

December 8, 2023

Mariah VanZerr  
Strategic Transportation Planning Manager  
City of Kelowna

Sent via email: [MVanZerr@kelowna.ca](mailto:MVanZerr@kelowna.ca)

Dear Ms. VanZerr,

We are pleased to provide you with an updated e-scooter injury report; the original report was submitted on [November 4, 2021](#). Attached is an updated epidemiological analysis of visits to the Kelowna General Hospital (KGH) emergency department (ED) for e-scooter injuries. The data indicates that since our last report a majority of the transport related injury visits to KGH ED were due to bicycle injuries followed by motor vehicle incidents. It is worth noting that scooter-related injuries were the third most prevalent cause of injury.

It is important to recognize there are many limitations to this analysis, which are articulated within the Data Source & Methodology section of the report. As such, this analysis underestimates the total injuries caused by e-scooters, and injuries cannot be distinguished between privately owned and publicly available e-scooters.

Since the launch of the e-scooter pilot in April 2021, there was a sharp rise in confirmed e-scooter related injury visits in 2021 which was reduced and stabilized in the following years, from 72 visits in 2021 to 48 in 2022. While data for 2023 is incomplete (only reflecting December to August) we see a similar stable trend of 41 presentations.

In comparison, bicycle presentations at the KGH ED accounted for 373, 345, and 245 in 2021, 2022, and 2023 respectively, and motor vehicle presentations accounted for 290, 168, and 120 in the same period pointing towards the need to expand efforts to a broader road safety strategy to encompass all modes of transportation. Vision Zero is a strategy which has achieved international recognition, and in 2004 the World Health Organization identified it as an effective policy to prevent road traffic injury. [Vision Zero BC](#) is currently accepting applications for new projects.

Since 2023, Interior Health has worked with City staff to advance the recommendations in our previous letter. We are pleased to see a number of safety strategies adopted by the City, such as attaching helmets to scooters to encourage use, increasing knowledge and awareness among users via a knowledge quiz for riders, a safety education campaign, and the introduction of engineering features.

Among emergency department visits for e-scooter injuries, upper extremity fractures and concussions were the most common reason for seeking care. The proportion of individuals not wearing helmets at the time of the injury appears to have decreased from 95% in 2021 to 88% in 2022 and 87% in 2023, pointing towards a possible cause effect with the

introduction of helmets in the pilot. Interestingly, the data shows an increase in injury among adolescents; underage riding and, anecdotally, an increase in double riders could be potential causes for this increase. As such, we encourage the City to continue the safety education campaign, with perhaps a targeted focus on adolescent users and discouraging double riding. We also encourage the upgrading of e-scooters to include turn signals when this feature becomes available in Canada.

While e-scooters, like any other modes of transportation, have inherent risks, the City has made great efforts to mitigate the risk of injury by adopting previous recommendations and working closely with Interior Health staff to monitor the data. We would like to see these efforts continue.

We would like to thank the City of Kelowna for seeking our input and collaboration throughout the duration of the shared e-scooter pilot program. We welcome the opportunity to continue to collaborate with City staff on this and other topics contributing to the health and wellbeing of the community. Please reach out if you have any questions or concerns.

Sincerely,



Silvana Mema, MD MSc FRCPC  
Deputy Chief Medical Health Officer



Tanya Osborne  
Community Health Facilitator

Attachment

## BACKGROUND

On April 19<sup>th</sup>, 2021, shared or rental electric scooters (e-scooters) were launched in The City of Kelowna as a part of the provincial e-scooter pilot program. This report intends to provide a summary of e-scooter related injuries for riders who had a visit to the emergency department (ED) of Kelowna General Hospital (KGH) .

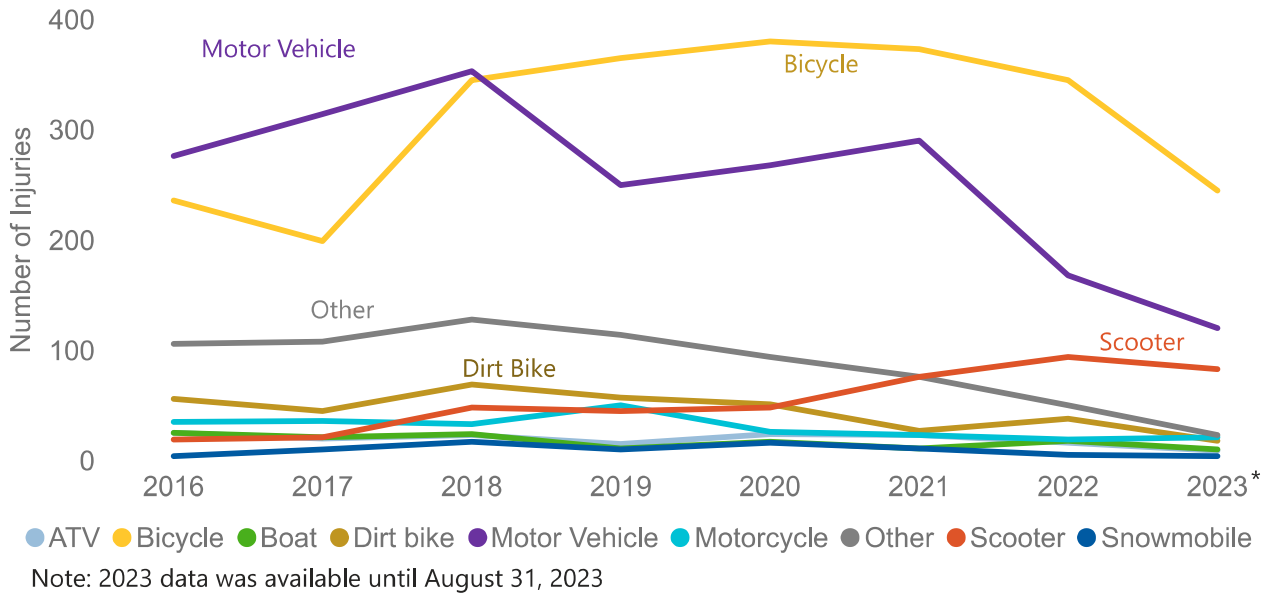
## KEY FINDINGS

- Since 2018, majority of the transport related injury visits to KGH ED were due to bicycle injuries followed by motor vehicle incidents (Figure 1). Higher proportion of bicycle injuries were observed in young males aged 20-39 years. In recent years, scooter related injuries were among the top three types of transport related injuries registered at KGH ED following bicycle and motor vehicle incidents.
- Since the launch of e-scooter pilot, there was a sharp rise of confirmed e-scooter related injury visits in 2021 among riders aged 16-64 years which reduced in the following years (confirmed e-scooter related ED visits: 6, 72, 48 and 41 in 2016-2020, 2021, 2022 and 2023 YTD respectively).
- According to data provided by the City of Kelowna, number of LIME e-scooter trips were highest in 2023 (total LIME e-scooter trips: 245,000; 180,000 and 248,000 in 2021, 2022, 2023 YTD respectively).
- E-scooter injury visits showed a seasonal pattern of mostly happening in summer months from May to September. 89% of confirmed e-scooter injury visits in 2021 and 63% of confirmed e-scooter injury visits in 2022 were observed from May to September.
- Majority of confirmed e-scooter related injury visits were observed in the afternoon hours between 12 to 6 PM (73%), and involved young adults of 20-39 year (56%) and adolescent of 10-14 year (12%) age groups.
- Most common part of body affected by e-scooter related injuries was upper extremity resulting in fracture and soft tissue injuries. Injuries to the head and neck region were second most frequent areas of impact that can be potentially prevented by use of helmet.
- However, only 16% of riders aged 16-64 years who visited KGH ED for e-scooter related injuries reported to have used a helmet (2016-20: 41%, 2021: 5%, 2022: 12%, and 2023: 13%).

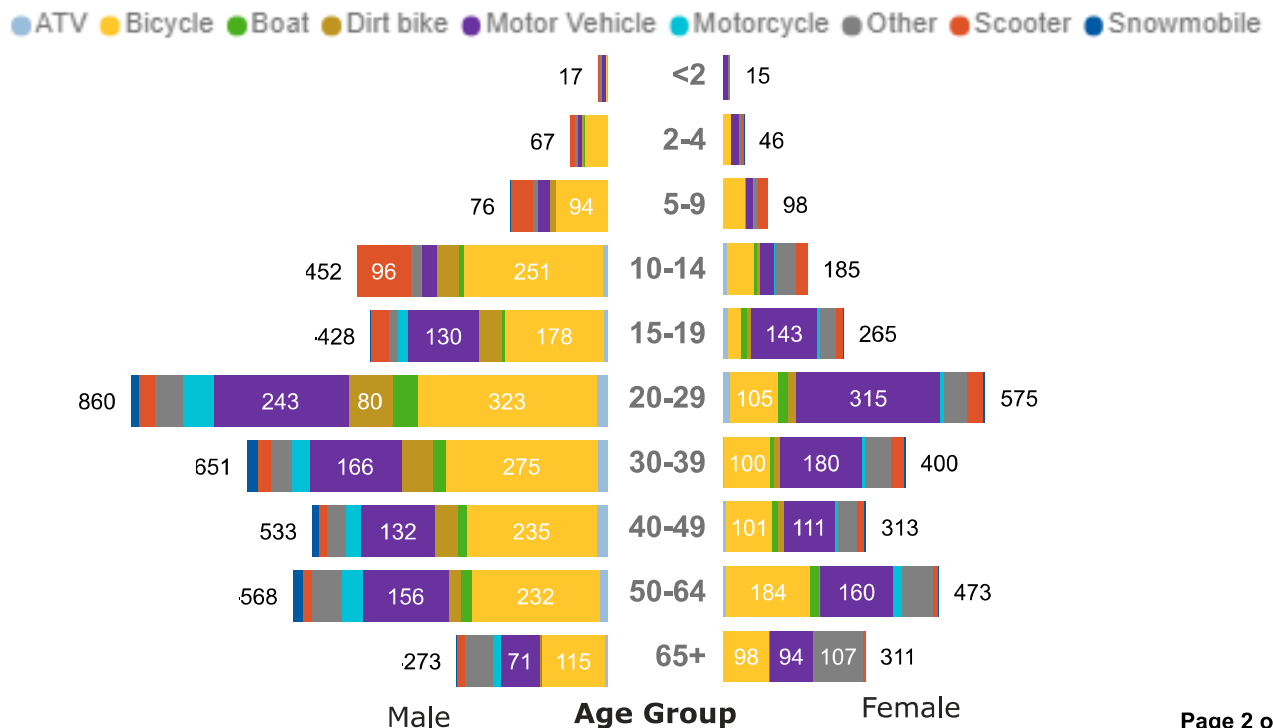
**TRANSPORT RELATED INJURIES**

Transport related injuries include any unintentional incident involving a moving vehicle including water transport injuries and other unspecified injuries related to air transport, cable car, ski, chairlift etc. The injuries were identified based on the intent and primary mechanism.

**FIGURE 1. Number of Transport Related Injury Visits at KGH ED by Vehicle Type and Year, April 2016 to August 2023**



**FIGURE 2. Number of Transport Related Injury Visits at KGH ED by Age Group and Sex, April 2016 to August 2023**



### E-SCOOTER RELATED INJURIES AMONG INDIVIDUALS AGED 16-64 YEARS

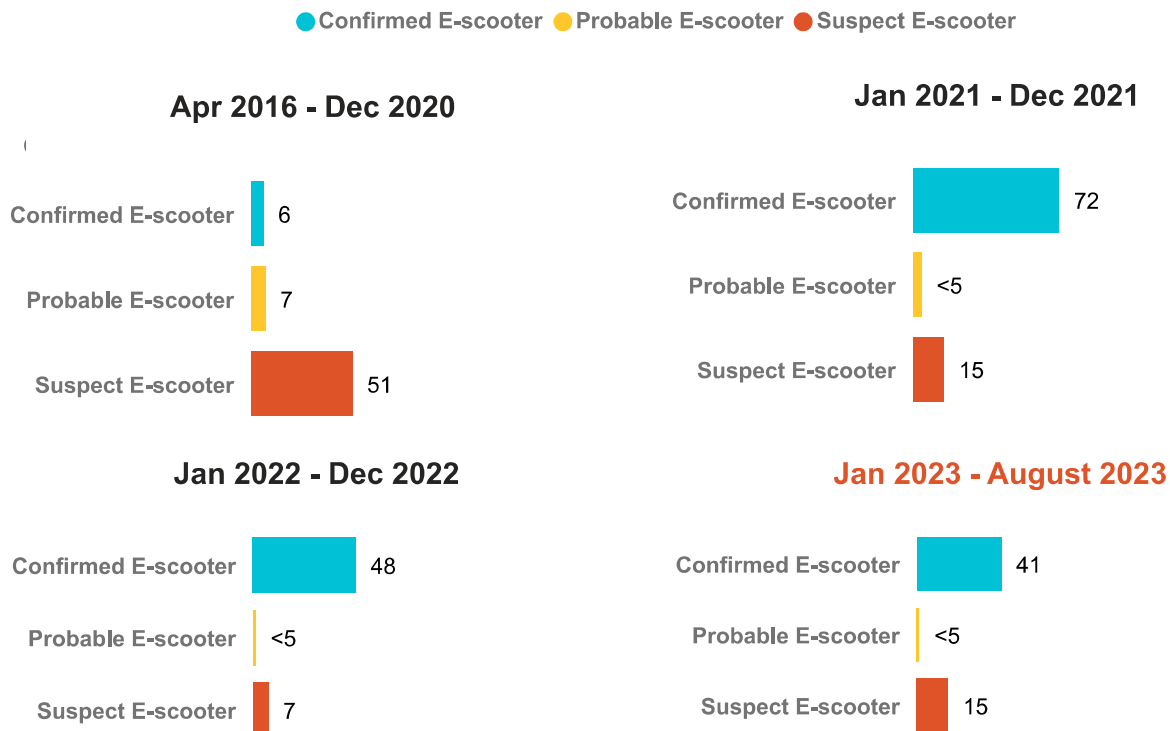
E-scooter injuries in this report focused on the individuals aged 16 to 64 years. We limited the age groups in this analysis as people outside this range are more likely to have possible use of other types of scooters.

Since the launch of e-scooter pilot in April 2021, there was a sharp rise of confirmed e-scooter related injury visits in 2021 among riders aged 16-64 years which reduced in the following years (confirmed e-scooter related ED visits: 6, 72, 48 and 41 in 2016-2020, 2021, 2022 and 2023 YTD respectively).

E-scooter related injury visits showed a seasonal pattern of mostly happening in summer months as warmer weather triggers the outdoor activities and the city gets busier with tourists (Figure 4). 89% of confirmed e-scooter injuries in 2021 were observed from May to September. Similarly, 63% of confirmed e-scooter injuries in 2022 happened in that peak season.

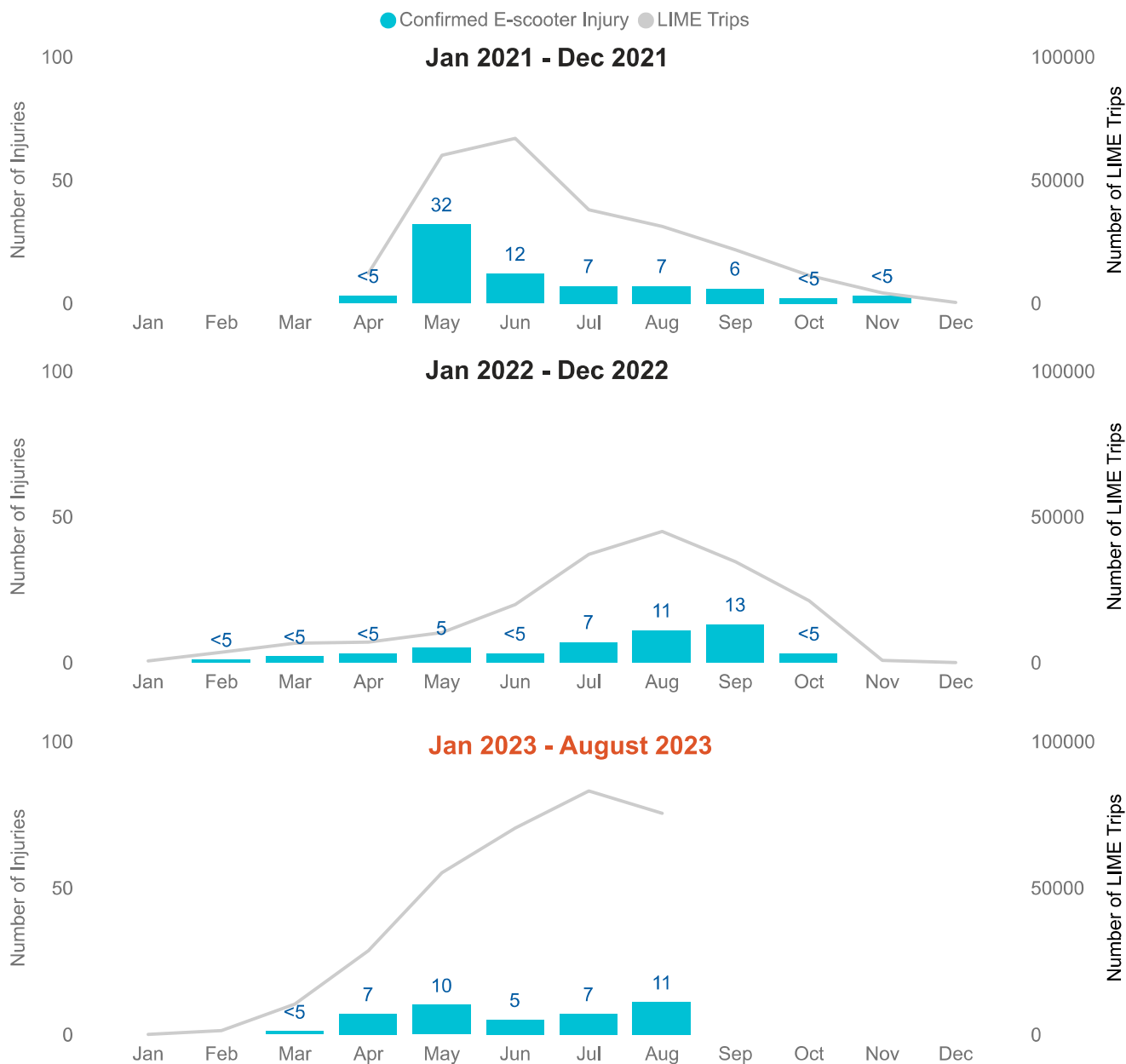
Although we had data until August 31, 2023, the current trend suggests that the e-scooter related injury visits in 2023 is most likely similar to 2022 compared to the first year of the pilot, also as seen in monthly breakdown in Figure 4.

**FIGURE 3. E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Type of E-scooter and Year, April 2016 to August 2023**

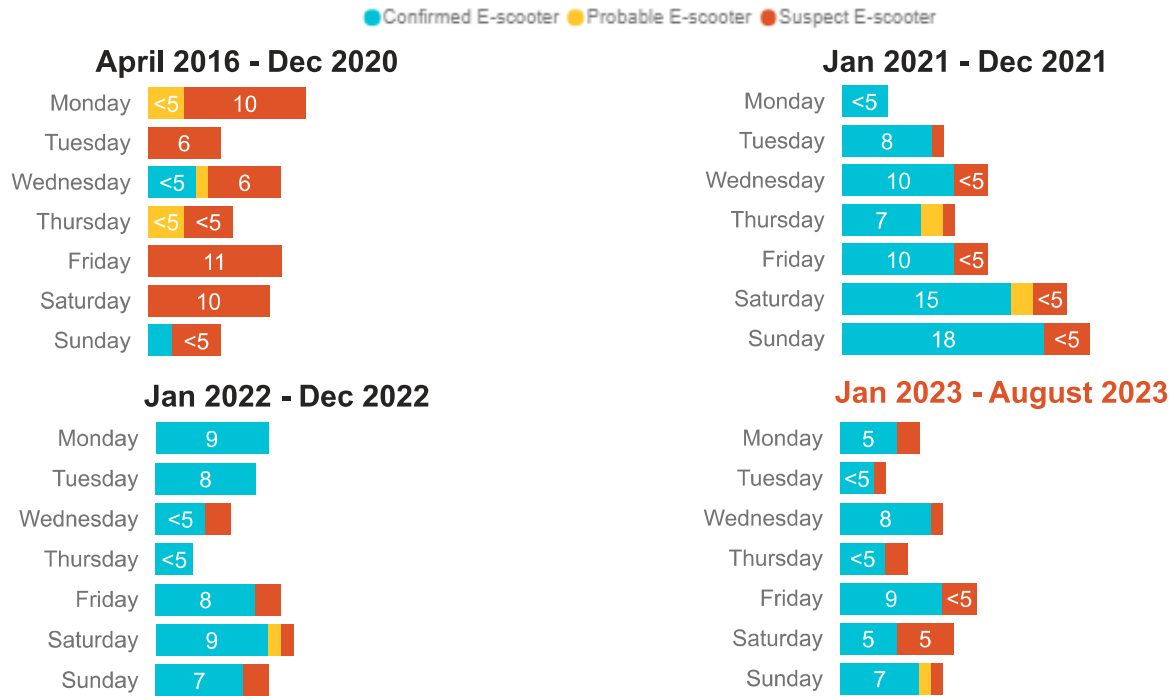


**FIGURE 4. Number of Confirmed E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years and Number of LIME E-scooter Trips by Month and Year, April 2016 to August 2023**

According to the data provided by City of Kelowna, there was approximately 245,000 shared e-scooter (LIME e-scooter) trips in calendar year 2021; 180,000 trips in 2022 and 248,000 trips recorded in 2023 YTD. In the figures below, number of e-scooter injuries include injuries among 16-64 years and was not possible to separate for shared e-scooters such as LIME program vs. private e-scooters while the number of LIME e-scooter trips include all ages.

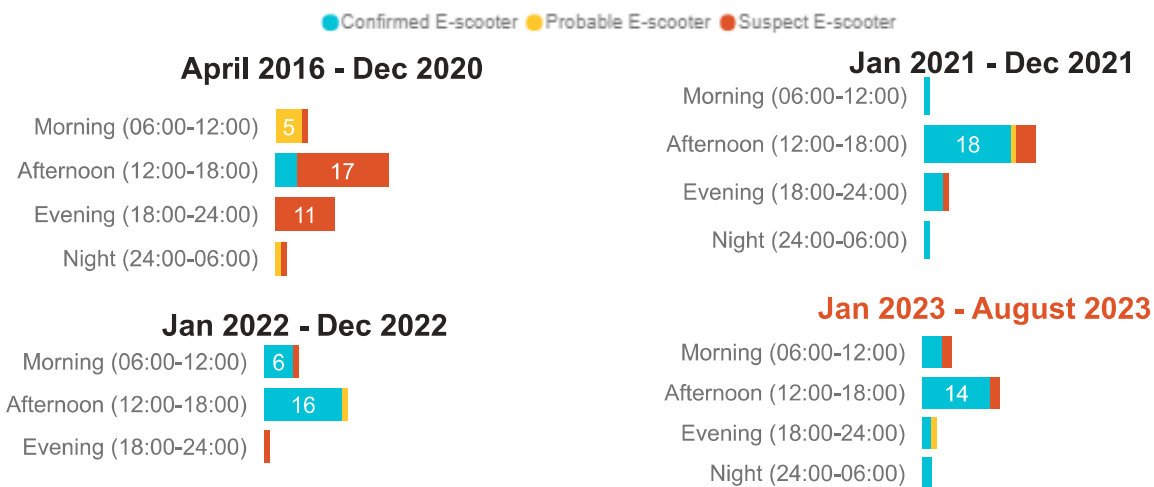


**FIGURE 5. Number of E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Day of Week, April 2016 to August 2023**



In 2021, majority of e-scooter related injuries happened from Friday to Sunday. However, in 2022 and 2023 no similar trends were observed most likely indicating a shift in e-scooter use for leisure activities in weekend to day to day transportation throughout the week.

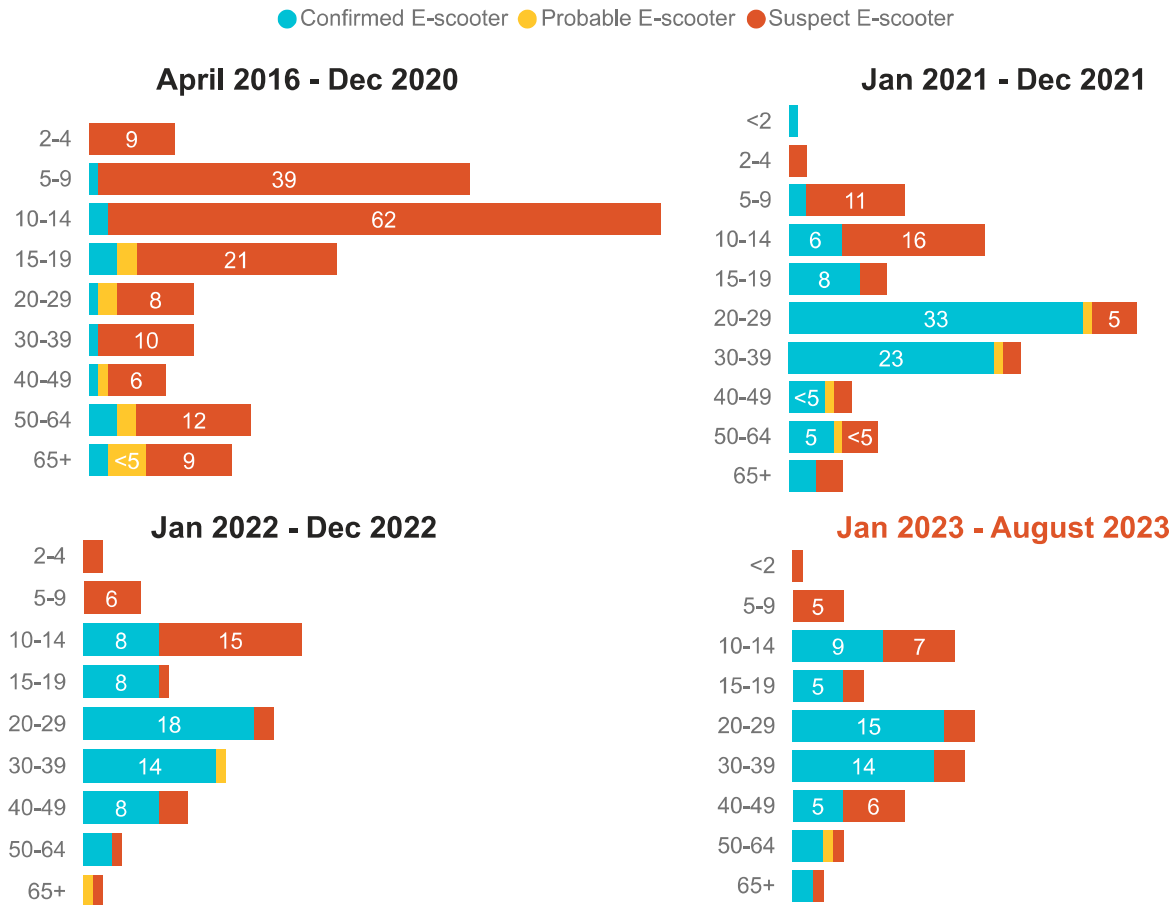
**FIGURE 6. Number of E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Time of Day, April 2016 to August 2023**



Almost half of the identified e-scooter injuries did not have a record of time of injury (54%). Of those that had a record, majority of injuries were observed in the afternoon hours (73%), specifically between the hours of 12 to 6 PM.

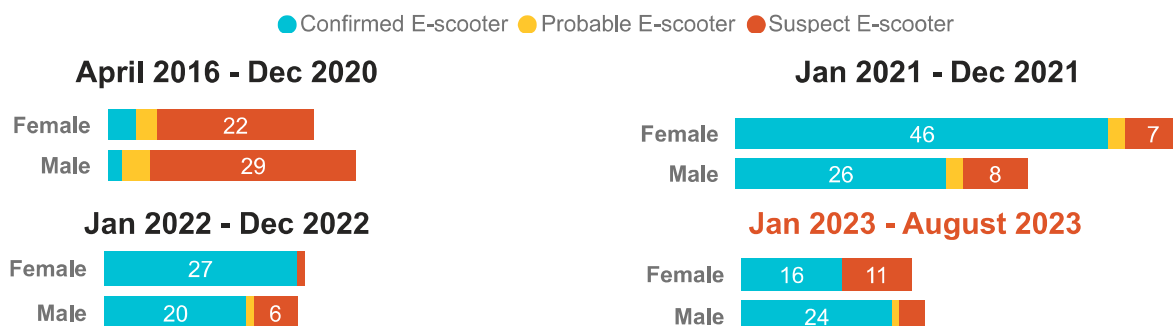
**FIGURE 7. Number of E-scooter Related Injury Visits at KGH ED by Age Group, April 2016 to August 2023**

ED visits for confirmed e-scooter injuries were mostly observed in younger adults of 20-39 year and adolescents of 10-14 year age groups.



**FIGURE 8. Number of E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Gender, April 2016 to August 2023**

In the year following the launch of e-scooter pilot (2021), females had higher percentage of ED visits for confirmed e-scooter injuries than males (64 vs 36%). Similar trend was observed in 2022 while more males had e-scooter related injury visits in 2023 YTD.



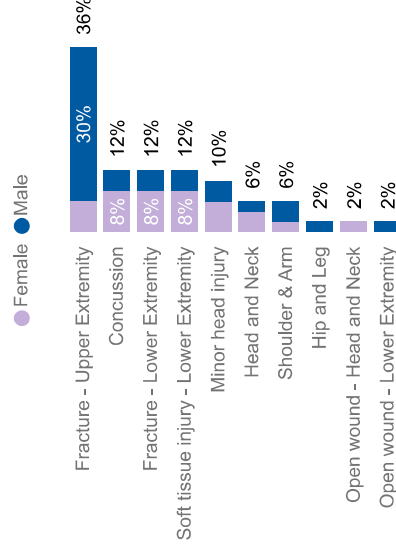


**FIGURE 9. Number of Confirmed, Probable and Suspect E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Nature of Injury (Top 10) and Sex, April 2016 to August 2023**

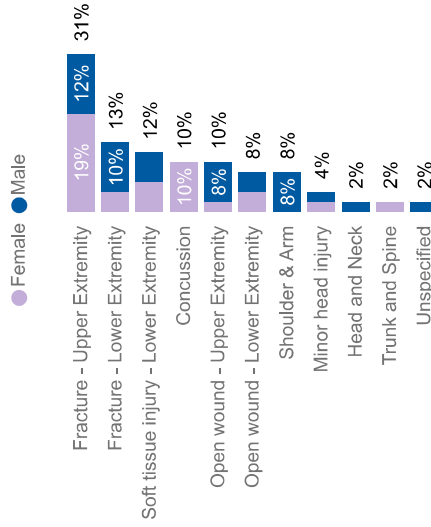
During the reported time frame, most common part of body affected by e-scooter related injury was upper extremity resulting in fractures and soft tissue injuries. Injuries to the head and neck region were second most frequent areas of impact that can be potentially prevented by use of helmet.

Among the ED visits for e-scooter injuries, more males visited for upper extremity fractures compared to females (37 visits vs 29 visits) during the reported time frame, while females had higher number of concussions (16 visits vs 12 visits). The number of ED visits for concussions were 5, 9, 8 and 6 in 2016-20, 2021, 2022 and 2023 YTD respectively.

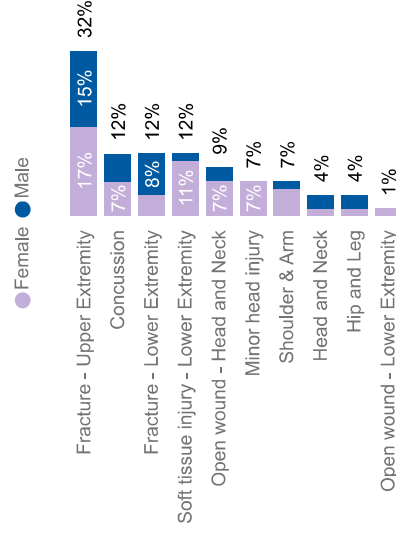
**Jan 2023- August 2023**



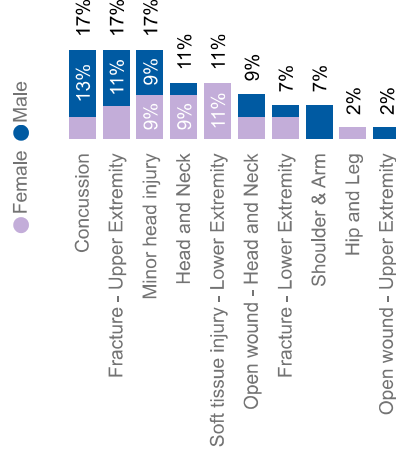
**Apr 2016 - Dec 2020**



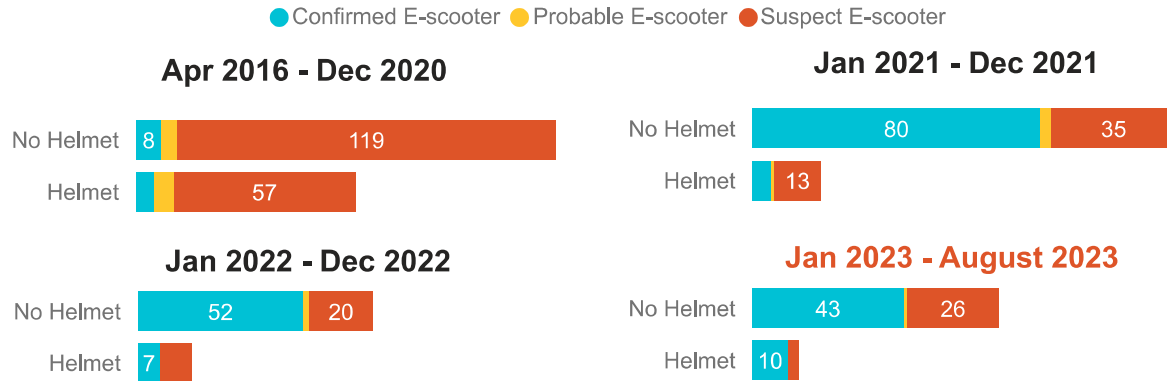
**Jan 2021 - Dec 2021**



**Jan 2022 - Dec 2022**



**FIGURE 10. Number of E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Use of Safety Device, April 2016 to August 2023**



During the reported time frame, 16% of riders who visited KGH ED for e-scooter related injuries self-reported to have used helmet during the ride (2016-20: 41%, 2021: 5%, 2022: 12%, 2023: 13%). The proportion of riders who did not use helmet while they were injured were higher since the launch of e-scooter pilot in 2021 indicating that safety devices were not used frequently by riders of commercial e-scooters. Although helmets are required to be worn by law and usually provided with commercial e-scooters, helmets could be missing and some riders might be reluctant to use due to concerns like hygiene, proper fit etc.

**FIGURE 11. Number of E-scooter Related Injury Visits at KGH ED Among Individuals Aged 16-64 Years by Substance Use, April 2016 to August 2023**



The information on substance use were self-reported, not laboratory tested and most likely underreports substance use while riding the e-scooters. Compared to 2021 and 2023, a higher proportion of e-scooter related injury visits at KGH ED had self-reported to have used alcohol in 2022 (2016-20: 2%, 2021: 7%, 2022: 23%, 2023: 4%).

## DATA SOURCE & METHODOLOGY

- Data on e-scooter injuries were obtained from Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP) database that was collected at KGH ED. CHIRPP is an injury and poisoning surveillance system administered by Public Health Agency of Canada that collects injury data from emergency departments of 11 pediatric and 9 general hospitals across Canada including KGH. For this report, CHIRPP data was analyzed from April 2016 to **August 31, 2023**.
- We used following keywords to search for e-scooter related injuries that were further categorized as Confirmed, Probable and Suspect e-scooters as defined below
  1. Confirmed e-scooter: records that contain the texts "electric scooter" or " e scooter" or "e-scooter" in the injury event description field.
  2. Probable e-scooter: records that contain the texts "motorized scooter" or "motorised scooter" in the injury event description field but excluding vespa/moped and motorcycle.
  3. Suspect e-scooter: records that contain the text "scooter" in the injury event description field but excluding motorcycle, mobility scooter, push scooter, pedal scooter, non-motorized scooter, vespa/moped.
- Please note some of the estimates from the past surveillance reports have slightly changed as the coding of preliminary data from past years were completed and the keywords to identify e-scooter injuries were updated to prevent misclassification of categories.
- Data were not available on whether the injuries happened while riding private versus shared commercial scooter and hence injuries that happened in rural settings were excluded based on the assumption that scooters in the rural settings were owned privately.
- In addition, scooter related injuries that were part of organized sport activity were excluded to identify scooters used for transport purposes.
- We did not have information on whether e-scooter injuries varied by first time users vs experienced riders and if there was passenger in the scooter at the time of the incident (doubling up).
- Some of the higher acuity/trauma cases were being missed in the dataset such as those requiring ICU-admission as they were by-passing the CHIRPP data collection volunteers placed in minor treatment area of KGH ED.
- This surveillance report only captured the e-scooter and transport related injuries for which riders sought treatment at KGH ED. Thus, the analysis most likely provides an underestimation of total injuries since information on riders who received treatment from urgent primary care centers, family doctors, walk in clinics or who self-managed their injuries were not available.