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16. Abstract

In a previous report (UMTRI-99-21), data analysis using the Daylight Saving Time (DST) changeover and the Fatality Analysis Reporting System (FARS) showed that the added safety risk in darkness versus light is much higher for pedestrians than any other road users. This report extends those analyses to determine the specific magnitude of darkness effects for all harmful events, and focuses on how pedestrian risk is affected by features of the roadway environment. The new results show that pedestrian risk in darkness is related to posted speed limits and is particularly high on high-speed, limited-access roadways, where the combination of speed and limited sight distance may multiply pedestrian risk. Use of alcohol by pedestrians appears to strongly magnify the effect of darkness on the risk of being killed. No similar effect of alcohol was found among the drivers involved in the same crashes. Given the apparent effect of speed on pedestrian risk, there may be substantial safety benefits of innovative headlighting systems that could adjust to the greater visibility needs of higher speeds.

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