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Emerging Issues in Safe and Sustainable Mobility for Older Persons

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Driving is an Instrumental Activity of Daily Living and is of key importance to maintaining mobility and independence in many industrialized countries. There were approximately 31 million older licensed drivers in the United States in 2007, a 19% increase since 1997 (National Highway Transportation Safety Administration, 2008), and the ability to drive continues to provide a foundation for independence. Older adults who can no longer drive are more likely to suffer from increased risk of entering a long-term care facility (Freeman, Gange, Muñoz, & West, 2006), reduced out-of-home activities (Marottoli, et al., 2000), poorer cognitive and physical health (Anstey, Windsor, Luszcz, & Andrews, 2006), mortality (Edwards, Reynolds, Perkins, & Ross, 2009), and increased risk of depression (Marottoli, et al., 1997; Ragland, Satariano, & MacLeod, 2005). Balanced against the importance of driving for maintaining independence and mobility is the issue of public safety. Older drivers accounted for 15% of all traffic fatalities in 2008 (National Highway Traffic Safety Administration, 2008). However, research has indicated that it is a subset of older drivers who are unsafe and that age per se is a poor predictor of driving safety (Anstey, Wood, Lord, & Walker, 2005; Ball & Owsley, 2003; Ball, et al., 2006). Thus, a balance is needed between driving skill assessment, programs that maintain safe driving for as long as possible, and programs to promote mobility and independence for older adults who can no longer drive safely.

Policy makers began addressing the mobility needs of the aging population in the 1980's. Such needs vary across a continuum from personal mobility within the home to transit-based mobility in the wider community. The primary areas of activity centered on programs and services funded with public dollars, especially transportation infrastructure and transit services. These efforts have realized progress, but have not adequately addressed the unmet need for safe and sustainable mobility options and services for older people. One reason for this is that traditional public transportation was never intended as a primary mode of

transportation for those living into the 7th decade and beyond, one of the fastest growing groups in today's population. We have added 30 years to the human lifespan in the last 100 years (Fries, 2002). That is greater than the gains of last 50,000 years combined. Transportation is but one of the systems we are now outliving, together with housing, healthcare and retirement plans.

Policy makers have approached the transportation problem from several sides. In addition to the efforts made to adapt the roads for older drivers, policy makers have developed a "Livable Communities" approach to land use in an effort to enhance the walking environment and encourage the population density which is essential to the efficient use of traditional mass transportation. They have also worked to create better coordinated public transportation planning efforts, as well as to make more efficient use of existing public resources. Whether they will be able to reverse the trend predicted in the 2006 TCRP study that projected a decline in the use of public transportation by the aging population remains to be seen. However, even if they do, it does not appear likely they can effect enough change to keep pace with the aging of the population in time to help the tens of millions of older people who are aging out of driving and who have few options to maintain their independence and quality of life.

Most trips (approximately 90 percent) for the over 65 population are taken in a private automobile, either as a driver or a passenger, while 8 percent of trips are walking and 2 percent are taken on public transportation. Fifty-four percent of the over 65 population live in communities with no public transportation whatsoever. Most of the resources spent on transportation in this country are private, not public, by a ratio of 5 to 1. Now, and for the foreseeable future, the strongest consumer preference and need is for the use of private resources for personal transportation (Collia, Sharp, & Giesbrecht, 2003). Policies that remove barriers or create incentives for the use of private resources for sustainable senior mobility point to a whole array of opportunities that can help people take care of themselves. These policies address protection for volunteer drivers, modernize livery laws, update insurance laws, and amend automobile dealership laws.

This balance of issues and need for programs to maintain safe mobility for older adults is the focus area for the Committee on Safe Mobility for Older Adults (ANB60), a committee within the National Academies' Transportation Research Board (TRB). This committee was given the charge to organize a conference to bring together scientists from around the world for presentation and ultimately publication of the latest research findings in this area. The Emerging Issues in Safe and Sustainable Mobility for Older Persons Conference was developed in response to this charge to address a key need for dialog between scientists and policy makers regarding the current state and future direction of transportation as it relates to the growing older population. The overall objective of this conference was to create an opportunity for policy makers, researchers, industry partners, and state agencies to openly discuss current issues and possible solutions surrounding barriers to the safe and sustainable mobility for older adults, as well as update findings from the last such conference held in 1999. The conference was organized around four key areas in which changes or breakthroughs have recently been identified:

- *Changing Demographics:* With the aging of the population, and changes particularly in the number of older women drivers in older cohorts, driving statistics have changed related to both safety and mobility. In addition, demographics related to where older adults are choosing to live (urban/rural environments) and the design of those environments is changing, as is access to transportation.
- *Changing Health Care Environment:* With respect to older adults in general, frailty has emerged as a salient descriptor for a new subgroup of older persons who are at-risk for a variety of negative outcomes (e.g., falls, driving cessation, poor health, injury). This focus area addressed potential treatments for frail older adults, and the impact of frailty on safe mobility and the use of alternative transportation options. Another aspect of this focus area was on emerging research on brain health and fitness which included how exercise, cognitive training, and other interventions impact driving and mobility issues.
- *Changing and Emerging Caregivers:* This focus highlighted the role of caregivers in meeting the transportation needs of older adults. Topics included issues related to potential transportation options, reimbursement for caregivers, and the Lifespan Respite Act.
- *Changing Policy:* This focus area highlighted issues regarding the current national and local infrastructure systems, public transit, and incentives and barriers for private solutions. Additionally, debate surrounding current and proposed driver's licensing and regulations for older adults was a focus.

Results from this conference are the foundation of this Special Issue. In the area of changing demographics, Dr. Jay Olshansky presented a keynote address on the future course of longevity. His resulting paper provides a general overview on the demographics of aging and discusses how a significant increase in the number of very old people, along with a changing frailty and disability profile of future cohorts, will require changes to our transportation system (including changes to the infrastructure, vehicles, and accessibility). Also within this theme, Dr. Sherrilene Classen, Ms. Yanning Wang, Dr. Alexander Crizzle, Dr. Sandra Winter and Ms. Desiree Lanford discussed gender differences found among participants who completed a comprehensive driving evaluation. Finally within this area, Drs. Jae Seung Lee, Christopher Zengras, and Eran Ben-Joseph focused on the relationship between urban form and safety issues which will impact urban baby boomers' walking behavior.

In the area of a changing health care environment, Dr. Karlene Ball, presented a keynote address on emerging research in brain health and fitness which included how cognitive training impacts driving and mobility issues. A resulting systematic review authored by Dr. Lesley Ross, Ms. Erica Schmidt and Dr. Ball provided an overview and analysis of the current state of the science on the impact of cognitive, physical, educational, and mixed domain interventions on the promotion of safe mobility. In the area of older drivers experiencing some impairment, Dr. Melissa O'Connor, Dr. Jerri Edwards, and Ms. Yvonne Bannon discussed self-reported driving habits among adults aged 60 and older with clinical mild cognitive impairment (MCI), or clinical mild dementia relative to cognitively intact older adults. Also, within the context of a changing health care environment, Drs. Stephen

Menemeyer, Cynthia Owsley, and Gerald McGwin Jr. discussed the role of early cataract surgery on future driving safety. Older adults who undergo cataract extraction have roughly half the rate of motor vehicle collision involvement per mile driven than cataract patients who do not elect cataract surgery. Using a Monte Carlo model to simulate motor vehicle crashes (MVC) within the U.S. population from age 60 to 89, they concluded that a policy of earlier cataract removal surgery would significantly reduce MVCs and their associated consequences.

Finally, in the area of changing policy, Dr. Loren Staplin and Ms. Katherine Freund provided a keynote address advocating policy change in three key areas: infrastructure, driver licensing, and access to private resources for transportation alternatives. Their resulting paper discusses how policy makers can adopt minimum, evidence-based requirements for visual, mental and physical capabilities for licensure and, by uniformly applying them at all ages, can improve the safety of older drivers without unfairly restricting their mobility. This paper also addresses how state policies that either create incentives or remove barriers to the use of private resources for non-profit senior transportation can help communities access the labor and capital, as well as manage the risks of market-oriented, non-profit mobility solutions. Dr. Linda Hill, Ms. Jill Rybar, Ms. Tara Styer, Dr. Kevin Patrick, and Dr. Raul Coimbra discussed the role of health professionals, and their training, in identifying impaired drivers.

In summary, meeting the mobility needs of an aging population will continue to be an important world-wide issue. As demonstrated in this Special Issue, while there are many emerging solutions to some of the complex issues involved, much work remains to be done. What is lacking is a coordinated effort to evaluate and bring solutions into the marketplace. It is our hope that the Conference and Special Issue of Accident Analysis and Prevention will stimulate further research and ultimately help to sustain the mobility and independence of older adults.

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