Assessing Headlamps and Glare

LRC researchers are working with the National Highway Traffic Safety Administration (NHTSA) to address more than 5000 complaints NHTSA has received from the driving public about headlamp visibility. Most of the complaints focus on glare from new headlamp technologies. Many cite high intensities, the “bluish” color of the lamps, and the small lamp size that results in higher brightness and increased glare.

To help NHTSA assess these issues, the LRC conducted a field study to systematically examine the intensity, color, and size of oncoming headlamps (as viewed from 50 meters away); and to determine the effects of these parameters on the visibility of objects and on subjective impressions of visual discomfort.

A view of the experimental setup. Subjects looked toward a lighted array and responded to flashing signals from targets located in their peripheral field of view. LRC researchers recorded subject response times for each oncoming headlamp intensity, color, and size.

LRC findings

- Increasing the intensity of oncoming headlamps both decreased visibility and increased discomfort.
- Oncoming headlamps with increased “blue” content did not decrease visibility but did increase discomfort.
- The size of the oncoming headlamps did not affect visibility or comfort.

The LRC is conducting ongoing studies to determine whether increases in discomfort might also be related to misaim of headlamps, and whether increased discomfort leads to driving behaviors such as slowing down or veering out of lane.

Sponsor

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