STRATEGIC PLANNING FOR MATURE DRIVERS: FOUNDATIONS AND STRATEGIES

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Issues surrounding mature drivers appear to receive increasing attention in the public and research settings. Anticipating significant growth in the number of mature drivers in the Commonwealth, it is clear to the Virginia Department of Motor Vehicles (DMV) that a strategic plan needs to be developed to identify and address many of these issues. In 1998, George Mason University's Center for the Advancement of Public Health (GMU's CAPH) prepared a detailed study for the Virginia Department of Motor Vehicles on mature drivers; this study incorporated an extensive methodological approach, including a literature review, key informant interviews, and national survey (see www.caph.gmu.edu). The current approach was undertaken to provide a sound foundation for a strategic plan. The approach used included an extensive review of current published findings since the 1998 report, a review of approaches and resources at the state and national levels, and selected key informant discussions.

In the organization of this document, care has been taken to provide documentation and background information helpful for decision-makers in the finalization of an appropriate strategic plan. A key consideration is that the development of a strategic plan for the Commonwealth of Virginia is a significant undertaking. The development of a strategic plan for Virginia represents the forging of new directions; no substantive approaches to this challenging issue currently exist in other states in a publicly-available format. Further, the information gathered in the process of preparing this document demonstrates the complexity of the issue of addressing mature drivers. Specific information is provided within a framework that elucidates the issues from both broad and specific perspectives.

This document is organized around the range of key issues identified. Following a review of background information, these key issues include the following:

- Physical Considerations: Eyesight
- Physical Considerations: Turning and Driving Activities
- Physical Considerations: Other
- Essential Services
- Knowledge
- Quality of Life
- Intermediaries: Family

- Physical Considerations: Reaction Speed
- Physical Considerations: Fragility
- Self-Determination
- Medication
- Self-Sufficiency and Independence
- Intermediaries: Medical/Health Professionals
- Staying Current and Cost-Effective

Within each of these key issues are four components: (1) Informational Foundation; (2) Implications; (3) Potential Strategies; and (4) Strategic Plan Considerations.   The detail provided offers insight and issues from a variety of studies and reports.   This document is not prepared as a literature review; it is organized in a way that is useful and appropriate for decision-makers and policy-makers, with references and resources used included in an Appendix.   The findings are organized in a brief, bulleted format to provide ease of understanding and review.   For each of the items identified in the Informational Foundations section, the resource can be identified.   It is also noteworthy that some of these facts may not be consistent; this represents the disparate content associated in the professional literature regarding mature driving issues.

Several cautions underlie this draft document.   First, this initial draft of these outlines the range of issues and considerations underlying a strategic plan for mature drivers for the Virginia Department of Motor Vehicles.   Within the scope of this document, deliberations will determine the extent to which specific content areas may be further developed.   In a related way, some components included in this document would more appropriately be addressed by other agencies or offices.   This document is viewed as a preliminary resource to initiate more formalized discussions around the strategic plan for mature drivers.

A related caution underlying the development of this document is that this does not represent a detailed report on mature driving issues, similar to what was done by George Mason University's Center for the Advancement of Public Health in 1998.   This also does not represent a full and complete review of all activities undertaken on mature driving issues in all states.   Further, this does not represent items and issues relevant to mature drivers that were not found in the professional literature; for example, no mention of hearing difficulties and their relationship to driving was found.   What this discussion does represent is a fairly comprehensive synthesis of key issues and topics associated with mature drivers.   Within the scope of work associated with this discussion, a detailed study was outside the range of activities; however, a focused synthesis of key issues and considerations is included.

With regard to implementation standards, specific timelines and areas of responsibility have not been identified. Rather than specify a detailed timeline, the premise is that this issue is quite complex, as well as very time-sensitive. The premise throughout the preparation of this document is that deliberate planning activities occur in a timely manner.

Foundations

In the development of a strategic planning resource helpful for mature driver issues, it is critical to state clearly the foundations and guiding principles underlying the development of this resource.   It is both surprising and not surprising that no substantive strategic plan is publicly available on mature driving issues from other states.   While some states may have developed a strategic plan, this is not readily available from a review of all state DMV web sites.   Further, a thorough review of DMV-related web sites for each state revealed only a modest amount of general information (this is included in an Appendix to this document).   The surprise regarding the development of a strategic plan is based on the fact that the older driver population is increasing, and additional increases are clearly anticipated in the years and decades to come.   The important need of anticipating and preparing resources and strategies to this emerging issue appears to not be addressed in a publicly-available manner.   The lack of current strategic plans on mature drivers is not surprising, in part due to the apparent desire by some to have a "simple fix" for the issue, and by others to maintain the status quo.   This document attempts to provide the background and information that will be helpful for orchestrating a sound strategic plan for the Commonwealth of Virginia.

The aim of any strategic plan for addressing mature driver issues is to address this issue in a manner that is grounded in several perspectives:
- Incorporate the greatest safety on the highway for all individuals.
- Maintain the quality of life for the mature driver, both as a person and as a driver.
- Consider a comprehensive, holistic perspective, with its various components integrated.
- Be as cost-effective as possible.
- Anticipate future changes in the population and society.
- Emphasize self-directed approaches over externally-imposed strategies.
- Engage key constituencies in addressing this issue, both in developing an overall strategic plan and in implementing this at the local and individual levels.
- Focus on resources and implementation strategies at the state and local levels with attention to urban, rural, and suburban settings.
- While acknowledging the role of age in developing a mature driving strategic plan, focus more on specific behaviors and conditions; age alone should not be the only consideration.

In the development of a strategic plan at the state and local levels, these perspectives should be reviewed for consideration as foundations.   That is, these foundation perspectives, among others, can become the basis upon which specific strategic plans are based.

Background Information: Mature Drivers

Informational Foundation

- The nature of the U.S. population is changing; individuals aged 65 and higher grew 11-fold from 1900 to 1994, while those under age 65 grew three-fold.   The estimate is that, by 2050, there will be 80 million citizens above age 65.
- In 2050, 21% of the population will be above age 65.
- The percentage of Americans aged 65 and higher is projected to increase from 12.8% in 2000 to 20.7% 2040.
- By 2050, the world's population of elderly persons will exceed the population of children.
- In 1975, there were 130 million licensed drivers; in 2001, there were 191 million.
- In 1975, there were 126 million vehicles; in 2001, there were 221 million.
- If 75% of older adults are licensed to drive, expect 60 million licensed drivers over 65 by 2050.
- The proportion of older persons licensed to drive is rising, largely the result of more older women driving.
- There were 18.9 million older drivers licensed in 2000, an increase of 36% since 1990.
- There are 22 million drivers age 65 and higher, representing 13%.
- Of drivers aged 65 and older, one out of 12 is at least 80 or older; in 1950 this was 10%.
- Medical breakthroughs result in an increase in life expectancy.
- Increasingly, older drivers are keeping their licenses longer and driving more.
- Relatively few deaths of elderly people (1% or lower) involve motor vehicles.
- 1998, individuals age 65 and higher represented 13% of population, and accounted for 17% of traffic fatalities.
- Older drivers have among the highest motor vehicle crash rates per vehicle mile traveled.
- Older drivers are more likely to have crashes on local roads (rather than state/interstate highways).
- Per mile driven, the fatality rate for drivers 85 and older is 9 times higher than the rate for drivers 25-69.
- Annually, 3,000 older drivers are killed; 100,000 are injured.
- The age at the time of stopping driving ranged from 65 to 95 years; the mean age is 85.5.
- Fewer older people are licensed to drive (proportionally) compared with those ages 20 to 64.
- Motor vehicle crashes in older adults are relatively uncommon events, primarily due to their driving fewer miles per year.
- Poor driving ability among older drivers is more apparent in locations that are densely populated areas and when driving conditions are challenging.

- Older drivers are three times more likely to be cited for failure to yield right of way than drivers in other age groups.
- Mature drivers are more likely to be involved in left-turn and angle collisions (not rear-end collisions), compared with middle-age counterparts.
- Highest driver fatality rates found with youngest and oldest drivers.
- Age alone is a poor predictor of individual driving ability.
- Older Americans travel extensively, and rely on personal vehicles as heavily as their younger counterparts. Older Americans conduct 89% of their travel in personal vehicles.
- Older adults are less mobile, take fewer trips, travel shorter distances, have shorter travel times than other drivers.
- Older adults are more likely to suffer from self-reported medical conditions that further limit their travel; this pattern is more pronounced among older women.
- Traffic safety concerns with older adults include driving and as pedestrians.
- Anticipation of a longer, healthier lifespan prompts many older Americans to postpone retirement and continue active, independent and productive lifestyles.
- Many factors combine to produce circumstances that may lead to a motor vehicle crash; there is rarely a single cause of such an event.
- Since the 1970s, progress has been made in reducing the number of fatalities and injuries on roads. From 1975 to 2001, this was reduced by 5%; fatality rate per 100 million vehicle miles traveled was reduced 55% (3.35 to 1.51).
- Speeding was a contributing factor in 15% of all crashes, and 30% of all fatal crashes (1997-2001).
- There is a strong relationship between a driver's age and the likelihood of being involved in a crash. Age, itself, is not the cause of the crash – some of the characteristics displayed at various ages can lead to a higher probability of being involved in traffic crashes.

Implications

- The growth of this age population is significant, including longevity of life considerations.
- In reviewing factors that contribute to crashes, injuries and fatalities, consider the range of factors, including human factors, roadway and environmental factors, and vehicle factors.
- To have mandatory retesting of just the older segment of the driving population would not solve a problem shared by 2 age groups.
- Just retesting older drivers could be discriminatory as well as costly.
- A better understanding is needed of the factors that influence older drivers to stop driving; this will help public health and medical practitioners, as well as family members, as they advise those who need to stop driving or who are considering it for safety reasons.

Potential Strategies

- Monitor data of the population, licensed drivers, crashes, injuries, and fatalities for the state, region and nation.

- Carefully examine factors contributing to crashes, injuries and fatalities, including human factors, roadway and environmental factors, and vehicle factors.

Strategic Plan Considerations

1. Analyze state data based on age and gender; review retrospectively to determine causal and contributing factors associated with crashes, injuries and fatalities.
2. Incorporate data on older citizens regarding pedestrian (non-driving) injuries and fatalities, including associated causal and contributing factors.
3. Monitor national and other state data on crashes, injuries and fatalities.

Physical Considerations: Eyesight

Informational Foundation
- There is a reported relationship between driving and vision.
- Impairment in near vision is significantly associated with crash risk.
- Glaucoma is a widely cited eye problem.
- Cataracts are noted as a leading cause of vision impairment in older adults; 50% of white adults 65-74 have cataracts, with a higher prevalence of 60% in African Americans.
- Cataracts cause deficits in acuity and contrast sensitivity, and increased disability glare.
- One specific issue with vision is decreased dark adaptation; the average 60 year old requires 8 times more light than the average 20 year old.
- Older adults have increased sensitivity to glare.
- Older adults have restrictions in the area of visual attention.
- With aging comes reductions in contrast sensitivity.
- Neither vision test scores nor age accounted for more than 7% of the variation in types of self-restriction.
- Five vision tests were not significantly associated with crashes that occurred in previous 3 years.
- A pattern of difficulty in high-risk driving situations is noted among those with decreased visual acuity and contrast sensitivity, even after adjustments for age, gender, weekly mileage, cognitive impairment.
- In a survey of older drivers, 25% cited vision as the reason for stopping driving.

Implications
- Many of these visual losses occur early around age 20.
- Many individuals are unaware of their vision problems.
- Drivers with visual impairment may modify their driving behavior.
- Tests that measure higher-level visual functioning (e.g., visual processing speed) may prove to be better predictors of crashes than tests that measure acuity alone.
- Most states require license renewal applicants to appear in person and to pass a vision test. The range is from 2 to 8 years since the previous test.
- Cataracts are highly treatable; the impact of surgery on driver safety suggests half the rate of crash involvement after surgery.
- Care should be provided to not over-emphasize vision testing as the primary (sole) criteria for driver license renewal.

Potential Strategies
- Improve roadway markings and striping, including the use of reflective tape, metal implants and more visible pavement markings.
- Have 6" pavement markings.

- Incorporate 40' spacing for reflective pavement markings.
- Incorporate these changes into routine maintenance activities.
- Improve the luminance contrast for new materials; these materials often exceed minimum requirements.
- Incorporate increased lighting at intersections and roadways.
- Incorporate the use of raised pavement markers.
- Use the "Highway Design Handbook for Older Drivers and Pedestrians"
- Include eye screening at licensure.
- Target education and eye care services, to address undercorrected refractive error.
- Promote medical treatment of eye problems.

Strategic Plan Considerations

1. Work with road planners at the state and local level to incorporate state-of-the-art materials in new roads, road repairs, and road redesign; this includes the highest quality luminance materials for road striping as well as raised pavement markers.
2. Monitor national and other states' incorporation of materials and strategies to address vision issues.
3. Use the "Highway Design Handbook for Older Drivers and Pedestrians," to incorporate key elements into local and state design.
4. Identify ways to educate eye care services about the assessment and educational role they may provide.
5. Promote public awareness of the range of types of eyesight limitations, including those that occur at any age and those that tend to increase with age.
6. Identify cost-effective eye monitoring devices to provide self-assessment opportunities for individuals.   This may be undertaken in conjunction with local governments or local service organizations.
7. Engage optometrists and other eye medical specialists with identifying strategies for early detection and programming.

Physical Considerations: Reaction Speed

Informational Foundation
- As an individual gets older, there is a tendency to have slower perceptions, slower decision-making, slower reactions, slower driving.
- With age, there is increased difficulty in dividing attention between potential conflicts and traffic information.
- The reaction times for older drivers may be up to 30% greater than among younger drivers.
- The use of medications with older drivers may play a role with the increased reaction times.
- Violations citing older drivers were most frequently due to careless driving; this is noted as being similar to inattention as a cause of accidents.

Implications
- Attention to reaction time is important.
- Careless driving is difficult to remedy.
- Awareness about the impact of medications can be addressed.

Potential Strategies
- Incorporate advanced traveler information systems that relay timely information (e.g., navigation instructions).
- Encourage older drivers to enroll in voluntary, educational programs that help compensate for diminishing capabilities.
- Train older drivers with techniques for focusing their attention while behind the wheel; include training for ways of maneuvering safely at intersection.
- Consider human engineering with a device that would warn drivers of on-coming cars and whether they can get through the intersection safely.
- Increase the emphasis on traffic control through work zones.
- Obtain a statement from an individual's physician that the individual is physically and mentally competent to drive.
- Incorporate a reaction test as a requirement for license renewal.

Strategic Plan Considerations
1. Identify state-of-the-art engineering systems that could help with earlier warning of roadway changes, work zones, and intersections.
2. Promote incentives for training activities for focusing attention while driving.
3. Explore the feasibility of cost-efficient, time-efficient and accurate reaction testing during license renewal.

Physical Considerations: Turning and Driving Activities

Informational Foundation
- At grade intersections are cited as older drivers' most serious crash problem area.
- Older drivers' number two problem area is with merging / weaving and lane changing operations.
- Seriously injured older occupants are more likely to be involved in side-impact crashes than their younger counterparts.
- Physical impairment can lead to driving restrictions.

Implications
- Provide attention to the conditions surrounding side-impact crashes.
- Examine vehicle technologies that can help drivers avoid side collisions.
- Focus attention on interchanges (grade separation).
- Focus attention on roadway curvature and passing zones, as well as highway construction and work zones.

Potential Strategies
- Design cars that older drivers can maneuver safely, that provide comfort, and that promote the need to stay attentive.
- Incorporate suggestions and recommendations from FHWA's "Highway Design Handbook for Older Drivers and Pedestrians."
- Consider inclusion of a road test for driving license renewal candidates age 75 and older.

Strategic Plan
1. Work with road construction planning and oversight agencies to identify ways that intersections can be most safely designed or re-designed, particularly with roadway construction and roadway upgrades.
2. Identify specific approaches that are cost-effective, valid, and time-efficient for road testing for driving license renewals.

Physical Considerations: Fragility

Informational Foundation
- Fatal rates are higher per mile driven for older drivers, in part due to increased susceptibility to injury (chest injuries, medical complications) rather than an increased tendency to get into crashes.
- Fragility is the predominant factor explaining the elevated deaths per mile among older drivers.
- Fragility begins to increase at ages 60-64.
- Older people are more likely to travel in passenger cars, compared with younger people who frequently use light trucks.

Implications
- Change the design of the automobile, for the frail elderly; include safer cars.
- The risk of fatalities for those age 65 and older could be better handled by redesign of the automobile rather than changing policy regarding licensure.
- Make highway infrastructure improvements (streets easier to drive, reduce confusion).

Potential Strategies
- Incorporate larger roadway markings, traffic signs.
- Make design changes at intersections, such as special lanes for left turns, left turn arrows, and modified signal timings at traffic lights.
- Include striping of roadways.

Strategic Plan Considerations
1. Explore more specifically what physical features are appropriate for automobile design.
2. Explore what roadway construction and improvement activities would be most appropriate to reduce incidents of crashes, through review of incidents involving older drivers.

Physical Considerations: Other

Informational Foundation

- Dementia is reported to be the most important change that can affect crash risk of older drivers; the prevalence of this increases sharply with age.
- Drivers with dementia often lack insight regarding their limitations and overestimate their own ability.
- Cardiovascular dosease, Parkinson's disease, and arthritis cause physical limitations that affect driving ability.
- Functional disability and mobility are considerations with mature drivers.
- With age comes a reduction in strength and flexibility.
- Confusion increases, decision-making becomes more difficult, and multi-tasking is challenging with older drivers.
- Currently, highway design is controlled by the 85th percentile performance requirements; the "design driver" may soon be an individual over the age of 65.
- The role of personality is found in older driver behavior; those reporting driving violations were more likely to have high impulsivity scores.
- Heart disease that involves arrhythmias is of concern; this affects 1 in 4 Americans and is most common among those over age 65. Driving under highly stressful conditions is known to increase the heart's response to oxygenation requirements, thus contributing to an increased incidence of cardiac arrhythmias.
- The relationship between environmental stress (aggressive drivers, crowded roadways, rush hour traffic, weather conditions, confusing intersections) and the increased crash risk among those with cardiovascular disease is unclear.
- Four domains of perceptual-cognitive ability have been highlighted – directed visual search, information processing speed for divided attention tasks, ability to visualize missing information in an image, and working memory.
- In addition to the perceptual-cognitive approach, two physical functions emerged as measurement priorities – lower limb strength, and head/neck mobility (rotation).

Implications

- It would be helpful to simplify the driving task for older drivers.
- It would help to limit the amount of information to be processed in short time frames.
- For drivers with dementia, "self-regulation" is often accomplished by family, friends and health professionals who help them make driving decisions.
- The Driver Behavior Questionnaire and Driving Habits Questionnaire can help estimate driving errors and violations, and driving exposure.
- There is a need for greater reliance on more objective measures of driving behavior when assessing the impact of personality variables.
- Drivers can be put at increased risk because of impaired cognition or loss of conscious attention.

Potential Strategies

- Incorporate renewal of driver's license in person on a regular basis to maintain assurance of physical capabilities.
- Mail renewal of a driver's license is available only to those whose prior renewal was not by mail.
- Mail renewal of a driver's license is not available to those aged 69 or older.
- Use tests that are a true measure of one's cognitive function related to driving.   The Traffic Sign Recognition Test (TSRT) links cognitive function and the ability to interpret symbolic road signs (picture, no words); this successfully identifies older drivers with a recent motor vehicle crash, but the test lacks sensitivity and specificity, and in its current form it is not a useful screening device.
- Incorporate standard sign letters and increased size.
- Use large overhead street name signs at significant intersections.
- Use advance street name signs.
- Provide advance notice signs on freeways and for lane assignment at freeway entrance/exit ramps.
- Reduce the complexity of sign messages.
- Reduce the number of signs.
- Have clearer signing and clearer geometric design.

Strategic Plan Considerations

1. Review license renewal process, including standards for license renewal and when in-person and by-mail approaches may be appropriate.
2. Work with local and state road design agencies to incorporate appropriate and advanced signage.

Self-Determination

Informational Foundation
- There is a need for a better understanding of what factors actually influence older drivers to stop driving.
- The reported main reason for stopping driving is medical problems (41%); changes due to aging are cited by 19%, and licensing problems are cited by 12%.
- Of drivers who stopped driving, 2% stopped in their 60s; 18% stopped in their 70s; 63% stopped in their 80s; 17% stopped in their 90s.
- Nearly 2/3 of the sample who stopped driving within the previous 5 years were female; the mean age was 85.5 years.
- Females are more likely to stop driving earlier than men.
- The decision to stop driving may be a gradual process that is not explained by a single factor.
- Drivers who determine for themselves whether to drive and under what circumstances might retain their feelings of self-efficacy and affective well-being.
- Dementia is the most important change that can affect crash risk of older drivers, and the prevalence of this increases sharply with age.   However, demented drivers often lack the ability to be objective about their own limitations, tending to overestimate their own ability.

Implications
- Help the driver become an "activated driver."
- Maintain driving ability as long as feasible, while maintaining highway safety.
- Held the driver consider limiting the time/places of driving (e.g., daylight, off-peak traffic, familiar roads, shorter trips, lower speed roads, weather conditions).
- Drivers may already choose to avoid hazardous driving conditions.
- For those affected by dementia, "self-regulation" may be done by family, friends and health professionals who help make driving decisions.
- Symbolic traffic sign recognition tests can distinguish normal cognition from those with probable Alzheimer's dementia; however, a prospective examination of the TSRT's ability to predict crashes revealed a poor correlation.

Potential Strategies
- Use "Drivers 55 Plus Self-Rating Form" from AAA Foundation for Traffic Safety.
- Use the American Medical Association "Tips for Safe Driving."
- Test skills that are related to driving to identify gaps and problem areas.
- Use resources developed by American Optometric Association to help drivers who exhibit specific medical conditions, and the families of those drivers, who seek appropriate decisions about driving ability, risk and safety.   Examples include "Driving When You Have Cataracts," "Stepping Out-Mature Adults: Be Healthy, Walk Safely."

Strategic Plan Considerations

1. Identify a range of self-assessment tools that can help individuals review their capabilities with driving an automobile safely.
2. Identify the types of issues about which it would be helpful to have self-assessment process.
3. Examine the impact of using self-assessment resources on driving behaviors among mature drivers.

Essential Services

Informational Foundation
- It is important to maintain the ability to access services.
- The type of transportation preferred by most seniors is automobiles, as drivers or passengers.
- Independent mobility is important to maintain.
- For men and women to have to give up driving, alternative means of transportation become a necessity.
- Use of alternative transportation is relatively low – about 2% of daily travel.
- Of those with medical conditions that affect their travel, only about 12% use special transportation services such as dial-a-ride.

Implications
- Consider the perspective of accessible transport from a holistic perspective, not as pieces of equipment.
- Pedestrian safety becomes an important consideration, if driving or alternative transportation is not available.
- Place lifelong transportation at the top of the local and state government agenda to ensure healthy aging and strong communities.
- Because older citizens are more educated, healthier and more active than previous generations, there is a high expectation of transit service.

Potential Strategies
- Identify alternative transportation facilities and options.
- Identify ways of offering community-based or volunteer transportation services.
- Localities can prepare a listing of alternatives to personal transportation.
- Offer a volunteer-operated van and/or a county/city bus driven by a part-time driver.
- Consider use of lottery proceeds for coordinated service.

Strategic Plan Considerations
1. Explore a range of transportation options for inclusion at the state and local levels.
2. Work with localities to identify specific ways in which mature drivers will maintain access to essential services in the years to come.
3. Work with highway design planners to ensure that alternative transportation options are included in any roadway improvements or new roadways.

Medication

Informational Foundation

- Older adults' use of medication includes the use of licit drugs, including prescription, over the counter, and alcohol.
- Reaction times for older drivers may be up to 30% greater than for younger drivers; medication may play a role with this.
- At least ¾ of those 65 or older use prescription medications generally; Medicare recipients take an average of 10 medications daily.

Implications

- In assessing an individual's ability to drive safely, the combined effects of medications alone or in combination with the conditions they treat may affect driving more than age alone.

Potential Strategies

- Engage health professionals in monitoring "fitness to drive" based on prescribed medication.

Strategic Plan Considerations

1. Work collaboratively with the medical community to identify specific ways of communicating with mature drivers and their family/friend caregivers about the effects of specific medications on driving safety.
2. Incorporate pharmacists in the design and implementation of activities to reduce impaired driving among mature drivers.

Knowledge

Informational Foundation
- Many older drivers are not up-to-date on driving strategies and protocols.
- Three states and D.C. retest driving knowledge for license renewal after age 70.

Implications
- These tests for renewal have not been validated as predictors of motor vehicle crashes.

Potential Strategies
- Test knowledge and skills-based information on driving.
- Incorporate the use of driving simulators that help reeducate older drivers.
- Promote enrollment in educational, voluntary programs that help older drivers stay abreast of current laws.

Strategic Plan Considerations
1. Identify strategies appropriate to bring older drivers up-to-date on driving strategies, laws, standards, protocols, and related issues.
2. At the state and local level, incorporate incentives to encourage drivers to get and stay up-to-date.
3. Provide resource information and assistance in a manner friendly to the mature driver that demonstrates up-to-date information.

Self-Sufficiency and Independence

Informational Foundation

- Automobiles are the primary mode of transportation among older people.
- Older individuals typically do not plan for no longer driving.
- Older drivers are not aware of what public transportation services are available.
- Over half of drivers who perceived a likelihood of driving problems within the next 5 years expected to keep driving beyond 5 years.
- Loss of mobility in automobile transportation is viewed as a loss of independence; this then can result in social isolation.
- Throughout most of their lives, American adults have relied on themselves to drive.
- America's older citizens today have been defined by decades of an automobile culture, increasing suburbs that are deficient of available transit, and rural populations.
- The driver's license is a symbol of independence for both the new and older driver.
- The aim is to increase independence, maintain employment, delay placement in a nursing home, reduce health care costs, and improve the quality of life.
- The Medicare program's restrictions on transportation expenses have resulted in reduced access to medical services and preventative care.

Implications

- Maintaining transportation can help prolong employment.
- Maintaining transportation can delay placement in nursing homes.
- There is a tremendous reliance upon automobile transportation, without thoughts of alternative transportation approaches.
- Promote strategies to prevent driving cessation.
- When promoting the mobility of older people, acknowledge the strong societal reliance on the automobile.

Potential Strategies

- Encourage dialog about alternative transportation approaches.
- Promote strategies that will help in the transition from driver to ex-driver.
- Incorporate driver self-evaluation information systems that promote safe decisions about driving; this includes workbooks with self-assessments.
- Develop county-by-county listing of alternatives to personal transport; users can share experiences and rate services offered by alternative transportation providers.
- Review the Virtual Resource Center in Florida; this includes information on safety, assistive devices, testing of driving-related skills and knowledge.
- Offer a community education tool kit (e.g., American Society on Aging).

Strategic Plan Considerations

1. Promote discussion among community leaders and planners at the local and state level regarding available public transportation options.
2. Provide resources to facilitate discussions at the local and family level about alternative transportation options.

Quality of Life

Informational Foundation

- Next to health, senior citizens cite transportation as the most important issue.
- Most studies on driving cessation have focused on factors contributing to stopping, rather than the consequences of having stopped. Little is known about the consequences of driving cessation.
- Driving cessation is strongly associated with decreased out-of-home activity levels, after adjustment for socio-demographic and health-related factors.
- Respondents who stopped driving had greater risk of worsening depressive symptoms.
- For respondents who stopped driving, having a spouse available to drive did not mitigate the risk of worsening symptoms.
- After losing a driver's license, most people depend on informal support systems (rides from family and friends) for transportation.
- No increase was observed in the number of people walking, using public transit, taxi cabs or van services following license revocation.
- Because of differences in life expectancy, women require more years of support for transportation on average, than men after age 70.
- Drivers who select for themselves whether to drive and under what circumstances might retain their feelings of self-efficacy and affective well-being.
- Some caregivers indicated that they frequently missed work or stopped working entirely to care for/chauffeur people in the former drivers' household.

Implications

- With any process of restricting driving, it is important to maintain the quality of life, and/or improve the quality of life.
- When advising older drivers, consider the potential consequences of driving limitations or cessation, and alternative transportation strategies, to help maintain their mobility.
- It may be more appropriate to promote strategies that prevent driving cessation and promote safe driving behavior.
- Study ways in which the environment mediates the relationship between driving limitations and well-being.
- Certain groups of non-drivers reported difficult/accessing services, especially social and recreational destinations; this is due to a lack of transportation options or available licensed drivers to chauffeur non-drivers.

Potential Strategies

- Use self-evaluation/self-assessment workbooks to encourage safe driving behavior.
- Promote advanced traveler information systems that relay timely information.
- Use driving simulators to re-educate older drivers.

- Offer training and workshop programs to prepare older drivers for the life transition from driver to ex-driver.
- Develop transportation policies that incorporate alternative and accessible public transportation systems.
- Promote the functioning of informal transportation structures.

Strategic Plan Considerations

1. Facilitate discussions at the state and local level regarding the essential components of a quality of life for the older driver.
2. Identify and actively promote strategies that maintain an individual's driving for as long as safely possible.
3. Review the components of a quality life for older citizens, including accessible and affordable transportation options and support services.

Intermediaries: Medical / Health Professionals

Informational Foundation
- No nationally accepted guidelines exist to use in counseling older drivers.
- Nationally, there is a lack of consistency of reporting older driving behavior from the medical and health professions.
- The medical community has not been provided preparation to address older driver issues.
- Discussions about driving capabilities are sensitive for medical practitioners who provide their care.
- The American Medical Association has adopted "Impaired Drivers and Their Physicians," stating that physicians have an ethical responsibility to assess physical or mental impairments that might affect driving.
- States typically have medical review boards composed of health care professionals who advise on licensing standards and on individual cases.

Implications
- The medical community needs preparation and skills to provide appropriate assessment of mature drivers.
- Provide background information to the medical community so that their role can be accomplished easily.
- Driving is not addressed in discharge planning and outpatient counseling, although it is listed by the American Occupational Therapy Association as one of the activities of daily living.

Potential Strategies
- Promote guidelines for the medical community to use in identifying mature driver needs and issues.
- Identify and share resources that would be helpful to intermediaries and mature drivers about cessation of driving.
- Standardize forms, reporting mechanisms, criteria, and medical issues relevant to mature drivers.
- Collaborate with the medical and law enforcement communities to determine appropriate approaches.
- Identify specific problem areas that may interfere with safe driving to educate health practitioners and staff.
- Do a Training of Trainers, such as done by the American Medical Association; the curriculum is based on AMA's "Physician's Guide to Assessing and Counseling Older Drivers."
- Promote the use of the "Physician's Guide to Assessing and Counseling Older Drivers."
- Identify was of framing the issues surrounding driving, including the driver avoiding "unsafe driving," "impaired driving," "dangerous driving," and "unfit to drive."

Strategic Plan Considerations

1. Continue discussions of needs, issues, and potential directions with the DMV's Medical Advisory Board.
2. Conduct assessments and discussions with the medical community throughout the state about ways in which they can be involved in promoting decisions about safe driving among their patients; the medical community should be broadly defined, to include doctors, dentists, optometrists, nurses, and other caregivers.
3. Review the medical review policies and procedures, including a review of other states' medical review policies.
4. Review the standards surrounding reporting of medical conditions, including confidentiality considerations.
5. Discuss with health care providers and mature drivers ways of addressing this issue, primarily from a marketing perspective.

Intermediaries: Families

Informational Foundation
- Awareness of the issue is lower among the general population and influencer groups.
- Few resources are available to provide assistance to caregivers and family members.

Implications
- Increase awareness among these groups about the important role they can play.
- Identify specific strategies that family members can use, such as talking to an older driver or getting information.

Potential Strategies
- Provide information to family members about myths and facts surrounding mature drivers and driving safety.
- Examine resources developed by the American Optometric Association to help drivers who exhibit specific medical conditions, and the families of those drivers, who seek appropriate decisions about driving ability, risk and safety.

Strategic Plan Considerations
1. Conduct a needs assessment among family members about their review of needs, issues, roles and gaps surrounding the mature driver.
2. Identify and promote specific resources to family members in a variety of formats.

Staying Current and Cost-Effective

Informational Foundation
- A review of each state's DMV web site reveals only a single strategic plan on mature drivers.
- It would be helpful to have appropriate assessment criteria to objectively measure performance of older drivers. Cognitive abilities associated with crash occurrence were working memory, decision-making under pressure of time, confidence in driving at high speed.
- No tests have been identified which reliably and efficiently screen drivers for impaired driving skills.
- For ease of administration, any screening tools used by driver's licensing agencies should be simple, inexpensive, objective, not based on self-report, and easy to perform.
- Driving simulators, neuropsychological testing and physical performance parameters to screen for unsafe drivers have been studied, but there is little prospective information on actual crashes to support these evaluations in correctly identifying unsafe drivers.

Implications
- Based on the Maryland Pilot Older Driver Study and cost analyses, the cost-per-driver-screened was projected at $5 or less. The study identified the promise of new, more cost-effective testing methods, including automated testing.
- Identify state-of-the-art screening and monitoring tools that can be used at multiple levels: self-assessment, family, medical, licensing agency.
- Work to promote other states' strategic planning and sharing of current resources.
- Identify ways of having a review of an individual's ability to safely drive in a progressive, anticipatory manner.

Potential Strategies
- Review and monitor data from Virginia's database regarding mature drivers and specific factors that link to crashes, injuries, and deaths; this should include situational factors and those elements that contributed to the incident (such as environmental conditions, automobile considerations, and personal factors).
- Incorporate specific insights on incidents in Virginia, for examination as case studies and an overall synthesis for patterns and insights.
- Link to those who do studies, including the National Older Drivers Research and Training Center, NHTSA Public Information and Education projects, the AAA Foundation for Traffic Safety and its information clearinghouse on senior drivers.
- Review and synthesize current books, such as "When You Are Concerned."
- Conduct and report individual case studies on insights gleaned from the implementation of any of the range of approaches identified throughout this strategic planning resource.
- Report community-based local strategies, including successes and concerns.

- Review the "Compendium of Law Enforcement Older Driver Programs" for sample strategies and resources.
- Offer a re-examination with counselors who are specially trained to recognize problems that may affect a person's driving ability; this would include a private meeting, a review of the medical history, medication review, testing of reflexes and response time, assessment of the driver's judgment, awareness and thinking skills, and vision.

Strategic Plan Considerations

1. Closely monitor other states that are studying fitness to drive and preparing strategic planning documents.
2. Review carefully ways in which the mature driving issue gets framed and marketed, to help identify positive, respectful and safety-oriented messages.
3. Promote and report on research studies on focused and broad considerations surrounding mature drivers.
4. Monitor and attend conferences, such as those sponsored by the National Conference on Aging and Mobility and the North American Conference on Elderly Mobility (NACEM).
5. Partner with associations and organizations, such as the National Safety Council and the American Optometric Association.
6. Provide active consideration to a type of graduated licensing approach. Just as this is emerging as a viable strategy for new, novice drivers, this may be worthy of consideration for the mature driver whereby the focus shifts to the circumstances of driving (such as when and where to drive) rather than of not driving at all.

Summary

This strategic planning document provides an overview of the range of issues associated with mature driving.   As is clearly noted, addressing mature driving is a complex task that incorporates a wide range of issues.   With any of the approaches identified, multiple trade-offs exist.   Some examples illustrate this:

- While it may be feasible to assess an individual's driving skill, there may not be sufficient resources or time to accomplish this in a cost-effective manner.
- While an individual may be tested for issues related to vision, safe driving behavior may be compromised by an issue not related to vision.
- Restricting an individual's driving may dramatically affect the quality of life for him/her as well as for caregivers.
- Is self-assessment of the ability to drive safely valid and sufficient to provide an accurate criteria?

In the development of a strategic plan, the challenge is one of preparing this in a way that effectively balances the range of issues affiliated with mature drivers.   A primary aim is to develop a plan that maintains all of the desired elements (such as driving ability, independence, self-sufficiency) in a manner that maintains and promotes the safety on the highways.   To appropriately address mature driver issues is to undertake an overall systems approach that examines the range of intersecting approaches, many of which are identified in this foundational document.

This resource provides the foundation, in a preliminary way, for addressing mature driving issues.   Mature driving safety is not an issue that can be addressed with a single or simple approach; certainly, it is much more complex, as illustrated by the range of issues associated with this document.   The process is one that requires an engagement of officials from a range of offices and agencies at the state level; it is also one that would benefit from the engagement of personnel at the local level, as they are often the ones who will be implementing the strategies.   Addressing mature driving is, as noted at the onset, complicated by the range of perspectives and multiple constituencies associated with this audience.   Further, mature driving is complicated by the fact that this issue incorporates much, much more than driving safety.   The important consideration is that it be dealt with in a thorough and thoughtful manner, in an inclusive way, and with clear consideration of the facts and emerging resources. It is appropriate that this be dealt with at this relatively early date, as the audience targeted by this initiative is growing in numbers and proportion.   Being proactive, as is incorporated by this document, is both necessary and appropriate.

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