



Massachusetts Department of Public Health

TRAUMA SYSTEMS COMMITTEE

January 30, 2025

*Bureau of Health Care Safety and Quality
Massachusetts Department of Public Health*

Meeting Agenda

- Department Updates
- Trauma Registry Update
- Trauma summary statistics report (01/2021-12/31/2023) in Massachusetts presentation
- Prehospital blood transfusion discussion

Department Update

- Teryl Smith, Bureau Director, Bureau of Health Care Safety and Quality
- New Trauma System Committee Members:
 - Abigail Wertz, Trauma Program Manager, Lawrence General Hospital
 - Elizabeth Henderson, Trauma Program Manager, Cape Cod Hospital
 - Mohammed Bawazeer, MD, Co-director of Trauma, Melrose Wakefield Hospital

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>

Massachusetts Trauma Registry Updates

- All data through Calendar Year (CY) 2024 Quarter 3 were due December 14, 2024
- Quality improvement activities are ongoing
- CY 2025 data specifications will be posted after registry vendor implements updates, expected spring 2025

Quarter	Reporting Period	Data Submission Deadline
CY 2025 Q1	January 1-March 31	June 13
CY 2025 Q2	April 1-June 30	September 12
CY 2025 Q3	July 1-September 30	December 12
CY 2025 Q4	October 1-December 31	March 13

*All dates are subject to change by the Department.

Trauma Registry Data Submissions from Community Hospitals

- Community Hospitals continue to receive support from DPH and the vendor ESO to improve reporting
 - This includes reviewing specifications, feedback on submission files and data quality reporting
- Nearly all community hospitals that have submitted data have completed submissions
- 3 community hospitals have not made successful Trauma Registry submissions

Count of Community Hospital Trauma Registry Submissions by Year			
Year	Number of Facilities	# Community Hospitals Reporting some Quarters	# Up to Date
FFY 2021	44	0	42
FFY 2022	44	0	42
CY2022 Q4 (10/1/2022-12/31/2022)	44	0	42
CY 2023*	44	2	42
CY2024 Q1-Q3	44**	0	38

*Signature Brockton Hospital exempt from CY2023 Q2 through CY2024 Q2 due to Feb 2023 fire

**Melrose Wakefield Hospital became designated trauma center Jan 2024,

**North Adams Regional Hospital became community hospital June 2024

Data Source: Massachusetts Trauma Registry, extracted 01/13/2025

Trauma Registry Data Submissions from Designated Trauma Centers

- Nearly all Massachusetts Trauma Centers have successfully submitted data to Trauma Registry CY2024 Q1 through Q3
- CY2024 Q4 (10/01/2024-12/31/2024) data submission is due March 16, 2025
- Submissions are being reviewed for data quality

Count of Trauma Center Registry Submissions by Year			
Year	Number of Facilities	# Trauma Centers reporting some Quarters	# Up to Date
CY 2024 Q1-Q3	18	n/a	17

Data Source: Massachusetts Trauma Registry, extracted 01/13/2025

Massachusetts Trauma Updates

Updated trauma center destination maps and list by EMS Region with trauma level designation

EMS Region	Trauma Center	Adult Trauma Level	Pediatric Trauma Level
Region 1 - Western MA	Baystate Medical Center	Level I	Level II
	Berkshire Medical Center	Level III	
Region 2- Central MA	UMASS Memorial Medical Center	Level I	Level I
Region 3 - Northeastern MA	Beverly Hospital	Level III	
	Lawrence General Hospital	Level III	
	Lowell General Hospital	Level III	
	Melrose Wakefield Hospital	Level III	
	Salem Hospital	Level III	
Region 4 - Metropolitan Boston	Beth Israel Deaconess Medical Center	Level I	
	Boston Children's Hospital		Level I
	Boston Medical Center	Level I	Level I
	Brigham and Women's Hospital	Level I	
	Lahey Hospital and Medical Center	Level I	
	Massachusetts General Hospital	Level I	Level I
	South Shore Hospital	Level II	
	Tufts Medical Center	Level I	
Region 5 - Southeastern MA/Cape Cod	Good Samaritan Medical Center	Level III	
	Southcoast Health - St. Luke's Hospital	Level II	
	Cape Cod Hospital	Level III	



Massachusetts Department of Public Health

MA State Trauma Registry

Statistical summary report, 01/01/2021-12/31/2023

Jiankun Kuang MS, Leah Pinckney MPH, Katherine Saunders MS
Bureau of Health Care Safety & Quality

MA State Trauma Registry Overview

- Introduction
- Facility information (maps, listed by region)
- Overall case counts
- Patient characteristics
- Injury summary
- Hospital and regional statistics

Introduction

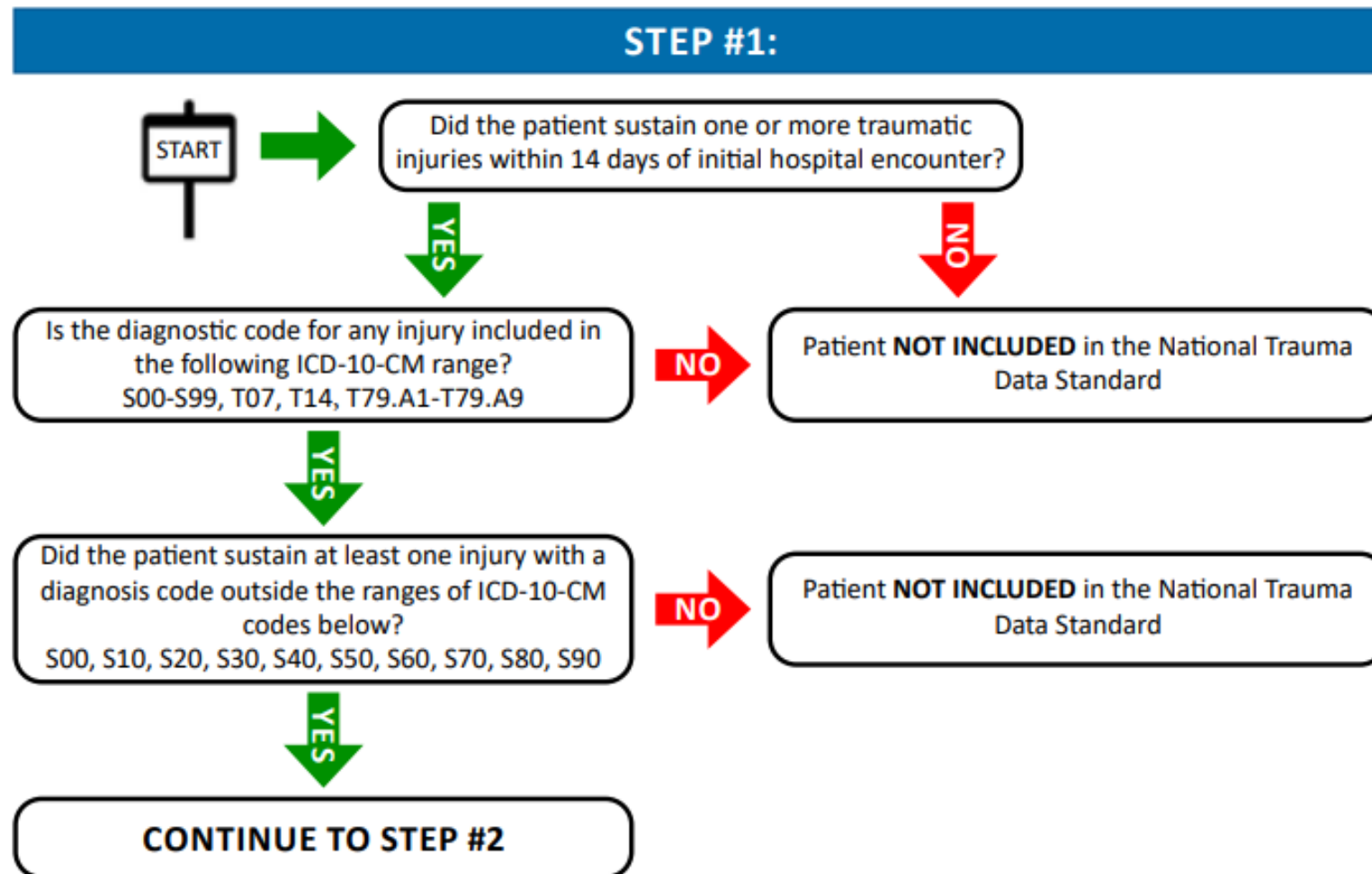
- This report is to present summary statistics of trauma-related injuries and outcomes of the care provided in facilities (designated trauma centers and community hospitals) in Massachusetts for calendar years (CY) 2021-2023.
- Spring 2020 marked the beginning of the Covid-19 pandemic which significantly affected trauma incidence and is reflected in this report. Some of the statistical reporting could have been affected by the Covid-19 pandemic.
- Trauma clinicians, administrators and policy makers may use this report to enhance systems development and for clinical quality improvement. The public may use this report to learn more about the trauma system in MA.

Data Sources

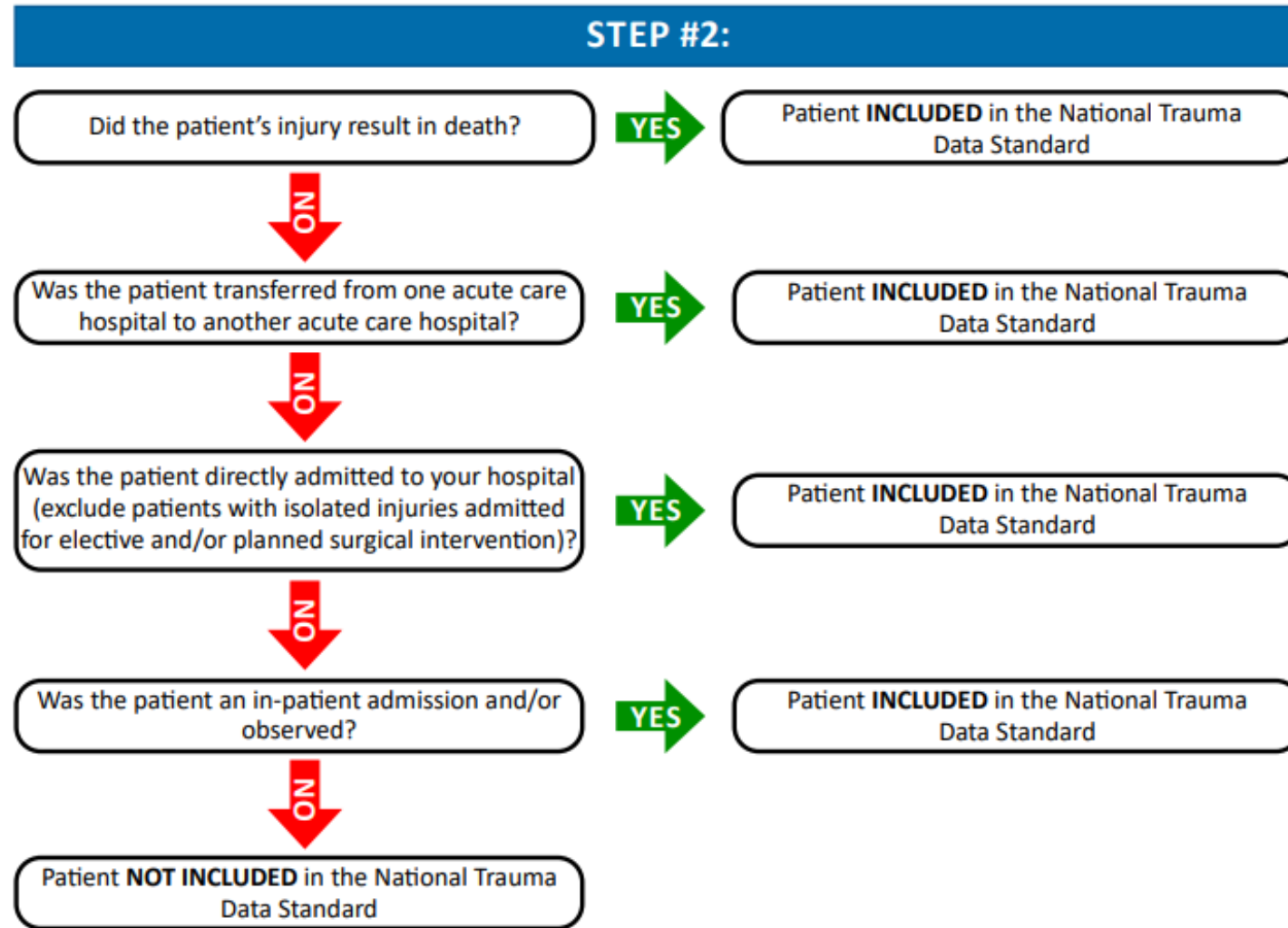
- **Trauma Registry** - Established in 2008, the MA Trauma Registry (TR) receives reports from designated trauma centers and community hospitals on patients identified and treated for traumatic injury
- **Data submitted from designated trauma centers and community hospitals in MA** which contain variables specified by the TR including patients' demographic clinical characteristics, diagnoses, treatment, and discharge information.

Inclusion Criteria- ICD diagnosis code

NTDS PATIENT INCLUSION CRITERIA (ALGORITHM)

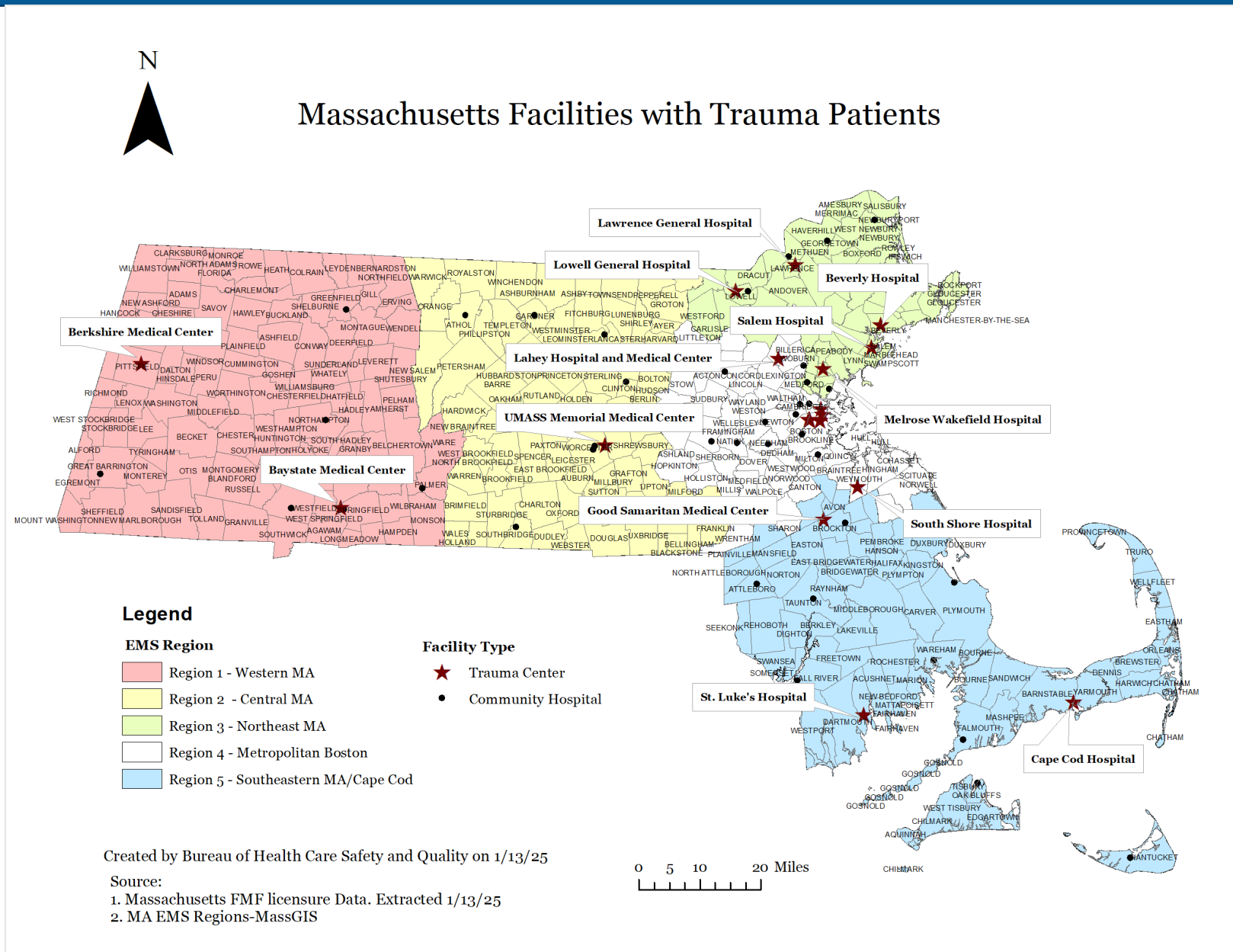


Inclusion Criteria- Admission

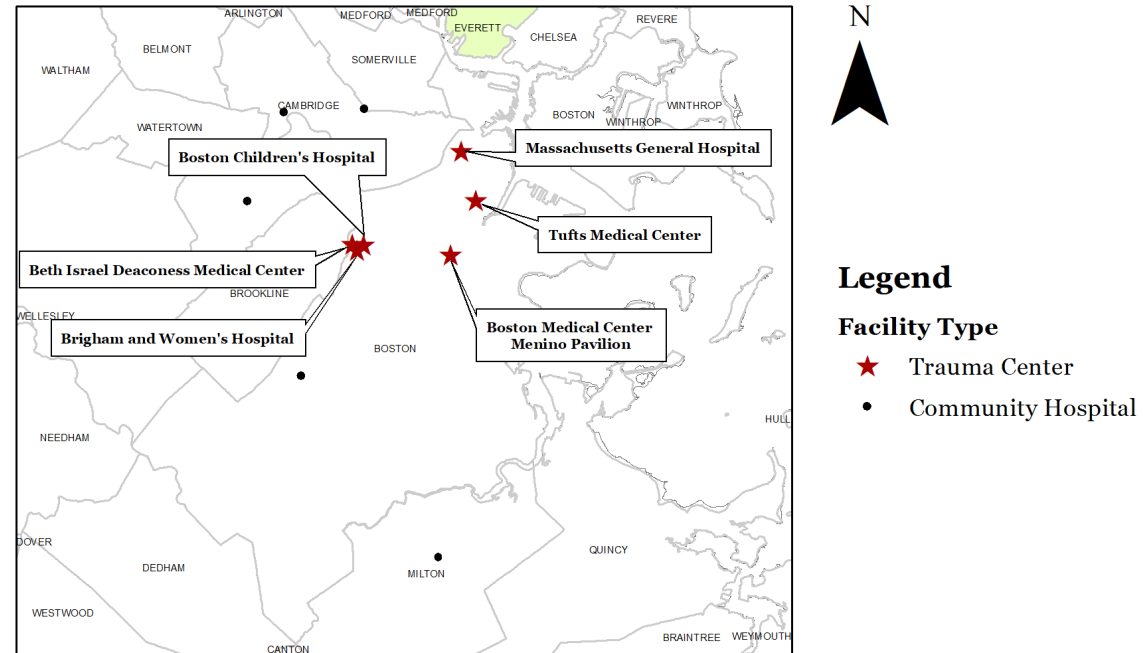


PAGE iii

Facility Information - Statewide



Boston Region Facilities with Trauma Patients

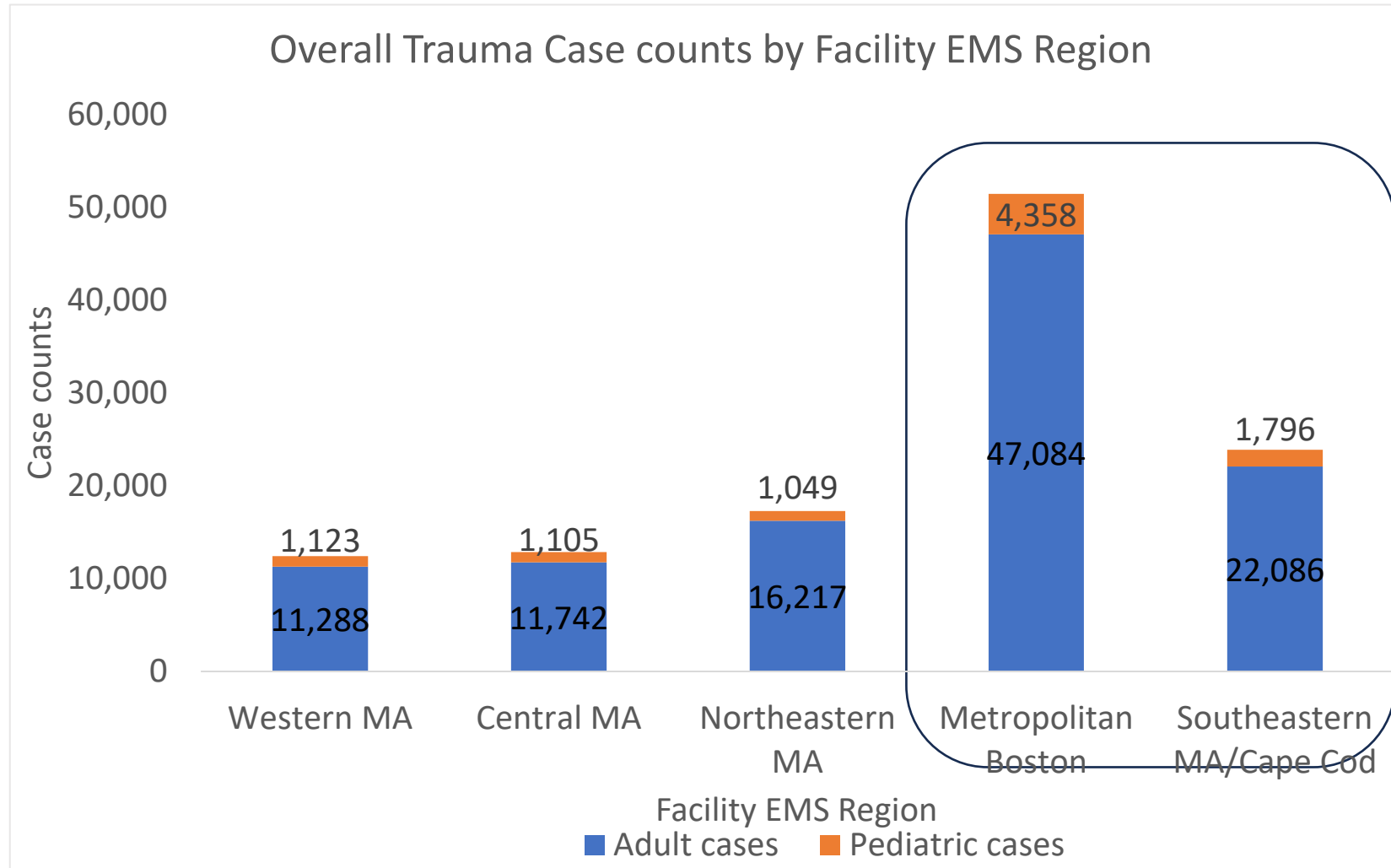


Created by: Bureau of Health Care Safety & Quality
Updated on: 1/13/25
FOR DPH USE ONLY
Data Sources:
1. Facility Master File - extracted 01/13/25
2. MassGIS - shapefiles downloaded 01/13/25

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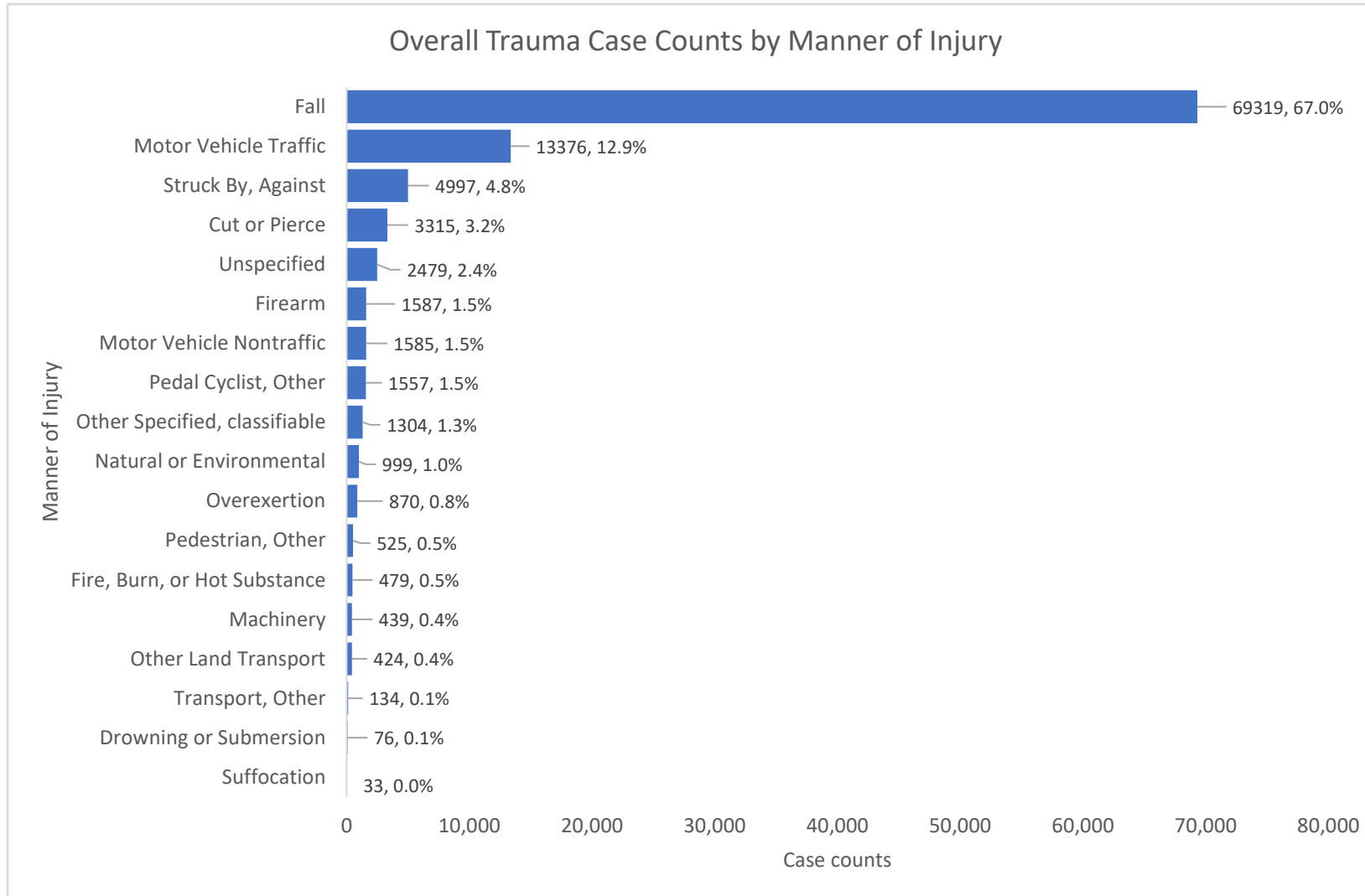
Facility Information - Case Counts

- For CY 2021-2023, MA TR received a total of 117,848 cases submitted by the 18 trauma centers and 43 community hospitals across the state with case fatality rate of 2.6%
- Metro Boston and Southeastern MA/Cape Cod account for the majority trauma cases (64%)



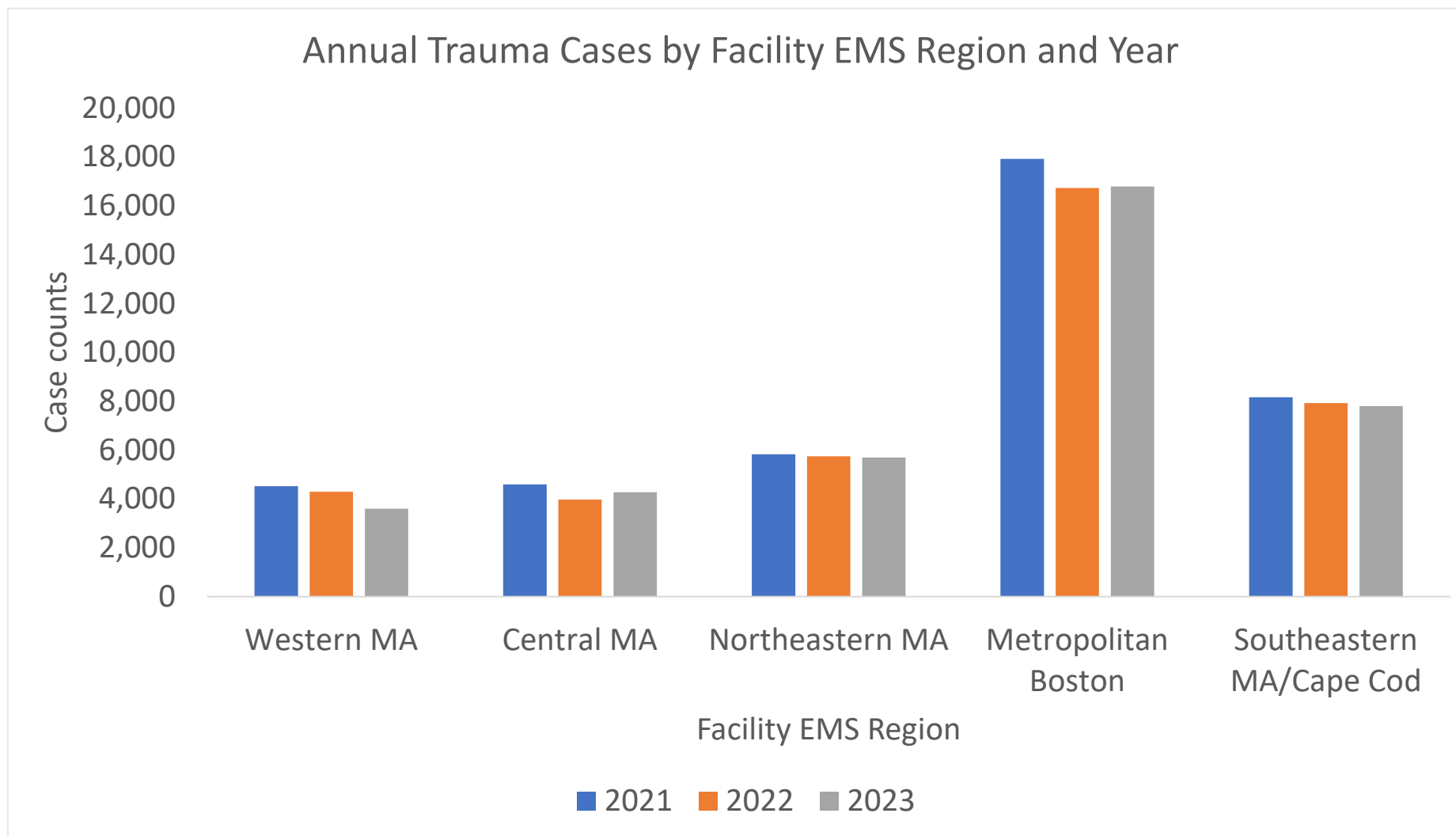
Facility Information - Case Counts

- The leading causes of trauma were falls (67.0%) and motor vehicle traffic (12.9%)



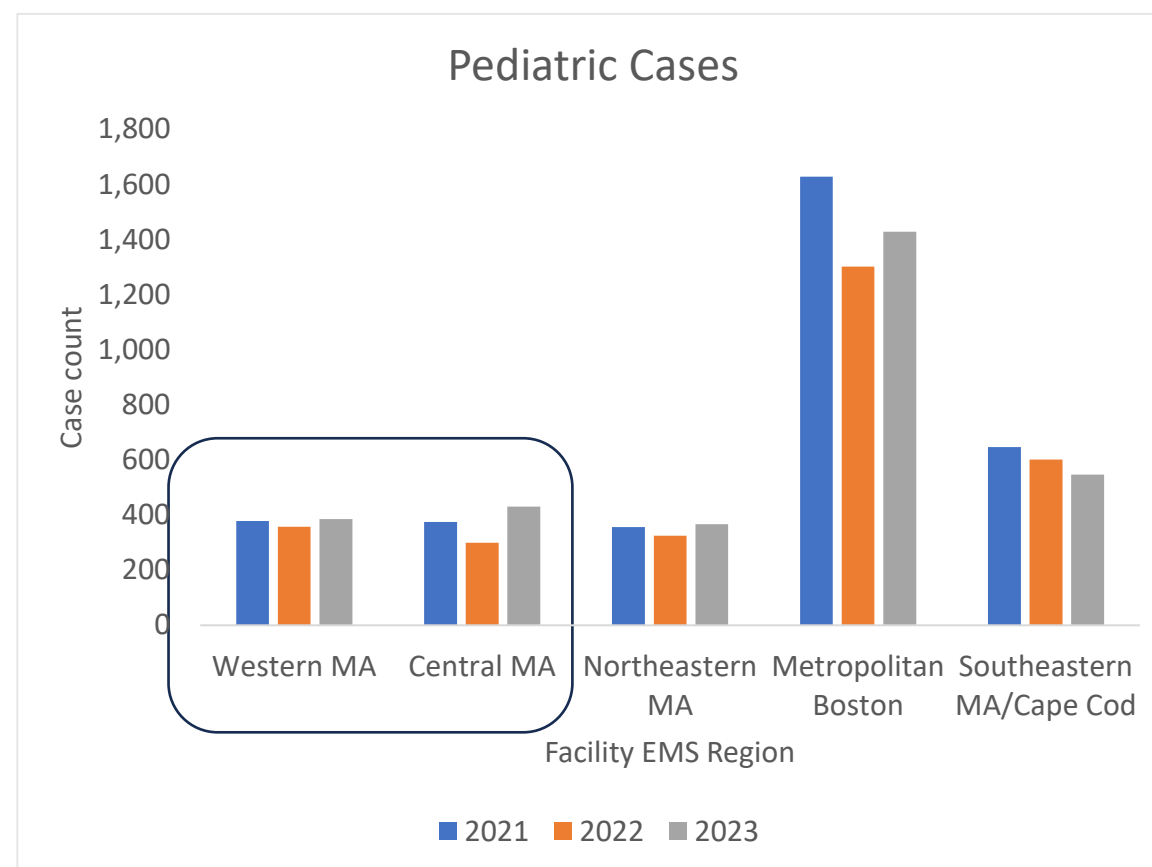
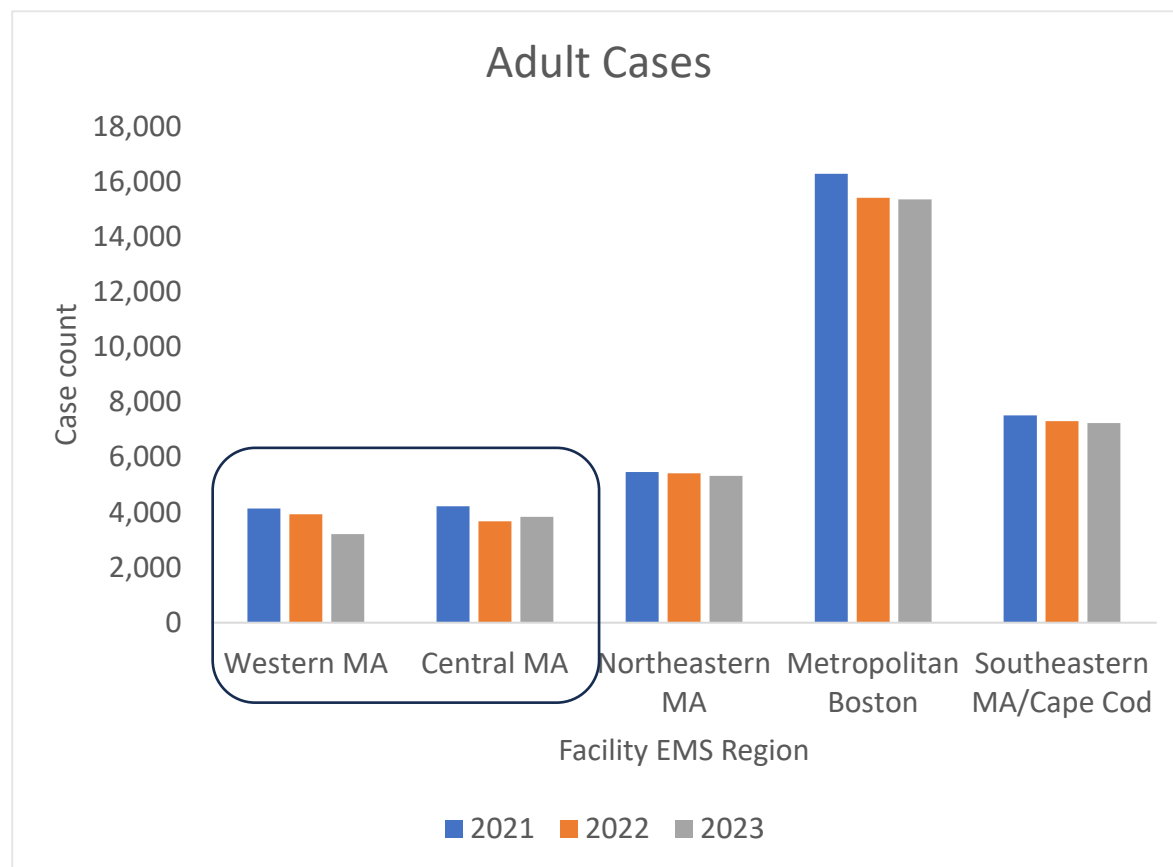
Facility Information - Case Counts

Compared with CY 2021, annual trauma cases decreased in the past 3 years across all regions



Facility Information - Case Counts by Region, Year

- In Western and Central regions, adult cases decreased while pediatric cases increased in the past 3 years.
- In Boston and Southeastern MA/Cape Cod, both adult and pediatric trauma cases decreased in the past 3 years.



Patient Characteristics

- Case fatality rate among 75+ age groups are significantly higher
- Case fatality rate among Asian and unknown are also higher
- Western MA had a significantly higher case fatality rate compared with other regions

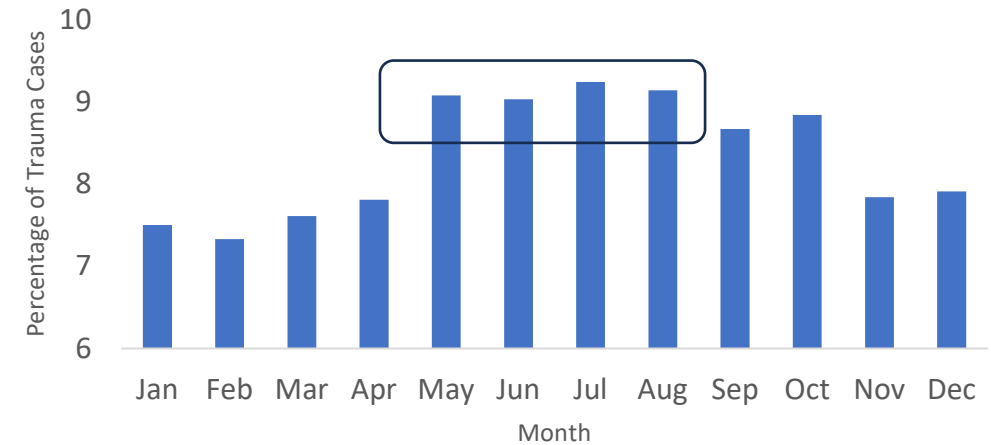
Demographics		Cases	Percent	Deaths	Case Fatality Rate* (95%CI)
Age	0-14	6,131	5.2	31	0.5 (0.3, 0.7)
	15-29	11,032	9.4	265	2.4 (2.4, 2.7)
	30-59	25,866	21.9	548	2.1 (2.1, 2.3)
	60-74	26,856	22.8	567	2.1 (2.1, 2.3)
	75-84	23,259	19.7	642	2.8 (2.7, 3.0)
	85+	24,704	21	981	4.0 (3.9, 4.2)
Gender	Female	59,296	50.3	1,180	2.0 (2.0, 2.1)
	Male	58,526	49.7	1,854	3.2 (3.1, 3.3)
Race	Asian	2,621	2.2	80	3.1 (2.4, 3.8)
Ethnicity	Black or African American	7,055	6.0	179	2.5 (2.5, 2.9)
	Hispanic or Latino	9,021	7.7	221	2.4 (2.4, 2.8)
	White	85,877	72.9	2,203	2.6 (2.5, 2.7)
	Two or more	2,501	2.1	27	1.1 (0.7, 1.6)
	Unknown	10,553	9.0	320	3.0 (3.0, 3.4)
EMS	Western MA	12,411	10.5	468	3.8 (3.7, 4.1)
Region	Central MA	12,847	10.9	323	2.5 (2.5, 2.8)
	Northeastern	17,266	14.7	349	2.0 (2.0, 2.2)
	Metropolitan Boston	51,442	43.7	1,530	3.0 (2.9, 3.1)
	Southeastern /Cape Cod	23,882	20.3	364	1.5 (1.5, 1.7)

- Case fatality rates are not adjusted for any risk factors

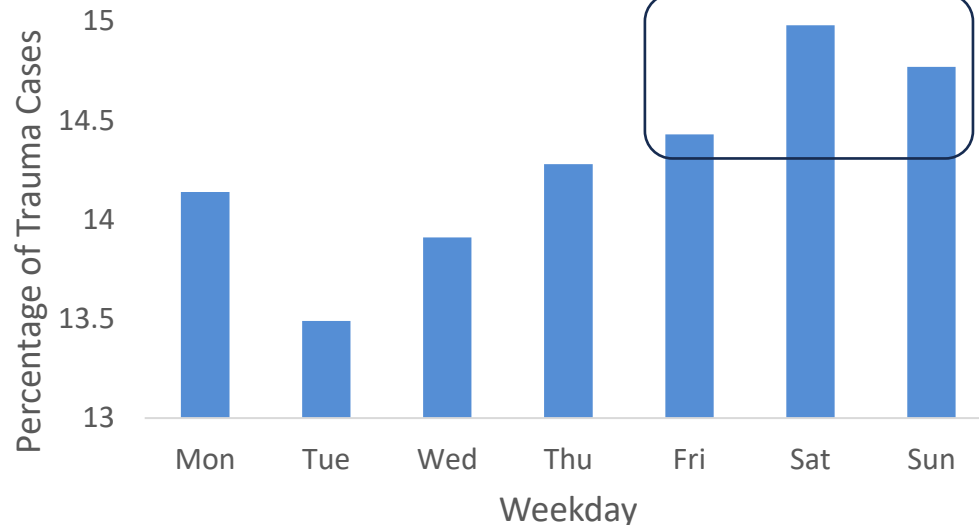
Patient Characteristics - Trauma Occurrence

- Trauma case admissions were most likely to happen:
 - During summer months (May-August)
 - On the weekends (Friday-Sunday)
 - And in the afternoon (peaking at 5 p.m.)

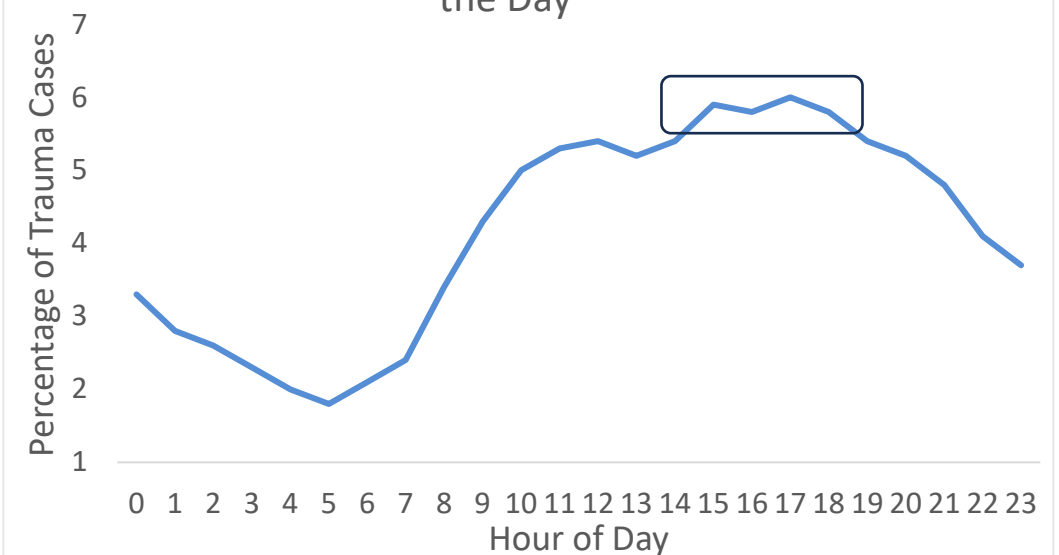
Percentage of Trauma Case Counts by Month



Percentage of Trauma Case Counts by Weekday



Percentage of Trauma Case Counts by Hour of the Day



Injury Statistics

- Firearm-related injuries had the highest case fatality rate.
- The case fatality rates among motor vehicle traffic-related injuries and suicide/self harm injuries are significantly higher compared with other injury categories.

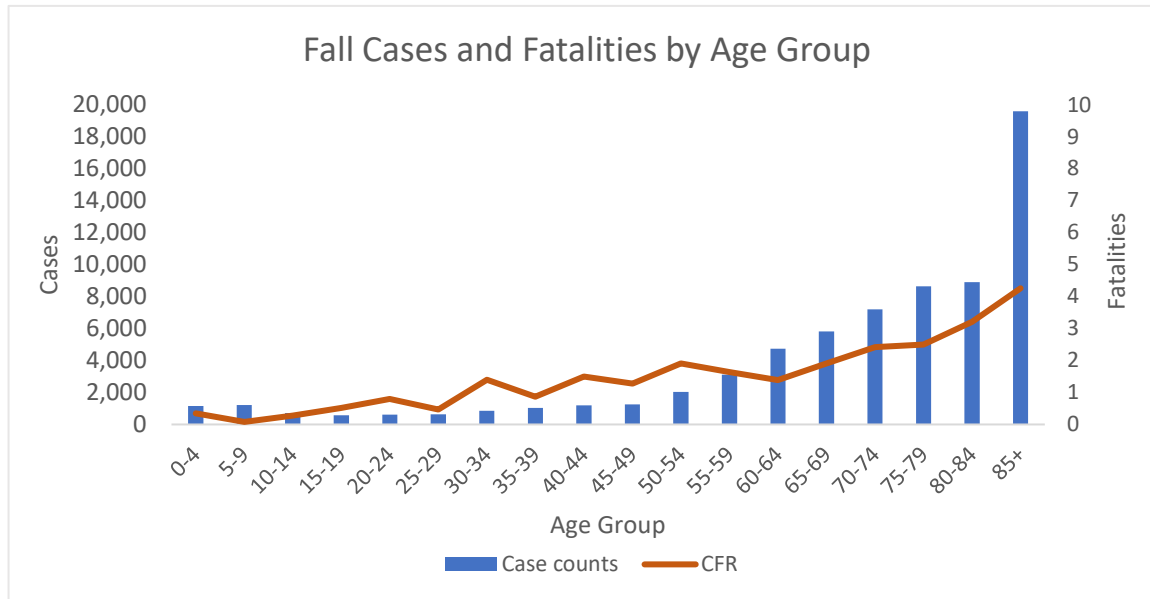
- Case fatality rates are not adjusted for any risk factors

MA Trauma Injury by Intention and Injury Manner, CY 2021-2023

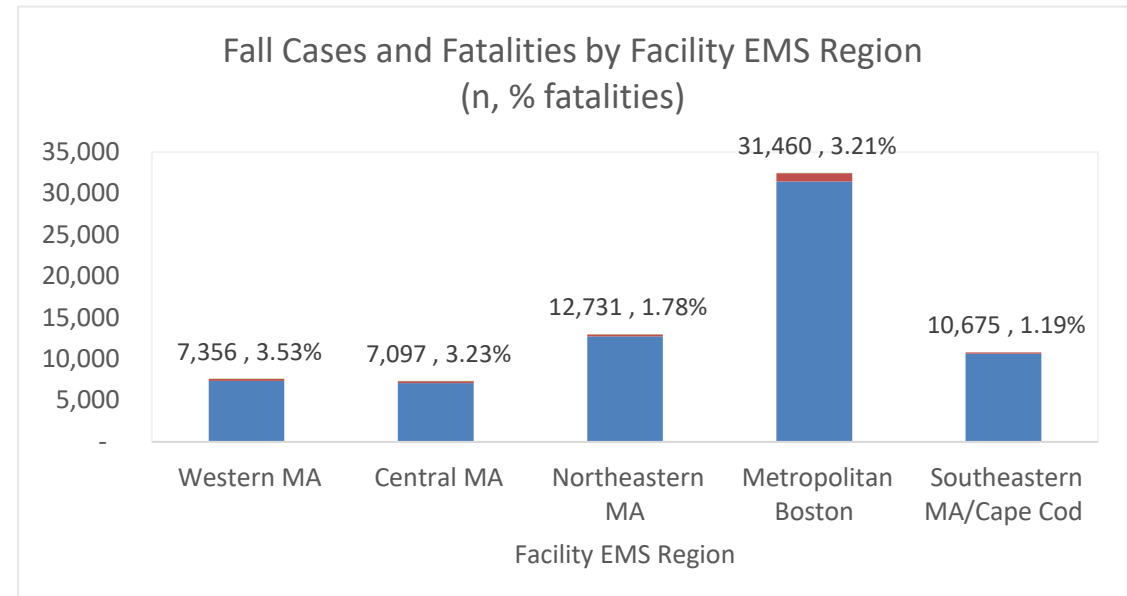
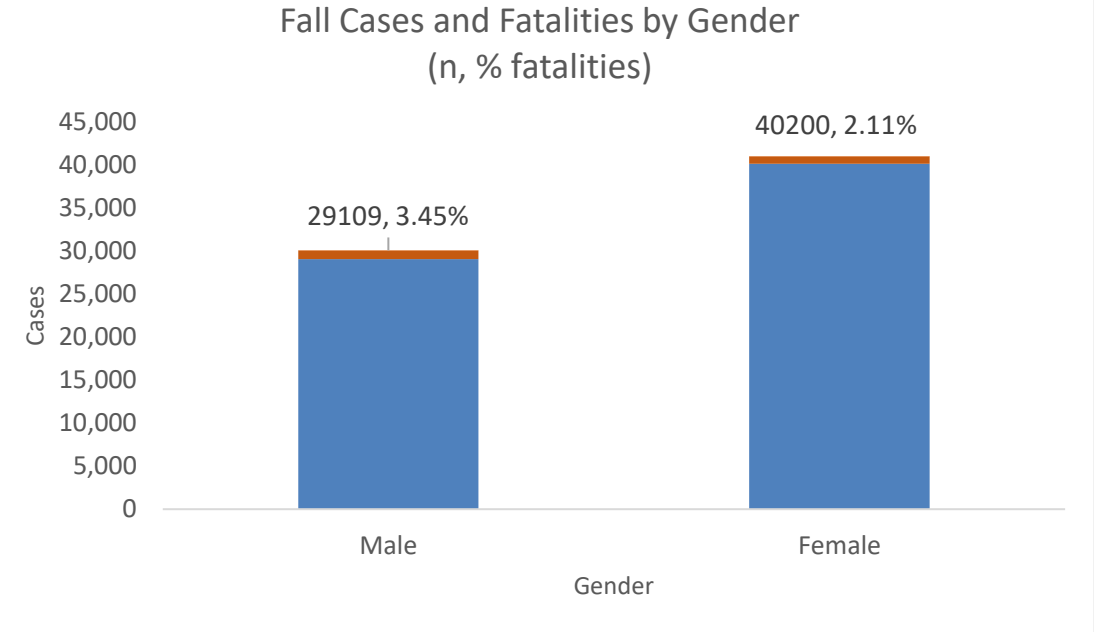
	Category	Cases	Percent	Deaths	Case fatality rate* (95% CI)
Intention	Unintentional	96,866	82.2	2,470	2.5 (2.5, 2.7)
	Homicide or Assault	5,046	4.3	201	4.0 (3.9, 4.5)
	<u>Suicide and Self-Injury</u>	<u>996</u>	<u>0.8</u>	<u>107</u>	<u>10.7 (10.1, 12.8)</u>
	Undetermined	408	0.3	42	10.3 (7.4, 13.9)
Manner	Fall	69,319	58.8	1,851	2.7 (2.7, 2.8)
	<u>Motor Vehicle Traffic</u>	<u>13,376</u>	<u>11.4</u>	<u>485</u>	<u>3.6 (3.6, 3.9)</u>
	Struck By, Against	4,997	4.2	29	0.6 (0.4, 0.8)
	Cut or Pierce	3,315	2.8	61	1.8 (1.4, 2.4)
	Unspecified	2,479	2.1	35	1.4 (1.0, 2.0)
	<u>Firearm</u>	<u>1,587</u>	<u>1.3</u>	<u>239</u>	<u>15.1 (14.3, 17.0)</u>
	Motor Vehicle Nontraffic	1,585	1.3	32	2.0 (1.4, 2.9)
	Pedal Cyclist, Other	1,557	1.3	7	0.4 (0.2, 0.9)
	Unclassifiable	1,304	1.1	17	1.3 (0.8, 2.1)

Injury Statistics - Falls

- Trauma incidence and case fatality rate* increased with patient's age.
- There are more female cases, however, male patients had higher case fatality rate*.
- Metropolitan Boston region had the most cases compared to other regions; Western MA region had the highest case fatality rate*.



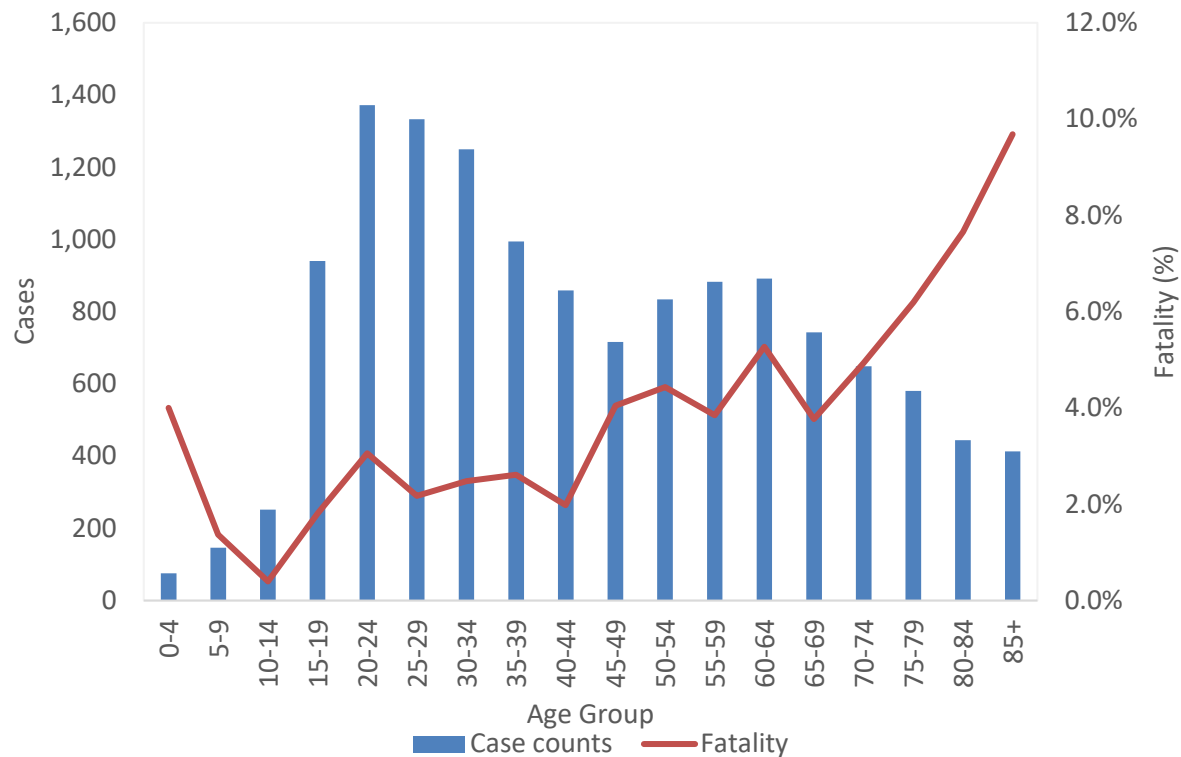
- Case fatality rates are not adjusted for any risk factors



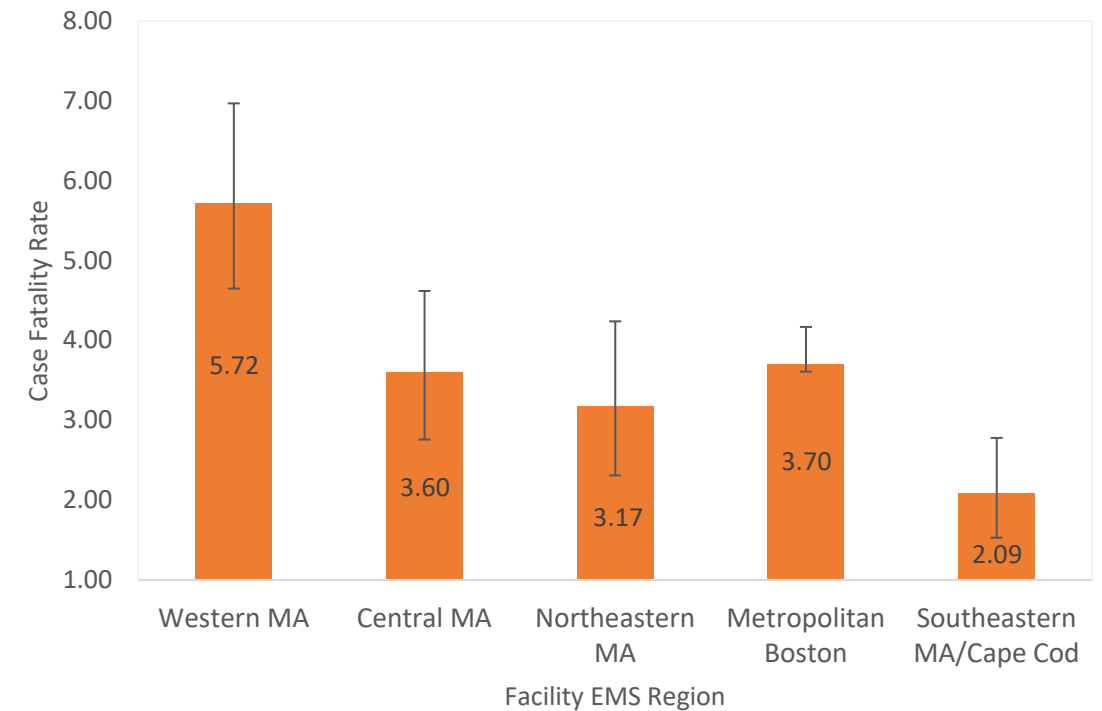
Injury Statistics - Motor Vehicle Traffic

- Trauma incidence is bimodal with peaks observed among both the 20-34 and 55-64 age groups and case fatality rate* increased with age for those 40+ years old.
- Western MA region had the highest case fatality rate*.

Motor Vehicle Traffic Trauma Cases and Fatalities by Age Group



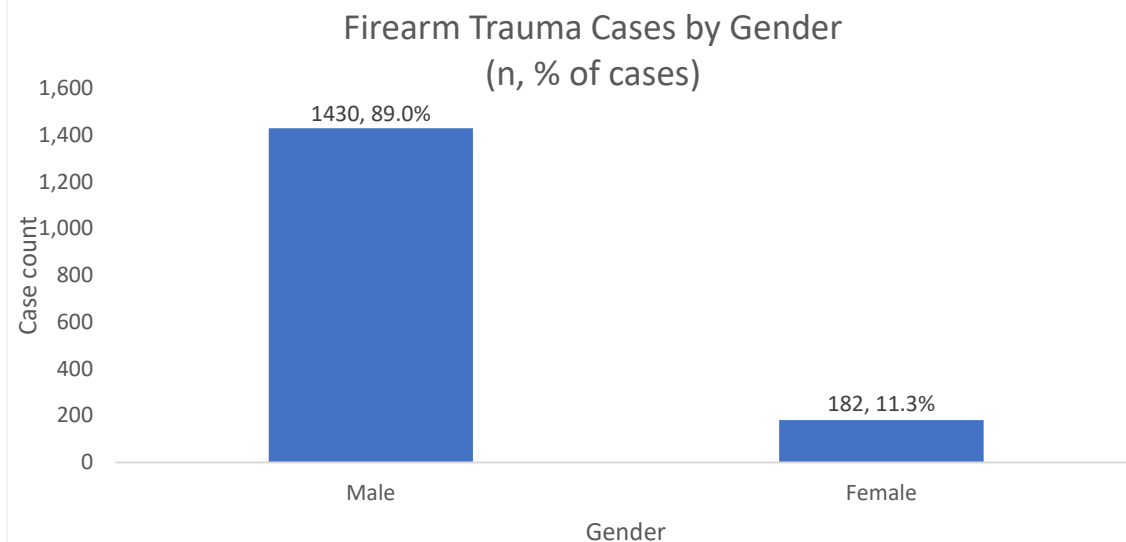
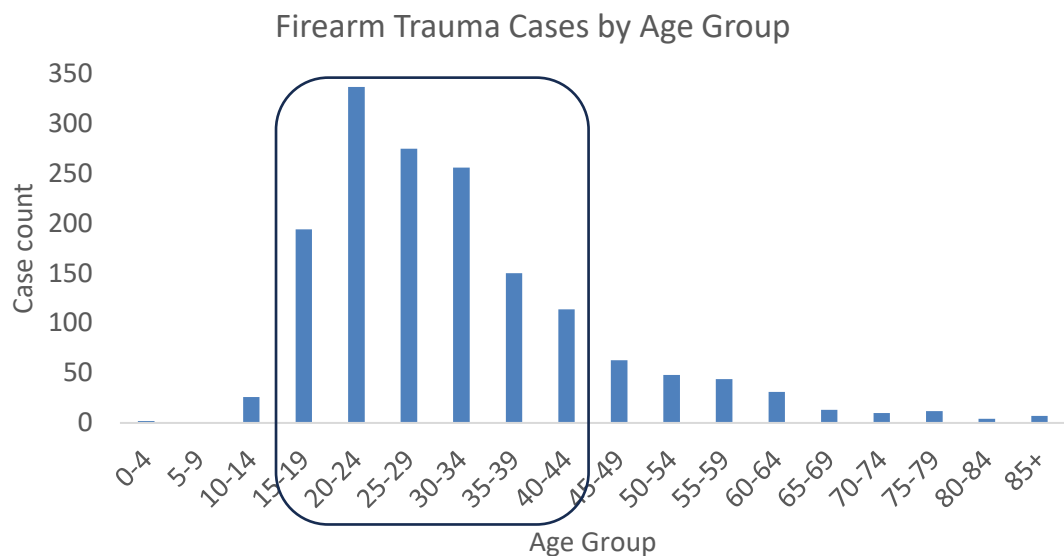
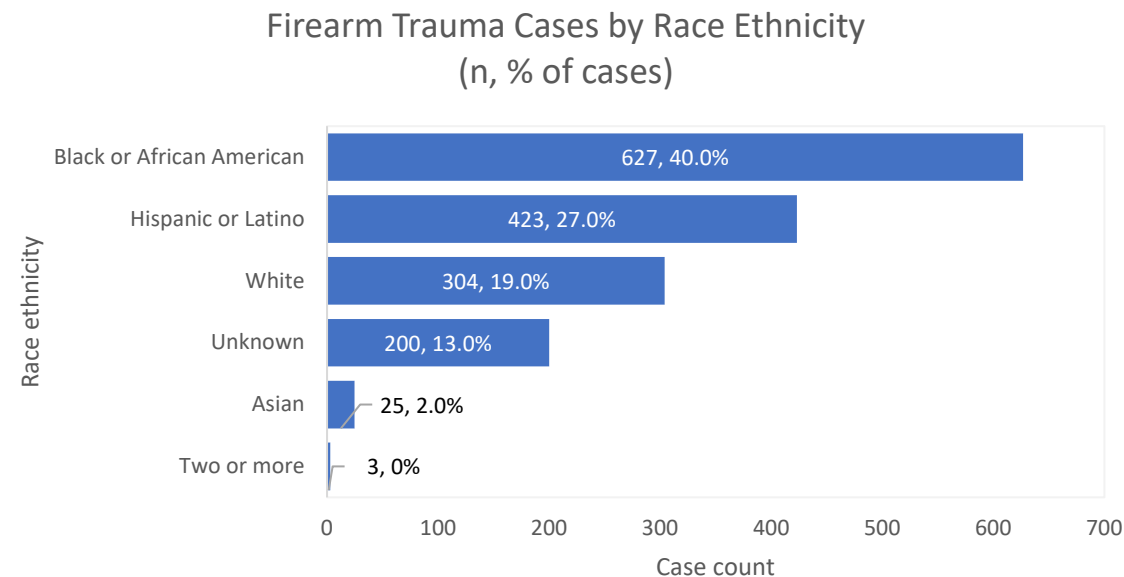
Motor Vehicle Traffic Trauma Case Fatality Rate by Facility EMS Region



- Case fatality rates are not adjusted for any risk factors

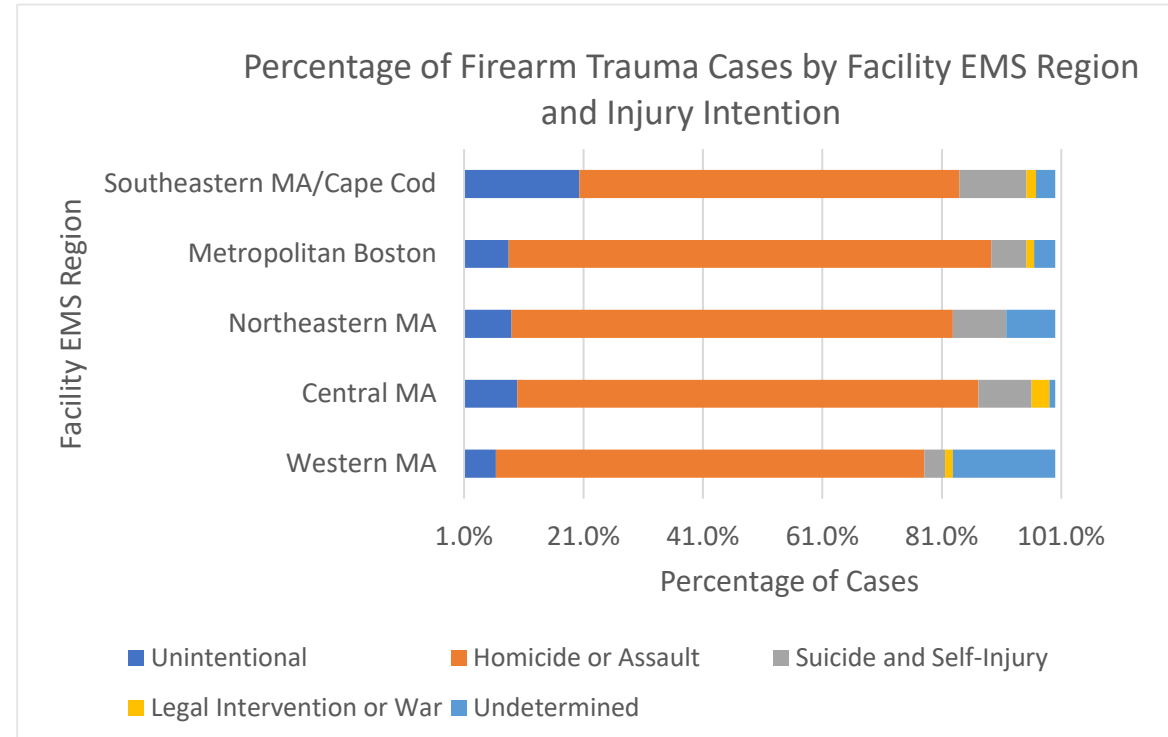
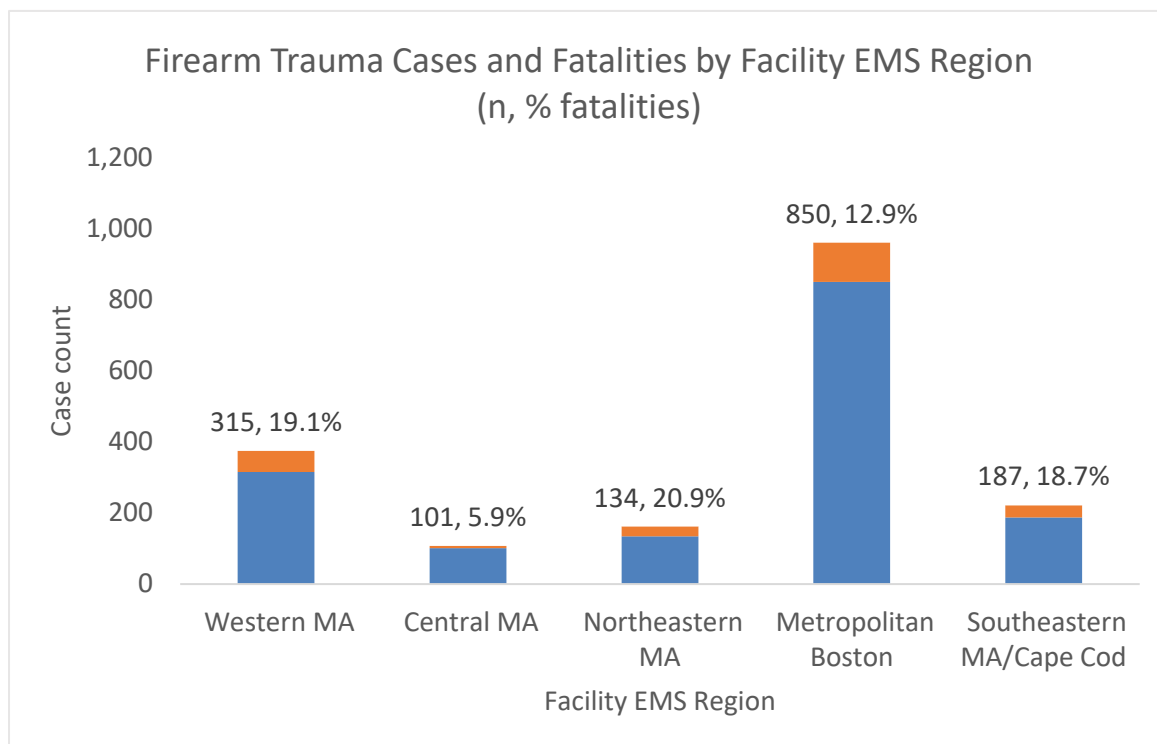
Injury Statistics - Firearm Trauma

- Most cases are 15-44 yrs old.
- Black or African American and Hispanic patients account for two thirds (67%) of the cases.
- We observed 8 times as many male cases as female with similar case fatality rate (15%)*.



Injury Statistics - Firearm Trauma

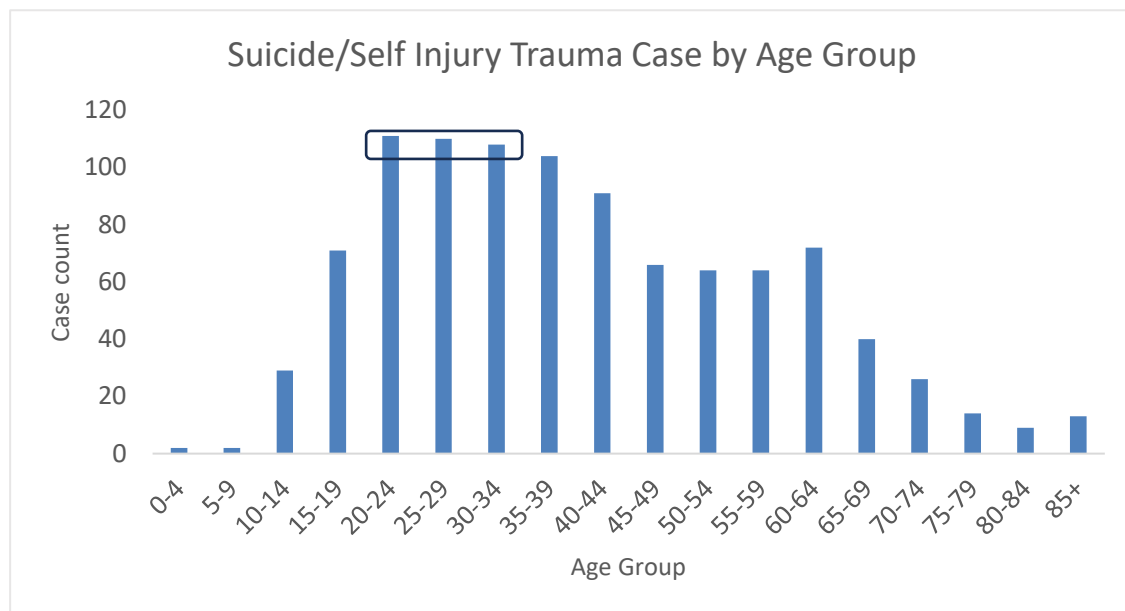
- Case fatality rate* is highest in Northeastern region (20.9%) followed by Western MA (19.1%) and, Southeastern region (18.7%).
- Percentage of Homicide or Assault is higher in Boston region, whereas the percentage of Suicide and Self-injury is higher in Southeastern region.



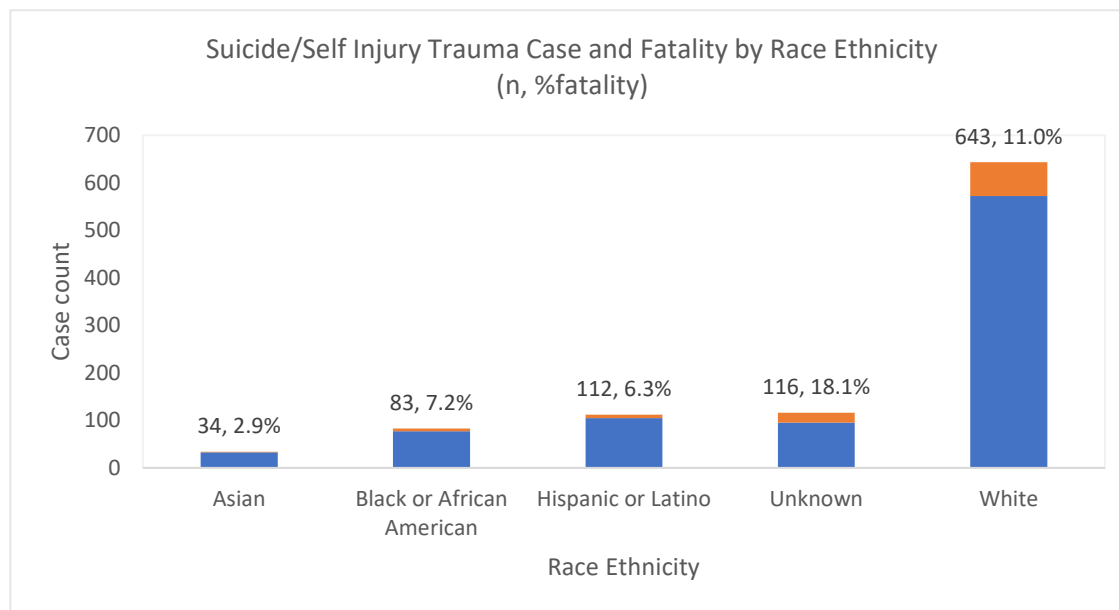
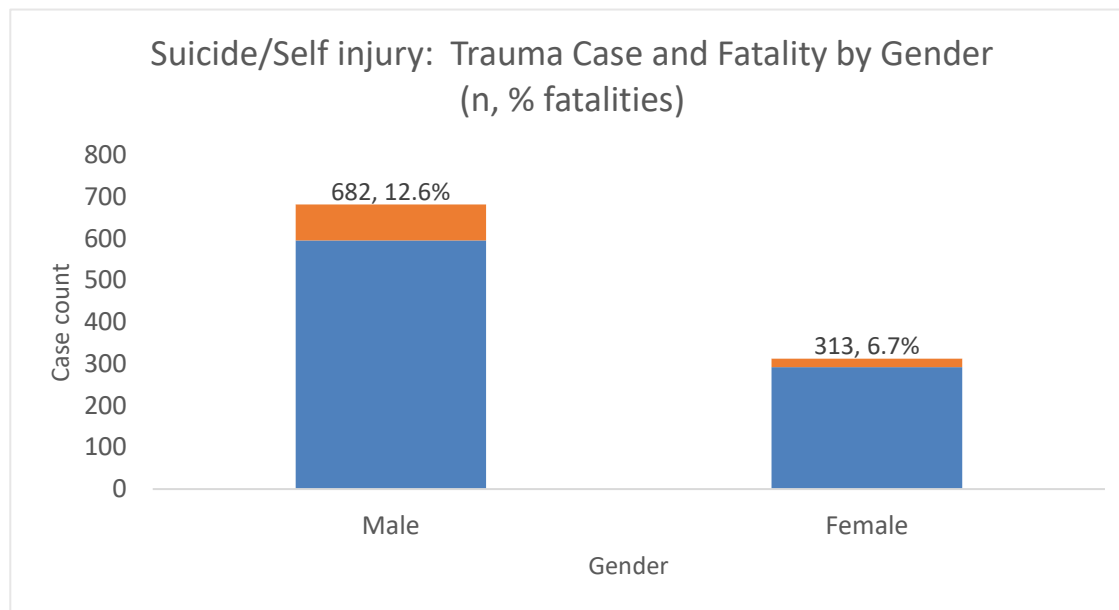
- Case fatality rates are not adjusted for any risk factors

Injury Statistics - Suicide/Self Injury

- The majority of suicide/self injury trauma cases fall within 15-64, with the peak of 20-34 yrs age groups.
- Among suicide/self injury trauma cases, male patients had a higher incidence and case fatality rate* than females.
- White patients account for the most cases. Those patients with unknown race information had the highest case fatality* rate (18.1%) followed by white (11%).



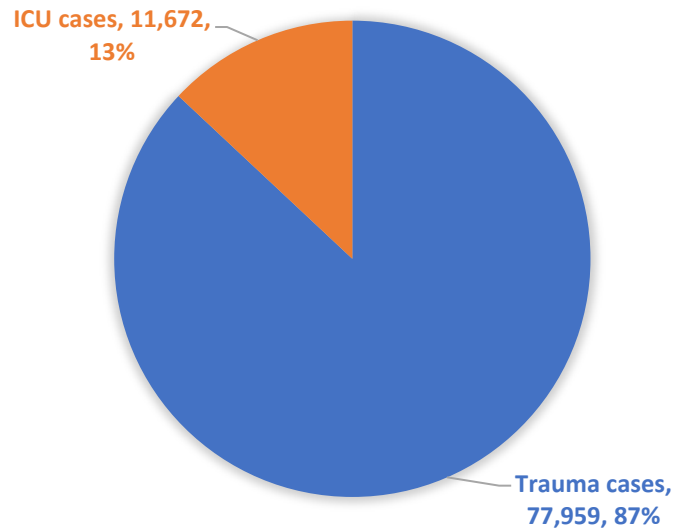
- Case fatality rates are not adjusted for any risk factors



Hospital Statistics

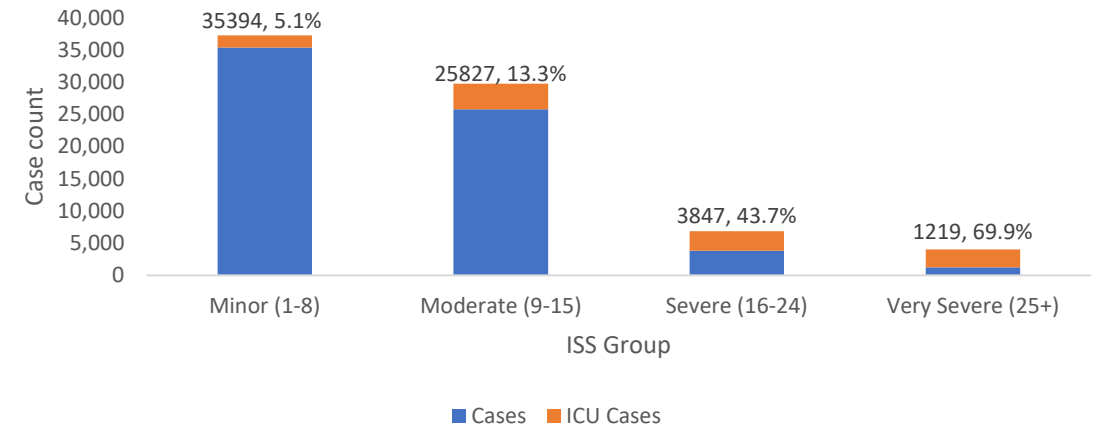
- Overall, there are 13% trauma patients admitted to ICU and the proportion of ICU admission increased by injury severity score.
- Among the ICU admissions, the case fatality rate* is about 9% among the minor, moderate and severe patients (ISS 1-25), however this rate increased to 25.8% for the very severe patients (ISS 25+).

Trauma Patients Admitted to the ICU

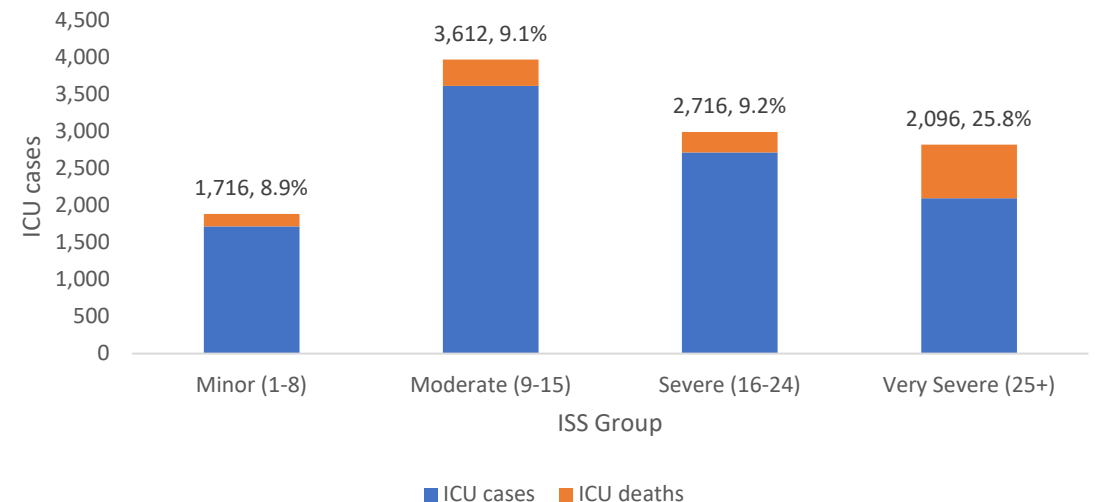


- Case fatality rates are not adjusted for any risk factors

Trauma Patients Admitted to ICU by Injury Severity Score (ISS)

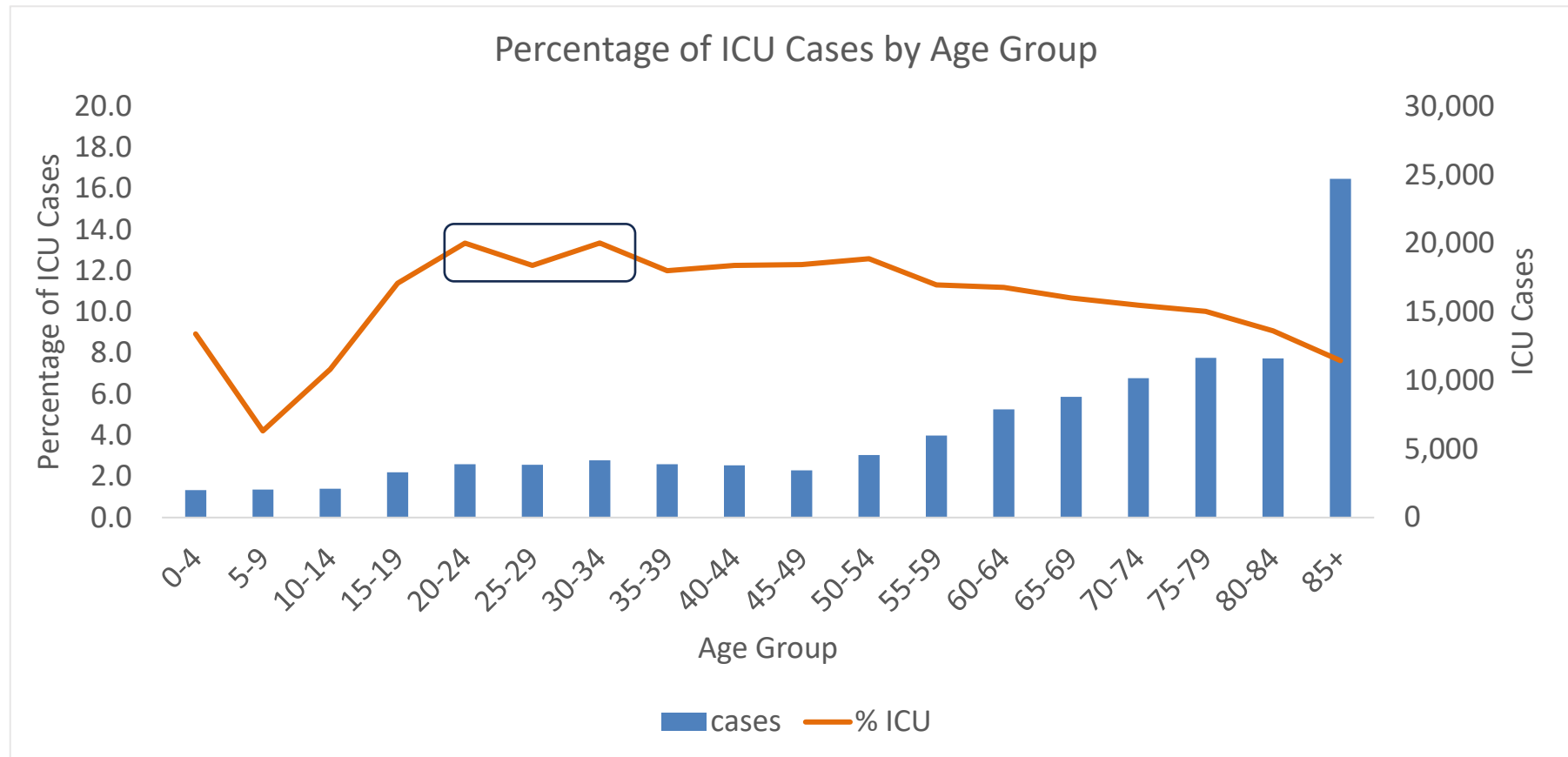


ICU Cases and Fatalities by Injury Severity Score (ISS)



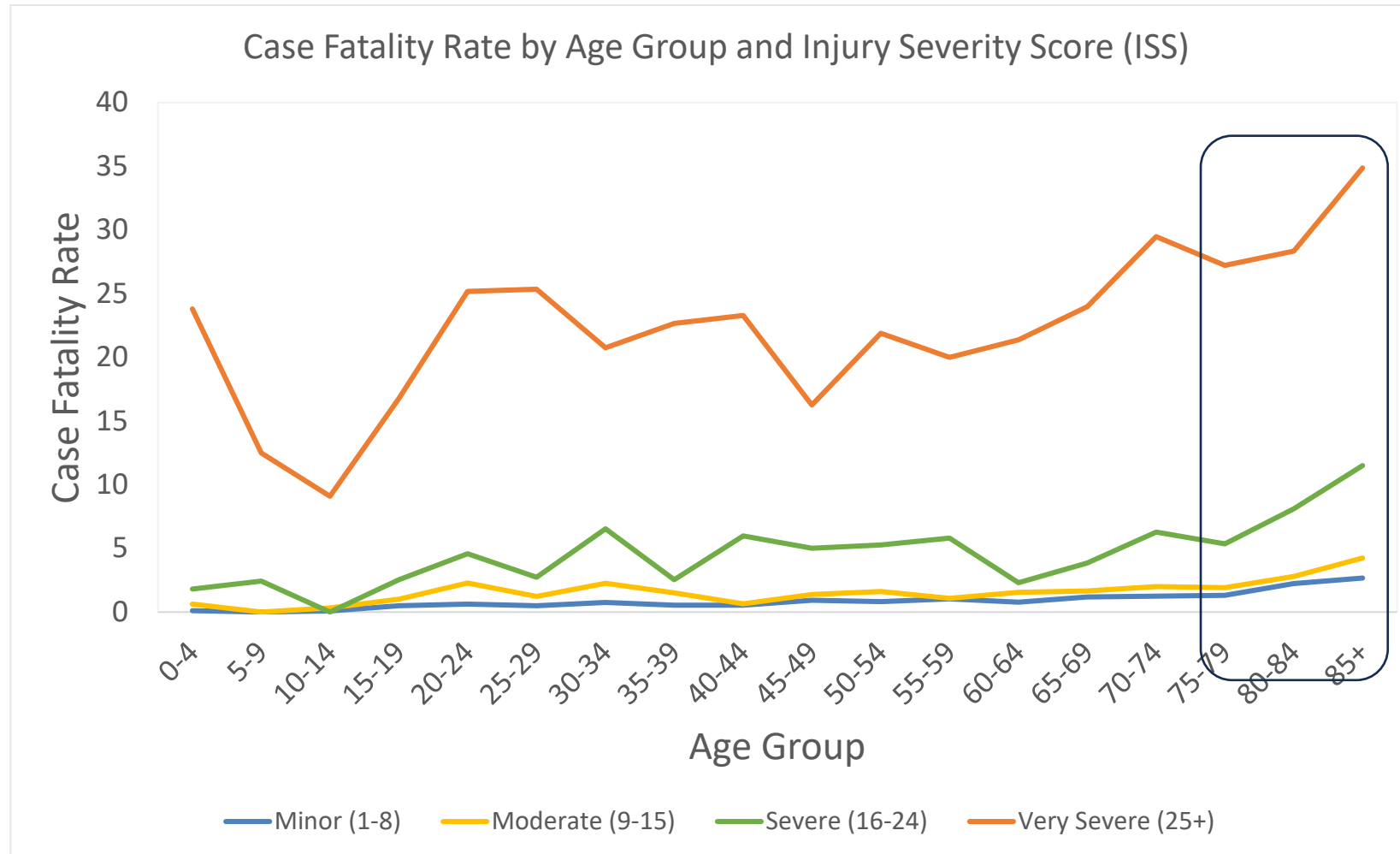
Hospital Statistics

- The percent of trauma patient admitted to the intensive care unit (ICU) is higher among younger adults (20-35 yrs old) and decreased with age, aligning with more severe motor vehicle traffic and firearm trauma injuries, while the leading cause of trauma injury among older adults is falls.



Hospital Statistics

- The case fatality rate* increased with 75+ age groups with all the levels of injury severity score (ISS).
- The case fatality rate* is highest among the ISS score of 25+ (very severe) with all the age groups.



- Case fatality rates are not adjusted for any risk factors

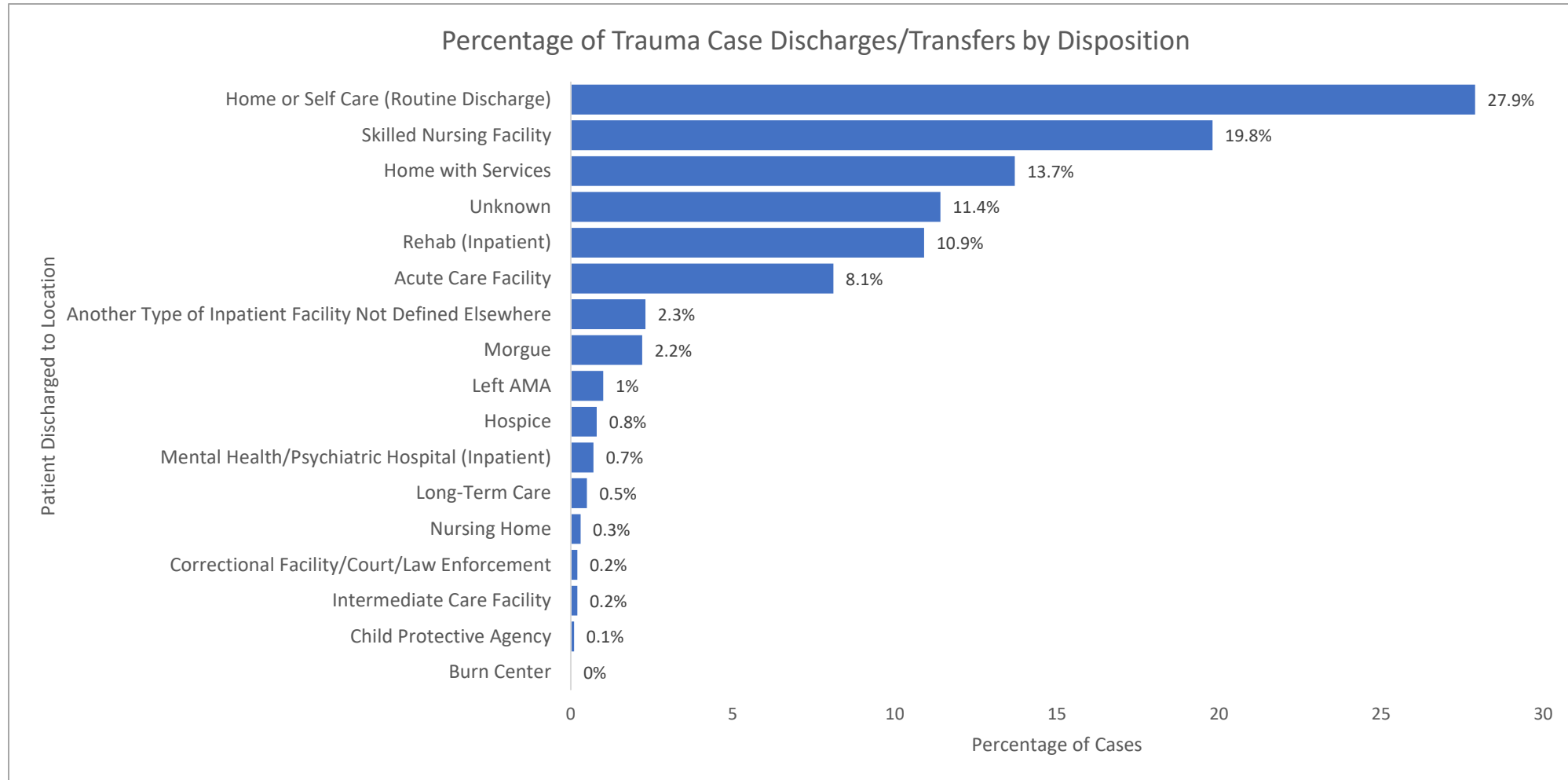
Hospital Statistics

- Overall, the median length of stay (LOS) is 3 days with IQR (1,6) across all regions.
- However, the ICU days are longer in western and central MA regions.

Facility EMS Region	Overall Median (IQR)			Pediatric (0-19)			Adult (20+) Median (IQR)		
	LOS	ICU Days	Ventilator Days	LOS	ICU Days	Ventilator Days	LOS	ICU Days	Ventilator Days
Western MA	3.0 (1.0, 6.0)	3.0 (2.0, 6.0)	2.0 (2.0, 6.0)	1.0 (1.0, 2.0)	2.0 (2.0, 3.0)	2.0 (2.0, 7.5)	3.0 (2.0, 6.0)	3.0 (2.0, 6.0)	2.0 (2.0, 6.0)
Central MA	3.0 (1.0, 6.0)	5.0 (3.0, 9.0)	3.0 (1.0, 8.0)	1.0 (1.0, 2.0)	2.0 (2.0, 5.0)	2.5 (1.0, 6.5)	4.0 (1.0, 6.0)	5.0 (3.0, 9.0)	3.0 (1.0, 8.0)
Northeastern MA	3.0 (1.0, 5.0)	3.0 (2.0, 4.0)	1.0 (1.0, 2.0)	0.0 (0.0, 1.0)	0.0 (0.0, 1.0)	1.0 (1.0, 1.0)	3.0 (2.0, 5.0)	3.0 (2.0, 4.0)	1.0 (1.0, 2.0)
Metropolitan Boston	3.0 (1.0, 6.0)	0.0 (0.0, 3.0)	0.0 (0.0, 0.0)	1.0 (1.0, 2.0)	1.0 (0, 3.0)	0.0 (0.0, 1.0)	4.0 (2.0, 6.0)	0.0 (0.0, 3.0)	0.0 (0.0, 0.0)
Southeastern MA/Cape Cod	3.0 (1.0, 5.0)	0.0 (0.0, 3.0)	2.0 (1.0, 5.0)	0.0 (0.0, 1.0)	0.0 (0.0, 0.0)	1.0 (1.0, 4.0)	3.0 (1.0, 5.0)	0.0 (0.0, 4.0)	2.0 (1.0, 5.0)

Hospital Statistics

- About 28% of trauma patients were discharged to home with no services, 20% to skilled nursing facilities, 14% to home with services, 11% to inpatient rehabilitation.



Summary

Key findings:

For CY 2021-2023, MA Trauma Registry received a total of 117,848 cases submitted by the 18 trauma centers and 43 community hospitals across the state with an overall case fatality rate of 2.6%*

- Trauma incidence and the case fatality rate* increased with patient's age; males had a higher incidence and case fatality rate* than females; Metro Boston region hospitals had the highest trauma incidence. Western region had a highest case fatality rate* compared to other regions
- Trauma events were most likely to occur during summer months, on the weekends, and in the afternoon (peaking at 5 p.m.)
- The leading causes of trauma were falls and motor vehicle traffic crashes. Firearm injuries had the highest case fatality rate* (15%), African American and Hispanic patients account for the majority of these cases.
- The case fatality rate* increased with patients 75+ years old and is highest among those with an ISS score of 25+ (very severe) for all age groups
- Patients spent more time in ICU and on a ventilator in Western and Central MA regions
- The majority of trauma patients were discharged to home (44%) and skilled nursing facilities (20%)
- Case fatality rates are not adjusted for any risk factors

Resources

[State Trauma Registry Data Submission | Mass.gov](#)

[Trauma Hospital Destinations | Mass.gov](#)

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Massachusetts Department of Public Health



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