

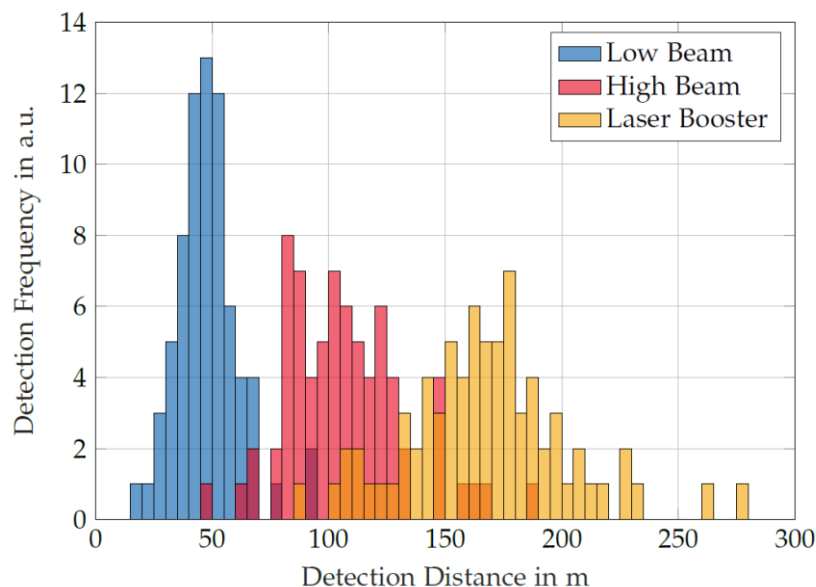
Extract from GTB Glare and Visibility Forum Geneva, 22 October 2018 (Prior to GRE-80th session)

Note: all the forum materials are available on the GRE website. This is a direct link:
http://www.unece.org/trans/main/wp29/wp29wgs/wp29gre/infpape_80.html

Glare and Visibility in Automotive Lighting

J. Kobbert, K. Kosmas, Prof. T. Q. Khanh

Insufficient headlamp aiming
Only about 20% of all vehicles are properly aimed



120 km/h max speed limit in the USA
150 km/h: average speed on German Autobahn
80km/h average on country roads
Low Beam is not suitable!

Headlamp Light Performance Evaluation

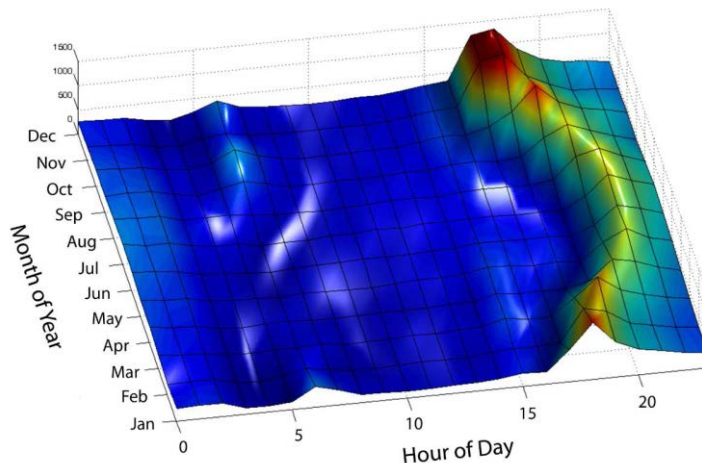
John D. Bullough, Ph.D.

Sensitivity analyses have consistently shown (Perel1985; Sivaket al. 1998; Akashi et al. 2008) that vertical aim is the most critical parameter associated with visibility and glare from headlamps

Real-world measurements (Skinner et al. 2010; Bullough et al. 2010; Flannagan 2011) have demonstrated that many vehicles have misaimed headlamps, including brand-new vehicles

Importance of visibility improvements for safety in automotive lighting

Michael J. Flannagan



- Animal and pedestrian accidents increase in dark
- Drivers' impressions of headlamp effectiveness are probably dominated by the fact that headlamps are adequate for seeing the road, and they may not realize how poorly headlamps work for pedestrian visibility.
- Since the visual deficit is only partial and of consequence only for low-probability stimuli, **the driver is unaware of the loss of function** and does not take the necessary precautions
- Stopping distance (and therefore required seeing distance) by speed
- People overdrive their headlamps. Additional visibility distance, especially at higher speeds, would be beneficial