

# VISION, PUBLIC SAFETY, AND THE DMV

EDWIN WORTHAM V, M.D.

WVAEPS/PAO SCIENTIFIC CONFERENCE  
APRIL 28, 2017

**VMI**

S-2 CAPTAIN, POLE  
VAULTER,  
CINCINNATUS AWARD  
RECIPIENT, RHODES  
SCHOLAR FINALIST,  
TOP GPA





Peripheral vision

Central vision

Peripheral vision

Peripheral vision

**DRIVER**

MARGINAL VISION BUT DETERMINED TO DRIVE



SEPTEMBER 5, 2015  
CYCLING WHILE TRAINING FOR A MARATHON...ON A  
COUNTRY ROAD...AN UNINTENDED MEETING



# Vision Standards for the Virginia Driver

Department of



Motor Vehicles

# Vision Standards: The Regular Driver

- The vision code is 46.2 – 311
- 20/40 or better corrected or uncorrected in one or both eyes
- Horizontal visual field of at least 100 (now 110) degrees in one or both eyes
- If one eye has an acuity worse than 20/200 then the field of vision is only considered for the eye meeting acuity standards

# Vision Standards: The Regular Driver

- A restricted license may be issued to an individual with an acuity of 20/70 corrected or uncorrected in one or both eyes
- A visual field of 70 degrees or better is required for this restriction
- Daylight only – ½ hour after sunrise and ½ hour before sunset
- The field of vision must be at least 40 temporally and 30 degrees nasally in the eye meeting the 20/70 standard



# Understanding the Public Health Challenge

- We all lose functional abilities needed to drive safely – vision, mental sharpness, physical strength and flexibility – as we age, but at dramatically different rates; some individuals in their 70's and 80's are as fit as others in their 50's and 60's.
- NHTSA estimates that on average a person is unable to drive for 8 years at the end of their lifespan.
- DMV is mandated to ensure that those licensed in Virginia are medically fit to drive.
- Chronic and acute conditions are handled differently

# Association between Glaucoma and At-fault Motor Vehicle Collision Involvement among Older Drivers

Kwon M, Huisinigh C, Rhodes L, McGwin G, Wood J, Owsley C. *Ophthalmology*. 2016;123:109-116

**CUSTOMER VISION REPORT**

MED 4 (08/25/2014)

**Purpose:** Use this form to request vision examination information from your ophthalmologist or optometrist.  
**Instructions:** Complete the Customer Information section and have your Ophthalmologist/Optometrist 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 visual defect.

**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: [REDACTED] (last) [REDACTED] (first) [REDACTED] (middle) (suffix) **B** CUSTOMER NUMBER (from your driver license or SSN) [REDACTED]

RESIDENCE/HOME ADDRESS: [REDACTED]  Check if this is a new address, your address will be changed on DMV's system. BIRTH DATE (mm/dd/yyyy) **12-20-48**

CITY: [REDACTED] STATE: **VA** ZIP CODE: **23513** CITY OR COUNTY OF RESIDENCE: **0**

MAILING ADDRESS (if different from above): [REDACTED]

CITY: **Same** STATE: [REDACTED] ZIP CODE: [REDACTED] DAYTIME TELEPHONE NUMBER: ( ) [REDACTED]

**VISION EXAMINATION** (to be completed by Ophthalmologist/Optometrist)

FIRST EXAMINATION DATE (mm/dd/yyyy): **11/25/2015** MOST RECENT EXAMINATION DATE (mm/dd/yyyy): **11/25/2015**

**VISUAL MEASUREMENTS** (See Note "A" below)

	RIGHT EYE (OD)	LEFT EYE (OS)	BOTH EYES (OU)
Uncorrected Visual Acuity	<b>20/60</b>	<b>20/70</b>	<b>20/60</b>
Best Corrected Visual Acuity	<b>20/40</b>	<b>20/40</b>	<b>20/40</b>

Horizontal Visual Field (fields must be in degrees) METHOD:  GOLDMANN  HUMPHREY  OTHER

Vision in both eyes  Vision limited to one eye only (check one)

	TEMPORAL - OD	NASAL - OD	TEMPORAL - OS	NASAL - OS
BOTH EYES (OU)	<b>80</b>	<b>50</b>	<b>80</b>	<b>70</b>
RIGHT EYE (OD)				
LEFT EYE (OS)				

**VISION STANDARDS**

**DRIVER'S LICENSE:**

- 20/40 or better vision in one or both eyes, and
- 100 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" below)

- 20/40 or better vision in each eye
- 140 degrees or better horizontal vision

Does the patient have any ocular condition(s) that would affect the safe operation of a motor vehicle?  YES  NO If YES, indicate condition:

DIPLOPIA  NYSTAGMUS  PTOSIS  AMALUSIOSIS  HOMONYMOUS HEMIANOPSIA (H-H)

OTHER **Diabetic retinopathy - stable @ this time. Recheck annually**

**OPHTHALMOLOGIST/OPTOMETRIST CERTIFICATION**

MEDICAL PROVIDER NAME (print): [REDACTED] CHECK BOX THAT APPLIES:  OPTHALMOLOGIST  OPTOMETRIST

MEDICAL LICENSE NUMBER: [REDACTED] EXPIRATION DATE (mm/dd/yyyy): **12/31/2016** STATE ISSUING LICENSE TO PRACTICE: **VA**

BUSINESS ADDRESS: [REDACTED] TELEPHONE NUMBER: [REDACTED]

CITY: [REDACTED] STATE: **VA** ZIP CODE: **23510** FAX NUMBER: [REDACTED]

MEDICAL PROVIDER SIGNATURE: [REDACTED] DATE (mm/dd/yyyy): **11/25/2015**

**A** Visual requirements must be met without the aid of a telescopic lens. Some drivers may be granted waivers from these vision requirements.

**B** If you are unable to meet Virginia minimum vision requirements for a commercial driver's license or instruction permit, you may apply to Medical Review Services for a disability waiver to qualify for an intrastate only CDL or instruction permit, provided you meet the Federal Motor Carrier Safety Regulations (FMCSR) minimum vision requirements in one eye:  
At least 20/40 visual acuity, and 120 degrees horizontal vision.

If you have questions or need more information to complete this form, call Medical Review Services (804) 367-6203.

**DMV**

**DEC 10 2015 11 25 '15**

**#8 MCR-626**

**Annual exam to retain license**  
**wear glasses while driving**  
**Daylight driving only**

SINGLE FIELD ANALYSIS

NAME: [REDACTED]  
ID: [REDACTED]

EYE: RIGHT  
DOB: 12-20-1948

CENTRAL 30-2 THRESHOLD TEST

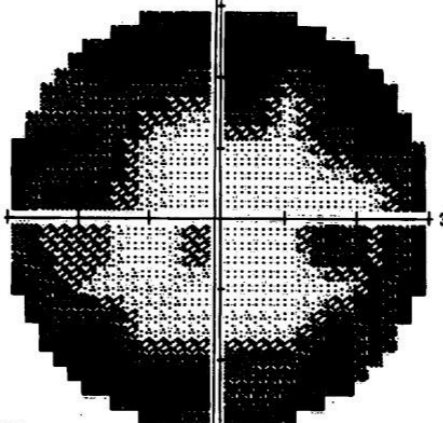
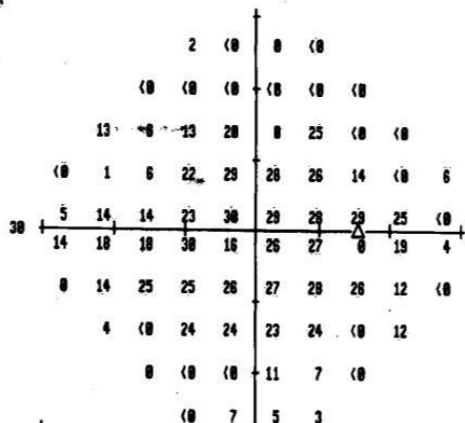
FIXATION MONITOR: GAZE-BLIND SPOT  
FIXATION TARGET: CENTRAL  
FIXATION LOSSES: 9/17 XH  
FALSE POS ERRORS: 10 %  
FALSE NEG ERRORS: 10 %  
TEST DURATION: 07:28

STIMULUS: III. WHITE  
BACKGROUND: 31.5 ASD  
STRATEGY: SITR-FAST

PUPIL DIAMETER:  
VISUAL ACUITY:  
RX: DS DC X

DATE: 02-01-2016  
TIME: 4:57 PM  
AGE: 67

FOVEA: OFF

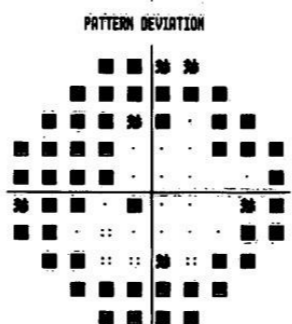
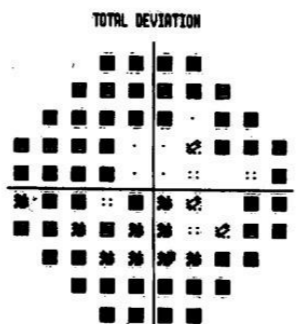


TOTAL DEVIATION

-22	-26	-24	-25						
-28	-29	-29	-28	-28					
-14	-23	-16	-9	-29	-3	-30	-29		
-28	-27	-24	-9	-2	-3	-4	-15	-30	-22
-22	-15	-16	-9	-2	-2	-3	-4	-31	
-13	-11	-13	-2	-16	-6	-5	-11	-25	
-27	-15	-6	-7	-6	-5	-3	-4	-18	-31
-24	-31	-7	-7	-8	-7	-32	-17		
-28	-31	-31	-18	-22	-31				
-29	-21	-23	-25						

PATTERN DEVIATION

-19	-23	-21	-22						
-25	-25	-26	-25	-25	-24				
-11	-19	-12	-6	-26	0	-26	-26		
-25	-24	-21	-6	2	0	-1	-12	-27	-19
-19	-12	-13	-6	1	1	0	-1	-20	
-10	-9	-10	1	-13	-3	-2	-7	-22	
-23	-12	-3	-4	-3	-1	0	-1	-14	-20
-21	-28	-4	-3	-5	-3	-29	-14		
-25	-28	-28	-15	-19	-28				
-26	-18	-28	-22						



● < 5%  
■ < 2%  
■ < 1%  
■ < 0.5%

\*\*\* LOW TEST RELIABILITY \*\*\*  
GHT  
OUTSIDE NORMAL LIMITS  
VFI 60%  
MD -15.07 DB P < 0.5%  
PSD 11.31 DB P < 0.5%

*Peripheral VF defect in all quadrants  
due to later NRS for diabetic  
retinopathy.*

© 2010 CARL ZEISS MEDITEC  
NFA II 740-48263-5.1.1/5.1.1

SINGLE FIELD ANALYSIS

EYE: LEFT

NAME: [REDACTED]

DOB: 12-20-1948

ID: [REDACTED]

CENTRAL 30-2 THRESHOLD TEST

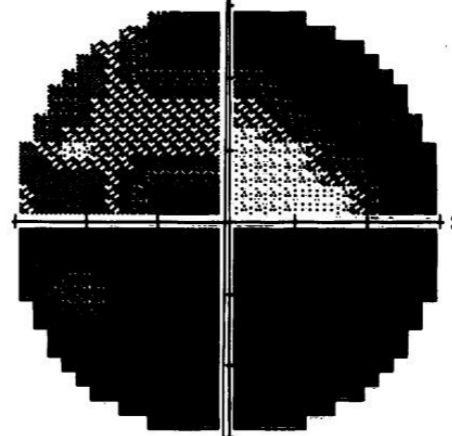
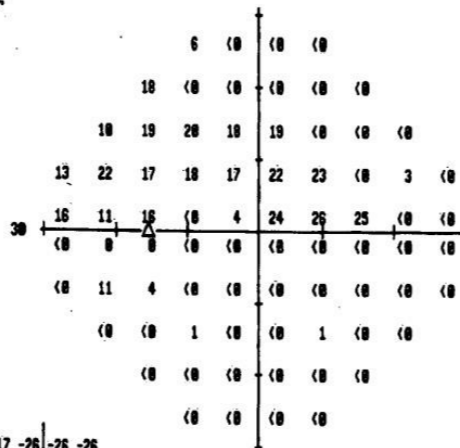
FIXATION MONITOR: GAZE/BLIND SPOT  
 FIXATION TARGET: CENTRAL  
 FIXATION LOSSES: 4/15 WX  
 FALSE POS ERRORS: 13 %  
 FALSE NEG ERRORS: 0 %  
 TEST DURATION: 00:19

STIMULUS: III. WHITE  
 BACKGROUND: 31.5 ASD  
 STRATEGY: SITA-FAST

PUPIL DIAMETER:  
 VISUAL ACUITY:  
 RX: DS DC X

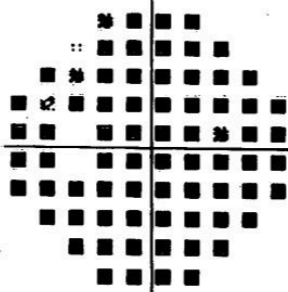
DATE: 02-01-2016  
 TIME: 5:06 PM  
 AGE: 67

POWER: OFF



-17	-26	-26	-26
-7	-28	-28	-29
-17	-9	-9	-11
-15	-8	-12	-12
-13	-18	-33	-28
-31	-30	-33	-34
-31	-18	-27	-33
-31	-32	-30	-33
-31	-31	-31	-31
-30	-30	-30	-29

TOTAL DEVIATION



●● < 5%  
 ●●● < 2%  
 ●●●● < 1%  
 ●●●●● < 0.5%

PATTERN DEVIATION NOT SHOWN FOR SEVERELY DEPRESSED FIELDS. REFER TO TOTAL DEVIATION.

PATTERN DEVIATION

PATTERN DEVIATION NOT SHOWN FOR SEVERELY DEPRESSED FIELDS. REFER TO TOTAL DEVIATION.

\*\*\* LOW TEST RELIABILITY \*\*\*

GHT  
 OUTSIDE NORMAL LIMITS

VFI 22%

MD -25.24 DB P < 0.5%

PSD 11.00 DB P < 0.5%

*Severely depressed field loss due to late PRP  
 for diabetic retinopathy*

© 2010 CARL ZEISS MEDITEC  
 HFA II 740-40263-5.1.1/5.1.1

# **PROPOSALS TO IMPROVE CURRENT VISION STANDARDS**

# NEW DRIVERS, RENEWAL DRIVERS

- A clear and concise new driver or renewal DMV application that compels the driver to self report their visual conditions
- Trigger a formal VF and vision report

# EYE EXAM FORM

- List of eye conditions that potentially impact VF and vision
- Eye care professional delineates these eye conditions
- Form sent directly to the DMV

**STANDARDIZED FORMAL VF TESTING**

**STREAMLINE REPORTING TO THE DMV**

**YEARLY EVALUATIONS FOR ACTIVE EYE DISEASE**

**"GOOD SAMARITAN" CLAUSE**

# FEEDBACK

- Ghassan Ghorayeb: ghorayeb@wvumedicine.org
- Suzanne Everhart: (VSEPS President)  
everharteyes@comcast.net
- Edwin Wortham V: eworthamv@me.com

**"PRIMUM NON NOCERE"...**

**"FIRST, DO NO HARM."**

**ESSENCE OF THE HIPPOCRATIC OATH**