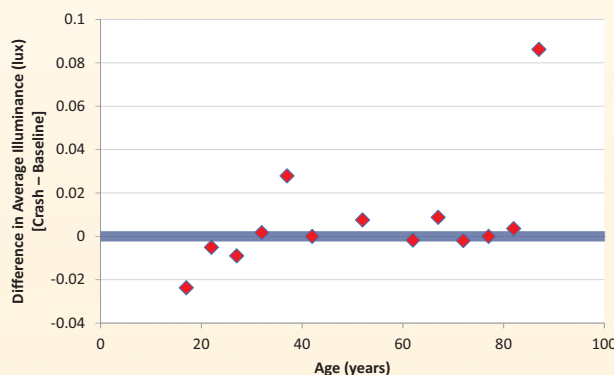


Naturalistic Driving Study of Headlight Glare and Crash Risk

Headlight glare is a major concern of the driving public. However, the risks of glare on the frequency of crashes have been difficult to ascertain. The Second Strategic Highway Research Program (SHRP2) commissioned the Naturalistic Driving Study (NDS), a long-term study in which more than 3000 drivers' vehicles across the U.S. were instrumented with sensors, camera and data logging systems to record driving performance over a period of one year or longer.

Using NDS data, LRC researchers performed a preliminary analysis to assess oncoming glare exposures during nighttime driving on unlighted roads. NDS driving data in this study were segmented into crash events (including 15 seconds of driving before the crash) and baseline conditions. Crashes included vehicles driving off the road, or colliding with other vehicles, pedestrians or fixed objects.

Crash and baseline data were matched for driver age and speed. Analysis of ages revealed that young drivers were over-represented in nighttime crashes along unlighted roads.

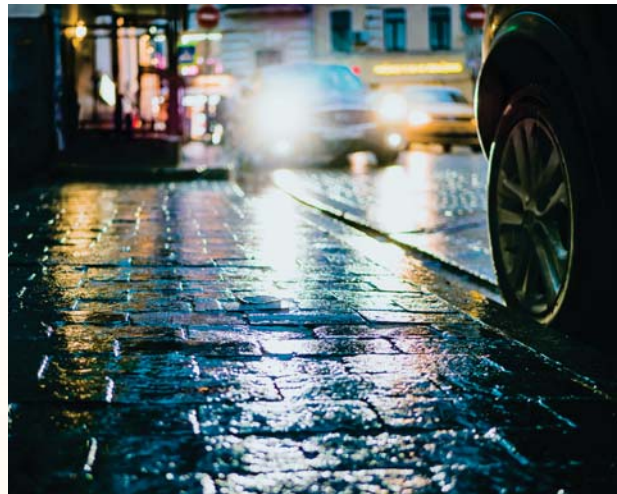


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Because the roads in the data sets were unlighted, oncoming headlight illumination – not roadway lighting – would be the primary source of glare, and this was confirmed by examining the associated video footage. The LRC research team hypothesized that if glare were a substantial risk factor in vehicle crashes, glare exposures might be lower in baseline than in crash situations. Differences in the mean glare illuminance between crash and baseline data were not statistically different from zero, either overall or for any age group.

Although preliminary, these analyses do not support the notion that crash risk is substantially increased when headlight glare is present just before a crash. The influence of long-term glare exposure on crash risk was not addressed in this study.

Citation

Bullough, J., "Influence of Oncoming Light Exposure on Safety Outcomes in a Naturalistic Driving Study," SAE Technical Paper 2018-01-1039, 2018, <https://doi.org/10.4271/2018-01-1039>.

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