Fatal crash trends in the United States between 1990 and 2006 were examined for changes in the ratio of crashes in darkness to crashes in daylight to determine whether recent improvements in vehicle forward headlighting might have influenced the dark/light ratio. A general decline in the ratio was observed among all fatal crashes, although partitioning of the data suggests this trend is only present among crashes involving drinking drivers. In an analysis of pedestrian crashes, an increasing trend in the dark/light ratio was observed. When the data were further partitioned based on the age of the victim, a decline was observed among adult victims and increases were observed among children and older victims. These differences in the ratio trend suggest that the dark/light ratio may be influenced by many factors and it may be difficult to associate it with any one factor, such as improved vehicle lighting.

Further analyses examined dark/light ratio trends in fatal rural and urban pedestrian crashes. Sharp declines were observed in rural crashes; no change was observed in urban crashes. A comparison of interstate and noninterstate roadways found an overall declining trend, but no difference between road types. A comparison between luxury and nonluxury makes of vehicles found no difference between vehicle types, although a trend toward sharper decline was observed among luxury vehicles.

Although some of the results could be considered consistent with the hypothesis that improvements in forward vehicle lighting have contributed to improved safety in darkness, inconsistencies in these trends suggest that other factors also affect the dark/light ratio and that caution should be used in interpreting the ratio. Moreover, the proportion of U.S. vehicles equipped with improved headlamps may be too small to influence fleet-based crash data. Additional analyses are suggested to develop more direct evidence for associating safety improvements with forward lighting.