

Electric scooters injuries and causes: analysis of Swedish accident data 2019

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Background

Shared electric scooters (e-scooters) are emerging as a mean of transport around the globe and are commonly used as a “last mile” service. Since August 2018 electric scooters are available in selected cities in Sweden, operated by several different companies. There is a growing concern of their safety as they grow in popularity. Accident data are starting to be available. However, there is limited knowledge regarding injury distribution and how these injuries relate to the vehicle and infrastructure conditions Sweden represent, of which this study contributes.

Aim

The aim was to investigate the injuries associated with e-scooters in Sweden and to identify accident characteristics to contribute to ongoing technical development, policy and legislation initiatives. In addition, the aim was to observe how different data collection procedures and samples can affect the results.

Method

Two complementary data sets were used. First, insurance data including all reported injuries to Folksam Insurance Group during 2019 in Sweden. Secondly, the Swedish Traffic Accident Data Acquisition database (STRADA), the national system for road traffic injury data collection was used. Included were individuals who had been involved in a e-scooters accident in Stockholm city area during 2019 and who had received medical treatment in the emergency department. Described statistics including frequencies and percentage are reported.

Results

Results based on insurance data show that 56% of those injured were females and the average age was 30 years old. The most common accident type was a single crash (X%) but in 18% of the cases, the accident involved another vulnerable road user. In total 13% of the crashes involved management of the e-scooter (getting on/off, problem with balance). Some accidents were also due to lack of maintenance of the road surface (20%) or that the e-scooter hit a curb stone (9%). In 9% of the accidents were due to malfunction to the e-scooter, most typically the breaks malfunction. Most of the reported injuries were minor injuries such as lacerations and contusions (34%), followed by fractures (21%). The head was the most commonly injured body region (35%) followed by upper extremities (26%), and lower extremities (16%). E-scooter accidents stand for 14% of all traffic accidents included in STRADA and reported to the hospital in Stockholm during 2019. By studying hospital data similar pattern could be seen to the insurance data. Most of the crashes were single crashes and the average age were 31 years old. However, there was a difference between genders where males were more common (55%). Of all accidents, 20% were classified as related to the management of the e-scooter (e.g., on/off), 7% was due to malfunctions of the e-scooter. Some injuries were due to lack of maintenance of the road surface, (20%) or that the e-scooter hit a curb (9%). In 7% of the accidents was due to malfunction of e-scooter. There were 44% of the accidents that occurred during night time (22-06). However, the most common injured body part differ from the insurance data. Injuries to the upper extremities were most common (36%), followed by head (7% head, 23% face) and lower extremities (23%). In total 36% of the reported injuries involved a fracture. Of all injured, 13% were using helmet.

Conclusion

This study involved two datasets in Sweden with the aim of investigating the overall pattern of injuries as well as to observe how different data collection procedures and samples can affect the results. Differences were observed in the datasets. When setting targets and priorities, and in monitoring changes it is thereby important to be aware of how this will influence the results. Policy makers and developers of safety equipment should utilize these results to optimize safety measures. The study highlights not only type of accident but also the causes for accident and time of day. As such, the study contributes to future development of e-scooters not only related to the technological development of the vehicle, but also to policy making regulating its usage.