

# Executive-Level Traffic Records Coordinating Committee (ETRCC) Meeting Minutes

<b>Date/Time</b>	November 14, 2022, Noon to 1 pm	
<b>Chair</b>	<b>Kerry Collins</b> , EOPSS Undersecretary for Forensic Science and Technology & ETRCC Chair	
<b>Participants</b>	<p><b>Richard Bates</b>, Federal Motor Carrier Safety Administration</p> <p><b>Shital Binnod</b>, MassDOT Contractor</p> <p><b>Maria Cheevers</b>, Boston Police</p> <p><b>Brook Chipman</b>, OGR/Highway Safety</p> <p><b>Scott Cluett - VM</b>, MDPH-OEMS</p> <p><b>Kerry Collins - VM</b>, EOPSS and ETRCC Chair</p> <p><b>Lt. Colonel James Concannon - VM</b>, MA State Police</p> <p><b>Dan DeMille</b>, NHTSA</p> <p><b>Joe Demers</b>, Department of Criminal Justice Information Services</p> <p><b>Debra Eaton</b>, MassDOT/Merit Rating Board</p> <p><b>John Fabiano</b>, OGR/Highway Safety</p> <p><b>Bob Frey - VM</b>, Alternate, MassDOT/Office of Planning</p> <p><b>Jamie Gagnon - VM</b>, Department of Criminal Justice Information Services</p> <p><b>Eric Gemperline - VM</b>, Alternate Central MA Planning Commission</p>	<p><b>Rosaline Harden</b>, MassDOT/Merit Rating Board</p> <p><b>Jeanne Hathaway</b>, MDPH/ Injury Surveillance Program</p> <p><b>Chief John LeLacheur - VM</b>, Alternate, Beverly PD and Mass Chiefs of Police Association</p> <p><b>Kenneth Miller</b>, FHWA</p> <p><b>Arielle Mullaney</b>, EOPSS Assistant General Counsel</p> <p><b>Andrea Nardone - VM</b>, Municipal Police Training Committee</p> <p><b>Bonnie Polin - VM</b>, Alternate MassDOT/Highway Division</p> <p><b>Robin Riessman</b>, UMassSafe</p> <p><b>Samatha Riley</b>, MDPH/ Injury Surveillance Program</p> <p><b>Barbara Rizzuti</b>, NHTSA</p> <p><b>Sonja Singleton - VM</b>, MassDOT/Merit Rating Board</p> <p><b>Rebekah Thomas - VM</b>, MDPH/Bureau of Community Health and Prevention</p> <p><b>Jake Viola - VM</b>, EOTSS Deputy Superintendent</p> <p><b>Christopher Walsh</b>, Boston Police</p> <p>VM = Voting Member</p>
<b>Location</b>	Teams Meeting	

## ***1. Welcome and Introductions***

Kerry Collins, EOPSS Undersecretary for Forensic Science and Technology and ETRCC Chair, welcomed participants and reminded them this was a virtual meeting being held in compliance with the Massachusetts Open Meeting Law requirements.

Kerry conducted a roll call to determine how many ETRCC members were on the call and identify alternates present. Arielle Mullaney confirmed a quorum was present (12 out of 15 voting ETRCC members or alternates were on the call, more than the eight members necessary).

## ***2. Review and vote on draft of 8/2/2022 ETRCC Meeting Minutes***

Kerry noted the draft minutes for the ETRCC's 8/2/22 meeting had been circulated to the membership for review before the meeting. She asked if anyone had requested edits, then provided a final opportunity for review. Given no member requested a change, Kerry indicated the minutes were unanimously adopted.

## ***3. Office of Grants and Research update on Availability of Grant Funds (AGF) for Second Round of FFY 2023 405c funding***

Brook Chipman from the Office of Grants and Research (OGR) said an AGF for a second round of Section 405c funding for traffic records projects is anticipated to be posted on OGR's website in late November. It is expected \$1.3 million of grant funding will be available through the AGF process. Notice of the AGF will be distributed through e-lists maintained by OGR and Mass Chiefs of Police, the TRCC's e-list, and other methods. Brook encouraged ETRCC members to help spread the word about this funding opportunity with their networks. A webinar to help new applicants will be held shortly after the release of the AGF. Responses to the AGF are expected to be due by January 31, 2023, and these would be reviewed at the currently scheduled February 28, 2023 meeting. Funded project would likely to start on or about May 1, 2023. Brook said a document of highlights of this AGF process was circulated earlier to the committee.

## ***4. Presentations on recent and current 405c projects***

**Boston Police Department** – Deputy Walsh spoke on developments regarding the department's E-Crash Reporting and E-Citation Reporting Projects. Technical challenges have prevented full use of their 405c-funded e-crash reporting application, but these will soon be overcome through continued collaboration with RMV. Further training to prepare officers to use the system will soon be conducted. The OGR-Boston PD contract was finalized in early November. Now the city's procurement effort will begin to secure a vendor for the printers and other hardware to enable officers to access MACCS from vehicles. Joe Demers of DCJIS provided tips on avoiding supply chain issues with printer orders. Deputy Walsh expects to have printer installation start in spring 2023. Sonja Singleton said Merit Rating Board is ready to help Boston PD with this project.

**Department of Criminal Justice Information Services** - Joe Demers spoke on the progress of DCJIS's MACCS project: 234 local departments live on MACCS, 25 pending, 6 set-up on their own, and 70 still deciding. DCJIS is looking into ways the project could help other law enforcement agencies that issue citations to join MACCS, like college police, environmental police, MSP Marine, etc. DCJIS is aiming to do outreach to the top 30 municipal departments still deciding. Since the launch of MACCS in early 2017, municipal police have issued more than half a million citations through the system, the State Police more than a million. DCJIS is going to do a survey with MACCS users to identify any possible future software enhancements.

Chief LeLacheur said he would share information on MACCS and the upcoming AGF at the Major City Chiefs meeting the following day, as well as the Mass Chiefs of Police meeting later in the week. Both the Chief and Sonja were interested in receiving from DCJIS a list of departments that had yet joined MACCS. Joe will follow-up with both.

**Merit Rating Board** - Sonja Singleton said the first phase of MRB's Accessible Citation Data Project was wrapped up, and the grant award and associated contract for the second phase of the project are expected to be in place for a 12/1/22 start.

**MDPH** - Jeanne Hathaway spoke on recent progress of 405c-funded projects related to the MA Crash-Related Injury Surveillance System (MA CRISS) data. Jeanne said continued efforts would be made to connect with project stakeholders to ensure their input on project activities. Bekah Thomas said MDPH was speaking with RMV about medical fitness reporting from hospitals being better utilized by RMV. Brook Chipman will further distribute the MDPH report developed from MA CRISS data with FFY 22 405c funding entitled *Exploring the History of Drivers Who Sustain Injuries in a Crash - October 2022*.

#### ***5. Unforeseen business/upcoming event announcements/next meeting: February 28, 2023***

Kerry offered an opportunity for public comment or to raise an unforeseen business matter. Nothing was offered.

#### ***6. Adjournment***

Kerry asked the group if they supported adjourning the meeting. As no objections were raised, Kerry said the meeting was adjourned.



**Massachusetts  
Executive-level Traffic Records Coordinating Committee (ETRCC)  
Virtual Meeting**

**Noon to 1:30 pm – November 14, 2022**

Microsoft Teams meeting  
[Click here to join the meeting](#)  
Meeting ID: 230 626 207 025, Passcode: 6JT6NE  
Or call in (audio only)  
[+1 857-327-9245, 455063356#](#) United States, Boston  
Phone Conference ID: 455 063 356#  
[Find a local number](#) | [Reset PIN](#)

**AGENDA**

1. Introductions (Kerry Collins)
2. Review and vote on draft August 2, 2022 ETRCC meeting minutes (Kerry)
3. Office of Grants and Research update on proposed Availability of Grant Funds process for Second Round of FFY 2023 405c funding (Brook Chipman)
4. Presentations on recent and current 405c projects (Brook and presenters)
5. Unforeseen business/upcoming event announcements/next meeting:  
February 28, 2023 (Kerry)
6. Adjourn (Kerry)



**Highlights of  
Office of Grants and Research's  
Availability of Grant Funds (AGF)  
for Second Round of FFY 2023 405(c) funding**

- This competitive AGF will make multiple grant awards totaling up to \$1.3 million.
- AGF release is expected in late November 2022.
- AGF responses will be due electronically on January 31, 2023.
- Will follow review process like one used for last AGF: a review committee with two OGR staff members and at least one outside reviewer (anticipate outside reviewer(s) will be from TRCC membership, but their entity can't have project under consideration), then ETRCC review/vote (on February 28, 2023).
- No Executive-level TRCC member with a project under consideration may vote during the committee's project selection step.
- Projects funded through this AGF are anticipated to start on or about May 1, 2023 and finish by September 30, 2023. Projects approved for a longer award duration will receive a continuation contract/ISA prior to September 30, 2023, with a start date of October 1, 2023. No project will be approved to run past June 30, 2024.
- OGR expects all entities receiving awards through this AGF process and entering into grant agreements to begin grant-funded services within 90 days of funding access (unless a later service start date is noted in the timeline and task plan of the agreement). Failure to do so may result in termination of the grant award.
- Applicants with current Section 405(c) grant awards cannot receive new 405(c) grant awards until their first awarded funds are 30% or more spent down in the state accounting system or committed (i.e. in a purchase order) at the time of application. Such applicants should consult with OGR prior to applying.
- AGF respondents must show in their applications how they would provide a minimum 20% state-funded match based on the proposed total project cost. (For example, if the total project is \$100,000, OGR will provide up to \$80,000, and a subrecipient must provide at least a \$20,000 match). There is no match requirement for projects from applicants under the Executive Office of Public Safety and Security (EOPSS).

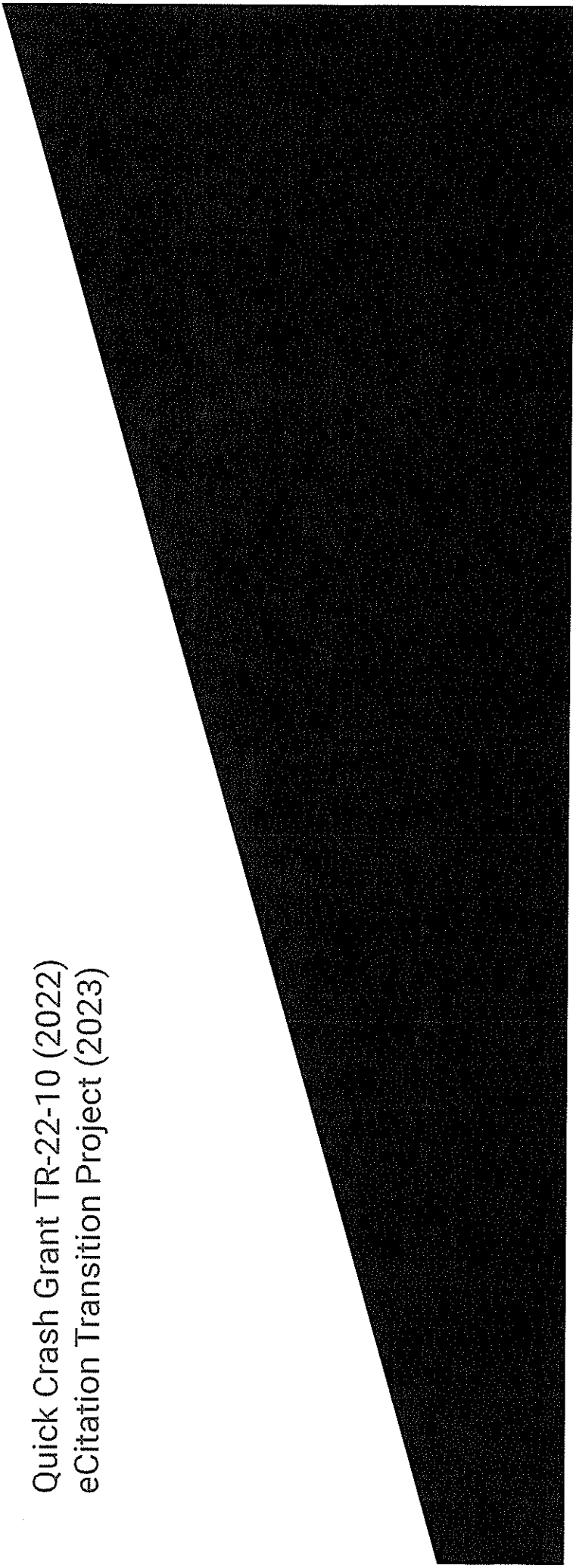




# Nov 14, 2022 ETRCC Meeting

## Boston Police Department Update

Quick Crash Grant TR-22-10 (2022)  
eCitation Transition Project (2023)



# FY 2022 EOPSS STSIS Quick Crash Grant

## GOAL:

To provide the City of Boston/ Boston Police Department with a more efficient way of reporting crashes to the State, in order to ensure compliance, and to allow data analysts within the City of Boston to use this data for trend analysis for city planning regarding collision prevention

## OBJECTIVES:

- Improvement of the interfaces with the State Crash Data System that reflect best practices identified in the Traffic Records Program Assessment Advisory
- Improvement of the data quality control program for the Crash Data System that reflect best practices identified in the Traffic Records Program Assessment Advisory

# Quick Crash Update

Task	Projected Completion Date	Status
Training completed by all BPD officers	Q1 2023 03/31/2023	Due to the extensive delay in fully deploying Quick Crash, additional training was placed on hold. Currently working with Academy to develop a full version of E-Learning on Quick Crash as well as teach Academy Staff in person.
Electronic submissions made manually to RMV through DCJIS persistent route	11/10/2022	Delay in correcting XML files led to no submissions of files to RMV. The file submission is currently working and is being verified by RMV
Final project acceptance	12/2/2022	Final acceptance by RMV expected by first week of Dec, 2022 with the BPD conducting full training Department wide to be completed by Q1 2023

# Quick Crash Update

Measure	Benchmark	Status
Increase Boston Police Department's crash reporting to the RMV Crash Data System from an estimated 6% rate as of July 2020 through a paper submission process to a 70% or more rate by 12/31/21 through an electronic submission process.	70% electronic data submission compliance	Due to the delay in getting the technical aspects of the submission files completed, the compliance rate of electronic submissions is low. We currently have 2,453 Quick Crash reports in the Mark43 RMS from Jan 1, 2022 through Nov 8, 2022 but they have not yet been transmitted to the RMV. Once the backlogged reports are transmitted, we expect to hit the benchmark 70% compliance rate.

# FY 2023 EOPSS STSIS eCitation Project

## GOAL:

Enable the BPD to access and analyze Boston citation data from written MV violations. With the analytics of traffic citation data, we can then work with other City of Boston (COB) agencies to better manage resources and identify locations where there is a high prevalence of violations.

## Strategy:

The BPD will outfit 564 marked and unmarked cruisers with specialized printers to implement the Motor Vehicle Automated Citation and Crash System in Boston. BPD will participate in the eCitation part of MACCS, where officers issue electronic citations to motorists for traffic violations by printing out a hard-copies of the citations, via these printers within their cruisers, and then giving violators their citations on letter-sized paper. **Data from these citations will load into MACCS, and then will be downloaded into the Boston Police RMS system (Mark43) for data analytics.**

# eCitation Transition Project

## Estimated Timeline:

- Award letter - **October 2022**
- EOPSS contract signed - **11/03/22**
- Set up BAIS system within the grants database at the COB Budget Office. That alerts IGR to set up a hearing - **12/22/22 - early 1/5/23**
- Set up eCitation Budget to begin working with the BPD Contracts Office to go out to post bid - **2/14/23**
- Bid process - **2/29/23**
- Contract signed - **3/15/22** - At which time work can begin
- Begin Installation **April 2023**
- Complete Installation **July 2023**
- Grant Close Out **August 2023**

## **MA Crash-Related Injury Surveillance System: Data Quality Assessment and Analysis**



### **FFY 2022 405c-Funded Project Update**

**Executive-level Traffic Records Coordinating Committee Meeting**

**November 14<sup>th</sup>, 2022**

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

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## **Overview**

- **FFY 21 Analysis of driver intoxication**
  - Background
  - Selected findings
- **FFY 22 Completed activities**
- **FFY 22 Completed benchmark & performance measure**
- **FFY 23 Next steps**

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## FFY 21 Analysis: Intoxication in Hospitalized Drivers Background

- Analysis explored the driving records of hospitalized drivers identified as intoxicated by alcohol or drugs at the time of the crash.
- Data: 2016 - 2018 linked driver, crash, and hospital discharge data in the MA Crash-Related Injury Surveillance System (MA CRISS); N = 3,615 drivers
- Crash and hospital data used to identify driver intoxication. Driver records used to identify whether drivers:
  - Admitted to<sup>1</sup> or were convicted of Operating Under the Influence (OUI) for the "index" crash
  - Crashed while operating on a suspended license
  - Admitted to or were convicted of OUI in the previous 5 years
  - Had any at-fault crashes in the previous 5 years

1. OUI cases "continued without a finding", in which the driver admits they would likely be found guilty in court and agrees to complete requirements, e.g., driver courses and substance addiction treatment.

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## FFY 21 Analysis: Intoxication in Hospitalized Drivers Selected Findings

- Hospital data identified 21% of drivers as intoxicated at the time of the "index" crash; 2x as many as were identified as intoxicated in crash data (10%)
- Of the 764 drivers identified in hospital data as intoxicated at the time of the "index" crash, only one in ten (10%) admitted to<sup>1</sup> or was convicted of OUI for that crash
- Of the 390 drivers identified in crash or driver data as intoxicated at the time of the "index" crash,
  - 9% crashed while operating on a suspended license
  - 4% admitted to or were convicted of OUI in the previous 5 year
  - 26% had one or more at-fault crashes in the previous 5 years

1. OUI cases "continued without a finding", in which the driver admits they would likely be found guilty in court and agrees to complete requirements, e.g., driver courses and substance addiction treatment.

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## FFY 22 Completed Activities July – September 2022

- Hired a contractor to assist with data linkage and analysis of MA Crash-Related Injury Surveillance System (MA CRISS) data
- Expanded MA CRISS by obtaining final 2019 crash data and linking it with hospital discharge, observation stay, and emergency department discharge data
- Assessed the completeness, accuracy, and uniformity of the injury severity field ("injury status code") in crash data using FY2018 - FY2019 MA CRISS data
- Drafted a report on the quality of the injury severity field in crash data, including recommendations for potential data quality improvements
- Developed a plan to assess the completeness, accuracy, and uniformity of the alcohol and drug use fields in crash data using MA CRISS data

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## FFY 22 Benchmark and Performance Measure

FFY 22 Benchmark and performance measure: Increase the number of linked MA CRISS records in which the injury severity field ("injury status code") in crash data is assessed for completeness, accuracy, and uniformity from 0 as of 7/1/22 to 40,000 by 6/30/23.

We surpassed our benchmark/performance measure by assessing the accuracy of the injury severity field in over 77,000 linked MA CRISS records, and the completeness and uniformity of the injury severity field in over 850,000 unlinked crash records by 9/30/22.

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## FFY 23 Next Steps October 2022 – June 2023

- Finalize report on the quality of the injury severity field for OGR and develop a presentation on findings and recommendations for TRCC
- Complete analysis of the completeness, accuracy, and uniformity of the alcohol and drug use fields in crash data using MA CRISS. Summarize findings and recommendations in a report for OGR and a presentation for the TRCC
- Obtain and link driver data associated with crashes in FY2017 – FY2019 MA CRISS data
- Solicit input from traffic safety stakeholders to prioritize potential topics for next analysis of linked driver-crash-hospital injury data in MA CRISS
- Complete new analysis of linked driver-crash-hospital injury data, and summarize findings and recommendations in a report for OGR and a presentation for the TRCC

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### Transportation Safety Team Massachusetts Department of Public Health

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**Merit Rating Board**  
**Accessible Citation Data Portal**

**Phase I**

**Final Project Summary**

**Please accept this report and the following three files as the programmatic close-out documents required as deliverables for Phase I of this project:**

- 1. Task, timeline, and estimated budget**
- 2. Citation portal data dictionary to be published upon portal roll-out**
- 3. Business and System Requirement Specifications**

As with any Commonwealth of MA Information Technology - related project, consideration must be given to security requirements, data needs, and leveraging other possible existing systems to achieved the desired outcome.

The MRB Citation Portal project team was fortunate to have members with expertise in the RMV legacy database as well as in MA Highway's Impact database and portal. As development of the Business and System Requirements got underway, it was determined that:

- The practical place for accessible Citation data to reside is on the MassDOT MA Highway Division Impact website
- MassDOT procurement and legal advisors approved the Merit Rating Board plan to work with VHB, the contractors who developed Impact
- It was acceptable to request a quote from VHB, based upon the attached Business and System Requirement Specifications
- The VHB contract for support and maintenance of IMPACT was renewed through February 2025, opening the door for MRB to create a contract amendment with them to develop the accessible Citation data portal
- Based on the level of integration the Citation portal project required, and the extended VHB support contract, it became clear it was neither practical nor efficient to have two vendors splitting responsibilities for the IMPACT website, so searching further for a vendor became unnecessary and impractical

While the project team has received and continues to review VHB's proposal, project scope, and price quote, the MRB is in an awkward position to negotiate, until such time that it has an ISA in place for Phase II of the Accessible Citation data portal.

Additionally, there are some specific project requirements that have come to light now that could not have been predicted at the time MRB submitted its budget for Phase II funding of this project.

For example, VHB has advised that there may be a need for a major upgrade to the underlying ArcGIS software (in Impact) that will require a significant effort to do and support. This, as well as maintenance and operational support were not items considered in developing the original project budget for Phase II.

The Team believes it is important to convey this information at this point, because it may have an impact on the actual designation of budgeted dollars for Phase II of this project. Specifically, it may cost more than exactly \$400,000 that is now allocated for VHB.

Also, as we have reported previously, one of the two IT contractors who worked on this project since its inception has moved on to another job within MassDOT IT as Deputy CIO. So the \$110,000 previously allocated for IT contractors will undoubtedly be decreased. Instead, MassDOT IT will assume a role at no cost to this budget item.

Again, since there is not yet a formal agreement or an award letter to negotiate with, we also have just estimated the \$40,000. cost to have the contractors (FAST) who developed the RMV ATLAS database provide their necessary data bridges and testing services. This dollar amount was based upon an estimated number of hours the project team thought might be needed, but until a detailed project scope can be negotiated, this number of hours may increase or decrease, affecting that line item.

The good news is that these monies are all in “contractor” services. And all parties mentioned – VHB, FAST, and an IT expert – are all contractors. The MRB will need to rely upon EOPSS guidance and the expertise of Brook Chipman to advise how to proceed with the Phase II paperwork, given these circumstances and present uncertainties. We understand that Phase II funding will be \$550,000, and intend to work within that amount. We’re just not certain how to document exact numbers at this point, since we cannot know them yet. It seemed important to provide this information along with the Task, timeline, and estimated budget now being submitted.

## MERIT RATING BOARD CITATION DATA PORTAL – PHASE II

### PROJECT SCOPE, TIMELINE, AND QUARTER - DELIVERABLE DUE OCTOBER 15, 2022

Task	Timeline by Quarter	Estimated budget totals
I. Project start – contract with selected developer	Q1 (estimated start of 11.01.22)	
A. Project Management	Q1 – Q4	Tasks A – H \$400,000.
1. Project kickoff meeting	Q1	
2. Project Plan development and execution	Q1	
3. Regular sprint review meetings	Q1 – Q4	
B. Requirements traceability matrix	Q1	
C. Conceptual design & architecture	Q1	
D. Application development	Q1 – Q3	
1. Product backlog development	Q1 – Q2	
2. Application development cycle	Q1 – Q3	
E. UAT support and Production Deployment	Q3 – Q4	
F. Documentation	Q4	
1. Development of on-line help/videos	Q4	
2. System administrators manual	Q4	
G. Training/knowledge transfer	Q4	
H. Enhanced maintenance and support services	Q4	
II. Engage FAST Enterprises	Q1 - Q4	\$40,000.
A. Build the data bridge between ATLAS and VHB	Q1 – Q2	
B. Generate the jobs that will produce the Initial Load of Citation Data to be transmitted to VHB and provide support through the testing phase.	Q1 – Q4	
C. Generate the jobs that will produce the Delta Files of Citation Data that will be transmitted to VHB and provide support through the testing phase	Q1 – Q4	
III. Engage IT contractor	Q1 – Q4	\$110,000.
A. Provide support to FAST; answer questions re: project objectives and design		
B. Generate queries to validate Citation data to be extracted from ATLAS in Initial Load and Delta Files		
C. Validate file layout of Initial Load and Delta Files		
D. Generate test cases/user stories for project team testing		
E. Generate queries to assist QA team with testing; extract citation records/counts based on testing criteria		
F. Testing Citation Portal tools for validity and completeness: dashboards, reports, query & visualization, citation tree, cross-tabulation & charting		
IV. Portal deployed for stakeholder use	Q4 (estimated 09.29.23)	
V. Data dictionary publicly available on portal	Q4	
VI. Post Portal roll-out survey of stakeholders	Q5	



Business and System Requirements

*Merit Rating Board - Citation Portal*  
*August 1, 2022*

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## ***Revision History***

This section records the change history of this document.

<b><i>Version</i></b>	<b><i>Date</i></b>	<b><i>Changed By</i></b>	<b><i>Section</i></b>	<b><i>Reason for Change</i></b>
0.1	5/3/22	Ghydaa Prather	All	Initial Draft
.2	6/22/2022	Bill and Ghydaa	All	Initial Draft Review
.3	7/21/2022	Ghydaa and Bill	All	Expanded business and system requirements sections
.4	7/29/2022	Ghydaa and Bill	All	Updates after Business Review
1.0	8/1/2022			Initial Version provided to VHB for review and Scoping
1.1	9/15/2022	Ghydaa	All	Updates to align the requirements with the scope from VHB for Phase 1 – moved the Citation Image and Subscription Service to the future consideration items

## ***CONTRIBUTORS***

The following individuals have contributed to the creation of this document, either as subject matter experts or as systems experts.

<b><i>Name</i></b>	<b><i>Contribution / Area of Expertise</i></b>
Sonja Singleton	Interim Director of MRB – Project Executive Sponsor
Debra Eaton	MRB Citations Subject Matter Expert
Bonnie Polin	Highway Division State Safety Engineer
Rosaline Harden	MRB Specialist
Jennifer Inzana	MASS Highway Subject Matter Expert
Leslie Bestick	Grant Writer
Bill Catania	Project Lead
Ghydaa Prather	System Analyst

## ***ACRONYMS AND ABBREVIATIONS***

<b><i>Acronym/Abbreviation</i></b>	<b><i>Description</i></b>
MRB	Merit Rating Board
RMV	Registry of Motor Vehicles
ALARS	RMV Mainframe System (old System of Record)
ATLAS	RMV System (new System of Record)
NHTSA	The National Highway Traffic Safety Administration
PII	Personally Identifiable Information
PRR	Public Records Request
OUI	Operating Under the Influence
JOL	Junior Operator License
CDL	Commercial Driver's License
Haz-Mat	Hazardous Materials
LEA	Law Enforcement Agency

## **Introduction**

The MRB has received federal grant funds, made available to states by NHTSA, to make measurable improvements to performance attributes of state safety data systems that will help federal, state, and local traffic safety programs identify and establish priorities.

Enhancing the state's ability to observe and analyze its trends in traffic citations such as: frequency, demographics, crashes, location, circumstances, and contributing factors will aid strategic planning efforts to reduce crashes while improving overall safety in MA.

While major improvements have been made to make crash data accessible, this ability does not yet exist for citations and citations are one of the key datasets in traffic records and numerous requests are made for the data. Having these data will help to inform strategic safety planning efforts.

Stakeholders, such as Law Enforcement Agencies (LEA), must follow the Public Records Request (PRR) process to obtain citation and violation related information. There are several steps involved in obtaining the Citation information after the request is submitted and it can take several weeks for the requestor to receive the data from the MRB/RMV. The LEA must rely on others to provide this data, which may not be received in a timely manner. The Current PRR process is outlined in Appendix A.

This project is being undertaken to improve the access and visibility of traffic citation information for engineers and transportation planners, law enforcement and other Commonwealth constituents. The goal is to make certain traffic citation and violation information available to stakeholders in both summary and detail format via a newly developed public facing internet portal.

This project will address the recommendations from the FFY 2022 Strategic Plan for Traffic Records Improvement.

The project will be implemented using a phased approach:

### **Phase 1 – “Define - Plan Development”**

- 🔧 Expected to run May through September 2022
- 🔧 Solicit requirements from the principal stakeholders through Focus Groups and feedback sessions
- 🔧 Develop a detailed project scope – Business and System Requirements
- 🔧 Develop a Citation and Violation Data Dictionary
- 🔧 Develop Schedule /Timeline and Budget

### **Phase 2 - “Execution – Build the Portal”**

- 🔧 Separate grant request which will be applied for in the next grant application cycle
- 🔧 Selected vendor(s) to collaborate with the MassDOT IT/MRB to implement the solution

Phase 1 began in April 2022 following award of the NHTSA grant and will conclude with the publishing of the bid solicitation to implement the proposed system and data repository.

## **Project Objectives and Outcomes**

The following are the project objectives.

### ***BUSINESS OBJECTIVES***

1. Design a Web-based portal that provides the user with a point-in-time access to Citation data.
2. Empower the requestor with the ability to access and export citation data on demand.
3. Reduce the amount of time it takes for a requestor to receive the citation data.
4. Improve access and visibility to traffic citation data, to allow the requestor to trend citation data on a variety of attributes.
5. Provide citation violation data while complying with the state's guidelines regarding safe-guarding PII data.

### ***SYSTEM OBJECTIVES***

1. Utilize MassDOT's existing IMPACT website to access and report Citation Data.
2. Develop a data extraction and synchronization process to store 10 years of historical citation data on the Portal.
3. Provide a set of Dashboards where the user can easily access and manipulate the criteria displayed in the Dashboard.
4. The user shall be able to access a list of pre-defined Reports where they can enter their own criteria to generate the report (such as citations issued for the prior month by a specific Police department).
5. The user will be able to generate their own query, based on the criteria they are interested in, such as all citations where a Non- Inventory Motor Vehicle search was marked as true.
6. Provide the necessary data elements and database structures to support future integration of citation data with the Crash Portal and other state agencies data repositories.

## ***PROJECT OBJECTIVES AND OUTCOMES***

The benefits that will be realized by the users will include but are not limited to:

1. Law Enforcement will not have to submit standard public records requests to access citation data.
2. Be able to observe, analyze, and trend recurring issues within a location/town, identify high-volume areas.
3. Use the data to confirm that citations are being issued in an equitable manner.
4. The convenience of going to one location, MassDOTs existing IMPACT website, to access both Citation and Crash data.
5. Having access to view trends in high-volume areas, allows the users to issue safety related recommendations to cities and towns within the Commonwealth.
6. Use the data to understand the impact legislation has on enforcement.

## **Project Scope**

### ***BUSINESS REQUIREMENTS – IN SCOPE***

The project team reached out to several potential stakeholders. The list of stakeholders was identified by those that are currently requesting Citation Data and those that have a need for this data to perform their day-to-day job requirements.

Focus group meetings were held, where the stakeholders were given an overview of the proposed Citation Portal, and the project team solicited feedback as to what they would like to see. The stakeholders were also provided with a series of survey questions, listed in Appendix D.

As a result of the feedback received during the focus group meetings and the responses received from the survey questions, a list of requirements was compiled.

Each requirement was categorized into one of the following groups:

- Data – access to citation and violation data fields
- Dashboard - something predefined and informative, at-a-glance
- Searching - user defined search and export
- Reporting - predefined reports and export
- Information - data dictionary, violation attributes, background information, how to guides, FAQs and context sensitive help, etc.
- Support – point of contact for clarification on data and How To questions for reporting and querying

#### **Citation Portal Requirement**

Design and develop a new Web-based Portal that provides Traffic Citation and Violation information to state and federal agencies, local and state law enforcement, advocate groups and members of the media.

The portal shall have a user-friendly landing page to guide users to core functional areas, available dashboards, reports and user defined analysis queries.

Most of the stakeholders that will be accessing the Citation Portal are familiar with the IMPACT portal. Familiarity in design of the Citation Portal, it would be beneficial to the users to have the design and layout of the Citation Portal in line with the IMPACT Portal, creating a seamless experience. There are several benefits of using a familiar design: Reduce the learning curve since the users do not have to learn to use a new system. Improved usage speed, as the users are working with a familiar model. The designer of the new system can re-use existing design pattern, reducing the amount of time in the design process.

The portal will have a legal disclaimer posted to all pages indicating, “The Data is as of the Date and Time Stamp.” The user will be notified the data they are viewing or downloading is not stagnant and can change over time.

### **Data Requirement**

The MRB receives Citation and Citation Violation information through a variety of law enforcement sources. A citation can be received from the Courts, Police Departments, electronically through the eCitation process and from the violator.

When a paper copy is received, the citation is validated for accuracy. If an issue is identified, the citation is passed on to the Quality Control department within the MRB for additional research. Once the issues are resolved, the citation is stored on the ATLAS Database.

The ATLAS Database is the primary source for Citation and Violation data. The citation data to be extracted from ATLAS will not contain any PII data. The Portal will comply with state guidelines regarding safe-guarding PII data.

A Data Dictionary, that lists the fields that will be extracted and published on the Portal with the initial implementation phase of the project, has been provided in Appendix B.

In addition to Citation and Citation Offense fields, the Customer Key, which is a unique numeric record key in ATLAS, will be included in the data extract. The Customer Key will aid in grouping violations at the customer level and will be used to summarize citation counts by Customers. The Customer Key will also be used to link the Citation to the Crash.

A citation can have up to four violations. When a citation is written with more than four violations, a second citation code is issued for the fifth – eighth violations. The customer key will aid in identifying these scenarios, the citations can be grouped by Customer Key, Event Date, Officer ID, Time and Location.

Cross-referencing to reference tables may be required to obtain other characteristics of the violation, such as Speeding, OUI, and Distracted Driving. Cross-reference tables will be utilized from the ATLAS database as well as the existing Lookup Tables found in the IMPACT portal. The cross-reference tables from ATLAS will be updated on a pre-determined schedule to pick up any configuration changes.

The Citation Portal shall include an extraction of Citation Data from the last 10 years, with a rolling one-year period as the default timeframe. The initial data load will consist of citation and citation offense data with an Event Date within the last ten years. The citation file will utilize Bulk Data File process, transmitted through a MoveIT directory. After the Initial Load, Delta records will be transmitted to the portal. The deltas will include new citations added to ATLAS and those that have been updated, reversed, or rejected.



The ten-year time period was selected since most violations have an experience period that falls within a ten-year window. For example, Habitual Traffic Offender has an experience period of five-years, where the driver record is evaluated based for the presence of surchargeable events within a five-year period. The exception is OUI violations, these violations have an experience period of Lifetime. The driver record is evaluated in its entirety for prior OUI Violations.

To provide the most accurate reporting, the data will be as up to date as possible. However, a legal disclaimer will be posted on all Dashboards and Reports indicating, "The Data is as of the Date and Time Stamp," meaning the violation data is not stagnant but can change from day to day. Updates to the citation data will be refreshed on the Portal based on a pre-determined schedule, e.g., weekly, daily, etc.

**Data Export:** When a user exports the raw data from the Portal, it may be easier for them to query the data if each violation is listed individually, where the primary citation data is repeated for each violation at the front end of the record. This will allow the user to group violations using the citation data and the customer key.

Certain data items will need to be calculated, grouped, or translated. The driver age, at the time of the offense will need to be calculated for each citation. The age of the person will be made available as well a grouping by age, e.g., under 15-years-old, 15–18-year-old, 19–21-year-old, etc. The time for each citation will be translated to correspond to a specific time of day. Citations that were issued between 6 –9 AM will be translated to morning rush hour, citations issued between 9 – Noon will be translated to Mid-day, citations issued between 3 – 7 PM will be translated to Afternoon rush-hour, etc.

### **Interactive Dashboards Requirement**

The portal shall have a set of predefined, interactive, and informative dashboards that provide the user with an at-a-glance view of the citation data. Each Dashboard will provide a description of the data being displayed on the screen.

The Dashboard shall represent the citation violation data in a variety of formats, such as Bar Graphs, Line Graph, Pie Charts, summarized by total counts and percentages. The raw data can be viewed and/or exported in detail and summary format. The user shall be able to focus on a particular frame on a dashboard, to view the information in detail.

All dashboards shall provide users with the ability to apply filters, view record detail behind dashboard via drill downs, and permit data to be extracted into excel or CSV files. For example,

the user will be able to filter the Speeding Violations Dashboard to report the number of violations issued by Age within a Location.

The Dashboard will default to Citations with an Event Date that falls within the last year. The user will have the ability to filter on the Dashboard by adjusting, selecting and de-selecting data points. The use of radio buttons and drop-down boxes will allow the user to easily manipulate the data displayed on the dashboard screen.

The Dashboards shall include:

- Citations/Violations Dashboard
  - The Citation/Violations Dashboard will provide an overview of all citation and violations issued within the last year. Display Total counts of Citations, Violations, Customers
  - Bar Graph that depicts the counts issued for each violation, in Descending order, displaying the top violations cited
  - Chart displaying the number of citations and violations issued by Event Date (Month/Year)
  - Comparison Chart of the number of Citations to Warnings issued
  - Number of Citations issued, by Agency Code
  - Number of Citations issued, by Location
  - Number of Citations issued, grouped by Customer Key
    - Number of customers with one citation within the reporting period
    - Number of customers with two citations within the reporting period
    - Number of customers with three or more citations within the reporting period
  - Number of Customers with a citation that has more than four violations issued (violations are grouped by Customer Key, Violation Date, Time, Location, Officer ID)
  - Aging of Citations, length of time before the citation was posted to ATLAS – comparison chart of Received Date minus Offense Date
- Speeding Violations Dashboard

This dashboard will display statistics of all speeding violations issued. A cross-reference to the Massachusetts Violation Table will be needed to identify the violations that are marked as Speeding, include violations where fblnSpeed is marked true on rfrMR\_MAViolationCodes.

  - Display Total counts of Citations, number of Violations, Customers and Percentage of Speeding Violations of Total Citations
  - Comparison Chart of the number of Citations to Warnings issued
  - Comparison chart by Citation Type (Warning, Civil, Criminal, Arrest)
  - Chart Speeding violations by MPH range (100+ MPH Speeding Violations by Citation Type)
  - Graph that depicts Speeding Violations issued, in relations to person Age

- Graph that depicts Speeding Violations issued, by Time of Day
  - Number of Speeding violations issued, by Agency Code
  - Number of Speeding violations issued, by Location
  - Number of Speeding violations issued, grouped by Customer Key
    - Number of customers with one Speeding violation within the reporting period
    - Number of customers with two Speeding violations within the reporting period
    - Number of customers with three or more Speeding violations within the reporting period
  - Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- Distracted Driving Dashboard
 

This dashboard will display statistics of all Distracted Driving violations issued. A cross-reference to the Massachusetts Violation Table will be needed to identify the violations that are marked as Distracted Driving, include violations where fblnDistractedDriving is marked true on rfrMR\_MAViolationCodes.

    - Display Total counts of Citations, counts of Citations reported Electronically and on Paper, and Calculated Total Fines
    - Chart counts of citation issued, by Event Date (Month/Year)
    - Comparison chart of citations issued, between Electronic vs Paper
    - Graph depicting Distracted Driving (DD) Violations issued, in relations to person Age
    - Graph that depicts DD Violations issued, by Time of Day
    - Comparison chart of DD Violations issued, by sex
    - List DD violation counts by Issuing Agency Code
    - Number of DD Citations issued, by Location
    - Number of DD violations issued, grouped by Customer Key
      - Number of customers with one DD violation within the reporting period
      - Number of customers with two DD violations within the reporting period
      - Number of customers with three or more DD violations within the reporting period
    - Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- JOL-CDL-HazMat Dashboard
 

This dashboard will display statistics of all JOL, CDL, and HazMat violations issued.

    - JOL – A driver under the age of 18 is issued a citation. The calculated age of the operator is under 18.
    - CDL – A driver operating a Commercial Vehicle. The CDL flag is marked yes on the

Citation.

- HazMat – A driver operating a Commercial Vehicle that is carrying Hazardous Materials. The HazMat flag is marked yes on the Citation.
  - Display Total counts of Citations, counts of JOL and Percentage of citations, Counts of CDL and Percentage of citations, Count of Haz-Mat and Percentage of citations
  - Graph line to illustrate citations issued for JOL, CDL, and HazMat, by Event Date (Month/Year)
  - Comparison chart by Citation Type (Warning, Civil, Criminal, Arrest)
  - Number of Citations issued, by Agency Code
  - Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- Electronic vs Paper Citations Dashboard  
This dashboard will display statistics of the Citation Source.
    - Comparison chart of citations issued by Paper, Electronically, or Both by Agency Code
    - Graph percentage citations issued by Paper vs. percentage issued Electronically
    - Paper vs. Electronic Agency: Calculate the Percentage of how many police departments are paper, electronic, or both
    - Graph the percentage of citations issued electronically or by paper, by Agency Code
    - Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- Warning Citations Dashboard  
This dashboard will display statistics of Warning Citations issued.
    - Display Total counts of Warnings issued from all Police Departments
    - Comparison chart or counts of Warnings issued by Paper vs. Electronic
    - Chart of Warning citations issued, by Event Date (Month/Year)
    - The detail report can be pulled by Violations
    - Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- Criminal Violations Dashboard  
This dashboard will display statistics of Criminal violations issued. A cross-reference to the Massachusetts Violation Table will be needed to identify the violations that are marked as Criminal, include violations where fstrCriminalIndicator is marked true on rfrMR\_MAViolationCodes.
    - Display Total Counts of Citations, number of Criminal Violations, Percentage of Total Citations

- Chart of Violation counts, by Event Date (Month/Year)
- Graph depicting Violations issued, by Age group
- Graph depicting Violations issued, by Time of Day
- Comparison chart of citations issued by Paper vs. Electronic
- Number of Violations issued, by Agency Code
- Number of Violations issued, by Location
- Comparison chart of Violations issued, by sex
- Comparison chart of Violations issued, by Race
- Aging of Citations, length of time before the citation was posted on ATLAS – comparison chart of Received Date minus Offense Date
- Customer Demographics Dashboard
  - Display Total Counts of Customers, Citations, Violations
  - Graph depicting Number of Citations issued, in relations to person Age
  - Graph depicting Number of Citations issued, in relations to person Race
  - Graph depicting Number of Citations issued, in relations to person Sex
  - Summarize the number of Citations issued, by Location
  - Number of Customers with more than four violations issued per incident (violations are grouped by Customer Key, Violation Date, Time, Location, Officer ID)

### **Searching Requirement**

The user will have the ability to adjust the data on the Dashboard and Reports by selecting and de-selecting data points.

The user will be able to execute a query and have the data represented in a variety of formats, such as Bar Graphs, Pie Charts and summarized by total counts. The user will be able to download the detail or summary records into an Excel or CSV file format, using a Double-Pipe delimiter, “||”.

The user will be able to search and retrieve violation data using individual violation codes and predefined groupings of violations, such as Speed.

The user shall be able to filter on a specific data point, to include or omit the criteria from the dashboard or report, for example:

- Event Date From
- Event Date To
- Citation Type
- Violation Code
- Violation grouping type (Speed, Distracted Driving, OUI)
- Issuing Agency

- Town
- Court Code
- Race
- Sex
- Age of Violator at time of Incident
- Disposition

### **Reporting Requirement**

The portal shall have predefined reports to return citation information based on user selectable fields such as town, court, violation type, race, and sex.

The portal shall provide the users with the ability to create crosstabulation reports based on selected fields (e.g., age and violation type).

The portal shall provide the users with the ability to generate comparison reports of citations to previous year, month, week, or day.

The portal shall provide the users with the ability to select predefined set of aggregation reports including but not limited to: Town, court, year, month, day of week, time of day, age and age range.

**Subscription Service:** The portal shall provide a Subscription Service that allows the requestor to define and subscribe to have reports sent on a regular basis (Weekly, Monthly, Yearly, etc.). Create configurable job(s) to run routine reports and email the results in a delimited format. Due to the complexity of implementing this change, this requirement has been set to be applied during a future phase of the Citation Portal.

**Test Of Proportions:** Trend analysis against statewide average reporting – this reporting module will display trends taking shape with respect to statewide averages for citations and violations. The portal shall provide the user with the ability to run a Test of Proportions to compare statistical overrepresented Citation attributes, such the number of citations issued by Location, Agency Code, or Violation code. The user will select from a list of attributes for comparison. The comparison can be against the entire population of Citation data or a portion of that population.

- Select Date range or entire population
- Citations Issued
- Violation code
- Location
- Agency Code
- Sex
- Race

- CMV or Hazmat
- Time

A series of predefined Reports will be available by entering the required information. Certain fields may be required to generate a report, most can be optional but are highly recommended to optimize performance. The data will be available to download in an Excel or delimited CSV file. The field delimiter shall be Double Pipes “||”.

**Other predefined Reports shall include:**

- Monthly Citations Issued by Agency Code  
The report will identify all citations issued by Agency for the prior month.
  - Event Date From (required, default to the first day of the prior month)
  - Event Date To (required, default to the last day of the prior month)
  - The report dates will default to the prior month, but the user will be able to adjust the date fields to access data from a different time period.
  - Agency Code (required, selection is from a drop-down list)
  - The user will be able to select X number of Agency Codes for comparison
  - The user will need the option to filter for agencies and the option to select all those agencies. For Example, ‘Boston’ has many agency codes associated with it. The user will need to be able to select all agency codes with Boston in the description.
  - Data Summary frequency - the user will have the ability to determine the frequency at which the data is summarized: Daily, Weekly, Monthly or Yearly. The default will be monthly.
  - If a single Agency Code is selected, the report shall provide the raw citation and violation data for the reporting time period
    - The report shall summarize the data based on the Summary frequency: The number of Citations issued, Violations count, Customer count
  - If multiple Agency Codes are selected, the report shall summarize the data for each Agency Code based on the Summary frequency: The number of Citations issued, Violations, Customer
- Citations Issued by Officer ID  
The report will identify all citations issued by an Officer from a specific Agency.
  - Event Date From (required, default to the first day of the prior month)
  - Event Date To (required, default to the last day of the prior month)
  - The report dates will default to the prior month, but the user will be able to adjust the date fields to access data from a different time period.
  - Agency Code (required, selection is from a drop-down list)
  - Officer ID (required, selection is from a drop-down list)

- Data Summary frequency - the user will have the ability to determine the frequency at which the data is summarized: Daily, Weekly, Monthly or Yearly. The default will be monthly.
- Speeding Violations
 

The report will provide a detailed and summary reporting of Speeding Violations issued. A cross-reference to the Massachusetts Violation Table will be needed to identify the violations that are marked as Speeding, include violations where `fblnSpeed` is marked true on `rfrMR_MAViolationCodes`.

  - Event Date From (required, default to the first day of the prior month)
  - Event Date To (required, default to the last day of the prior month)
  - The report dates will default to the prior month, but the user will be able to adjust the date fields to access data from a different time period. If an Agency code is not selected, the report will display all Speeding violations issued for the time period.
  - Agency Code (optional, selection is from a drop-down list). If not populated, the report will extra all Speeding citations within the requested reporting time frame (from Event Date From and Event Date To dates).
  - Officer ID (optional, selection is from a drop-down list) will only be made available if an Agency Code is selected.
  - Data Summary frequency - the user will have the ability to determine the frequency at which the data is summarized: Daily, Weekly, Monthly or Yearly. The default will be monthly.
- Distracted Driving Violations
 

The report will provide a detailed and summary reporting of the Distracted Driving Violations issued. A cross-reference to the Massachusetts Violation Table will be needed to identify the violations that are marked as Distracted Driving.

  - Event Date From (required, default to the first day of the prior month)
  - Event Date To (required, default to the last day of the prior month)
  - The report dates will default to the prior month, but the user will be able to adjust the date fields to access data from a different time period. If an Agency code is not selected, the report will display all Distracted Driving violations issued for the time period.
  - Agency Code (optional, selection is from a drop-down list). If not populated, the report will extra all Distracted Driving citations within the requested reporting time frame (from Event Date From and Event Date To dates).
  - Officer ID (optional, selection is from a drop-down list) will only be made available if an Agency Code is selected.
  - Data Summary frequency - the user will have the ability to determine the frequency at which the data is summarized: Daily, Weekly, Monthly or Yearly. The default will be monthly.



## **Data Query and Visualization**

The user will be able to generate their own query, based on the criteria they are interested in, using the Data Query and Visualization option.

- The user shall have the ability to select individual fields or All fields to be listed in the output report.
- The output will be displayed in detail record format and summarized in a user defined bar chart format.
- Query construction options – The user will have the opportunity to select from the Basic Query option and the Advanced Query option.
  - The Basic Query will consist of a list of the most referenced citation attributes
    - A list of filter options will be available for the user to include or omit from the query
    - The filter options will be categorized as: Basic Filters, Citation Attributes, Violation Attributes, Person Attributes, Vehicle Attributes
  - The Advanced Query allows the user to construct their own query using all the fields available from the Citation and Violation data, in conjunction with mathematical operators (e.g., AND, OR, Between, Not Between, Equal to, Less Than, Greater Than, Not Equal To, Like/Contains (wildcard text search), NULL, Not Null).

The Basic Query will consist of the following attributes to select from:

### **Basic Filters**

- Event Date From (required)
- Event Date To (required)
- Agency Code – Can be left blank. If blank, all citations within the Event Dates timeframe will be selected. The user will be able to select more than one Agency Code to be included in the report
- Officer ID – Can be left blank. If blank, all citations within the Event Dates timeframe will be selected. The user will be able to select more than one Officer ID to be included in the report. If Officer ID is selected, Agency Code is required.

### **Citation Attributes**

- Citation Source (Court/eCitation/Police/Violator)
- Violator Type (Operator/Owner/Passenger/Bicyclist)
- Citation Type (Arrest/Civil/Criminal Application/Warning)
- Location
- Time or Time of Day (Morning, Afternoon, etc.)
- Crash
- Hearing Requested

### **Violation Attributes**

- Offense Description

- Violation grouping type (Speed, Distracted Driving, OUI)
- Speed MPH
- Speed Zone
- Speed Posted
- Violation assessment amount
- Disposition description
- Disposition date
- Radar
- Clocked
- Criminal
- Major
- Surchargeable

#### **Person Attributes**

- Calculated Age of person or age grouping
- License Class
- Race
- Sex
- Zip Code
- CDL Holder

#### **Vehicle Attributes**

- Vehicle flagged as (CDL, 16+ Passenger, Hazmat)
- Plate Type
- Make
- Model
- Color
- Year

#### **Citation Tree Builder**

The Citation Tree Builder is an interactive tool, where users can select key data elements, gradually building a tree which shows common characteristics of Citations within a particular time period.

- The user can access and build a Citation Tree from the main landing page of the Citation Portal
- The system will allow Citation Trees to be generated based on a selected set of data elements from the Citation Query and Visualization Tool.
- The Event Dates will default to the prior month. The user will have the ability to modify the Event Dates.
- All citation and violation fields will be available as emphasis points to be used in the Citation Tree Builder
  1. Agency Code
  2. Citation Type (Arrest, Civil, Criminal, Warning)
  3. Offense Description
  4. Grouping of Violations (Speed, Distracted Driving, OUI, Criminal)

5. Disposition
6. Location
7. Violator Type (Operator, Owner, Passenger, Bicyclist)
8. Race
9. Sex
10. Age or Age Range of Violator at time of Incident
11. Time (Hour, Minute or Time of Day)
12. CDL Vehicle Flag
13. HazMat Vehicle Flag
14. Crash
15. Speed (MPH)

### Citation Tabulation and Charting

The Citation Tabulation and Charting tool will give users the ability to create cross-tabulation reports, aggregate selected data elements and display the output in a Matrix or Chart.

- The user can access the Citation Tabulation and Charting from the main landing page of the Citation Portal
- The user is prompted to select the citation or violation fields they would like to chart
- The selected citation and violation fields will be summarized and charted based on the individual values they contain. For example, Sex will be aggregate by Male, Female, Unknown and Non-binary
- The user will be able to select the output format, grid, or various chart formats

### User Guides and Videos

The Portal will contain instructional videos, how to user guides, FAQs, and Informational documents to aid users in navigating and accessing the portal features.

The portal shall include a user friendly and intuitive data dictionary, to identify the citation fields, the format of each field, and a description of the data each field contains.

Several configuration tables will be made available on the Citation Portal. These tables will need to be refreshed from ATLAS periodically, to pick up any updates that have been applied:

- The Massachusetts Violation Codes Configuration Table, identifying key characteristics of each violation. This configuration table identifies a wide range of attributes for each violation, including speeding, distracted driving, and discretionary
- The Country Configuration Table, which maps the Country code to the Country Name
- The State Configuration Table, which maps the State code to the State Name
- The Race Configuration Table, which maps the Race code to the Race Description
- The Location Configuration Table, which maps the Location code to the Location name
- The Agency Configuration Table, which maps the Agency code to the Agency name
- The Disposition Configuration Table, which maps the Disposition code to the Disposition Description
- The Plate Type Configuration Table, which maps the Plate Type code to the Plate Type

## Description

Training – how to guides, FAQs and context sensitive help.

A Help option will be made available to the users. The portal shall include a user-friendly set of FAQs, allowing the user to search for common question and answers that may arise.

The portal shall include a set of How-To scenarios and short videos to assist users with navigation of the Dashboards and Reporting options and to perform common activities such as downloading detail data.

The portal shall include recorded tutorials that demonstrates how to navigate the portals various dashboards, reporting and search capabilities.

The information section of the Portal will be maintained and updated as necessary by the Merit Rating Board. The MRB may elect to hold training sessions throughout the year to assist users with using the portal to its full potential and to introduce any new reporting methods that may be implemented over time.

Prior to go-live the vendor shall conduct train the trainer sessions with the MRB that includes:

1. An overview of the training documentation on how to use the Portal
2. An overview of the how-to videos will be provided to demonstrate the use of the Portal
3. Once approved by the MRB, the information will be made available on the portal for the users.

### **Support Requirement**

Support – point of contact for clarification on data and how to questions for reporting and querying.

An administrative login site shall be made available, allowing the MRB access to the portal for necessary updates.

In the Help section, the users will be provided with contact information, a support email address, if they require additional support.

### **Usage Reporting Requirement**

Capture and store data points when the Citation Portal Dashboard or Report is accessed.

This information is intended to be used for internal statistical reporting and analysis on usage.

The usage report will depict the volume of usage by day, week, and month. This will allow the MRB to plan for user support, especially during peak usage times, such as month end and year end reporting.

Information shall include but not be limited to:

- Access Date and Time
- Run Time
- Function Accessed (Dashboard/Report/Visualization Query, etc.)

## ***Quality of Service Requirements***

Quality of Service (Non-Functional) requirements are those that address areas such as usability, reliability, performance, and security. Each of the areas below must be evaluated for relevance for this project.

### **Security Requirements**

Security requirements address access to the system (roles and rights), as well as access to and protection of the information created or used by the system, as defined by the business unit and by existing policies and guidelines. The system shall:

1. Follow the existing IMPACT Security Structure in place to protect web applications/services from unauthorized access
2. Ensure there are no areas of architectural vulnerability
3. Admin Level Security will be provided to allow the MRB to update portal areas with notes, Help, FAQs, Videos.
4. Future capability, the portal shall be designed in a manner that will support the addition of secure user accounts that will have permission to view fields and records that are designated as secure.
5. Penetration and Accessibility testing will need to be completed in accordance with the existing contract.

### **Usability Requirements**

Usability requirements detail the human factors such as the user interface look and feel, help facility, ease of use and aesthetics. This section should include if there is a preference for Impact or Web user interface. The system shall:

1. Conform to the Usability standards designed for the new application system
2. The portal shall adhere to state requirements for accessibility

### **Interface Requirements**

Interface requirements address the software and hardware interactions the system must accommodate. The system shall:

1. Be able to communicate with the ATLAS Database
2. Be able to accept a Bulk Data File

## **SYSTEM REQUIREMENTS – IN SCOPE**

### **Integration with IMPACT Website**

After a review of the features, hosting platform, database, and security structure, MassDOT determined utilizing the existing IMPACT website to host and access Citation Data was the best option.

In addition to using the existing environment, many of the Stakeholders that access the IMPACT site to obtain Crash Data will also be accessing the Citation Data.

Modelling the Citation Portal features after the IMPACT Crash Data Portal will make for a smooth transition for the Stakeholders, since most are familiar with the current look and feel of the IMPACT site. The color scheme of the Citation Portal shall be different from the IMPACT Portal, so the users can easily identify which Portal they are accessing.

Hosting both Crash and Citation data on the same website enables MassDOT to integrate citation data and crash data as well as take advantage of geocoding capabilities present on IMPACT for citation geocoding.

### **Data Transfer**

A bulk data transfer will be developed by MassDOT to populate the citation portal database. Reversed, voided, or rejected Citations will not be included in the Data Extract. The initial data transfer will include an extraction of Citation Data within the last 10 years, transmitted through a MoveIT directory. The vendor will use this extract to do the initial load of the citation database.

A data load process will be developed by the vendor to keep the portal database in-sync with ATLAS (the system of record). The delta records will be identified in ATLAS and transmitted to the portal on a pre-determined schedule using MoveIT. Outline below are the requirements for processing the ATLAS delta file

1. If a new citation is added to ATLAS, this will trigger an Add transaction in the Citation Portal. If the Citation does not exist on the Portal, add the records to the Database tables
2. If any field on the citation record is modified, such as violation code, event date, or disposition, this will trigger an Update transaction in the Citation Portal
3. The portal will need to account for citation and violation information that are reversed, voided, or rejected from a customer record
  - a. When a citation is reversed, voided, or rejected off a customer record, this will trigger a Delete transaction on the Citation Portal
  - b. When a citation is corrected off one customer account and added to another, this would trigger an Add transaction and a Delete transaction on the Citation Portal. The Add transaction will be for the customer record where the active citation currently resides. The Delete transaction will be for the customer record where the citation was reversed, voided, or rejected.

In addition to the Citation and Violation data, the following items will need to be extracted from ATLAS and loaded onto the Citation Portal:

1. Configuration Reference tables - These tables will need to be refreshed from ATLAS periodically, to pick up any updates that have been applied:
  - a. rfrMR\_MAViolaitonCodes: Massachusetts Violation Codes table
  - b. lanCOUNTRY: Country Codes Configuration Table
  - c. lanSTATE: State Code Configuration Table
  - d. lanRace: Race Code Configuration Table
  - e. lanMR\_LocationCodes: Location Codes Configuration Table
  - f. lanActAgency: Agency Code Configuration Table
  - g. lanDrvDisposition: Disposition Codes Configuration Table
  - h. lanVrgPlateType: Plate Type Configuration Tabe

### **Citation Database**

Similar to the IMPACT Crash database it is anticipated that the Citation database will exist in both the private and public instances keeping the authenticated and public users separated by security.

The Citation database will be designed using tables that provide robust performance and query run times for the Dashboards, Reports, and Query Visualization. If multiple users are querying the data at the same time, it's important to not create database contention, slowing down response time.

To ensure updating the correct record on the Citation Portal Database, it is recommended to use a combination of fields as the key to identify the record. For example, using a combination of the following fields will ensure the correct record is obtained: Citation Doc Key, Customer Key, and Violation Sequence Number. If the disposition is updated for one violation on a citation, using the combination of fields will ensure the correct record is updated as opposed to updating all the violation records for that citation.

### **Citation Image**

Using the citation data from the portal database, the system must populate a redacted citation document (PDF) the user may elect to display and print. This requirement has been set to be applied during a future phase of the Citation Portal.

### **Data Analysis**

Data analysis to assess the quality and completeness of the existing IMPACT citation data will be necessary to determine the best approach for integrating with the citation data being extracted and stored within the Citation Portal.

### **GEO Coding**



The Highway Department and MRB expect to apply GEO coding to the citation data in future releases of the portal. With this requirement in mind the solution must consider the necessary data fields, system processing, and GEO coding software to ensure that this requirement is met.

### **Administration Requirements**

The Portal should include an administrative user feature to allow configuration table updates, track portal usage, manage data refresh rates, track system level activity and alert administrators when routines related to data management fail or exceed normal runtimes.

### **Reference Database Tables**

The reference tables will be updated on a pre-determined schedule, as these tables should not change often, the frequency between updates can be a longer period, such as Monthly or Quarterly.

### **Data Encryption**

Applications containing or hosting sensitive data, as defined by State or Federal law, must encrypt data at rest, data in motion over the network and all authentication activity. Encryption algorithm used to encrypt data and authorization activity must meet PCI DSS and HIPAA standards and be encrypted as NIST FIPS 140-2 compliant

### **Data Archiving**

To preserve performance, the portal should be architected to include data archiving capabilities. This feature should be implemented in a manner that allows a site administrator to select records to be archived by date ranges based on which of the following dates event, disposition, enter or something like IMPACT.

### **Database Backup, Refresh and Recovery**

Database Backup and Recovery: Database Backups will be performed on a pre-determined schedule, to ensure the reporting databases can be restored in a timely manner.

Data Refresh: After the initial load, the Delta records will be applied to the Citation Portal based on a pre-determined scheduled. The data should be refreshed in all copies of the database tables, to keep the records in sync.

### **Availability Requirements**

Availability requirements note items such as available/unavailable timeframes, notification specifics, and data retention parameters. The system shall:

1. Be available during the Web Services production schedule
2. Availability should mirror IMPACT

### **Performance Requirements**

Performance requirements address response time, throughput, and capacity issues from a business perspective. The system shall (these should be mutually agreed upon):

1. Conform to performance standards as set by RMV Citation records

2. The Initial Load will be extracted from ATLAS prior to Go Live
3. The Delta updates will be extracted and applied during non-peak processing hours

### **Quality Requirements**

Quality requirements specify maintainability, scalability (increasing capacity), and failure recovery needs. The system shall:

1. Be able to accommodate the growth of the number of Citation records

### **Maintenance and Support Requirements**

Maintenance and Support requirements address the follow-on support and system maintenance that must take place after implementation. The system shall:

1. The vendor will provide System Support/Maintenance of the Portal to include but not limited to:
  - a. Monitor the functionality of the portal
  - b. Update software to adhere to Data Security standards
  - c. Perform Database Maintenance to optimize performance

## **Items for future considerations**

These items have been identified as enhancements to be implemented in the future. The Web Portal will be built flexibly enough to incorporate them later.

1. Future integration with MassDOT IMPACT Platform, integration of Citation information with Crash Data. The Crash database has a limited table containing citation and violation data. The quality and completeness of this data is questionable largely because it was manually entered. Data Analysis will be required to determine the feasibility of linking the Citation to the Crash.
2. Support the addition of secure user accounts that will have permission to view fields and records that are designated as secure.
3. Modifications to the current citation processing or capturing new data points, such as Address of Offense.
4. Mapping by geographical location of the Offense, by Street Address, Mile Marker, or GPS Coordinates.
  - a. A Mapping component, visual overlay of incidents by location, will not be included in the portal during this phase. Currently, there is one field on the citation record that indicates where the violation occurred, the location code which corresponds to the Town. There is an address field on the Massachusetts Uniform Citation, for the address of the offense. At this time, not all citations have this field populated, and the field is not currently captured on the ATLAS Database. A recommendation is to begin capturing this data to be used for future enhancements of the Citation Portal. Future releases may include capturing Street Address, Mile Marker or specific location of the incident to enable geocoding.
5. Subscription Service: The portal shall provide a Subscription Service that allows the requestor to define and subscribe to have reports sent on a regular basis (Weekly, Monthly, Yearly, etc.)
6. Citation Image: Using the citation data from the portal database, the system must populate a redacted citation document (PDF) the user may elect to display and print.

## **Assumptions and Constraints**

### **ASSUMPTIONS**

- ✦ PII Data will not be provided on the Portal.
- ✦ The MRB does not alter Citation Data, it is entered into the Database as it is received.
- ✦ Citations and their attributes are fluid, the Portal will provide a point-in-time snapshot of the citation data.
- ✦ Data extracts will omit Reversed, Voided, and Rejected Citations.

### **CONSTRAINTS**

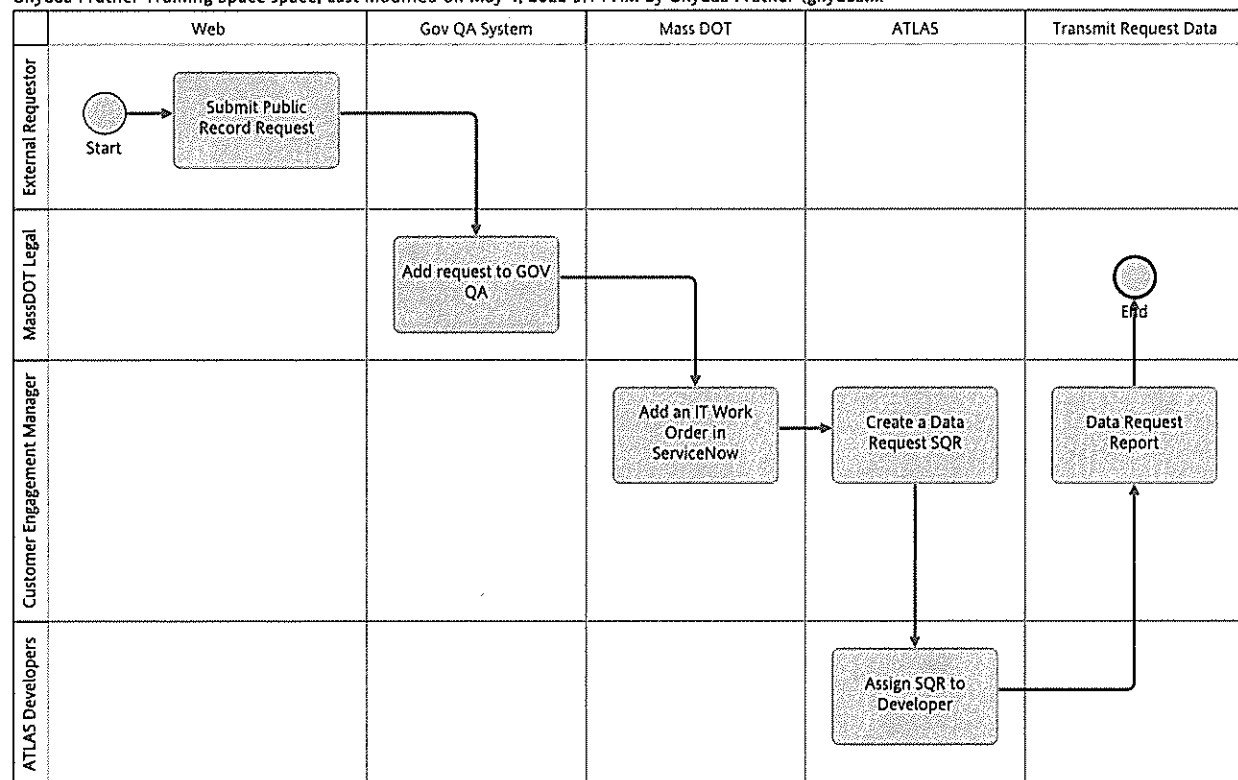
- ✦ The Citation Data to be provided on the Portal is limited to what is currently captured on the Massachusetts Uniform Citation and the data points stored on the ATLAS Database.
- ✦ Citation Data from ATLAS will be updated once a week.
- ✦ CRASH replacement system contains necessary key fields and data to support integration with citation data
- ✦ Existing IMPACT cloud configuration can support increased user and data from citations
- ✦ Project is intended to make citation data accessible to stakeholders to support research, safety planning efforts, and decision-making (e.g., legislators deciding if a law is effective or if a traffic safety law should be created and better enforced)

## Appendix A – Current PRR Process

### **CURRENT PUBLIC RECORDS REQUEST PROCESS – EXTERNAL REQUESTORS**

- ✦ A PRR is submitted online through MASS.Gov
- ✦ MassDOT Legal adds the request To GOV QA
- ✦ The request is received by the Customer Engagement Manager (CEM) at the RMV
  
- ✦ The CEM creates an IT Work Order in Service Now for the request
- ✦ The CEM creates an SQR in ATLAS for the request
- ✦ The SQR is assigned to the Applications Development team member to process the request
- ✦ Once the request is completed, the data is gathered and sent to the CEM
- ✦ Because of the Act to Improve Public Records, a PRR must be responded to within ten business days

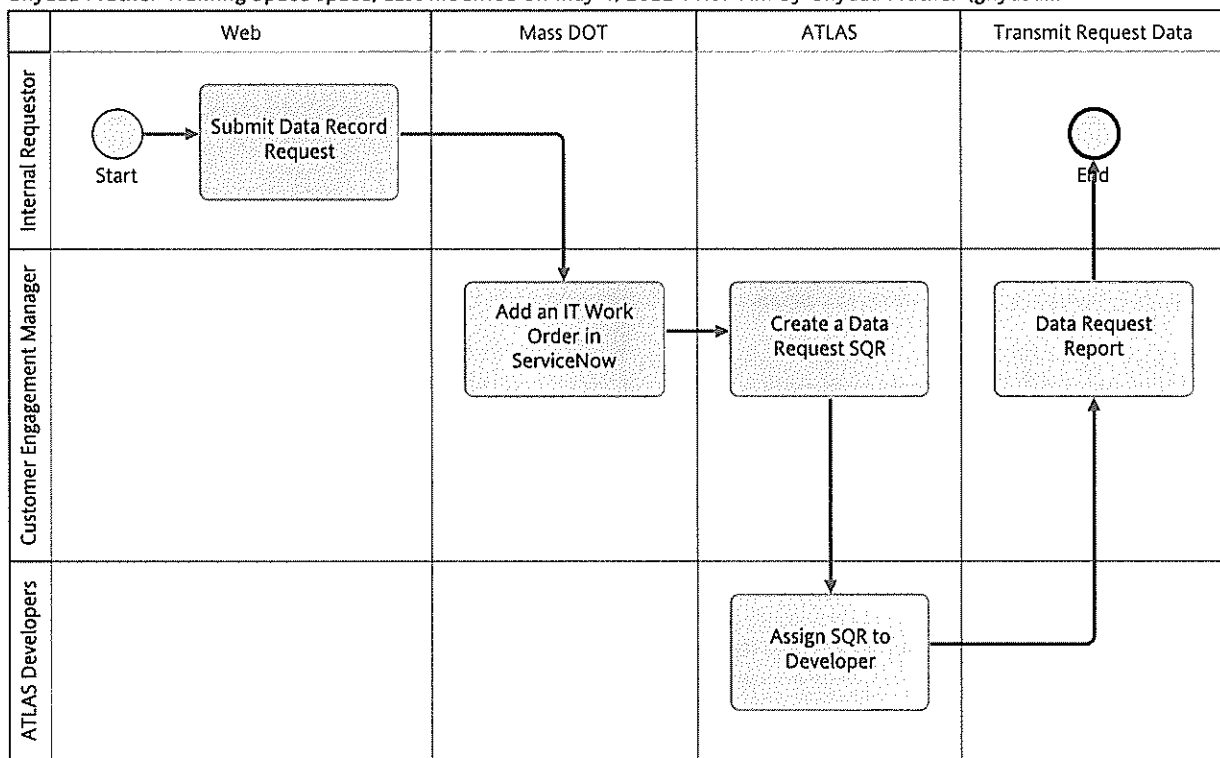
Public Record Request - Current process (ID: 199f04d4eb) <https://us001.blueworkstive.com/scr/processes/199f04d4eb>  
 Ghydaa Prather Training Space space, Last modified on May 4, 2022 9:14 AM by Ghydaa Prather (ghydaa....



## CURRENT PUBLIC RECORDS REQUEST PROCESS – INTERNAL REQUESTORS

- ✦ A PRR is submitted directly to the CEM
- ✦ The CEM creates an IT Work Order in Service Now for the request
- ✦ The CEM creates an SQR in ATLAS for the request
- ✦ The SQR is assigned to the Applications Development team member to process the request
- ✦ Once the request is completed, the data is gathered and sent to the CEM

Public Record Request - Internal process (ID: cf9f0424b6) <https://us001.blueworkslive.com/scr/processes/cf9f0424b6>  
 Ghydaa Prather Training Space space, Last modified on May 4, 2022 11:07 AM by Ghydaa Prather (ghydaa...



## **Appendix B – Citation Data Dictionary**

The Citation Data Dictionary can be found in this document: Citation Fields - Data Dictionary V1.2.xlsx

## Appendix C – Massachusetts Uniform Citation

The Massachusetts Uniform Citation, depicting the information that is currently populated and captured.

MASSACHUSETTS UNIFORM CITATION										TYPE OF CITATION		T0111861	
STATE-WRITTEN WARRANT/TYPE		AGENCY CODE		OFFICER ID. NUMBER		COURT CODE		<input type="checkbox"/> OPERATOR <input type="checkbox"/> PASSENGER <input type="checkbox"/> BICYCLIST		<input type="checkbox"/> OWNER <input type="checkbox"/> YES <input type="checkbox"/> NO		<input type="checkbox"/> YES <input type="checkbox"/> NO	
MOTOR VEHICLE LICENSE NO. OF VIOLATOR		STATE		CLASS		DOL. LICENSE		RACE		SEX		NON-INVOLUNTARY INV. SEARCH	
VIOLATOR NAME (Last)		(First)		(Middle)		BIRTH DATE		BIRTH MONTH		BIRTH DAY		BIRTH YEAR	
ADDRESS		CITY/TOWN		STATE		ZIP							
PLATE TYPE		VEHICLE REGISTRATION NO.		STNC		YEAR		MAKE AND TYPE		COLOR		LIC. VEHICLE	
												<input type="checkbox"/> YES <input type="checkbox"/> NO	
OFFENSE DATE (Month/Day/Year)		LOCATION OF OFFENSE (Route #, St., Hwy, City or Town)		TIME OF OFFENSE		AM		PM		CRASH		<input type="checkbox"/> YES <input type="checkbox"/> NO	
A. CHARGE/SECTION		<input type="checkbox"/> CRIM <input type="checkbox"/> CIVIL		DESCRIPTION OF OFFENSE		ASSESSMENT		JUDGMENT/ADJUDGMENT DATE		COMMENT			
B.		<input type="checkbox"/> CRIM <input type="checkbox"/> CIVIL											
C.		<input type="checkbox"/> CRIM <input type="checkbox"/> CIVIL											
D. SPEEDING		<input type="checkbox"/> 90/17 <input type="checkbox"/> 90/10		CIVIL		MPH IN A ZONE		<input type="checkbox"/> POSTED <input type="checkbox"/> NOT POSTED <input type="checkbox"/> RADAR <input type="checkbox"/> LIDAR <input type="checkbox"/> CLOCKED <input type="checkbox"/> ESTIMATED		TOTAL DUE		DOCKET NUMBER	
SPEEDING ASSESSMENTS INCLUDE A \$50 HEAD INJURY SURCHARGE													
OFFICER CHECK SHEET ONLY		<input type="checkbox"/> ALL CIVIL INFRACTIONS (See Instruction A on back)		<input type="checkbox"/> CRIMINAL APPLICATION (See Instruction B on back)		<input type="checkbox"/> ARREST (No action required)		<input type="checkbox"/> WARNING (No action required)		COURT ADDRESS			
OFFICER CERTIFIES		<input type="checkbox"/> IN HAND TO VIOL. <input type="checkbox"/> MAILED TO VIOL.		<input type="checkbox"/> IN HAND TO VIOLATOR'S AGENT		AGENT NAME							
X		VIOLATOR/AGENT ACKNOWLEDGES RECEIPT OF CITATION		AGENT'S LICENSE NUMBER & STATE									
X													

RMV COPY (IF CIVIL OR COURT COPY (IF CRIM.))

PRESS HARD - You are making 5 copies.



## **Appendix D – Stakeholder Survey Questions**

### Stakeholder Questions

#### Data and Information

1. What citation information would be useful to your efforts?
1. What components of the data do you find are difficult to understand?
1. What other data would help your organization?

#### Use and Purpose

1. What specific purpose would you want this information for?
1. What is the organizational business need/goal? What is the organization trying to accomplish using citation and violation data?
1. Who do you share the data or results of your analysis with?
1. Why is this data important to your organization?
1. Does access support the mission and goals of your organization?

#### Access and Retrieval

1. What would be the ideal way to access this data?
1. What process are you currently following to access this data?
1. When do you typically access or request this data?
1. What format would you prefer the data be provided in?

#### Impediments

1. What aren't you able to do without access to this data?
1. What are the impediments to access this data currently?
1. What problems will access to this data solve?
1. What would happen if this project were not done?
1. What problems should we be trying to solve?
1. What would be the ideal outcome from this project?

#### Improvements and Benefits

1. What improvements will you realize by better access to this data?
1. How will your job be made easier with this data?
1. What do you expect to gain from the implementation of this portal?

#### Impact Website

1. Are you familiar with the Mass Highway Department's Impact website?
1. Have you used the Impact website recently?
1. When you retrieve data/information from the Impact website what type of data do you retrieve?
1. How frequently do you visit the Impact website?
1. What module do most frequently do you use? (Dashboard, Reports, Query and Visualization, Extracts, Crosstabulation, Safety and Analysis)

Other

1. What suggestions do you have for the project or MRB?
1. Who else should we talk to about this project?
1. What type of support do you see your organization needing when accessing this data?
1. What information would you like to be kept abreast of concerning this project?

**MERIT RATING BOARD - CITATION PORTAL  
DATA DICTIONARY**

**VERSION 2.0**

**SEPTEMBER 30, 2022**

**THE COMMONWEALTH OF MASSACHUSETTS  
MASSACHUSETTS DEPARTMENT OF TRANSPORTATION**

**10 PARK PLAZA**

**SUITE 7210**

**BOSTON, MA 02116**

## REVISIONS

<u>Date</u>	<u>Author</u>	<u>Comments</u>
07/21/2022	Ghydaa Prather	Initial release - Version 1.0
09/22/2022	Ghydaa Prather	Version 2.0 Added: Field descriptions, Citation Doc Key Removed: PERS-NUMB-SURR, License Number Changed: Received Data to Posted Date

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## Customer Fields

### Columns

Field Name	Description	Data Type	Size	Format/Valid Value	Publish	Comment
Customer Key	Key assigned to the customer on ATLAS	Integer	4		NO	Key field used to identify a customer. Will be used to group citations by person. Will not be included in data extracts from the portal.
						Class A, B, and C licenses, which are known as commercial driver's licenses (CDLs), allow you to operate large vehicles, like trucks and buses. The Class D license, which is most common, is for passenger vehicles, vans, and small trucks. The Class M license allows you to operate motorcycles
License Class	Credential Class	nvarchar	50		Yes	Month and year of the customer Date of Birth
Date of Birth	Date of Birth in MM/YYYY format	datetime	8	MM/YYYY	Yes	
Age	Calculated age of customer at time of offense	Integer	4		Yes	Calculated age of customer at time of offense
Zip	Zip Code	nvarchar	30		Yes	Zip code of the town in which the violator lives
CDL	CDL Holder	nvarchar	6	Yes, No, blank	Yes	This is a system derived field: Did the violator hold a CDL or CLP at the time of

						the offense? Commercial driver license
						Your ethnicity refers to your background heritage, culture, religion, ancestry or sometimes the country where you were born.
Race	Race	nvarchar	6		Yes	Person is a female, male, unknown or non-binary
Sex	Sex	nvarchar	12	F-Female, M-Male, U-Unknown, X-Non-Binary	Yes	
Country	Country where credential was issued	nvarchar	6		Yes	USA or the country in which the person lives
State	State where credential was issued	nvarchar	2		Yes	The state in which the licensed was issued

## Citation Fields

### Columns

Field Name	Description	Data Type	Size	Format/Valid Value	Publish	Comment
Citation Doc Key	Key assigned to the citation and citation offenses on ATLAS	Integer	4		NO	Key field used to identify a citation and link the citation to the offenses. Will not be included in data extracts from the portal.
Citation Number	Citation Number	nvarchar	40	A##### or #####AA	Yes	Can be blank
Posted Date	Date the Citation was added to ATLAS	datetime	8		Yes	Date the Citation/activity was posted to ATLAS. Will be used for Aging the Citation
Rejected Date	Date the Citation is rejected	datetime	8		Yes	If the citation is rejected with a reason code not equal to "Voided", this field will be populated.
Offense/Event Date	Offense/Event Date	datetime	8	MM/DD/YYYY	Yes	Date/Day the Offense occurred
Source	Citation Source	nvarchar	30	Court, ecitation, Police, Violator	Yes	Came from Police, Violator, eCitation(Electronic Citation) or from the Court.
Non-Inv MV Search	Non-Inventory Motor Vehicle Search	tinyint	1	Yes, No, Unknown	Yes	An inventory search is a search conducted following police department policy when a vehicle is seized. If the police tow the car they will search and make an inventory of the contents.



Business	Business Flag	tinyint	1	Yes, No	Yes	The citation is written on a business rather than person
Date Written	Date Written	datetime	8	MM/DD/YYYY	Yes	Date/day month and year in which the citation was written.
				Operator, Owner, Passenger, Bicyclist	Yes	Owner is owner of the vehicle, operator is the driver of the vehicle at the time of the occurrence, passenger is someone not driving but in the vehicle at the time of the occurrence, and bicyclist is someone riding a bike at the time of the occurrence
Violator Type	Type of Citation	nvarchar	10		Yes	Issuing Agency, which can be a Police Department, Town, or District Court
Agency Code	Issuing Agency	nvarchar	12		Yes	Badge number of the police officer
Officer ID	Issuing Officer ID	nvarchar	16		Yes	jurisdiction over the City or Town where the violation occurred
Court Code	Court Code ID	nvarchar	12		Yes	Arrest is when someone is arrested at the scene occurrence or due to something on their background from another occurrence. Civil is a traffic violation that is non-criminal, i.e., Speeding. Criminal violation is something more serious i.e., Operating Without a License, Driving Under the Influence. Warning
Citation Type	Citation Type	nvarchar	12	Arrest, Civil, Criminal Application, Warning	Yes	

						is a violation that goes on violators record but is not subject to fines.
Location	Offense Location	nvarchar	3		Yes	location in which the offense occurred, city, town etc.
Time - Hour	Time - Hour	nvarchar	2	0-12, Unknown	Yes	Hour: When the offense occurred
Time - Minutes	Time - Minutes	nvarchar	2	0-59, Unknown	Yes	Minute: When the offense occurred
Time - AM/PM	Time - AM/PM	nvarchar	12	AM, PM, Unknown	Yes	AM/PM: When the offense occurred
Crash	Crash	tinyint	1	Yes, No, Unknown	Yes	Flag to indicate if an Accident occurred
Officer Certifies	Officer Certifies	nvarchar	10	In hand to violator, In hand to violator's Agent, Mailed to violator, Unknown	Yes	How the officer hands off the citation to the violator, i.e., In hand, Mailed
CDL Vehicle	CDL Vehicle Flag	nvarchar	3	Yes, No, Unknown	Yes	Commercial Driving Vehicle (Commercial Vehicle)
16+ Passenger	Vehicle designed to transport 16 or more Passengers Flag	nvarchar	3	Yes, No, Unknown	Yes	Flag to indicate if the Vehicle is designed to transport 16 or more Passengers
Hazmat	Hazardous Materials Vehicle Flag	nvarchar	3	Yes, No, Unknown	Yes	Vehicles that carry hazardous material when transported are a risk to safety, environment, health, and safety to property.
Payment Due Date	Payment Due Date	datetime	8	MM/DD/YYYY		Date in which the payment should be completed by
Total Due	Total Due	money	8	Applies to Civil Citations	Yes	Total amount of all violations written on the citation
Paid	Paid Flag	tinyint	1	Yes, No	Yes	Flag indicating if the citation was paid
Hearing Requested	Hearing Requested	tinyint	1	Yes, No	Yes	Hearing was requested for civil citation or warning only.

							Criminal cannot request a hearing
Docket Number	Docket Number	nvarchar	30			Yes	The docket number is the court's case number or tracking number.
Case ID	Court Case ID	nvarchar	20			Yes	A case number is a unique number assigned to a case by the court
Case Filed	Date the Case was Filed	datetime	8			Yes	Date the case was filed

## Violation Fields

### Columns

Field Name	Description	Data Type	Size	Format/Valid Value	Publish	Comment
Citation Doc Key	Key assigned to the citation and citation offenses on ATLAS	Integer	4		NO	Key field used to identify a citation and link the citation to the offenses. Will not be included in data extracts from the portal.
Conviction Sequence	Violation Sequence Number	Integer	4		Yes	The assigned sequence number for a violation within a citation
Chap/Sec/Sub	Massachusetts General Law Violation code	nvarchar	20		Yes	Massachusetts General Law Violation Code
Offense Description	Massachusetts General Law Violation code Description	nvarchar	200		Yes	Massachusetts General Law Violation Code description
Offense Type	Offense Type	nvarchar	12	Civil, Criminal, Warning	Yes	Civil violation, Warning violation or Criminal violation
Speed Provided	Speed provided	tinyint	1	Yes, No	Yes	Speed provided on citation from police officer
MPH	Violation Speed - Miles Per Hour	Integer	4		Yes	Miles per hour that violator was travelling
Zone	Posted Speed Limit	Integer	4		Yes	Posted speed limit allowed for the area
Posted	Posted Speed Limit Sign	nvarchar	10	Yes, No, Unknown	Yes	Flag indicates if a sign for the posted speed limit for the area is available

Radar	Radar - The type of device used to detect speed	nvarchar	10	Lidar, Radar, Unknown	Yes	The type of device used to detect speed
						<b>Clocked</b> - The officer indicates they followed behind the vehicle for a given length of time and maintained a consistent speed with the vehicle. <b>Estimated</b> - the officer is now focusing, or targeting, their attention on a specific vehicle. During this observation period, the officer will estimate the target vehicle's speed independently of and before using any speed measuring device. With experience, the speed estimation will coincide with target identification. Estimation relates to Lidar, Radar and Clocked.
Clocked	Clocked - A device used to detect speed	nvarchar	10	Clocked, Estimated, Unknown	Yes	
Assessment	Violation Assessment amount	money	8	Applies to Civil Motor Vehicle Infractions	Yes	Amount owed for the violation
						Violation assessment, because of adjudication, based on Massachusetts General Law or a court hearing. Codes such as DIS, R, NR, etc.
Disposition	Violation Disposition	nvarchar	12		Yes	
Disposition Description	Violation Disposition Description	nvarchar	255		Yes	Description of the Violation assessment code. Such as

						Dismissed, Responsible, No Responsible, etc.
Disposition Date	Violation Disposition Date	datetime	8	MM/DD/YYYY	Yes	Date the violation assessment is rendered
Criminal	Criminal Indicator	nvarchar	1	C: Criminal, N:Non-Criminal	Yes	Indicates whether it is criminal act or non-criminal
Major	Major Indicator	tinyint	1	Yes, No	Yes	Indicates whether it is Major or Minor violation. Used to determine Habitual Offenders.
Surchargeable	Surchargeable Offense	tinyint	1	Yes, No	Yes	A surchargeable incident is an at fault accident or traffic law offense that may result in an increase in an operator's insurance premium.
SDIP Points	Safe Driver Insurance Plan Points	smallint	2		Yes	In Massachusetts, drivers accumulate two points for minor violations like speeding. For major violations, like operating under the influence, drivers will get five points. Driver's license points in Massachusetts are called SDIP points.

# Vehicle Fields

## Columns

Field Name	Description	Data Type	Size	Format/Valid Value	Publish	Comment
Country	Country of Vehicle Registration	nvarchar	6		Yes	USA or another country of which the vehicle is from
State	State of Vehicle Registration	nvarchar	4		Yes	State of which the vehicle is registered in
Plate Type	Vehicle Plate Type	nvarchar	50		Yes	The plate could be Normal, Reserved, or Vanity plate
Registration Number	Vehicle Registration Number	nvarchar	10		No	This is the plate number that is attached to the vehicle
Make and Model	Vehicle Make and Model	nvarchar	40		Yes	The type of vehicle that the person is driving.
Year	Vehicle Year	nvarchar	4		Yes	Year of the vehicle, ie, 2010, 2022
Color	Vehicle Color	nvarchar	6		Yes	Color of the vehicle





## Exploring the History of Drivers Who Sustain Injuries in a Crash

October 2022

The injury surveillance team at DPH has conducted an analysis of drivers who were hospitalized for crash-related injuries. This analysis explores the history of these hospitalized drivers in order to identify opportunities for preventing crashes that result in hospitalizations, especially crashes related to impaired driving.

The team analyzed data from the MA Crash-Related Injury Surveillance System (MA CRISS), a linked data set that includes hospital, driver, and crash data. Previously, the team determined that hospital discharge data identified approximately three times as many hospitalized drivers as intoxicated (24%) compared to crash (8%) and driver data (8%).

This new analysis found the following:

- Health care providers or law enforcement officials identified some hospitalized drivers as intoxicated. The analysis calls this group “drivers identified as intoxicated.” The analysis found that only a small proportion of this group admitted to or were convicted of Operating Under the Influence (OUI) in court.
  - According to the analysis, only 1 in 5 (21%) hospitalized drivers identified as intoxicated in crash data admitted to or were convicted of OUI.
  - Furthermore, only 1 in 10 hospitalized drivers identified as intoxicated in hospital data admitted to or were convicted of OUI.
- Of hospitalized drivers, 2% of drivers not identified as intoxicated were driving on a suspended license at the time of the crash, compared to 6% of drivers identified as intoxicated in hospital data only, and 9% of drivers identified as intoxicated in crash or driver data.
- Nearly 25% of hospitalized drivers had at least one at-fault crash in the previous 5 years and some had up to six prior at-fault crashes in their driver record. Hospitalized drivers who were identified as intoxicated in crash or driver data had more at-fault crashes in the previous 5 years than drivers not identified as intoxicated.
- Based on driver records, only a small percentage of hospitalized drivers had admitted to or were convicted of OUI in the previous 5 years. This finding may indicate that previous impaired driving crashes are not being captured in drivers’ records.

Opportunities for prevention or intervention include:

- Evaluation of the judicial process to better understand how OUI cases are adjudicated.
- Bedside screening, brief intervention, and referral to treatment (SBIRT) for substance use disorders and concerted follow-up efforts to connect those identified as intoxicated to services.
- Supporting equitable Medical Fitness Reporting that alerts the Registry of Motor Vehicles when a health care provider has determined that a driver is cognitively or physically impaired due to intoxication.
- Education and intervention post-crash, beyond insurance step increases.
- Development of alternative transportation options for people with suspended licenses.
- All-offender Ignition Interlock legislation proposed in the 2018 MA Strategic Highway Safety Plan.

Definitions:

- Hospitalized driver: A person operating a car, truck, or motorcycle who experienced a crash and was admitted to a hospital for treatment of injuries related to the crash.
- Identified as intoxicated: Hospital or crash data reflected evidence that a driver had been intoxicated while driving. For hospital data, a driver was identified as intoxicated when data included diagnostic codes for use of one or more substances, including alcohol, cannabis, and opioids. For crash data, a driver was identified as intoxicated when a crash report included an OUI-related violation code, a BAC level of .08 or higher, or other data indicating the police suspected alcohol or drug use. See appendices A-C for detailed descriptions of diagnosis codes, violation codes, and other intoxication identifiers.
- Admitted to or convicted of OUI: Driver data indicated a driver was found guilty of OUI or received an OUI violation that was continued without a finding. Cases continued without a finding are, legally, not convictions. In such cases, drivers acknowledge that they operated under the influence; the court then requires the driver to meet certain conditions, such as driver training and substance use education or treatment. If these conditions are met, the case is dismissed; if not, a driver may be found guilty of OUI.
- Hospital data: Inpatient hospital discharge data maintained by the Center for Health Information and Analysis.
- Crash Data: Data collected by law enforcement and maintained in the Crash Data System by the Registry of Motor Vehicles (RMV). See [Massachusetts Crash Report E-Manual](#) to learn more.
- Driver Data: Driver licensing and history data, including driving violation convictions and license suspensions, also maintained by the RMV.

**Summary of Findings from Analysis of Integrated Driver-Crash-Hospital Discharge Data  
Alcohol and Drug Intoxication among Drivers Hospitalized for Motor Vehicle Crash Injuries,  
MA Crash-Related Injury Surveillance System (MA CRISS), FY2016 - FY2018  
October 2022**

**Background:** Analysis of 2012-2015 MA CRISS data identified approximately one in five car/truck drivers (20.6%) as being under the influence of alcohol and/or drugs at the time of the crash. Crash data identified 70% fewer drivers as being under the influence of alcohol and/or drugs at the time of the crash (6.1% vs. 20.6%). A subsequent analysis by the MDPH Injury Surveillance Program comparing 2015 intoxication indicators in hospital discharge, crash, and driver data found that hospital discharge data identified approximately three times as many hospitalized drivers as intoxicated (24.1%) as crash (8.4%) or driver data (7.7%) (data not published).

**Purpose of Current Analysis:** 1) Assess history of risky driving in hospitalized drivers (includes motorcycle operators) identified as intoxicated at the time of the crash in hospital data but not crash or driver data to determine potential opportunities for intervention. 2) Demonstrate the utility of linked crash-driver-hospital discharge data to inform traffic safety measures.

**Data Sources:** FY2016 - FY2018 MA Crash-Related Injury Surveillance System data, including the following linked data sources:

- Crash Data System, MA Registry of Motor Vehicles
- Driver License/History Records, MA Registry of Motor Vehicles
- Inpatient Hospital Discharge data, Center for Health Information and Analysis

Findings on the following pages summarize answers the following questions:

- Q1. What percentage of hospitalized drivers were identified in each data source as intoxicated at the time of the index crash (crash in linked FY2016-FY2018 data)?
- Q2. What percentage of drivers identified as intoxicated in hospital discharge and/or crash data ultimately admitted to or were convicted of operating under the influence (OUI - based on driver data)?
- Q3. What were the three study groups and how many drivers were in each group?
- Q4. What percentage of hospitalized drivers in each study group were driving on a suspended license at the time of the index crash?
- Q5a. What percentage of drivers in each group had admitted to or were convicted of OUI in the 5 years prior to the index crash?
- Q5b. What was the average number of OUI convictions/admissions per driver and total number of OUI convictions/admissions per group in the 5 years prior to the index crash?
- Q6a. What percentage of drivers in each group had an at-fault crash in the 5 years prior to the index crash?
- Q6b. What was the average number of at-fault crashes per driver and the total number of at-fault crashes per group in the 5 years prior to the index crash?

See Appendices A - C for alcohol and drug use indicators used in hospital discharge, crash, and driver data, respectively.

**Limitations:** This analysis had several limitations. The analysis used linked FY2016-FY2018 MA driver-crash-hospital discharge data. These data do not represent all drivers who were hospitalized in MA for crash-related injuries for several reasons, including that the police were not involved in the crash, the driver was hospitalized more than one day following the crash, the driver was unlicensed, the crash report was not submitted to the state crash data system, or other missing or incorrect data prevented data linkage. A small number of hospital discharge records may be linked to the wrong crash and driver record. Alcohol and drug intoxication may be underestimated if police or healthcare providers did not test for alcohol or drugs, delayed testing, or positive results were not documented in the crash or medical record. Some OUI violations in crash data may have been missed, as violations were documented in non-standardized free text fields. There were also many incomplete Chap.90, Sec.23 and Sec. 24 violation codes in crash data. These laws cover OUI violations, but also include violations for speeding and reckless driving. Because they were incomplete, we were unable to determine whether they were OUI-related.

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These results were compiled by the MA Department of Public Health Injury Surveillance Program.

Q1. What percentage of hospitalized drivers were identified in each linked data source as intoxicated at the time of the index crash (crash in linked FY2016-FY2018 data)?

<b>Table 1. Alcohol and Drug Intoxication among Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018</b>			
<b>Data Source<sup>2</sup></b>	<b>Total # of Drivers</b>	<b>Identified as Intoxicated in Data Source n</b>	<b>Identified as Intoxicated in Data Source %</b>
Hospital discharge data	3,615	764	21.1%
Crash data	3,615	353	9.8%
Driver data	3,615	110	3.0%

Of the 3,615 hospitalized car/truck drivers and motorcycle operators,

\* 21.1% were identified in hospital discharge data as intoxicated at the time of the crash.

\* 9.8% were identified in crash data as intoxicated at the time of the crash.

\* 3.0% were identified in driver data as intoxicated at the time of the crash, that is, admitted to or was convicted of OUI.

Q2. What percentage of drivers identified as intoxicated in hospital discharge and/or crash data admitted to<sup>3</sup> or were convicted of operating under the influence (OUI) of alcohol or drugs in the index crash?

<b>Table 2. Drivers Identified as Intoxicated Who Admitted To or Were Convicted Of OUI, by Source Where Identified as Intoxicated, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016-FY2018<sup>1</sup> (N = 3,615)</b>			
<b>Data Source<sup>2</sup></b>	<b># Drivers Identified in Data Source as Intoxicated</b>	<b># Drivers Who Admitted to or were Convicted of OUI (Driver data)</b>	<b>% Drivers Who Admitted to or were Convicted of OUI (Driver data)</b>
Hospital discharge data <sup>4</sup>	764	74	9.7%
Crash data <sup>5</sup>	353	73	20.7%
Both hospital discharge and crash data	228	51	22.4%

1. Linked data do not include all drivers hospitalized for MV crash injuries. See [Alcohol and Drug Involvement in MA Motor Vehicle Crashes, 2012-2015](#) for more information about MA CRIS linked data.

Fiscal years 2016-2018: Oct. 1, 2015 - Sep. 30, 2018. See appendices A-C for descriptions of intoxication indicators. Drivers with incomplete Ch90/Sec23 and Sec24 violation codes in crash data and no other intoxication indicators were excluded from this analysis.

2. Categories are not mutually exclusive.

3. These were OUI cases "continued without a finding", in which the driver admits they would likely be found guilty in a court case and agrees to complete requirements, such as driver training and substance addiction treatment.

4. May or may not be an intoxication indicator in crash data.

5. May or may not be intoxication indicator in hospital discharge data.

\* Of the 764 hospitalized drivers identified in hospital discharge data as intoxicated at the time of the index crash, only one in ten (9.7%) admitted to or was convicted of OUI.

\* Of the 353 hospitalized drivers identified in crash data as intoxicated at the time of the index crash, only one in five (20.7%) admitted to or was convicted of OUI.

\* Of the 228 hospitalized drivers identified in both hospital discharge AND crash data as intoxicated at the time of the index crash, only slightly over one in five (22.4%) admitted to or was convicted of OUI.

Q3. What were the three study groups and how many drivers were in each group?

Table 3. Study Groups Used in the Analysis of Intoxicated Drivers, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup>	
Study Group <sup>2</sup>	Total # Drivers in Group
Group 1: No Intoxication Indicators <sup>3</sup>	2,712
Group 2: Intox. Indicator in hospital data only <sup>4</sup>	513
Group 3: Intox. Indicator in crash and/or driver data <sup>5</sup>	390
<b>Total</b>	<b>3,615</b>

\* There were 513 drivers in the main study group (group 2). These drivers were identified as intoxicated in hospital discharge data, but not in crash or driver data.

\* Drivers in group 2 were compared with two other groups: The 2,712 drivers in group 1 with no intoxication indicators and the 390 drivers in group 3 with intoxication indicators in crash and/or driver data.

Q4. What percentage of hospitalized drivers in each study group were driving on a suspended license at the time of the index crash?

Table 4. Number and Percentage of Drivers who Crashed While Driving on a Suspended License, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup> (N = 3,615)			
Study Group <sup>2</sup>	Total # Drivers in Group	# Drivers Who Crashed on Susp. License	% Drivers Who Crashed on Susp. License
Group 1: No Intoxication Indicators <sup>3</sup>	2,712	45	1.7%
Group 2: Intox. Indicator in hospital data only <sup>4</sup>	513	28	5.5%
Group 3: Intox. Indicator in crash and/or driver data <sup>5</sup>	390	35	9.0%

1. Linked data do not include all drivers hospitalized for MV crash injuries. See [Alcohol and Drug Involvement in MA Motor Vehicle Crashes, 2012-2015](#) for more information about MA CRISS linked data.

Fiscal years 2016-2018: Oct. 1, 2015 - Sep. 30, 2018. See appendices A-C for descriptions of intoxication indicators. Drivers with incomplete Ch90/Sec23 and Sec24 violation codes in crash data and no other intoxication indicators were excluded from this analysis.

2. Categories are mutually exclusive.

3. No intoxication indicators in hospital discharge, crash, or driver data.

4. Intoxication indicator in hospital discharge data, but not in crash or driver data.

5. Intoxication indicator in crash and/or driver data. May or may not be an intoxication indicator in hospital discharge data.

\* Of the 2,712 hospitalized drivers not identified as intoxicated in any of the data sources, 1.7% crashed while driving on a suspended license (n = 45 drivers).

\* Of the 513 hospitalized drivers identified as intoxicated in hospital discharge data only, 5.5% crashed while driving on a suspended license (n = 28 drivers).

\* Of the 390 hospitalized drivers identified as intoxicated in crash and/or driver data, 9.0% crashed while driving on a suspended license (n = 35 drivers).

Q5a. What percentage of drivers in each group had admitted to or were convicted of OUI in the 5 years prior to the index crash?

Table 5a. OUI Convictions or Admissions in the 5 Years Prior to the Index Crash, by Study Group, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup> (N = 3,615)			
Study Group	Total # Drivers in Group	# Drivers with OUI Convictions or Admissions, Prev. 5 yrs	% Drivers with OUI Convictions or Admissions, Prev. 5 yrs
Group 1: No Intoxication Indicators <sup>2</sup>	2,712	30	1.1%
Group 2: Intox. Indicator in hospital data only <sup>3</sup>	513	16	3.1%
Group 3: Intox. Indicator in crash and/or driver data <sup>5</sup>	390	17	4.4%

\* The percentage of drivers who had admitted to or were convicted of OUI in the 5 years prior to the index crash was low in all groups, but was slightly higher in drivers identified as intoxicated at the time of the index crash (groups 2 and 3) than drivers not identified as intoxicated at the time of the index crash (group 1).

\* Of the 2,712 hospitalized drivers not identified as intoxicated in any of the data sources, 1.1% had admitted to or were convicted of OUI in the 5 years prior to the index crash (n = 30 drivers).

\* Of the 513 hospitalized drivers identified as intoxicated in hospital discharge data only, 3.1% had admitted to or were convicted of OUI in the 5 years prior to the index crash (n = 16 drivers).

\* Of the 390 hospitalized drivers identified as intoxicated in crash and/or driver data, 4.4% had admitted to or were convicted of OUI in the 5 years prior to the index crash (n = 17 drivers).

Q5b. What was the average number of OUI convictions/admissions per driver and the total number of OUI convictions/admissions per group in the 5 years prior to the index crash?

Table 5b. Average Number of OUI Convictions/Admissions per Driver and Total Number of OUI Convictions/Admissions per Group in the 5 Years Prior to the Index Crash, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup> (N = 3,615)			
Study Group	# Drivers with OUI Conviction or Admission, Prev. 5 yrs	Average # of OUI Convic./Admiss. per Driver <sup>5</sup> , Prev. 5 yrs	Total # of OUI Convic./Admiss. in Group, Prev. 5 yrs
Group 1: No Intoxication Indicators <sup>2</sup>	30	1	32
Group 2: Intox. Indicator in hospital data only <sup>3</sup>	16	1	20
Group 3: Intox. Indicator in crash and/or driver data <sup>4</sup>	17	1	23

1. Linked data do not include all drivers hospitalized for MV crash injuries. See [Alcohol and Drug Involvement in MA Motor Vehicle Crashes, 2012-2015](#) for more information about MA CRISS linked data.

Fiscal years 2016-2018: Oct. 1, 2015 - Sep. 30, 2018. See appendices A-C for description of intoxication indicators. Drivers with incomplete Ch90/Sec23 and Sec24 violation codes in crash data and no other intoxication indicators were excluded from this analysis.

2. No intoxication indicators in hospital discharge, crash, or driver data.

3. Intoxication indicator in hospital discharge data, but not in crash or driver data.

4. Intoxication indicators in crash and/or driver data. May or may not be an intoxication indicator in hospital discharge data.

5. Of drivers in that group who had any OUI convictions/admissions in the 5 years prior to the index crash.

\* In each group of drivers, the average number of OUI convictions/admissions per driver was 1, although a few drivers had been convicted of or admitted to OUI 2-3 times in the 5 years prior to the index crash (data not shown).

\* Of the 2,712 hospitalized drivers not identified as intoxicated in any of the data sources, 30 drivers had a total of 32 OUI convictions/admissions in the 5 years prior to their index crash.

\* Of the 513 hospitalized drivers identified as intoxicated in hospital discharge data only, 16 drivers had a total of 20 OUI convictions/admissions in the 5 years prior to their index crash.

\* Of the 390 hospitalized drivers identified as intoxicated in crash and/or driver data, 17 drivers had a total of 23 OUI convictions/admissions in the 5 years prior to their index crash.

Q6a. What percentage of drivers in each group had an at-fault crash in the 5 years prior to the index crash?

Table 6a. At-fault Crashes in the 5 Years Prior to the Index Crash, by Study Group, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup> (N = 3,615)			
Group	Total # Drivers in Group	# Drivers with Any At-fault Crash, Prev. 5 yrs	% Drivers with Any At-fault Crash, Prev. 5 yrs
Group 1: No Intoxication Indicators <sup>2</sup>	2,712	611	22.5%
Group 2: Intox. Indicator in hospital data only <sup>3</sup>	513	116	22.6%
Group 3: Intox. Indicator in crash and/or driver data <sup>5</sup>	390	101	25.9%

\* The percentage of drivers with any at-fault crash in their driving record in the 5 years prior to the index crash was high in all groups, although it was highest in drivers identified as intoxicated in crash and/or driver data (group 3).

\* Of the 2,712 hospitalized drivers not identified as intoxicated in any of the data sources, 22.5% had any at-fault crashes in the 5 years prior to the index crash (n = 611 drivers).

\* Of the 513 hospitalized drivers identified as intoxicated in hospital discharge data only, 22.6% had any at-fault crashes in the 5 years prior to the index crash (n = 116 drivers).

\* Of the 390 hospitalized drivers identified as intoxicated in crash and/or driver data, 25.9% had any at-fault crashes in the 5 years prior to the index crash (n = 101 drivers).

Q6b. What was the average number of at-fault crashes per driver and the total number of at-fault crashes per group in the 5 years prior to the index crash?

Table 6b. Average Number of At-fault Crashes per Driver and Total Number of At-fault Crashes per Group in the 5 Years Prior to the Index Crash, Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018 <sup>1</sup> (N = 3,615)			
Study Group	# Drivers with Any At-fault Crash, Prev. 5 yrs	Average # of At-fault Crashes per Driver <sup>5</sup> , Prev. 5 yrs	Total # of At-fault Crashes in Group, Prev. 5 yrs
Group 1: No Intoxication Indicators <sup>2</sup>	611	1	824
Group 2: Intox. Indicator in hospital data only <sup>3</sup>	116	2	186
Group 3: Intox. Indicator in crash and/or driver data <sup>4</sup>	101	2	160

1. Linked data do not include all drivers hospitalized for MV crash injuries. See [Alcohol and Drug Involvement in MA Motor Vehicle Crashes, 2012-2015](#) for more information about MA CRISS linked data.

Fiscal years 2016-2018: Oct. 1, 2015 - Sep. 30, 2018. See appendices A-C for description of intoxication indicators. Drivers with incomplete Ch90/Sec23 and Sec24 violation codes in crash data and no other intoxication indicators were excluded from this analysis.

2. No intoxication indicators in hospital discharge, crash, or driver data.

3. Intoxication indicator in hospital discharge data, but not in crash or driver data.

4. Intoxication indicators in crash and/or driver data. May or may not be an intoxication indicator in hospital discharge data.

5. Of drivers in that group who had any at-fault crashes in the 5 years prior to the index crash.

\* Drivers identified as intoxicated at the time of the index crash (groups 2 and 3) had an average of 2 at-fault crashes in the previous 5 years compared to an average of 1 at-fault crash in the previous 5 years among drivers not identified as intoxicated (group 1). Many drivers in all three groups had multiple at-fault crashes in the 5 years prior to the index crash, with a maximum of 6 crashes (data not shown).

\* Of the 2,712 hospitalized drivers not identified as intoxicated in any of the data sources, 611 drivers had a total of 824 at-fault crashes in the 5 years prior to their index crash.

\* Of the 513 hospitalized drivers identified as intoxicated in hospital discharge data only, 116 drivers had a total of 186 at-fault crashes in the 5 years prior to their index crash.

\* Of the 390 hospitalized drivers identified as intoxicated in crash and/or driver data, 101 drivers had a total of 160 at-fault crashes in the 5 years prior to their index crash.



Please contact Jeanne.Hathaway@mass.gov if interested in using these indicators as codes may be updated periodically.

#### Appendix A

#### Alcohol and Drug Intoxication among Drivers Hospitalized for Motor Vehicle Crash Injuries, MA Crash-Related Injury Surveillance System, FY2016 - FY2018

Search for specified ICD-10-CM codes in all diagnosis and external cause code fields in hospital discharge data.

Alcohol	
ICD-10-CM Code	Description
Purpose of Current Analysis: 1) Assess history of risky driving in hospitalized drivers (includes motorcycle operators) identified as operating under the influence of alcohol and/or drugs (OUI) at the time of the crash in hospital data but not crash or	Alcohol codes (conservative definition)
	Does not include abuse or dependence in remission; uncomplicated dependence without intoxication; alcohol use complicating pregnancy, childbirth, and the puerperium (O99.31); or blood alcohol levels below 80 mg/100 ml (Y90.0-Y90.3);
F10.10	alcohol abuse, uncomplicated
F10.12	alcohol abuse, with intoxication
F10.13	alcohol abuse, with withdrawal
F10.14	alcohol abuse, with alcohol-induced mood disorder
F10.15	alcohol abuse, with alcohol-induced psychotic disorder
F10.180	alcohol abuse, with alcohol-induced anxiety disorder
F10.22	alcohol dependence, with intoxication
F10.23	alcohol dependence, with withdrawal
F10.24	alcohol dependence, with alcohol-induced mood disorder
F10.25	alcohol dependence, with alcohol-induced psychotic disorder
F10.280	alcohol dependence, with alcohol-induced anxiety disorder
T51	Toxic effect of alcohol (all types of alcohol; there are no adverse effects or underdosing codes)
Y90 (.4-.8)	Blood alcohol level of 80 mg/ml or higher
F10.9, R78.0, Y90 (with 4th char 0-3, 9)	Additional alcohol codes for any alcohol use (NOT used in OUI analysis of FY2016-FY2018 linked driver-crash-hospital discharge data)
F10.92	alcohol use, unspecified, with intoxication
F10.93	alcohol use, unspecified, with withdrawal
F10.94	alcohol use, unspecified, with alcohol-induced mood disorder
F10.95	alcohol use, unspecified, with alcohol-induced psychotic disorder
F10.980	alcohol use, unspecified, with alcohol-induced anxiety disorder
R78.0	Finding of alcohol in blood
Y90(.0-3)	Blood alcohol levels <80 mg/100 ml
Y90.9	Presence of alcohol in blood, level not specified

Psychoactive Drugs (other than alcohol)	
<p>(F11,F13-F15,F19)[.10,.12-.15]; F12[.10,.12,.13,.15]; (F16,F18)[.10,.12,.14,.15]; (F12-F16 and F18, F19)[.180]; (F11,F13-F15,F19)[.22-.25]; F12[.22,.23,.25]; (F16,F18)[.22,.24,.25]; (F12-F16 and F18, F19)[.280]; (F11,F13-F15,F19)[.90,.92-.95]; F12[.90,.92,.93,.95]; (F16,F18)[.90,.92,.94,.95]; (F12-F16 and F18, F19)[.980]; (T40.0-T40.4 &amp; T40.6)[w/6th char 1-5]; (T40.5 &amp; T40.7-T40.9)[w/6th char 1-4]; (T41.0-T41.2 &amp; T41.5)[w/6th char 1-4]; (T42.0-T42.6 &amp; T42.8)[w/6th char 1-4]; (T43.0-T43.6 &amp; T43.8)[w/6th char 1-4]; (T41.4, T42.7, T43.9)[w/5th char 1-4]; (T50[.90,.91,.99])[w/6th char 1-4]; R78.1-R78.4; and a 7th char of A or missing for all codes</p>	<p><b>All psychoactive drugs</b></p>
	<p><b>Drug categories included:</b> opioids and other narcotics (F11, T40); cannabis (F12, T40.7); sedatives, hypnotics, and antiepileptics (F13, T42); cocaine (F14, T40.5, R78.2); other stimulants (F15, T43.6); hallucinogens (F16, T40.8, T40.9); inhalants and inhaled or IV anesthetics (F18, T41); other psychoactive substances (F19, T43); unspecified and multiple drugs (certain T50.9 codes)</p>
	<p><b>Drug categories excluded:</b> nicotine (F17), antibiotics (T36), anti-infectives and anti-parasitics (T37), hormones (T38), nonopioid analgesics, antipyretics, and antirheumatics (T39), local anesthetics (T41.3), unspecified psychotropic drugs (may be Lithium or Valproic Acid) (T43.9); autonomic nervous system drugs (T44), hematologic system drugs (T45), cardiovascular system drugs (T46), gastrointestinal system drugs (T47), muscular and respiratory system drugs (T48), topical drugs and ophthalmological, otorhinolaryngological and dental drugs (T49), diuretics and other specified drugs (T50, except T50.9 codes for unspecified or multiple drugs)</p>
	<p><b>Code categories included:</b> drug abuse, uncomplicated (FXX.10); drug abuse, dependence, or use with intoxication or withdrawal (FXX [.12.13,.22,.23,.92,.93]); drug abuse, dependence or use with drug-induced mood, psychotic, or anxiety disorder (FXX [.14,.15,.180,.24,.25,.280,.94,.95,.980]); drug poisoning (specified T40-T43, T50, with 6th character 1-4); adverse effects of opioids (T40.XX5); specified drugs found in blood (R78.0-R78.4)</p> <p><b>Code categories excluded:</b> drug dependence without intoxication (FXX.20); drug abuse or dependence in remission (FXX [.11,.21]); drug abuse, dependence or use with other or unspecified drug-induced disorders (specified FXX [.18,.19,.28,.29,.98,.99]); adverse effects of drugs, except opioids (TXX.XX5); underdosing of drugs (TXX.XX6); other psychotropic drugs found in blood (since may be Lithium or Valproic Acid)(R78.5-R78.9); injury, poisoning or other external causes complicating childbirth (O9A.2); drug use complicating pregnancy, childbirth, and the puerperium (O99.32); or long-term/current use of opiate analgesic (Z79.891)</p>

## Opioids

ICD-10-CM Code	Description
F11[.10,.12-.15]; F11[.22-25]; F11[.90,.92-.95]; (T40.0-T40.4, and T40.6)[with 6th char 1-5]; R78.1; and a 7th char of A or missing for all codes	All opioid codes (There are no codes for opioid-induced anxiety disorders)
F11.10	opioid abuse, uncomplicated
F11.12	opioid abuse, with intoxication
F11.13	opioid abuse, with withdrawal
F11.14	opioid abuse, with opioid-induced mood disorder
F11.15	opioid abuse, with opioid-induced psychotic disorder
F11.22	opioid dependence, with intoxication
F11.23	opioid dependence, with withdrawal
F11.24	opioid dependence, with opioid-induced mood disorder
F11.25	opioid dependence, with opioid-induced psychotic disorder
F11.90	opioid use, unspecified
F11.92	opioid use, unspecified, with intoxication
F11.93	opioid use, unspecified, with withdrawal
F11.94	opioid use, unspecified, with opioid-induced mood disorder
F11.95	opioid use, unspecified, with opioid-induced psychotic disorder
T40.0 (with 6th char 1-5)	poisoning by or adverse effect of opium
T40.1 (with 6th char 1-5)	poisoning by or adverse effect of heroin
T40.2 (with 6th char 1-5)	poisoning by or adverse effect of other opioids
T40.3 (with 6th char 1-5)	poisoning by or adverse effect of methadone
T40.4 (with 6th char 1-5)	poisoning by or adverse effect of synthetic narcotics (e.g. fentanyl)
T40.6 (with 6th char 1-5)	poisoning by or adverse effect of other or unspecified narcotics
R78.1	opiate drug in blood

## Cannabis

ICD-10-CM Code	Description
F12[.10,.12,.13,.15,.180]; F12[.22,.23,.25,.280]; F12[.90,.92,.93,.95,.980]; T40.7 (with 6th char 1-4); and a 7th char of A or missing for all codes	All cannabis codes (There are no codes for cannabis-induced mood disorder.)
F12.10	Cannabis abuse, uncomplicated
F12.12	Cannabis abuse, with intoxication
F12.13	Cannabis abuse, with withdrawal
F12.15	Cannabis abuse, with cannabis-induced psychotic disorder
F12.180	Cannabis abuse, with cannabis-induced anxiety disorder
F12.22	Cannabis dependence, with intoxication
F12.23	Cannabis dependence, with withdrawal
F12.25	Cannabis dependence, with cannabis-induced psychotic disorder
F12.280	Cannabis dependence, with cannabis-induced anxiety disorder
F12.90	Cannabis use, unspecified
F12.92	Cannabis use, unspecified, with intoxication
F12.93	Cannabis use, unspecified, with withdrawal
F12.95	Cannabis use, unspecified, with cannabis-induced psychotic disorder
F12.980	Cannabis use, unspecified, with cannabis-induced anxiety disorder
T40.7 (with 6th char 1-4)	Poisoning by cannabis

Stimulants	
ICD-10-CM Code	Description
(F14, F15) [.10,.12-.15,.180]; (F14, F15)[.22-.25,.280]; (F14, F15)[.90,.92-.95,.980]; (T40.5 and T43.6)[with 6th char 1-4]; R78.2; and a 7th char of A or missing for all codes	All stimulant codes
F14.10	cocaine abuse, uncomplicated
F14.12	cocaine abuse, with intoxication
F14.13	cocaine abuse, with withdrawal
F14.14	cocaine abuse, with cocaine-induced mood disorder
F14.15	cocaine abuse, with cocaine-induced psychotic disorder
F14.180	cocaine abuse, with cocaine-induced anxiety disorder
F14.22	cocaine dependence, with intoxication
F14.23	cocaine dependence, with withdrawal
F14.24	cocaine dependence, with cocaine-induced mood disorder
F14.25	cocaine dependence, with cocaine-induced psychotic disorder
F14.280	cocaine dependence, with cocaine-induced anxiety disorder
F14.90	cocaine use, unspecified
F14.92	cocaine use, unspecified, with intoxication
F14.93	cocaine use, unspecified, with withdrawal
F14.94	cocaine use, unspecified, with cocaine-induced mood disorder
F14.95	cocaine use, unspecified, with cocaine-induced psychotic disorder
F14.980	cocaine use, unspecified, with cocaine-induced anxiety disorder
F15.10	other stimulant abuse, uncomplicated
F15.12	other stimulant abuse, with intoxication
F15.13	other stimulant abuse, with withdrawal
F15.14	other stimulant abuse, with other stimulant-induced mood disorder
F15.15	other stimulant abuse, with other stimulant-induced psychotic disorder
F15.180	other stimulant abuse, with other/unspecified stimulant-induced disorder
F15.22	other stimulant dependence, with intoxication
F15.23	other stimulant dependence, with withdrawal
F15.24	other stimulant dependence, with other stimulant-induced mood disorder
F15.25	other stimulant dependence, with other stimulant-induced psychotic disorder
F15.280	other stimulant dependence, with other stimulant-induced anxiety disorder
F15.90	other stimulant use, unspecified
F15.92	other stimulant use, unspecified, with intoxication
F15.93	other stimulant use, unspecified, with withdrawal
F15.94	other stimulant use, unspecified, with other stimulant-induced mood disorder
F15.95	other stimulant use, unspecified, with other stimulant-induced psychotic disorder
F15.980	other stimulant use, unspecified, with other stimulant-induced anxiety disorder
T40.5 (with 6th char 1-4)	poisoning by cocaine
T43.6 (with 6th char 1-4)	poisoning by psychostimulants
R78.2	cocaine in blood

## Sedatives, Hypnotics, Anxiolytics &amp; Antiepileptics

F13[.10,.12-.15,.180]; F13[.22-.25,.280]; F13[.90,.92-.95,.980]; (T42.0-T42.6 & T42.8)[w/6th char 1-4]; T42.7[w/5th char 1-4]; and a 7th char of A or missing for all codes	All sedative, hypnotic, anxiolytic & antiepileptic codes
F13.10	Sedative, hypnotic or anxiolytic (sed/hyp/anx) abuse, uncomplicated
F13.12	sed/hyp/anx abuse, with intoxication
F13.13	sed/hyp/anx abuse, with withdrawal
F13.14	sed/hyp/anx abuse, with sed/hyp/anx-induced mood disorder
F13.15	sed/hyp/anx abuse, with sed/hyp/anx-induced psychotic disorder
F13.180	sed/hyp/anx abuse, with sed/hyp/anx-induced anxiety disorder
F13.22	sed/hyp/anx dependence, with intoxication
F13.23	sed/hyp/anx dependence, with withdrawal
F13.24	sed/hyp/anx dependence, with sed/hyp/anx-induced mood disorder
F13.25	sed/hyp/anx dependence, with sed/hyp/anx-induced psychotic disorder
F13.280	sed/hyp/anx dependence, with sed/hyp/anx-induced anxiety disorder
F13.90	sed/hyp/anx use, unspecified
F13.92	sed/hyp/anx use, unspecified, with intoxication
F13.93	sed/hyp/anx use, unspecified, with withdrawal
F13.94	sed/hyp/anx use, unspecified, with sed/hyp/anx-induced mood disorder
F13.95	sed/hyp/anx use, unspecified, with sed/hyp/anx-induced psychotic disorder
F13.980	sed/hyp/anx use, unspecified, with sed/hyp/anx-induced anxiety disorder
T42.0 (with 6th char 1-4)	poisoning by hydantoin derivatives
T42.1 (with 6th char 1-4)	poisoning by iminostibenes
T42.2 (with 6th char 1-4)	poisoning by succinimides and oxazolinediones
T42.3 (with 6th char 1-4)	poisoning by barbiturates
T42.4 (with 6th char 1-4)	poisoning by benzodiazepines
T42.5 (with 6th char 1-4)	poisoning by mixed antiepileptics
T42.6 (with 6th char 1-4)	poisoning by other antiepileptic and sedative-hypnotic drugs
T42.7 (with 5th char 1-4)	Poisoning by unspecified antiepileptic and sedative-hypnotic drugs
T42.8 (with 6th char 1-4)	Poisoning by antiparkinsonism drugs and other central muscle-tone depressants

## Hallucinogens

ICD-10-CM Code	Description
F16[.10,.12,.14,.15,.180]; F16[.22,.24,.25,.280]; F16[.90,.92,.94,.95,.980]; T40.8; T40.9(w/6th char 1-4); R78.3; and a 7th char of A or missing for all codes	All hallucinogen/psychodysleptics codes. (There are no withdrawal codes.)
F16.10	hallucinogen abuse, uncomplicated
F16.12	hallucinogen abuse, with intoxication
F16.14	hallucinogen abuse, with hallucinogen-induced mood disorder
F16.15	hallucinogen abuse, with hallucinogen-induced psychotic disorder
F16.180	hallucinogen abuse, with other/unspecified hallucinogen-induced disorder
F16.22	hallucinogen dependence, with intoxication
F16.24	hallucinogen dependence, with hallucinogen-induced mood disorder
F16.25	hallucinogen dependence, with hallucinogen-induced psychotic disorder
F16.280	hallucinogen dependence, with other/unspecified hallucinogen-induced disorder
F16.90	hallucinogen use, unspecified
F16.92	hallucinogen use, unspecified, with intoxication
F16.94	hallucinogen use, unspecified, with hallucinogen-induced mood disorder
F16.95	hallucinogen use, unspecified, with hallucinogen-induced psychotic disorder
F16.980	hallucinogen use, unspecified, with hallucinogen-induced anxiety disorder
T40.8 (with 6th char 1-4)	poisoning by lysergide (LSD)
T40.90 (with 6th char 1-4)	poisoning by unspecified psychodysleptics (hallucinogens)
T40.99 (with 6th char 1-4)	poisoning by other psychodysleptics
R78.3	finding of hallucinogen in blood

NOTES: These indicators were first drafted by Jeanne Hathaway in Nov. 2021 and updated in Feb. 2022. Materials reviewed in the process of creating these indicators were:

The International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) External Cause-of-Injury Framework for Categorizing Mechanism and Intent of Injury

1) National Health Statistics Reports Number 136, Dec. 2019: The International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) External Cause-of-Injury Framework for Categorizing Mechanism and Intent of Injury. This was used to obtain codes for drug poisoning.

2) Draft SAS code for alcohol and drug indicators based on ICD-10-CM codes from the Colorado Department of Public Health and Environment, received on 3/25/21. Used to get initial categories and assign ICD-10-CM codes.

CSTE Drug Overdose Indicator

3) CSTE Drug Overdose Indicator. Used to see what ICD-10-CM codes were included in this overdose definition. Except for opioid and stimulant poisoning codes, we did not use this definition because it included many medications which are not generally considered psychoactive and it excluded key concepts, including intoxication, abuse, dependence, and drugs found in blood.

4) The website ICD10data.com (accessed in November 2021). This website was used to review and identify relevant codes and code ranges. Code descriptions were also obtained from information on this site. We used this website to search for the following terms in ICD-10-CM codes and reviewed all search findings for additional potential codes: "alcohol", "opioid", "cocaine", "stimulant", "sedative", and "hallucinogen".

Modification to the 2014 Proposed ICD-10-CM external cause-of-injury matrix, as of October 1, 2021

5) The National Center for Health Statistics table of Modifications made to the 2014 Proposed ICD-10-CM external cause-of-injury matrix, as of October 1, 2021. This table was reviewed to check for new drug poisoning codes or reassigned categories.

6) Alcohol/Drug Use Indicators based on ICD-9-CM codes developed by the Massachusetts (MA) Department of Public Health Injury Surveillance Program in 2018. See page 3 of Alcohol and Drug Involvement in MA Motor Vehicle Crashes, 2012-2015. These indicators were used to make sure the ICD-10-CM indicators included similar types of codes as the ICD-9-CM alcohol and drug indicators.

7) Drug and Alcohol Prevalence in Seriously and Fatally Injured Road Users Before and During the COVID-19 Public Health Emergency, 2020, link: <https://rosap.nhtl.bts.gov/view/dot/50941>. This report was used to inform appropriate drug categories.

Recommended CSTE Surveillance Indicators for Substance Abuse & Mental Health, 2019

8) We used the 2019 report "Recommended CSTE Surveillance Indicators for Substance Abuse & Mental Health", recommended by Tom Largo, to help decide which types of drug categories and code types to include or exclude.

Additional input was sought from:

1) MA Department of Public Health MA Violent Death Reporting System (MAVDRS) and the State Unintentional Drug Overdose Reporting System (SUDORS) staff regarding the drug indicator definition and drug categories. Lauren suggested leaving out "withdrawal", but Katy (as a practicing MD) thought this should be in the ICD-9-CM alcohol/drug indicators, as patients in withdrawal likely used the substance recently before their admission. Providers are also more likely to document alcohol or drug withdrawal as a diagnosis, as that is what they would need to treat once the patient was hospitalized.

2) In Dec. 2021, Jonathan Bressler reviewed definition, compared it with literature, and reviewed accuracy of codes in definition and SAS code.

3) 1/18/22 - Consulted Hannah Yang in the Montana state health dept. about the rationale for not including F-codes in the CSTE ICD-10-CM poisoning definition. She thought the F-codes were excluded because injuries/poisonings were acute events, whereas F-codes "focused on the presence of an underlying substance use disorder, rather than an acute poisoning event". She thought it would be appropriate to include the F-codes in our alcohol and drug indicators, however.

4) 2/27/22 - Received feedback from Dan Leonard (Uillinois), Anna Waller (UNC), and Katie Harmon (UNC). Dan suggested having one broad indicator that included Y90 codes for BAC level below .08 and another more conservative indicator for BAC levels of .08+. Anna and Katie supported this suggestion. Jeanne suggested including generic "alcohol use" codes in the broad indicator. We agreed that it would be helpful to assess the frequency of the various codes.

5) 2/8/22 - Received input from Tom Largo, who was involved in the CSTE workgroups that created substance use indicators using ICD-9-CM and ICD-10-CM codes. (See 2019 report "Recommended CSTE Surveillance Indicators for Substance Abuse & Mental Health"). They focused on drugs viewed to have the potential for abuse and dependence. He noted that adverse effects were not included as its definition is adverse effects "when the drug is taken as prescribed". We therefore decided to exclude these codes. They did not consider inhalants to be drugs. They excluded some anti-epileptics, as the drugs were not included in the ICD-9-CM drug indicators. They did not look at R78.

- 6) 2/24/22 - Dr. Katy Rahilly-Tierney reviewed the ICD-10-CM indicators, ICD-9-CM indicators, CMS definitions, and 2019 report noted above. She supported inclusion of the following codes that were not included in the 2019 Substance Use Indicator report: F18 inhalants, as these include volatile gases that can be psychoactive; T42.1-2 anti-epileptics, as these drugs are psychoactive and have a depressant effect on the brain; and T50 unspecified drugs and multiple drugs, as these are unlikely to refer to prescribed medications. She recommended including adverse effects for opioids only, as common side effects for opioids affect cognition (delirium and drowsiness). She suggested excluding R78.5 - finding of other psychoactive drug in blood, as this could be Lithium or Valproic Acid, which do not have acute psychoactive effects. She also supported having conservative and broad definitions for the alcohol use indicator, with the broad definition to include F10.9 (alcohol use, unspecified), R78.0 (finding of alcohol in blood), Y90(.0-.3) (blood alcohol levels below 80 mg/100 mg), and Y90.9 (presence of alcohol in blood, level not specified).
- 7) 4/13/22 - Consulted Dr. Katy Rahilly-Tierney on inclusion of T42.0 (hydantoin derivatives), T42.5 (mixed antiepileptics), and T42.8 (antiparkinsonism drugs). Using CDC WONDER, she found that these 3 codes were associated with 456 deaths in the U.S. in 2018. We also identified that common side effects of hydantoin derivatives were drowsiness, fatigue, and loss of motor control, and side effects of antiparkinsonism drugs included hallucinations and confusion. T42.5 includes other antiepileptics that are included in the definition because they are psychoactive and have a depressant effect on the brain. We therefore decided to include these T42 categories, which results in the inclusion of all T42 poisoning codes.
- 8) 5/13/22 - Consulted Dr. Katy Rahilly-Tierney on inclusion of codes for drug-induced disorders. We decided to include drug-induced mood, psychotic, and anxiety disorders, as these are more likely to be acute conditions. We will exclude drug-induced sexual dysfunction and dementia, as these are more likely to be chronic conditions. We will also exclude other and unspecified drug-induced disorders, as these could be chronic psychiatric conditions exacerbated by drug use. There is some concern that coders could interpret "sleepiness" as a drug-induced sleep disorder, but we will exclude this code as well, since sleep disorders are usually chronic conditions.
- 9) 6/15/22 - Dr. Katy Rahilly-Tierney checked SAS code against ICD-10-CM alcohol and drug use definitions and found some ranges that included non-existent codes. SAS code and definitions were updated to remove non-existent codes.

## Appendix B

**MA Crash Data Indicators for Operating Under the Influence of Alcohol or Drugs,  
Based on Specified Crash Data Fields and Violation Codes  
Last updated 4/18/22**

Law enforcement suspects alcohol or drug use (ALC\_SUSPD\_TYPE\_CODE, DRUG\_SUSPD\_TYPE\_CODE)

Value	Description
1	Law enforcement suspects alcohol use
	Law enforcement suspects drug use

BAC test result (ALC\_TEST\_RESULT\_CODE)

5	BAC of 0.08 or greater
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Violation codes 1 - 8 (viol1 - viol8)

Chapter and Section	Description	Text Found in VIOLX Fields (spaces removed)
<b>MA Alcohol-related violation codes</b>		
90/24A/A (added in 2018)	OUI Liquor, 9th offense	9024AA
90/24G/F	MV Homicide OUI-Liquor or .08	9024GF
90/24G/G	MV Homicide OUI-Liquor or .08 & Neglig	9024GG
90/24G/H	MV Homicide OUI- Liquor or .08 & Reckless	9024GH
90/24I (no slash before "I")	Alcohol in MV, open container of	9024I, 9024(I), 90/24I, 90S24I, C9024I, C90S24I
90/24/J	OUI Liquor OR .08	9024J, 90/24/J, 9024(J), 9024/J, 90/24/J, 90249024J, C9024J
90/24/K	OUI Liquor OR .08, 2 <sup>nd</sup> offense	9024K, 9024/K, 9024(K), 90/24/K, C9024K,
90/24/L	OUI Liquor OR .08, 3 <sup>rd</sup> offense	9024L, 90/24/L, 9024(L), 9024/L, 90/24/L, 90/24/L, C9024L, C90S24L
90/24/L/D	OUI-Liquor or .08 & Serious Injury	9024LD, 9024/LD, 90/24/L/D
90/24/L/E	OUI-Liquor or .08 & Serious Injury & Neglig	9024LE, 9024/L/E, 90/24/L/E
90/24/L/F	OUI-Liquor or .08 & Serious Injury & Reckless	9024LF, 90/24/L/F
90/24/M	OUI Liquor OR .08, 4 <sup>th</sup> offense	9024M, 9024/M, 90/24/M
90/24/V	OUI Liquor OR .08, 5 <sup>th</sup> offense	90/24V, 9024V, 9024/V, 90/24/V, CH90/S24/V
90/24/X (added in 2018)	OUI Liquor, 6th offense	9024X
90/24/Y (added in 2018)	OUI Liquor, 7th offense	9024Y
90/24/Z (added in 2018)	OUI Liquor, 8th offense	
<b>MA Drug-related violation codes</b>		
90/24B/B V2(added in 2018)	OUI Drugs, 6th offense	
90/24C/C (added in 2018)	OUI Drugs, 7th offense	
90/24D/D (added in 2018)	OUI Drugs, 8th offense	9024DD
90/24E/E (added in 2018)	OUI Drugs, 9th offense	9024EE
90/24/F	OUI Drugs	924F, 9024F, 90/24/F, 9024/F, 90/24/F, C9024F, 9024(DRUGS)
90/24/G	OUI Drugs, 2 <sup>nd</sup> offense	9024G, 9024/G, 90/24G, 90/24/G
90/24G/C	MV Homicide OUI Drugs	90/24G/C (not seen yet)
90/24G/D	MV Homicide OUI-Drugs & Neglig	90/24G/D (not seen yet)
90/24G/E	MV Homicide OUI-Drugs & Reckless	90/24G/E (not seen yet)
90/24/H	OUI Drugs, 3 <sup>rd</sup> offense	9024H, 90/24/H
90/24/I (slash before "I")	OUI Drugs, 4 <sup>th</sup> offense	9024/I, 90/24/I
90/24L/A	OUI-Drugs & Serious Injury	9024LA, 90/24L/A
90/24L/B	OUI-Drugs & Serious Injury & Neglig	9024LB, 90/24L/B
90/24L/C	OUI-Drugs & Serious Injury & Reckless	9024LC, 90/24L/C
90/24/U	OUI Drugs, 5 <sup>th</sup> offense	90/24/U
<b>MA OUI violations, not specified whether alcohol or drugs (or code not clear)</b>		
90/23/J	License Suspended for OUI, OUI while	9023J, 9023/J, 90/23/J, 90/23J
90/24V/A	Child Endangerment while OUI	9024VA, 9024V/A, 90/24V/A, 9024V(A){1,
90/24V/B	Child Endangerment while OUI, subseq. offense	90/24V/B (not seen yet)
90/24/{1}(A){1}	OUI of intoxicating substances	9024{1}, 90241, 90241A, 90241A1, 9024{1}(A), 90/24{1A}, 90/241A, 90/24(1), 90/24/{1}, 90/24/1A, 90/24{1}(A), 90/24(1)A, CH90/S241A1, 9024OUI, 90/24OUI, 9024OUICHI, 9024OUISE, 9024SERIOU, OUI9024, 9024L1, 9024L{1}, 9024L{2}, 9024VE, 9024VV



## Appendix C

**Driver Record Indicators for Operating Under the Influence of Alcohol or Drugs  
Based on Violation Codes in Section 2 MA and Out-of State Driver Records**

Note: Driver records only include violations for which the driver was adjudicated as "guilty" or "responsible".

For surchargeable accident definition, see <https://www.mass.gov/info-details/surchargeable-incidents>. For NDR definition, see <https://www.mass.gov/service-details/out-of-state-suspensions-and-revocations>

Violation Code and Description	Search terms in SAS code
90/23/I - LICENSE SUSPENDED FOR OUI, OUI WHILE c90 §23	"265/1312", "90/23/I", "90/24/F", "90/24/G", "
90/24/F - OUI--DRUGS c90 §24(1)(a)(1)	90/24/H", "90/24/I", "90/24/J", "90/24/K", "90/
90/24/F - OUI-DRUGS c90 §24(1)(a)(1)	24/L", "90/24/M", "90/24G/D", "90/24G/F", "90
90/24/G - OUI-DRUGS, 2ND OFFENSE c90 §24(1)(a)(1)	/24G/G", "90/24G/H", "90/24I", "90/24L/A", "9
90/24/H - OUI-DRUGS, 3RD OFFENSE c90 §24(1)(a)(1)	0/24L/B", "90/24L/C", "90/24L/D", "90/24L/E",
90/24/I - OUI-DRUGS, 4TH OFFENSE c90 §24(1)(a)(1)	"90/24L/F", "90/24/V", "90/24V/A", "94G/13/E
90/24/J - OUI--LIQUOR c90 §24(1)(a)(1)	", "A08", "A10", "A11", "A12", "A20", "A21", "A22
90/24/J - OUI-LIQUOR OR .08% c90 §24(1)(a)(1)	", "A23", "A24", "A25", "A26", "A35", "A60", "A61
90/24/K - OUI--LIQUOR, 2ND OFFENSE c90 §24(1)(a)(1)	", "A90", "A91", "A98", "ADMIN PER SE", "CTR",
90/24/K - OUI-LIQUOR OR .08%, 2ND OFFENSE c90 §24(1)(a)(1)	"YAP"
90/24/L - OUI-LIQUOR OR .08%, 3RD OFFENSE c90 §24(1)(a)(1)	
90/24/M - OUI LIQUOR, 4TH OFFENSE c90 §24	
90/24/M - OUI-LIQUOR OR .08%, 4th OR GREATER OFFENSE c90 §24(1)(a)(1)	
90/24/V - OUI LIQUOR, 5TH OFFENSE c90 §24	
90/24/V - OUI-LIQUOR OR .08%, 5TH OFFENSE c90 §24(1)(a)(1)	
90/24G/D - MOTOR VEH HOMICIDE OUI-DRUGS & NEGLIGENCE c90 §24G(a)	
90/24G/F - MOTOR VEH HOMICIDE OUI-LIQUOR OR .08% c90 §24G(b)	
90/24G/G - MOTOR VEH HOMICIDE OUI--LIQUOR OR .08% & NEGLIGENCE c90 §24G(a)	
90/24G/G - MOTOR VEH HOMICIDE OUI-LIQUOR OR .08% & NEGLIGENCE c90 §24G(a)	
90/24G/H - MOTOR VEH HOMICIDE OUI--LIQUOR & RECKL c90 §24G(a)	
90/24G/H - MOTOR VEH HOMICIDE OUI-LIQUOR OR .08% & RECKLESS c90 §24G(a)	
90/24I - ALCOHOL FROM OPEN CONTAINER IN MV, DRINK	
90/24I - ALCOHOL FROM OPEN CONTAINER IN MV, DRINK c90 §24I	
90/24I - ALCOHOL IN MV, POSSESS OPEN CONTAINER OF * c90 §24I	
90/24L/A - OUI-DRUGS & SERIOUS INJURY c90 §24L(2)	
90/24L/B - OUI-DRUGS & SERIOUS INJURY & NEGLIGENCE c90 §24L(1)	
90/24L/C - OUI-DRUGS & SERIOUS INJURY & RECKLESS c90 §24L(1)	
90/24L/D - OUI--LIQUOR & SERIOUS INJURY c90 §24L(2)	
90/24L/D - OUI--LIQUOR OR .08% & SERIOUS INJURY c90 §24L(2)	
90/24L/D - OUI-LIQUOR OR .08% & SERIOUS INJURY c90 §24L(2)	
90/24L/E - OUI-LIQUOR OR .08% & SERIOUS INJURY & NEGLIGENCE c90 §24L(1)	
90/24L/F - OUI-LIQUOR OR .08% & SERIOUS INJURY & RECKLESS c90 §24L(1)	
90/24V/A - CHILD ENDANGERMENT WHILE OUI c90 §24V	
94G/13/E - OPEN CONTAINER MARIJUANA IN VEHICLE c94G §13(d)	
A08 - DUI WITH BAC >=.08	
A10 - DUI WITH BAC >=.10	
A11 - DUI W/BAC >=, (DTL REQ)	
A12 - REFUSED TO TEST (ALCOHOL)	
A20 - DUI OF ALCOHOL OR DRUGS	
A21 - DUI OF ALCOHOL	
A22 - DUI OF DRUGS	
A23 - DUI OF ALCOHOL AND DRUGS	
A24 - DUI OF MEDICATION	
A25 - DRIVING WHILE IMPAIRED	
A26 - DRINKING WHILE DRIVING	
A35 - POSSESS OF OPN CONTAINER	
A60 - UNDERAGE DUI BAC >=.02	
A61 - UNGE ADMIN DUI BAC >=.02	
A90 - ADMIN PER SE BAC >=.10	
A91 - ADMIN PER SE	
A98 - ADMIN PER SE	
ADMIN - ADMIN PER SE	
CTR - CHEMICAL TEST REFUSAL	
YAP - YOUTH ALCOHOL (suspension for underage OUI)	

