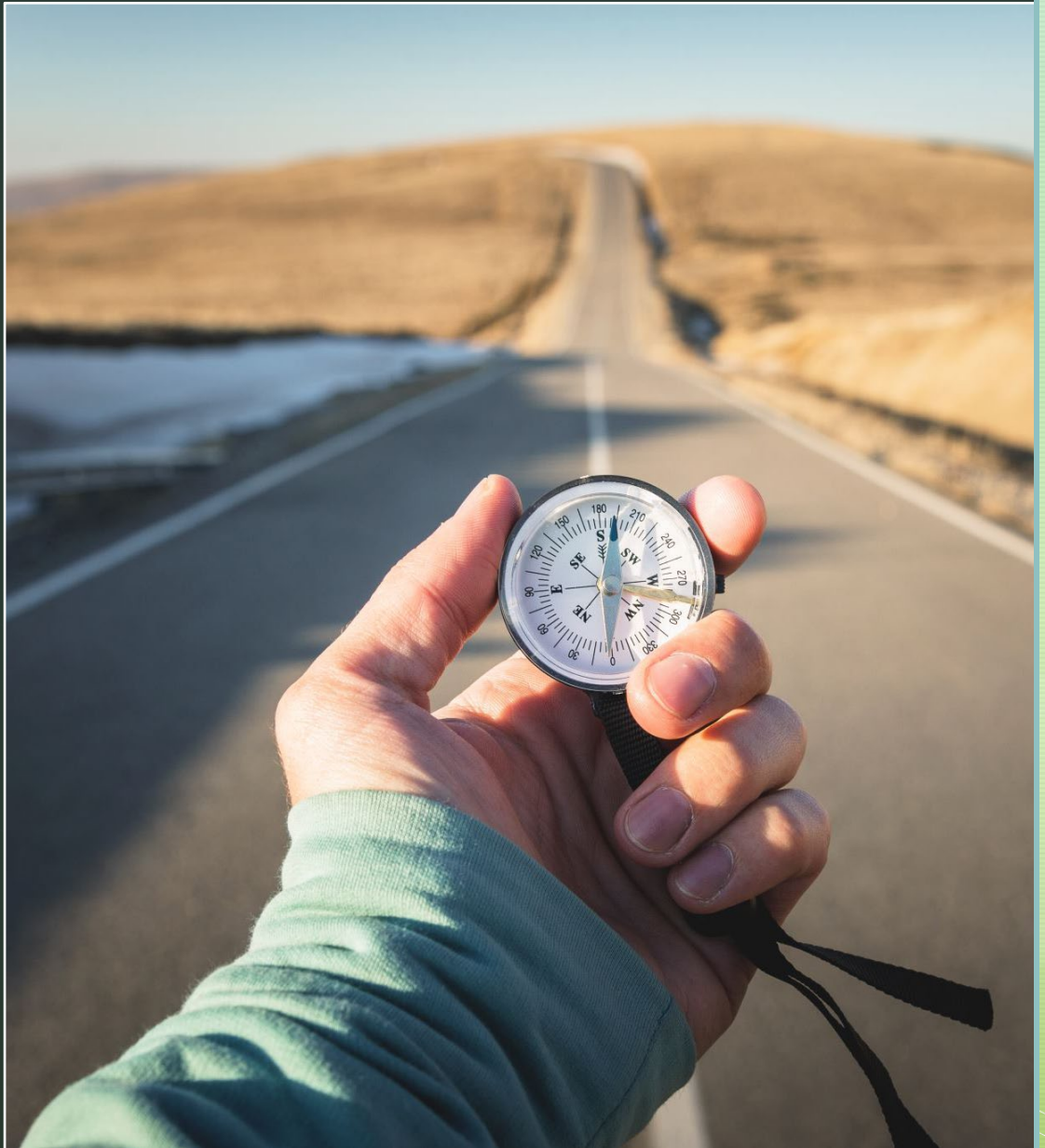




Low Vision Driver Training Workshop

- Rehabilitation of Frederick, Inc.
- Timothy Jones, OTR, CDRS, CDI

- **Keep going! The expert in anything was once a beginner!**
- **Each day, we learn, make mistakes, and try to learn from one another.**
- **I am still trying to wrap my head around a field with so little evidence to support the decisions we need to make about driving. Why is there such a discrepancy?**





“There are many ways
to climb a mountain,
but the view from the
top is the same!” -
Anonymous Proverb



My way is not the only
way, it's just what has
worked for me.-Let's
dive into it!

Scheduling an Evaluation:

- **What type of modified-vision driver evaluation? Low vision, visual field, history of vision abnormalities such as amblyopic/strabismic eye?**
- **Who is referring the consumer? Are they an experienced driver, novice driver, OD referral, MD referral, VR referral, MDOT referral?**
- **Train your support staff to ask more questions. Ask about diagnosis, history, and the most recent vision report from the low-vision provider. Visual-field report: HVF, GVF, Esterman. Train your support staff not to answer all the questions about the program. It is too complicated, and they will only confuse the consumer.**

- Have they already started with MDOT, or are they starting with a low-vision provider to evaluate their potential? Do we have the most recent clinic note? Can you understand and interpret it, or do you need to speak with the provider?
- Do we have a copy of the MDOT DC-040 report? What does this form look like?
- What should they bring to their appointment? Permit, ID card, MDOT paperwork, clinic note, EMDs, handheld, BTLS, filters, sunshades, driver education classroom completion 003A form.



What information does the DC-040 provide?

- Distance acuity in each eye, with and without correction.
- Visual field in each eye and whether the field is continuous.

What does that mean?

- What does Maryland require for unrestricted driving with respect to acuity and visual field?
- What does MDOT require for the Modified Vision Program? Acuity? Visual field?
- Use of the BTLS and the distance acuity required for spotting through the BTLS.
- Can we qualify for the program while spotting through the BTLS?



**Vision Specialist / Modified
Vision Program (DC-040E)
Driver Wellness & Safety**

Questions?
Please call 410-768-7513
TTY for the deaf 1-800-735-2258
Visit our website at:
www.MVA.Maryland.gov

DRIVER LICENSE IDENTIFICATION NUMBER	DATE OF BIRTH	TODAY'S DATE
LAST NAME	FIRST	MIDDLE

INSTRUCTIONS TO DRIVER: Complete Section A and have your Ophthalmologist/Optometrist complete Section B. The medical provider should return this form to the MVA.

(Please note: Payment for any examination and preparation of this form is your responsibility.)

SECTION A - TO BE COMPLETED BY DRIVER (Print or Type)

Driver's License Number	Today's Date		
Last Name	First	Middle	Date of Birth
Address			

SECTION B – TO BE COMPLETED BY OPHTHALMOLOGIST/OPTOMETRIST

INSTRUCTIONS TO MEDICAL PROVIDER: Participation in this MVA Modified Vision Program is determined by an individual's vision with the best standard spectacle or contact lens correction, in the applicant's better eye. The use of bioptic telescopic lenses are not considered in determining an individual's qualification to participate in this program. To qualify for the Modified Vision Program driver's must have: Visual acuity less than 20/70, but no worse than 20/100 and Continuous field of vision of at least 110 degrees with at least 35 degrees lateral to the midline of each side. (Note: Drivers with limited field of vision may use this form to apply under the Modified Visual Field Program.)

Maryland Motor Vehicle Law requires that an applicant seeking a license under this program be recommended for license consideration by the applicant's licensed Ophthalmologist or Optometrist. The Ophthalmologist or Optometrist recommendation **MUST** be based on the best standards spectacle or contact lens correction in the applicant's better eye.

***Please complete the remainder of this report and return
to:***

For quickest processing, including 24/7 access to case information and updates, **upload all of your required documents securely with a myMVA account.** To create an account visit:

by mail to MVA, Driver Wellness and Safety Division, Room 124, 6601 Ritchie Highway, NE, Glen Burnie, MD 21062.

1. Date of Examination: _____

2. Briefly describe cause and nature of the applicant's vision condition: _____

3. Is visual deficit the result of an underlying condition? (i.e. Diabetes, TBI, CVA) ☐ Yes* ☐ No

If yes, please specify _____

4. Is this vision condition stable? ☐ Yes ☐ No

***Please inform the driver that it is their responsibility to have their primary care provider complete a "Physician's Report Form" for review by MVA's Medical Advisory Board.**

MVA Modified Vision Program qualifications:

•Visual acuity less than 20/70, but no worse than 20/100

•Continuous field of vision of at least 110 degrees with at least 35 degrees lateral to the midline of each side

(See page 1, Instructions to Medical Provider, for more information regarding this program)

5. Visual Acuity and Field of Vision

	Right Eye	Left Eye	Both Eyes
Acuity without corrective lenses	20/ _____	20/ _____	20/ _____
Acuity with corrective lenses	20/ _____	20/ _____	20/ _____
Field of Vision	_____ degrees	_____ degrees	_____ degrees

6. Does the driver's vertical field of vision contraindicate safe driving? ☐ Yes ☐ No

7. Did your vision examination include any other vision tests? ☐ Yes ☐ No



The type of evaluation we are scheduling will dictate the amount of time needed for the evaluation:

Experienced Driver: 3 hours+

- **Clinical evaluation, right-seat passenger assessment, BTW evaluation, debrief, and plan of care.**

Novice Driver with life experience: 3 hours

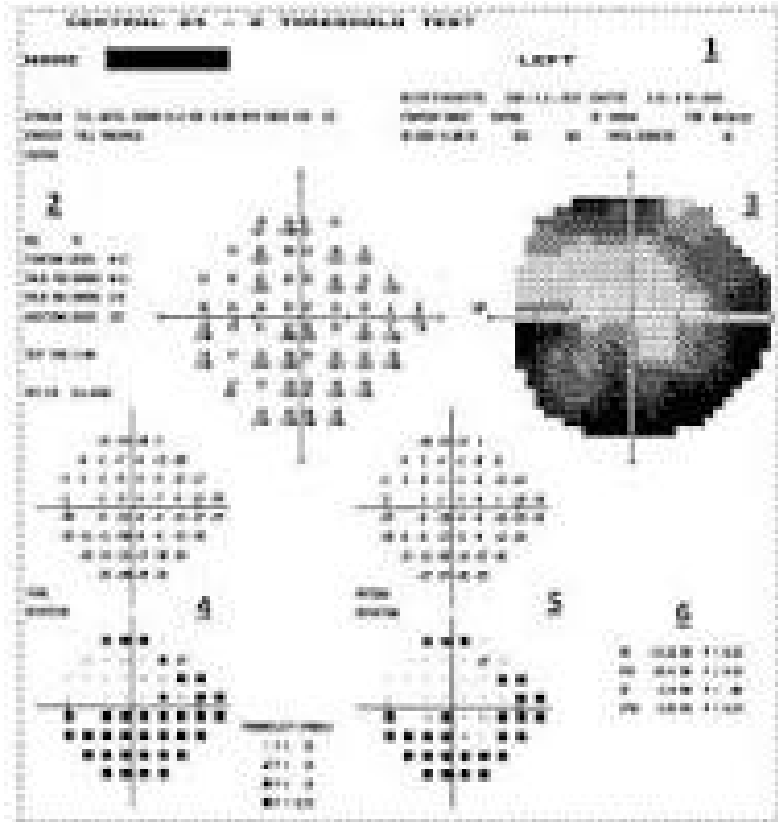
- **Clinical evaluation, right-seat passenger assessment, parking-lot assessment, debrief, and plan of care.**

Novice Driver without life experience: 2 hours

- **Clinical evaluation, right-seat passenger assessment, debrief, and plan of care.**

Clinical Evaluation:

- 1. Interview to discuss medical/vision history, comorbidities, driving history, progression, MDOT involvement, case management, funding.**
- 2. Vision screening using the OPTEC or Snellen at a 20-foot distance. How closely does the measured acuity match the reported acuity? Consider good days and bad days, lighting, optical aids, best possible acuity, and binocular versus monocular viewing.**
- 3. Do you feel comfortable interpreting visual fields using Goldmann, Humphrey, and Esterman testing?**

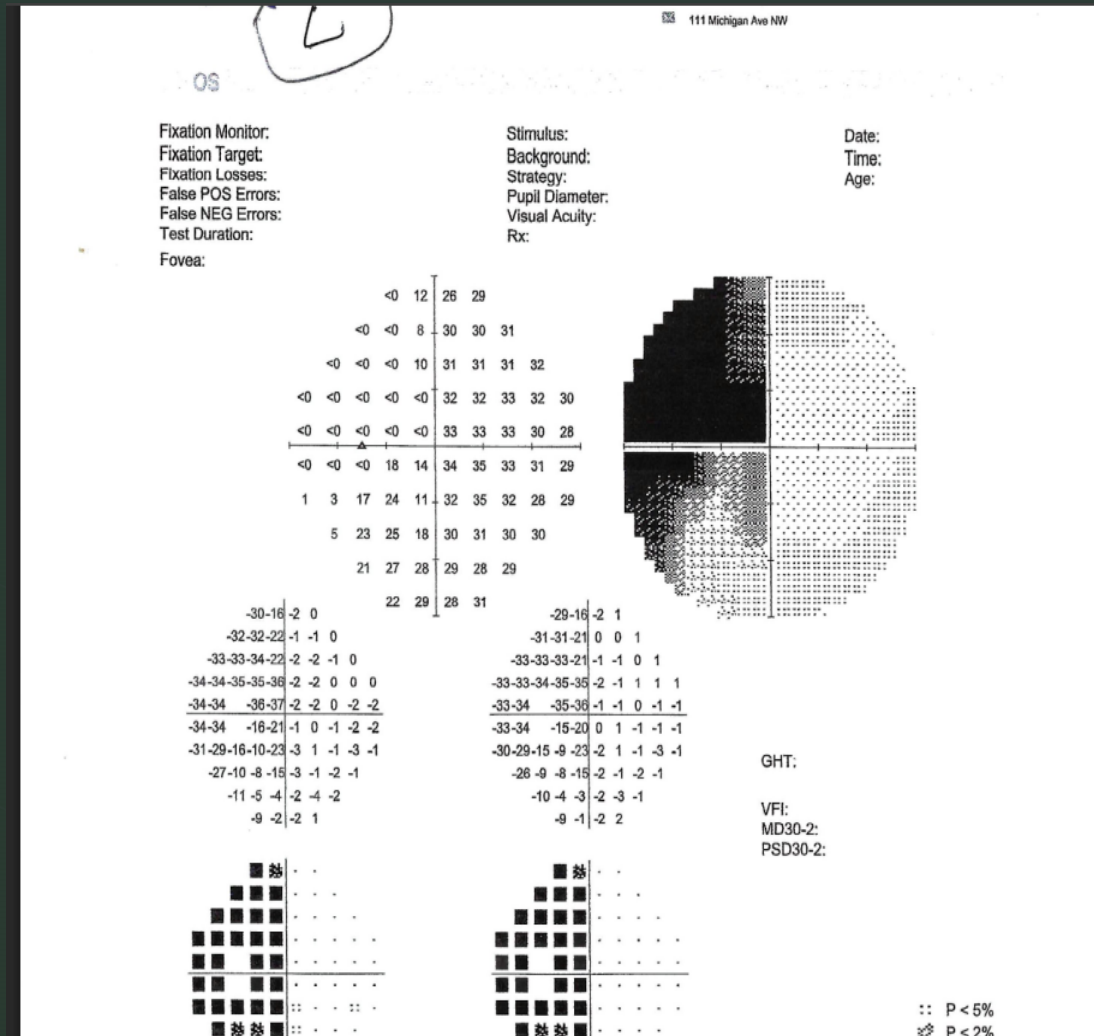


- **Standard Automated Perimetry**

(SAP): Uses a bowl-shaped perimeter machine to flash stationary lights of varying intensities while you stare straight ahead and click a button when you see a flash.

- **24-2: Central field using 6° spacing**
- **30-2: 30° radius; slightly larger field**
- **10-2: Central 10°; fine detail for macular or paracentral scotomas**
- **60-4: Testing farther out from fixation to 60°**

HVF: 16-year-old, left eye:
What do you see? 30-2
field. Is it the best tool to
give us data as to this
young consumer's field?
Maps the central 30° field
of vision in 2° markers.
Does not test the
peripheral field.

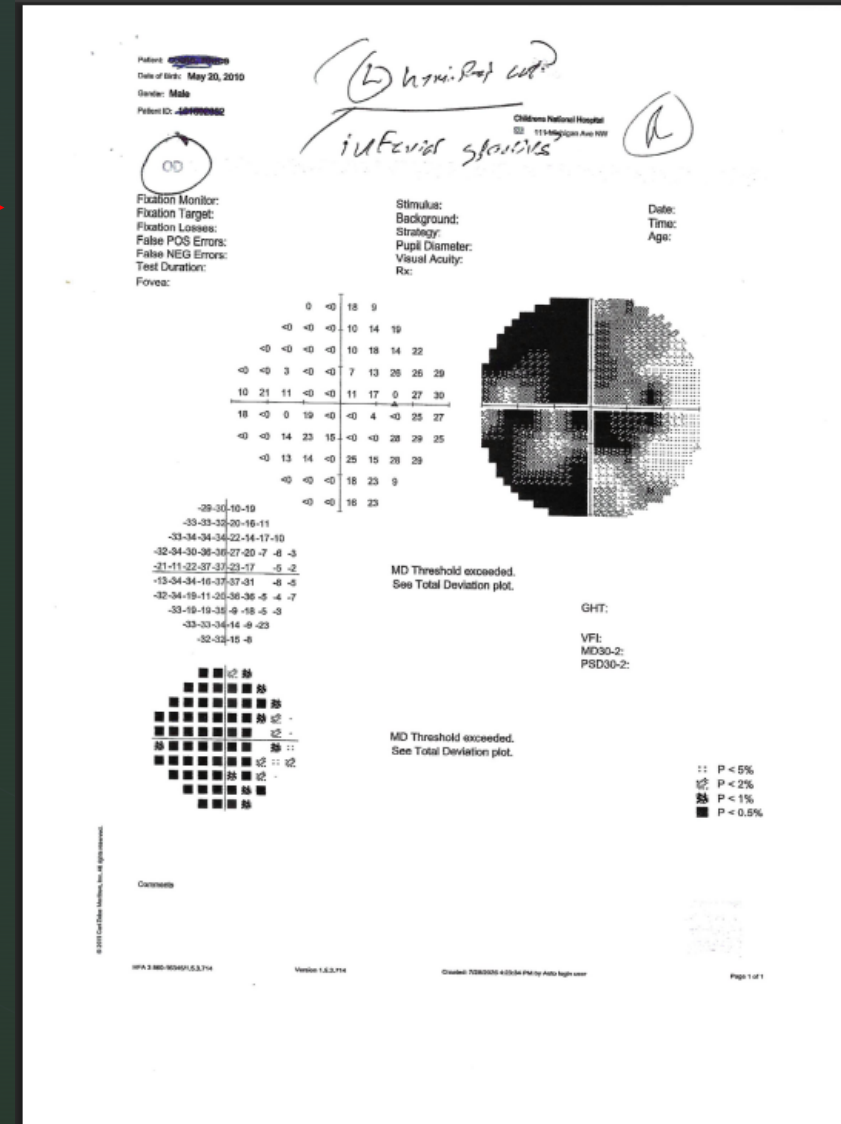


Right eye: Patches or sparing inferior to midline. Would we consider him an incomplete superior quadrantanopia?

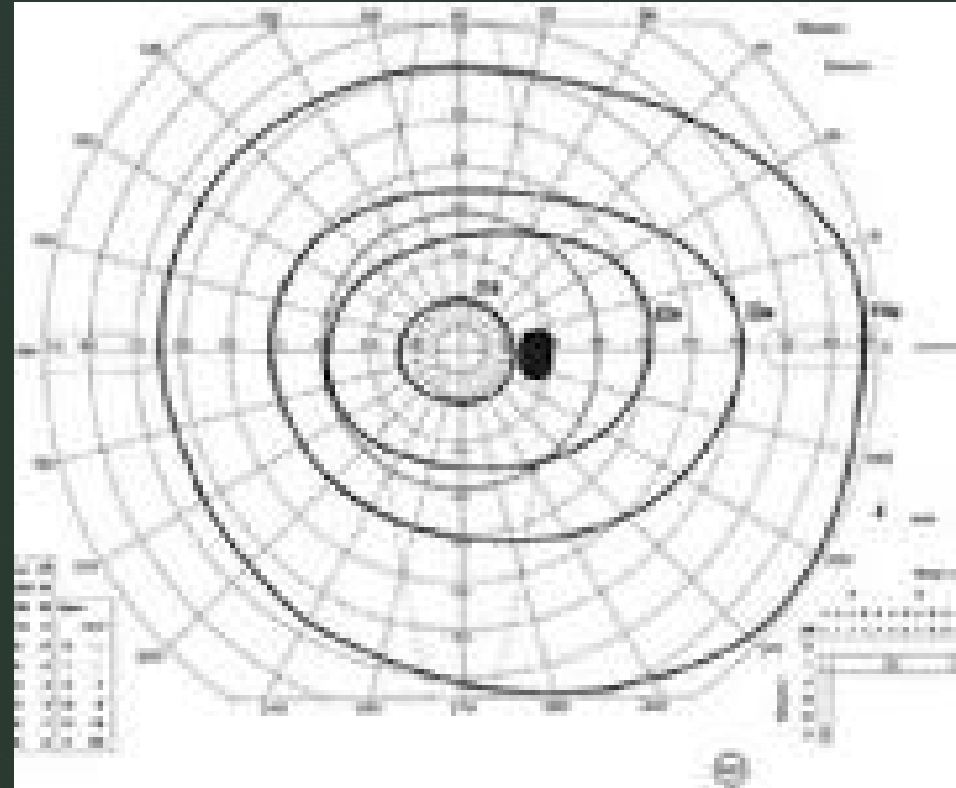
What did Dr. Sunnes say to me?

"Hi, Tim. This is not a full field visual field. It only goes out to 30 deg to each side. You can't necessarily extrapolate from this to the full field.

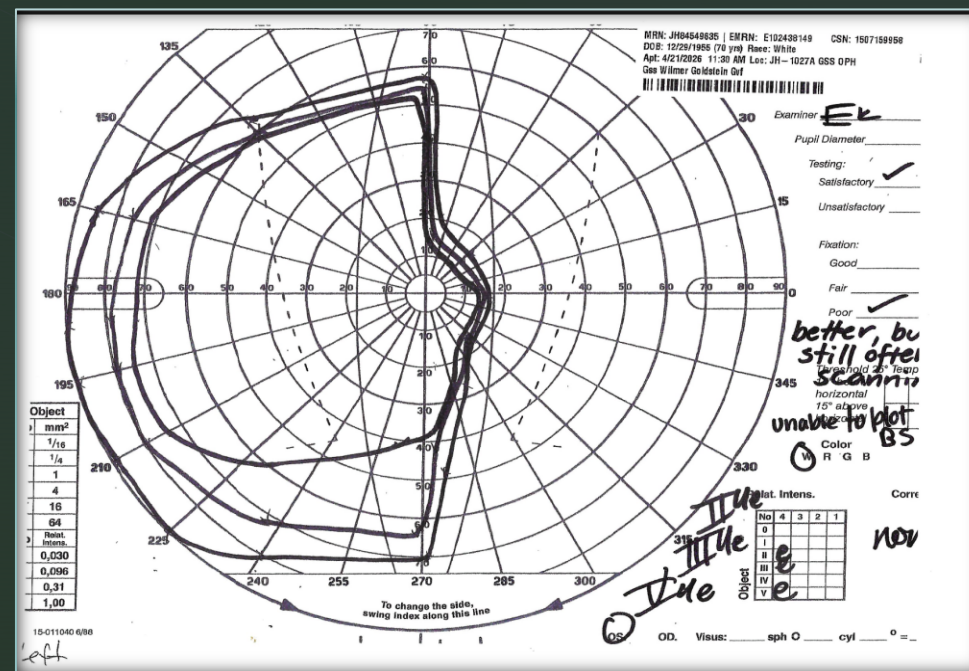
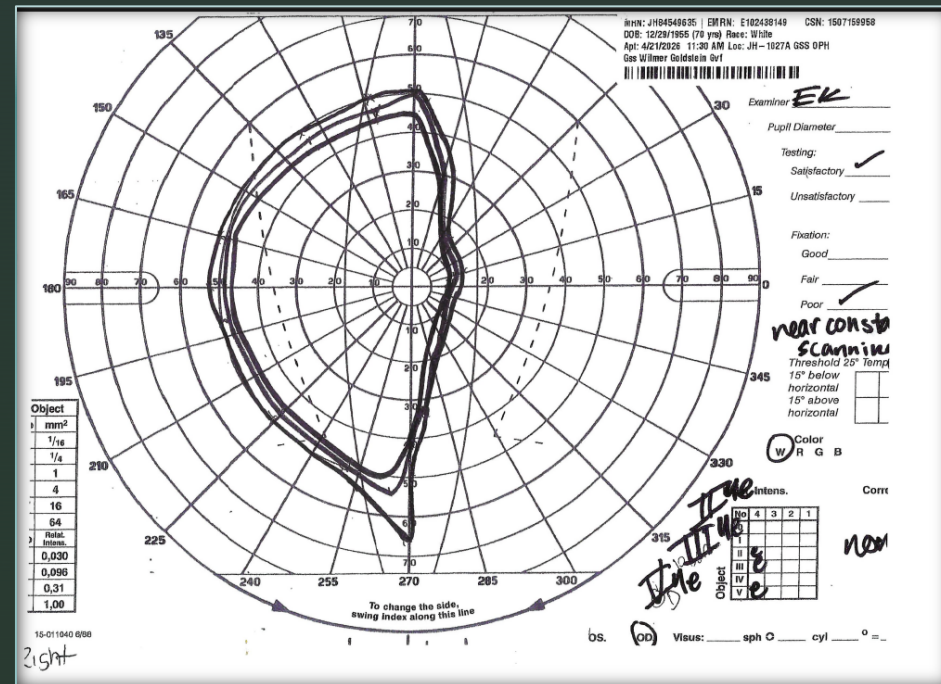
Having said that, the fields show an upper left quadrantanopia with both eyes together. He sees down to the left, but not up to the left. "



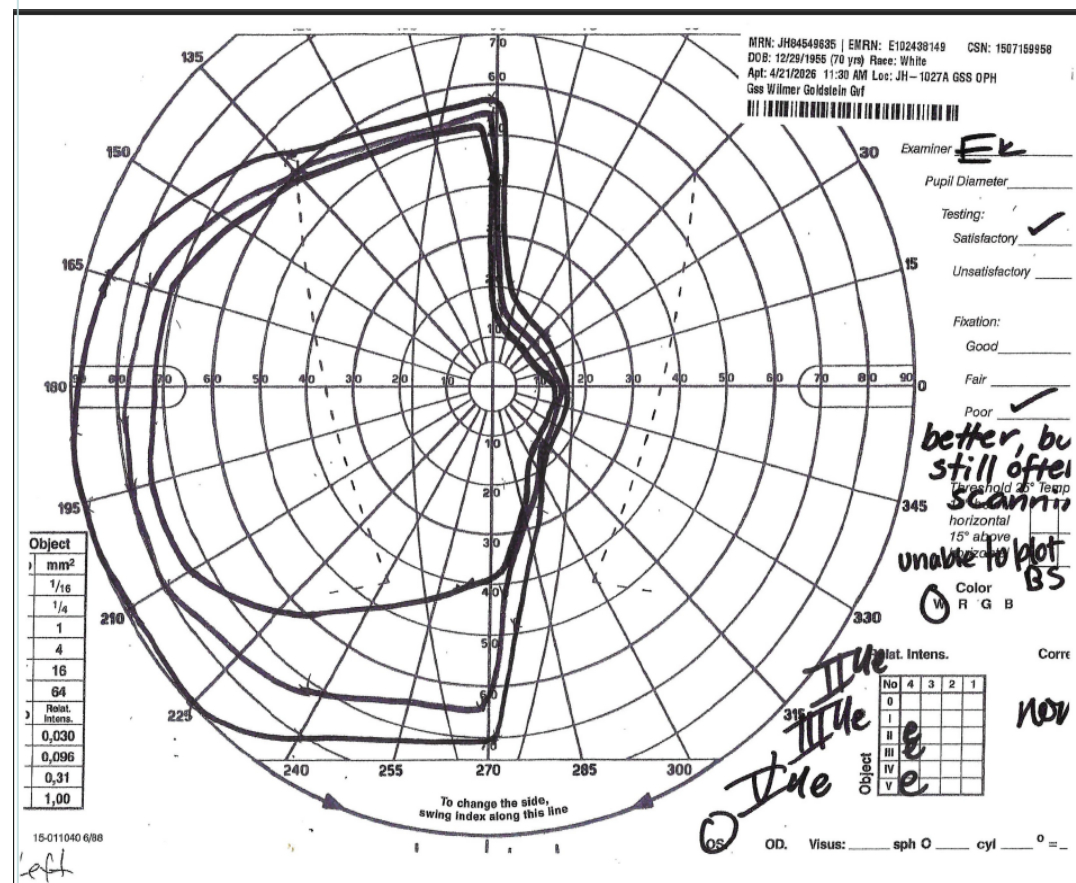
- **The Goldmann visual field test: Better for evaluating low-vision patients for a more precise look at the peripheral field, various stimulus sizes, and extending out to the 60-90° range. Covers much more of the field!**



- Right eye: What do you see in degrees from the point of fixation to the left versus the right?



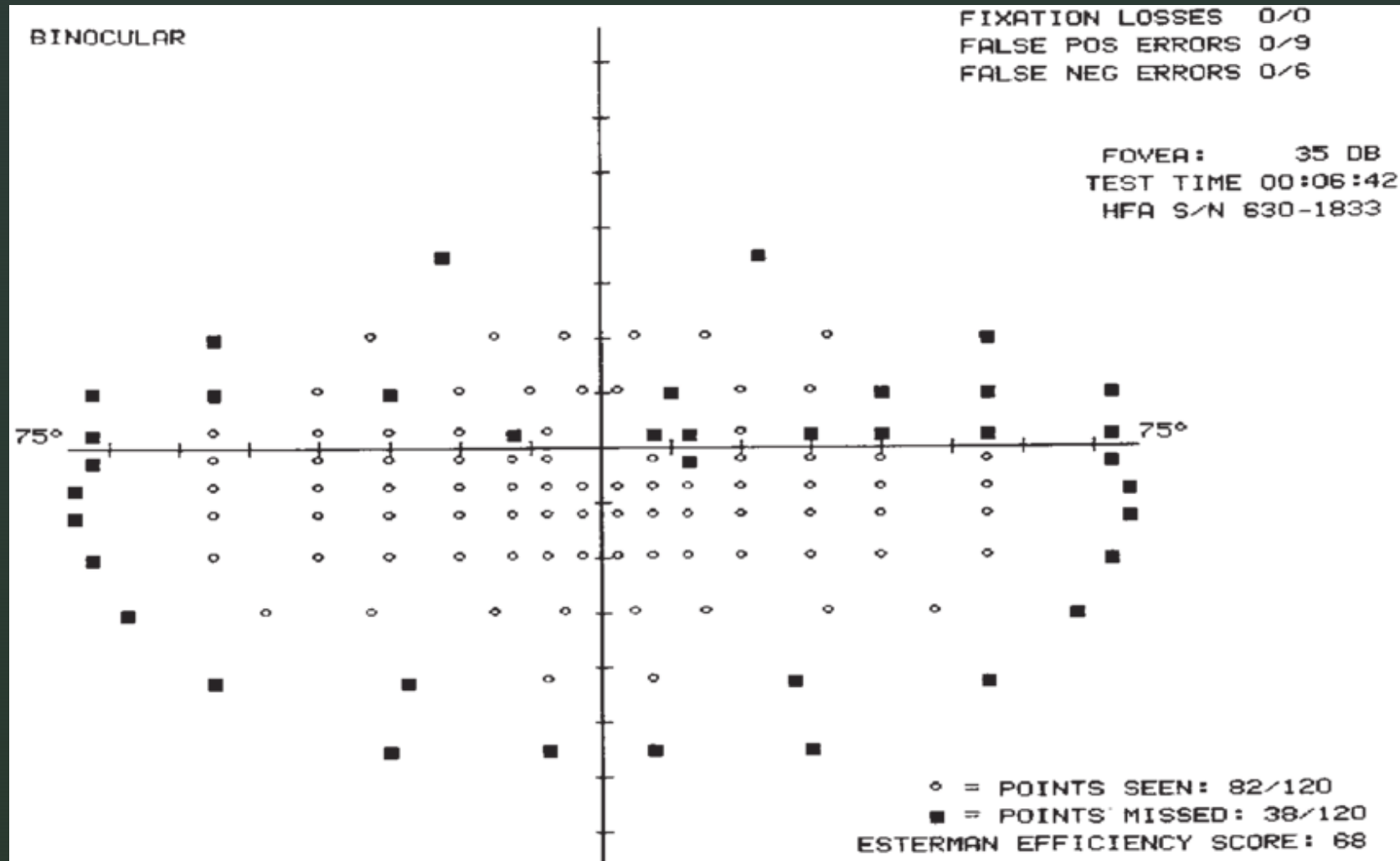
- Left eye: What do you see in degrees from the point of fixation to the left versus the right?





- What diagnosis do you think the last consumer has? How do you think he presents during screening in the clinic using the OPTEC markers? Nasal (45° , 55° , 70° , 85°)
- Confrontation?
- Bernell Vision Disk?
- Follow my pen?

The Esterman Visual Field is a binocular (both eyes open) visual-field test with a horizontal span of approximately 130° and a suprathreshold strategy.



- **90% to 100%: Normal or near-normal peripheral vision. Most driver licensing authorities and medical standards consider this a clear pass.**
- **70% to 89%: Mild to moderate visual field loss. This range may still pass driving requirements in certain jurisdictions, but it can signal functional difficulties in low-light or demanding conditions.**
- **Below 70%: Significant visual field impairment. This usually falls below the legal standards required for driving or operating heavy machinery and indicates substantial peripheral loss.**

Conclusions:

For driving, there is evidence that complete and/or binocular visual field loss poses more of a difficulty than partial and/or monocular loss, and central defects cause more problems than peripheral defects. A lack of evidence exists concerning the impact of superior versus inferior defects. The level of peripheral vision loss that is incompatible with safe driving remains unknown, as compensation abilities vary widely between individuals. This review highlights a lack of evidence in relation to the impact of visual field loss on driving skills. Further research is required to strengthen the evidence to allow clinicians to better support people with visual field loss with driving advice.

Patterson G, Howard C, Hepworth L, Rowe F. The Impact of Visual Field Loss on Driving Skills: A Systematic Narrative Review. *Br J Orthopt J*. 2019 Apr 16;15(1):53-63. doi: 10.22599/bioj.129. PMID: 32999975; PMCID: PMC7510550.

Color perception slide: Most low-vision consumers do not have the acuity to see this. Must have a minimum acuity of at least 20/70. They have low vision, not poor color perception per se.

- Distance acuity in OPTEC or Snellen**
- OPTEC for VF screening at the horizontal midline**
- Confrontation is very functional - a rough screening**
- Bernell Vision Disk**
- Fixation on a target for VF screening - demonstrate**
- Color recognition**
- Road signs and depth on the same slide**
- Visual perceptual**
- Oculomotor**

What else should the clinician assess? It depends on the disability and its implications, including age, comorbidities, and other relevant factors.

-Oculomotor assessment

-Depth perception

-Color recognition

-Visual perceptual skills

-Attention

-Mobility

-Brake reaction

-Cervical impairments that would limit a blind spot check

-Cognitive

-Traffic law knowledge

-Road signs

Are we proceeding with the right-seat passenger assessment or BTW evaluation if the mature adult scores within a dementia range on the BCAT, SLUMS, or MoCA?

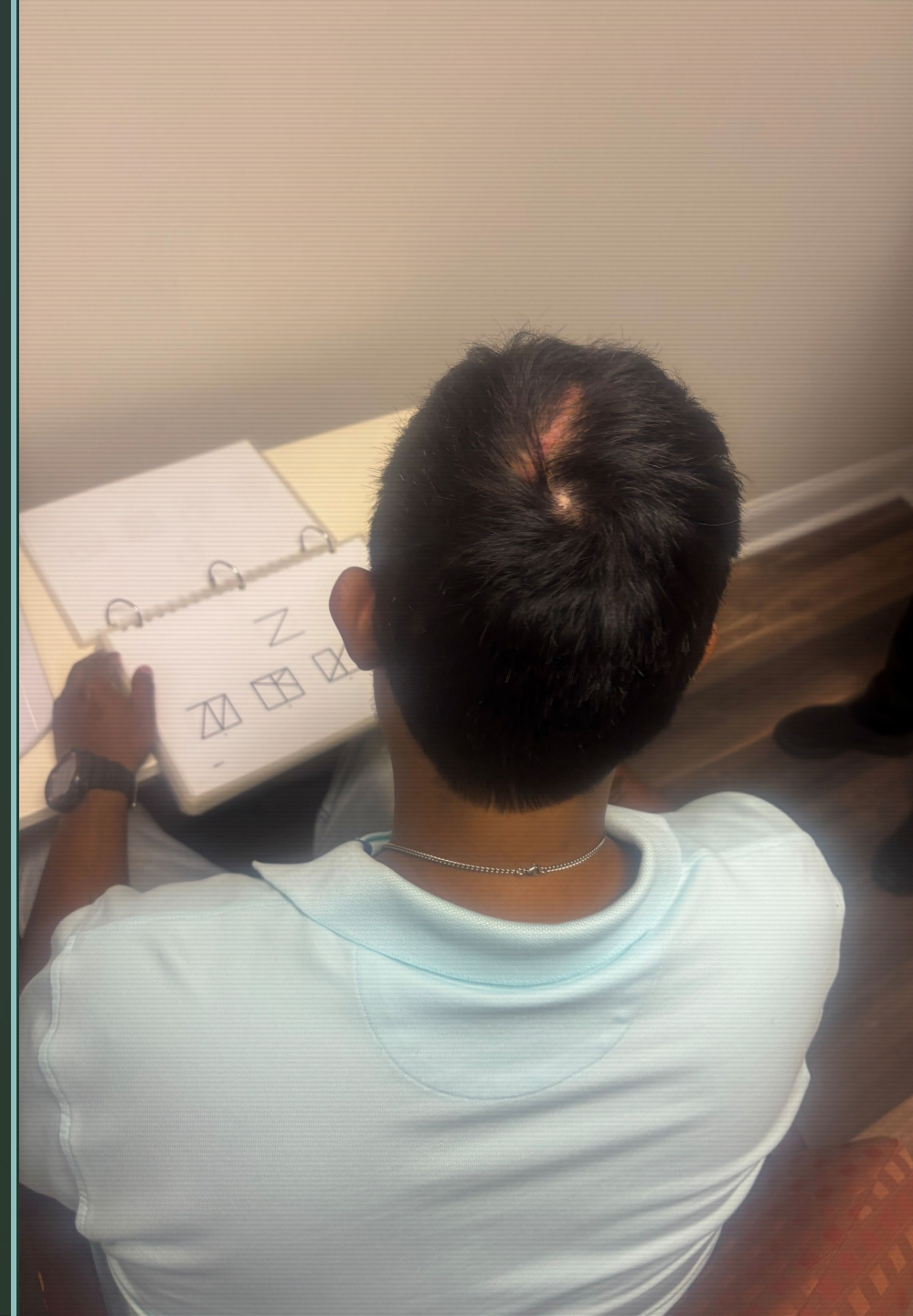
Are they an appropriate candidate for the program if there is cognitive impairment, neuropathy, or polypharmacy concerns?

Have the difficult conversation early and be willing to support it without family or consumer pressure. Be willing to refund the portion of their evaluation and stand firm on your recommendation.

What tools did they bring with them? BTLS, filters, EMDs, handheld?

- Can they use them for any part of your clinical screening?
- Can you look into an OPTEC while wearing a BTLS?
- Can they use a handheld magnification device or use their phone to assist with paper-and-pencil tasks?
- If they are light sensitive and have photophobia, can they wear their filters in the clinic?
- Did you leave the clinic with an understanding of their vision impairment, how it could impact driving, and are you comfortable proceeding with the evaluation?

- What do you see with visual field impairment and static head tilt to compensate?
- Right subdural hematoma s/p craniectomy procedure. Accident while trying to drive in January 2026. Does not want to report to MDOT because of immigration status and fear of losing his license.



Sample Medical History Summary:

Past Medical History: This consumer is a 45 y.o. female who presents to the program today for a low vision driver evaluation. Katrina was diagnosed with low vision in her 20s and has been an independent driver for years. The consumer met the MVA minimal visual acuity and visual field requirement up until this last cycle. She has been followed at the Wilmer Eye Institute and was issued a BTLS in May of 2024 to assist with spotting traffic lights further out, and overall assistance with her vision changes. The consumer is now at the 20/100 reading for both eyes, and 20/125 for left and right. Visual fields are intact and contrast sensitivity is normal. The consumer is an independent driver who self restricts to familiar places and self regulates when needed. The consumer has now had her BTLS for a full year and is fully functional with the compensatory tool. She presents to the program today for an assessment, and to establish a plan of care to assist with her low vision restrictions when her license renews in February of 2026. The consumer has no other past medical history and is not taking any medication. She drove herself to the office for her appointment from Clarksburg, Maryland. The consumer presents to the program proactively, wanting to keep her independence and demonstrate functional compensation with her BTLS.

Rehab: Low Vision consult at Wilmer.

Seizure History/Syncope: N/A

Driving Demographics:

License Expiration Date: 02/22/2026 **Current Restrictions:** BC **License Status:** Valid

Vehicle Type: 2017 Honda Pilot

Visual Status:

Last Vision Exam: May 19, 2025.

Does the consumer wear corrective lenses for driving?: Yes

Static Distance Acuity: Defer to low vision provider. The consumer has at least 20/100 distance acuity in both eyes. She was able to spot at the 20/40 level using the Snellen eye chart at a 20' distance.

Horizontal fields of vision: R: 85' L:85' Continuous:170'

Ocular motility:

Pursuits: WFL's **Saccades:** WFL's **Near Point of Convergence:** WFL's

Depth Perception (Stereo fly Screening): Seconds of arc Unable to measure

Color Perception: Impaired

Far Fusion: Impaired

Road Sign ID Test: 12/12

Trails A: 51" without errors (norm 31")

Trails B: 57" without errors (norm 1':03")

Trail Making Test (Trails) is a neuropsychological test of visual attention and task switching. It can provide information about visual search speed, scanning, speed of processing, mental flexibility, as well as executive functioning.

Multiple Choice Traffic Law Test: 23/25

Clinical & BTW Evaluation Recommendations: This consumer is a 45 y.o. female who has just completed her modified vision driver evaluation at the program. Please refer to her medical history listed above for the nature of this referral. The consumer has been driving for > one year now using a BTLS to assist with spotting traffic lights and establishing a line of sight sooner. Her clinical presentation is strong for visual fields, color recognition, and visual perceptual skills. The consumer does not have any cognitive or mobility impairments that could affect driving or any polypharmacy concerns when driving. The consumer received a clinical evaluation and a BTW evaluation in traffic while wearing her Ocutech VES Explorer 4x BTLS. She is driving using the carrier lens and is spotting correctly for lights, signs, and line of establishment with independence at this point. The consumer was tested on a full 26-objective route.

Referral Source: DORA-KOHI Sanchez

Cc: JHU Low Vision-Judith Goldstein, D.O. Fax: 410-955-0580

Phone Number: 410-303-8326

Medical History: This consumer is a 56 y.o. female referred to the program by VR services and the JHU Low Vision program. The consumer has a complicated history that began in 2022 with an acute retina detachment in her left eye. The consumer had two procedures that were unsuccessful leading to a steady state of double vision. The consumer returned to driving while patching her left eye for a period of two years. The consumer had a retina detachment in the right eye in 2024 with distance acuity leaving her with 20/200 acuity for almost two years. The consumer stopped driving in 2024, and has followed up extensively with her providers and the low vision team. She has improved distance acuity in the right eye at this point to 20/60-2. The consumer has attempted driving locally and feels she could return to driving again as a monocular driver with low vision on certain days. The consumer has returned to work full time as a guidance counselor for Frederick County schools and has accommodations at work including a 32" monitor, speech to text, etc. The consumer is no longer having double vision and is wearing an occlusion CL left eye. The consumer is having to use Uber to get to and from work on certain days with approximately \$600 per month in transportation costs. The consumer is interested in seeing if she can return to driving under daylight conditions at this point. She has a valid Maryland license and has not disclosed any records to MDOT. Other medical history includes Asthma.

Rehab: The consumer sees the low vision OT at JHU for consultation and to experiment with technology to assist at work and at home.

**WHICH ONE DO YOU FEEL MORE COMFORTABLE
PROCEEDING WITH FOR A BTW?**

**WHICH ONE DO YOU HAVE MORE QUESTIONS
ABOUT?**

Vision Simulator Glasses Trial

- Cataract: clouding of the lens, halos, and blurred vision.
- Tunnel vision with scotomas blocking full central with “pinhole” view in center of field.
- Central field loss: macular degeneration, optic nerve atrophy.
- Diabetic retinopathy: combined loss of central and peripheral visual fields.
- Low contrast: difficulty distinguishing an object from its background.
- Right homonymous hemianopia.

Right-Seat Passenger Assessment:

-What is it? Why would we do this?

- **Separates vehicle-control skills from visual skills.**
- **Starts immediately from the office, making a right turn onto a divided highway with traffic traveling 50+ mph. Gap selection is required immediately.**
- **“I would like to make a right turn. Tell me when it is safe to proceed.”**
- **“Which lane would you like me to turn into?”**
- **“Tell me when you see a speed-limit sign.”**

- Lane markings
- Signs
- Traffic lights
- Lane-position choices: 1, 2, and 3
- Warning signs
- Turn lanes
- Stop lines
- Crosswalks
- Construction signs
- School zone
- Protected versus unprotected lights
- Stop signs, what kind of stop sign?
- Close LOS and safety-stop requirements
- Road characteristic changes
- Traffic merging
- One-way street signs
- Threat-detection skills

- **At what point are we establishing acuity for what it is we are scanning for?**
- **How far out can they pick up clues, and at what point on the approach are they establishing it?**
- **Are they guessing, hesitating, and at what point do they confirm what it is they are searching for?**
- **Goals are being established before you even place them behind the wheel with the added distraction of physically trying to control the vehicle.**

BTW Evaluation: Experienced adult driver who is now < 20/70 Distance Acuity.

- What are we looking to measure? How are their driving skills given their level of visual impairment? Can you measure it?**
- Lane management, speed management, light recognition, following distances, braking distances, moving turns, stationary, protected, unprotected, lane changes, space management, threat-detection skills, road characteristic changes, two-lane country roads, expressways, divided highway, urban, residential, parking lots, etc.**

What is your assessment of their driving skills?

What behaviors are you seeing that need to improve based on their visual impairments?

Do you believe these are areas that can improve with training?

What goals are you developing from your assessment?

Can you distinguish between poor driving habits and visual impairments that are affecting performance? Do you know the difference?

BTW Evaluation of the Novice Driver with Low Vision/Visual-Field Impairment:

- Closed-course evaluation**
- Basic vehicle control skills**
- Life skills with steering, acceleration, braking, right side of the road concepts**
- Visual targeting, scanning, reference points.**
- What is needed before they return to you for L1-L6?**
- How can we achieve this if they have a “J22” restriction?**
- Can we work together on this LTG?**

Modified Vision Training: Experienced vs. Novice Driver

Goals identified during the evaluation that need improvement for safety and sustainability and to maintain driving privileges once licensed or relicensed.

Training goals should match the areas of impairment identified during the evaluation.

Have you observed them sufficiently across different settings and situations, including varying lighting, weather, time of day, fatigue, and glare?

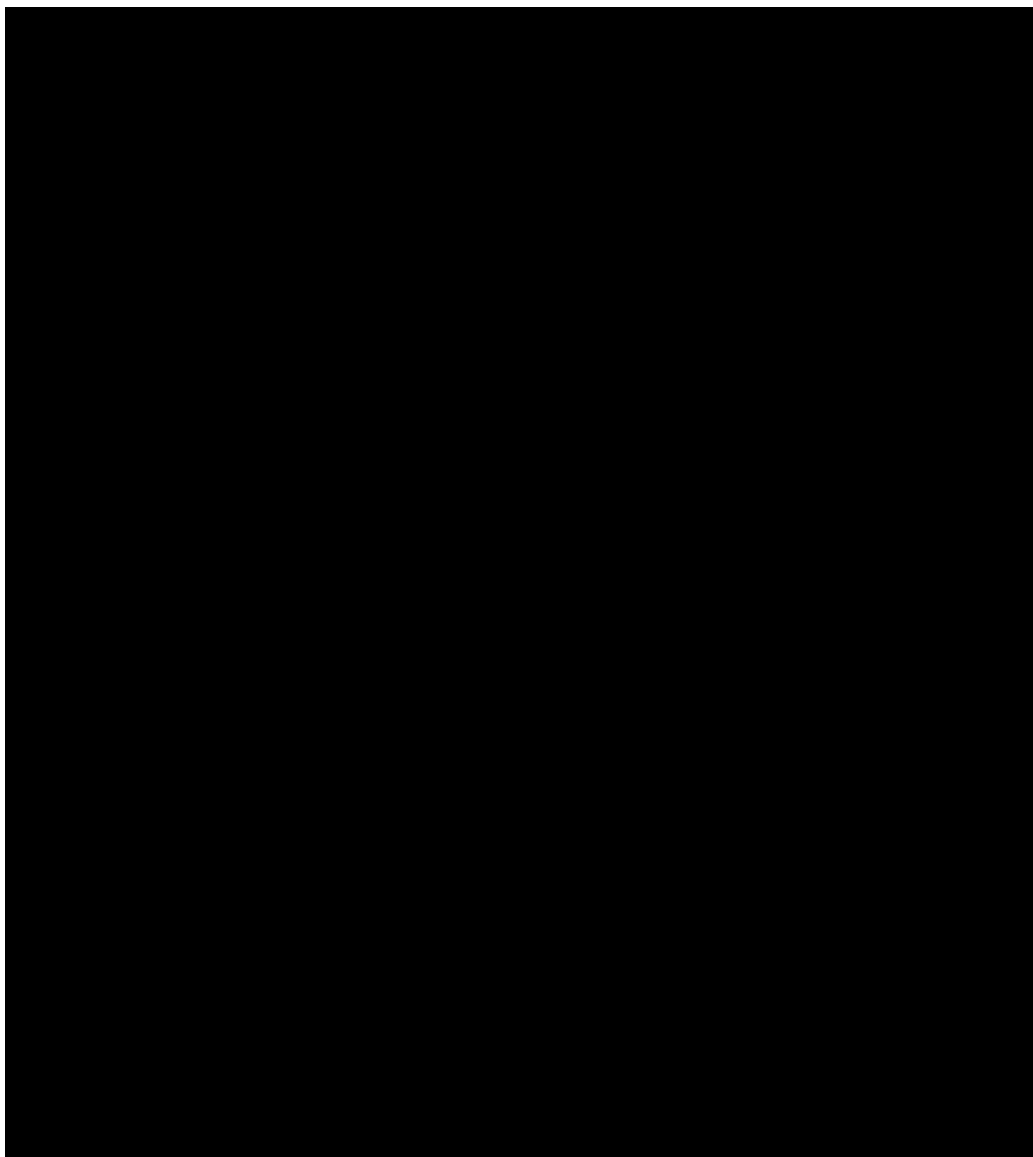


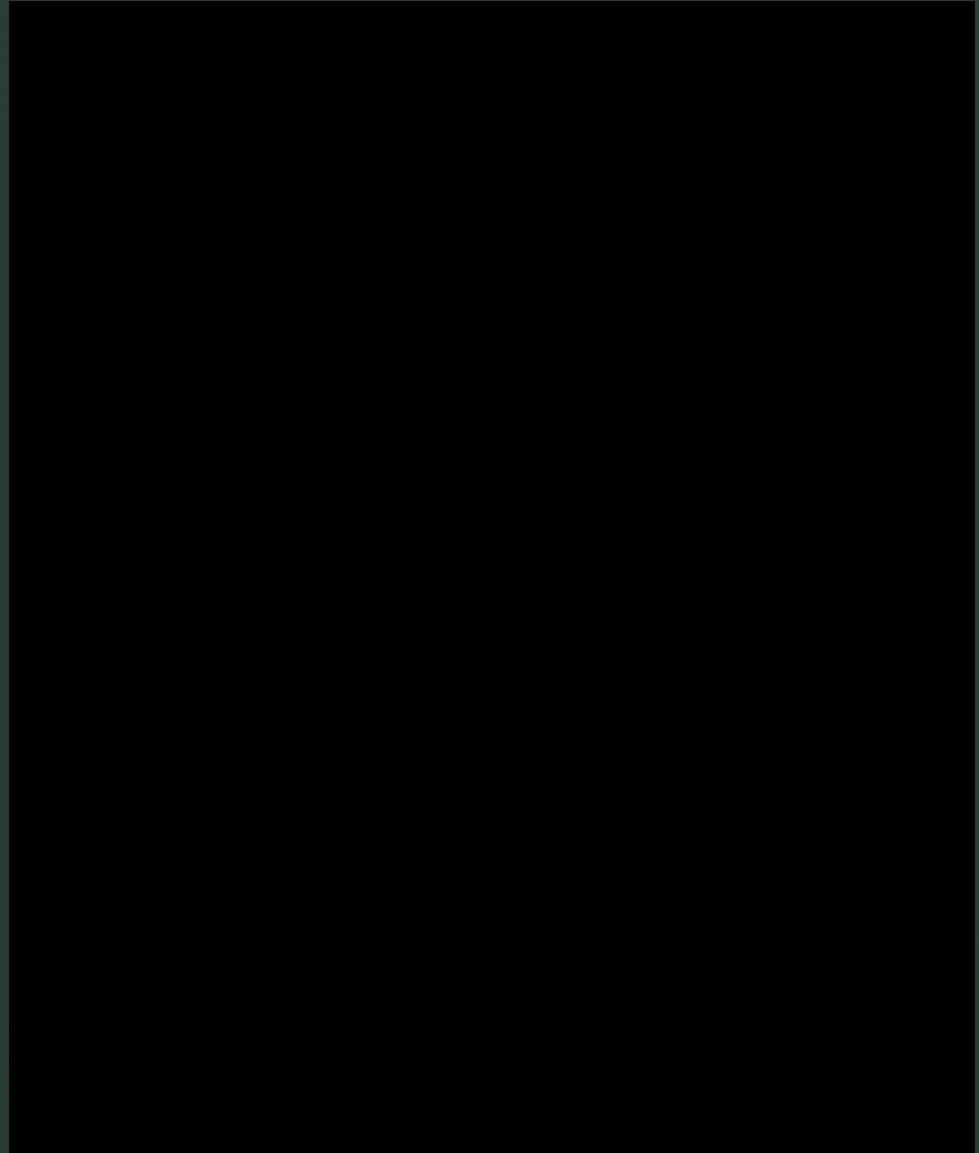
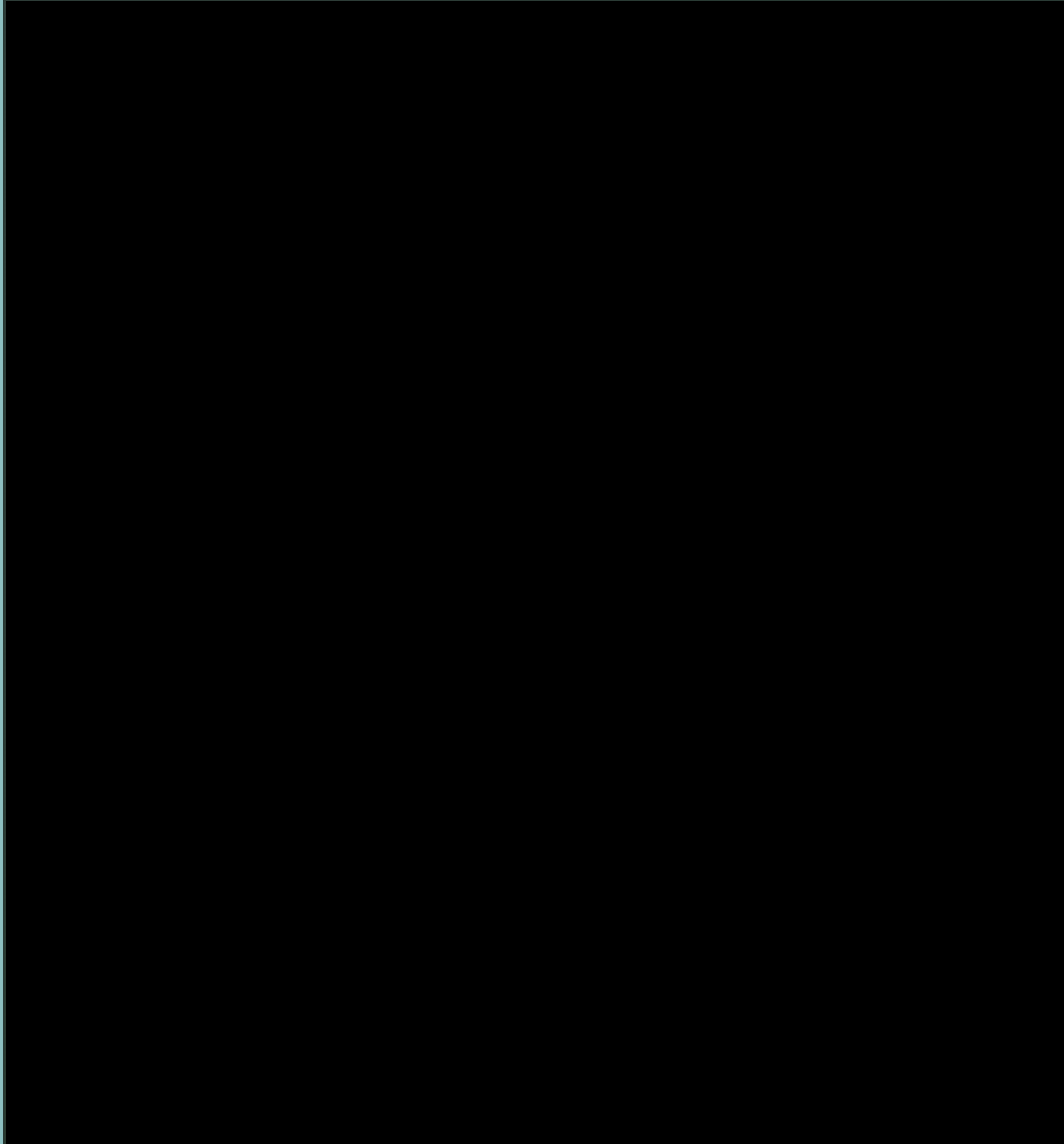
<https://www.noirinsight.com/low-vision-sunglasses>

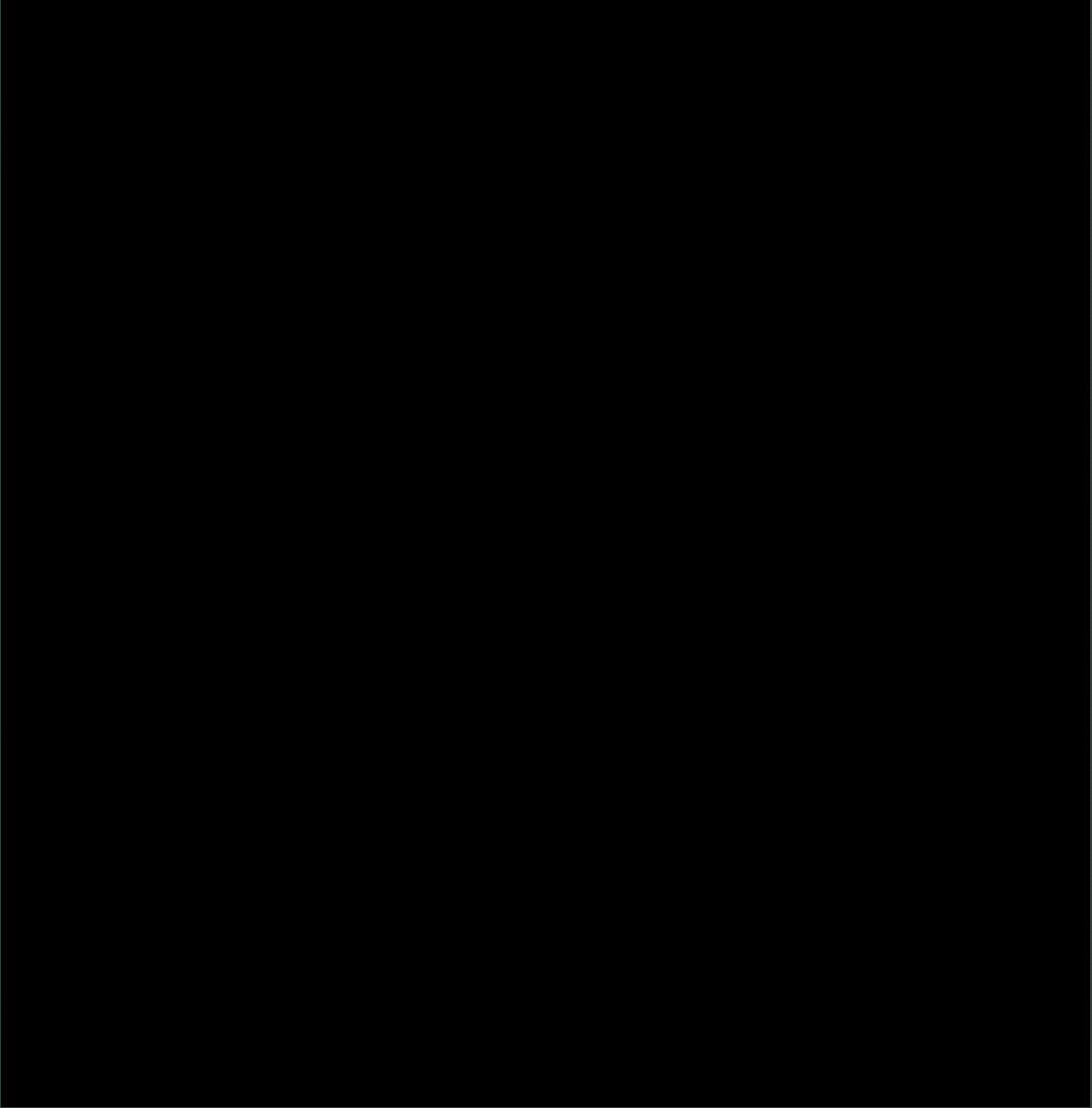
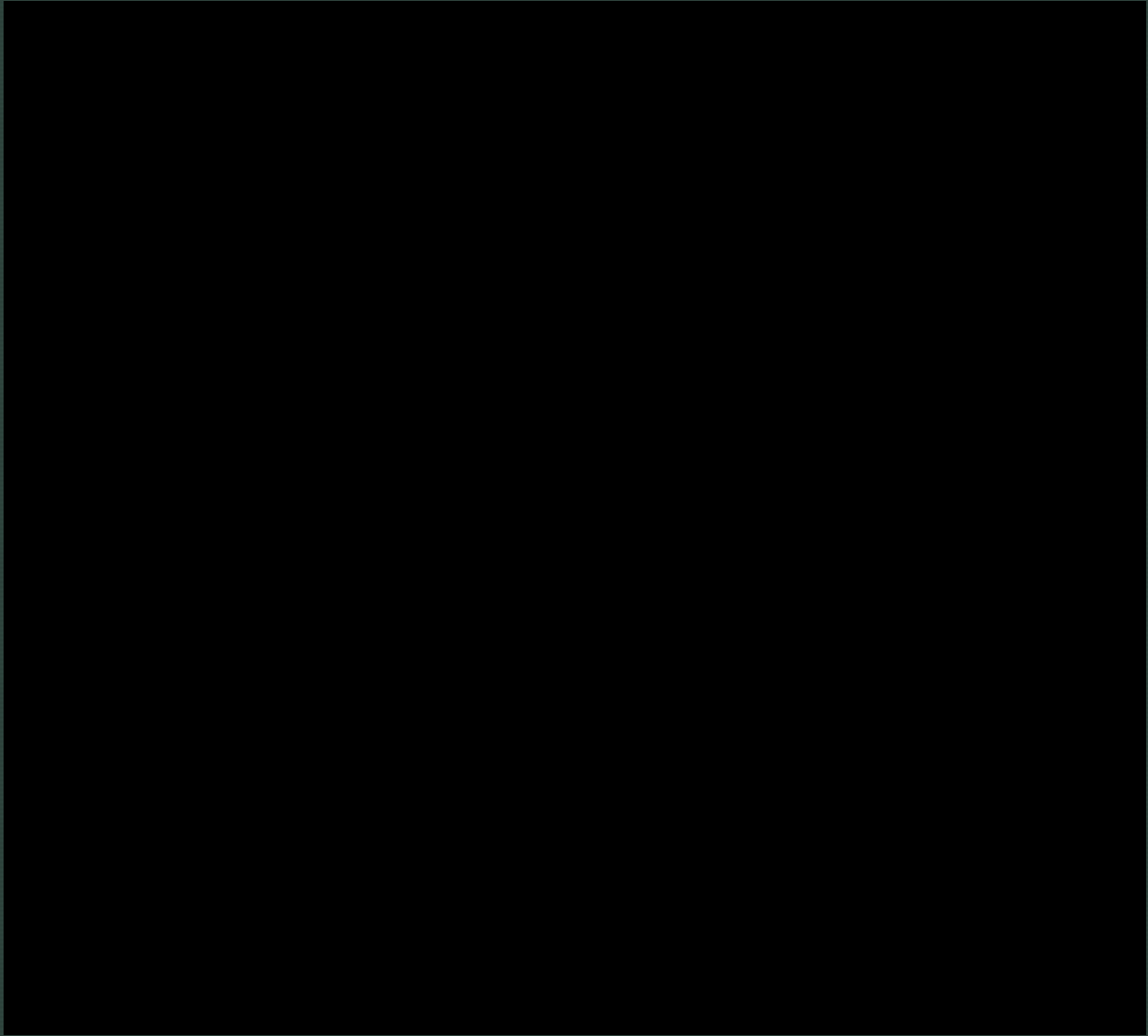


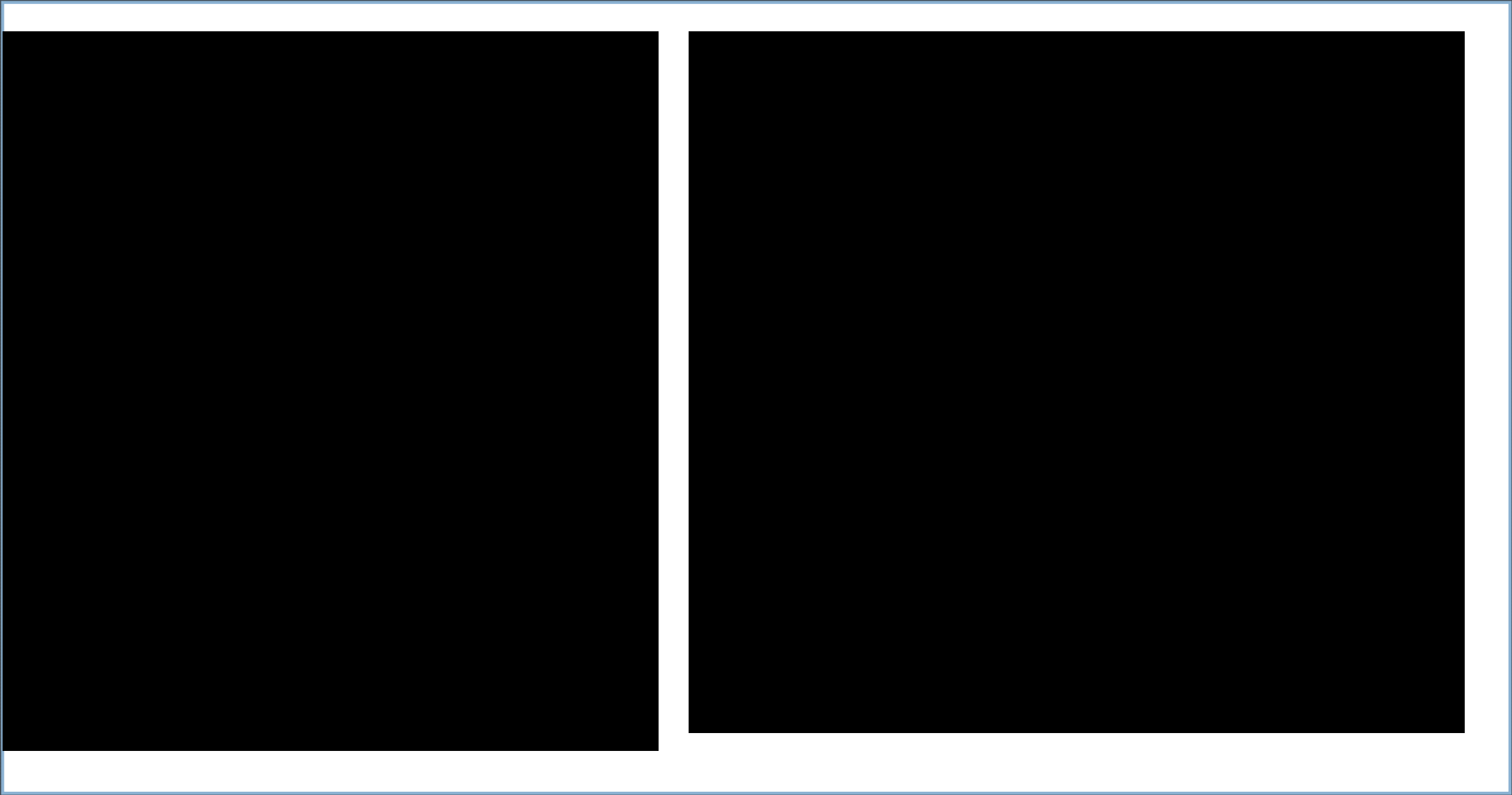












Light Sensitivity Link:



#81 bright sun-glare

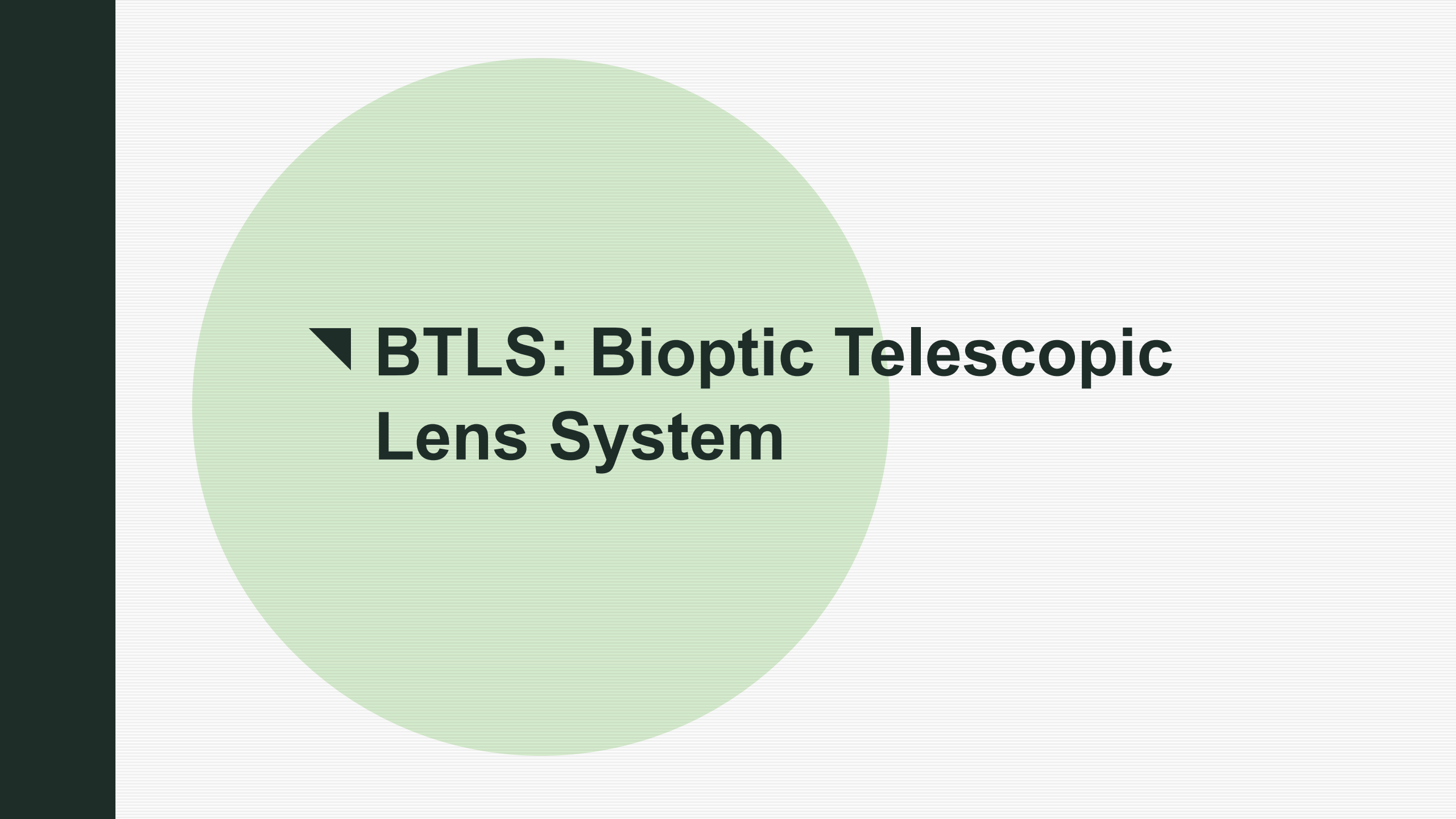


**#72 overcast-grey
conditions**

Congenital Achromatopsia

“The consumer purchased his NOIR split filter lenses after the last training session in September of 2025. He has been wearing them every day while driving with his parents, and this has drastically improved his ability to see red and green with the split-filter setup. Wyatt is now able to filter out glare, improving contrast when approaching a traffic light. He can see red better with the #97 filter over his left eye and green with the #8 filter over his right eye. The consumer is confident with his driving and has driven >60 hours throughout his community and local towns surrounding Hartford County.”





▼ **BTLS: Bioptic Telescopic Lens System**

2026: 45 states and the District of Columbia allow bioptic driving under specific rules, training mandates, and vision limits.

Arkansas, Iowa, Kansas, Nebraska, and Wyoming do not allow BTLS.

In some states, you may use a bioptic device after qualifying, but you cannot use it to meet the minimum vision requirement. This creates a potential “Catch-22.” For example, New Mexico requires 20/40 acuity, and a BTLS cannot be used to meet that requirement.

New England Low Vision *and Blindness*

Speak with an Expert: 888-

Technology Training Care

State	Bioptic Allowed	Acuity Through Bioptic	Carrier Lens Acuity	Field Requirement	Common Restrictions
Massachusetts	Yes	20/40	20/100	120 degrees	Daytime, local roads, speed limits
Connecticut	Yes	20/40	20/200	120 degrees	Daytime only, restricted routes
New Hampshire	Yes	20/50	20/200	105 degrees	Daytime, no interstate
Vermont	Yes	20/40	20/160	120 degrees	Daytime, annual renewal
Rhode Island	Yes	20/40	20/200	120 degrees	Daytime only
Maine	Yes	20/40	20/200	110 degrees	Daytime, geographic limits
New York	Yes	20/40	20/200	140 degrees	Daytime, no highway, speed limit
Florida	Yes	20/40	20/200	130 degrees	Daytime only

How do they work? Bioptics are miniature telescopes mounted onto the top of your eyeglasses. They are a convenient way to magnify distant objects, making them instantly visible while leaving the hands free.

Keplerian Products

- [VES Falcon Autofocus](#)
- [VES Sport II](#)
- [VES Explorer](#)
- [VES K](#)
- [VES Mini](#)
- [VES II](#)

Galilean Products

[SightScope](#)
[SightScope 2](#)
[SightScope NearView](#)
[Reveal InstaMount](#)
[Reveal On & Off Bioptic](#)
[Reveal Traditional System](#)
[Tunnel Vision Products](#)

Do we drive while looking through the BTLS?

What is spotting?

What are we looking for?

How long should it last?

What are the risks?

What happens when we look through a pair of binoculars?

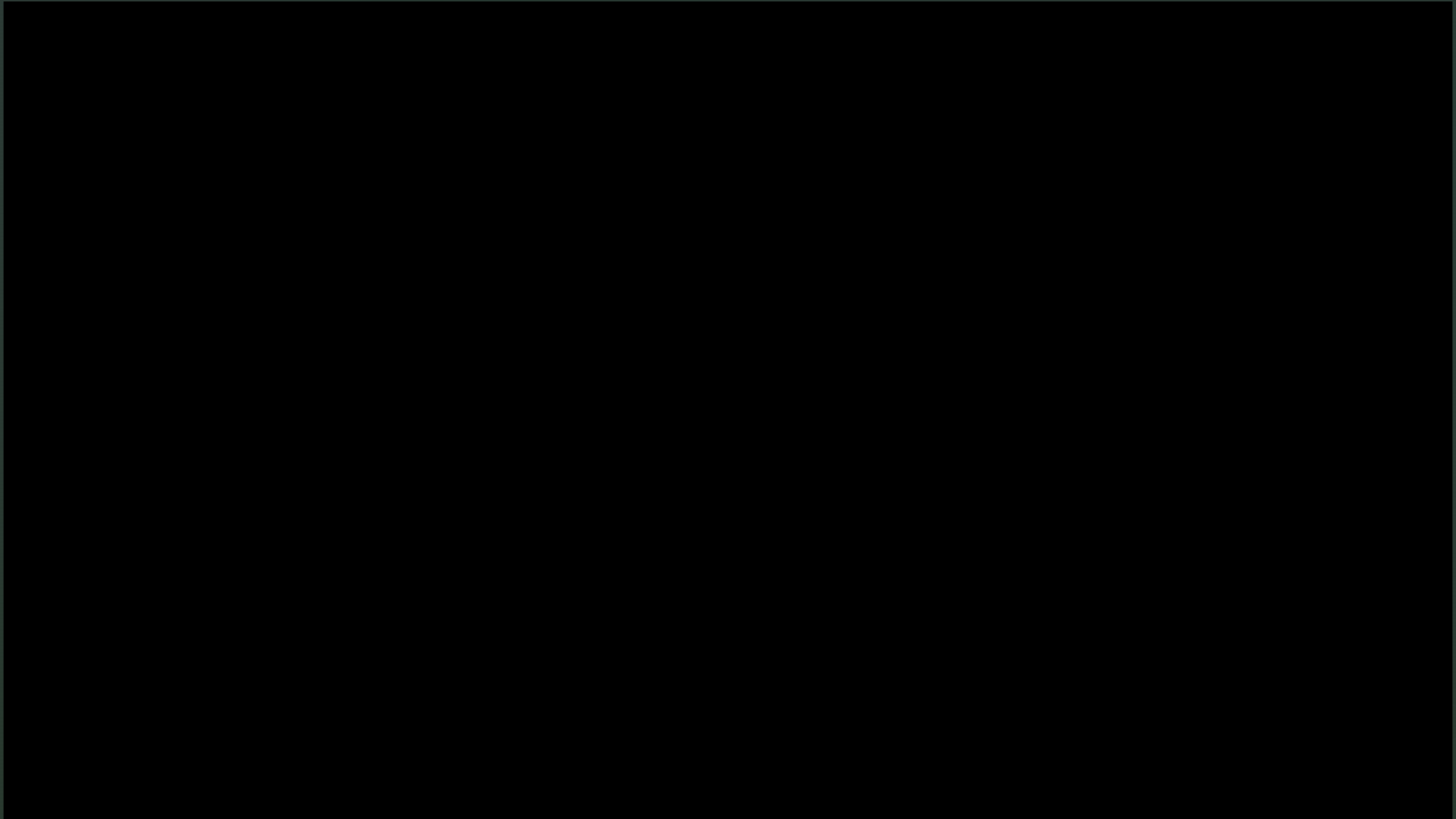
Is it required for everyone? Is this a good thing?



This is textbook!

**Ocutech VES Explorer 3×
magnification**

Textbook approach with "spotting."





- Struggling to see 20/100 at a 20-foot distance through the carrier lens, or even with BTLS for spotting. Sold a \$6,000 useless product! Galilean SightScope product, 1.7-2.2× magnification. Lighter weight; however, it has a narrower field than a Keplerian BTLS.
- Be wary of commission-based salespeople who sell optical products.

**Galilean optical sightscope
2.2X**

**Slip in filters for glare needed
by O.D.**





-Polarized lenses were his choice for photophobia...

***Tried with a Galilean SightScope 2.2× without success...**



**Ocular Albinism, Congenital
Nystagmus**

→ **Ocutech VES Explorer with 4×**

2½ years wearing an Ocutech VES Explorer, 3×. Some things just take time!

*Drives to college, work, and now has a boyfriend!



*They are getting better! New magnetic flip-down filters!



Mirrors & Cameras

Panoramic rearview mirror: expands the field of view from the rear toward the sides.

Convex: Eliminates blind spots to the side of the vehicle and assists with parking-space reference points.

NEW *SmartView Mirror III* **Blind Spot Mirror**

Makes Lane Changing Safe!

- Detects Vehicles in Blind Spots
- Makes Freeway Driving Safer
- Makes Backing Safer
- Eliminates Head Turning
- Makes Nighttime Driving Safer

NEW Etched "Safe Box"

"Danger Zone"

See Backside

Mounting Mirrors
 Clean the vehicle's mirrors, then the etched Safe Box properly positioned as illustrated gives the driver clearly away the lower outside corner of each mirror.

Driver's Side

Passenger's Side

Safe Lane Changing is as easy

1. Car is in the Safe Box. Okay to change lanes.

2. Car is moving out of the Safe Box. Not safe.

SmartView Becomes Very Smart

For more tips: www.NCHL.org/SmartViewMirror

Available on CD Safety Products
 Approved by
 National Institute for Driver Behavior
www.NCHL.org - (202) 272-1991
 Patent Pending





Standardized route-plan training versus geographic/contextual training

Standardized: Objective route plans, safety, and gradual progression.

Contextual: Familiar landmarks decrease anxiety. More costly, as this requires travel-time reimbursement.

Restrictions for Low Vision and Visual-Field Impairment:

- Daylight only
- No vehicles >10,000 lbs.
- Outside mirrors

Some states restrict driving to 45 mph or less, prohibit expressway driving, or limit driving to local or designated routes. Requirements vary considerably by jurisdiction.

References & Sources

Sources supporting the external clinical, regulatory, research, and product material used in this workshop

Maryland licensing & Modified Vision Program

- [MDOT MVA Vision Tests & Requirements \(2026\)](#).
- [MDOT MVA Low Vision Workshop Materials \(2026\)](#), including DC-040E, laws, and MVP resources.
- [Maryland COMAR 11.17.05 Use of Biotopic Telescopic Lenses](#).

Humphrey / automated perimetry

- [Rula, S., & Tripathy, K. \(2025\). Humphrey Visual Field. StatPearls / NCBI Bookshelf](#).
- [DiCOM PS3.16, CID 4250, Visual Field Static Perimetry Test Patterns \(24-2, 10-2, 30-2, 60-4\)](#).

Esterman visual-field testing

- [Bro, T. \(2022\). Benjamin Esterman and the binocular visual-field scoring grid. Acta Ophthalmologica, 100\(7\), 828–833. doi:10.1111/aos.15096](#).
- [Fujiimoto, S., et al. \(2024\). Reliability of Binocular Esterman Visual Field Test. Diagnostics, 14\(4\), 433. doi:10.3390/diagnostics14040433](#).

Visual field loss & driving evidence

- [Patterson, G., Howard, C., Hepworth, L., & Rowe, F. \(2019\). The Impact of Visual Field Loss on Driving Skills: A Systematic Narrative Review. Br Jr Orthopt J, 15\(1\), 53–63. doi:10.22599/bioj.129](#).

Eye-disease / simulation material

- [National Eye Institute \(NIH\). See What I See: Virtual Reality Eye Disease Experience: Low Vision, Cataracts, AMD, and Diabetic Retinopathy resources](#).

Filters, bioptics & product information

- [NOIR Insight, Low Vision Sunglasses / filter information](#).
- [Ocutech, Driving with Bioptics and biopic product resources](#).
- [Deffler, R. A., Raasch, T. W., & Dougherty, B. E. \(2026\). Biotopic driving: Historical milestones, current landscape, and future directions. Optometry and Vision Science, 103\(3\), e70022. doi:10.1002/ovs2.70022](#).

State-by-state licensing / restrictions

- [New England Low Vision & Blindness \(2026\). Biotopic Driving: State Requirements and How It Works](#).
- [New Mexico MVD, Chapter 9: Medicals – Vision Report](#).
- [EyeWiki / American Academy of Ophthalmology, Driving Restrictions per State \(updated 2026\)](#).

Verification note: Esterman percentage pass/fail thresholds are jurisdiction-specific. The slide stating “45 states + D.C.” matches NELVB (2026), while Deffler et al. (2026) reports 49 of 51 U.S. licensing jurisdictions currently permit biopic use. State rules should be rechecked before clinical use.

Web sources accessed Sep. 16, 2026

Thank you!