



FY 2017 Research Problem Statement

ODOT Research Section
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I. TITLE

17-020 Development of a Strategic Plan for Oregon's Approach to Ensuring the Safety of Aging Road Users

II. PROBLEM

Ensuring and monitoring the safety of older road users is a complex issue. Many of the challenges stem from driver licensing practices, such as the monitoring of medical issues that affect the ability to safely use the transportation system (e.g. degradation of vision (*Ball et al., 1998*), cognition (*Stutts et al., 1998*), and motor function (*Stelmach and Nahom, 1992*). In addition, there are more fundamental questions about societal mobility and how design and operational guidance can influence safety (e.g. the selection of pedestrian walking speed, sign letter heights, minimum illumination levels, dynamic signs and messaging). Overlaying these issues are societal norms and trends such as the desire to age in place, shifts in mode use from driving to transit or walking, and how these issues affect urban and rural areas differently. As the population ages—the National Association of Area Agencies on Aging reports that 25% of licensed drivers in the United States will be over the age of 65 by 2030—these issues will only become more important.

In Oregon, drivers older than 65 were involved in about 9,300 crashes, 65 of them the fatal in 2013. The fatal involvement rate (fatal crashes / total crashes) is the highest for the 75 and older category (0.79%) than any other age cohort tracked by ODOT. Relative to all drivers, Oregon drivers older than 65 have more errors coded to right-of-way, left-turn in oncoming traffic, and errors at a traffic signal. Overall, however, crash involvement appears lower per population (10% of all crashes, 19% of population) and they have far fewer speed-related errors coded such as too fast for conditions, failure to stop for a vehicle, or reckless driving (though some of this is caused by self-regulation such as driving at times of the day when there is much less traffic).

With respect to a comprehensive approach to safety for the aging road user, there are a number of guidance documents for transportation safety professionals to consider. FHWA maintains a focus or resource page on “Older Road Users” and has updated the Older Driver Handbook for designing roadways for the aging population. The NCHRP 500 series includes a guide for reducing collisions involving older drivers. Some work has been done in Oregon recently around driving cessation (*Neal et al., 2008*) and the medically at-risk driver issue (*Strathman et al., 2009*). While licensing is one key issue, there are other programs and design standards that could be modified or considered to benefit the aging road user. Examples questions include how novel dynamic information from ITS systems will be presented, and how car and ride sharing and on-demand digital taxi services will be used to support a significantly growing population of older drivers who may have specific difficulties with these technologies. ***For Oregon, there is no comprehensive understanding or inventory of safety efforts, design practices, and operational procedures as they relate to older road users.*** While some aspects of transportation safety that are important to older driver safety are covered by ODOT's Transportation Safety Division (TSD), no TSD program specifically targets safety education, training, and messaging towards older road users (or aging drivers).

The objective of this research is to identify best practices with a local and national review, inventory current practices in Oregon, and map the best practices to Oregon efforts such that places for improvement are identified.

III. PROPOSED RESEARCH, DEVELOPMENT, OR TECHNICAL TRANSFER ACTIVITY

The proposed research would likely consist of the following tasks:

1. Review past literature and practices related to safety of older transportation system users. This review would include published literature, state strategic safety plans, and best practices that have been implemented by

others. Given the broad scope of potential issues, the research team would seek to define the scope of the review with TAC input as part of this task.

2. Inventory and identify current practices in Oregon related to older road users. The scope and focus on Oregon DOT and partner agencies. The review would be guided by the literature review and best practices that were identified. The inventory would likely consider practices as they relate to:
 - a. Design, operations, and maintenance
 - b. Licensing
 - c. Mobility
 - d. Safety data programs
 - e. Other areas as identified in the literature review
3. Establish and recommend best practices for implementation in Oregon. Explore gaps in current practice and recommend strategies to employ. The research would look across all established best practices and the potential for these to be applied in Oregon. A part of the task will prioritize the gaps by importance to help aid decision makers with resource allocation for inclusion in a possible plan for improving the safety of older drivers and pedestrians.

IV. POTENTIAL BENEFITS

There are number of potential benefits to the proposed work. The review of best practices and an inventory of Oregon's practices could clearly help inform safety programs and policies. As the MAP 21 legislation has a new rule about incorporating strategies for to provide a safer transportation system for older drivers and pedestrians this research could help inform ODOT on those strategies and the approach for developing those strategies. As with many initiatives, any efforts to improve the transportation system for aging drivers also will benefit all drivers

V. IMPLEMENTATION

The gap analysis will clearly highlight opportunity areas for Oregon, provide analysis of best low-cost treatments, look most at risk elements for drivers, cyclists, and pedestrians, identify any promising countermeasures that are not currently being used, identifying at-risk features that could be especially applicable to systemic safety improvements.

VI. LIST OF REFERENCES (optional)

1. Neal, Margaret B., et al. The older driver in Oregon: A survey of driving behavior and cessation. No. FHWA-OR-RD-08-08. 2008.
2. Strathman, James G et al. Evaluation of the Oregon DMV medically at-risk driver program. No. FHWA-OR-RD-09-12. 2009.
3. Ball, K. Owsley, C., Stalvey, B., Roenker, D.L., Sloane, M.E., and Graves, M. Driving avoidance and functional impairment in older drivers. *Accid. Anal. And Prev.*, 30(3), 313-322, 1998.
4. Stutts, J.C., Stewart, J.R., and Martell, C. Cognitive test performance and crash risk in an older driver population. *Accid. Anal. And Prev*, 30(3), 337-346,1998.
5. Stelmach, G.E. and Nahom, A. Cognitive-motor abilities of the elderly driver. *Human Factors*, 34(1), 53-65, 1992.

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