

Uniform Vision Standards for Driving: A Call for National Reform

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Abstract

The vision standards for driving in the United States vary significantly across states, leading to inconsistencies and inequities for individuals seeking or maintaining driving privileges. These discrepancies are particularly evident for individuals with visual impairments, who may be eligible for license in some states but denied driving privileges in others because of differing standards for visual acuity and visual fields. Additionally, the use of bioptic telescopes for driving with a visual impairment is required in many, but not all states, adding financial and logistical burdens for individuals. This manuscript advocates for the establishment of uniform national vision standards for driving, incorporating evidence-based criteria that allow for individualized assessments and the consideration of modern vehicle safety technologies. We propose a set of updated standards for non-commercial drivers, including specific visual acuity and visual field requirements, while also supporting behind-the-wheel testing and the use of adaptive technologies where appropriate. The goal is to ensure a fair and consistent approach to licensing, allowing individuals with visual impairments to drive safely while accounting for advancements in vehicle safety features. A national standard would also alleviate the need for individuals to move between states to retain driving privileges, providing greater equity and improved safety for all drivers.

Introduction

As clinicians responsible for the care of individuals with various ocular conditions, it is often frustrating to inform a patient that they can be licensed to drive in our state of practice, through a discretionary review process, but are unable to do so in their own home state because of arbitrary visual acuity and/or visual field standards. Similarly, the requirement to purchase a bioptic telescope to meet the licensed standards in certain states, is both burdensome and costly for the individual.

Given these inconsistencies, we believe it is time to establish a uniform set of vision standard for driving across the United States. This would prevent the loss of driving privileges, and resultant undue burden placed on individuals who can still drive safely, despite a reduction in visual function (visual acuity/visual fields or both). This is particularly important given the updates made in 2008 for obtaining a commercial driver's license (CDL). Based on medical expert review, the vision standards for commercial motor vehicle (CMV) drivers were amended and now can allow individuals to obtain a CDL for driving large commercial vehicles, with more constricted visual fields that that required to drive a passenger car in many states.(1, 2)

We recommend updating the current vision standards to allow for a more individualized assessment of driving ability, including the use of behind-the-wheel testing for those who do not meet the basic standards of visual acuity and/or visual field, but can demonstrate the safe operation of a motor vehicle. Policies should also consider the potential benefits of modern advanced vehicle safety features, given that adapted cars have long allowed individuals with physical limitations to safely drive.

Historical Perspective on Vision and Driving Standards

The history of vision standards for driving date back to the Transactions of the Section on Ophthalmology of the American Medical Association's Seventy Sixth Annual Session in Atlantic City, New Jersey, on May 25–29, 1925(3) The Committee on Visual Standards for Drivers of Motor Vehicles recommended that applicants demonstrate a visual acuity of at least 20/50 in one eye and at least 20/100 in

the fellow eye, with or without glasses. Applicants with worse acuity in the poorer eye could still be licensed under certain circumstances. Interestingly, diplopia was considered an automatic disqualification at that time.

The next formal report was issued in 1937, which modified the 1925 recommendations. The report, published in the Journal of the American Medical Association(4), acknowledged that the initial recommendation for county-level boards of physical licensure had proven impracticable and instead recommended maintaining bureaus of licensure in every state. It emphasized that a fixed standard of good vision was difficult to define, as safety also depended on factors such as the driver's natural aptitude, experience, and general mental and physical fitness. The revised standard recommended a visual acuity of at least 20/40 in one eye and 20/100 in the fellow eye, with a horizontal visual field of at least 45° to both sides of the point of fixation; binocular single vision; and the ability to distinguish red, green, and yellow. A limited driving license could be obtained with a visual acuity of at least 20/65 in the better eye, a field of vision extending at least 125° horizontally in one eye, and the absence of diplopia.

Research on vision and driving continued through the 1960s, particularly by Burg(5-8) whose landmark studies assessed vision, reaction time, and decision-making in large populations of California drivers. Although the studies raised questions about sample selection and methodology, they laid the foundation for the current understanding of vision requirements for driving. Over 40 years of subsequent studies of vision and driving have explored the influence of visual impairment on non-commercial driving, the use of devices to accommodate disabilities, and cognitive and decision-making aspects of driving.(9-90)

Despite significant research on the relationship between vision and driving safety, there remain considerable variation in the vision requirements for driving across the United States. Each state has its own set of standards, which results in inconsistencies and inequities for individuals seeking driving privileges.

Vision Standards for Commercial Drivers

In 2008, the Federal Motor Carrier Safety Administration (FMCSA) assembled a panel of medical experts to review its vision standards for commercial motor vehicle (CMV) drivers, which had been in place for 45 years. This review resulted in a report titled Vision and Commercial Motor Vehicle Driver Safety.(2) Based on that report, the FMCSA amended the visual field requirements for a commercial driver's license (CDL) to a minimum of 70-degrees of horizontal vision in each eye, replacing the previous requirement of 70-degrees in the temporal field of each eye. This change allowed individuals to obtain a CDL and drive large commercial vehicles, such as semi-trucks, with more constricted visual fields than are required to drive a passenger car in many states.(1,2)

In 2019, the FMCSA conducted another comprehensive review of its vision standards for CMV drivers.(91) The research also sought to identify any additional vision measures that FMCSA might consider adding to the U.S. Department of Transportation (DOT) medical examination, based on crash risk associated with the identified visual performance component. The standards as outlined in section 391.41(b)(10) of Title 49 of the Code of Federal Regulations (CFR), requires drivers to have all the following:

- A distant visual acuity of at least 20/40 (Snellen) in each eye without corrective lenses or visual acuity separately corrected to 20/40 (Snellen) or better with corrective lenses.
- A field of vision of at least 70 degrees in the horizontal meridian in each eye.
- The ability to recognize the colors of traffic signals and devices showing standard red, green, and amber.

Evidence from the literature review, consultation with experts, and analysis of CMV driver vision and crash data, supported the measurement of visual acuity and horizontal field of view using the current cut-points. The safety analysis did not find that monocular CMV drivers were experiencing an increased crash risk relative to binocular CMV drivers.

Based on this review, in March 2022, the FMCSA continued the waiver program that had been in place since 1992, now allowing drivers with best corrected vision of less than 20/40 in one eye, to acquire a commercial driver's license as long as the visual acuity in their fellow eye was 20/40 or better and that they had a field of vision of 70 degrees or greater.(91)

Bioptic Telescopes

Bioptic telescopes have been used for decades to assist individuals with central vision loss to acquire and maintain driving privileges. But there are still no uniform national standards for their use in driving. Some states require the use of a bioptic telescope for licensure, while others do not. The variation in state standards means that individuals may be able to obtain a driver's license in one state, but not in another, simply based on different requirements for vision aids.

Much has been written about the use of bioptic telescopes over the past almost 50 years.(92-103) However, there are known safety concerns with bioptic telescopes, particularly the time it takes for a driver to switch their focus from the telescope to the road, which can create dangerous delays.(104) Modern vehicle safety features—such as blind-spot detection, lane-keep assist, forward collision warning,

and automatic braking—have been shown to prevent a significant portion of traffic fatalities, suggesting that drivers with visual impairments may benefit from these technologies more than they can from a bioptic telescope.(105)

Proposed National Vision Standards for Driving

To address the disparities in state standards and improve safety for all drivers, we propose the following national vision standards. These proposed standards are based on what the State of Iowa has been doing for the past 30+ years, in addition to what the FMCSA has found for commercial drivers:

Unrestricted, Non-Commercial License: Individuals with a visual acuity of 20/40 or better in one or both eyes (with or without correction), and a uninterrupted (excluding the physiologic blind spot) visual field of 70° horizontally or greater (measured with a V4e isopter or its equivalent) in one or both eyes, with no other conditions which may impair driving ability, should be eligible for an unrestricted license.

Restricted Non-Commercial License: Individuals with visual acuity between 20/40 and 20/70 in one or both eyes and the same visual field requirements as above, may be eligible for a restricted license, limiting driving to conditions where headlights are not required.

Individualized Assessments: Drivers who fall outside these standards—such as those with visual acuity between 20/40 and 20/70 who wish to drive when headlights are required, those with visual acuities less than 20/70 but better than 20/200 who wish to acquire driving privileges or continue driving, perhaps with other restrictions, those with visual fields less than 70° but greater than 20°, or visual field interruptions (other than the physiological blind spot)—should undergo an individualized evaluation, including a recent eye exam report and an on-road evaluation by a qualified evaluator.

For any of the individuals to be judged on an individual basis, a report of a recent (within past 3 months) eye examination should be submitted to the Department of Motor Vehicle at the time of licensing. This report should include at a minimum best corrected visual acuity, need for glasses or contact lenses, extent of horizontal visual field, presence of blind spots (excluding the physiologic blind spot), and diagnosis and prognosis of the eye condition. These individuals should have no other conditions that alone or in combination with the visual deficit may impair driving ability.

Licensing for individuals judged on an individual basis must include an on the road evaluation by a qualified driving instructor or driving evaluator.

Bioptic Telescopes: Bioptic telescopes should not be used to meet static visual acuity requirements for licensing.

Final Licensing Responsibility: The Department of Motor Vehicles (DMV) should retain final authority over licensing decisions, based on an evaluation of actual driving performance via DMV protocol.

Eye care professionals: Eye care professionals should determine whether a person meets the visual criteria necessary for licensure and can complete the visual reports needed for licensure. They should ensure the individual maintains these visual criteria at every office visit.

Driver Responsibility: Drivers should be responsible for ensuring that they meet the visual criteria required to continue operating a vehicle between license renewal periods. Should they fail to meet criteria, it is their responsibility to either surrender their license, pursue a restricted license, or request an individual assessment to maintain legal driving privileges.

Conclusion

There is a clear need for uniform vision standards for driving in the United States to ensure fairness, consistency, and safety for all drivers. By adopting updated, evidence-based criteria that allow for individual assessments and consider advances in vehicle safety technology, we can create a system that supports safe driving for people with visual impairments, while eliminating the inconsistencies and inequities of the current state-based system.

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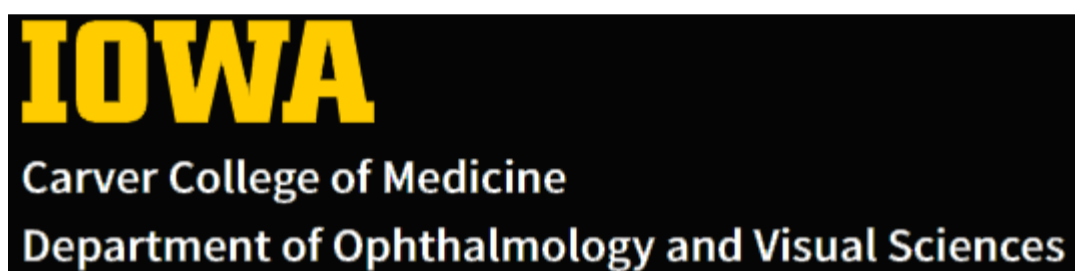
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