

Driving with central visual field loss

September 2 2015



A low-vision driving simulation at Schepens Eye Research Institute in Boston, MA. Credit: Mass. Eye and Ear Office of Communications

Vision researchers in Boston have published the second paper of a study designed to determine if a driver who suffers from loss of central vision

is able to detect pedestrians in a timely manner when driving. Central visual field loss, a scotoma or blind area in central vision, is found most commonly in patients with age-related macular degeneration (AMD). Patients with AMD may drive provided their visual acuity at least meets the requirements for a restricted license. However, the size and location of the blind area are usually not considered when making licensing decisions. The purpose of the study was to evaluate how much these blind areas delayed responses to pedestrian hazards in the safe environment of a driving simulator.

"Driving with Central Visual Field Loss II: How Scotomas Affect Hazard Detection in a Driving Simulator" has just been published in the Sep. 2, 2015 *PLOS ONE*.

This study was conducted with participants with AMD who drove in a state-of-the-art [driving simulator](#) at the Schepens Eye Research Institute of Mass. Eye and Ear. The research was led by Alex Bowers, Ph.D., Eli Peli, O.D. M.Sc., and P. Matthew Bronstad, Ph.D..

The study's first phase, documented in *JAMA Ophthalmology*, Mar. 2013 showed that patients with blind areas to the side of where they typically look tend to miss [pedestrians](#) coming from that side. The results of the current study showed that a blind area located above or below the center of interest will still likely block or delay a driver's ability to detect pedestrians entering the field of vision from the side of the road. These late reactions usually occurred because the pedestrians were entirely or partially obscured by the blind area after the drivers noticed the pedestrian using their peripheral vision, and then tried to look at them directly, causing the blind area to obscure the pedestrian.

Taken together, the results of the two papers suggest that any binocular central field loss might delay a driver's ability to detect moving hazards in time for the driver to take safe, corrective action.

"If you are a low-[vision](#) patient, you should understand how the condition affects and perhaps limits your ability to drive safely," said Dr. Bronstad. "These data should prove useful to clinicians in advising patients about whether they should continue driving, and may even become a consideration for state agencies responsible for licensing drivers."

Provided by Massachusetts Eye and Ear Infirmary

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