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16. Abstract

This in-traffic study evaluated driving performance with and preference for HID low beams. Subjects drove two identical luxury sedans. One vehicle was equipped with HID low beams and the other with tungsten-halogen low beams. The main difference between the two beams was that the HID lamps provided more spread light. Driving performance was evaluated by analyzing steering frequencies. The hypothesis was that the wider beam pattern of the HID lamps would be beneficial by reducing the steering effort in the 0.3 to 0.6 Hz range, which has been used in previous studies as an index of steering-task difficulty.

The main finding is that the wider HID beam pattern made lane maintenance less demanding, as measured by a reduction in the steering frequencies between 0.3 and 0.6 Hz. The implication is that HID headlamps may be beneficial to safety, because their wider beam pattern allows more of the limited information processing resources of drivers to be allocated to other tasks.

When the subjects were not primed before driving to pay attention to the headlamps, they did not show, as a group, preference for either type of lamp. However, when they were told to pay attention to the headlamps, they overwhelmingly preferred the HID lamps.

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