

Unfolding the full extent of major road trauma crashes

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Abstract

Major trauma (MT) is a term used for pre-hospital patients that have sustained life-threatening injury. Trauma patients from the same road traffic crash are seldom matched in hospital data and therefore the individuals in need of medical care from MT crashes are likely underestimated. Using a hospital and police matched road crash database, additional individuals from MT crashes were retrieved. The sample of individuals increased from 2,542 MT patients to a total of 4,937 individuals. Emergency department presentations increased by 39.8% and ambulance transportation by 34.8%. Ninety-five additional fatalities were not accounted for in the original MT sample.

Background

Injuries and fatalities from road traffic crashes are a great burden to global health (WHO, 2015). Major trauma (MT) is a term used in pre-hospital and acute hospital care for patients that sustained life-threatening injury to the body or who died in hospital from trauma. Analyses of MT normally use hospital data at patient level with an Injury Severity Score (ISS) above 12 or 15 (Palmer, Gabbe, & Cameron, 2016), and in-hospital fatalities. Such data generally do not provide matching between trauma patients from the same road traffic crash. This likely underestimates the number of patients requiring medical care from MT crashes. The objective of this study was to determine the additional number of people involved in MT crashes in Sweden.

Method

Data from April 2011 to March 2017 was retrieved from the Swedish Traffic Accident Data Acquisition (STRADA) (Howard & Linder, 2014) which is a dedicated road crash reporting system containing matched hospital and police data. Police and hospital emergency departments (ED) report road injuries directly to the STRADA and individuals are matched automatically within the system. First, MT patients were selected from ED reported data using the following criteria; road users (pedestrians, cyclists, powered two-wheeler riders, car/truck/bus occupants) that were transported by ambulance with an ISS > 12 or died in hospital. Then, matched individuals involved in the same MT crash was added to the sample. Finally, three data groups were generated: 1) major trauma patients, 2) additional ED patients, and, 3) road users solely reported by the police.

Results

The original MT sample included 2,542 patients from 2,444 road crashes. An additional 1,012 ED patients or fatalities were identified through ED records. Of these ED patients, 884 (87.4%) were transported to hospital by ambulance and 488 (48.2%) were admitted to ward. The police reported 1,383 MT crash participants beyond those presenting to the ED. In total, there were 4,937 road users exposed to a MT crash. In Figure 1 the proportion of road users and their injury level is presented per data group. In the original MT group a higher proportion of vulnerable road users is present because many are impacted by another vehicle or they have been in a single vehicle crash. Car occupants are the most frequent road user in all three groups. There were 30.6% patients who were moderate (ISS 4-8) to severely injured (ISS 9-12) and a total of 95 fatalities in the additional ED and police groups.

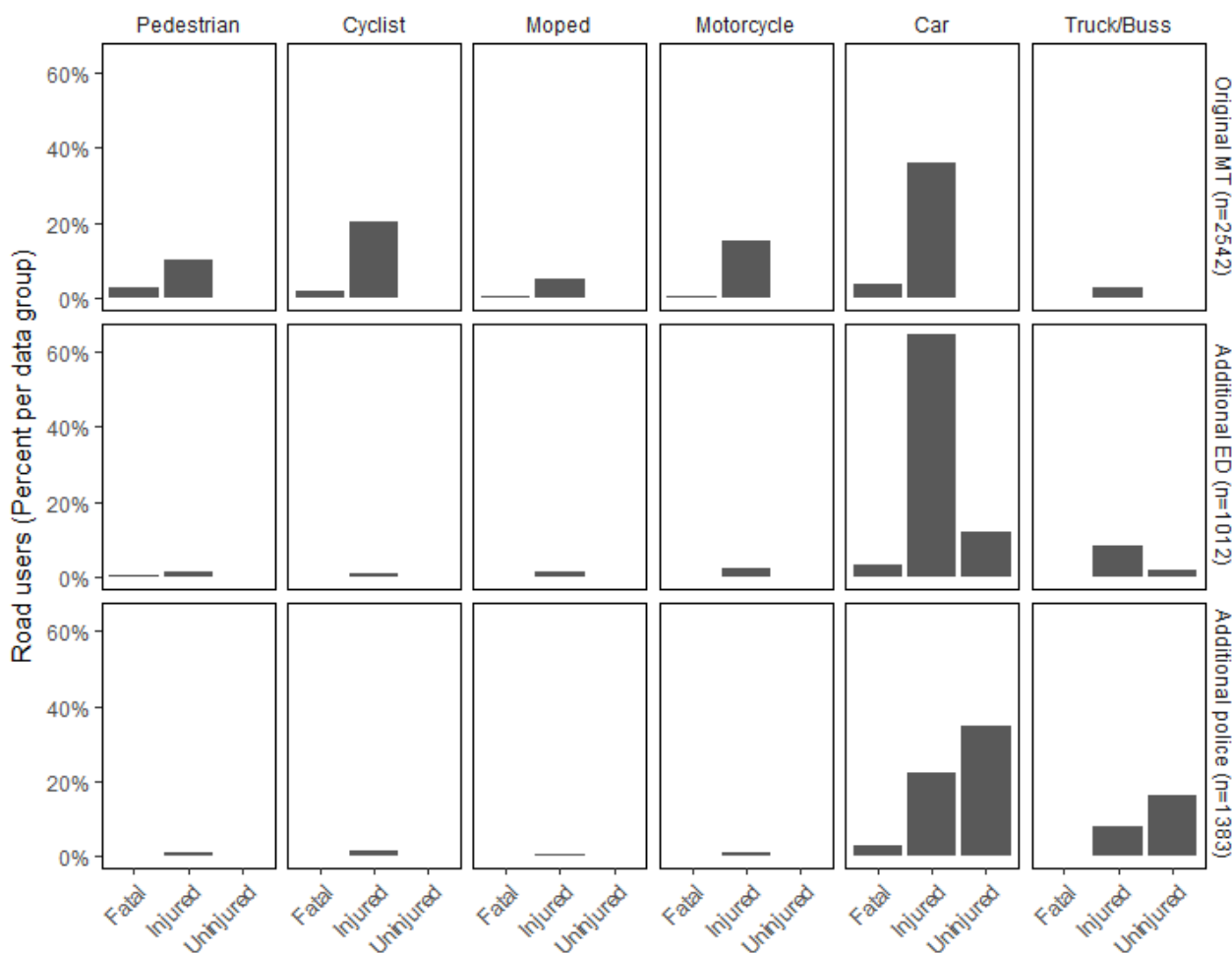


Figure 1. Injury level distribution per road user category involved in major trauma crashes. Original MT: ISS > 12 and in-hospital deaths. Additional ED: uninjured and ISS ≤ 12 and dead upon arrival. Additional police: uninjured, injured according to the police and died on-scene.

Conclusions

The burden of major trauma crashes on the society and the health care system is much larger when all road users involved in these crashes are considered. The matched crash data revealed an increase of ED presentations by 39.8% and ambulance transportations by 34.8%. Ninety-five additional people who lost their lives in these major trauma crashes were identified. This work emphasises the need to prioritise the prevention and mitigation of MT crashes. The study also highlights the need for improved opportunities in data linkage across authorities to better guide crash and injury prevention strategies.

References

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