

# MassDOT Interactive Mapping Portal for Analysis and Crash Tracking (IMPACT)

September 26, 2022

# Note to User

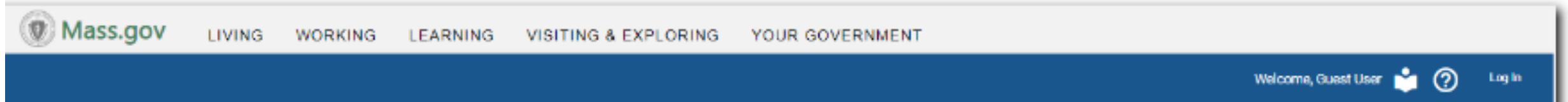
This document explores the basic functionality of MassDOT Interactive Mapping Portal for Analysis and Crash Tracking (IMPACT).

Note that IMPACT is a Massachusetts Department of Transportation website and the Somerville Police Department has no involvement in its creation nor maintenance.

The following instructions are based on IMPACT's site as of September 26, 2022. Mass DOT may make changes at any time at which point some of the provided material may become obsolete.

# MassDOT IMPACT Help Function

On each page of the IMPACT website, the help function (question mark on top right of screen) provides detailed step-by-step instructions on content and navigation. Instructional videos are also provided.



# Interactive Mapping Portal for Analysis and Crash Tracking (IMPACT) Homepage

<https://apps.impact.dot.state.ma.us/cdp/home>

Engage with crash related data through easy-to-understand pre-built reports, interactive dashboards, or conduct your own self-driven analysis. IMPACT provides several means of engaging with the crash data including:

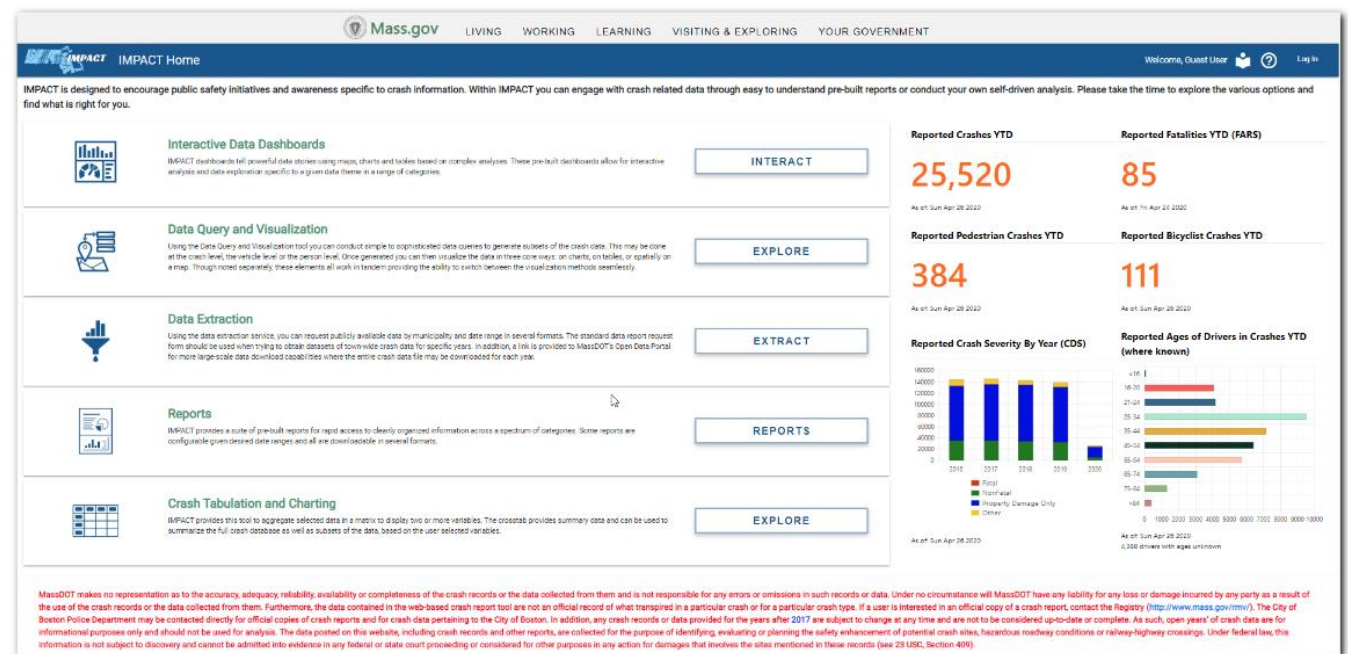
**Interactive Data Dashboards:** Pre-built dashboards use maps, charts, and tables to describe data. Allows for interactive analysis and data exploration specific to a given data theme in a range of categories.

**Data Query and Visualization:** Conduct data queries to generate subsets of the crash data. This may be done at the crash level, the vehicle level, or the person level. You can then visualize the data in three core ways: on charts, on tables, or spatially on a map.

**Data Extraction:** Extract publicly available data by municipality and date range. Also, a link is provided to MassDOT's Open Data Portal for more large-scale data download capabilities.

**Reports:** IMPACT provides a suite of pre-built reports for access to cleanly organized information across a spectrum of categories.

**Crash Tabulation & Charting:** Tool to aggregate selected data in a matrix to display two or more variables. The crosstab provides summary data and can be used to summarize the full crash database as well as subsets of the data, based on the user selected variables.





## Interactive Data Dashboards

IMPACT dashboards tell powerful data stories using maps, charts and tables based on complex analyses. These pre-built dashboards allow for interactive analysis and data exploration specific to a given data theme in a range of categories.

This grouping of dashboards provides information on general crash statistics at the crash level.

### SHSP Emphasis Areas

Users can view the fatal and serious injury trends and safety performance measures in the Strategic Highway Safety Plan emphasis areas.

[Explore →](#)

### Statewide Crashes by Severity and Year

Users can filter by a municipality and/or year (or multiple years) to view crash data statistics on various charts, graphs and maps.

[Explore →](#)



### Geocoding Performance Metrics

View the percentage of crashes that are geocoded by municipality, and the type of geocoding methods used.

[Explore →](#)

### Fatal Crash Information

Users can view preliminary motor vehicle fatality information using filters that include Year/YTD, Region, Town, Sex, Age, Month, Day, Time and/or Type. Data is updated daily as reported by police departments and is subject to change when new information becomes available.

[Explore →](#)





# Interactive Data Dashboards

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## Statewide Crashes by Severity and Year

Users can filter by a municipality and/or year (or multiple years) to view crash data statistics on various charts, graphs and maps.

[Explore](#) →

The dashboard displays the following information:

- Navigation:** IMPACT Home > Dashboard Categories > Operations Dashboards > Statewide Crashes by Severity and Year
- User:** Welcome, Guest User
- Filter Summary:** All Crashes (filtered) for Somerville, 2021. Total: 122 Minor Injury, 11 Serious Injury, 2 Fatal Injury.
- Total Crashes:** 641 Total Crashes. Breakdown: Fatal Injury Crashes (2), Serious Injury Crashes (11), Minor Injury Crashes (122), Possible Injury Crashes (67), No Injury Crashes (419), Other Crashes (unknown, not reported, etc.) (20).
- Crash Type Summary:** Horizontal bar chart showing: Pedestrian Related (22), Bicyclist Related (18), Motorcycle Related (5), Young Driver Related (10), Older Driver Related (20).
- Crash Type Summary Table:**

Crash Type	Count
Pedestrian Related	22
Bicyclist Related	18
Motorcycle Related	5
Young Driver Related	10
Older Driver Related	20
- Top 5% Town Intersection Crash Locations:** Table listing locations in Somerville with EPDO counts.

Location	EPDO
SOMERVILLE - 310 (EPDO) INTERSTATE 93(RT: I93 NB) / FELLSWAY (RT: SR28 NB)	310
SOMERVILLE - 291 (EPDO) INTERSTATE 93(RT: I93 NB) / FELLSWAY (RT: SR28 NB)	291
SOMERVILLE - 272 (EPDO) ALEWIFE BROOK PARKWAY(RT: SR16 EB) / BROADWAY (RT: N1446 EB)	272
SOMERVILLE - 255 (EPDO) MYSTIC VALLEY PARKWAY(RT: SR16 EB) / BOSTON AVENUE (RT: N1411 NB)	255
SOMERVILLE - 190 (EPDO) MYSTIC AVENUE(RT: SR38 NB) / TEMPLE STREET (RT: N2377 EB)	190
SOMERVILLE - 156 (EPDO) MCGRATH HIGHWAY(RT: SR28 NB) / FELLSWAY (RT: SR28 NB)	156
SOMERVILLE - 137 (EPDO) MCGRATH HIGHWAY(RT: SR28 NB) / BROADWAY (RT: N1451 EB)	137
SOMERVILLE - 116 (EPDO) MCGRATH HIGHWAY(RT: SR28 NB) / WASHINGTON STREET (RT: N334 WB)	116
SOMERVILLE - 111 (EPDO) SOMERVILLE AVENUE(RT: N333 EB) / PROSPECT STREET (RT: N327 NB)	111
- 2017-2019 Top 5% Crash Clusters by Town:** Map showing crash clusters in Somerville, MA.
- Filters:** Filter by Town (Somerville), Filter by Severity (Fatal Injury, Serious Injury, Minor Injury, Possible Injury), Filter by Year (2022-2010).



# Interactive Data Dashboards

IMPACT dashboards tell powerful data stories using maps, charts and tables based on complex analyses. These pre-built dashboards allow for interactive analysis and data exploration specific to a given data theme in a range of categories.

## Fatal Crash Information

Users can view preliminary motor vehicle fatality information using filters that include Year/YTD, Region, Town, Sex, Age, Month, Day, Time and/or Type. Data is updated daily as reported by police departments and is subject to change when new information becomes available.

[Explore →](#)

Note that the “Town” filter appears to currently not be functional.

IMPACT Home > Dashboard Categories > Operations Dashboards > Fatal Crash Information

Welcome, Guest User [?](#) [Log In](#)

Users can view preliminary motor vehicle fatality information using filters that include Year/YTD, Region, Town, Sex, Age, Month, Day, Time and/or Type. Data is updated daily as reported by police departments and is subject to change when new information becomes available.

**Select All Fatalities or Year-to-Date**  
Use filters below to focus on specific data

All Fatalities  
 YTD

**Year**  
2021

**Region**  
[Dropdown]

**Town**  
No Data

**Sex**  
[Dropdown]

**Age**  
[Dropdown]

**Month**  
[Dropdown]

**Day**  
[Dropdown]

**Time**  
[Dropdown]

**Type**  
[Dropdown]

**FILTERS**

Motorized cycle (MC) - Motorcycle, Moped, 3-wheeled motorcycle, or Other (Inventive, motor scooter, or unknown) Cycle.

Data updated daily as reported by police departments.

**Fatalities by Type**  
PRELIMINARY RESULTS

**Fatalities by Age**  
PRELIMINARY RESULTS

**Male/Female Fatalities**  
PRELIMINARY RESULTS

**Fatalities by Month**  
PRELIMINARY RESULTS

**Fatality Total**  
**418**

**Mapped Fatalities**  
**418**

**Fatality Details**

PASSENGER, M	12/29/2021, 2:00 AM	245 Perodae Rd., Swampscott
OPERATOR, F	12/28/2021, 11:19 PM	657 Wareham St., Middleborough
OPERATOR, M	12/26/2021, 2:07 PM	192 Mountain Rd., Williamaburg
OPERATOR, M	12/27/2021, 6:44 PM	Forbes Blvd. + Chauncy St., Mansfield
PASSENGER, F	12/27/2021, 4:17 PM	40 Lengley Ln., Tewksbury
OPERATOR, M	12/27/2021, 12:48 PM	179 Rosemont St., Haverhill
MOTORCYCLE: OPERATOR, M	12/26/2021, 7:08 PM	244 Park St., Dorchester
MOTORCYCLE: OPERATOR, M	12/26/2021, 3:07 PM	45 Essex Ave., Gloucester
OPERATOR, M	12/25/2021, 3:05 AM	

**Fatalities by Month**  
Month Day Time



## Data Query and Visualization

Using the Data Query and Visualization tool you can conduct simple to sophisticated data queries to generate subsets of the crash data. This may be done at the crash level, the vehicle level or the person level. Once generated you can then visualize the data in three core ways: on charts, on tables, or spatially on a map. Though noted separately, these elements all work in tandem providing the ability to switch between the visualization methods seamlessly.



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Crash Query and Visualization



ver 1.0.19

## Crash Query and Visualization

The Query and Visualization Tool is a web application built to provide crash-related data, maps, and charts for the state of Massachusetts. Providing crash data and the ability to analyze this information will encourage public safety initiatives and awareness. It is primarily for this reason that this tool has been made available. Analysis of the crash data is a complex undertaking, one that may require trial and error on the part of users. It is suggested you approach this information as a tool rather than an end in itself and that you cross-check your results with other data sources.

Upon entering the tool, you will first be asked to select your data level of interest (crash level, vehicle level or person level) and will next be asked to select the fields you want to include in your query results.

Enter As Guest

Sign In

By clicking 'Enter As Guest' or 'Sign In' above, I agree to the disclaimer



### System Information

The system is currently available.

### Supported Browsers



This site is best viewed at a screen resolution of 1600 x 900 or greater.

This application deals with large amounts of data so it is recommended that 64-bit browser versions are used. You may encounter a problem using 32-bit browsers.





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**IMPACT** Crash Query and Visualization Welcome, Guest User ver 1.0.19

1. Select Fields 2. Query Type 3. Define Query 4. Visualize Results

Crash Data Vehicle Data Person Data Select Query Type →

## Crash Data Level Fields

Select the fields you would like in your output

**SELECT FIELDS**

All Core Crash Details Extended Crash Details Limited Crash Details

<input checked="" type="checkbox"/> Crash Number	<input checked="" type="checkbox"/> City/Town Name	<input checked="" type="checkbox"/> Crash Date	<input checked="" type="checkbox"/> Crash Severity
<input checked="" type="checkbox"/> Crash Status	<input checked="" type="checkbox"/> Crash Time	<input checked="" type="checkbox"/> Crash Year	<input checked="" type="checkbox"/> Max Injury Severity Reported
<input checked="" type="checkbox"/> Number of Vehicles	<input checked="" type="checkbox"/> Police Agency Type	<input checked="" type="checkbox"/> State Police Troops	<input type="checkbox"/> Age of Driver - Youngest Known
<input type="checkbox"/> Age of Driver - Oldest Known	<input type="checkbox"/> Age of Non-Motorist - Youngest Known	<input type="checkbox"/> Age of Non-Motorist - Oldest Known	<input type="checkbox"/> Crash Hour
<input type="checkbox"/> Driver Contributing Circumstances (All Drivers)	<input type="checkbox"/> Driver Distracted By (All Drivers)	<input type="checkbox"/> First Harmful Event	<input type="checkbox"/> Is Geocoded
<input type="checkbox"/> Light Conditions	<input type="checkbox"/> Manner of Collision	<input type="checkbox"/> MassDOT District	<input type="checkbox"/> Non-Motorist Action (All Persons)
<input type="checkbox"/> Non-Motorist Location (All Persons)	<input type="checkbox"/> Non-Motorist Type (All Persons)	<input type="checkbox"/> RMV Document Numbers	<input type="checkbox"/> Road Surface Condition
<input type="checkbox"/> Roadway Junction Type	<input type="checkbox"/> RPA Abbreviation	<input type="checkbox"/> Total Fatalities	<input type="checkbox"/> Total of Non-Fatal Injuries.
<input type="checkbox"/> Traffic Control Device Type	<input type="checkbox"/> Trafficway Description	<input type="checkbox"/> Vehicle Actions Prior to Crash (All Vehicles)	<input type="checkbox"/> Vehicle Configuration (All Vehicles)
<input type="checkbox"/> Vehicle Emergency Use (All Vehicles)	<input type="checkbox"/> Vehicle Towed From Scene (All Vehicles)	<input type="checkbox"/> Vehicle Travel Direction (All Vehicles)	<input type="checkbox"/> Weather Conditions
<input type="checkbox"/> County Name	<input type="checkbox"/> Crash Report IDs	<input type="checkbox"/> FMCSA Reportable (All Vehicles)	<input type="checkbox"/> FMCSA Reportable (Crash)
<input type="checkbox"/> First Harmful Event Location	<input type="checkbox"/> Geocoding Method	<input type="checkbox"/> Hit and Run	<input type="checkbox"/> Locality
<input type="checkbox"/> Most Harmful Event (All Vehicles)	<input type="checkbox"/> Road Contributing Circumstance	<input type="checkbox"/> School Bus Related	<input type="checkbox"/> Speed Limit

Query Speed Estimator: slower faster

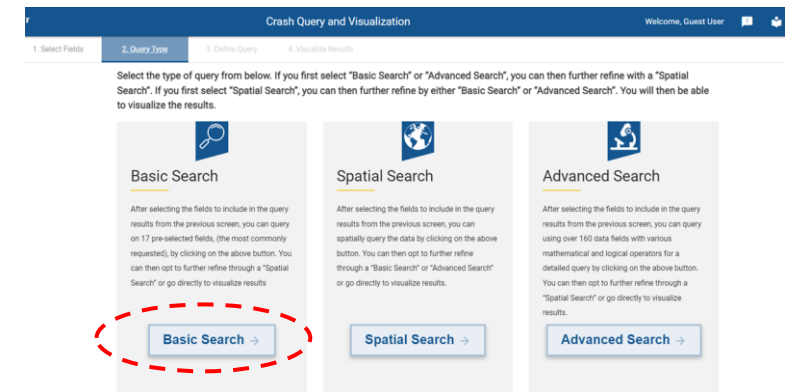
Query speed estimates adjusted here are relative to the query parameters defined in the following steps. The estimate assumes no filters are set. If filters are chosen, a quicker response can be expected.

Windows Taskbar: 11:38 AM 9/26/2022



# Data Query and Visualization

Using the Data Query and Visualization tool you can conduct simple to sophisticated data queries to generate subsets of the crash data. This may be done at the crash level, the vehicle level or the person level. Once generated you can then visualize the data in three core ways: on charts, on tables, or spatially on a map. Though noted separately, these elements all work in tandem providing the ability to switch between the visualization methods seamlessly.



## DEFINE QUERY

**IMPACT** Crash Query and Visualization Welcome, Guest User

1. Select Fields 2. Query Type **3. Define Query** 4. Visualize Results

Basic Search Spatial Search Advanced Search

Reset All Filters Data Level **Crash** Visualize Results

**FILTERS**

Basic Filters

crash date from 07/01/2021 crash date to 06/30/2022 City/Town SOMERVILLE

Time Of Day From: 12:00 AM To: 11:59 PM

Restrict to Not Located

Crash Characteristic Filters

Vehicle Characteristic Filters

Person Characteristic Filters

Basic Search Help

The basic query is a parameter-driven search. This search supports selecting criteria specific to a crash but also vehicle and person-type details as well. Results for this search can be displayed on a crash level identifying all crashes meeting the selected criteria, on a vehicle level for all vehicles involved in crashes, or on a person level for all persons involved in crashes.

Upon submitting the search, the results screen will display showing all records meeting the search criteria. The related crashes will display as points on the map based on the location they occurred. After reviewing the results, the search can be refined by returning to the basic search form. Otherwise, by navigating to the spatial tab, the results can be refined to a specific area on the map based on several location types.

- Step 1: Select Criteria in one of the collapsible panels
- Step 2: Submit the search
- Step 3: View results
- Step 4: Refine search parameters

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**VIEW  
OPTIONS**



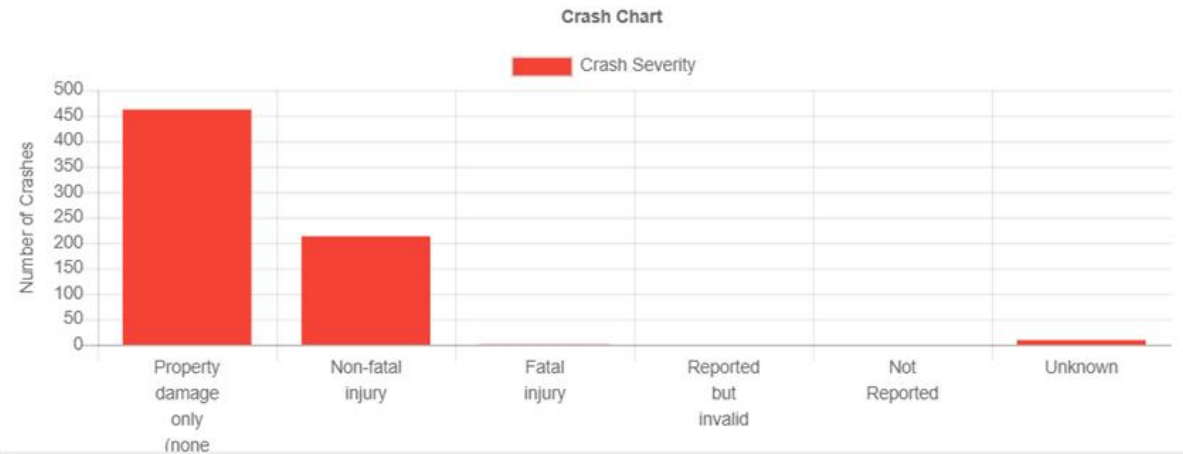
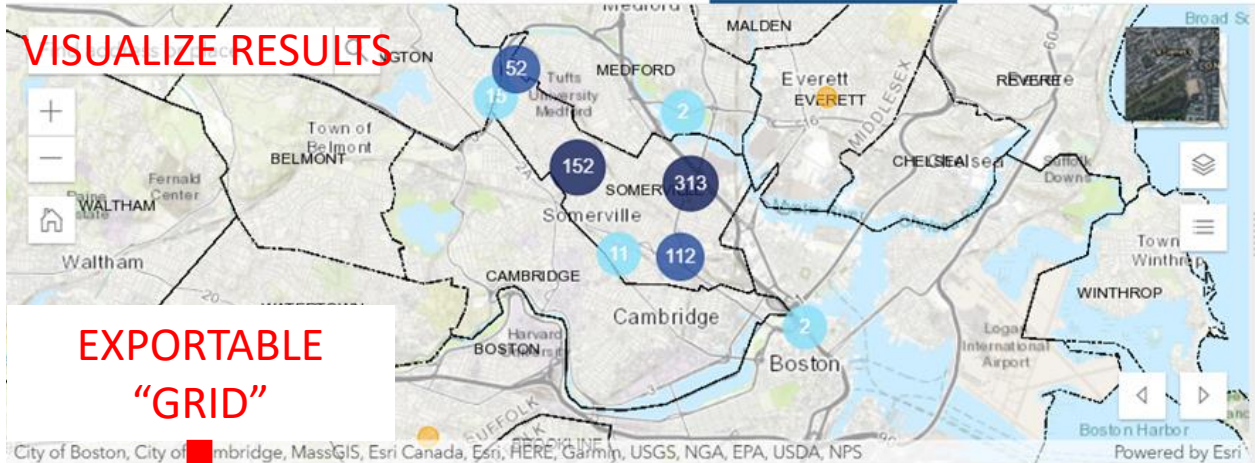
IMPACT Crash Query and Visualization

Welcome, Guest User

Show All Show Map Show Chart Show Grid

- 1. Select Fields
- 2. Query Type
- 3. Define Query
- 4. Visualize Results

**VISUALIZE RESULTS**



**EXPORTABLE  
"GRID"**

Drag here to set row groups

<input type="checkbox"/>	Crash Number	City Town Name	Crash Date	Crash Severity	Crash Status	Crash Time	Crash Year	Max I	<input type="checkbox"/> Pivot Mode
<input type="checkbox"/>	5126778	SOMERVILLE	6/29/2022	Non-fatal injury	Open	9:43 AM	2022	St	<input checked="" type="checkbox"/> Filter...
<input type="checkbox"/>	5127299	SOMERVILLE	6/29/2022	Property damage only (no...	Open	8:05 AM	2022	Nc	<input checked="" type="checkbox"/> Crash Number
<input type="checkbox"/>	5122531	SOMERVILLE	6/28/2022	Property damage only (no...	Open	11:51 PM	2022	Nc	<input checked="" type="checkbox"/> City Town Name
<input type="checkbox"/>	5124175	SOMERVILLE	6/28/2022	Non-fatal injury	Open	10:21 AM	2022	Nc	<input checked="" type="checkbox"/> Crash Date
<input type="checkbox"/>	5126772	SOMERVILLE	6/28/2022	Property damage only (no...	Open	3:48 AM	2022	Nc	<input checked="" type="checkbox"/> Crash Severity
<input type="checkbox"/>	5127291	SOMERVILLE	6/26/2022	Property damage only (no...	Open	7:07 AM	2022	Nc	<input checked="" type="checkbox"/> Crash Status
<input type="checkbox"/>	5122886	SOMERVILLE	6/25/2022	Property damage only (no...	Open	6:12 PM	2022	Nc	<input checked="" type="checkbox"/> Crash Time
<input type="checkbox"/>	5122499	SOMERVILLE	6/24/2022	Property damage only (no...	Open	1:01 PM	2022	Nc	<input checked="" type="checkbox"/> Crash Year
<input type="checkbox"/>	5122236	SOMERVILLE	6/23/2022	Property damage only (no...	Open	8:05 AM	2022	Nc	<input type="checkbox"/> Row Groups

**EXPORT  
OPTIONS**



**FILTERS**





## Data Extraction

Using the data extraction service, you can request publicly available data by municipality and date range in several formats. The standard data report request form should be used when trying to obtain datasets of town-wide crash data for specific years. In addition, a link is provided to MassDOT's Open Data Portal for more large-scale data download capabilities where the entire crash data file may be downloaded for each year.



### Open Data Portal

This service should be used when trying to obtain statewide crash data that may be filtered at the crash, vehicle, or person level that could be downloaded in several formats.

[VIEW](#)



### Standard Data Report Request Form (for crash level data)

By completing the fields below, an email should be sent to you within 5-10 minutes with a link to the resulting data. For a small or medium sized town you may be able to use this form for multiple years of data. For multiple towns you can make multiple requests using this form. For statewide data, the Open Data Portal should be used instead.

Email Address \*



Confirm Email \*



Report Start Year \*



Report End Year \*



Municipality \*



File Format \*

xlsx



[EXTRACT DATA](#)

## Contact Us

### Address

Massachusetts Department of Transportation - Highway Division

Traffic and Safety Engineering Section

10 Park Plaza, Suite 7210

Boston, MA 02116-3969

[directions](#) →

### Phone

**Main:** 857-368-9649

This line is open M-F 8 AM – 4 PM

[More about this organization](#) →

### Online

**Email:** [DOTCrashDataRequest@dot.state.ma.us](mailto:DOTCrashDataRequest@dot.state.ma.us)

**Web:** <https://www.mass.gov/how-to/request-specialized-crash-data>

[Contact Form](#) →

### Fax

**Main:** 857-368-0628



# Reports

IMPACT provides a suite of pre-built reports for rapid access to cleanly organized information across a spectrum of categories. Some reports are configurable given desired date ranges and all are downloadable in several formats.

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## Standardized Reports

The Standardized Reports show Crash Report data broken down by a variety of different criteria.



[Explore →](#)

## Geocoding Performance Metrics

The Geocoding Performance Metrics reports show information about the numbers and status of the types of geocoding methods.

[Explore →](#)

The Standardized Reports show Crash Report data broken down by a variety of different criteria

- Police Agency
- Crashes by Severity
- Older, Younger, and JOL Driver Related Crashes by Injury Type
- Pedestrian and Motorcyclist Crashes by Injury
- Fatal Crashes by Town
- Persons Involved in Crashes by Age Group
- Reports Entered by Police Agency by Month
- Grant Application – Crashes at a Glance

- Driver Distractions in Crashes
- Injury Severity and Safety Systems by Person Type
- Crashes by Urban Type and Functional Class
- Crashes by Jurisdiction
- Mass DOT Timeliness of Fatal Reports to CDS
- MassDOT Timeliness of Non-Fatal Reports to CDS
- Community Crashes
- Community Non-Motorists



# Crash Tabulation and Charting

IMPACT provides this tool to aggregate selected data in a matrix to display two or more variables. The crosstab provides summary data and can be used to summarize the full crash database as well as subsets of the data, based on the user selected variables.

IMPACT Home > Crash Tabulation and Charting

**CURRENT SELECTED DATA: CRASH DATA**

**NOTE:** In all fields "BLANK" represents a Null, or empty value.  
**NOTE:** Labels will always behave as though they are a strings when applying filters.  
**NOTE:** For improved visibility of options in the fields selection, expand the pop up window by dragging the right and left edge to increase the width.  
**NOTE:** Exit numbers updated in 2021.

Custom Report Title

The Textbox below allows for user to enter a custom title that will be included in the exported image, pdf, and excel reports.

Enter Custom Chart / PDF Label Text

Expand / Collapse Data

Expand all data Collapse all data

Crash Data Vehicle Data Person Data

Open Save Export Grid Charts

Format Options Fields Fullscreen

**FIELD CHOSER** →

**PIVOT CONFIGURATION** ←



## Crash Tabulation and Charting

IMPACT provides this tool to aggregate selected data in a matrix to display two or more variables. The crosstab provides summary data and can be used to summarize the full crash database as well as subsets of the data, based on the user selected variables.

### EXAMPLE

### Fields

Drag and drop fields to arrange

**APPLY** **CANCEL**

All fields <a href="#">Expand all</a>	Report filters	Columns
<ul style="list-style-type: none"><li>▶ <b>Crash Attributes</b></li><li>▶ <b>Date Dimension</b></li><li>▶ <b>Crash Measures</b> <math>\Sigma</math></li></ul>	<ul style="list-style-type: none"><li><b>City Town Name</b> <math>\equiv</math></li><li><b>Year</b> <math>\equiv</math></li><li><i>Drop field here</i></li></ul>	<ul style="list-style-type: none"><li><math>\Sigma</math> <b>Values</b> <math>\equiv</math></li><li><i>Drop field here</i></li></ul>
	<p>Rows</p> <ul style="list-style-type: none"><li><b>Age of Driver - Youngest...</b> <math>\equiv</math></li><li><i>Drop field here</i></li></ul>	<p>Values</p> <ul style="list-style-type: none"><li><b>Crash Count</b> <math>\Sigma \vee \equiv</math></li><li><i>Drop field here</i></li></ul>





# Next Steps

Self-exploration of IMPACT's functionality is encouraged.  
Please take advantage of its robust HELP feature. 