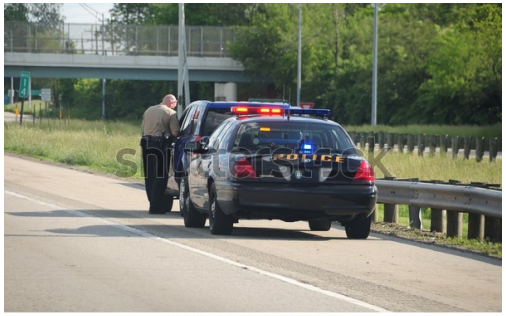
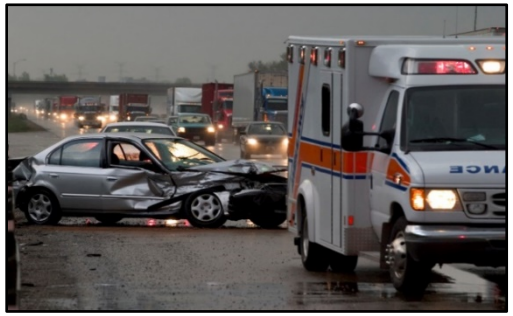
# Integration and Analysis of Crash, Injury Surveillance, and Driver Data



**FFY 2021 405c Funding Virtual Project Presentation**

**March 10th, 2021**

**Presenter: Jeanne Hathaway, MA Department of Public Health,**
**Bureau of Community Health and Prevention,**
**Injury Surveillance Program**

# Overview

- **Project summary**
  - **Traffic record assessment recommendations addressed**
- **Background**
  - **Strengths of MDPH Injury Surveillance Program (ISP)**
  - **ISP's prior work linking crash data**
  - **Current work with driver data**
- **Project activities and deliverables**
- **Project timeline**
- **Benchmark and performance measures**
- **Budget and in-kind support**

# Project Summary

- **Identify drivers involved in crashes in linked 2016-2018 crash-hospital case mix data[1]**
- **Obtain driver records from RMV and assess data quality**
- **Link driver data with linked 2016-2018 crash-hospital case mix data; assess linkage rates and data representativeness**
- **Engage stakeholders to identify and prioritize initial analyses**
- **Analyze linked 2016-2018 driver-crash-hospital case mix data**
- **Prepare and submit analysis findings to OGR**
- **Submit findings to DPH review prior to dissemination to stakeholders**

1. Includes hospital discharges, emergency department discharges, and observation stays

# Traffic Records Assessment Recommendations Addressed

## Unmet recommendation addressed:

***Data Use & Integration recommendation to improve the traffic records systems capacity to integrate data that reflects best practices***

## Specific Assessment question to be addressed that did not meet the Advisory ideal:

***Q320 – Integration of driver data with crash data for specific analytical purposes***

# Traffic Records Assessment Recommendations Addressed (cont.)

**Specific Assessment questions to be addressed that only partially met the Advisory ideal:**

***Q325 – Data integration among crash and two or more other component systems***

***Q326 – Integration of data from traffic records component systems – other than crash – for specific analytic purposes***

***Q327 – For integrated datasets, decision-makers access to resources – skilled personnel and user-friendly access tools – for use and analysis***

# Strengths of MDPH Injury Surveillance Program (ISP) Integrating Crash Data

- **MDPH has the legal authority to access hospital case mix data with the personal identifiers needed for data linkage**
- **ISP has extensive experience maintaining, analyzing, and disseminating injury data**
- **ISP works closely with the Injury Prevention and Control Program (IPCP)**
- **ISP and IPCP have strong collaborations with traffic records and other traffic safety stakeholders**

# Injury Surveillance Program's Prior Work Linking Crash Data

**2016: MassDOT funded ISP to begin linking 2012 crash and hospital discharge data**

**2018-2020: MassDOT funded ISP to link 2012-2015 crash data with all 3 hospital case mix datasets and start analyzing linked data**

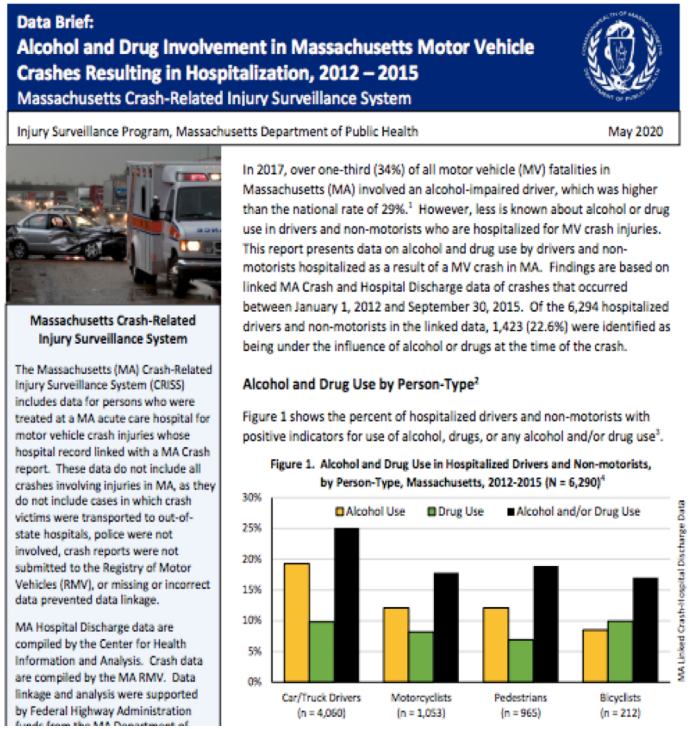
**2019-2021: CDC funded ISP to establish data use agreements for additional data sources; named MA Crash-Related Injury Surveillance System (MA CRISS)**

# MA CRISS Data Sources
# Long-term Vision

- **Crash data**
- **Hospital case mix data**
- **Driver license/history data**
- **Citation/adjudication data**
- **MA Ambulance Trip Record Information System (MATRIS)**
- **Trauma Registry data**
- **Death data**
- **Post-mortem toxicology data**

# Analyses Conducted To Date

- Alcohol and Drug Involvement in MA Motor Vehicle Crashes Resulting in Hospitalization
- **Demographics of intoxicated persons by person-type** (car/truck drivers, motorcyclists, and pedestrians)
- **Driver & crash factors contributing to traumatic brain and spinal cord injury** (car/truck drivers and motorcyclists)
- **Driver & crash factors contributing to higher hospital charges** (car/truck drivers and motorcyclists)



**Data Brief:**
**Alcohol and Drug Involvement in Massachusetts Motor Vehicle Crashes Resulting in Hospitalization, 2012 – 2015**
**Massachusetts Crash-Related Injury Surveillance System**

Injury Surveillance Program, Massachusetts Department of Public Health — May 2020

**Massachusetts Crash-Related Injury Surveillance System**

The Massachusetts (MA) Crash-Related Injury Surveillance System (CRISS) includes data for persons who were treated at a MA acute care hospital for motor vehicle crash injuries whose hospital record linked with a MA Crash report. These data do not include all crashes involving injuries in MA, as they do not include cases in which crash victims were transported to out-of-state hospitals, police were not involved, crash reports were not submitted to the Registry of Motor Vehicles (RMV), or missing or incorrect data prevented data linkage.

MA Hospital Discharge data are compiled by the Center for Health Information and Analysis. Crash data are compiled by the MA RMV. Data linkage and analysis were supported by Federal Highway Administration

In 2017, over one-third (34%) of all motor vehicle (MV) fatalities in Massachusetts (MA) involved an alcohol-impaired driver, which was higher than the national rate of 29%.[1] However, less is known about alcohol or drug use in drivers and non-motorists who are hospitalized for MV crash injuries. This report presents data on alcohol and drug use by drivers and non-motorists hospitalized as a result of a MV crash in MA. Findings are based on linked MA Crash and Hospital Discharge data of crashes that occurred between January 1, 2012 and September 30, 2015. Of the 6,294 hospitalized drivers and non-motorists in the linked data, 1,423 (22.6%) were identified as being under the influence of alcohol or drugs at the time of the crash.

**Alcohol and Drug Use by Person-Type[2]**

Figure 1 shows the percent of hospitalized drivers and non-motorists with positive indicators for use of alcohol, drugs, or any alcohol and/or drug use[3].

**Figure 1. Alcohol and Drug Use in Hospitalized Drivers and Non-motorists, by Person-Type, Massachusetts, 2012-2015 (N = 6,290)[4]**



- **Factors associated with hospitalized drivers being involved in a subsequent injury crash** (average follow-up of 4 years)

# Current Work with Driver Data[1]

- Data use agreements and IRB approval in place
- Obtained driver record data associated with 2015 linked crash-hospital case mix data
- Currently assessing driver record data quality and creating a data dictionary
- Will link "2015" driver data[2] with linked crash-hospital case mix data
- Will conduct preliminary analysis of linked data

1. This work is supported by CDC grant #NU17CE924835-01-00, which ends in July 2021.
2. Actual time span covered extends from date drivers were licensed to when RMV sent the data.

# Project Activities & Deliverables

- **Identify and request driver record data associated with 2016-2018 MA CRISS data** (crash-hospital case mix data)
- **Obtain 2016-2018 driver record data**
- **Assess quality of driver data; clean and recode driver data**
- **Link driver data with 2016-2018 MA CRISS data** (Deliverable #1)[1]
- **Assess linkage rates and data representativeness**
- **Prepare report on data quality, linkage rates, and data representativeness; submit to OGR** (Deliverable #2)

1. Due to data privacy requirements, data will be owned and maintained by MDPH.

# Project Activities & Deliverables (cont.)

- **Engage traffic safety stakeholders to identify and prioritize initial analyses of linked driver-crash-hospital case mix data**
- **Develop analysis plan and conduct analysis**
- **Prepare summary of findings; submit to OGR** (Deliverable #3)
- **Identify and prepare findings for dissemination to traffic safety stakeholders beyond OGR**
- **Submit findings for dissemination to traffic safety stakeholders to DPH review**

# Project Timeline – Part 1

| Activity | 2021 | | |
|---|---|---|---|
| | May-Jul | Aug-Oct | Nov-Dec |
| Procure computer and SAS license; install | X | | |
| Identify and request 2016-2018 driver records | X | | |
| Obtain driver data; convert to SAS files | X | X | |
| Assess quality of driver data; clean/recode | | X | |
| Link driver data with other MA CRISS data | | X | |
| Assess linkage rates and representativeness | | X | X |
| Summarize data assessments; submit to OGR | | | X |

# Project Timeline – Part 2

| Activity | 2021 | 2022 | | |
|---|---|---|---|---|
| | May-Dec | Jan-Mar | Apr-Jun | Jul-Sep |
| Engage stakeholders; identify and prioritize analyses | X | | | |
| Develop analysis plan | | X | | |
| Conduct analysis | | X | X | |
| Prepare analysis report; submit to OGR | | | X | X |
| Prepare findings for stakeholders beyond OGR | | | X | X |
| Submit findings for dissemination to stakeholders to DPH review | | | | X |

# Benchmark and Performance Measures

## Benchmark and performance measure #1:

The annual percentage of MA hospital case mix records involving persons injured or killed in a MV crash that are integrated with a crash record.[1]

## Benchmark and performance measure #2:

The annual percentage of MA hospital case mix records involving persons injured or killed in a MV crash that are integrated with a crash record *and* driver data for all drivers involved in the crash.[1]

1. We will calculate separate linkage rates for hospital discharge, ED discharge, and observation stay data for each performance measure.

# Project Budget

| Description | Rate | Cost |
|---|---|---|
| ISP Epidemiologist 1 FTE[1] (Jeanne Hathaway) | --- | $74,599.06 |
| Fringe benefits | 38.32% | $28,586.36 |
| Indirect costs | 12.64% | $9,429.32 |
| Computer | --- | $2,000.00 |
| SAS software license | --- | $5,000.00 |
| Grand total | | $119,614.74 |

1. This position is currently supported by CDC grant #NU17CE924835-01-00, which ends in July 2021.

# In-kind Support

## Senior ISP staff will assist with:

- grant and budget management
- purchase of computer and SAS license
- engagement of traffic safety stakeholders
- review of deliverables to OGR and other documents
- oversee activities of the project epidemiologist

## IPCP staff will assist with:

- engagement of traffic safety stakeholders
- review of deliverables to OGR and other documents

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