Considering built environment and spatial correlation in modelling pedestrian injury severity

This study looks at mitigating and aggravating factors that are associated with the injury severity of pedestrians when they have crashes with another road user and overcomes existing limitations in the literature by posing attention on the built environment and considering spatial correlation across crashes. Reports for 6539 pedestrian crashes occurred in Denmark between 2006 and 2015 were merged with geographic information system resources containing detailed information about built environment and exposure at the crash locations. A linearised spatial logit model estimated the probability of pedestrians to sustain a severe or fatal injury conditional on the occurrence of a crash with another road user. This study confirms previous findings about older pedestrians and intoxicated pedestrians being the most vulnerable road users, and crashes with heavy vehicles and in roads with higher speed limits being related to the most severe outcomes. This study provides also novel perspectives by showing positive spatial correlation of crashes with the same severity outcome and emphasising the role of the built environment in the proximity of the crash. This study emphasises the need for thinking about traffic calming measures, illumination solutions, road maintenance programs and speed limit reductions. Moreover, this study emphasises the role of the built environment, as shopping areas, residential areas, and walking traffic density are positively related to a reduction in pedestrian injury severity. Often, these areas have in common a larger pedestrian mass that is more likely to make other road users more aware and attentive, while the same does not seem to apply to areas with lower pedestrian density.

General information
Publication status: Published
Organisations: Department of Management Engineering, Transport DTU, Transport Modelling, University of Queensland, Technical University of Denmark
Corresponding author: Prato, C. G.
Contributors: Prato, C. G., Kaplan, S., Patrier, A., Rasmussen, T. K.
Pages: 88-93
Publication date: 2018
Peer-reviewed: Yes

Publication information
Journal: Traffic Injury Prevention
Volume: 19
Issue number: 1
ISSN (Print): 1538-9588
Ratings:
BFI (2018): BFI-level 1
Scopus rating (2018): CiteScore 1.86 SJR 0.839 SNIP 1.232
Web of Science (2018): Impact factor 1.465
Web of Science (2018): Indexed yes
Original language: English
Keywords: Built Environment, Injury Severity Models, Pedestrian Crashes, Spatial Correlation
Electronic versions:
considering.pdf. Embargo ended: 23/05/2018
DOIs:
10.1080/15389588.2017.1329535
Source: FindIt
Source ID: 2363264654
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review