

# Trauma Systems Committee

Bureau of Health Care Safety and Quality Department of Public Health

September 15, 2021

**Agenda**

* Department Update
* Trauma Registry Submissions Update
* Trauma Trends during the COVID-19 Pandemic

**Open Meeting Law: G.L. c. 30A, §§18-25**

* The purpose of open meeting law (OML) is to ensure transparency in the deliberations on which public policy is based.
  + This requires that meetings of public bodies be open to the public.
* All meetings of a public body must be open to the public.
  + A meeting is any deliberation by a public body with respect to any matter within the body’s jurisdiction.
  + A deliberation is a communication between members among members of a public body.
* A public body is any multi-member board, commission, committee or subcommittee within the executive or legislative branches (except the Legislature) of state government
  + This includes any body created to advise or make recommendations
* Under OML the public is permitted to attend meetings.
  + Individuals in meetings may not address the public body without the permission of the chair.
  + Public participation is allowed at the discretion of the chair.
* For more information on Open Meeting Law, please visit:
  + https://[www.mass.gov/the-open-meeting-law](http://www.mass.gov/the-open-meeting-law)

**What is a Quorum?**

#### A Quorum is defined as:

* + A **simple majority** of the members of a public body, unless otherwise provided in a general or special law, executive order, or other authorizing provision. G.L. c. 30A, § 18.
  + **As applied to the Trauma Systems Committee—a quorum equals 10 members (½ of 19 members + 1)**

# Department Update

* Solid Organ Injury Bracelet update

#### The Medical Services Committee updated the Trauma Point of Entry Protocol to transfer patients with the Solid Organ Injury Bracelet to the nearest Trauma Center.

* New Commissioner
  + Former Commissioner Bharel left the Department of Public Health in June after six years with the Department.
  + Margret Cooke is the Acting Commissioner.

**Trauma Data Submissions from Designated Trauma Centers**

* One facility is still working on submitting 4 quarters from FFY2016-2019
  + This facility has reported multiple quarters for FFY2016-2019 and has individual quarters remaining.

|  |  |  |  |
| --- | --- | --- | --- |
| **Count of Trauma Center Registry Submissions by**  **Year** | | | |
| N = 17 | November 2019 | November 2020 | March 2021 |
| 2016 | 16 | 17 | 17 |
| 2017 | 17 | 17 | 17 |
| 2018 | 17 | 17 | 17 |
| 2019 | 4 | 16 | 17 |
| 2020 | -- | 10 | 15 |

**Trauma Data Submissions from Community Hospitals**

* The Department continues to provide ongoing, individual outreach and assistance to community hospitals to increase reporting.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Count of Community Hospital Trauma Registry Submissions by**  **Year** | | | | |
| Federal  Fiscal Year | N | November 2019 | November 2020 | March 2021 |
| 2016 | 49 | 39 | 39 | 41 |
| 2017 | 49 | 33 | 38 | 42 |
| 2018 | 49 | 33 | 41 | 45 |
| 2019 | 49 | 18 | 43 | 46 |
| 2020 | 46 | -- | 31 | 42 |

**Massachusetts Trauma Registry Update**

* DPH continues to work with its selected vendor, DI by ESO to develop and implement a web-based Trauma Registry
* DPH is working with the vendor to address American Disabilities Act issues identified during testing.
* Additional information regarding system registration will be shared when DPH resolves the identified issues.

**Preliminary Findings: The COVID-19 Pandemic and the Impact on EMS transports, ED Visits and Hospital Admissions**

* The COVID-19 pandemic has stressed the American health care system, including emergency medical services, emergency departments, and hospital inpatient units.
* The Massachusetts Ambulance Trip Record Information System (MATRIS) and Massachusetts CaseMix (hospital administrative) data will be used to illustrate traumatic injury prevalence and patterns during the pandemic, specifically patient transport, ED visits, and hospitalizations.
* Recent literature has shown traumatic injury patients with COVID-19 have higher inpatient mortality1

– In order to assess mortality if there is a difference in traumatic injury patients with COVID-19 comorbidity to those patients without one in Massachusetts we used Chi-square tests

1. Kaufman, Elinore J. MD, MSHP; Ong, Adrian W. MD; Cipolle, Mark D. MD, PhD, MS; Whitehorn, Gregory BA; Ratnasekera, Asanthi DO; Stawicki, Stanislaw P. MD, MBA; Martin, Niels D. MD The impact of COVID- 19 infection on outcomes after injury in a state trauma system, Journal of Trauma and Acute Care Surgery: September 2021 - Volume 91 - Issue 3 - p 559-565 doi: 10.1097/TA.0000000000003310

# Methods

#### Hospital Case Mix data were used to examine the trauma emergency department visits and hospital inpatients stays:

* + - The Massachusetts Trauma registry ICD-10-CM inclusion criteria were applied to both databases to identify traumas. Traumas with the ICD-10 code U071 were used to identify COVID-19 comorbidity1
    - Facilities with missing quarters of data were excluded
    - Demographics, transportation mode, and external cause code were quantified
    - Trauma rates, rate differences, and confidence intervals were calculated to identify changes in traumatic injury admissions in Massachusetts in 2020 and compared to 2019
    - Please note, the Hospital Case Mix data used for this analysis does not include observation stays, which are included in the Massachusetts Trauma Registry

1. Centers for Disease Control and Prevention (2019, March 18) New ICD-10-CM code for the 2019 Novel Coronavirus (COVID-19), April 1, 2020. Accessed at <https://www.cdc.gov/nchs/data/icd/Announcement-New-ICD-code-for-coronavirus-3-18-2020.pdf>

350

300

Traumatic Injury Transport Count

250

200

150

100

50

EMS Traumatic Injury Transports, 1/1/2019 - 6/30/2021

Traumatic Injury EMS transport counts dipped from March-May in 2020.

Traumatic Injury EMS transport counts began to rise beginning in June 2021.

**Overall EMS Traumatic Injury Transport Count, 1/1/2019 - 6/30/2021**

0

1/1/2019

2/1/2019

3/1/2019

4/1/2019

5/1/2019

6/1/2019

7/1/2019

8/1/2019

9/1/2019

10/1/2019

11/1/2019

12/1/2019

1/1/2020

2/1/2020

3/1/2020

4/1/2020

5/1/2020

6/1/2020

7/1/2020

8/1/2020

9/1/2020

10/1/2020

11/1/2020

12/1/2020

1/1/2021

2/1/2021

3/1/2021

4/1/2021

5/1/2021

6/1/2021

Date

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification |
| Ambulance services are required to enter data into MATRIS per A/R 5-403 Statewide EMS Minimum Dataset. |
| Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. |

Traumatic Injury Transport Frequency by Quarter, Year, 1/1/2019 - 6/30/2021

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year |  | **Quarter** | |  |
| Q1 | Q2 | Q3 | Q4 |
| 2019 | 20,766 | 20,783 | 21,692 | 19,125 |
| 2020 | 17,402 | 15,952 | 21,872 | 20,150 |
| 2021 | 19,082 | 22,678 | - | - |

EMS Traumatic Injury Transports by Quarter and Year, 1/1/2019 - 6/30/2021

25,000

Traumatic Injury EMS transport counts were lowest in in Q1 and Q2 of 2020 and were highest in Q2 of 2021.

When comparing quarterly trauma counts by year (Q1 and Q2 for 2019-2021), it was found that there was a statistically significant difference between years for quarterly trauma runs (p <.0001).

**EMS Traumatic Injury Transport Volumes, 1/1/2019 – 6/30/2021**

20,000

Number of Runs

15,000

10,000

5,000

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification |
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| Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. |

0

Q1 Q2 Q3 Q4

2019 2020 2021

**EMS Traumatic Injury Transport Demographics, 1/1/2019 – 6/30/2021**

Average and median patient age in traumatic injury EMS transports have remained constant from 2019 to 2021.

|  |  |  |  |
| --- | --- | --- | --- |
| Traumatic Injury Transport Patient Age in Years, 1/1/2019 - 6/30/2021 | | | |
| **Year** | **Mean** | **Std** | **Median** |
| 2019 | 56.09 | 25.4 | 59 |
| 2020 | 57.25 | 25.02 | 60 |
| 2021 | 57.19 | 25.24 | 61 |

The Kruskal-Wallis Test found that there was a significant difference in mean age among the three years (p <

.0001).

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition- Clinical Modification |
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Traumatic Injury Transport Patient Race/Ethnicity and Gender, 1/1/2019 - 6/30/2021

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **2019** | | **2020** | | **2021** | |
| **Race/ethnicity** | **n** | **%** | **n** | **%** | **n** | **%** |
| Hispanic | 1,320 | 1.6 | 3,818 | 5.07 | 2,551 | 6.11 |
| NH White | 33,730 | 40.95 | 35,639 | 47.28 | 21,213 | 50.8 |
| NH Black | 716 | 0.87 | 2,352 | 3.12 | 1,506 | 3.61 |
| NH AA&NHOPI | 718 | 0.87 | 733 | 0.97 | 530 | 1.27 |
| NH Other Race | 4,094 | 4.97 | 930 | 1.23 | 438 | 1.05 |
| Unknown/Not Recorded | 41,788 | 50.73 | 31,904 | 42.33 | 15,522 | 37.17 |
| **Gender** |  | |  | |  | |
| Female | 43,193 | 52.45 | 38,108 | 50.56 | 21,299 | 51 |
| Male | 38,562 | 46.83 | 36,877 | 48.92 | 20,252 | 48.5 |
| Unknown | 611 | 0.74 | 391 | 0.52 | 209 | 0.5 |

There is sufficient evidence to conclude that the frequency of traumatic injury EMS runs per year between 2019-2021 (up to date) differs between race/ethnicity categories (p<.0001) when unknown race/ethnicity is excluded.

There is sufficient evidence to conclude that the frequency of traumatic injury EMS runs per year between 2019-2021 (up to date) differs between males and females (p<.0001) when unknown gender is excluded.

**EMS Traumatic Injury Transport Demographics, 1/1/2019 – 6/30/2021**

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes:  Non-Hispanic; AA&NHOPI: Non-Hispanic Asian American & Native Hawaiians and Other Pacific Islander  The number of patients with an "unknown" race/ethnicity in MATRIS is because the reports are either incomplete or the EMI was unable to collect race/ethnicity information. Counts are number of runs, not patients  Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts  Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification Ambulance services are required to enter data into MATRIS per A/R 5-403 Statewide EMS Minimum Dataset.  Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. |

**EMS Traumatic Injury Transport Demographics, 1/1/2019 – 6/30/2021**

180

160

140

Trauma Transport Count

120

100

80

60

40

20

0

EMS Traumatic Injury Transports by Race/Ethnicity, 1/1/2019 - 6/30/2021

Hispanic NH White NH Black

1/1/2019

2/1/2019

3/1/2019

4/1/2019

5/1/2019

6/1/2019

7/1/2019

8/1/2019

9/1/2019

10/1/2019

11/1/2019

12/1/2019

1/1/2020

2/1/2020

3/1/2020

4/1/2020

5/1/2020

6/1/2020

7/1/2020

8/1/2020

9/1/2020

10/1/2020

11/1/2020

12/1/2020

1/1/2021

2/1/2021

3/1/2021

4/1/2021

5/1/2021

6/1/2021

Traumatic Injury EMS transport counts dipped for NH White patients and those with unknown/not recorded race/ethnicity from March-May in 2020.

Traumatic Injury EMS transport counts for NH White patients have begun to rise to higher than pre-pandemic levels beginning in April 2021, where as unknown/not recorded race ethnicity

creased.

|  |
| --- |
| NH AA&NHOPI NH Other Race Unknown/Not Recorded has de  **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes:  Non-Hispanic; AA&NHOPI: Non-Hispanic Asian American & Native Hawaiians and Other Pacific Islander  The number of patients with an "unknown" race/ethnicity in MATRIS is because the reports are either incomplete or the EMI was unable to collect race/ethnicity information. Counts are number of runs, not patients  Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts  Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification Ambulance services are required to enter data into MATRIS per A/R 5-403 Statewide EMS Minimum Dataset.  Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. |

200

180

160

Tramua Transport Count

140

120

100

80

60

40

20

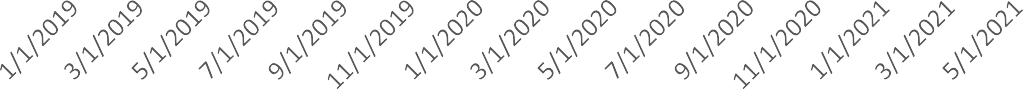
0

EMS Traumatic Injury Transports by Gender, 1/1/2019 - 6/30/2021

Traumatic Injury EMS transport counts dipped for both males and females from March-June in 2020.

Traumatic Injury EMS transport counts for both males and females have begun to rise starting in May/June 2021.

**EMS Traumatic Injury Transport Demographics, 1/1/2019 – 6/30/2021**



Female Male Unknown

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification |
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| Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. |

EMS Traumatic Injury Median Response in Minutes, Scene, and Transport Times By Quarter, 1/1/2019 - 6/30/2021

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2019** | | | | **2020** | | | | **2021** | |
| **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** | **Q3** | **Q4** | **Q1** | **Q2** |
| Response Time | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 7 |
| Scene Time | 12 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Transport Time | 9 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

Median response, scene, and transport times have remained consistent from Q1 2019 to Q2 2021.

**EMS Traumatic Injury Transport Response Time, 1/1/2019 – 6/30/2021**

Median Traumatic Injury EMS Times by Quarter, 1/1/2019 - 6/30/2021

14

12

Q1

Q2

Q3

Q4

Q1

Q2

Q3

Q4

Q1

Q2

2019

2020

2021

10

8

Minutes

6

4

2

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification |
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0

Response Time Scene Time Transport Time

Table 4. Trauma Transport Cause of Injury by Year

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Cause of Injury** | **2019** | | **2020** | | **2021** | |
| **n** | **%** | **n** | **%** | **n** | **%** |
| Fall | 32,578 | 60.5 | 29,975 | 59.48 | 16,804 | 60.62 |
| Motor Vehicle Traffic | 8,813 | 16.37 | 6,429 | 12.76 | 3,622 | 13.07 |
| Struck By, Against | 3,305 | 6.14 | 2,956 | 5.87 | 1,621 | 5.85 |
| Cut or Pierce | 1,635 | 3.04 | 2,077 | 4.12 | 1,147 | 4.14 |
| Unspecified | 1,437 | 2.67 | 1,788 | 3.55 | 931 | 3.36 |
| Other Land Transport | 904 | 1.68 | 1,518 | 3.01 | 707 | 2.55 |
| Pedestrian, Other | 1,205 | 2.24 | 932 | 1.85 | 478 | 1.72 |
| Other Specified, classifiable | 255 | 0.47 | 689 | 1.37 | 393 | 1.42 |
| Motor Vehicle Nontraffic | 1,006 | 1.87 | 680 | 1.35 | 373 | 1.35 |
| Pedal Cyclist, Other | 904 | 1.68 | 754 | 1.5 | 303 | 1.09 |

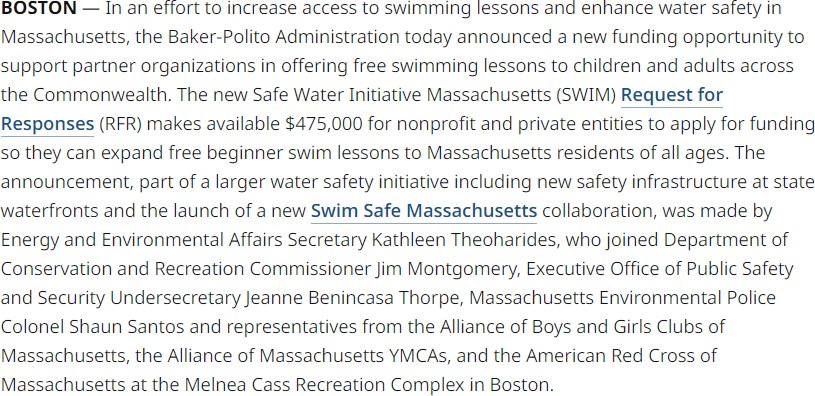
There is sufficient evidence to conclude that the frequency of traumatic injury EMS runs per year between 2019-2021 (up to date) differs between cause of injury category (p<.0001).

**EMS Traumatic Injury Transport Injury Manner, 1/1/2019 – 6/30/2021**

|  |
| --- |
| **Source: MA Department of Public Health MATRIS V2 & V3, downloaded 8/20/2021** |
| Notes: |
| Counts are number of runs, not patients |
| Data includes only those runs where patient disposition = "Patient Treated, Transported by this EMS Unit“ and incident location is in Massachusetts |
| Data includes only those runs where primary impression is recorded as “traumatic injury” or is coded as trauma as per the International Classification of Diseases, 10th Edition-Clinical Modification |
| Ambulance services are required to enter data into MATRIS per A/R 5-403 Statewide EMS Minimum Dataset. |
| Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service.  Categories included in Chi-shared analysis not in top ten mode of injury were overexertion, natural or environmental causes, fire, burns or hot substances, machinery, other transport, firearms, poisoning, suffocation, other specified, and drowning or submersion |

**Drowning and Water Related Incident Response Initiatives Summer 2021**





EMS Runs, Drownings and Water Related Incidents, 1/1/2018-6/30/2021

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Month** | | | | | | | | | | | | |
| **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** | **Oct** | **Nov** | **Dec** | **Total** |
| **2018** | 1-4 | 1-4 | 1-4 | 1-4 | 1-4 | 9 | 23 | 12 | 13 | 1-4 | 1-4 | 1-4 | 71 |
| **2019** | 1-4 | 0 | 1-4 | 1-4 | 1-4 | 18 | 19 | 10 | 5 | 1-4 | 0 | 1-4 | 69 |
| **2020** | 1-4 | 1-4 | 1-4 | 1-4 | 7 | 14 | 35 | 15 | 5 | 1-4 | 1-4 | 1-4 | 92 |
| **2021** | 5 | 5 | 1-4 | 1-4 | 16 | 24 | - | - | - | - | - | - | 55 |

**Drowning and Water Related Incident EMS Calls, 1/1/2018 - 6/30/2021**

Drownings or Water Related Incident EMS Calls by Water Type (1/1/18 - 6/30/21)

|  |  |  |
| --- | --- | --- |
| **Water Type** | **n** | **%** |
| Bathtub | 19 | 6.62 |
| Harbor or Dock | 11 | 3.83 |
| Lake, River, Pond | 57 | 19.86 |
| Ocean | 61 | 21.25 |
| Pool | 89 | 31.01 |
| Unknown/Unspecified | 50 | 17.42 |

**Source: MA Department of Public Health MATRIS V2 & V3 downloaded 8/17/2021**

Notes:

Counts are number of runs, not patients

Includes runs where primary impression, secondary impression, and/or cause of injury was drowning Includes all patient dispositions, from DOA, to active drowning, to simple submersion with water swallowed

Incidents that did not have a drowning or water related incident in their narrative report were excluded by performing a full narrative review, as well as duplicates Ambulance services are required to enter data into MATRIS per A/R 5-403 Statewide EMS Minimum Dataset

Data are required to be submitted within 14 days; however, actual submission timeframes vary by ambulance service. Counts 4 and under are suppressed as 1-4.

Drownings and water related incident EMS runs tend to be highest between the months of June-August. In 2021, these runs have about doubled for the months of May and June.

Most drownings and water related incidents occur in pools, followed by natural bodies of water (oceans, lakes, rivers, and ponds).

9000

8000

7000

6000

Visit Count

5000

4000

3000

2000

All Massachusetts Emergency Department Visits, 1/1/2019- 9/30/2020

* Overall Massachusetts Emergency Department visits dramatically dropped in March 2020 during the stay-at-home order and gathering restrictions.
* Over time ED visits have increased but have not returned to 2019 levels.

1000

0

01-Jan-19

01-Feb-19

01-Mar-19

01-Apr-19

01-May-19

01-Jun-19

01-Jul-19

01-Aug-19

01-Sep-19

01-Oct-19

01-Nov-19

01-Dec-19

01-Jan-20

01-Feb-20

01-Mar-20

01-Apr-20

01-May-20

01-Jun-20

01-Jul-20

01-Aug-20

01-Sep-20

### This trend continues in traumatic injury only ED visits.

**Massachusetts Emergency Department Visits,**

**1/1/2019-9/30/2020**

Data Source: Massachusetts Case Mix, FFY 2019, FFY 2020, preliminary FFY2021 YTD

Extract Date 8/17/2021 Includes all patients treated at reporting hospital emergency department, traumatic injury limited to initial visit

Traumatic injury is defined as the Massachusetts Trauma Registry inclusion criteria, sequelae, subsequent visits, and superficial injuries are excluded

All FFY2021 data are preliminary and subject to change

**Massachusetts Trauma-Related ED Visits,**

**1/1/2019-9/30/2020**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Trauma Count by Year and Quarter, 1/1/2019-9/30/2020** | | | | | | |
|  | 2019 Count | 2019  Rate/10,000 | 2020 Count | 2020  Rate/10,000 | Risk Difference | Confidence Interval |
| Quarter 1 | 91,781 | 131.74 | 77,001 | 110.53 | -21.2 | -22.4, -20.1 |
| Quarter 2 | 105,437 | 151.34 | 60,150 | 86.34 | -65.0 | -66.2, -63.9 |
| Quarter 3 | 112,346 | 161.26 | 87,358 | 125.39 | -35.87 | -37.1, -34.6 |
| Quarter 4 | 98,480 | 141.36 | 25,485 |  |  |  |

* + Please note 2020 Quarter 4 is incomplete and based on preliminary data.
  + 2020 Case Mix data show that all cause trauma was significantly lower in quarters 1, 2, and 3 of 2020 when compared to 2019.
  + Available literature also shows a decrease in trauma in healthcare system overall in 20201

Data Source: Massachusetts Case Mix, FFY 2019, FFY 2020, preliminary FFY2021 YTD

Extract Date 8/17/2021 Includes all patients treated at reporting hospital emergency department, traumatic injury limited to initial visit

Traumatic injury is defined as the Massachusetts Trauma Registry inclusion criteria, sequelae, subsequent visits, and superficial injuries are excluded

1. Salottolo K, Caiafa R, Mueller J, et al. Multicenter study of US trauma centers examining the effect of the COVID-19 pandemic on injury causes, diagnoses and procedures. *Trauma Surg Acute*

*Care Open*. 2021;6(1):e000655. Published 2021 Apr 2. doi:10.1136/tsaco-2020-000655

**Massachusetts Trauma-Related ED Visits,**

**1/1/2019-9/30/2020**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Trauma Count by Year and Quarter, 1/1/2019-9/30/2020** | | | | | | |
|  | 2019 Count | 2019  Rate/100 | 2020 Count | 2020  Rate/100 | Risk Difference | Confidence Interval |
| Quarter 1 | 91,781 | 15.5 | 77,001 | 13.6 | -1.8 | -2.0, -1.7 |
| Quarter 2 | 105,437 | 17.4 | 60,150 | 16.9 | -0.4 | -0.6, -0.3 |
| Quarter 3 | 112,346 | 18.0 | 87,358 | 18.2 | 0.2 | 0.07, 0.4 |
| Quarter 4 | 98,480 | 16.9 | 25,485 |  |  |  |

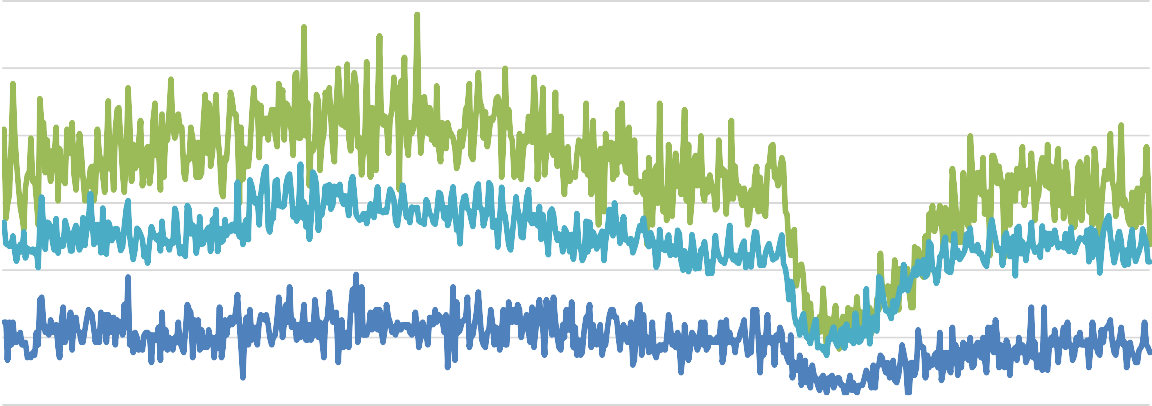
* + Please note 2020 Quarter 4 is incomplete and based on preliminary data.
  + 2020 Case Mix data show that all cause trauma was significantly lower proportion of all ED visits in quarter 1 and quarter 2. Quarter 3 2020 was no different from 2019.

Emergency Department Visit Rate with Traumatic Injury Diagnosis, 1/1/2019-9/30/2020

**Massachusetts Trauma-Related ED Visits,**

**1/1/2019-9/30/2020**

35

30

ED Visit Rate/100,000 Residents

25

20

15

10

5

0

AA&NHOPI Rate Black Rate White Rate

* Traumatic Injury ED Visits rates are consistently highest in Black and African American Massachusetts residents.
* Rates in all groups decreased in March 2020 when the first COVID-19 lockdowns and gathering restrictions were enacted.
* Gradually, rates increased over summer 2020, but as of September 2020 had not reached pre-pandemic levels.

Emergency Department Visit Rate with Traumatic Injury by Hispanic Ethnicity, 1/1/2019-9/30/2020

25

ED Visit Rate/100,000

20

15

10

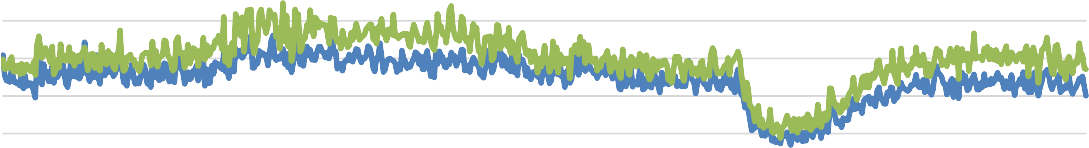
5

0

Non-Hispanic Rate Hispanic Rate

Emergency Department Visit Rate with Traumatic Injury by Sex, 1/1/2019-9/30/2020

ED Visit Rate/100,000 Residents

25

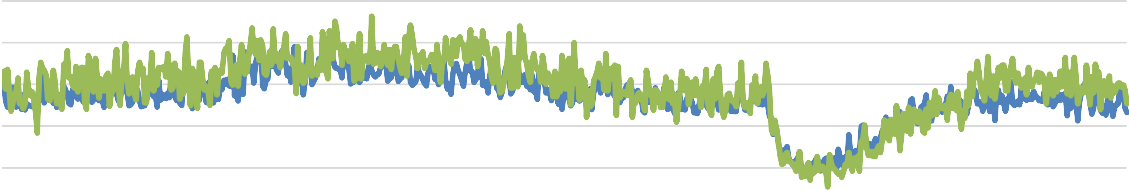
20

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0

* Traumatic injury dropped in March 2020 for all sexes, Hispanic, and non-Hispanic residents.
* After March, as observed in other groups, rates increased over summer 2020, but have not returned to pre-pandemic levels by the end of September 2020.
* Trauma rates are historically higher in men than women, which is also observed in these data.
* The trauma rate may be high in Hispanics, especially after the 2020 COVID-19 stay-at- home order and gathering restrictions, this warrants further exploration.

Data Source: Massachusetts Case Mix, FFY 2019, FFY 2020, preliminary FFY2021 YTD

Extract Date 8/17/2021

Female Rate Male Rate

**Massachusetts Trauma-Related ED Visits,**

**1/1/2019-9/30/2020**

Includes all patients treated at reporting hospital emergency department, traumatic injury limited to initial visit

**Massachusetts Trauma-Related Inpatient Stays,**

**1/1/2019-6/30/2021**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **2019**  **Count** | **2019**  **Rate/10,000** | **2020**  **Count** | **2020**  **Rate/10,000** | **Rate Difference\*** | **2021 1/1-6/30**  **Count\*\*** |
| Total | 45,034 | 64.6 | 42,096 | 60.4 | -4.2\* | 21,248 |
| Sex |  |  |  |  |  |  |
| Female | 23,518 | 65.6 | 21,587 | 60.2 | -5.4\* | 11,049 |
| Male | 21,510 | 63.6 | 20,507 | 60.6 | -3.0\* | 10,199 |
| Hispanic | 2,661 | 31.3 | 2,533 | 29.8 | -1.5 | 1,380 |
| Non- Hispanic | 42,371 | 69.3 | 39,561 | 64.7 | -4.6\* | 19,862 |

* Massachusetts traumatic injury hospital inpatients stays significantly decreased between 2019 and 2020
* This was significant in all sexes, Hispanic, and non Hispanic MA residents. The decrease in Hispanic residents may be smaller and warrants further investigation

Data Source: Massachusetts Case Mix, FFY 2019, FFY 2020, preliminary FFY2021 YTD

Extract Date 8/17/2021 Includes all patients treated at reporting hospital emergency department, traumatic injury limited to initial visit

Traumatic injury is defined as the Massachusetts Trauma Registry inclusion criteria, sequelae, subsequent visits, and superficial injuries are excluded

All FFY2021 data are preliminary and subject to change

\*significant at P < 0.05

\*\*Rate will be calculated when full year available

**Massachusetts Traumatic Injury Related Inpatient Stays 1/1/2019-6/30/2021**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Race** | **2019**  **Count** | **2019**  **Rate/10,000** | **2020**  **Count** | **2020**  **Rate/10,000** | **Rate Difference** | **2021 1/1-6/30** |
| American Indian/Alaska  Native | 48 | 14.4 | 38 | 11.4 | -3.0 | 33 |
| Asian | 885 | 17.9 | 736 | 14.86 | -3.0\* | 381 |
| Black/African American | 2,350 | 37.9 | 2,405 | 38.7 | 0.89 | 1,206 |
| Native Hawaiian or  other Pacific Islander | 29 | 43.8 | 9 | 13.6 | -3.0\* | 8 |
| White | 38,472 | 68.3 | 35,657 | 63.3 | -5.0\* | 17,873 |
| Other Race | 1,396 |  | 1,537 |  |  | 869 |
| Unknown | 1,854 |  | 1,714 |  |  | 877 |

* Traumatic injury related hospital inpatient stay decreased from 2019 to 2020 in all groups except Blacks
* In Black Massachusetts residents, the rate of traumatic injury increased but was not statistically significant

**Massachusetts Traumatic Injury-Related Inpatient Stays**

**1/1/2019-6/30/2021**

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Traumatic Injury Related-Hospital Inpatient Stays 1/1/2019-6/30/2021** | | | |
|  | 2019 | 2020 | 2021 Q1-Q2 |
| Quarter 1 | 10,940 | 10,093 | 10,760 |
| Quarter 2 | 11,206 | 9,913 | 10,488 |
| Quarter 3 | 11,277 | 11,155 | Not Available |
| Quarter 4 | 11,611 | 10,935 | Not Available |
| Total | 45,034 | 42,096 | 21,248 |

|  |  |  |
| --- | --- | --- |
| **Traumatic Injury with COVID-19 Diagnosis Inpatient Stays, 1/1/2019-6/30/2021** | | |
|  | 2020 | 2021 Q1-Q2 |
| Quarter 1 | 42 | 455 |
| Quarter 2 | 522 | 88 |
| Quarter 3 | 92 | Not Available |
| Quarter 4 | 394 | Not Available |
| Total | 1,050 | 543 |

* + All 2021 data are preliminary
  + Traumatic injury inpatient stays were lower in 2020 and 2021 when compared to 2019
  + Comorbidity with COVID-19 was highest in Quarter 2 of 2020 and Quarter 1 2021, which correspond with the first and second wave of COVID-19 in Massachusetts

**Massachusetts Trauma-Related Inpatient Stays and**

**COVID-19 Comorbidity, 2020**

* + - Traumatic injury patients diagnosed with COVID-19 were more likely to die while a hospital inpatient that patients that were not diagnosed with COVID-19 (p

|  |  |  |
| --- | --- | --- |
| **Traumatic Injury with COVID-19 Diagnosis, 2020 Only** | | |
|  | No COVID-19  Diagnosis | COVID-19  Diagnosis |
| Discharged | 36,007 | 874 |
| Died while Inpatient | 280 | 32 |
| Total | 36,287 | 906 |

<0.0001)

* + - This is consistent with recent literature, indicates poorer outcomes for trauma patients with COVID-19 morbidity and warrants further investigation

Data Source: Massachusetts Case Mix, FFY 2019, FFY 2020, preliminary FFY2021 YTD

Extract Date 8/17/2021 Includes all patients treated at reporting hospital emergency department, traumatic injury limited to initial visit

Traumatic injury is defined as the Massachusetts Trauma Registry inclusion criteria, sequelae, subsequent visits, and superficial injuries are excluded

All FFY2021 data are preliminary and subject to change

**Future Meetings**

Meeting Schedule:

## – December 15, 2021 10:00AM-12:00PM

– March 16, 2022 10:00AM-12:00PM

**Additional Information**

For more information, please visit: [Trauma Systems Committee | Mass.gov](https://www.mass.gov/orgs/trauma-systems-committee)