated that in 2030 close to 90 percent of adults age 65 and older will be drivers. The combination of these two demographic shifts will lead to an estimated total increase of more than 130 percent in the

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*Is the choice still  
safety versus independence?*

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number of older drivers in the United States (Organization for Economic Cooperation and Development [OECD], 2001).

While concern over older-driver safety issues remains high, in recent years concerns over the mobility of older adults also have increased. In particular, the current generation of elders has lived primarily in suburban areas and has been dependent upon the automobile for the satisfaction of its daily transportation needs. Efforts to reduce accident exposure by imposing driving restrictions on older adults have been increasingly tempered by concern for the price that is paid in loss of mobility, a trend facilitated to some extent by the ideas of the community of activists lobbying for people with disabilities. These activists have questioned the choice of safety over independence in design of services and other programs. The two goals of safety and mobility, traditionally seen in social services as antagonistic, now are being blended into a single goal of providing safe mobility for elders and others with mobility difficulties. Agencies concerned with the welfare of older adults have begun to include transportation assistance among their services. This assistance includes efforts to help those with driving problems find ways of overcoming such problems

or limiting their effects on driving, as well as efforts to find alternatives to driving. Nevertheless, the risk that older drivers pose to the public will rise over the coming years as their numbers on the highways increase.

#### ACCIDENT RISK OF OLDER DRIVERS

Statistics certainly support the concern over the risks faced by older drivers. For every mile that drivers age 75 and older travel, they face a rapidly rising risk of being killed or injured, the risk for those 75 to 79 years of age doubling that of younger adults and increasing to a sixfold difference for drivers over age 85 (National Highway Traffic Safety Administration [NHTSA], 2000). Because the contribution of older drivers to the total numbers of deadly accidents is no greater than that of younger drivers. Yet, every time older drivers get behind the wheel they face an inordinately high risk of injury or death.

However, older drivers are not quite the menace to society that public opinion suggests. Their high fatality and injury rates result more from their fragility than from their unsafe driving practices. Older drivers and passengers are far more likely to be killed or injured in an accident than their younger counterparts: The likelihood of being fatally injured at age 70 is more than twice the risk of adults ages 20–50 who are involved in accidents; 80-year-olds are four times more likely than younger accident victims to be fatally injured (Mitchell, 2000). Their per-mile crash rate for noninjury accidents is no greater than that of drivers in the 20-to-24-year-old age group (NHTSA, 2000).

Furthermore, when accidents are analyzed in terms of culpability, older drivers are as likely to be the victims as the driver at fault (Dulisse, 1997). What appears statistically as a progressive rise in per-mile accident likelihood with age is not a universal change within the population as a whole, but rather, an increase in the small proportion of the age cohort who experience the declines that create increased risk. Even among the 75-and-older age group, the majority of drivers present no greater threat to themselves or the public than they ever did.

In summary, although older drivers are significantly more likely to be the victims of accidents causing injury or fatality, their threat to the

motoring public at large is no greater than that of any other age group. To the extent that they are at risk, the risk is primarily to themselves.

#### UNSAFE DRIVING PRACTICES AMONG OLDER ADULTS

There has been only meager research into the specific unsafe driving actions that lead to accidents involving older drivers. The accident reports that serve as the primary source of insight into the circumstances surrounding accidents describe the characteristics of roads, vehicles, and environments more completely than they do the shortcomings that led to the accidents. Although the narratives that accompany these reports often relate such information, the availability of the narratives is highly variable and their validity is often questionable. In addition, techniques for coding them for entry into automated databases have not been perfected.

Further, without knowing the degree to which drivers in various age groups are exposed to situations calling for specific actions, estimates of risk are only relative. The fact that older drivers have more of their accidents in certain situations may mean that they face those situations more often than do younger drivers rather than that they are more likely to respond in an unsafe way.

Much of the research into the problems of older drivers involves assumptions as to the effect of various physiological declines upon risk rather than any demonstrated relation of those declines to accidents. In many instances, drivers compensate for their deficiencies in ways that prevent them from increasing their risk.

An abundance of research shows that intersections are a relatively greater source of difficulty for older drivers than for younger cohorts. Staplin and colleagues (1998) conducted an extensive review of research on intersection problems encountered by older drivers; it revealed that older drivers are over-represented in accidents involving left turns across traffic, even with some control for exposure (that is, the frequency with which drivers encounter the situation). Other intersection accidents result from acceptance of unsafe gaps between cars in traffic, violations of traffic signals, and stops for no apparent reason. While research shows that

virtually all aspects of driving may pose difficulties for older drivers, the most frequent are those performances that involve sharing attention, judging gaps in traffic, visual search, navigation, and motor control.

*Attention sharing.* Attention-sharing deficiencies show up most often in left turns, where drivers must divide attention between oncoming traffic and vehicular as well as pedestrian traffic on the left side of the vehicle. Crossing an intersection without signals requires sharing attention between cars from each direction. Often drivers will look in both directions, see a car coming from one direction, wait until it passes, and then pull out without a look back in the other direction. Similarly, much of failure to comply with traffic controls such as red lights and stop, one-way, or lane-use signs can be attributed to failure to notice them when attending to traffic and other route signs. Attention sharing becomes a particular challenge for elders traveling in unfamiliar areas, where destination-finding actions compete with operation of the vehicle. Cell phones are a particular distraction for older drivers. Older drivers often resolve the conflict created by inability to attend to different demands on attention or sources of danger by slowing down or stopping, which itself can become a danger.

*Judgment about traffic gaps.* Deficiencies in the ability to judge gaps in traffic show up primarily in decisions to cross or enter traffic at intersections and access points. Research shows that older drivers have difficulty judging the position of approaching traffic in relation to their ability to accelerate across or into gaps. This difficulty shows up both in accepting inadequate gaps, with the risk of collision, and in passing up acceptable gaps, to the delay and dissatisfaction of those behind.

*Visual search.* Visual search seems less a concern than gap judgment at intersections, where the special problem of older drivers appears to lie more in what they perceive than where they look. However, elders' physical limitations in head and upper body motion often make looking behind before backing ("backing by sound") more difficult or cause them to fail to check their blind spot before changing lanes. Older drivers can overcome the latter problem by making cer-

tain mirror adjustments that largely eliminate the blind spot; however, drivers must be taught these changes and must be willing to make the readjustment.

*Navigation.* Navigation problems stem primarily from memory lapses and can range from simply missing a turn or taking the wrong turn to becoming lost and ending up far from their place of origin or their destination. Wrong or missed turns appear as a normal part of aging and may have as much to do with the driver's failure to acquire accurate information in the first place rather than with memory problems. More serious cases appear to be manifestations of brain deterioration, most notably Alzheimer's disease. The consequences of navigational shortcomings seem less a matter of safety than of inconvenience to the older driver.

*Motor control.* Motor-control difficulties show up among older drivers as tendencies to wander back and forth between lanes, cut across lanes, swing too wide in curves and corners, accelerate and brake erratically, and, once in a great while, in misapplication of the accelerator or the shift lever, resulting in crashes with structures or people. Because accidents resulting from these difficulties are often highly publicized, the public is often left with the impression that such accidents happen more often than is the case. Moreover, the risk associated with declines in motor control is greatly offset by traveling at lower speeds.

In summary, age-related shortcomings affecting elders' driving practices can pose a threat to the safety and mobility of the public. Fortunately, this threat is greatly moderated by the willingness of drivers to confine their operation to times, places, and conditions in which the effects of their shortcomings pose the least risk.

#### DECLINES IN OLDER DRIVER ABILITY

Almost every form of mental and physical ability evidences decline with age, increasing risk of unsafe driving. Research in this area has been voluminous. A literature survey carried out by Miller and Dimling as early as 1969 cited more than 700 references relating mental and physical ability to various aspects of driving. Subsequent reviews by Janke (1994), McKnight and McKnight (1996), and Owsley (2002) have

helped to further define the three-way relationship among ability, age, and accidents.

The specific abilities showing declines with age and evidence of unsafe driving include the following:

*Visual ability.* Elders experience some decline in their ability to differentiate stimuli clearly under normal conditions; under low illumination (night) and in low-contrast situations; for objects in motion; and in the presence of glare and after removal of glare. In addition, many experience narrowing of the visual field.

*Attention ability.* Aging brings about declines in older drivers' ability to attend to important aspects of the driving environment, which includes range of attention as well as ability to attend selectively to specific elements, to share attention among different aspects, and to shift attention quickly.

*Perceptual ability.* Older drivers experience declines in their ability to interpret correctly what is sensed: speed of perception, ability to detect motion, and ability to recognize various patterns within the visual field.

*Cognitive ability.* The ability to acquire, store, and apply knowledge, including short-term and long-term memory as well as performing mental operations, shows some decline with age.

*Psychomotor ability.* Many elders lose some of their ability to respond quickly to the appearance of a stimulus, to respond differently to different stimuli, and to coordinate eye-hand motion.

*Physical ability.* Declines in strength, coordination, reach, and range of motion are normal with aging; they affect arms, legs, upper body, and neck. Some elders experience loss of consciousness.

Declines in these abilities appear with the older population as a whole and show small correlations with age as well as with accidents among older drivers. Yet, as with other forms of health risk, it is the small number of older drivers with severe deficits who tend to be involved in accidents. What the wealth of research into the relationship between age and accidents largely fails to determine is which of the many ability deficits actually cause accidents. Most of the research has been confined to examining one or a few abilities at a time. Research obtaining measures for a broad range of abilities

within the same drivers shows intercorrelations among the various abilities themselves that generally exceed their correlations with indices of unsafe driving (McKnight and McKnight, 1999). There is hardly an ability whose relationship to unsafe driving cannot be explained by its relationship to other abilities that could be the true causes of accidents. The only sure way of establishing a causal relationship is experimentally, that is, by systematically varying certain abilities and observing changes in driving practices. Unfortunately, few age-related declines in ability are susceptible to experimental variation. Yet the improvement in driving that appears to have been achieved through modification of certain abilities to focus attention is evidence that these abilities play some causal role in safe driving.

#### INTERVENTIONS TO ADDRESS DECLINES IN ABILITY

Intervention in unsafe driving by older drivers requires identifying at-risk older drivers and then taking some form of action to reduce the risk they pose to themselves and others.

*Identifying the unsafe.* The fact that unsafe drivers make up a minority of the older-driver population creates the need for means of distinguishing the safe from the unsafe driver, one that is both valid and capable of being instituted without imposing an inordinate burden upon the total older-driver population. The responsibility for identifying drivers who are incapable of driving safely falls primarily to the licensing agency of each state. However, the focus of licensing is primarily assuring that new drivers have acquired the requisite ability to drive by assessing their knowledge through written tests, their skill through road tests, and their visual acuity through vision tests. Once the prospective drivers have passed all tests, further measurement is largely limited to vision tests administered as part of the license renewal process. While the frequency of renewal testing increases for older drivers, only two states, Illinois and Indiana, require demonstrations of skill or knowledge.

Police, families, and the medical community, roughly in that order of frequency, initiate the identification of unsafe older drivers primarily through reports to licensing agencies. Most

states provide a mechanism through which police can report drivers whose accidents or violations of the law arouse suspicion of an ability deficit. Some states routinely require those reported upon to appear for examination, and other states limit their workload to some degree by requiring an examination only when there is evidence of deficit beyond mere violations or involvement in accidents. Families, principally adult offspring, are invited to report cases in which unsafe driving is accompanied by other observations suggesting deficits, a process encouraged in some jurisdictions by withholding the names of those reporting. Physicians are typically reluctant to report to the police patients with observed deficits, even in states where physicians are required to do so under the law and where they are provided immunity from any resulting lawsuits. However, after Pennsylvania passed a law making failure to report ability deficits a criminal offense and holding physicians liable for any resulting damages, reports reached 40,000 in the first year (1994), and the number continued to increase after that.

The means by which licensing agencies assess the abilities of at-risk older drivers reported to them vary considerably. While some simply readminister written, road, and vision tests, others refer some or all of such drivers to services designed specifically to assess the abilities that are required in driving and are prone to decline with age. Measures are available for assessing and detecting declines in the various skills that have been described. However, before taking any restrictive action, most licensing agencies will administer some form of road test as the ultimate determiner of driving ability.

*Actions to reduce risk.* The two alternative actions available in dealing with drivers who have dangerous ability deficits are to overcome the deficits and to restrict driving. The first alternative is clearly the most attractive to drivers as well as to the agencies that control driving. Most limitations in visual acuity revealed during license renewal are handled through changes in corrective lenses; advances in optics have eliminated cataracts, and recent research holds hope of overcoming some forms of blindness. Age-related muscular limitations in

strength and flexibility range from the relatively minor effects of arthritis to the more severe effects of stroke. Occupational therapists specialize in helping older drivers overcome the deficits where possible and compensate for them where it is not. Developments in vehicle control assists, mirror systems and alignment, seats, and ways of getting in and out of vehicles have reduced the debilitating effects of many physical limitations.

Within the mental realm, there is evidence that certain attention deficits may be amenable to training in compensatory visual search practices. Several measures of attention span have shown a decline in the ability to detect peripheral stimuli lying within the sensory field of view. Instruction aimed at increasing the speed of processing has led to improved performance in on-road and simulator performance tests, although the effects upon everyday driving have yet to be evaluated.

Unfortunately, the progressive nature of ability declines ultimately necessitates restrictions in driving. Restrictions are largely self-imposed; as age increases, drivers tend to limit the amount, times, and locations of driving. Furthermore, when called in for testing, substantial numbers of older drivers fail to show up, allowing their licenses to be suspended. Where restrictions must be imposed, licensing agencies show reluctance to restrict driving any more than necessary, recognizing the importance of independent mobility of an age group largely settled in the suburbs, where personal transportation alternatives are generally limited. Restrictions imposed include operation only in daylight hours for those with visual limitations, operation at certain hours and in locations of sparse traffic for those with attention deficits, and operations in familiar areas for those with attention and memory deficits. Complete suspension tends to be reserved for drivers with very severe deficits that show up in road tests as well as through ability testing.

#### PROVIDING ALTERNATIVE MODES OF TRAVEL

Eventually, for those who live long enough, the ability to operate a car safely becomes compromised to the point that driving no longer

affords an acceptable mode of transportation. At this point the need for mobility must be met through alternative modes of travel. Public transit systems tend to be commuter oriented and not well suited to helping older adults reach shopping centers, medical facilities, and other common destinations. Even where such service is available it can require walking to distant and exposed locations. Most communities have paratransit systems intended to meet the special mobility needs of those who cannot drive. However, they tend to fall short of substituting for a car in allowing the people to go where and when they want. Paratransit systems have been designed primarily to transport groups of elders at predetermined times to specific locations, such as senior centers, churches, and medical centers. Yet, recent years have seen a move toward local transportation systems geared toward providing demand-responsive paratransit services. The characteristics of such systems have been described by Burkhardt (2000) and in R. Sterns and colleagues, this issue. Key elements include the following:

- *Coordination.* Paratransit in most communities is furnished by a number of independent providers, serving a varied clientele. Coordination of services through a single agency permits more effective and economical use of available resources.

- *Financial support.* Providing highly responsive transit services at affordable prices requires substantial subsidization by local and state agencies. However, this financial support is instrumental in coordinating of services.

- *Ride-sharing.* The ability to provide demand-responsive travel at affordable prices requires consumers to share of rides. While clients can go where and when they want, they will travel with others users, who are to be picked up and dropped off along the way. However, this aspect of paratransit has not proven a barrier to its use by an older clientele.

- *Advanced scheduling.* Transporting clients from different locations to different destinations while minimizing travel time and distance involves complicated scheduling and routing. Most systems require that requests for rides be made well in advance. Some paratransit sys-

tems will gear charges to the degree of advance notice provided.

- *Eligibility.* Most communities have established eligibility requirements for subsidized transportation. Requirements include age, need for transportation, physical capability, and financial need.

#### SUMMARY

Over the next thirty years, the number of older drivers on the road will more than double. Known age-related deficiencies in the broad range of mental and physical capabilities demanded in driving have raised concern as to the effect of this increase upon the safety of the motoring public. Fortunately, a number of factors help allay these concerns. First, older drivers tend to compensate for their deficiencies by driving more slowly and more carefully than they once did and by avoiding the situations that present the greatest threat. As a result, they do not pose a substantially greater threat to the public than any other age group. Their high fatal- and injury-accident rates are more a function of their fragility rather than the way they drive. Moreover, as they age older adults drive progressively less often, and the great majority of older drivers voluntarily cease driving when they are no longer able to drive safely.

Of course, there are notable exceptions, and the licensing process is called upon to take action when drivers show true cause for concern. While some deficiencies can be overcome through medical or instructional interventions, most cannot, necessitating imposition of driving restrictions ranging from specification of acceptable times and places to complete cessation of driving. Unfortunately, elders' need for mobility does not diminish with the inability to drive, and the focus of attention in recent years has shifted from getting older adults off the road to finding other ways of getting them around. This has proven to be a formidable task. Of the many alternative travel modes available, few are well suited to the needs of the elderly. Paratransit systems have not generally provided a means of transporting the elderly where and when they wish to go. However, with greater recognition of their travel needs have come more demand-responsive paratransit systems. These systems

rely heavily upon coordination at the local level, financial support, ride-sharing, and advanced scheduling of rides. ❧

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