

Explaining the Rise in Pedestrian Fatalities: A Systems Approach

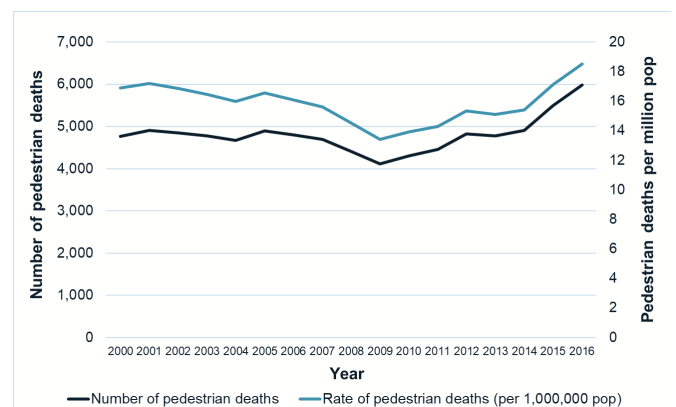
Pedestrian fatalities in the United States increased 48 percent between 2009 (n=4,109) and 2017 (n=6,080). This is particularly alarming after so many years of decreasing pedestrian fatalities nationwide since the early 1970s. Many explanations have been stated for why this increase has occurred. This project was intended to explore some of the possible underlying factors associated with this alarming increase in pedestrian fatalities.

The project first convened a diverse group of cross-sector experts and examined available data sources to explore the underlying and complex factors influencing the national rise in pedestrian deaths. These efforts supported the development of dynamic, testable hypotheses to inform a future research agenda.

This project was designed to also demonstrate an application of innovative systems science tools as a means for examining underlying drivers of complex problems. An initial set of systems mapping workshops with diverse stakeholders produced numerous theories involving about 40 key variables and themes related to the rise of pedestrian fatalities, many of which were further substantiated by additional data and literature scans. Additionally, hypotheses about system structures—including balancing and reinforcing feedback loops—thought to be accelerating or mitigating the fatality trends were uncovered.

Many interrelated variables are thought to be contributing to the national rise in pedestrian fatalities, including changes to pedestrian exposure to risk (such as changes in nighttime trip-making), demographics,

changes in technology use in vehicles, vehicle fleet makeup, new and interacting forms of impairment (including prescription drug impairment), changes in road user distraction, and changes in access to emergency medical services in rural areas. Data needed to further investigate these hypotheses is not easily or universally available, or not currently available at the level (e.g., substate) needed to perform robust analyses. Recommendations are provided for future research areas.



Number and rate of pedestrian deaths, U.S. FARS data, 2000-2016

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