Alan M. Voorhees Transportation Center Edward J. Bloustein School of Planning and Public Policy



# Safe Mobility at Any Age Policy Forum Series

# **Summary Proceedings**

# Forum No. 3 April 29, 2004

Proceedings prepared and published by:

Alan M. Voorhees Transportation Center Edward J. Bloustein School of Planning and Public Policy

and

New Jersey Foundation for Aging

June 2004



# SAFE MOBILITY AT ANY AGE POLICY FORUM SERIES

# SUMMARY PROCEEDINGS

April 29, 2004 Forum

Proceedings prepared and published by:

Alan M. Voorhees Transportation Center Edward J. Bloustein School of Planning and Public Policy Rutgers, The State University of New Jersey 33 Livingston Avenue – Suite 500 New Brunswick, New Jersey 08901 732/932-6812 x700 • 732/932-3714 (fax) Internet: www.policy.rutgers.edu/vtc

and

New Jersey Foundation for Aging 176 West State Street Trenton, New Jersey 08608 609/421-0206 • 609/421-2006 (fax) Internet: www.njfoundationforaging.org

# FOREWORD

On April 29, 2004, more than 50 attendees participated in the third meeting of the **Safe Mobility at Any Age** policy forum series. Forum speakers presented information on:

- Senior driver programs sponsored by the Automobile Association of America (AAA);
- New directions in older driver safety & mobility from the perspective of the National Highway Traffic Safety Administration;
- The Federal Highway Administration's older road user program and roadway design guidelines;
- NJ Department of Transportation Safety Task Force's safety through engineering, education & enforcement initiative; and
- NJ State Police enforcement statistics.

The policy forum series is cosponsored by the Alan M. Voorhees Transportation Center and the New Jersey Foundation for Aging.

The topic of safe mobility is timely and has far-reaching policy implications related to public health, public safety, community development and personal autonomy across all age groups. The forum sessions target and focus attention on different aspects of this multi-sided issue, bringing together policy and regulatory experts from inside and outside of New Jersey to aid the discussions. The forum series is laying the foundation for and will culminate in a final summary report that makes recommendations for future policy and legislative initiatives to address safe mobility for older drivers in New Jersey.

Key issue areas to be discussed at the fourth and fifth sessions will include:

- Community mobility options, including the demand for public transport options and issues with volunteer recruitment, screening, insurance, consumer utilization and satisfaction; and
- Regulatory practices and compliance issues related to driving licensure.

The sixth and final forum meeting will engage participants in a discussion of systemic and integrated policy reforms aimed at ensuring safe mobility at all levels. We strongly urge all participants to attend the final three meetings because Safe Mobility at Any Age touches many aspects of our professional and personal lives. Sharing a broad range of expertise will help to inform participants and engage us all in finding the best set of recommendations for family members, as well as community, transportation and health care professionals.

Our hope is that this policy series stimulates attention on safe mobility issues from a broad range of practitioners and interest groups; that this consortium of interests recognizes the benefit of sharing perspectives; and that together, New Jersey can develop best practices through policy and legislation that move in the direction of safer mobility at all ages.

With this in mind, we present the summary proceedings of the third policy forum. We hope you find them interesting and informative.

Grace Egan

Grace Egan, MS Executive Director New Jersey Foundation for Aging

Jon A. Camegie

Jon A. Carnegie, AICP/PP Assistant Director Alan M. Voorhees Transportation Center

## ACKNOWLEDGMENTS

The New Jersey Foundation for Aging and the Alan M. Voorhees Transportation Center wish to acknowledge the following entities for their generous financial support:

## Automobile Association of America – NJ Automobile Club

Stephenson-Klotzburger Foundation

Thomas and Theresa Berry Foundation

Wallerstein Foundation for Geriatric Life Improvement

# TABLE OF CONTENTS

Summary Proceedings	6
American Automobile Association Senior Driver Programs	6
New Directions in Older Driver Safety & Mobility National Highway Traffic Safety Administration	7
Older Road User Program & Roadway Design Guidelines Federal Highway Administration	. 10
Safety Initiatives – New Jersey Department of Transportation and New Jersey State Police	.11
Participant Discussion	. 13
Speaker and Moderator Biographies	. 15
April 29 <sup>th</sup> Forum Agenda	. 17
List of Participants	.18
Appendix 1 – Presentation Slides	.20

## SUMMARY PROCEEDINGS

#### Welcoming Remarks

**Marco Navarro** from the Robert Wood Johnson Foundation (RWJF), welcomed forum participants. He underscored the importance of safe mobility as an element of active healthy community design, a key area of emphasis for the Foundation. He added that personal mobility – whether walking, biking, driving or riding – is a crucial element of quality of life that directly impacts access to health care and social services, as well as one's ability to remain connected with family, friends and community. Mr. Navarro highlighted several statistics reported at the first policy forum series. He noted that there are over 5.9 million licensed drivers in New Jersey who travel over 68 billion vehicle miles a year. He remarked that New Jersey is clearly a state on the move and concluded by noting that the RWJF recognizes the value of the work that the Alan M. Voorhees Transportation Center and the New Jersey Foundation for Aging are performing with the Safe Mobility at Any Age policy forum series.

**Jon Carnegie**, assistant director of the Alan M. Voorhees Transportation Center, joined Mr. Navarro in welcoming participants and briefly reviewed highlights from the first two forums, including the purpose of the safe mobility policy forum series, the status of research into New Jersey's mature drivers, key health factors that contribute to an increased risk of crashes, the products and policy outcomes identified by the Maryland Research Consortium, the status of the Medical Advisory Board in New Jersey, best practices in functional assessment and health screening, as well as driver rehabilitation and remediation programs. Mr. Carnegie outlined the meeting agenda and recognized the organizations providing financial support for the policy forum series. He concluded by referring attendees to the VTC website for copies of the proceedings from the first two policy forums.

### American Automobile Association of America (AAA) Senior Driver Programs

**Pam Fischer**, vice president of the AAA New Jersey Automobile Club Public Affairs office, was the first presenter. She began by reporting that AAA is the world's largest motoring organization with over 46 million members, 2 million of whom are New Jerseyans. Ms. Fischer explained that the goal of AAA's senior driver programs is to help senior citizens stay mobile for as long as safely possible. To accomplish this goal, AAA offers a host of senior mobility activities and services, including publication of education and public relations materials, AAA mature operator courses, and internet resources on senior mobility.

Ms. Fisher stated that AAA opposes the use of age alone as a sole criterion for driver testing; however, she also noted that AAA supports vision testing on a

regular basis and skills testing when warranted. Ms. Fischer added that AAA supports New Jersey Senate Bill S1226, which promotes the creation of senior driving health centers.

Ms. Fisher briefly described several AAA initiatives focusing on safe mobility for older drivers. She explained that the programs are designed to address three elements of traffic safety: the driver, the vehicle and the road. With regard to the road, through its "Get there safely" initiative, AAA promotes building safer roads and reducing high risk driving. Through its "Get there your way" initiative AAA advocates for expanding transportation options and choice; and through its "Get there on time" initiative, AAA promotes various strategies designed to address roadway congestion.

With regard to the driver, AAA is working on developing a new functional assessment tool that can be used in the privacy of one's home, either online or via CD-ROM. Finally, with regard to the vehicle component of traffic safety, AAA is involved with a program entitled CarFit. The CarFit initiative provides assessments for participants on how well they physically "fit" in their vehicle, as injury can be prevented through proper positioning and appropriate use of vehicle safety features. In closing, Ms. Fischer encouraged participants to visit the AAA Foundation for Traffic Safety's senior driver website at www.seniordrivers.org to obtain more information about relevant programs and research.

Copies of Ms. Fisher's presentation slides are included in Appendix 1.

# New Directions in Older Driver Safety and Mobility – National Highway Traffic Safety Administration (NHTSA)

**Essie Wagner**, program analyst for the Safety Countermeasures Division at NHTSA was the second speaker. She reported that NHTSA's mission is to save lives by promoting safe, secure and efficient automobile travel. Ms. Wagner then provided the following facts related to older drivers:

- Older drivers have fewer crashes than do younger drivers, in some part, because older adults tend to drive fewer miles than do younger segments of the population.
- Older drivers are more likely to die in a vehicle crash than their younger counterparts. For example, an elderly driver is four times more likely to die in a crash than a 20-year old driver.
- The mode of transportation frequented most by older drivers is that of driver of a motor vehicle. Some senior citizens rely upon receiving rides in cars from others, while few utilize transit/taxis.
- Overall, driver fatality rates are not improving for senior citizens based on the most recent data (1998-2002).

Ms. Wagner explained that NHTSA's approach to ensuring safe mobility for older drivers involves the medical community, social service and licensing agencies and law enforcement working with and responding to the needs of the public. She noted that increased collaboration among these parties must be encouraged. She also reported that NHTSA works with a host of organizations on older driver initiatives, including the American Medical Association, American Occupational Therapy Association, American Optometric Association, American Society of Aging, law enforcement and the American Association of Motor Vehicle Administrators.

Copies of Ms. Wagner's presentation slides are included in Appendix 1.

The next speaker was **Michael Perel**, from the NHTSA Office of Applied Vehicle Safety Research. He reported that his work and research at NHTSA focuses on crash avoidance and noted that older drivers are faced with a host of limitations, including slower response time, problems with glare and vision, restricted head/neck movement, problems with focusing close and difficulties attending to multiple tasks. He stressed that older drivers need to pay attention to car design when purchasing a new vehicle or reevaluating their current one. Areas of special concern are seat belt comfort and ease of use, visibility through windows, mirror optics, usability of new technologies and quality of headlights.

Mr. Perel explained that NHTSA receives many glare complaints from older drivers. As a result, the agency recently investigated issues related to the color and horizontal intensity of High Intensity Discharge (HID) lights versus halogen lights. Based on the study, NHTSA determined that drivers' attention appears to be attracted to the blue color and brightness of many HID lights and therefore are more apt to look into the light source, causing discomfort and increasing glare recovery time. Whether or not driver exposure to intensity from different beam patterns affects glare recovery time is currently under investigation, as is the issue of headlamp aim.

Mr. Perel provided an overview of the positives and negatives associated with new technologies designed to improve driver safety. Included in his overview was the following:

 Infra-red night vision enhancement systems (NVES) – This technology, which is currently available as an option on some automobiles uses infrared (IR) cameras to supplement the visibility provided by standard headlamps during night driving. There are two main NVES systems: active, near infrared (NIR) systems, which require an IR source but give a complete picture of the scene in front of the driver, and passive, far infrared (FIR) systems, which do not need an IR source but only enhance relatively warm objects (such as people and animals). There are three main display alternatives: a contact analog display with the camera view superimposed on the direct view of the road by means of a head-up display (HUD), a separate HUD on the top of the dashboard, and a head-down display (HDD) in the dashboard.

Preliminary findings from a study examining object detection while driving with a NVES demonstrated that for older drivers without oncoming glare, pedestrian detection distance increased, but not the percent of pedestrians detected. For detecting pedestrians in the presence of oncoming glare, NVES did not help older drivers. In all, older drivers used NVES less often than did younger drivers. Reasons for this decreased use could be that it is difficult for seniors to recognize the NVES thermal images and/or seniors may have difficulty shifting attention between the NVES display and the road while driving.

- Adaptive forward lighting This technology adjusts the position of vehicle headlight beams to conform to roadway design and operating environment (e.g., bending the beam to adjust for highway curves or cornering in a city environment). A NHTSA study is underway. Initial indications are that this technology holds promise but significant further investigation is needed to determine potential negative effects on on-coming traffic/drivers.
- Curved driver-side mirrors This technology is used extensively in Europe, but not in the Unites States. It involves the use of curved or aspheric mirrors to increase field of view. Preliminary findings from a NHTSA study indicate that curved/aspheric mirrors improve detection of adjacent vehicles for all drivers, including older drivers. However, NHTSA researchers noted that many drivers took a long time to acclimate to the technology because aspheric mirrors minify the reflective image.
- Advanced vehicle crash warning technologies This technology includes a variety of applications that provide forward crash warnings, lane change/blind spot warnings, rear object detection, road departure warnings and intersection collision warnings. Field testing of these applications is ongoing.

Advanced information and telematics systems were also briefly discussed, but Mr. Perel stressed that the primary goal of such systems is not improving safety. In fact, elements of such systems, such as email and internet accessibility, voice controlled information and audio/video entertainment can be distracting to drivers.

In closing, Mr. Perel emphasized that enhancing senior driver safety with compatible vehicle design is critical. For example, vehicle design features should be compatible with the capabilities of average seniors and should focus on aiding cognitive limitations, in addition to physical limitations. Systems should be designed so they are reliable and understandable to drivers. Older drivers should also strive to keep their headlamps aimed and clean and should be sure to test drive vehicles before purchasing.

Copies of Mr. Perel's presentation slides are included in Appendix 1

# Older Road User Program and Roadway Design Guidelines – Federal Highway Administration (FHWA)

**Karen Yunk** from the FHWA New Jersey Division Office was the next speaker. She provided an historical overview of FHWA programs and activities focusing on the older road user. She noted the following publications: 1998 *TRB 218*, *Transportation in an Aging Society; 1998 Older Driver Highway Design Handbook: Recommendations and Guidelines; 2001: Revised Highway Design Handbook for Older Drivers and Pedestrians; 2003: Guidance for Implementation of the AASHTO Strategic Highway Safety Plan* and the currently underway pocket guide, *2004: Travel Better, Travel Longer.* 

Ms. Yunk reported that, in forty states, FHWA offers a one-day older driver design workshop developed for engineers, design consultants and others in the transportation field. The workshop focuses attention on age-related cognitive and physical changes and illustrates safety conscious design examples through handbooks and case studies.

Ms. Yunk noted that FHWA recognizes that drivers experience visual, mental and physical changes as they age. As a result the agency has sought to provide a variety of countermeasures to accommodate these changes, including:

- Bigger and brighter traffic signs; larger legends, more contrast
- Increased use of highway lighting
- Brighter pavement markings and delineation of curbs/medians
- Redundant signing
- Protected operations (e.g., left turn lanes)
- Increased perception-reaction time in intersection sight distance calculations
- Eased parallel entrance ramp geometry
- Slower walking speed assumptions when designing pedestrian signal control

The most recent FHWA *Manual on Uniform Traffic Control Devices (MUTCD)* is the 2003 Edition. Ms. Yunk provided several examples of changes incorporated in this edition, including: increased letter height standards for sign legibility at a distance; larger street name signs; and turning path pavement markings. She also commented that three demonstration projects are currently in progress to evaluate the effectiveness of older road user guidelines. She explained that the projects have a three year time frame and the Washington DOT has been selected to address pedestrian safety, Arizona DOT will address safety in general relating to signs, signals and pavement markings and the Massachusetts Governor's Highway Safety Bureau will address work zone safety.

Ms. Yunk concluded by noting that FHWA has historically identified and promoted positive infrastructure changes and continues to work with various partners to improve safety and mobility of older and all road users.

Copies of Ms. Yunk's presentation slides are included in Appendix 1.

# Safety Initiatives – Perspectives from the New Jersey Department of Transportation (NJDOT) and New Jersey State Police

**Patricia Ott**, Director of Traffic Operations for the NJDOT was the next speaker. She described the NJDOT's efforts with regard to traffic safety in general and senior driver safety specifically emphasizing engineering, education and enforcement. She noted that over 300,000 crashes were reported in New Jersey in 2003, resulting in a total of 750 fatalities. She reiterated the point made by the previous speakers that driving is a key element to life in New Jersey and noted that safe mobility for the aging population is a critical and growing concern. She added that 13 percent of the New Jersey population is 65 or older, while 15 percent of the state's drivers are 65 or older.

Ms. Ott reported that a Highway Safety Task Force was established in New Jersey in 2002 with high-level commitment that involved multiple agencies and organizations. The task force, which is a standing committee, has developed and implemented various strategies aimed at improving traffic safety. These include an aggressive driver campaign, a program to improve median barriers to prevent cross-over crashes and the utilization of wider pavement markings on construction projects. She further noted that the state's *Safety First* legislation, passed in July 2003, resulted from the task force's work and included the safe corridor program, equipment violation penalties, and penalties for out-of-state overweight carriers. The legislation also led to the establishment of a Highway Safety Fund and Commercial Drivers License (CDL) Point School.

Other NJDOT safety initiatives include the intersection improvement program, pedestrian improvement program, local safety initiative and safety conscious planning. In addition, the Statewide Traffic Records Coordinating Committee is working on integrating statewide traffic records into one data warehouse.

With specific regard to senior drivers, Ms. Ott reported that in 2002-2003, the NJDOT conducted a senior safety study that examined policy initiatives to improve transportation for New Jersey's senior population. The study focused on developing strategies to help accommodate the special needs of seniors and

improving the overall level of highway safety. Various recommendations resulted from the study, one of which was a senior safety pilot program.

Ms. Ott reported that the pilot program has focused on a partnership between the NJDOT and the Departments of Health & Senior Services, Education and State. Efforts of the program are also being coordinated with the Corporation for National and Community Service's Learn and Serve America Program, AARP's 55 Drive Alive and the RWJF HealthEASE initiative. Ms. Ott stressed the value of establishing working partnerships among different organizations and government departments/agencies, as such arrangements encourage the sharing and consideration of divergent perspectives. She added her hope that the pilot initiative will develop into a continuing program and that partnerships, both existing and new, will continue to thrive.

Ms. Ott concluded her presentation by describing several NJDOT engineering improvements which have helped and will continue to help the senior population. They include: enhanced signing and striping/pavement markings, signal improvements (e.g. larger signal heads, timing modifications), lighting enhancements and geometric improvements to roads and intersections (e.g. curbing, sidewalks).

The final speaker was **Lieutenant Paul Krupa** of the New Jersey State Police. Lt. Krupa noted that although driving is generally considered a privilege and not a right, for many, accessibility and mobility depend on the ability to drive. He provided an overview of NJ State Police fatal accident statistics, noting that 99 of the 419 total driver fatalities in 2002 were victims 65 & older.

With regard to driver re-examination, Lt. Krupa reported that family members and medical professionals submit most requests for re-examinations. He displayed and explained a table depicting the number of drivers re-examined in a given year and the number of those re-exams given due to involvement in a fatal accident. For example, in 2003, 739 drivers were re-examined, 425 of whom were re-examined due to involvement in a fatal accident. Over half of those involved in a fatal accident were senior citizens (298 of 425 re-examined). Lt. Krupa did not elaborate on what portion of the 314 drivers examined for other reasons were seniors. Lt. Krupa concluded is remarks by pointing out that N.J.S.A. 39:3-10c, requires that every driver take and pass a vision screening test every ten years as a condition for license renewal. He observed that this law, which is already on the books and not being implemented, should be considered by the group when it develops policy recommendations

Copies of Ms. Ott's and Lt. Krupa's presentation slides are included in Appendix 1.

## PARTICIPANT DISCUSSION

Participants shared the following comments and questions during the facilitated discussion that followed the speaker presentations:

- In response to a question regarding vehicle Event Data Recorders (EDR), a.k.a. black boxes, and the privacy concerns use of such technology raises, Lt. Krupa explained that the black box records vehicle crash data such as vehicle and engine speed five seconds before air bag deployment. Some vehicles currently on the market, such as various General Motor (GM) cars, include the device. Ms. Fischer added that AAA is examining the issue and recognizes that while there is potential safety value in using such a device, motorists need to be made aware if the technology is included in their vehicle, they "own" that data. Ms. Fischer indicated that AAA is pursuing this issue further to clarify the related legal issues for their members.
- One participant stressed the importance and value of continual communication among those working on safe mobility issues and observed that there is a lot of good work going on at all levels of government, but not enough information sharing. He noted that Bergen County commissioned and disseminated a film on pedestrian safety for seniors to police departments in the county. The film was used as part of community outreach activities. He credited the use of the film with contributing to a decrease in pedestrian fatalities in the county. The participant opined that there are many additional training opportunities related to the safe mobility topic and suggested that community policing initiative could play an important role in this regard. Ms. Wagner responded that NHTSA strives to make its training tools widely available and plans on developing a course for law enforcement that addresses the issues mentioned by the participant.
- In response to a question, Ms. Ott indicated that the NJDOT senior safety study was not yet available online but noted it was a good suggestion and that she would investigate the possibility of posting the study's executive summary online.
- In response to a question, it was confirmed that law enforcement personnel can request license re-examination, in addition to family members and medical professionals.

The following is a list of important policy areas identified by forum participants on comment sheets:

- Improve pedestrian mobility and safety for seniors
- Make greater use of adaptive vehicle technology to make driving safer, particularly for senior drivers
- Do a better job of coordinating, integrating and promoting currently available mobility options to driving-alone for seniors
- Improve and expand safety education
- Balance safe mobility goals in highway design with achieving congestion relief
- Develop a communication and dissemination plan for public distribution of information gathered at the Safe Mobility forums
- Promote safety conscious parking lot and on-street parking design, specifically reverse angle parking
- Use TMA's to develop and implement travel option programs to meet senior needs
- Consider the traffic and transportation impacts of age-restricted housing, relative to where it is being located
- Improve the attractiveness and user-friendliness of public transit for seniors
- Consider the impact of alcohol and prescription drug use on driver safety
- Provide an update on Senator Smith's proposed legislation, discussed at first forum
- Consider ways to increase funding for mobility options
- Consider continuous license re-testing, so that the impacts of degenerative illnesses are captured
- Expand and promote education programs to assist law enforcement in their community police programs with seniors
- Develop an alternative transportation plan in advance of revoking an individual's drivers' license

# **SPEAKER BIOGRAPHIES**

**PAM FISCHER** is vice president of public affairs for the AAA New Jersey Automobile Club headquartered in Florham Park. An 18-year veteran of the membership organization, Ms. Fischer oversees public, government, community and media relations for her Club, leads the New Jersey Automobile Club Foundation for Safety & Education, and also serves on several national AAA committees. She is chairman of AAA's national child passenger safety workgroup and is a certified child passenger safety technician. Last Spring, she was one of four public members appointed to the Motor Vehicle Commission by Governor McGreevey and also serves on the Governor's Highway Safety Task Force and Highway Traffic Safety Policy Advisory Committee. She works with state and federal legislators and government officials on numerous transportation and safety-related issues -- including senior mobility.

**ESSIE WAGNER** is a Program Analyst working with the National Highway Traffic Safety Administration's (NHTSA) Safety Countermeasures Division on older driver safety programs. Since joining NHTSA in 1998, Ms. Wagner has conducted many studies on older drivers including an OECD study on safe mobility of older people and studies on screening and assessment. She works with organizations addressing medical, licensing, law enforcement, and social services aspects of older driver safety. Before joining NHTSA, Ms. Wagner worked for seven years as a contractor for FHWA's Research and Development division, conducting and monitoring extensive research on older driver issues related to the roadway environment, such as signs and pavement markings, and responses to emergency driving events.

**MICHAEL PEREL**, a Senior Research Engineer in the Office of Applied Vehicle Research, has over 30 years experience at the National Highway Traffic Safety Administration. He is responsible for planning and managing human factors research to better understand how crashes can be prevented by applying knowledge about drivers' abilities and limitations to the design and operation of vehicle safety systems. This research has focused on such areas as vehicle lighting, controls and displays, and vehicle visibility systems. His recent responsibilities as the Human Factors Team Leader of the Intelligent Vehicle Initiative have focused on driver distraction and on advanced collision warning systems.

**KAREN YUNK** is the Traffic Operations and Safety Engineer at the Federal Highway Administration's New Jersey Division Office. She has been involved with many safety efforts in New Jersey since joining FHWA almost two years ago. Ms. Yunk worked previously as a consultant in transportation planning and traffic engineering. She received her Bachelor of Science in Civil Engineering from Rutgers University and is currently pursuing her Masters degree, also at Rutgers. **PATRICIA A. OTT**, P.E., has over 20 years of experience at the New Jersey Department of Transportation (NJDOT) where she serves as Director for Traffic Engineering and Safety. Ms. Ott oversees the bureaus of Traffic Engineering and Investigations, Safety Programs, and Transportation Data Development, focusing on the collection and analysis of traffic and crash data, the identification and review of high crash locations, and the design and implementation of traffic safety measures such as traffic signal revisions, sign improvements, and pavement marking enhancements. She earned her BS in Civil Engineering from Rutgers University and MS in Transportation Engineering from NJ Institute of Technology.

**LIEUTENANT PAUL KRUPA** is a 25-year veteran of the New Jersey State Police and now serves as Division Traffic Officer. For the past 4 years, Lt. Krupa has been assigned as the Technology Management Coordinator for the State Police Traffic Bureau, where he was responsible for the management of systems integration for the four commercial vehicle units within the Bureau. Lt. Krupa spent 12 years in the Fatal Accident Investigation Unit as a field investigator and ultimately the unit supervisor. While in the Fatal Accident Investigation Unit, he investigated over 1500 fatal crashes.

# FORUM AGENDA

## The future of vehicle and roadway safety and design

## 9:00 Registration and Continental Breakfast

- 9:30 Welcome Marco Navarro, Robert Wood Johnson Foundation Jon Carnegie, Assistant Director, Voorhees Transportation Center
- 9:40 Automobile Association of America (AAA) Senior Driver Programs Pam Fischer, Vice President, Public Affairs, AAA - NJ Automobile Club
- 9:50 New directions in older driver safety and mobility Essie Wagner, Program Analyst, Safety Countermeasures Division, NHTSA Michael Perel, Human Factors Research, Safety Programs, NHTSA
- 11:20 Federal Highway Administration: Older Road User Program and Roadway Design Guidelines Karen Yunk, FHWA New Jersey Division Office
- 11:55 Safety through Es Engineering, Education and Enforcement Patricia Ott, Director of Traffic Operations, NJDOT Lieutenant Paul Krupa, NJ State Police
- 12:45 Question and Answer and Facilitated Discussion

## LIST OF PARTICIPANTS

Rosemarie	Anderson	Delaware Valley Regional Planning Commission
Morteza	Ansari	Keep Middlesex Moving, Inc.
Bill	Beans	NJDOT Bureau of Safety Programs
Howard	Berger	Senior Citizens Advisory Board
Sandra	Brillhart	Greater Mercer TMA
Jon	Carnegie	Voorhees Transportation Center
Margaret	Chester	Middlesex County AAA
Bill	Cicchetti	State Chiefs of Police Association
Adele	Clark	Greater Mercer TMA
Flora	Davis	CWW
Beth	DeAngelo	Parsons Brinckerhoff
Kathy	Diringer	NJDOT, Bureau of Policy
Grace	Egan	NJ Foundation For Aging
Lois	Favier	NJ Foundation For Aging
Meghan	Fehlig	Parsons Brinkerhoff
Pam	Fischer	AAA - NJ Automobile Club
Susan	Franson	American Red Cross
Marilu	Gagnon	Atlantic County Intergenerational Services
Barbara	Geiger-Parker	NJ Brain Injury Associaion
Nat	Giancola	AARP - Driver Safety Program
Lois	Goldman	North Jersey Transportation Planning Authority
John	Hainsworth	Cross County Connection TMA
Janet	Hanson	Rutgers-CAIT - LTAP
Норе	Hezel	Morris County Department of Human Services
Kathy	Higham	NJ Motor Vehicle Commission
Darren	Jaffe	Cross County Connection TMA
Kay	Klotzburger	Stephenson-Klotzburger Foundation, Inc.
Paul	Krupa	Dept. of Law & Public Safety Division of NJ State Police
Walter	Lane	Somerset County Planning Board
Peggy	Lanni	City of Bayonne Office on Aging
Andrea	Lubin	Voorhees Transportation Center
Jerry	Lutin	New Jersey Transit Corporation
Claire	McLaughlin	Bacharach Institute for Rehabilitation
Ashley	Marchowsky	Atlantic County Intergeneration Services
Lynne	Mason	St. Lawrence Rehabilitation Center
Roger	Mayer	Township of Washington Police-Bergen County
Pam	Maiolo	Automobile Association of America
Carrie	Monagle	St. Lawrence Rehabilitation Center
Marco	Navarro	Robert Wood Johnson Foundation
Richard	Nead	Kessler Institute for Rehabilitation
Patricia	Ott	NJDOT, Division of Traffic Engineering and Safety
Michael	Perel	NHTSA – Vehicle Safety Research
Stephanie	Potapa	NJ Department of Transportation
Rick	Remington	Voorhees Transportation Center
Martin	Robins	Voorhees Transportation Center
Beth	Rolland	Kessler Institute for Rehabilitation
Kim	Sarik	Princeton Healthcare Systems

VTC

New Jersey Foundation for Aging

Catherine	Scott	Atlantic County Senior Citizens Advisory Board
Kathleen	Seaman	NJDHSS - Division of Aging and Community Services
Ronnie	Siriani	NJ Transit
Karen	Smith	Somerset Medical Center
Lynn	Thornton	West Windsor Senior Center
George	Ververides	Middlesex County Dept. of Planning
Robert	Vilak	Ocean County
Erma Polly	Williams	New Jersey Division of Addiction Services
Pippa	Woods	Voorhees Transportation Center
Karen	Yunk	Federal Highway Administration - New Jersey Division

# **APPENDIX 1**

## **PRESENTATION SLIDES**

## AAA Lifelong Safe Mobility

Pam Fischer Vice President, Public Affairs AAA New Jersey Automobile Club

### Safe Mobility at Any Age

Essie Wagner Program Analyst NHTSA

### Making Vehicles Safer for Older Drivers

Michael Perel Human Factors Research, Safety Programs NHTSA

### FHWA Older User Program & Roadway Design Guidelines

Karen Yunk FHWA New Jersey Division Office

### **NJDOT Safety Initiatives**

Patricia Ott Director, Traffic Engineering & Safety NJDOT

Lieutenant Paul Krupa NJ State Police



Alan M. Voorhees Transportation Center Edward J. Bloustein School of Planning and Public Policy

Safe Mobility at Any Age Policy Forum Series

Forum #3 The Future of Vehicle and Roadway Safety and Design

April 29, 2004

Robert Wood Johnson Foundation College Road East & Route 1 Princeton, New Jersey

<u>RUTGERS</u>

#### Safe Mobility at Any Age Policy Forum Series

- Cosponsored by the Alan M. Voorhees Transportation Center and New Jersey Foundation for Aging
- · Policy Forum Topics:
  - Facts and myths related to NJ's mature driver
  - Maryland Safe Mobility Research Consortium
  - Functional fitness to drive assessment and screening
  - Safety perspectives addressing roadway design, vehicle design and adaptive technologies to improve safety
  - Regulatory practices and compliance issues related to driving licensure
  - Community mobility options for those who cannot or wish not to drive

VIC

#### New Jersey's Mature Driver

- Crash incidence declined with the age of the driver although fatalities increased
- Crash characteristics:
  - More crashes during daylight hours and good weather
  - More crashes on local and private roads
  - High incidence of left turn crashes
  - Crashes most often due to:
    - Driver inattention
    - · Failure to yield right of way
    - Failure to yield light of way
      Failure to obey traffic signals
    - Older drivers more likely to be at fault

Source: The Mature Driver in New Jersey, Dr. Naomi Rotter and Dr. Claire McKnight

#### Products and Policy Outcomes Identified by the Maryland Consortium

- Functional areas identified as significant predictors of "atfault" crashes:
  - Visualization of missing information
  - Direct visual search
  - Information processing speed under divided attention conditions
  - Working memory
  - Leg strength and general mobility
  - Head and neck flexibility

VTC

#### Products and Policy Outcomes Identified by the Maryland Consortium

- Functional capacity screening adds value to traditional medical evaluation procedures
- Identifying functional loss can promote safe mobility by allowing earlier intervention (and remedial help)

Source: Maryland Consortium, Dr. Loren Staplin

#### VTG

#### NJ Motor Vehicle Commission Medical Advisory Board

- Most medical review referrals are made by concerned physicians and/or family members
- · Referrals cannot be made anonymously
- Medical reviews may result in reinstatement of an individuals license or a recommendation for additional testing
- MVC is in the process of upgrading its capacity to proactively pursue medical reviews when license holders with long-standing medical conditions or those with time limited suspensions come up for license renewal

VTC

#### Best Practices for Functional Assessment and Health Screening

- · Functional fitness to drive assessments should include:
  - Vision
  - Cognition
  - Motor performance
  - Reaction time
  - Roadway knowledge
- Functional assessments will NOT answer whether a person can drive safely, but they can help to identify diminished capacity
- Only clinical testing can provide a full picture of how an individual is likely to perform while driving

VTC

#### Resources for Improving Skills and Rehabilitation

- American Occupational Therapy Association (AOTA) Older Driver Initiative
  - Educate occupational therapists and promote awareness that driving is and instrumental activity of daily living
  - Increase awareness of the needs of older drivers
  - Promote working with older drivers as a viable practice area
  - Develop a "good practice" guide and continuing education materials for occupational therapists through a cooperative agreement between the NHTSA and the CDC

VIC

#### Resources for Improving Skills and Rehabilitation

- Certified Driving Rehabilitation Specialists (CDRS)
  - Six CDRSs practicing in New Jersey
  - CDRSs are trained to perform fitness to drive evaluations using medical history, physical examination, vision, cognitive and perceptual skills testing and behind-the-wheel road testing
  - Based on evaluation, CDRSs provide occupational therapy as well as vision and driver skills training, as needed
  - If prohibition on driving is recommended, CDRSs assist client and their family to explore community resources for alternative transportation
- · AARP Driver Safety Program



#### Acknowledgments

The New Jersey Foundation for Aging and Alan M. Voorhees Transportation Center wish to acknowledge the following organizations for their generous financial support:

**Stephenson-Klotzburger Foundation** 

Thomas and Theresa Berry Foundation

Wallerstein Foundation for Geriatric Life Improvement

Automobile Association of America - NJ Automobile Club

www.policy.rutgers.edu/vtc

VTC



## Update

- Brief Review of AAA Lifelong Safe Mobility activities
- 2. Roadwise Review Senior Driver Screening Tool
- 3. CarFit
- 4. AAA Foundation for Traffic Safety activities

## Lifelong Safe Mobility...

- Safety Preventing Deaths and Injuries (physical health)
- Mobility Maintaining ability to travel, with or without driving (social activity and mental health)

<u>AAA's Goal</u>: To help seniors stay mobile for as long as safely possible.

### AAA Senior Mobility Activities

- AAA Senior Mobility Club Liaisons
- Education Materials
- AAA Mature Operators Course
- Legislation and Policy Information
- Senior-Friendly Road Design Information
- Public Relations Materials
- AAA Foundation for Traffic Safety
- Partner Organizations & Contacts
- Internet Resources on Senior Mobility

## Straight Talk for Mature Drivers Brochures

- Available free from AAA Clubs
- · Recently updated



#### Legislation & Policy Information

- AAA opposes us of age alone as sole criterion for driver testing
- AAA supports vision testing on a regular basis and skills testing when warrated
- AAA supports S1226 transportation plan/senior driving health centers









## What is CarFit?

- Open environment using vehicle to promote conversations about driving
- Provides information, education and community-based resources to an elderly driver in a non-threatening, quick and easily accessible manner
- · Promotes continued safe driving/mobility

AAA Foundation for Traffic Safety: Older Driver Involvment in Injury Crashes in Texas 1975-1999

- Drivers Over Almost Twice as Likely as Middle-Aged Drivers to Die in Car Crashes
- 65+ year olds are 1.78 times as likely to die 75+ year olds are 2.59 times as likely to die 85+ years olds are 3.75 times as likely to die.... As compared to 55-65 year olds
- Released February 2004, analyzed data from 4 million injury crashes



















#### **Need More Information?**

- Contact Essie Wagner:
  - Phone 202-366-0932
  - ∎E-mail
    - esther.wagner@nhtsa.dot.gov
- Contact NHTSA: <u>WWW.NHTSA.DOT.GOV</u>

### Handy Web links

- www.asaging.org/webseminars/
- www.aamva.org/drivers/drv\_AgingDrivers.asp
  www.ama-
- assn.org/ama/pub/category/10791.html • www.alzcare.org/crisis line.htm
- www.nhtsa.dot.gov/people/injury/olddrive
- www.seniordrivers.org





### **Older Driver Limitations**

- Slower response time
- Problems with glare and vision
- Restricted head/neck movement
- Can't focus close
- Difficulty attending to multiple tasks
- More variable in performance

## Percent Crashes/Age Group

	16-24	25-64	65+
Night	33	25	10
Intersection	50	50	60
Straight	60	55	50
Turning Left	10	9	11
<b>Rear-End Striking</b>	17.9	13.4	13.6
Lane Change Merge	2.7	2.6	4.8
Backing	2	2	4

## Older Drivers Need to Pay Attention to Car Design

- Seat belt comfort and ease of using
- Visibility through windows
- Mirror optics
- Minimizing dashboard clutter and confusion
- ■Usability of new technologies
- Good headlighting (visibility and glare)

# Glare Complaints Sent to NHTSA

- Causes annoyance and road rage
- Reduces vision
- Increases difficulty of using mirrors
- Distracts drivers
- Limits night driving
- It hurts the eyes

## High Intensity Discharge vs Halogen



Blue/white vs.

 Horizontal Intensity

Wide spread vs. limited spread

## Hypotheses/Findings

- HID Blue color: Novelty attracts attention
  - More attracted to brighter lights
- HID Blue color: Eyes more sensitive
  - Affects discomfort not disability glare
- Smaller lamps: Brighter luminance
  - Not a significant effect compared to intensity

## Hypotheses/Findings

- Wider Beam Pattern: Drivers exposed to glare longer during meeting scenarios Intensity influences object detection
- Does driver exposure to intensity from different beam patterns affect their glare recovery time?
  - Under investigation
- How good is headlamp aim?
  - Under investigation



#### **Positives**

-Allows longer object detection distances -Objects visible next to glare sources

#### **Negatives**

- May be difficult for older drivers to shift attention between road and display while driving
- May be difficult to recognize thermal images

Object Detection While Driving and Using an Infrared Night Vision Enhancement System (NVES)

- 14 Subjects (20-50, 66-83) asked to respond when they detected and recognized targets
- heated traffic cones
- pedestrians
- Subjects also asked to detect speed limit signs and stay within 5 mph of speed

## **Preliminary Findings**

- For Older Drivers without oncoming glare, pedestrian detection distance increased but not percent of pedestrians detected
- For detecting pedestrians in the presence of oncoming glare, NVES did not help **Older Drivers**
- Older Drivers used NVES less often than younger drivers



#### The Effects of Driver-Side Mirror Curvature on Gap Acceptance and Vehicle Detection



- NHTSA requires flat optics
- Field of view limited--requires head turns or time sharing with inside mirror
- Curved mirrors increase field of view but minify image and require visual accommodation





# Adv Implications Misjudging gap may be overcome by slowing of approaching vehicle Detection errors for nearby vehicles have immediate crash consequences Convex mirrors, such as aspherics, may be helpful to older drivers

## Advanced Vehicle Crash Warning Technologies

- Forward Crash Warning
- Lane Change/Blind Spot Warning
- Rear Object Detection Systems
- Road Departure Warning
- Intersection Collision Warning

# Advanced Information and Telematics Systems

•Navigation •Email, Internet •Audio/Video entertainment •Head Up Displays •Voice controlled information Vehicle Technologies: A good prescription or a bitter pill for older drivers?







Voice system challenge: Hands free, not risk free













#### History of FHWA Older Road User Activities

- 1988: TRB 218, Transportation in an Aging Society
- 1989: FHWA High Priority Area: Safety and Mobility for an Aging Population





U.S. Depar of Transpor Federal His

#### History of FHWA Older Road History of FHWA Older Road User Activities (continued) User Activities (continued) • 2000 & 2003: Revised Manual on • 2003: Guidance for Implementation of the **Uniform Traffic Control Devices** AASHTO Strategic Highway Safety Plan • 2001: Revised AASHTO Green Book 2003: Demonstration projects to evaluate the effectiveness of older road user quidelines • 2001: Revised Highway Design Handbook for Older Drivers and • 2004: Travel Better, Travel Longer Pedestrians **Pocket Guide** 0 0 U.S. Departmen of Transportatio Federal Highwa U.S. Departm of Transportat Federal Highw







#### **Countermeasures to Accommodate Visual Changes**

- Bigger & Brighter Traffic Signs; Larger Legends; More Contrast
- Brighter Pavement Markings & Delineation of Curbs/Medians
- Overhead Placement of Signs & Signals
- 1 Increased Use of Highway Lighting

#### **Older Drivers: Mental Changes**

- ➔ Divided Attention
- ➔ Processing Speed (Perception-Reaction Time)
- ➔ Working Memory

#### **Countermeasures to Accommodate Mental Changes**

- \* Redundant Signing
- Protected Operations
- Increase PRT in Design & Operations
- ✤ Positive Offset of Left-Turn Lanes

#### **Older Drivers: Physical Changes**

- Reduced Limb (arm, shoulder, leg, knee, foot) Strength, Flexibility & Range of Motion
- Reduced Head/Neck and Upper Torso Flexibility & Range of Motion

#### **Countermeasures to Accommodate Physical Changes**

- **+** Eliminate Skewed Junctions
- ✤ Increase Perception-Reaction Time in Intersection Sight Distance Calculations
- ✤ Enlarge Curb Radii at Intersections
- ✤ Use Parallel Entrance Ramp Geometry
- Assume Slower Walking Speed for Pedestrian Signal Control



# Changes to the National Standards Legibility Distance • Historically: 1 inch = 50 feet

• 2003 MUTCD:

1 inch = 40 feet

• Optimum:

1 inch = 30 feet













#### **Demonstration Projects**

Massachusetts Governor's Highway Safety Bureau will address work zone safety



#### Summary

- Infrastructure changes have been identified and promoted by FHWA
- FHWA is working with partners to improve safety and mobility of older road users and all road users
- Accommodating needs and capabilities of older drivers can help all drivers

#### THANK YOU!!!

Karen Yunk Traffic Operations & Safety Engineer Federal Highway Administration – NJ Division 609-637-4207 <u>karen.yunk@fhwa.dot.gov</u>



	2001	2002	2003
Annual Vehicle Miles Traveled (Billions)	68.497	69.812	70.000+
Crashes	312,697	319,980	324,000-
Fatalities	745	773	750
Pedestrian	134	177	147

## Safety through Es

- Engineering
- Education
- Enforcement

# Highway Safety Task Force (Nov. 2002)

- High Level Commitment
- Multiple Agencies/Organizations
- Strategies Developed & Implemented

## Safety First Legislation (July 2003)

- Safe Corridor Program
- Equipment Violation Penalties
- Penalties for Out-of-State Overweight Carriers
- Establish Highway Safety Fund
- Establish a CDL Points School

## Safety Initiatives

Intersection Improvement Program Median Barrier Program Statewide Traffic Records Coordinating Comm. Local Safety Initiative Safety Conscious Planning Safety Management Task Force Pedestrian Improvement Program Safe Corridors AASHTO Lead State Initiative Transportation Safety Resource Center Safe Streets to Schools Senior Safety Pilot Program

## Stats

- 1 in 8 Americans are 65 or older
- By 2030 1 in 5 Americans will be 65 or older
- 13% of New Jersey population is 65 or older
- 15% of New Jersey drivers are 65 or older

# Stats (65 or Older)

2003

 2001 41,834 crashes 12,200 injuries 122 fatal crashes 477 pedestrian injuries 32 pedestrian fatals
 2002 41,806 crashes 12,110 injuries 118 fatal crashes 463 pedestrian injuries 30 pedestrian fatals 40,962 crashes 11,719 injuries 94 fatal crashes 485 pedestrian injuries 18 pedestrian fatals

## Senior Safety Study

- 2002-03 conducted a study of policy initiatives to improve transportation of the state's senior population
- Study focused on strategies to help accommodate any special needs of seniors while improving the overall level of highway safety
- Strategies include a combination of improvements in engineering, design, operations, motorist communication, and education

## Senior Safety Pilot Program

- Partnership with the Departments of Transportation, Health & Senior Services, Education, and State
- Pilot 3 locations for Improvements
- In conjunction with HealthEASE, Live Long, Live Well Walking Program
- In conjunction with the Learn & Serve America Program
- AARP 55 Drive Alive Sponsor

## NJDOT Engineering Improvements

- Enhanced Signing
- Enhanced Striping/Pavement Markings
- Signal Improvements
- Pedestrian Treatments
- Lighting Enhancements
- Geometric Improvements

## Moving Forward

- Senior Safety Program
- Senior Study Implementations
- Continued Partnerships