

Visual Field Study

2017 Report

Virginia Department of Motor Vehicles

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Executive Summary

The *Code of Virginia* in § 46.2-311 mandates that the Virginia Department of Motor Vehicles (DMV) shall not issue a driver's license or learner's permit to any person unless he meets certain minimum visual acuity and visual field standards.¹ During the 2017 General Assembly session Delegate Hyland F. “Buddy” Fowler Jr. and Senator Siobhan Dunnivant patroned House Bill (HB) 1504 and Senate Bill (SB) 1229 respectively.² The bills proposed to amend the minimum visual field standards in *VA Code* § 46.2-311 from 100 degrees of horizontal vision in one or both eyes to 120 degrees in one or both eyes.

DMV raised concerns regarding the proposed change with the patrons and the Virginia Society of Eye Physicians and Surgeons (VSEPS); the organization advocating for the change. DMV was concerned that the 643 visual screening machines in use at DMV Customer Service Centers (CSCs), mobile units, and DMV Connect did not have a setting that would allow for the measurement of a customer's visual field at 120 degrees of horizontal vision in one or both eyes. The increased settings available on the vision screening machines are 110 degrees, 140 degrees, and 170 degrees. To accommodate the 120-degree requirement included in the bills, DMV notified the patrons that the agency would have to purchase new machines at an average cost of \$3,463 per machine or \$2,226,812 for 643 machines.

After considering the substantial fiscal impact of having to replace the screening machines, DMV offered to study the vision standards to gather data to determine if further amendments to the minimum vision standards are needed. The patrons, DMV, and representatives for VSEPS reached a consensus that data was needed to support any further significant increase in the visual field standards and that, in the meantime, HB 1504 and SB 1229 would propose a moderate increase in the visual field standards to raise the visual field from 100 degrees of horizontal vision in one or both eyes to a visual field of 110 degrees. The bills passed unanimously and the new standard became effective July 1, 2017.³

After adjournment of the 2017 General Assembly session, DMV received letters from Senator Charles W. Carrico, Sr., Chairman of the Senate Transportation Committee, and Delegate Ronald A. Villanueva, Chairman of the House Transportation Committee, formalizing a request for DMV to study the standards for vision tests used in screening applicants for driver's licenses to determine any changes necessary to help drivers stay safe on the roads, prevent traffic crashes, and protect the safety of drivers, passengers, and pedestrians.⁴

The Chairs of the Transportation Committees requested that DMV convene a working group to obtain input from multiple stakeholders and then report the study findings and recommendations to the Transportation Committees in December of 2017. They further requested that the study examine existing research and gather data specifically related to Virginia drivers as well as other states, in considering whether a visual field requirement beyond 110

¹ Va. Code Ann. § 46.2-311, <http://law.lis.virginia.gov/vacode/title46.2/chapter3/section46.2-311/>

² 2017 VA Acts of Assembly, Chapters 121 and 279. <http://lis.virginia.gov/cgi-bin/legp604.exe?ses=171&typ=bil&val=hb1504> and <http://lis.virginia.gov/cgi-bin/legp604.exe?171+sum+SB1229>

³ See *id.*

⁴ See Appendix A: Letter from Delegate Villanueva and Senator Carrico.

degrees would be appropriate for Virginia. As part of the study report, the work group was asked to provide an analysis of the feasibility and fiscal impact for each item it proposes and any proposed legislation that would be necessary to pursue the work group's recommendations.

In response to the charge letters received from the Transportation Committee chairs, in mid-March DMV assembled a core team of approximately 15 staff members to facilitate work on the study. The team began:

- Identifying and reviewing related research and studies;
- Identifying and gathering data on Virginia drivers;
- Researching other jurisdictions' vision standards and policies; and
- Identifying and contacting relevant stakeholders

Stakeholders that were invited to participate in the study included VSEPS, Academy of Family Physicians, Virginia Optometric Association (VOA), Department for the Blind and Vision Impaired, Department of Health Professions, Department for Aging and Rehabilitative Services, DMV Medical Advisory Board, Virginia State Police, Virginia Association of Chiefs of Police, Virginia Sheriffs Association, Virginia Bicycling Federation, Sports Backers (representing bicycling and walking), American Automobile Association (AAA) Mid-Atlantic, Drive Smart Virginia, TransAnalytics Inc., Health South Rehabilitation Center, AARP (formerly known as American Association of Retired Persons), the Office of the Attorney General, Commonwealth Strategy Group, and Dr. Edwin Wortham, Highway Safety Advocate. DMV encouraged the stakeholders to identify others that DMV should include in the study.⁵

The various stakeholders met twice to review the DMV statutory requirements, the DMV vision screening process, and the DMV medical review policies and process; to analyze the existing visual field research; to compare Virginia visual field standards with those from other jurisdictions; to examine data related to Virginia drivers; to discuss the challenges revealed in the data and research; and to make recommendations for future action.

After culling through the available research on the ability of persons with visual impairments to remain licensed and able to drive, it was evident to the group that there is insufficient information to establish a scientifically supported minimum standard for visual field. The studies conducted to this point have inconclusive and contradictory findings, making it difficult to derive any recommendations. It appears from the studies that there is an association between visual field and driving safety; however, the literature is unclear as to how wide the visual field must be to reduce risk.

After comparing Virginia's visual field standards with the minimum visual field standards in other states, U.S. Territories, and Canadian Provinces and Territories, the research revealed that Virginia's standards appear to be in the middle, with some jurisdictions having higher standards and some having lower or no standards. The visual field standards from other jurisdictions did not suggest that Virginia's current visual field standards were in need of

⁵ See Appendix B: List of Stakeholders that participated in the study.

amendment to better align the Commonwealth with its bordering states or with standards nationwide.

After reviewing available research and literature on visual fields that revealed inconclusive data regarding acceptable minimum standards and comparing Virginia's standards with the widely varying standards of other jurisdictions, the study group remained without recommendations. The next step was to examine data specific to Virginia licensed drivers to determine if there was data to provide guidance to the group on what acceptable minimum standards should be to reduce risk and if Virginia's standards needed further amendment.

DMV staff outlined the agency's data collection efforts and the challenges. There are currently 5.9 million drivers with Virginia licenses. Of the licensed population, 23,710 drivers have DMV issued medical orders, and 10,631 drivers have restrictions for driving during daylight hours only. The majority of restrictions for daylight only driving were placed on the customers' licenses in CSCs and there is no vision report information available. The CSCs inputted the information that a driver needed a license restriction but not whether the restriction was for visual acuity or for visual field. Customer records for customers with medical orders contain the reasons for the medical orders. DMV staff identified 1,000 drivers' records that have restrictions for daylight only driving and that also have medical orders with vision reports available. As a result, DMV staff performed a manual audit of the 1,000 customer records to identify the reason for the daylight driving only restriction. From that audit, staff identified a sample of 108 drivers that were restricted to daylight driving only for visual field defects or for a combination of visual field and acuity defects.

After reviewing the data from the 108 restricted drivers sampled, it was clear to the study group that achieving a sample size adequate to establish statistical significance would not be possible with existing records. In addressing the study charge, DMV's Commissioner Holcomb posed to the study group whether they felt that based on a review of current processes, data on Virginia licensed drivers, current research and literature, and other jurisdiction's standards there was sufficient data at this time to initiate any changes in Virginia's visual field standards for screening driver's license applicants. The group concluded that there was not. Commissioner Holcomb also pointed out that the new 110 degree standard just went into effect on July 1, 2017 so it is too early to be able to draw conclusions about the impact of the current requirement.

The study group concluded that DMV will likely need two to three more years to gather enough data to make up a sufficient sample size to determine any recommendations. Commissioner Holcomb recommended that DMV be allowed to continue to collect data over the next few years in order to obtain a sample size large enough to provide statistically significant data and then reconvene the stakeholders to review the new data along with the impact resulting from the new 110 degree standard to determine if further amendments to the visual field standards are needed. He added that there should be additional data derived from the changes made as a result of DMV's *Mature Drivers Study* that could provide valuable information. Stakeholders were in agreement that there is not sufficient data to recommend changes and that the data collection should continue.

DMV staff indicated that as a result of the operational changes the agency has made, including beginning to record not only visual field and acuity measurements but also recording whether a driver's vision-based restriction was the result of visual acuity impairment or a visual field impairment, a larger sample size will be generated and thus a more complete set of data will be available to analyze. Over the next few years, DMV will be in a better position to collect data on:

- The number of drivers who have been restricted due to raising the minimum non-restricted standard from 100 degrees to 110 degrees;
- The percentage of daylight only restricted drivers who are restricted for visual field reasons;
- The crash and conviction rates of those drivers with restricted licenses for visual field reasons versus those with no restrictions;
- The relationship in the statistics between a driver's available visual field, traffic convictions, and at fault crashes; and
- The daylight hour crashes for the control group for a comparison with the sample of drivers restricted for visual field reasons.

In addition to data collection changes, DMV staff indicated that other operational changes will be made to include enhancing employee training on vision screening, revising DMV forms such as the *MED 4 Customer Vision Report* to incorporate suggestions from eye care professionals, and increased outreach with law enforcement and eye care professionals. The DMV Medical Review web page was also updated at the suggestion of stakeholders to make the medical review process more visible, and this update was done prior to the conclusion of the study.

The study group made several additional recommendations. The group recommended that DMV staff work with the VOA, VSEPS, and the Department of Health Professions to develop a continuing medical education (CME) seminar on DMV requirements for vision screening and visual field analysis and disseminate it to eye care professionals for CME credit. Commissioner Holcomb committed DMV to assisting with this recommendation. Various DMV staff members from Medical Review Services (MRS), Customer Service, Legislative Services, and Strategic Management Services are actively participating with VOA, VSEPS, and the Department of Health Professions in the development of the CME presentation. In addition, DMV staff are working with VSEPS and VOA to discuss and identify revisions to the *MED 4 Customer Vision Report* form. The group unanimously agreed on a number of changes to make the form clearer and more user friendly, and to help clarify that DMV is responsible for making the determination of whether a person's vision is acceptable for safe driving based on the vision information provided on the form. The VSEPS and VOA representatives believe that the form revisions, along with the information provided in the CME, will help ensure a more accurate and efficient reporting of vision data, and ultimately result in safer roadways for all.

Stakeholders further recommended that when DMV receives a crash report involving a driver who is currently under medical review that the DMV crash reporting system known as the Traffic Records Electronic Data System (TREDS) be modified to notify Medical Review Services. MRS would review the crash report along with the person's medical review status and

driving records to determine if additional action is warranted. Medical Review Services consulted with staff in the DMV Highway Safety Office to determine if this system modification was technically possible. Unfortunately, the TREDIS system is unable to be modified in such a way that would accomplish this recommendation. MRS staff will continue to explore whether there are other options available within DMV systems to accomplish this recommendation. If any system changes can be made, staff will work with the Office of the Attorney General to ensure that any such modification complies with privacy requirements.

Lastly, stakeholders recommended that DMV consider joining other states in a collaborative effort to collect data for setting visual standards. The Commissioner indicated that once the report is published it will be sent to the American Association of Motor Vehicle Administrators (AAMVA), the DMV trade organization. He would also raise the subject as a discussion item at the next Mid-Atlantic Regional administrative meeting.

There were a few recommendations that were proposed during the study that DMV determined would diminish customer service rather than enhance it and have an unnecessary fiscal impact. The stakeholders recognized DMV's concerns and those recommendations were not pursued.

The study stakeholders were supportive of the ongoing data collection and other initiatives that resulted from the study. DMV and the study stakeholders have committed to coming back together in the future to analyze the data once a larger sample size is collected to determine if recommendations should be made to amend Virginia's visual field requirements. DMV and the stakeholders have also agreed to continue their collaboration to share new information as it becomes available. DMV will also continue to monitor the research in the area of visual field to assist with any future recommendations.

Introduction

The *Code of Virginia* in § 46.2-311 provides that that the Virginia Department of Motor Vehicles (DMV) shall not issue a driver's license or learner's permit to any person unless he meets certain minimum visual acuity and visual field standards.⁶ During the 2017 General Assembly session, working with the Virginia Society of Eye Physicians and Surgeons (VSEPS), Delegate Hyland F. “Buddy” Fowler Jr. and Senator Siobhan Dunnivant patroned House Bill (HB) 1504 and Senate Bill (SB) 1229 respectively.⁷ The bills proposed to amend the minimum visual field standards in *VA Code* § 46.2-311 from 100 degrees of horizontal vision in one or both eyes to 120 degrees in one or both eyes.

DMV raised concerns regarding the proposed change with the patrons and the Virginia Society of Eye Physicians and Surgeons (VSEPS); the organization advocating for the change. DMV was concerned that the 643 visual screening machines in use at DMV Customer Service Centers (CSCs), mobile units, and DMV Connect did not have a setting that would allow for measuring a customer’s visual field of 120 degrees of horizontal vision in one or both eyes. The increased settings available on the vision screening machines are 110 degrees, 140 degrees and 170 degrees. To accommodate the 120-degree requirement included in the bills DMV notified the patrons that the agency would have to purchase new machines at an average cost of \$3,463 per machine or \$2,226,812 for 643 machines.

After much discussion between the patrons, DMV, and representatives for VSEPS, a consensus was reached that without further data both HB 1504 and SB 1229 would amend the *Code* to raise the visual field from 100 degrees of horizontal vision in one or both eyes to a visual field of 110 degrees in one or both eyes. The new standard went into effect on July 1, 2017. As part of the discussions, DMV proposed studying the vision standards to determine if further amendments to the minimum vision standards are needed.

Subsequently, in letters to DMV, Senator Charles W. Carrico, Sr., Chairman of the Senate Transportation Committee, and Delegate Ronald A. Villanueva, Chairman of the House Transportation Committee, charged DMV with studying the standards for vision tests used in screening applicants for driver’s licenses to determine any changes necessary to help drivers stay safe on the roads, prevent traffic crashes, and protect the safety of drivers, passengers, and pedestrians.⁸

The Chairs of the Transportation Committees requested that DMV convene a working group to obtain input from multiple stakeholders and then report the study findings and recommendations to the Transportation Committees in December of 2017. They further

⁶ Va. Code Ann. § 46.2-311, <http://law.lis.virginia.gov/vacode/title46.2/chapter3/section46.2-311/>.

Visual acuity is defined as the sharpness of vision, measured by the ability to discern letters or numbers at a given distance according to a fixed standard. Visual field is defined as the space or range within which objects are visible to the immobile eyes at a given time (also called field of view). Figures 1 and 2 are illustrative of what a visual field is and how it is measured.

⁷ 2017 VA Acts of Assembly, Chapters 121 and 279. <http://lis.virginia.gov/cgi-bin/legp604.exe?ses=171&typ=bil&val=hb1504> and <http://lis.virginia.gov/cgi-bin/legp604.exe?171+sum+SB1229>

⁸ See Appendix A: Letter from Delegate Villanueva and Senator Carrico.

requested that the study examine existing research and gather data specifically related to Virginia drivers as well as other states, in considering whether a visual field requirement beyond 110 degrees would be appropriate for Virginia. As part of the study report, the work group was asked to provide for each item it proposes an analysis of the feasibility and fiscal impact an increase in standards may have on the Commonwealth and any proposed legislation that would be necessary to pursue the work group's recommendations.

In response to the charge letters received from the Transportation Committee chairs, in mid-March DMV assembled a core team of approximately 15 staff members to facilitate work on the study. The team began:

- Identifying and reviewing related research and studies;
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- Researching other jurisdictions' vision standards and policies; and
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Stakeholders that were invited to participate in the study included VSEPS, Academy of Family Physicians, Virginia Optometric Association (VOA), Department for the Blind and Vision Impaired, Department of Health Professions, Department for Aging and Rehabilitative Services, DMV Medical Advisory Board, Virginia State Police, Virginia Association of Chiefs of Police, Virginia Sheriffs Association, Virginia Bicycling Federation, Sports Backers (representing bicycling and walking), American Automobile Association (AAA) Mid-Atlantic, Drive Smart Virginia, TransAnalytics Inc., Health South Rehabilitation Center, AARP (formerly known as American Association of Retired Persons), the Office of the Attorney General, Commonwealth Strategy Group, and Dr. Edwin Wortham, Highway Safety Advocate. DMV encouraged the stakeholders to identify others that DMV should include in the study.⁹

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Virginia DMV's Statutory Authority and Processes

To begin the study, the study group received information on the statutory requirements and policies for vision screening in Virginia. DMV staff also provided detailed information on the vision screening processes that occur in DMV Customer Service Centers and the DMV medical review process that is followed to address drivers that have vision-related issues that may impact safe driving.

⁹ See Appendix B: List of Stakeholders that participated in the study.

Virginia's Statutory Authority

Virginia Code § 46.2-311 provides that DMV shall not issue a driver's license or learner's permit to any person unless he meets certain minimum visual acuity and visual field standards. Specifically, the statute provides that:

A. The Department shall not issue a driver's license or learner's permit (i) to any person unless he demonstrates a visual acuity of at least 20/40 in one or both eyes with or without corrective lenses or (ii) to any such person unless he demonstrates at least a field of 110 degrees of horizontal vision in one or both eyes or a comparable measurement that demonstrates a visual field within this range. However, a license permitting the driving of motor vehicles during a period beginning one-half hour after sunrise and ending one-half hour before sunset, may be issued to a person who demonstrates a visual acuity of at least 20/70 in one or both eyes without or with corrective lenses provided he demonstrates at least a field of 70 degrees of horizontal vision or a comparable measurement that demonstrates a visual field within this range, and further provided that if such person has vision in one eye only, he demonstrates at least a field of 40 degrees temporal and 30 degrees nasal horizontal vision or a comparable measurement that demonstrates a visual field within this range.

Vision Screening Process

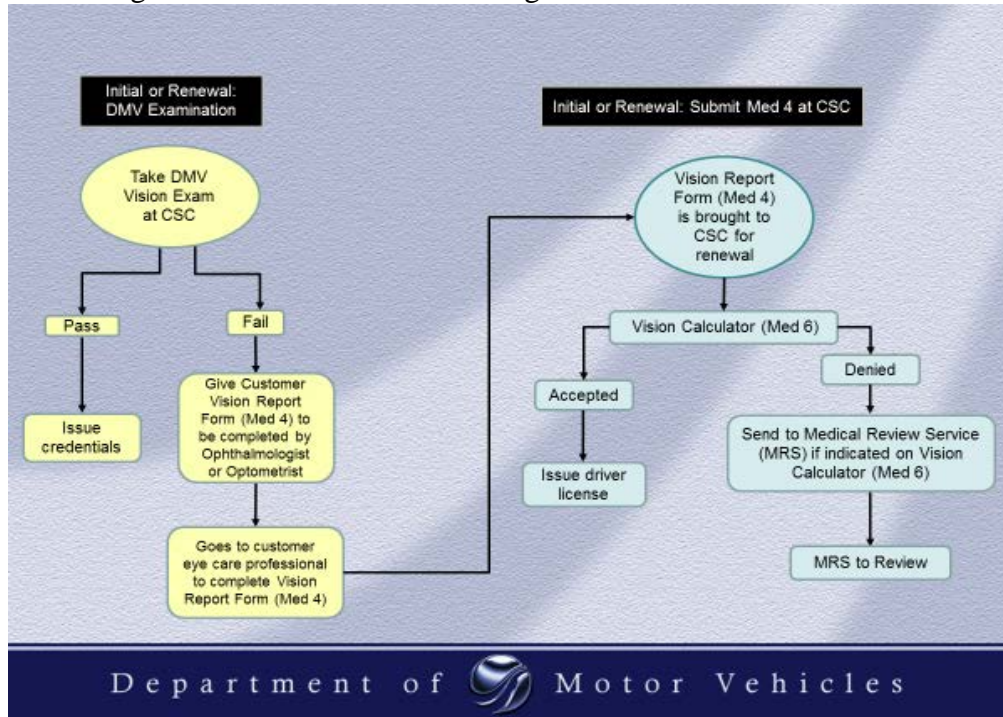
Every person applying for an initial driver's license and every person applying to renew a driver's license and who is required to be reexamined as a prerequisite to the renewal of the license must appear in person at a DMV CSC to receive a vision screening. During the vision screening, the license applicant must demonstrate that he meets the visual acuity and horizontal visual field requirements required in the statute for either an unrestricted license or a daylight driving only restricted license. However, license applicants have the option of accompanying the application with a report of such examination made within 90 days prior thereto by an ophthalmologist or optometrist. The report of examination of visual acuity and horizontal visual field made by an ophthalmologist or optometrist shall have precedence over vision screening performed at a DMV CSC in an administrative determination as to the issuance of a license to drive.

As Figure 1 illustrates, license applicants who do not pass the vision screening for an unrestricted license or daylight driving only restricted license at a DMV CSC are denied their initial license or license renewal at the time of the screening. However, applicants who do not pass the DMV vision screening are also given the option to obtain a vision report from an ophthalmologist or optometrist and then return to DMV with the report. Applicants are given the *DMV Med 4 Customer Vision Report* to take to their ophthalmologist or optometrist for completion.¹⁰ Once the customer returns to DMV with the completed *Med 4*, DMV staff enter the information from the ophthalmologist or optometrist into the *DMV Vision Calculator (Med 6)*, which calculates whether the applicant meets the visual acuity and horizontal visual field

¹⁰ See Appendix C: *Med 4 Customer Vision Report*.

requirements. Those applicants who pass are issued licenses. Applicants who do not meet the visual acuity and horizontal visual field requirements are referred to DMV’s Medical Review Services (MRS) for review.

Figure 1: DMV Vision Screening in Customer Service Centers



Medical Review Process

Virginia Code § 46.2-322 authorizes DMV to initiate medical review of a driver if the agency “has good cause to believe that a driver is incapacitated and therefore unable to drive a motor vehicle safely....” Pursuant to this statute, DMV may require a driver under medical review to submit to an examination to determine his fitness to drive a motor vehicle. As a part of its examination, the Department may require a physical examination as well as a vision screening.

If the driver so requests in writing, DMV shall give the Department's reasons for the examination, including the identity of all persons who have supplied information to the Department regarding the driver's fitness to drive a motor vehicle. However, pursuant to *VA Code* § 46.2-322, the Department shall not supply the reasons or information if its source is a “relative of the driver or a physician, physician assistant, nurse practitioner, pharmacist, or other licensed medical professional as defined in § 38.2-602 treating, or prescribing medications for, the driver.”

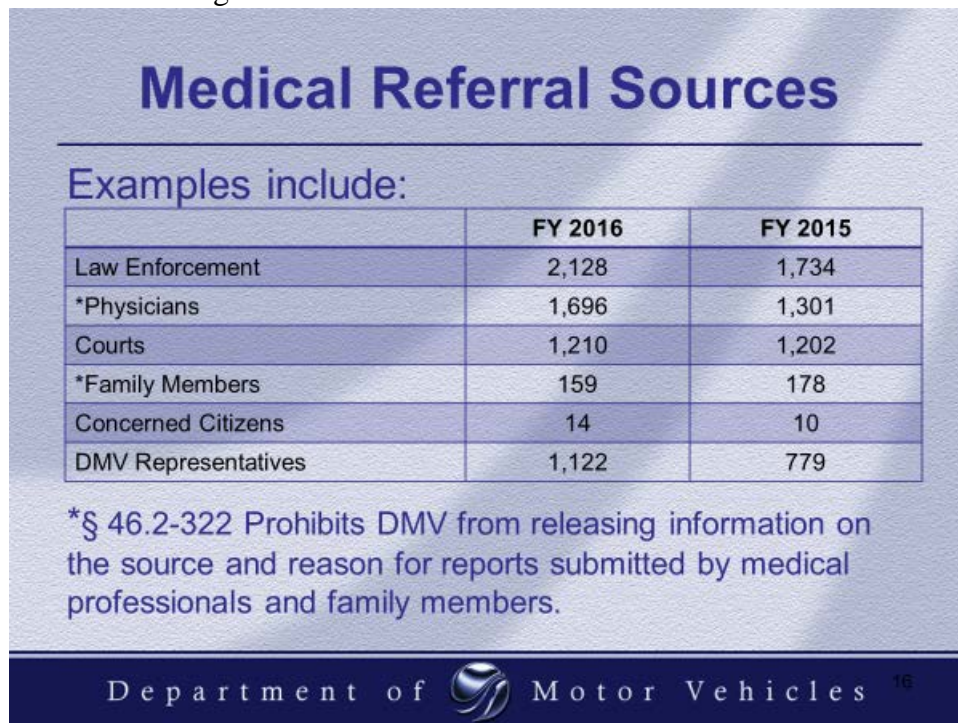
When the driver’s examination is complete, the statute directs DMV to take “whatever action may be appropriate.” DMV’s actions may include:

- Permitting the driver to remain licensed;
- Permitting the driver to remain licensed but require periodic monitoring of the driver by DMV's Medical Review Services;
- Permitting the driver to remain licensed subject to certain driving restrictions pursuant to VA Code § 46.2-329. Such restrictions may include driving within a certain number of miles from home or driving during daylight hours only (beginning one-half hour after sunrise and ending one-half hour before sunset); or
- Suspending the person's privilege to drive.

Refusal or neglect of the person to submit to the examination or comply with restrictions DMV imposes is grounds for suspension of the license and privilege to drive.

The medical review process is triggered when DMV Medical Review Services (MRS) receives a report of a medically at-risk driver. The DMV Medical Review Services is responsible for handling all cases involving customers under medical review. The office consists of the Health Care Compliance Officer who is a registered nurse (RN) and 12 licensed practical nurses (LPNs) serving as medical evaluators. As Figure 2 illustrates, MRS receives reports of medically at-risk drivers primarily from law enforcement, medical professionals, courts, and DMV Customer Service Representatives (CSRs). DMV receives reports to a lesser degree from family members of a medically at-risk driver or concerned citizens. In fiscal year (FY) 2016, DMV received 6,329 referrals for medical review.

Figure 2: Sources of Medical Review Referrals



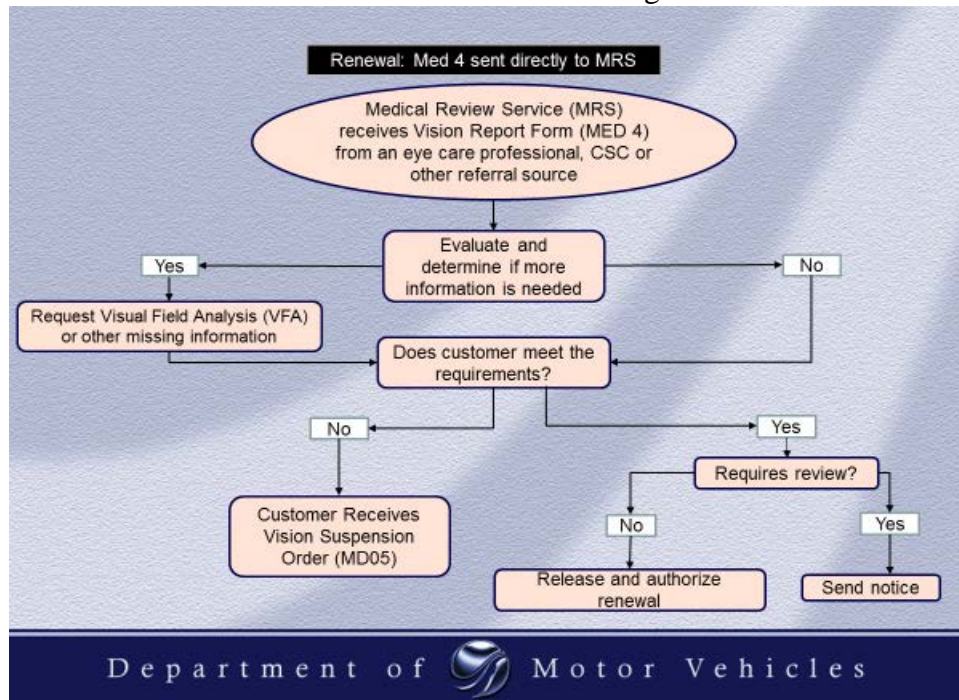
Medical Review Process-Vision Standards¹¹

Vision conditions can affect anyone at any age and are evaluated impartially based on acuity and visual field. Vision conditions can occur because of a chronic disease or an acute event; however, drivers have their licenses suspended based upon their current vision and the *Code of Virginia* standards only. DMV strives to identify individuals with chronic health conditions, including progressive health conditions of the eye. In these cases, DMV monitors individuals to determine at what point driving should be discontinued. There are numerous vision conditions that may lead to a customer being referred to MRS for medical review including:

- Bitemporal Hemianopsia
- Diabetic Retinopathy
- Homonymous Hemianopsia
- Intraocular Pressure
- Quadrantanopia
- Retinal Detachment
- Glaucoma
- Hemianopsia
- Scotoma
- Retinopathy

A Visual Field Analysis (VFA) is a graphic representation of an individual's visual field.¹² Visual fields are measured along the horizontal meridian to the widest point where there is vision above and below the horizontal meridian. Scotomas, or blind spots, are subtracted from the overall measurement.¹³ The data is then considered with respect to the *Code of Virginia* requirements.

Figure 3: Medical Review Services Process for Evaluating *Med 4 Customer Vision Report*



¹¹ This report focuses on the role of MRS and the medical review process as it relates to the vision standards required in *VA Code* § 46.2-311.

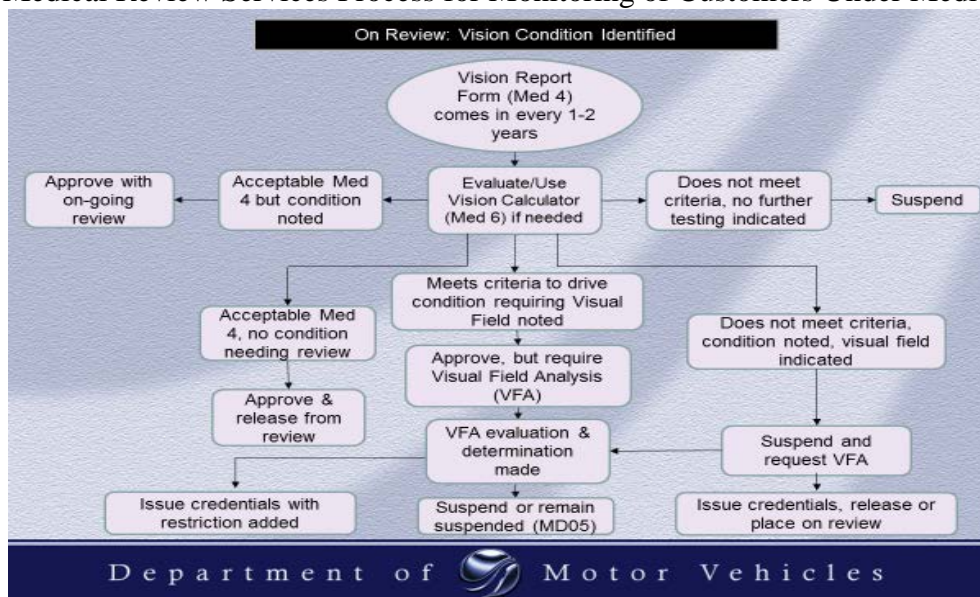
¹² DMV requires a threshold perimetry test. Common formats are the Humphrey Analyzer and Octopus Analyzer. Effective July 30, 2016, the Goldmann visual field analysis is no longer accepted by MRS.

¹³ Scotoma is an isolated area of absent vision or depressed sensitivity in the visual field, surrounded by an area of normal vision or of less depressed sensitivity. See <https://quizlet.com/89636146/visual-field-defects-flash-cards/>

As Figure 3 illustrates, when a customer is referred to MRS for vision issues, the customer's Med 4 *Customer Vision Report* from an ophthalmologist or optometrist is reviewed by MRS to determine if more information is needed. If no further information is needed, MRS notifies the customer whether he will remain on MRS monitoring or whether the customer may be released from review and the license authorized. If additional information is needed, MRS will request that the customer obtain a VFA from an ophthalmologist or optometrist.¹⁴ Once MRS receives the VFA, it determines whether the customer is eligible for an unrestricted license or a restricted license. Customers who are ineligible for a license will receive notice that they are denied an initial license, or if they currently hold a license, that the license is suspended.

To obtain an unrestricted license, a DMV customer must have a visual acuity of at least 20/40 in one or both eyes with or without corrective lenses and demonstrate at least a visual field of 110 degrees of horizontal vision in one or both eyes or a comparable measurement that demonstrates a visual field within this range. To obtain a daylight only restricted license that permits driving of motor vehicles during a period beginning one-half hour after sunrise and ending one-half hour before sunset, a customer must demonstrate a visual acuity of at least 20/70 in one or both eyes with or without corrective lenses and a visual field of 70 degrees of horizontal vision or a comparable measurement that demonstrates a visual field within this range. If a customer has vision in one eye only, he must demonstrate at least a visual field of 40 degrees temporal and 30 degrees nasal horizontal vision or a comparable measurement that demonstrates a visual field within this range. Generally, customers that receive daylight only restricted licenses remain under MRS monitoring and are required to submit updated medical and vision reports to DMV as directed. As Figure 4 illustrates, MRS evaluates the updated reports to determine if the customers may be released from monitoring, whether monitoring and license restrictions should continue, or whether there should be a cessation of driving and driver's license suspension. MRS staff may review any case with the DMV Medical Advisory Board if necessary.

Figure 4: Medical Review Services Process for Monitoring of Customers Under Medical Review



¹⁴ Visual Field Analysis is defined as a test used to map a patient's sensitivity to light across the entire visual field. Also called Perimetry Test.

DMV Medical Advisory Board (MAB)

Virginia Code § 46.2-204 provides for the establishment of the Medical Advisory Board. The Board consists of seven licensed physicians currently practicing medicine in Virginia, who are appointed by the Governor for four-year terms. The Governor also designates the chairman of the Board. Currently, the Board is comprised of practitioners from the areas of neurology, psychiatry, internal medicine, emergency medicine, ophthalmology, and occupational medicine.¹⁵

The purpose of the MAB is to assist DMV through the development of medical and health standards for use in the issuance of driver's licenses “to avoid the issuance of licenses to persons suffering from any physical or mental disability or disease that will prevent their exercising reasonable and ordinary control over a motor vehicle while driving it on the highways.”¹⁶ In addition to the development of medical standards, DMV may refer to the Board for an advisory opinion the case of any person applying for a driver's license or renewal, or of any person whose license has been suspended or revoked, or of any person being examined under the provisions of *VA Code* § 46.2-322, when there is cause to believe that such person suffers from a physical or mental disability or disease which will prevent his exercising reasonable and ordinary control over a motor vehicle while driving it on the highways. The MAB also provides guidance and recommendations to DMV regarding any case of a person examined under the provisions of *VA Code* § 46.2-322 who appeals the outcome of the examination pursuant to *VA Code* § 46.2-321 if the basis for such appeal is related to the medical evidence in the case.

The MAB has addressed vision-related issues in its Visual Field Policy that was initially developed in June of 2012. This policy determined that those with hemianopic defects may not drive. This includes Hemianopsia and Quadrantanopia. The policy further required that drivers must supply a visual field analysis on request. The VFA must provide a graphic depiction of an individual's visual field out to 120 degrees (minimum) and must be a static threshold test. The measurement size and type allows for variations in the visual field where a driver may have some areas of missing vision but is still able to achieve the 110 degrees required for unrestricted driving. The policy provided that individuals with bitemporal hemianopic vision loss may qualify for a restricted license if the vision retained by combined nasal measurements meets the minimum standards required in statute.

In July of 2016, the MAB provided additional policy guidance on Visual Fields. The updated policy provided that partial hemianopic and quadrantanopic defects may obtain a restricted license if the individual retains or regains 30 degrees of horizontal vision to the affected side with at least 15 degrees of vision above and below the midline. VFA will be required on progressive conditions that reduce the field of vision such as, moderate or advanced glaucoma, prolific diabetic retinopathy (especially post PRP surgery), and retinitis pigmentosa.

¹⁵ See Appendix D: Board Profile

¹⁶ See *VA Code Ann.* § 46.2-204 <http://law.lis.virginia.gov/vacode/title46.2/chapter2/section46.2-204/>

Appeal of Medical Review Decisions

Customers who are placed under the medical review process required by *VA Code* § 46.2-322 may challenge DMV's determination by requesting an Informal Fact Finding proceeding pursuant to the *Virginia Administrative Process Act* in *VA Code* § 2.2-4019. If a customer is dissatisfied with the decision resulting from the Informal Fact Finding proceeding, a customer has the right to appeal that decision to an appropriate Virginia circuit court in accordance with *VA Code* § 2.2-4025, *et seq.* and Part 2A of the *Rules of the Supreme Court of Virginia*.

Visual Field Research and Literature Review

After the study group received information on the statutory requirements and policies that impact the vision screening process in Virginia, the group examined existing research in the area of visual field and driving safety. DMV staff guided the study group through a literature review of numerous studies on the topic.¹⁷ A summary of the research and literature is provided below and a bibliography can be found in Appendix E.

In *A Roadmap for Interpreting the Literature on Vision and Driving*, the authors noted that it "is important for clinicians and policy makers alike to understand how various study designs and measurement methods should be appropriately interpreted so that the conclusions and recommendations they make based on this literature are not overly broad, too narrowly constrained, or even misguided."¹⁸ The authors offered explanations of the methodologies used in studies on vision and driving because "the types of inferences that can be made from each type of method are distinct, although theoretically related because they all address aspects of driving behavior, albeit from different perspectives."¹⁹ As the authors explained "[d]riving' can be measured using several different methods that may not produce consistent findings due to the fact that each method is designed to measure a unique aspect of driving or its component skills."²⁰ The various methods include using:

- Safety statistics using motor vehicle crashes. While at-fault crashes are more valid, many researchers include all crashes regardless of fault to raise the statistical significance power. Safety studies provide very little information about how vision impairments impact driving performance and vehicle control.
- Driving performance (driving behaviors and vehicle control) on open-road (actual public roadways) and on close-road (closed to public access, with planned hazard situations, and created for research). Driving performance is measured in different ways including:
 - Certified driving rehabilitation specialists (DRS), who are also occupational therapists, conduct driver evaluations, the recognized gold standard for measuring driving performance.
 - Backseat evaluators who are trained to use rating scales to make judgments about the quality of driving, may also be used to measure driving performance.

¹⁷ See Appendix E for a bibliography of all studies reviewed.

¹⁸ See abstract for Owsley, C., Wood, J. M., & McGwin, G. (2015). *A Roadmap for Interpreting the Literature on Vision and Driving*. *Survey of Ophthalmology*, 60(3), 250-262. doi:10.1016/j.survophthal.2015.01.005

¹⁹ See *id.*

²⁰ See *id.*

- Instrumented Vehicles with multiple sensors and video cameras placed in the vehicle to record driver performance is new technology used to measure driving performance.
- Naturalistic driving is a new approach using instrumented vehicles to measure driver performance over extended periods (weeks or months) in the driver's own vehicle, where the individual drives as they would normally.
- Driver reported outcomes is a third method for measuring driving. Drivers self-report on their own perspectives about driving experiences providing insights into drivers' beliefs about their own skills and abilities, including how their vision and other medical issues impact their driving and what they do to compensate when driving. The concern is that self-reporting of events may not be accurate or be reported at all.
- Driving simulators may be used to measure the relationship between vision and driving performance. Driving simulators offer standard conditions and driving scenarios for all participants in a safe environment. Simulators are also useful in safely studying driving performance of persons with severe impairments. The very controlled circumstances and unlimited measurement opportunities may not reflect actual driving habits.²¹

Along with different research methodologies, DMV staff identified other research challenges and issues confounding conclusive results regarding appropriate visual fields for safe driving including:

- Currently, there is a lack of data to guide policy makers in deciding upon visual field standards that would assure reduced risk and increase driver safety.
- Most studies focus on specific diseases or other aspects of vision rather than visual field. For instance, several studies focus on diseases or medical conditions like glaucoma or stroke patients that have a high potential for a variety of co-morbidities.
- Many of the study subjects have other medical conditions that affect them and their vision. Very often, studies focus on older drivers because of the prevalence of certain conditions. While field of vision may be the subject of interest, the test subjects are declining in more than just vision-related ways.
- Test conditions used in some of the studies do not adequately replicate actual driving situations.

Studies Finding a Correlation between Visual Field and Driving Safety

DMV staff identified some studies that found a correlation between visual field and driving safety:

In *Incidence of Visual Field Loss in 20,000 Eyes and its Relationship to Driving Performance*, the researchers, using automated perimetry testing, “examined the relationship between the status of peripheral vision and driving performance by comparing our visual field

²¹ See *id.*

test results with accident and conviction records for three years prior to the test date.”²² Two groups of test subjects with visual field deficits were examined: (1) those with visual field loss in one eye and a normal visual field in the other eye and (2) those with visual field loss in both eyes. The groups were compared with the accident and conviction records of an age and sex matched control group of persons with normal visual fields in both eyes. The research found that there were only minor differences that were not statistically significant between accident and conviction rates for persons with visual field loss in one eye (monocular visual field loss) and the control group. However, drivers with visual field loss in both eyes (binocular visual field loss) had twice the crash and conviction rates than those in the control group with normal visual fields. The researchers concluded that “[t]hese findings clearly indicate that the visual field may play an important role in driving performance.”²³

While this study was conducted in 1983, and now has some age on it for purposes of research most articles and studies addressing the topic of visual field and driving continue to cite this study because of its thorough collection of medical history, consistency of visual field screening technique, and the size of the initial sample (10,000 California drivers, 20,000 eyes). Unfortunately, for the purpose of guiding the work group’s recommendations on possible changes to the Virginia requirements for visual field, this research did not stratify or clearly define the degrees of visual field loss or provide a minimum standard for visual field for safe driving performance.

Driving With Central Field Loss I examined central visual field loss (CFL) caused by scotomas or blind spots and how CFL affects reaction times of drivers in detecting pedestrians.²⁴ The study was a simulator study involving 11 test subjects with CFL and 11 control subjects with normal vision. All subjects had at least 120-degree total horizontal visual field. The study found that test subjects with CFL had longer reaction times in detecting pedestrians in both their blind and seeing areas. The study concluded that “CFL may affect driving safety independent of its effect on acuity, thus, patients with CFL may be more vulnerable to hazards than other drivers with reduced acuity alone.”²⁵ However, the study did not provide any recommendations on a minimum standard for visual field for safe driving performance.

Association between Glaucoma and At-fault Motor Vehicle Collision Involvement among Older Drivers is a population-based study of a random sample of 2,000 licensed drivers in Alabama aged 70 or older. The study examined “the association between glaucoma and motor vehicle collision involvement among older drivers, including the role of visual field impairment that may underlie any association found.”²⁶ The researchers used at-fault motor vehicle collision

²² See Johnson, C. A., & Keltner, J. L. (1983). *Incidence of Visual Field Loss in 20,000 Eyes and Its Relationship to Driving Performance*. *Archives of Ophthalmology*, 101(3), 371-375, p. 371
doi:10.1001/archophth.1983.01040010371002

²³ See *id.* at p. 374

²⁴ See Bronstad, P. M., Bowers, A. R., Albu, A., Goldstein, R., & Peli, E. (2013). *Driving With Central Field Loss I*. *JAMA Ophthalmology*, 131(3), 303-309. doi:10.1001/jamaophthalmol.2013.1443

²⁵ See *id.* at p. 308

²⁶ Kwon, M., Huisinigh, C., Rhodes, L. A., Mcgwin, G., Wood, J. M., & Owsley, C. (2016). *Association between Glaucoma and At-fault Motor Vehicle Collision Involvement among Older Drivers*. *Ophthalmology*, 123(1), 109-116. doi:10.1016/j.ophtha.2015.08.043

(MVC) involvement incidents from state records over the five years before enrollment was obtained. The study measured three aspects of visual function: habitual binocular distance visual acuity (VA), binocular contrast sensitivity (CS), and the binocular driving visual field constructed from combining the monocular visual fields of each eye. The researchers asked whether older drivers with glaucoma have a higher MVC rate compared with those without glaucoma, and if so is visual field loss from glaucoma associated with at-fault MVC among drivers with glaucoma after controlling for other visual impairments such as VA or CS? The researchers found among those with glaucoma, drivers with a severe visual field loss were two times more likely to have had an at fault motor vehicle crash within the five-year period leading up to the study. However, the researchers found no correlation between crash rate and visual acuity or contrast sensitivity. The researchers concluded that “older drivers with glaucoma are more likely to have a history of at-fault MVC involvement than those without glaucoma. The results indicated that severe visual field impairment in drivers with glaucoma may have an independent association with at-fault MVC involvement, whereas VA and CS impairments do not.”²⁷ The researchers also indicated that of VA, CS, and visual field, “visual field loss is the important visual mechanism underlying increased crash risk in older drivers with glaucoma.”²⁸

On-Road Driving with Moderate Visual Field Loss states that “it might be obvious that a person with severe visual field restriction could not drive safely, it is far less clear what minimum size of the visual field would be consistent with safe driving.”²⁹ The study examined driving skills and maneuvers that would be expected to be negatively impacted by peripheral visual field loss and those that would not be impacted, and the relationship between driving skills and other measures related to driving performance such as useful field of view (UFOV) and contrast sensitivity.³⁰ Twenty-five test subjects were recruited from ophthalmology clinics affiliated with the University of Alabama at Birmingham. The researchers found correlations between peripheral visual field loss and deterioration of certain driving skills. For instance, “[d]rivers with more restricted fields showed poorer skills in speed matching when changing lanes, and poorer skills in maintaining lane position and keeping to the path of the curve when driving around curves.”³¹ The study results demonstrated that “in a small sample of drivers, that mild to moderate peripheral visual field restrictions adversely affect specific driving skills in maneuvers for which a wide field of vision is likely to be important (although the majority of subjects were regarded as safe drivers).”³²

Studies Not Finding a Correlation between Visual Field and Driving Safety

DMV staff identified several studies that did not find a correlation between visual field and driving safety, making it difficult to derive any recommendations.

²⁷ See *id.* at p. 112.

²⁸ See *id.* at p. 113.

²⁹ Bowers, A., Peli, E., Elgin, J., Mcgwin, G., & Owsley, C. (2005). *On-Road Driving with Moderate Visual Field Loss*. *Optometry and Vision Science*, 82(8), 657-667, p. 657. doi:10.1097/01.opx.0000175558.33268.b5

³⁰ See *id.* at p. 658.

³¹ See *id.* at p. 665.

³² See *id.* at p. 666.

The Canadian Council of Motor Transport Administrators (CCMTA 2009) has adopted visual field of 120 degrees for most drivers. The CCMTA has determined that for drivers “a visual ‘field less than 120° along the horizontal meridian and 15° continuous above and below fixation, with both eyes open and examined together’ is an immediate contraindication to driving.”³³ However, in the study *Visual Field Defects May Not Affect Safe Driving*, the researchers noted that the CCMTA’s “standard is not based upon scientific evidence.”³⁴ The study goes on to state that “[e]stablishing that the minimum standard for binocular visual fields should be 120 degrees rather than 110, 100, or even 90 degrees is a matter of opinion based on the consensus of eye specialists. Though such a conclusion may be reasonable and is shared by eye specialists in a number of countries throughout the world...no one has yet managed to prove that drivers whose binocular visual fields are below this standard are necessarily unsafe.”³⁵ Canadian law requires that anyone that is denied a driver’s license for failing to meet medical standards but claims they can drive safely must be permitted a driving evaluation by the licensing authority. In Quebec, private drivers are required to meet a 100 degree of continuous visual field, and those with a visual field impairment that are ineligible for a driver’s permit renewal may request an exemption from the visual field standard by demonstrating safe driving despite the impairment.

The goal of the study was “to attempt to identify predictors of failure on the road test in order to avoid placing driving evaluators in potentially dangerous situations when evaluating drivers with visual field defects.”³⁶ The study data collected included age, sex, type of visual field defect, visual field characteristics, and concomitant medical problems. The data revealed that no single factor, or combination of factors, could predict failure of the road test.³⁷ The study examined all requests for exemptions from the visual field standard in Quebec during a 4-month period in 2009. Ninety-one of the 103 requests (88 percent) for a waiver of the Quebec visual field standard were successful in demonstrating that despite visual field impairment they were safe to drive. The researchers concluded that the study is “important in that it demonstrates clearly that the driver with a visual field defect may be able to drive safely...and underlines the importance of licensing agencies abolishing unilateral suspension without recourse for drivers whose visual fields fall below the stated minimum in their local medical standards.”³⁸

On-Road Driving Performance by Persons with Hemianopia and Quadrantanopia was a study designed to examine the on-road driving performance of drivers with hemianopia and quadrantanopia compared with age-matched controls.³⁹ The study included 22 persons with

³³ Dow, J. (2011). *Visual Field Defects May Not Affect Safe Driving*. *Traffic Injury Prevention*, 12(5), 483-490, p. 483. doi:10.1080/15389588.2011.582906

³⁴ See *id.* at p. 483.

³⁵ See *id.* at p. 484.

³⁶ See *id.* at p. 485.

³⁷ See *id.* at p. 488.

³⁸ See *id.*

³⁹ Wood, J. M., Mcgwin, G., Elgin, J., Vaphiades, M. S., Braswell, R. A., Decarlo, D. K., . . . Owsley, C. (2009). *On-Road Driving Performance by Persons with Hemianopia and Quadrantanopia*. *Investigative Ophthalmology & Visual Science*, 50(2), 577-585. doi:10.1167/iovs.08-2506 Author Manuscript p.1-19, p. 1. “Homonymous visual field defects occur when field loss is in the same relative position in visual space in each eye. The term hemianopia is used if one half of the field is involved, and quadrantanopia if only one quadrant is affected.”

hemianopia and 8 with quadrantanopia and 30 participants with normal fields. Study participants' driving performance was assessed by a certified driving rehabilitation specialist and two "back-seat" evaluators over a 14.1 mile route of city and interstate driving.

The researchers noted that in most jurisdictions persons with the two conditions are generally barred from receiving driver's licenses, but there is little evidence to support these prohibitions.⁴⁰ The results of the study revealed that all drivers with normal fields were rated as safe to drive, while 73 percent (16/22) of hemianopic and 88 percent (7/8) of quadrantanopic drivers received safe ratings, although they performed less well than drivers with normal fields in the areas of steadiness, steering, lane position, and gap judgement.⁴¹ The study recommended that jurisdictions offer persons with these conditions the opportunity for an on-road driving evaluation by a certified driving rehabilitation specialists rather than implementing policies that categorically deny licensure to persons with hemianopia or quadrantanopia without any scientific basis.⁴²

The *Clinician's guide to assessing and counseling older drivers*, 3rd edition, is designed to help health care practitioners prevent motor vehicle crashes and injury to older adults. This guide, which is the result of a cooperative agreement between the American Geriatrics Society (AGS) and the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA),⁴³ is intended to help clinicians counsel patients about driving cessation and alternative means of transportation, while answering questions such as:

- At what level of severity do medical conditions impair safe driving? and
- What can be done to help older adults prolong their driving life expectancy (time behind the wheel)?⁴⁴

In attempting to help clinicians, the guide examines issues related to vision in older drivers including vision conditions, visual acuity and contrast, and loss of visual field. The guide advises clinicians that visual field loss is often the result of medical conditions such as glaucoma, optic neuritis, detached retina, and stroke/traumatic brain injury, and notes that "[d]rivers with loss of peripheral vision may have trouble noticing traffic signs or cars and pedestrians about to cross their path."⁴⁵ It goes on to state that "[t]he evidence examining the relationship between visual field loss and driving performance is still evolving."⁴⁶ However, it notes that while "adequate visual field is important for safe driving, there is no conclusive evidence to define 'adequate.' Most likely, this varies widely from person to person and may depend on the

⁴⁰ See *id.* at p. 578.

⁴¹ See *id.* at Author Manuscript p.7.

⁴² See *id.* at Author Manuscript p.8.

⁴³ American Geriatrics Society & A. Pomidor, Ed. (2016, January). *Clinician's Guide to Assessing and Counseling Older Drivers*, 3rd edition, p. X. (Report No. DOT HS 812 228). Washington, DC: National Highway Traffic Safety Administration. The American Geriatrics Society retains the copyright.

⁴⁴ See *id.* at p. 2.

⁴⁵ See *id.* at p. 34.

⁴⁶ See *id.* citing Dobbs, B. M. (2002, February). Medical Conditions and Driving: Current Knowledge. (NHTSA Contract Number DTNH22-94-G-05297). Barrington, IL: Association for the Advancement of Automotive Medicine.

presence of other comorbidities.”⁴⁷ The guide encourages screening for visual field loss “because most older adults with visual field loss are unaware of the deficit until it becomes quite significant, especially if their medical condition warrants examination (e.g., stroke, macular degeneration).”⁴⁸ The guide further recommends “[f]or older adults with a binocular visual field of questionable adequacy (as deemed by clinical judgment), strongly recommend an on-road assessment performed by a DRS. Through driving rehabilitation, the older adult may learn how to compensate for decreased visual fields.”⁴⁹

Only two reports reviewed by the work group contained a visual field recommendation. Visual field recommendations for drivers presented at the 30th World Ophthalmology Congress included a visual field of 120 degrees in the horizontal meridian with no obvious interruptions and approximately evenly divided to the left and right of fixation. It also included a vertical requirement of 20 degrees above and below fixation (40 degrees total) with testing done binocularly with both eyes open.⁵⁰ In making their recommendation, the authors noted that “visual problems, which are permanent and therefore easily tested, are probably important among the reasons for accidents and traffic violations.”⁵¹ The authors went on to say that while visual acuity screening can be done more easily and at less cost, visual field screening is more involved and more expensive. The authors suggested that “[t]he cost of screening all applicants should be weighed against the number of accidents prevented. In many situations screening and testing may be done only for selected applicants, e.g. only for those who have already been referred for an eye examination because of visual acuity loss, those in whom field loss is suspected, and/or those involved in accidents.”⁵² The European Council of Optometry and Optics in *Driving and Vision – Position Paper of the European Council of Optometry and Optics* recommends that all European Union member states require 120 degrees horizontal visual field with at least 50 degrees to the left and 50 degrees to the right with 20 degrees both up and down from the point of fixation.⁵³ The authors noted that “there is substantial evidence that links poor vision to impaired driver performance...” and concluded that “a clear minimum standard for visual acuity and visual fields for all drivers was necessary...”⁵⁴ While both reports made visual field recommendations, the reports provided very little on the justification for the proposed requirements.

Research Conclusions

In attempting to draw conclusions from the literature review, the work group was cognizant of the impact of affecting the ability of persons with visual impairments to remain licensed and able to drive without having scientific evidence and data to support any recommendation to increase visual field requirements. As noted in one clinical investigation,

⁴⁷ See *id.* at p. 54.

⁴⁸ See *id.*

⁴⁹ See *id.* at p. 55.

⁵⁰ Colenbrader, A., MD, & De Laey, J. J., MD. *Visual Standards; Vision Requirements for Driving Safety with Emphasis on Individual Assessment.* (2006). San Francisco, CA: International Council of Ophthalmology. p. 11

⁵¹ See *id.* at p. 7.

⁵² See *id.* at p. 14.

⁵³ European Council of Optometry and Optics in *Driving and Vision – Position Paper of the European Council of Optometry and Optics* p. 2.

⁵⁴ See *id.* at p. 5.

“[d]riving cessation was reported to be associated with declines in general health and physical, social, and cognitive function and with greater risks of admission to long-term care facilities and mortality.”⁵⁵ Specifically, for Virginia, Ray Hopkins, Commissioner for the Virginia Department for the Blind and Vision Impaired and Deputy Commissioner Matt Koch noted that transportation is the number one issue facing the agency’s stakeholders, and that there are serious consequences to losing the ability to drive such as a high rate of unemployment among the visually impaired. This is made worse by the lack of available transportation alternatives. They stressed the need to rely on data rather than emotion in making any increases to the visual field requirements due to the seriousness of the consequences of losing one’s ability to drive. Dr. Daniel Drysdale from VSEPS indicated that there is pressure on doctors to let people continue to drive even though patients may be dealing with a host of other serious medical challenges beyond just visual impairments. Addressing the issue of driving with such patients is a complex and delicate interaction. He stressed that it is impossible to remove the emotion from trying to balance safety while counseling patients who desire to continue to drive.

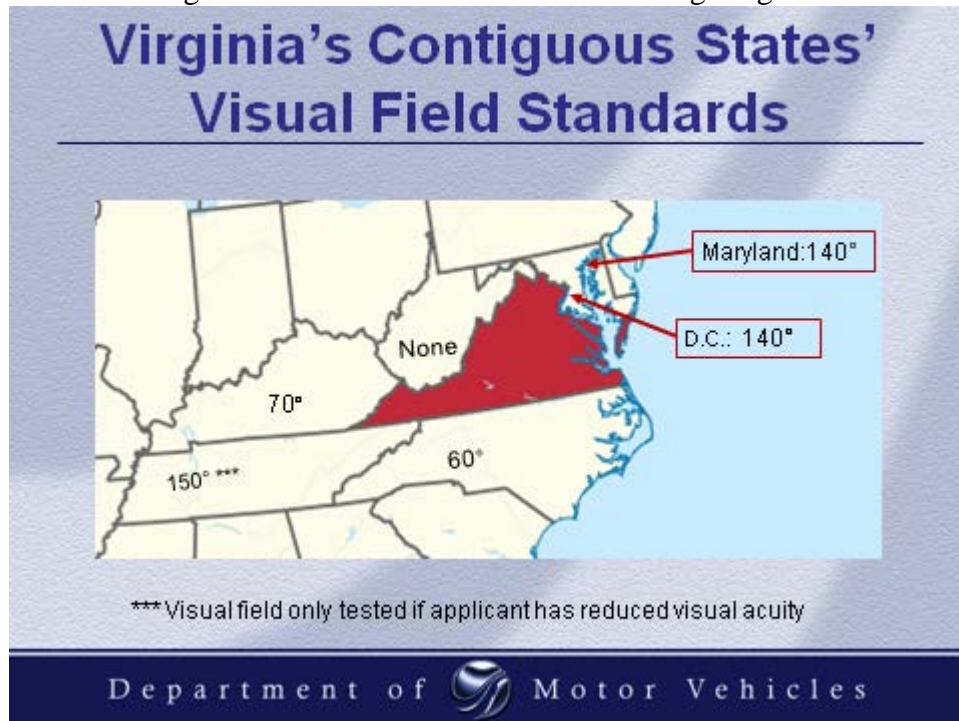
After culling through the available research, it became evident to the work group that there is insufficient evidence to establish a scientifically supported minimum standard for visual field. The studies conducted to this point have inconclusive and contradictory findings, making it difficult to derive any recommendations. It appears from the various studies that there is an association between visual field and driving safety; however, the literature is unclear as to how wide the visual field must be to reduce risk. Further, because of a lack of conclusive data, acceptable minimum standards for visual field vary widely by jurisdiction, and are usually based on a consensus of advisory opinions, rather than conclusive scientific evidence.

Visual Field Standards in U.S. States, U.S. Territories, and Canadian Provinces/Territories

After completing the literature review, the study group reviewed and compared Virginia’s visual field standards with the minimum visual field standards required to obtain a driver license in other U.S. States, U.S. Territories, and Canadian Provinces and Territories, with particular emphasis on states bordering Virginia. The research revealed that Virginia’s standards appear to be in the middle, with some states having higher standards and some having lower or no standards. As Figure 5 illustrates, among bordering jurisdictions, Maryland, Washington, D. C., Tennessee and Kentucky have higher standards than Virginia’s 110 degrees.

⁵⁵Chihuri, S., Mielenz, T. J., Dimaggio, C. J., Betz, M. E., Diguiseppi, C., Jones, V. C., & Li, G. (2016). *Driving Cessation and Health Outcomes in Older Adults*. *Journal of the American Geriatrics Society*, 64(2), 332-341, p. 332. doi:10.1111/jgs.1393

Figure 5: Visual Fields in States Bordering Virginia



In Maryland, to gain unrestricted driving privileges, applicants must have 140 degrees of continuous field of vision (binocular), and applicants with monocular vision must have a continuous field of vision of at least 110 degrees with at least 35 degrees lateral to the midline of each side. In Washington, D. C., driver's license applicants must have 140 degrees field of vision in the horizontal meridian. Applicants for driver's licenses in Kentucky must have at least 70 degrees of horizontal vision and at least 80 degrees of vertical vision in the same eye. North Carolina requires applicants to have at least 60 degrees of visual field. Tennessee requires visual field to be tested if an applicant wears bioptic and/or telescopic lenses to pass the visual acuity test (has to be at least 20/200). Applicants wearing telescopic lenses must test at least 150 degrees field of vision to be granted driving privileges. Lastly, West Virginia does not require applicants to have their visual field tested in order to gain unrestricted driving privileges. The research of other jurisdictions further revealed that:

- 10 states do not have any visual field requirements.
- 8 states have an unrestricted license visual field requirement below 110 degree.
- 9 states have an unrestricted license visual field requirement at 110 degrees.
- 24 states have an unrestricted license visual field requirement that exceeds 110 degrees.
- 2 states have a restricted license visual field requirement below Virginia's requirement of 70 degrees.
- 4 states have a restricted license visual field requirement the same as Virginia's 70-degree requirement.
- 10 states have a restricted license visual field requirement that exceeds Virginia's 70-degree requirement.
- Not all states offer license restrictions based on reduced visual field.

- Of the 5 U.S. Territories researched, only Guam specified a visual field requirement (140 degrees).
- Of the 13 Canadian Provinces and Territories researched, 12 have a visual field standard of 120 degrees.
- Quebec has a visual field standard of 100 degrees.

DMV staff reached out to the 24 states that have unrestricted license visual field requirements that exceed Virginia's 110 degree standard in an attempt to gather the reasons the states had set their standards at a higher degree. Of the states that responded none were able to provide the reasoning for the standard in place. With no further information available the visual field standards from other jurisdictions did not suggest that Virginia's current visual field standards were in need of amendment to better align the Commonwealth with its bordering states or with standards nationwide.

Visual Field-Virginia Data

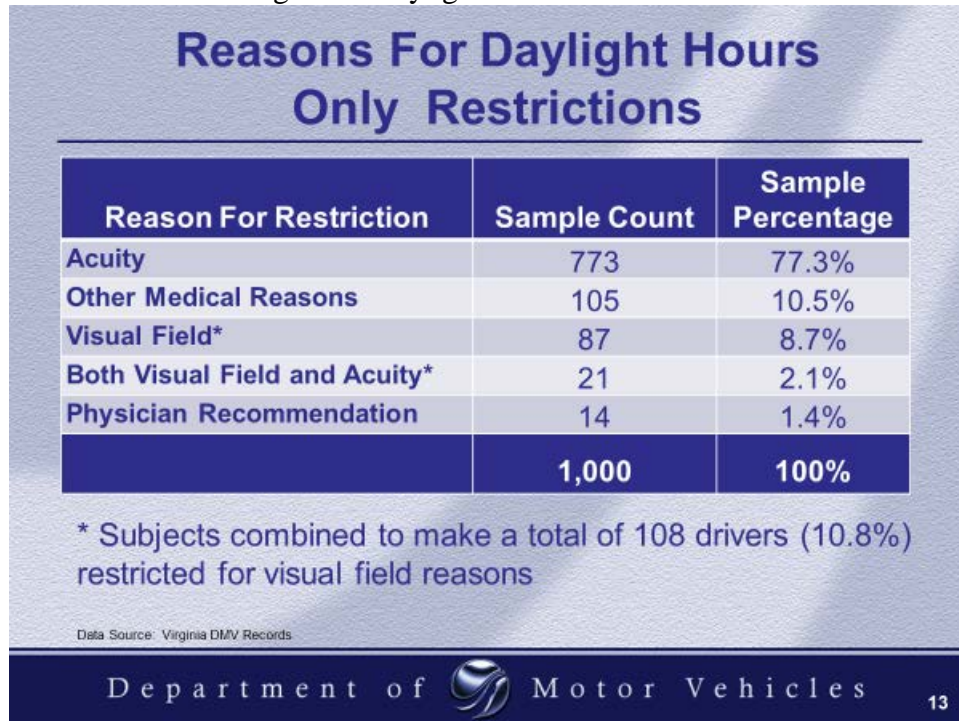
After reviewing available research and literature on visual fields that revealed inconclusive data regarding acceptable minimum standards and comparing Virginia's standards with the widely varying standards of other jurisdictions, the study group remained without recommendations. The next step was to examine data specific to Virginia licensed drivers to determine if there was data to provide guidance to the group on what acceptable minimum standards should be to reduce risk and if Virginia's standards needed further amendment.

DMV staff outlined the agency's data collection efforts and the challenges. There are currently 5.9 million drivers with Virginia licenses. Of the licensed population, 23,710 drivers have DMV issued medical orders, and 10,631 drivers have restrictions for driving during daylight hours only. The majority of restrictions for daylight only driving were placed on the customers' licenses in CSCs and there is no vision report information available. The CSCs inputted the information that a driver needed a license restriction but not whether the restriction was for visual acuity or for visual field. Customer records for customers with medical orders contain the reasons for the medical orders. In July of 2016, the Medical Advisory Board initiated a policy change to require the submission and retention of a VFA for all drivers under medical review with progressive conditions that reduce the field of vision such as, moderate or advanced glaucoma, diabetic retinopathy, and retinitis pigmentosa. Additionally, in March of 2017, DMV initiated a policy change to begin recording whether a driver's vision-based restriction was the result of a visual acuity impairment or a visual field impairment. While these changes helped to better identify persons with visual field concerns, they had not been in place long enough to provide sufficient information for the study group to review at this time. This unfortunately raised concerns that achieving a sample size adequate to establish statistical significance would not be possible with existing records. However, DMV staff identified 1,000 drivers' records that have restrictions for daylight only driving and that also have medical orders with vision reports available.

DMV staff performed a manual audit of the 1,000 customer records to identify the reason for the daylight driving only restriction. As Figure 6 illustrates, while the majority of the restrictions were for visual acuity issues, staff identified a sample of 108 drivers that were

restricted to daylight driving only for visual field defects or for a combination of visual field and acuity defects. Thirty-three of the sampled drivers were monocular and 75 of the sampled drivers were binocular.

Figure 6: Daylight Hours Restrictions



The 108 sampled drivers were also broken out by age ranges to identify if visual field defects are more prevalent within certain age groups and to create an age-matched control group of non-restricted drivers. Of the 108 sampled, visual field defects occurred more often in persons aged 60 and older. This data in Figure 7 was predictable since both the literature review and DMV’s previous work on the *Mature Drivers Study* in 2013 indicated that health issues and vision deterioration increase as individuals age.⁵⁶ DMV staff noted that as a result of the *Mature*

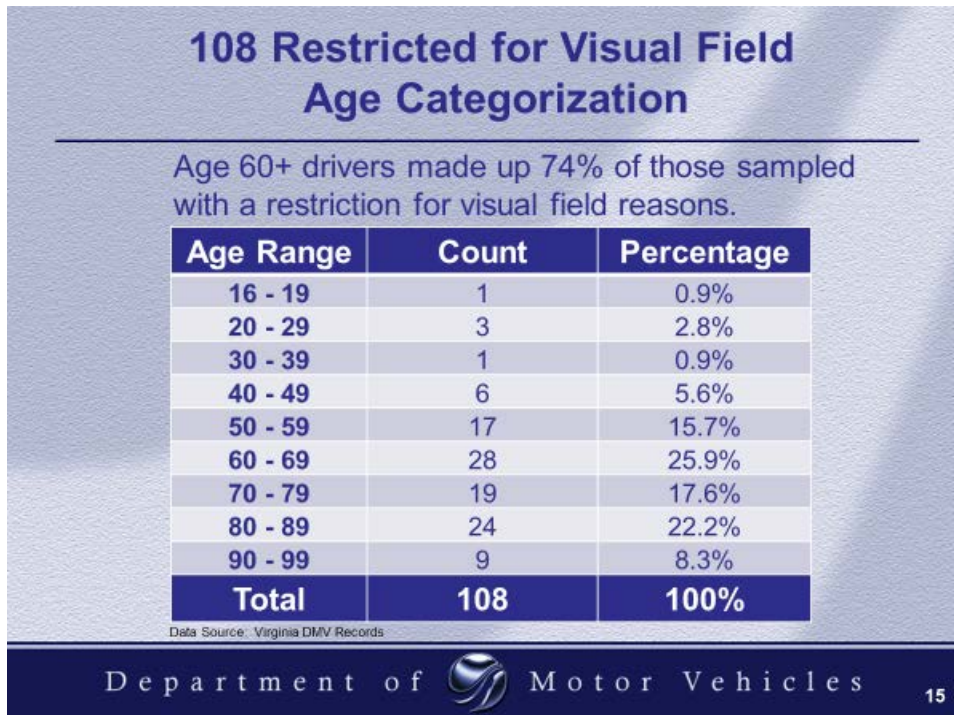
⁵⁶See *Mature Drivers Study - 2013*

<http://leg2.state.va.us/DLS/h&sdocs.nsf/5c7ff392dd0ce64d85256ec400674ecb/61e49ff4b0fa765485257c37007334b0?OpenDocument>. In 2013, the chairs of the General Assembly Transportation Committees requested that DMV study “whether the Commonwealth should adopt additional objective criteria in current license renewal requirements as a means of assessing mature drivers’ continued capability to remain active, safe, independent, and mobile on the road as they age.” The Mature Drivers Study group recognized that the normal aging process impacts reflexes, vision, mobility and cognitive function and recommended legislation (HB 771-2014 Virginia Acts of Assembly Chapter 282) to:

- Amend § 46.2-330 of the *Code of Virginia* to lower the statutory age for mandatory in-person license renewal for mature drivers from age 80 to age 75.
- Amend § 46.2-330 of the *Code of Virginia* to shorten the license renewal period from eight years to five years for persons age 75 and older. Therefore, any person renewing his license at age 75 or older would have a five-year license renewal cycle
- Implement a convenient means for licensed drivers age 70 and older to voluntarily exchange their driver’s licenses for special identification cards through alternative means (online, by phone, by mail)

Drivers Study addressing health and vision related issues in older drivers may be done more quickly since persons aged 75 and older are required to appear in person for license renewal and receive a vision screening.⁵⁷

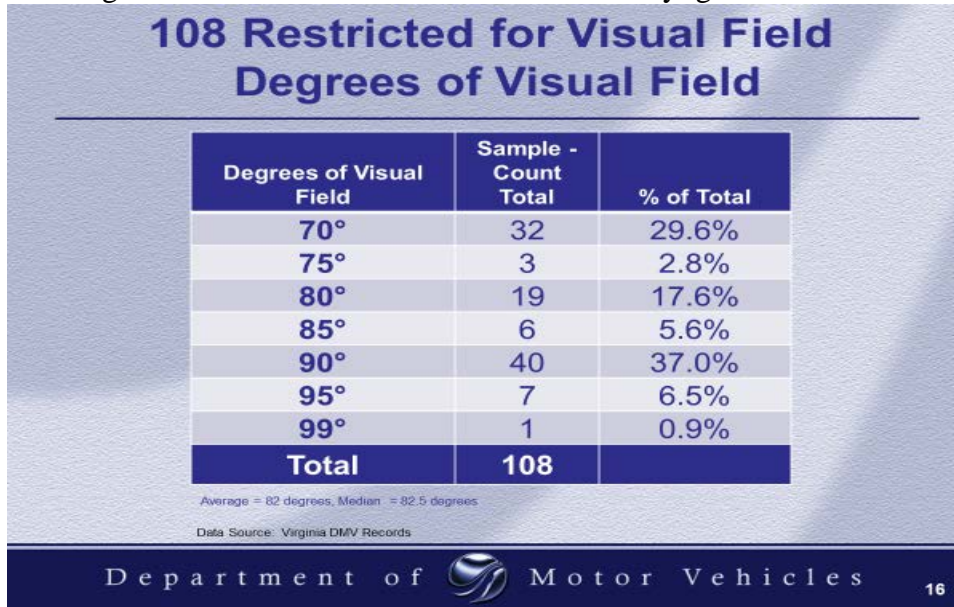
Figure 7: Age Categorization of 108 Drivers with Daylight Restrictions for Visual Field



After reviewing data on the age categorization of the 108 restricted drivers' sampled, the study group examined the visual field that each of the 108 drivers had. Figure 8 indicates that the visual field of the drivers is distributed throughout the range of 70 degrees to 99 degrees with the sample of drivers not clustering around any one particular degree of visual field. Fewer than 30 percent of drivers sampled had 70 degrees of visual field and 37 percent were found to have 90 degrees of visual field.

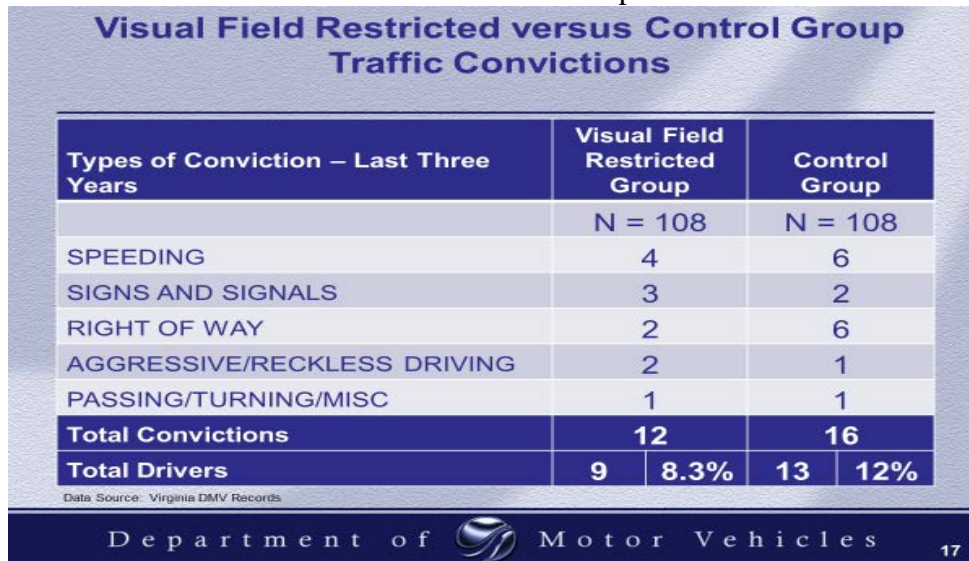
⁵⁷ As a result of the legislation enacted from the *Mature Drivers Study* DMV data reveals that DMV has had an increase in the number of reports of medically at-risk drivers received from physicians, police, CSRs and from customer applications. There has also been a 45.3 percent increase among senior drivers surrendering their licenses. More drivers are also being evaluated through the Medical Review Process for stroke, Alzheimer's disease, dementia and pulmonary disorders. With more drivers recognizing the need to surrender their licenses DMV has seen a decrease in the number of drivers on medical review for vision related issues as well as the overall number of drivers on medical review.

Figure 8: Visual Field of 108 Drivers with Daylight Restrictions



For these drivers, the study group then compared the last three years of conviction and crash data to the age matched control group of non-restricted drivers. While conviction data and crash reports do not necessarily identify visual field defects as the cause of a crash or offense resulting in conviction, common types of offenses that may be related to visual field limitations and defects were used in compiling the data. The offenses included speeding, failing to follow traffic signs or signals used to guide and control traffic, failing to yield the right-of-way, aggressive or reckless driving, and improper passing or turning violations. This comparison included at Figure 9 illustrates that the non-restricted control group actually posed a higher risk of moving violation convictions. This was likely due to fewer miles being driven by the restricted group (12 convictions for the restricted group, 16 convictions for the non-restricted control group).

Figure 9: Traffic Convictions-108 Restricted Driver Sample vs. Non-Restricted Control Group



On the other hand, Figure 10 shows that the restricted group had a higher risk of at-fault crashes. There were 12 drivers in the restricted sample group with nine of those drivers having one at-fault crash each and three drivers having two at-fault crashes each for a total of 15 at-fault crashes for the restricted group. The non-restricted control group had 8 at-fault crashes (drivers with one at-fault crash and no second at-fault crashes) during that three-year period.

Figure 10: At-Fault Crashes-108 Restricted Driver Sample vs. Non-Restricted Control Group

**Visual Field Restricted versus Control Group
At-Fault Crashes**

At-Fault Crashes– Last Three Years	Visual Field Restricted Group		Control Group	
	N = 108		N = 108	
Total At-Fault Crashes	15		8	
Drivers With One At-Fault Crash	9	8.3%	8	7.4%
Drivers With Two At-Fault Crashes	3	2.8%	–	–
Total Drivers With At-Fault Crashes	12	11.1%	8	7.4%

Data Source: Virginia DMV Records


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Figure 11 illustrates that the number of crashes was distributed relatively proportionately throughout the range of visual fields. For example, sample subjects with 70 degrees of visual field represented 29.6 percent of the drivers sampled and accounted for 33.3 percent of the crashes that occurred. Breaking crashes down by degree of visual field for the 108 restricted drivers sampled did not yield a clear point at which risk increases.

Figure 11: 108 Restricted Driver Sample – Crashes by Degree of Visual Field

**Visual Field Restricted Group
Crashes by Degree of Visual Field**

Driver's Visual Field	Visual Field Restricted Crashes – Last Three Years						
	% of Total Drivers Sampled	One Crash Count	% With One Crash	Second Crash Count	% With Second Crash	Total Crashes Count	Total Crashes %
70°	29.6%	4	3.7%	1	0.9%	5	33.3%
75°	2.8%	1	0.9%	–	–	1	6.7%
80°	17.6%	1	0.9%	–	–	1	6.7%
85°	5.6%	–	–	–	–	–	0.0%
90°	37.0%	4	3.7%	2	1.9%	6	40.0%
95°	6.5%	1	0.9%	–	–	1	6.7%
99°	0.9%	1	0.9%	–	–	1	6.7%
		12	11.1%	3	2.8%	15	

Data Source: Virginia DMV Records

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Recommendations

After reviewing the data from the 108 restricted drivers sampled, it was clear to the study group that the initial concerns over the sample size being inadequate to establish statistical significance were justified. In addressing the study charge, DMV's Commissioner Holcomb posed to the study group whether they felt that based on a review of current processes, data on Virginia licensed drivers, current research and literature, and other jurisdiction's standards there was sufficient data at this time to initiate any changes in Virginia's visual field standards for screening driver's license applicants. The group concluded that there was not. Commissioner Holcomb also pointed out that the new 110 degree standard just went into effect on July 1, 2017, so it is too early to be able to draw conclusions about the impact of the current requirement. It was also too early to determine the impact of two DMV operational changes: 1) requiring the submission and retention of a VFA for all drivers under medical review for progressive medical conditions that reduce the visual field and 2) recording whether a driver's vision-based restriction was the result of a visual acuity impairment or a visual field impairment. Additionally, beginning July 1, 2017, DMV began recording visual field and acuity measurements from the driver vision reports on the customer record for all drivers who present a vision report from an eye care professional.

The study group concluded that DMV will likely need two to three more years to gather enough data to make up a sufficient sample size to determine any recommendations. Commissioner Holcomb recommended that DMV be allowed to continue to collect data over the next few years in order to obtain a sample size large enough to provide statistically significant data and then reconvene the stakeholders to review the new data along with the impact resulting from the new 110 degree standard to determine if further amendments to the visual field standards are needed. He added that there should be additional data derived from the changes made as a result of DMV's *Mature Drivers Study* that could provide valuable information. Stakeholders were in agreement that there is not sufficient data to recommend changes and that the data collection should continue.

DMV staff indicated that the operational changes the agency has made will generate a larger sample size and thus a more complete set of data will be available to analyze. Additionally, over the next few years, DMV will be in a better position to collect data on:

- The number of drivers who have been restricted due to raising the minimum non-restricted standard from 100 degrees to 110 degrees;
- The percentage of daylight only restricted drivers who are restricted for visual field reasons;
- The crash and conviction rates of those drivers with a restricted license for visual field reasons versus those with no restrictions;
- The relationship in the statistics between a driver's available visual field, traffic convictions and at fault crashes; and
- The daylight hour crashes for the control group for a comparison with the sample of drivers restricted for visual field reasons.

In addition to data collection changes, DMV staff indicated that other operational changes will be made to help collect better data, to assist in better identification of drivers with visual impairments and to assist eye care professionals. Such changes include enhancing employee training on vision screening, revising DMV forms such as the *MED 4 Customer Vision Report* to incorporate suggestions from eye care professionals and increased outreach with eye care professionals. The DMV Medical Review web page was also updated at the suggestion of stakeholders to make the medical review process more visible, and this update was done prior to the conclusion of the study.

The study group recommended that DMV staff work with the Virginia Optometric Association (VOA), Virginia Society of Eye Physicians and Surgeons (VSEPS), and the Department of Health Professions to develop a continuing medical education (CME) seminar on DMV requirements for vision screening and visual field analysis and disseminate it to eye care professionals for CME credit. Commissioner Holcomb committed DMV to assisting with this recommendation. Various DMV staff members from MRS, Customer Service, Legislative Services, and Strategic Management Services are actively participating with VOA, VSEPS, and the Department of Health Professions in the development of the CME presentation. In addition, DMV staff are working with VSEPS and VOA to discuss and identify revisions to the *MED 4 Customer Vision Report* form. The group unanimously agreed on a number of changes to make the form clearer and more user friendly, and to help clarify that DMV is responsible for making the determination of whether a person's vision is acceptable for safe driving based on the vision information provided on the form. The VSEPS and VOA representatives believe that the form revisions, along with the information provided in the CME, will help ensure a more accurate and efficient reporting of vision data, and ultimately result in safer roadways for all.

Stakeholders further recommended that when DMV receives a crash report involving a driver who is currently under medical review that the DMV crash reporting system known as the Traffic Records Electronic Data System (TREDS) be modified to notify Medical Review Services. MRS would review the crash report along with the person's medical review status and driving records to determine if additional action is warranted. Medical Review Services consulted with staff in the DMV Highway Safety Office to determine if this system modification was technically possible. Unfortunately, the TREDS system is unable to be modified in such a way that would accomplish this recommendation. MRS staff will continue to explore whether there are other options available within DMV systems to accomplish this recommendation. If any system changes can be made, staff will work with the Office of the Attorney General to ensure that any such modification complies with privacy requirements.

Lastly, stakeholders recommended that DMV consider joining other states in a collaborative effort to collect data for setting visual standards. The Commissioner indicated that once the report is published it will be sent to the American Association of Motor Vehicle Administrators (AAMVA), the DMV trade organization. He would also raise the subject as a discussion item at the next Mid-Atlantic Regional administrative meeting.

There were a few recommendations that were proposed during the study that DMV determined would diminish customer service rather than enhance it. Stakeholders recommended that all vision reports completed by eye care professionals be submitted to DMV directly from

the physician to avoid the possibility of customer alteration of the report. DMV staff noted that currently there are three major groups of customers who submit vision reports to DMV. There are customers who undergo a vision exam at their doctor's office, have their doctor complete the vision report, and present that report at a CSC in lieu of the vision screening. The second group is customers who fail the vision screening at DMV and are given the *MED 4* form to take to their eye doctor for completion. Those customers typically return to the CSC with the completed form. The third group of customers is under DMV medical review and is required periodically to complete a *MED 4* as a part of the medical review process. Changing the submission process to require the *MED 4* form to be submitted only by doctors would require extensive and costly changes to DMV's processes and automated systems and would mean all reports would go to Medical Review Services staff as opposed to just reports for those customers who are under medical review. This would create a significant delay for customers who are not on medical review to receive their licenses if they have to wait for medical review staff to process all of the *MED 4* reports instead of just those required by the medical review process.

It was further proposed that all faxed reports for persons who pass the vision screening and are not under medical review be sent directly to the CSCs. Commissioner Holcomb noted that DMV does not have the staff to support this proposal since it would require monitoring of fax lines in 75 DMV offices. There was also concern that multiple fax numbers would lead to confusion and the possibility of vision reports being faxed to the wrong locations. Since drivers cannot receive a license until that report is entered into the system, whether all vision reports are sent to Medical Review Services or to the CSCs this proposal would result in a lengthy delay in customers who have passed the vision screening receiving their licenses.

DMV staff stressed that the agency has minimal concerns that altered reports will be inadvertently accepted. Medical review staff and CSRs are trained to spot alterations and fraud. In over twenty years, there have been roughly fewer than a dozen cases identified where fraudulent or altered medical reports were submitted by customers. It was after one case of alteration that DMV made changes to only accept original reports created by physicians when being submitted by customers and faxed reports may only come from physicians. Since DMV indicated that altered reports have not been a significant problem over the years, the consensus was that it would be unnecessary to expend resources to change the existing practice of report submission.

Stakeholders suggested that CSC staff should be given a script to read advising customers who fail the vision screening at a CSC that they should discontinue driving and see a doctor within the next two weeks. Commissioner Holcomb indicated that DMV has a statutory obligation to provide due process by providing licensed drivers 15 days' notice before a license is suspended. After consulting with the Office of the Attorney General on the agency's authority to implement this proposal, the Commissioner confirmed that the agency could not proceed with this recommendation.

Lastly, the eye care professionals expressed concerns regarding the increase in visual field testing that has resulted from changes by the DMV Medical Advisory Board to the Visual Field Policy. They find the demands of the current tests to be onerous and suggested the Esterman visual field test as a compromise. It is a binocular screening test that tests to 160

degrees. If this test is failed, then the other tests mentioned in the policy will be conducted as well. It was noted that the Medical Advisory Board is the appropriate authority to recommend any changes to the tests used, and the Board would have to consider the proposal and make recommendations to the Commissioner. The Chairman of the Board, Dr. Susan DiGiovanni, indicated that the suitability of the Esterman test could be discussed at the Board’s next meeting.

Fiscal Impact

After completion of the study, DMV evaluated the recommendations to determine any fiscal impact the recommendations may have on the agency. DMV determined that the recommendation for DMV to continue to collect data over the next two to three years in order to obtain a sample size large enough to provide statistically significant data, and then reconvene the stakeholders is the only recommendation that would have a fiscal impact. For DMV to continue to collect and analyze data over the next two to three years, the resulting costs would likely be a total of \$31,272 itemized as follows:

\$12,540	Staff time including fringe benefits for the Strategic Management Services policy analyst spending the equivalent of one day per month for 36 months on the identification and collection of data for drivers restricted to daylight driving only for visual field impairments.
\$14,694	Staff time including fringe benefits for the Medical Review Services compliance officer spending the equivalent of one day per month for 36 months on the analysis of data for drivers restricted to daylight driving only for visual field impairments.
\$928	TREDS data query one year from now and again two years later to match crash and driver data for the data sample would cost \$464 per query.
\$3110	A data query of convictions one year from now and again two years later to gather conviction data for the sample of drivers with a license restriction for daylight only driving due to visual field impairments along with establishing a control group of non-restricted drivers for comparison would cost \$1555 per query.
\$31,272	Total Costs

Conclusion

The study stakeholders were supportive of the ongoing data collection and other initiatives that resulted from the study.⁵⁸ DMV and the study stakeholders have committed to coming back together in the future to analyze the data once a larger sample size is collected to determine if recommendations should be made to amend Virginia’s visual field requirements. DMV and the stakeholders have also agreed to continue their collaboration to share new information as it becomes available. DMV will also continue to monitor the research in the area of visual field to assist with any future recommendations.

⁵⁸ See Appendix F for stakeholder comments of support for the study recommendations.

Appendices

Appendix A: Study Charge Letters

SENATE OF VIRGINIA



C.W. "BILL" CARRICO, SR.

40TH SENATORIAL DISTRICT
ALL OF GRAYSON, LEE, SCOTT, AND WASHINGTON
COUNTIES; ALL OF THE CITY OF BRISTOL; AND PART OF
SMYTH, WISE, AND WYTHE COUNTIES
POST OFFICE BOX 1100
GALAX, VIRGINIA 24333
(276) 236-0098

COMMITTEE ASSIGNMENTS:
TRANSPORTATION, CHAIR
EDUCATION AND HEALTH
FINANCE
RULES

March 13, 2017

Mr. Richard D. Holcomb, Commissioner
Virginia Department of Motor Vehicles
P.O. Box 27412
2300 West Broad Street
Richmond, Virginia 23269

Dear Commissioner Holcomb:

As you know there are currently two bills that amend the minimum standards for vision tests used in screening applicants for driver's licenses, House Bill 1504 patroned by Delegate Fowler and Senate Bill 1229 patroned by Senator Dunnivant. Current law provides in VA Code § 46.2-311 that the Department of Motor Vehicles (DMV) shall not issue a driver's license or learner's permit (i) to any person unless he demonstrates a visual acuity of at least 20/40 in one or both eyes with or without corrective lenses or (ii) to any such person unless he demonstrates at least a field of 100 degrees of horizontal vision in one or both eyes or a comparable measurement that demonstrates a visual field within this range.

After much discussion between the patrons, DMV and representatives from the Virginia Society of Eye Physicians and Surgeons (VSEPS), a consensus was reached that without further data both bills would amend the *Code* to raise the field of 100 degrees of horizontal vision in one or both eyes to a field of 110 degrees. The patrons and stakeholders acknowledge the need to gather additional data specifically related to Virginia drivers to determine whether a visual field beyond 110 would be appropriate for Virginia.

In a letter to both patrons DMV suggested that it be allowed to study the issues over the next year in order to gather additional data, obtain the input of multiple stakeholders, and have time to investigate any fiscal impact an increase in the vision standards may have on the Commonwealth. We as the chairs of the House and Senate Transportation committees recognizing the need to help drivers stay safe on the roads, prevent traffic crashes, and protect the safety of drivers, passengers and pedestrians agree that additional study is necessary.

Therefore, we respectfully request that the Department of Motor Vehicles study the minimum standards for vision tests used in screening applicants for driver's licenses to determine what changes are necessary to maintain the safety of all stakeholders. We request that DMV convene a

Mr. Richard D. Holcomb
February 13, 2017

working group of interested parties to conduct such a study. We ask that the group of stakeholders include Dr. Suzanne M Everhart, DO and current President of VSEPS, as well as Dr. Edwin Wortham, Pediatric Ophthalmologist. In addition, the stakeholders should include the Department for the Blind and Vision Impaired, members of the DMV Medical Advisory Board, American Automobile Association (AAA), and other stakeholders identified by the Department.

We ask that the working group examine existing research and data from Virginia as well as other states, in considering any further amendments to the minimum vision standards. We request that you report back to the House and Senate Committees on Transportation in December of 2017 with the results of the study and the working group's recommendations. As part of the report, the working group should provide for each item it proposes an analysis of the feasibility, the cost to the Commonwealth, and its cost-effectiveness compared to alternatives. Also include any proposed legislation that would be necessary in order to pursue the recommendations.

Sincerely,

A handwritten signature in blue ink that reads "Charles W. Carrico". The signature is written in a cursive style.

The Honorable Charles W. Carrico, Sr.
Chairman, Senate Transportation

- c: The Honorable Hyland F. "Buddy" Fowler, Jr., Delegate
- The Honorable Siobhan S. Dunnavant, Senator
- The Honorable Aubrey L. Layne, Jr., Secretary of Transportation
- The Honorable William A. Hazel Jr., Secretary of Health and Human Resources



COMMONWEALTH OF VIRGINIA

HOUSE OF DELEGATES

RICHMOND

RONALD JOHN A. "RON" VILLANUEVA

POST OFFICE BOX 61005
VIRGINIA BEACH, VIRGINIA 23466

TWENTY-FIRST DISTRICT

COMMITTEE ASSIGNMENTS:
TRANSPORTATION (CHAIRMAN)
COMMERCE AND LABOR
SCIENCE AND TECHNOLOGY

March 29, 2017

Mr. Richard D. Holcomb
Commissioner
Virginia Department of Motor Vehicles
P.O. Box 27412
2300 West Broad Street
Richmond, Virginia 23269

Dear Commissioner Holcomb:

As you know there are currently two bills that amend the minimum standards for vision tests used in screening applicants for driver's licenses, House Bill 1504 patroned by Delegate Fowler and Senate Bill 1229 patroned by Senator Dunnivant. Current law provides in VA Code § 46.2-311 that the Department of Motor Vehicles (DMV) shall not issue a driver's license or learner's permit (i) to any person unless he demonstrates a visual acuity of at least 20/40 in one or both eyes with or without corrective lenses or (ii) to any such person unless he demonstrates at least a field of 100 degrees of horizontal vision in one or both eyes or a comparable measurement that demonstrates a visual field within this range.

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Sincerely,



Ron Villanueva
State Delegate, 21st House District

Appendix B: List of DMV Staff and Stakeholders
Executive Oversight Team

Richard Holcomb
Commissioner

Virginia Department of Motor Vehicles

Karen Grim
Deputy Commissioner
Operations
Virginia Department of
Motor Vehicles

Linda Ford
Assistant Commissioner
Governmental Affairs
Virginia Department
of Motor Vehicles

Carla Jackson
Assistant Commissioner Legal
Services
Virginia Department
of Motor Vehicles

Millicent Ford
Assistant Commissioner
Driver, Vehicle and Data
Management Services
Virginia Department of
Motor Vehicles

Project Staff

Janet Smoot
Project Coordinator
Department of Motor Vehicles

Stakeholders and Other Participants

Sharon Brown
Driver Services
Virginia Department of Motor Vehicles

Greg Cavalli
Strategic Management Services
Virginia Department of Motor Vehicles

Russell Cross
Strategic Management Services
Virginia Department of Motor Vehicles

Kathleen Furr
Customer Service Management
Virginia Department of Motor Vehicles

Anthony Hahn
Enforcement and Compliance
Virginia Department of Motor Vehicles

Barbara Klotz
Legislative Services
Virginia Department of Motor Vehicles

Dalton Lee
Legislative Services
Virginia Department of Motor Vehicles

Katy Lloyd
Communications Office
Virginia Department of Motor Vehicles

Michael Mey
Strategic Management Services
Virginia Department of Motor Vehicles

Rebecca Parsio
Medical Review Services
Virginia Department of Motor Vehicles

John Saunders
Highway Safety
Virginia Department of Motor Vehicles

Sheri Vaughan
Customer Service Management
Virginia Department of Motor Vehicles

Melissa Velazquez
Legislative Services
Virginia Department of Motor Vehicles

Werner Versch II
Hearings Office
Virginia Department of Motor Vehicles

Tammy Arnette
AAA Mid-Atlantic

Janet Baugh
Office of the Attorney General

Jessica Bowman
Williams Mullen for
AAA Mid-Atlantic/AAA Tidewater

Janet Brooking
DriveSmart

Champ Burnley
Virginia Bicycling Federation

Elizabeth Carter, Ph.D.
Virginia Board of Health Professions

Dr. Susan DiGiovanni
DMV Medical Advisory Board

Dr. Daniel Drysdale
Blacksburg MD VSEPS

Penny Eissenberg
Driver Rehabilitation Specialist

Dr. Suzanne M. Everhart
President of VSEPS

Wallica Gaines
Virginia Department for Aging
and Rehabilitative Services

Mark Hickman
Commonwealth Strategy Group

Raymond Hopkins
Virginia Department for the
Blind and Vision Impaired

Rich Jacobs
DriveSmart

Beth Jamerson
Virginia Division of Legislative Services

Bruce Keeney
Virginia Optometric Association

Leslie Knachel
Virginia Department of Health Professions

Matt Koch
Virginia Department for the
Blind and Vision Impaired

Nancy Lo
Virginia Department for Aging
and Rehabilitative Services

Kathy Lococo
TransAnalytics, LLC

Captain Ronnie Maxey
Virginia State Police

Martha Meade
AAA Mid-Atlantic

Dr. Ahmed Nasrullah
DMV Medical Advisory Board

Crissy Noonan
Virginia Division of Legislative Services

Christian Parrish
Office of the Attorney General

Dana Schrad
Virginia Association of Chiefs of Police

Bud Vye
Virginia Bicycling Federation

Cal Whitehead
Commonwealth Strategy Group

Dr. Edwin Wortham
Pediatric Ophthalmologist
Highway Safety Advocate

Appendix C: Med 4 Customer Vision Report



CUSTOMER VISION REPORT

MED 4 (07/01/2017)

Purpose: Use this form to request vision examination information from your ophthalmologist or optometrist.

Instructions: Complete the Customer Information section and have your Ophthalmologist/Optomestrist complete the Vision Examination section. The vision examination must be conducted within 90 days prior to submission of the report to DMV. Mail the completed report to the address above.

Note: Any charges related to or incurred as part of the completion of this form are your responsibility.

DMV USE ONLY

CSC STAFF - do NOT send MED 4 back with daily work unless there is an ocular condition or customer cannot be licensed due to a MED 6 calculation.

CUSTOMER INFORMATION (To be completed by customer PRIOR to vision examination)				
If you change either your residence/home address or mailing address to a non-Virginia address, your driver license or photo identification (ID) card may be cancelled.				
NAME (last)	(first)	(mi)	(suffix)	CUSTOMER NUMBER (from your driver license) or SSN
RESIDENCE/HOME ADDRESS			<input type="checkbox"/> Check if this is a new address, your address will be changed on DMV's system.	BIRTHDATE (mm/dd/yyyy)
CITY	STATE	ZIP CODE	CITY OR COUNTY OF RESIDENCE	
MAILING ADDRESS (if different from above)				
CITY	STATE	ZIP CODE	DAYTIME TELEPHONE NUMBER	

VISION EXAMINATION (to be completed by Ophthalmologist/Optomestrist)				
FIRST EXAMINATION DATE(mm/dd/yyyy)		MOST RECENT EXAMINATION DATE(mm/dd/yyyy)		
VISUAL MEASUREMENTS (See Note "A" on page 2)		VISION STANDARDS		
Uncorrected Visual Acuity	RIGHT EYE (OD)	LEFT EYE (OS)	BOTH EYES (OU)	DRIVER'S LICENSE: ▶ 20/40 or better vision in one or both eyes, and ▶ 110 degrees, or better, horizontal vision in one or both eyes. RESTRICTED TO DAYLIGHT HOURS ONLY: ▶ 20/70 or better vision in one or both eyes, and ▶ 70 degrees, or better, horizontal vision. If vision is limited to only one eye, 40 degrees or better temporal and 30 degrees or better nasal are required. COMMERCIAL DRIVER'S LICENSE: (See Note "B" on page 2) ▶ 20/40 or better vision in each eye ▶ 140 degrees or better horizontal vision
Best Corrected Visual Acuity	RIGHT EYE (OD)	LEFT EYE (OS)	BOTH EYES (OU)	
Horizontal Visual Field (fields must be in degrees) METHOD: _____				
<input type="checkbox"/> Vision in both eyes <input type="checkbox"/> Vision limited to one eye only <input type="checkbox"/> RIGHT EYE (OD) <input type="checkbox"/> LEFT EYE (OS)		TEMPORAL - OD NASAL - OD TEMPORAL - OS NASAL - OS		
DMV Visual Field Information: See Note C on page 2.				
Does the patient have any ocular condition(s) that would affect the safe operation of a motor vehicle? <input type="checkbox"/> YES <input type="checkbox"/> NO If YES, indicate condition below.				
Does the patient have any condition that would affect the peripheral visual field? <input type="checkbox"/> YES <input type="checkbox"/> NO If YES, please provide a graphic visual field analysis out to 120 degrees in each eye. Preferably a HVF 30-2 AND 60-4 or other threshold perimetry test (see Note C on page 2).				
PLEASE LIST ALL OCULAR CONDITIONS				

OPHTHALMOLOGIST/OPTOMETRIST CERTIFICATION				
MEDICAL PROVIDER NAME (print)		CHECK BOX THAT APPLIES: <input type="checkbox"/> OPTHALMOLOGIST <input type="checkbox"/> OPTOMETRIST		
MEDICAL LICENSE NUMBER	EXPIRATION DATE (mm/dd/yyyy)	STATE ISSUING LICENSE TO PRACTICE		
BUSINESS ADDRESS			TELEPHONE NUMBER	
CITY	STATE	ZIP CODE	FAX NUMBER	
MEDICAL PROVIDER SIGNATURE			DATE (mm/dd/yyyy)	

Appendix D: Medical Advisory Board Profile

Board members are listed in order of appointment expiration.

Name	When Appointed	Expiration of Current Term	Seat Requirements As Mandated by Va. Code § 46.2-204
Dr. Susan DiGiovanni Chair	10/01/02 Appointed chairperson 01/05	09/30/2018	Specialization - Internal Medicine (Subspeciality - Nephrology)
Dr. Mark Sochor	2014	09/30/2018	Specialization - Emergency Medicine
Dr. Hetzal Hartley	2014	09/30/2020	Specialization - Occupational Medicine
Dr. Ahmed Nasrullah	2016	09/30/2020	Specialization - Ophthalmology
Dr. Adam Rosenblatt	2016	09/30/2020	Specialization - Neurology and Psychiatry
Dr. Saji Slavin	2012	09/30/2020	Specialization - Internal Medicine
Dr. Trevor D. Talbert	2016	09/30/2020	Specialization - Emergency Medicine

Appendix E: Bibliography

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Appendix F: Stakeholder Comments



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EYE MDs of VIRGINIA

November 1, 2017

Richard D. Holcomb, Commissioner
c/o Janet Smoot
Virginia Department of Motor Vehicles
PO Box 27412
Richmond, VA 23269

Dear Commissioner Holcomb:

The Virginia Society of Eye Physicians and Surgeons commends your team and the work-study group's collaborative efforts to determine the best vision requirements for driver safety and fitness. We agree with the final assessment and conclusions presented in the Visual Field Study Report.

We look forward to the completion of the current DMV study in the next 2-3 years and remain available to you when ready to be reviewed. This will provide meaningful, factual evidence to draw upon when considering any further legislative changes to the current DMV policy on vision related driving fitness.

We also look forward to your feedback after presenting Virginia's data collection/study efforts to the AAMVA and the regional Mid- Atlantic DMV Administrators meeting. We are hopeful you can encourage them to model their own studies after Virginia's. This would increase the data from which they too can draw upon to make more meaningful, fact driven policy changes when indicated by the study results. Perhaps it can also lead to a more unified national standard of driver assessment and fitness. There is clearly a paucity of evidential data to guide policy when setting minimum standards for driver fitness. Some neighboring states have no visual field requirements at all. This is a great beginning and the American Academy of Ophthalmology is also engaged in your efforts and very interested in the results as well.

VSEPS appreciates the time and efforts of your exceptional team at the DMV and all other stakeholders in working toward a safer Virginia for all drivers, pedestrians and cyclists.

Sincerely yours,

A handwritten signature in cursive script that reads 'Suzanne M. Everhart, D.O.'.

Suzanne M. Everhart, D.O.
President

From: [Velazquez, Melissa \(DMV\)](mailto:Velazquez.Melissa@dmv.virginia.gov)
To: [Velazquez, Melissa \(DMV\)](mailto:Velazquez.Melissa@dmv.virginia.gov)
Subject: FW: Visual Field Study draft report - for your review
Date: Thursday, November 30, 2017 4:21:52 PM

From: Kathy Lococo [<mailto:kathy.lococo.ta@gmail.com>] **On Behalf Of** Kathy Lococo
Sent: Wednesday, November 01, 2017 1:39 PM
To: Smoot, Janet (DMV)
Subject: RE: Visual Field Study draft report - for your review

Hi Janet,

The report looks good and I think DMV did a great job pulling together the research on the topic, discussing findings with stakeholders, and doing its own internal research study of VA DMV licensees with daytime only restrictions and crash and violation rates. I agree with your findings that a larger sample is needed to draw accurate conclusions about the safety benefits of increasing the visual field requirement for driver licensing.

Thanks so much for the opportunity to participate,
Kathy

From: Smoot, Janet (DMV) [<mailto:janet.smoot@dmv.virginia.gov>]
Sent: Tuesday, October 17, 2017 11:01 AM
To: everharteyes@comcast.net; eworthamv@gmail.com; Hopkins, Raymond E. (DBVI); Koch, Matt (DBVI); Gaines, Wallica (DBVI); susan.digiovanni@vcuhealth.org; eyenaz@gmail.com; Rothrock, James (DARS); Lo, Nancy (DARS); penny.eissenberg@healthsouth.com; Knachel, Leslie (DHP); Jamerson, Hunter (VDH); keeneygroup@gmail.com; mmeade@aaamidatlantic.com; tarnette@aaamidatlantic.com; janet.brooking@drivesmartva.org; rich.jacobs@drivesmartva.org; Maxey, Ronald (VSP); Schrad, Dana; jjones@virginia sheriffs.org; champe_burnley@vabike.org; bdvye@comcast.net; max@sportsbackers.org; cal@commonwealthstrategy.net; mark@commonwealthstrategy.net; klococo@transanalytics.com; dbdryes@gmail.com; cnoonan@dls.virginia.gov; bjamerson@dls.virginia.gov; jbaugh@oag.state.va.us; cparrish@oag.state.va.us
Subject: Visual Field Study draft report - for your review

Dear Stakeholders,

Enclosed is the Visual Field Study draft report. This report represents the work and recommendations of our study team. Please review this report and submit any feedback you have in regards to any errors you may note, or things that you see that may need to be corrected. If you would like to enclose a letter or email that represents your organization's view or support of the study and recommendations, please feel free to send me such a letter/email. We will ensure that it is placed in the appendices of the report.

I will need to receive all feedback and letters by Friday, November 3rd. The report will be finalized and submitted to the Chairs of the Transportation Committees by December 1st.

Thank you so much for your participation on this study team. As you are aware, we have some follow-up activities and data monitoring that will continue beyond the submittal of the report.

If you have any questions feel free to contact me.

Janet Smoot

Virginia DMV | Governmental Affairs | (804) 367-2479 | janet.smoot@dmv.virginia.gov | www.dmvNOW.com
[Confidentiality Statement](#)

