# Collaborative Sciences Center for ROAD SAFETY

Using Integrated Data to Examine Characteristics Related to Pedestrian Injuries

There is a lack of nonfatal pedestrian injury data, especially nonfatal pedestrian injury data integrated with police-reported motor vehicle crash data and other data sources. This study analysed five years of population-based, integrated, police-reported crash and emergency department visit data to examine vehicle, crash, roadway, and person-level factors and their association with serious pedestrian injuries, *ascertained using clinical metrics*, rather than police-reported injury severity indices.

We linked data from 6,923 pedestrians injured in North Carolina police-reported motor vehicle crashes (MVCs) to NC DETECT emergency department visit data from October 1, 2010 through September 30, 2015; of which 38% had injuries classified as serious based on the medical information. The results of the descriptive analysis were used to inform a multivariate logistic regression analysis, in which significant predictors of serious pedestrian injury were identified. In addition, the integrated crash-emergency department visit data were used to describe both the nature (laceration, fracture, etc.) and location (head, upper extremity, etc.) of injury to have a better understanding of pedestrian injury patterns following a motor vehicle crash.

Pedestrians were most frequently injured in crashes in which the pedestrian was struck while crossing the roadway, with the vehicle traveling straight (37%). Pedestrian crash type was statistically significantly associated with injury severity, with pedestrian crossing roadway, traveling straight (55%) and MV loss of control (34%) having the highest frequency of serious pedestrian injuries for roadway and non-roadway collisions, respectively.
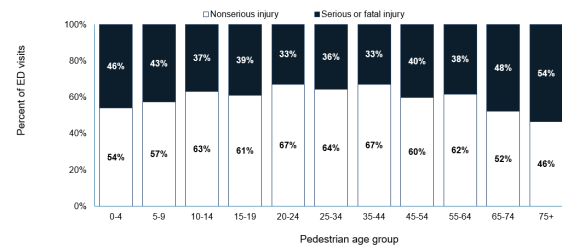
Frequency of serious pedestrian injuries by age group: NC, 2010-2015

Regarding injured pedestrian demographics, most were male, and a plurality were identified as white, not Hispanic/Latino. Black, non Hispanic/Latino pedestrians were overrepresented in the patient population, making up 45% of pedestrians treated in NC EDs, but only 23% of the NC population in 2015 (National Center for Health Statistics, Centers for Disease Control and Preventio, 2020). Nearly one-third of pedestrians treated in NC EDs for MVC-related injuries had one or more recorded comorbidities associated with premature mortality. Children aged 0-4 (46%) and older adults 65-74 (48%) and >75 (54%) years were the most likely to be diagnosed with serious injuries.

This study hopes to contribute to further research on data collection efforts using clinical metrics rather than police-reported injury severity indices.

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