Abstract

Old drivers and old road users in general, have high injury and fatality rates in road traffic. Furthermore, the proportion of old road users and old drivers will increase rapidly during the coming decades. Night travel has proven most difficult for old persons. The purpose of this study was to analyze this situation from the vehicle lighting point of view in order to propose vehicle lighting improvements that could be of special benefit to old road users.

A literature review of current knowledge concerning age, visual performance, and accident involvement was carried out. This was followed by an analysis of the present vehicle lighting problems. Based on the results from these analyses, a number of proposals for improvements were presented. The main proposals concerning illumination systems are as follows: more illumination to increase visibility in spite of higher glare, wider illumination to improve road guidance, a softer cut-off to decrease aiming sensitivity, and keeping headlights clean and correctly aimed. The main proposals concerning signaling and marking lights are the following: two intensity levels (for day and night), small, high-mounted turn signals, and higher light-source reliability. Mandatory daytime running lights are proposed. Interior lighting should be improved in a number of aspects. All of these proposed improvements should be beneficial not only for old drivers, but also for other drivers. Finally, the visibility and safety effects are estimated, research needs are pointed out, and technical and economic problems are discussed.