



AOTA Critically Appraised Topics and Papers Series

**Driving and Community Mobility
for Older Adults**

**A product of the American Occupational Therapy Association's
Evidence-Based Literature Review Project*

CRITICALLY APPRAISED PAPER (CAP)

Focused Question

What is the evidence for the effect of policy and community mobility programs (e.g., alternative transportation, walkable communities, education, and pedestrian programs) on the participation of the older adult?

Grabowski, D. C., Campbell, C. M., & Morrissey, M. A. (2004). Elderly licensure laws and motor vehicle fatalities. *Journal of the American Medical Association*, 291, 2840–2846.

PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)

State the problem the authors are investigating in this study.

The discussion of whether to change driver license renewal to a more demanding process to screen for high-risk older drivers is currently ongoing in many state licensing agencies. Some states have already imposed increased testing for license renewal among older drivers to decrease crashes, injuries, and fatalities in this age group. To better understand the actual impact of license renewal guidelines on older driver fatalities, the authors analyzed the fatality rates of older drivers across states with regard to the licensing policies.

RESEARCH OBJECTIVE(S)

List study objectives.

The purpose of this study was to determine whether state driver licensing renewal policies are associated with fatality rates among older drivers. Understanding this relationship is important due to the burden on alternative transportation that can be caused by strict license renewal guidelines.

DESIGN TYPE:

Retrospective cohort study

Level of Evidence:

II

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

Population study including all older licensed drivers and national fatality statistics

Inclusion Criteria

All fatalities of persons aged 65 and older in the contiguous United States reported to the Fatality Analysis Reporting System (FARS) for the 11-year period of the study. Fatalities included deaths of people within 30 days of a crash.

Exclusion Criteria

Fatalities in the District of Columbia

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

No

Others (list and explain):

SAMPLE CHARACTERISTICS

$N = 74,428$ older adults; $231,488$ control ages 25–64

% Dropouts	<input type="text" value="N/A"/>		
#/(%) Male	<input type="text" value="NR"/>	#/(%) Female	<input type="text" value="NR"/>
Ethnicity	<input type="text" value="NR"/>		
Disease/disability diagnosis	<input type="text" value="NR"/>		

NR = not reported.

Check appropriate group:

<20/study group	20–50/study group	51–100/study group	101–149/study group	150–200/study group
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Greater than 74,000

Sample Characteristics Bias: *If no, explain.*

If there is more than one study group, was there a similarity between the groups?

Yes

No Only one study group

Were the reasons for the dropouts reported?

Yes

No No dropouts

INTERVENTION(S)—Included are only those interventions relevant to answering the evidence-based question.

Different license renewal policies were examined across states, including

- In-person renewal
- Vision tests
- Road tests.

Other factors were identified to control for

- State speed limits
- Seat belt laws
- Blood alcohol limits
- Administrative license revocation.

All policies were carried out by the state driver licensing agency or law enforcement.

Add groups if necessary.

Group 1 - N/A

Brief Description	
Setting	
Who Delivered?	
Frequency?	
Duration?	

Intervention Biases: Explain, if needed.

Contamination

Yes

No

Co-intervention

Yes

No Not unless a person moved from one state to another and had to renew a driver license in different states after age 65, but this was not reported.

Timing

Yes

No

Site

Yes

No

Use of different therapists to provide intervention

Yes

No

MEASURES AND OUTCOMES—Included are measures relevant to answering the focused question.

Name of measure:

Older driver fatalities, older and middle-age daytime driver fatalities

Outcome(s) measured (what was measured?):

The number of fatalities as reported in the FARS

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes While considered valid, FARS may not include all crash-related fatalities because some older adult deaths may be due to series of medical events initiated by a crash but last greater than 30 days, in which case would not be included in FARS statistics.

No

NR

How frequently was the measure used for each group in the study?

Measures were gathered retrospectively for an 11-year period.

Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes

No

Recall or memory bias? *If yes, explain.*

Yes

No

Others (list and explain):

Limitations (appropriateness of outcomes and measures) If no, explain.

Did the measures adequately measure the outcome(s)?

Yes

✓ The study controlled for other factors including state speed limits, seatbelt laws, blood alcohol limits, administrative license revocation, and annual per capita income.

No

RESULTS

List results of outcomes relevant to answering the focused question.

Include statistical significance where appropriate ($p < 0.05$).

Include effect size if reported.

In an analysis of older drivers across states, the data revealed:

- States with in-person renewal had lower fatality rates for drivers aged 85 and older; incident ratio rate .83, 95% confidence interval.
- States with vision tests had lower fatality rates for drivers aged 65 to 74; incident ratio rate .92, 95% confidence interval.

In comparison of older drivers to the younger cohort, the data revealed:

- States with in-person renewal had lower fatality rates for drivers aged 85 and older; incident ratio rate .83, 95% confidence interval.
- Vision testing, road tests, and varying lengths of renewal period were not statistically associated with fatality rates of older drivers.

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No

Were appropriate analytic methods used? *If no, explain.*

Yes

No

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

The authors concluded that in-person license renewal is associated with decreased fatality rates. They speculated that 1 of 2 mechanisms may contribute to the lower fatality rates. The first theory is enhanced visual assessment of drivers when they come to renew, leading to increased referrals for comprehensive evaluations. Second, the authors suggested that potentially high-risk drivers may self-restrict by not going to renew due to low likelihood of renewal.

Were the conclusions appropriate for the Study Design (Level of Evidence)? *If no, explain.*

Yes

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

This study's results have far-reaching implications for the profession of occupational therapy. If states modify their license renewal policies based on these results, the demand for occupational therapy services in the area of older driver evaluation and community mobility services will increase. First, if older adults are choosing to forfeit their licenses for fear of not being renewed, occupational therapy services will be sought to identify transportation alternatives, provide travel training for new alternate transportation users, and generate a plan to continue occupational engagement without access to a private automobile. Second, if state licensing agencies increase the monitoring of drivers through in-person renewal, there is a twofold role for occupational therapy. Occupational therapists can be involved on the state planning level to design the screening program and train licensing personnel to observe drivers for high-risk behaviors. In addition, as the number of older drivers identified as needing evaluations increases, the number of occupational therapists specializing in driver rehabilitation will increase proportionally. Considering the aging of the population and the existing shortage of occupational therapists in this specialty area, there will be a significant demand for occupational therapists to enter this practice area.

This work is based on the evidence-based literature review completed by Wendy B. Stav, PhD, OTR/L, SCDCM

CAP Worksheet adapted from: Critical Review Form – Quantitative Studies ©Law, M., Stewart, D., Pollack, N., Letts, L., Bosch, J., & Westmorland, M., 1998, McMaster University. Used with permission.

For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6611, x 2052.



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