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16. Abstract

The potential glare from rearview mirrors was quantified in simulated encounters using data on the locations of mirrors and headlamps, and on the photometric output of low-beam headlamps. This was done for two classes of vehicles (passenger cars, and light trucks and vans [LTVs]) in the roles of the vehicle subject to the glare and the vehicle producing the glare.

The results indicate that, in many encounters with glare vehicles to the rear, there will be a substantial disparity in glare, both among vehicles of different classes and among different mirror locations on a single vehicle. The main reason for this is the strong role of mirror height in determining how much a mirror is exposed to the lower, and therefore stronger, portion of a low-beam light pattern. There is substantially greater potential for high glare values on the mirrors of passenger cars versus LTVs. and on the driver-side mirror versus the center rearview mirror on all vehicles. With upward misaim of headlamps, these disparities are increased, as is the absolute level of potential glare. The relatively low potential for glare on the center mirrors of LTVs will often be compounded by the low transmittance of privacy glass on those vehicles.

The present results have implications for where glare light should be sensed in order to control automatic anti-glare mirrors. However, specific recommendations should incorporate two additional considerations: (1) the geometry of a given vehicle, including the actual heights of the rearview mirrors and how the potential fields of view of those mirrors are affected by opaque parts of the vehicle, and (2) quantification of the exposure to glare that vehicles experience in actual traffic, including the frequencies at which glare vehicles are encountered in the fields of view of the individual mirrors.

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