

# Motorist Vision Policy

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**Background:** The primary purpose of public policy requiring vision testing for driver license renewal is to identify individuals with functional vision impairments and, when necessary, to restrict their driving. This is based on the presumption that poor vision is causally related to poor driving and traffic crashes.

**Methods:** The AOA Environmental and Occupational Vision Committee performed a synthesis of relevant empirical literature on policy-based research and developed potential options for enhancing traffic safety.

**Results:** Presently, some states require vision testing for driver's license renewal and some do not. Regional and nationwide studies report that vision-related license renewal policies are associated with enhanced traffic safety. However, contemporary vision screening tests may be of limited value in identifying individuals with functional vision impairments.

**Conclusion:** The most cost-effective and valid method for identifying, treating and counseling visually impaired drivers is to require a comprehensive eye examination as a condition for driver license renewal for those with a high prevalence or high probability of vision impairment.

**Key Words:** Driver's license renewal, driving, travel safety, vision testing, visual impairment

Public policy focusing on prevention has the potential to play a significant role in protecting the public's health. The American Optometric Association believes that the human and economic costs associated with avoidable traffic crashes are amenable to public policy intervention.

## Background

Traffic safety represents a significant public health challenge in the United States. Traffic crashes result in both health and economic consequences for individuals and society. In 1990, motor vehicle crashes were the leading cause of unintentional injury,<sup>1</sup> and motor vehicle crashes accounted for roughly 2.5% of America's gross national product—an estimated \$135.5 billion.<sup>2</sup>

Both younger and older drivers are over-represented in traffic crashes, relative to middle-aged drivers. Inexperience and aggressiveness are the probable causes for this overrepresentation among younger drivers, whereas the increased crash involvement among older drivers is probably associated with functional impairments.<sup>3</sup>

Despite an overall decline in the U.S. traffic fatality rate during the past decade, age-specific rates for older drivers (> 65 years) have increased.<sup>4</sup> Although they drive fewer miles, elderly drivers have the highest rate of crashes per mile driven.<sup>5</sup> Traffic crashes involving elderly drivers are more likely to be multi-vehicle collisions that result in more serious injuries than those involving younger drivers.<sup>6</sup> In addition to being more at risk for serious injuries, elderly drivers are more likely to be responsible for the crashes in which they are involved,<sup>7</sup> suggesting that in the multi-vehicle crashes, middle-aged and younger drivers provide a protective effect. As the propor-

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tion of older drivers (of all U.S. drivers) increases, this protective effect will decline.

Importantly, the proportion of older American drivers is increasing. By the year 2020, the number of elderly drivers is expected to increase by almost 50%.<sup>8</sup> It is estimated that 88% of older Americans rely on private automobiles for their transportation needs.<sup>9</sup> Most elderly people live in low-density communities where alternative transportation to automobile is rare.<sup>10,11</sup>

Driving is a complex and dynamic sensorimotor activity that requires rapid and continuous integration of sensory, motor, and cognitive skills. Research has shown that poor driving is often directly related to decreased functional performance. Research also suggests that impairments in vision, hearing, motor-reaction, and cognitive abilities are often associated with aging.<sup>12</sup> However, the effect of aging varies dramatically from individual to individual.<sup>13</sup>

Vision performance declines with age. Vision impairments are common to older individuals, even in the absence of eye disease.<sup>5,14-22</sup> In most cases, these vision impairments may be ameliorated, and complete or near-complete functional vision may be restored. Age-related decreases in vision function have been found in visual acuity, contrast sensitivity, glare sensitivity, visual field, night vision, and color vision. Similarly, cognitive skills related to recognition and attention also decline with increasing age. Research has shown that reduction in the "useful field of view" (UFOV)—the ability to detect, identify, and localize targets in a complex visual background—is age-related.<sup>23,24</sup>

Older drivers attempt to compensate for their diminished functional abilities by self-restricting their driving activities (e.g., driving less often, driving during non-rush-hour traffic, etc.).<sup>25</sup> However, due to the slow rate of change, many older individuals may not appreciate the extent of their functional limitations. Recent studies suggest that self-restriction in the case of older drivers may not adequately protect the public's health.<sup>26,27</sup>

### Current standards and practice

The purpose of requiring vision screening for the issuance or renewal of driver's licenses is to identify vision impairments and correct such problems or, if necessary, restrict functionally impaired driv-

ers as a means of enhancing traffic safety.<sup>28</sup> The responsibility for protecting the public's health, safety, and welfare falls to the state. Although all states require vision testing as a condition for the initial issuance of a driver's license, there is considerable variation among states with respect to the types of tests performed and frequency of testing. A majority of states require some level of vision assessment as a condition of driver's license renewal; however, some states do not require vision testing for re-licensing at any age.

State re-licensing policies differ in other aspects as well. Some states have provisions that require physical, sensory, and medical fitness as a condition of driver's license renewal. A small proportion of states require age-based assessments of continued driver competence (e.g., written and/or road testing). Some states require in-person renewals, whereas others do not. Also, the period between re-licensings varies considerably among states and, in several instances, re-licensing periods vary according to the driver's age. Some licensing jurisdictions award restricted or limited licenses, allowing for the operation of a vehicle during certain times of the day or within a limited range of a person's home.<sup>29,30</sup>

The implicit association between reduced vision function and poor driving for older drivers does not infer a causal relationship. Although research findings have been suggestive, the role of vision in driving safety has not been identified in at-risk older drivers.<sup>24,31</sup> To date, there is a lack of empirical evidence of significant predictive relationships between contemporary vision screening tests and automobile crashes.<sup>12,32-34</sup> Nevertheless, small but consistent correlations between static visual acuity and crash involvement by older drivers have been observed, and weak relationships between traffic crashes, extent of visual field, and disability glare have also been reported.<sup>35</sup>

Although a 1997 nationwide survey determined that Americans are aware of the importance of clear vision when driving, most of the respondents were more likely to have serviced their cars than to have been examined by an eye care professional in the past year. These findings suggest that while the importance of good vision is understood, most individuals lack the motivation to optimize their visual performance.

In the U.S., a driver's license is intrinsically tied to mobility, independence, and quality of life.

Equity is an important consideration in the issuance of driver's licenses. The 1990 Americans with Disabilities Act (ADA) specifically prohibits discrimination against persons with disabilities. Importantly, the ADA emphasizes reasonableness and does not require that others be placed at risk in the process of creating opportunities for persons with disabilities.<sup>36</sup> As long as criteria for eligibility are not prejudicial and licensing requirements are applied in a uniform, nondiscriminatory manner, the spirit of the ADA statute will be satisfied.<sup>37</sup> From this perspective, a license to drive should be considered a privilege, not a constitutional right.

## Options

Potential options for addressing the current and projected increase in the number of drivers with functionally related vision impairments include:

1. **Maintain Status Quo:** Retain current state-level vision-related driver licensing and re-licensing requirements.
2. **Mandatory Vision Testing for Re-licensure in All States:** States not presently requiring vision testing for renewal adopt some level of vision screening as a condition for driver's license renewal. Individuals not meeting state-specific minimum vision standards could be denied driving privileges, or granted a restricted or limited driver's license.
3. **Enhanced Vision Screening/Comprehensive Eye Examination:** Establish uniform—and more stringent—vision requirements across all states. Require enhanced vision testing or proof of a recent comprehensive eye examination for re-licensure. Individuals opting for vision screening who do not meet state-specific minimum vision standards for licensing would be counseled about their functional limitation(s) and potential rehabilitative services, including referral for a comprehensive eye examination.
4. **Mandatory Comprehensive Eye Examination for High-Risk Groups:** Require individuals at risk for functionally impaired vision to receive a comprehensive eye examination by an optometrist or ophthalmologist for a driver's license and re-licensing. Specific high-risk groups would include (1) persons seeking initial license; (2) individuals involved in traffic crashes or moving violations; (3) individuals 60 years of

age. "Best-corrected vision" status would be required for all licensed drivers.

5. **Mandatory Eye Examination for All:** Require vision testing for all individuals for initial and renewal of driver's licenses.

## Recommendations

At a minimum, the American Optometric Association advocates the adoption of Option 4, which requires a comprehensive eye examination by an optometrist or ophthalmologist for individuals at risk for functionally impaired vision, as a condition for a driver's license and re-licensing. Specific high-risk groups would include (1) persons seeking initial license; (2) individuals involved in traffic crashes or moving violations; (3) individuals 60 years of age. All drivers would be required to operate vehicles with optimal vision correction in addition to meeting state-mandated minimum standards (i.e., visual acuity, etc.). The rationale for this recommendation is discussed in the following paragraphs.

Although studies suggest that vision-related license renewal policies are associated with enhanced traffic safety—particularly for older drivers—the validity of contemporary vision screening tests is uncertain. Specifically, it is questioned whether current tests have the sensitivity and specificity to accurately identify individuals with functional impairments, and whether impairments are related to traffic crash involvement.<sup>38</sup> Further, the implementation of vision testing for license renewal in jurisdictions without such requirements would generate additional costs (i.e., alteration or expansion of facilities, staffing changes, and new equipment). For these reasons, maintaining the status quo (Option 1) or expanding requirements for screening procedures with low predictive value (Option 2) is neither adequate nor cost-effective. Option 3 would allow states currently providing vision screening to accept proof of a recent comprehensive eye examination in lieu of vision screening.

Within the U. S., refractive errors are the most-prevalent eye conditions associated with reduced vision function.<sup>39</sup> Fortunately, most refractive conditions are evident during childhood and correctable. From early adulthood through middle-age, vision function remains relatively stable. It is later in life that the aging eye undergoes significant and progressive physiological and func-

tional changes, in which the prevalence of sight-threatening complications exceeds 85% for individuals 65 to 74 years.<sup>40</sup> Screening for conditions with either very high or very low prevalence is neither efficient nor cost-effective.<sup>41</sup> Thus, Option 5—mandatory comprehensive eye examinations for all license renewals—is excessive.

The recommended option—Option 4—would eliminate the need for vision screening at licensing bureaus. The eye and vision assessments by an optometrist or ophthalmologist would facilitate both the identification and correction of vision impairments in at-risk individuals. This option would also increase the likelihood that pre-symptomatic or subclinical sight-threatening conditions would be detected and managed at an early stage. Lastly, eye health professionals are better able to inform patients about their conditions, and counsel drivers and their families on long-term expectations for their individual conditions.

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