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PUBLIC
HEALTH

Massachusetts Department of Public Health

Massachusetts Trauma Registry Data Timeliness, Uniformity and Custom Reporting

FFY 2022 NHTSA 405c Grant Application

March 12, 2021

Bureau of Health Care Safety and Quality
Department of Public Health

Topics to be covered

- Massachusetts Trauma Registry Overview
- FFY 2021 Project Objectives and Budget
- Addressing Strategic Plan Recommendations
- Public Data Products and Collaborations
- MA DPH Data Standards
- Trauma in Massachusetts During the COVID-19 Pandemic

Massachusetts Trauma Registry Overview

- Massachusetts hospitals offering emergency services are required to submit data to the State Trauma Registry system, on a quarterly basis, information about the medical care they provide to patients with traumatic injuries
- Data are reviewed by DPH and aggregate data are provided to stakeholders including the MA Trauma System Committee, DPH partners, and others who request data.
- Currently collects 96 data points, including patient demographics, trauma circumstance-related elements (i.e. alcohol indicator, safe device use and transport mode), key vital signs and Glasgow coma and injury scores, and abbreviated injury scale scores

Massachusetts Trauma Registry Overview

- Over the last year, DPH has been developing a new web-based system for data submission (expected launch March 26 2021) that is aligned with the national data standards set forth by the American College of Surgeons (ACS).
- Part of this long-term effort includes migration of historical data 2008-2020 into the new platform.
- Among the new features available in the new system is a reporting tool which can be used by submitting facilities to query their own data and by DPH to create custom data-mart style reporting.

FFY 2021 Project Objectives

- Evaluate the alignment of ESO and Massachusetts data elements, create new data elements to align with national data standards (NTDB) for 2022, and work with ESO to include these data elements.
 - Universally Unique ID and other data elements will be included to permit more robust linkage with MATRIS and other data sources to allow us to follow the patient through the trauma system and evaluate outcomes.
- Work with ESO to implement custom reporting to evaluate timeliness of data submissions and use these real-time reports to improve performance by our hospital partners.

FFY 2021 Project Objectives

Project Benchmark and Performance Measures

Benchmark

- As of 3/1/2021, there are zero trauma centers or community hospitals submitting to the new web-based, Massachusetts Trauma Registry.

Performance Measure

- Increase the number of combined trauma centers and community hospitals submitting mandatory trauma reporting to the new trauma registry within 90 days of quarter closure from 0 as of 3/31/2021 to 20 by 3/31/2022.

Budget

Item	Cost
Vendor report for registry and reporting tools	20,000.00
Enhancements to trauma registry to align with national data standards	20,000.00
Custom Variable Development	10,000.00
Total:	50,000.00

NHTSA Strategic Plan Objectives

Question 297 under Injury Surveillance Questions, Quality Control: Are there timeliness performance measures tailored to the needs of trauma registry managers and data users?

As the new registry is implemented, the Department of Public Health will use custom reporting in ESO's Report Writer tool, to track the timeliness of trauma center and community hospital submission timeliness. Timeliness reports will be available to our hospital partners and trauma registry managers.

The long-term goal is to have all facilities reporting by the end of FFY 2021 and to have at least 20 facilities completing reporting within 90 days of the previous FFY quarter.

Public Data Products

- Quarterly public-facing presentations showing traffic and non-traffic related trauma injuries, which were presented at Trauma Systems Committee meetings and are posted online for public use.

<https://www.mass.gov/orgs/trauma-systems-committee/events/past?page=1>

- Report of traumas incidents by incident city or town for local community use in emergency response and resource planning

<https://www.mass.gov/lists/state-trauma-registry-data>

Collaborations

- Collaboration with MD DPH ISP
 - Shared Trauma data for use in ISP reporting
 - Planned collaboration for CRISS
- Planned collaboration for MATRIS Linkage project
- Planned linkage project with Case Mix hospital discharge data

Department of Public Health Data Standards Initiative

- The Department of Public Health is currently conducting an organization wide alignment of data standards
 - Encourages department-wide data uniformity as well as align with national data standards
 - Focus on demographics to ensure we are able to evaluate measures of equity
 - Race and ethnicity
 - Sex and gender identity
- Proposed grant project includes work with our Trauma Registry vendor, ESO, to ensure compliance with these standards
 - Custom variables to be created
 - Provide updates to the trauma registry web portal and electronic upload format
- Directly addressing these changes with the vendor will assure these data are collected in a uniform manner

Data Use Case: MA Trauma Registry

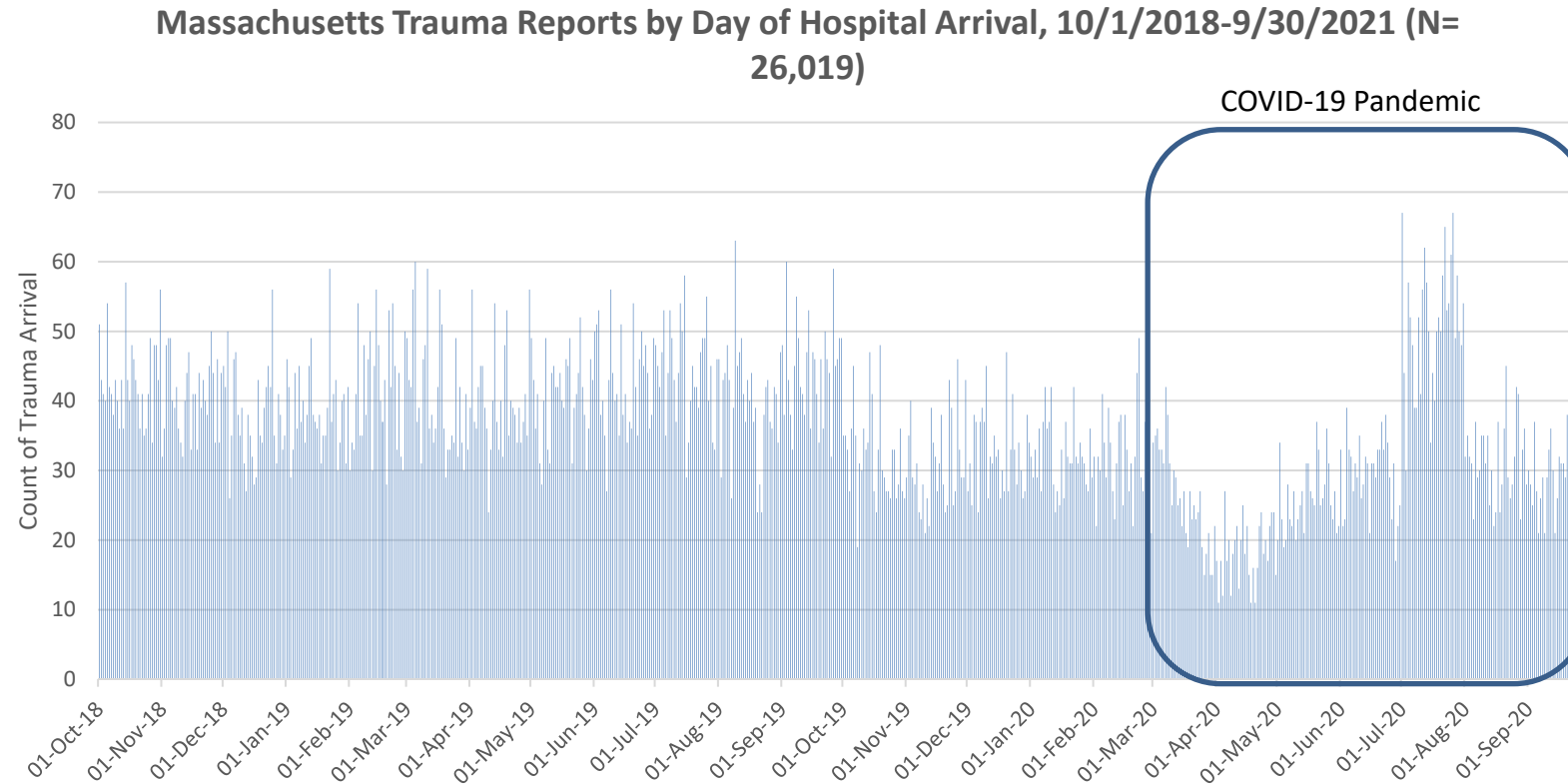
MA Trauma Systems Committee (MA TSC)

Request to better understand the nature of the effect of COVID-19 on:

- Case counts overall in 2020 and difference from 2019
- Potential effect of the state of emergency orders on the number, type, and severity of trauma injuries reported for 2020 compared to 2019

COVID-19 and Trauma in Massachusetts

as of February 15, 2021



Data Source: MA Trauma Registry 2/17/2021

Data Source: Massachusetts Trauma Registry, 2/17/2021

*Reopening Massachusetts, May 18, 2020 accessed on 3/1/2021: <https://www.mass.gov/doc/reopening-massachusetts-may-18-2020/download>

**DiFazio LT, Curran T, Bilaniuk JW, et al. The Impact of the COVID-19 Pandemic on Hospital Admissions for Trauma and Acute Care Surgery. The American Surgeon. 2020;86(8):901-903. doi:10.1177/0003134820939904. Accessed at: https://journals.sagepub.com/doi/10.1177/0003134820939904?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub++0pubmed&#articleCitationDownloadContainer

Time Periods for Comparison

Time Period	Date Range	Governor's Order Restrictions
Period 1	March 15, 2020 to July 1, 2020	<ul style="list-style-type: none">• Gatherings greater than 25 people prohibited• Reduced again to 10 people on March 23, 2020• Stay at Home Advisory and socially distance• High risk should work from home if possible• Socially distance• Specific work places allowed to open at limited
Period 2	July 2, 2020 to August 6, 2020	<ul style="list-style-type: none">• Indoor limit increased to 25 people• Outdoor limit increased to 100 people• Business and recreational travel discouraged• High risk should work from home if possible• Safer at Home Advisory and socially distance
Period 3	August 7, 2020 to September 30, 2020	<ul style="list-style-type: none">• Indoor gatherings limit remained at 25 people• Outdoor gatherings limited to 50 people• Business and recreational travel discouraged• High risk should work from home if possible• Safer at Home Advisory and socially distance

Trauma Counts Period of Interest 2019 & 2020

as of February 15, 2020

- A direct comparison of March 15-September 30 in 2019 and 2020 show that all cause trauma was statistically significantly lower in 2020
- Massachusetts all cause trauma decreased by 0.73 times in 2020 when compared to 2019
- However, as seen when traumas were graphed over time, all cause trauma varied greatly in 2020
 - Are there significant differences by injury type, manner, substance use, and mortality?

Period	Count	Weekly Rate/100,000 Residents	Unadjusted Risk Ratio
All Cause Trauma			
2019	8,225	4.20	---
2020	5,976	3.05	0.73 (0.70-0.75)*
Motor Vehicle Crashes in Traffic			
2019	701	0.36	
2020	471	0.24	0.67 (0.60-0.76) *

Data Source: Massachusetts Trauma Registry, 2/17/2021
 Data are preliminary and subject to change
 Limited to facilities reporting all quarters of FFY2019 and 2020

* p-value < 0.05

<https://www.mass.gov/info-details/archive-of-covid-19-cases-in-massachusetts>

COVID-19 and Trauma in MA– Manner of Injury

as of February 15, 2021

		Period 1 - 15.4 weeks		Period 2 – 5 weeks		Period 3 – 7.7 weeks	
Manner of Injury	Year	Weekly Rate/100,000 Residents (N)	Unadj Rate Ratio (Conf. Interval)	Weekly Rate/100,000 Residents (N)	Unadj Rate Ratio (Conf. Interval)	Weekly Rate/100,000 Residents (N)	Unadj Rate Ratio (Conf. Interval)
Motor Vehicle Crash in Traffic	2019	0.35 (376)	---	0.38 (133)	---	0.36 (192)	---
	2020	0.17 (177)	0.47 (0.39-0.56) *	0.41 (144)	1.08 (0.86-1.37)	0.28 (150)	0.78 (0.63-0.97) *
Cycling	2019	0.05 (53)	---	0.06 (21)	---	0.07 (37)	---
	2020	0.4 (40)	0.76 (0.50-1.14)	0.11 (40)	1.91 (1.12-3.23) *	0.08 (42)	1.14 (0.73-1.77)
Pedestrian	2019	0.01 (14)	---	0.002 (<5)	---	0.01 (7)	---
	2020	0.01 (10)	0.71 (0.32-1.61)	0.006 (<5)	2.0 (0.18-22.06)	0.007 (<5)	0.57 (0.17-1.95)

Data Source: Massachusetts Trauma Registry, 2/17/2021

Data are preliminary and subject to change

*Includes March 15, 2019-September 30, 2019 and March 15, 2020-September 30, 2020

Limited to facilities reporting all quarters of FFY2019 and 2020

* p-value < 0.05, excludes drownings, burns, firearm, machinery, non-traffic motor vehicle, other and other land transport, environmental overexertion, struck by, suffocation, and other injuries

COVID-19, Substance Use and Trauma

as of February 15, 2021

Year	Count	Rate/100,000 Residents*	Rate Ratio	Confidence Interval
Mortality				
2019	106	1.52	---	---
2020	118	1.69	1.11	(0.86-1.45)
Substance Use				
2019	215	3.09	---	---
2020	267	3.83	1.24	(1.04-1.49)**
Alcohol Use				
2019	256	3.68	---	---
2020	239	3.43	0.93	(0.73-1.11)

- In 2020, from March 15 to September 30, all cause trauma patients were 1.24 times more likely to test positive for substance use on a toxicology report, when compared to 2019
- There was no significant change in trauma and alcohol use from 2019 to 2020

Data Source: Massachusetts Trauma Registry, 2/17/2021

Data are preliminary and subject to change

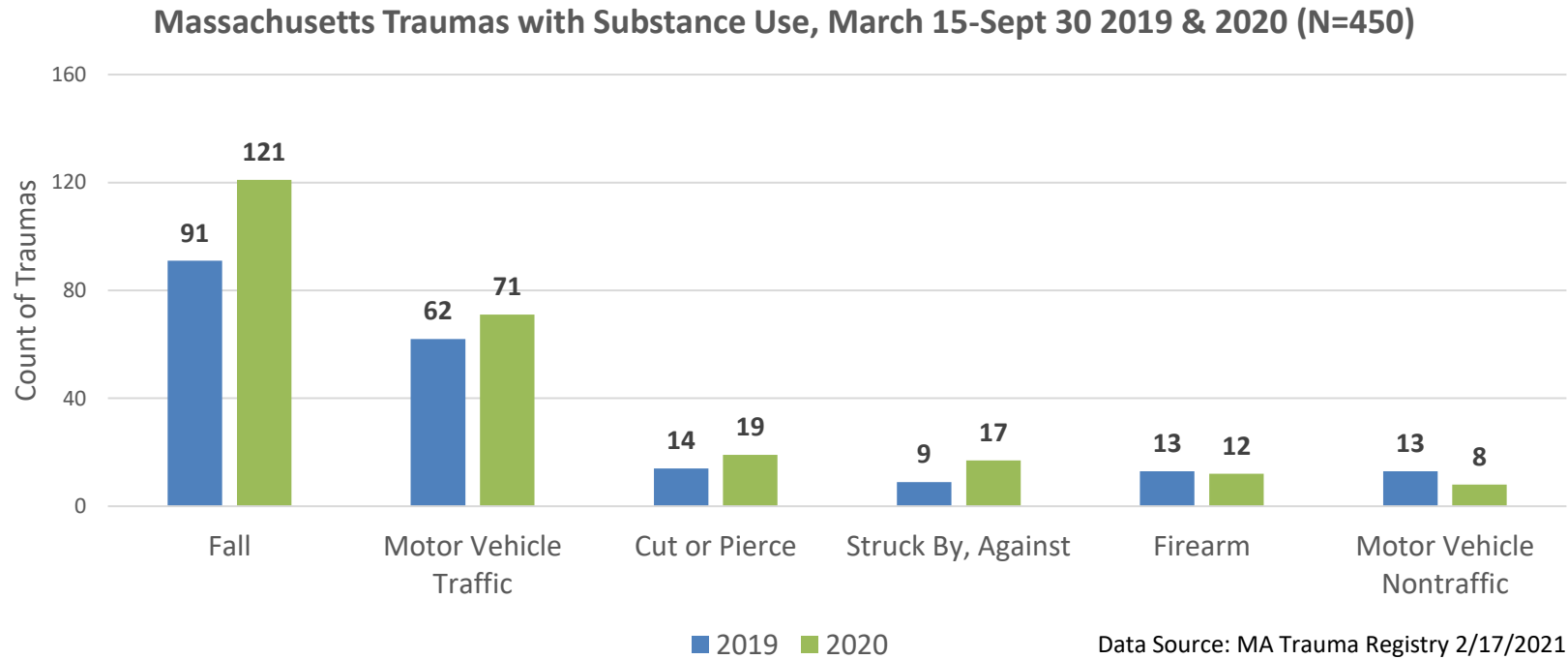
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P-value < 0.05

COVID-19, Substance Use and Trauma

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Limited to facilities reporting all quarters of FFY2019 and 2020

P-value < 0.05

Categories with <5 traumas are suppressed

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