

Assessment of distracted pedestrian crossing behavior at midblock crosswalks

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Abstract:

Risk of pedestrian-vehicle crashes increased with distraction of pedestrians at roadway crossings. Aims of the study included analysing distracted pedestrian crossing behavior, identifying factors that influence pedestrian crossing speed at a midblock crosswalk, and determining the influence of road cross-section (RCS) on pedestrian walking speed. Three cities in Oregon State in the USA were included in the study: Corvallis, Albany, and Eugene. A combination of digital video and researcher field notes were used to obtain the data at each site. A total of 1045 pedestrian crossings from 23 midblock crossings were observed and analysed to determine the association of distraction type, road cross-section, and other in situ factors with pedestrian walking speed. Data analysis was conducted in two stages. First, the effect of each distraction type (looking at a handheld device, talking on a cell phone, wearing headphones, walking in a pair, walking in a group, and other distractions) on the pedestrian walking speed was examined. The results showed that average walking speed was 4.8 ft./s (1.46 m/s). Pedestrians walking with headphones crossed more quickly (0.91 ft./s) (0.28 m/s) than those with no distractions (5.14 ft./s) (1.57 m/s). In addition, talking on a cell phone was not significantly correlated with walking speed. Moreover, the other four distraction types were associated with decreasing the walking speed by 0.29 ft./s (0.09 m/s) to 0.83 ft./s (0.25 m/s). Second, the influence of pedestrian distraction, crosswalk configuration, land use, compliance rate, and pedestrian demographics on the pedestrian walking speed were examined in this study. Findings indicated that distracted pedestrian in two road cross-sections would require more crossing time than an elderly pedestrian. Pedestrian safety is a key concern in transportation research, and improved understanding of the factors contributing to pedestrian fatalities could enable safer roadways to be designed.