

# Summary of e-scooter relevant emergency department visits at Ottawa hospitals

Prepared by Cam McDermaid, Epidemiologist, Ottawa Public Health

Dec 12, 2022

## Summary

Emergency department visits that may be associated with kick-type e-scooters increased by over three times to 166 in 2021 compared to 47 in 2020. Some of this increase may be due to conveyances other than e-scooters due to coding changes in emergency department coding systems. Injuries were most common among young adults aged 20 to 29.

The most common injuries were those that could progress to a serious problem requiring emergency intervention. In 2021, the lower extremities and the head, neck and face were most common body locations injured.

## Background

As of April 1<sup>st</sup>, 2021, e-scooter related injuries were coded in hospital data systems using the International Statistical Classification of Diseases and Related Health Problem (ICD) code of *W02.08* “fall involving other specified sports equipment”<sup>1</sup>. This code includes all falls from a scooter, including electric, motorized and non-motorized vehicles used for sports, leisure or locomotion. Previously, these types of falls were classified as *W05.00* “Fall involving wheelchair”. More detailed coding was added in the 2022 ICD coding for *W02.08* to discriminate between electric e-scooters (*W02.080*), other motorized conveyances like hoverboards and Segways (*W02.087*) and non-motorized scooters (*W02.088*).

This descriptive summary examines the changes in the number of emergency department (ED) visits that may be related to e-scooter injuries seen in Ottawa hospitals from 2016 to June 2022.

---

<sup>1</sup> Canadian Institute for Health Information. Updated ICD-10-CA coding direction: Homelessness, and falls from an electric scooter (escooter), mobility scooter, Segway® or hoverboard. Available from: <https://www.cihi.ca/en/bulletin/updated-icd-10-ca-coding-direction-homelessness-and-falls-from-an-electric-scooter>

## Methods

- The National Ambulatory Care Reporting System (NACRS)<sup>2</sup> was searched for injury related emergency department visits at Ottawa hospitals with an ICD code of W02.08 from 2016 to fiscal quarter 1 of 2022 (June 2022), the most recent complete data available. This ICD code represents a type of fall.
- Visits include injuries seen at Ottawa hospitals regardless of the patient's place of residence.
- Visits included only those seen between April to November among those aged 16 to 59. Sixteen is the minimum age to operate an e-scooter in Ottawa according to the bylaw and those over 59 might be more likely to have a fall involving a mobility scooter rather than an e-scooter using historical coding.
- Visits in 2022 attributed to Segways/hoverboards or non-motorized scooters were excluded from 2022 data.
- Falls that occurred at a home or residential institution were excluded based on the location of fall.
- The Canadian Triage and Acuity Scale (CTAS)<sup>3</sup> which is based on the presenting complaint and type and severity of the injury was used.
- The most responsible diagnosis code was used to attribute the location of injury. The most responsible diagnosis code is determined by what injury represented the highest cost of care. This results in a single body location for each visit even if multiple locations were injured. A hierarchy was employed such that if multiple locations were specified, the visit would be coded according to the most vulnerable location (e.g., a neck and trunk injury was coded as a head/face/neck injury rather than a trunk injury).

---

<sup>2</sup> Canadian Institute for Health Information. National Ambulatory Care Reporting System metadata (NACRS). Available from <https://www.cihi.ca/en/national-ambulatory-care-reporting-system-metadata-nacrs>

<sup>3</sup> Bullard MJ, Chan T, Brayman C, Warren D, Musgrave E, Unger B; Members of the CTAS National Working Group. Revisions to the Canadian Emergency Department Triage and Acuity Scale (CTAS) Guidelines. CJEM. 2014 Nov;16(6):485-9.

## Results

A total of 347 emergency department visits with injuries coded with W02.08 were seen from 2016 to June of 2022. Such injuries by age group, severity using the CTAS and location of injury are shown in Tables 1 through 3, respectively.

An increase in the number of injuries occurred in 2021 with a total of 166 W02.08 coded injuries compared to less than 50 in all previous years. Comparing data from April to June in 2021 and 2022, the number of injuries were similar (42 in 2021 and 38 in 2022). Injuries were most common among those aged 20 to 29 years old with approximately 58% of injuries among those under 30 in 2021 (**Table 1**). By-age comparisons of ED visits must be interpreted with caution however. If younger people are more likely to participate in the use of an e-scooter the rate or risk of injury among e-scooter riders may actually be lower among younger people compared to other age groups who are less likely to use an e-scooter. Data on this ridership is not available for this analysis.

Injuries tend to be those considered “Urgent” (CTAS 3) and could progress to a serious problem requiring emergency interventions (**Table 2**).

Lower extremities; head neck and face; and upper extremities tend to be the common body sites injured.

Table 1: Emergency department visits at Ottawa hospitals for falls with W02.08 by age group. April – November 2016-2022 (April to June in 2022)

Age	2016	2017	2018	2019	2020	2021	2022*	Total
16-19	4	4	5	8	7	20	7	55
20-24	3	5	6	6	9	43	4	76
25-29	2	6	2	2	5	34	5	56
30-34	0	1	2	3	7	14	4	31
35-39	1	3	2	2	5	14	9	36
40-44	2	1	1	4	5	9	3	25
45-49	4	2	0	2	2	8	2	20
50-54	1	3	2	1	5	8	2	22
55-59	3	0	0	3	2	16	2	26
<b>Total</b>	20	25	20	31	47	166	38	347

\* includes April-June of 2022

Data includes ED visits at Ottawa hospitals from April to November inclusive.

Source: National Ambulatory Care Reporting System 2016-2022, IntelliHEALTH ONTARIO, Ontario Ministry of Health and Long-Term Care. Date Extracted: Dec 12, 2022.

Table 2: Emergency department visits at Ottawa hospitals for falls with W02.08 by triage level. 2016-2022. April – November 2016-2022 (April to June in 2022)

CTAS code	2016	2017	2018	2019	2020	2021	2022*	Total
RESUSCITATION	1	0	0	0	0	0	0	1
EMERGENT	1	2	2	3	3	24	6	41
URGENT	9	9	7	12	23	91	18	169
LESS-URGENT	8	13	10	13	17	38	10	109
NON-URGENT	1	1	1	3	4	13	4	27
<b>Total</b>	20	25	20	31	47	166	38	347

\* includes April-June of 2022

Data includes ED visits at Ottawa hospitals from April to November inclusive.

Source: National Ambulatory Care Reporting System 2016-2022, IntelliHEALTH ONTARIO, Ontario Ministry of Health and Long-Term Care. Date Extracted: Dec 12, 2022.

Table 3: Emergency department visits at Ottawa hospitals for falls with W02.08 by body location of injury. April – November 2016-2022 (April to June in 2022)

Body location	2016	2017	2018	2019	2020	2021	2022*	Total
Head, neck, face	7	6	4	7	13	49	6	92
Trunk	4	1	3	2	4	9	4	27
Upper extremity	6	12	6	6	16	29	15	90
Lower extremity	3	6	7	14	14	76	13	133
Not specified	0	0	0	2	0	3	0	5
Total	20	25	20	31	47	166	38	347

\* includes April-June of 2022

Data includes ED visits at Ottawa hospitals from April to November inclusive.

Source: National Ambulatory Care Reporting System 2016-2022, IntelliHEALTH ONTARIO, Ontario Ministry of Health and Long-Term Care. Date Extracted: Dec 12, 2022. Body location of injury is coded using most responsible diagnosis.

## Limitations

- The ICD code is not specific to e-scooters excepting 2022 where a very specific code was available.
- Small numbers of ED visits historically make by-year comparisons difficult for changes by age group, severity or body location. As a result, these comparison are not made.
- Unlike explicit transportation injury coding that is available for cyclists or pedestrian injuries, the context for W02.08 injuries, such as a traffic crash, can't be determined.
- Place of occurrence of the fall is poorly completed with approximately 2/3 of visits had no specific place of occurrence coded. Estimates may still include injuries that happened at a person's residence.