
Funded with NHTSA Section 405-C funds through the Executive Office of Public Safety/Highway Safety Division’s Highway Safety Division and the Traffic Records Coordinating Committee

October 28, 2019
Multidisciplinary traffic safety research program

Housed in ...

• University of Massachusetts Amherst
  • College of Engineering
    • Civil & Environmental Engineering
    • University of Massachusetts Transportation Center
About UMassSafe

Support highway safety through combined approach

Scientific data-driven problem identification, program design, and evaluation

Traditional highway safety practices (engineering, enforcement & education)
Project Experience

- Strategic Planning Development
- Safety Data Warehousing
- Online Data Access Development
- Data Analysis and Technical Assistance
- Crash Mapping and GIS Analysis
- Field Data Collection and Analysis
- Data Quality Analysis and Improvement
- Curriculum & Online Training Creation
- Qualitative Analysis
UMassSafe Traffic Safety Data Warehouse

- Serves as a central repository for data from many sources
- Creates a location to provide historical view of events
- Serves as a decision support system
- Datasets – 12 datasets as well as linked datasets, 2002-2019
- Traffic Safety Technical Assistance Center (TS/TAC)
Traffic Safety Data Warehouse

- Crash
- Citation
- RMV Submission Accept/Warn
- Census
- CMV SafetyNet Crash
- CMV Inspection
- Ambulance Trip (MATRIS)
- Federal Fatality (FARS)
- Roadway Inventory
- Licensed Driver
- Jurisdiction
- Registered Vehicle
Data Quality Life Cycle

- Event Occurs
- Data Collected
- Data Entered
- Data Exported
- Data Analyzed
- Problem Found
- Solution Found
- Implement Fix
Goal
To improve crash data quality
Project Partners

MassDOT RMV Division: Development, Feedback, Dissemination, Promotion and Updates

MassDOT Highway Division: Location Methods

EOPSS HSD: Dissemination, Promotion, Updates

MA State Police: Dissemination

MA State Police Commercial Vehicle Enforcement Section: Truck and Bus Section

MA Chiefs of Police Association: Feedback and Dissemination
To improve the collection of crash data
Online resource and data dictionary for law enforcement and other users of transportation safety data.
Detailed information about the crash reporting process from start to finish.
Content

• Why we investigate crashes and how crash data is used
• General crash report information
• Data dictionary
• Specific information on new crash report fields
• Directions for each section of crash report (person, crash, location, and diagram)
Law Enforcement
Massachusetts
CRASH REPORT
E-MANUAL

https://masscrashreportmanual.com/

Search the Data Dictionary

Search Data Dictionary...

Try these: Traffic Device Functioning Code, Non-Motorist Action, Non-Motorist Location, License Class, Towed From Scene, Safety System Used, Latitude/Longitude, Speed Limit, Time, Hit/Run, Non-Motorist Indicator Box

Content filters
- Search in field names
- Search in dictionary
- Exact matches only

Filter by Categories
- All Categories

This project was implemented by UMassSafe with input from the Executive Office of Public Safety and Security/Office of Grants and Research/Highway Safety Division, MassDOT Highway Division and RMV Division, the Massachusetts State Police, and various local police representatives. The project was undertaken with Section 405-C funding from the National Highway Traffic Safety Administration, provided through the Massachusetts Executive Office of Public Safety and Security and the Massachusetts Traffic Record Coordinating Committee.
**Trafficway Description**

**Instructions:**
Select the characteristic that best describes the design of the road on which this vehicle was traveling.

**Definition:**
Indicates whether the trafficway for this vehicle is divided and whether it serves one-way or two-way traffic. A divided trafficway is one in which roadways for travel in opposite directions are physically separated by a median.

**Rationale:**
This element is used for classifying crashes as well as identifying the environment of a particular crash. It is important for guiding future trafficway design and traffic control.

<table>
<thead>
<tr>
<th>Code</th>
<th>Attribute</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Two-Way, Not Divided</td>
<td>This attribute is used whenever there is no median. Generally, medians are not designed to legally carry traffic. Although gores separate roadways, and traffic islands (associated with channels) separate travel lanes, neither is involved in the determination of trafficway division.</td>
<td><img src="image" alt="Example of Two-Way, Not Divided" /></td>
</tr>
<tr>
<td>2</td>
<td>Two-Way, Divided, Unprotected Median</td>
<td>This attribute is used for two-way trafficways that are physically divided by an unprotected median (e.g., painted median &gt; 4ft., vegetation, gravel, trees, water, embankments and ravines that separate a trafficway). Raised curbed medians do not constitute a “positive barrier” by themselves and would be included here.</td>
<td><img src="image" alt="Example of Two-Way, Divided, Unprotected Median" /></td>
</tr>
<tr>
<td>3</td>
<td>Two-Way, Divided, Positive Medium Barrier</td>
<td>This attribute is used whenever the traffic is physically divided and the division is protected by any concrete, metal, or other type of longitudinal barrier (i.e. all manufactured barriers). For underpass support structures and bridge rails acting as a barrier, use this attribute. “Traffic barrier” refers to a physical structure such as a guardrail, concrete safety barrier, cable barrier, or other structure designed to mitigate or prevent cross-median travel. Therefore, trees, curbing, rumble strips, drainage depressions, etc. are not considered traffic barriers.</td>
<td><img src="image" alt="Example of Two-Way, Divided, Positive Medium Barrier" /></td>
</tr>
<tr>
<td>4</td>
<td>One-Way, Not Divided</td>
<td>This attribute is used whenever the trafficway is undivided and traffic flows in one direction (e.g., one-way streets).</td>
<td><img src="image" alt="Example of One-Way, Not Divided" /></td>
</tr>
<tr>
<td>99</td>
<td>Unknown</td>
<td>If this attribute is used, an explanation in the narrative is recommended.</td>
<td><img src="image" alt="Example of Unknown" /></td>
</tr>
</tbody>
</table>

**FAQ**
Is a guardrail or jersey barrier considered a positive median?
Yes.

**Accuracy Checks**
- If Sequence of Events indicates 'cross median/centerline', then the Trafficway Description should not be 'one-way'.

**Data Quality Audit Results**

<table>
<thead>
<tr>
<th>Report Type</th>
<th>Acceptable</th>
<th>Inconsistent</th>
<th>Invalid</th>
<th>Empty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Police (electronic)</td>
<td>336</td>
<td>95.5%</td>
<td>11  3.1%</td>
<td>1  0.3%</td>
</tr>
<tr>
<td>Local Police (paper)</td>
<td>344</td>
<td>95.3%</td>
<td>6  1.7%</td>
<td>-   -</td>
</tr>
<tr>
<td>State Police (electronic)</td>
<td>322</td>
<td>96.4%</td>
<td>11  3.3%</td>
<td>-   -</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1002</td>
<td>95.7%</td>
<td>28  2.7%</td>
<td>1   0.1%</td>
</tr>
</tbody>
</table>
Crash Level Fields

Crash

The fields listed below are categorized as 'crash-level'. This designation indicates that instead of representing a specific person or vehicle, the information gathered represents the crash as a whole. Crash-level fields include environmental factors, such as lighting and weather; location attributes, including community and GPS coordinates; and events leading to the cause of the crash. Crash-level reporting is an integral part of crash data collection and helps law enforcement and other safety professionals to create programming and enforcement that is targeted toward the most common types of crashes and in high-crash areas.

<table>
<thead>
<tr>
<th>Field</th>
<th>Data Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>City/Town</td>
<td>Number of Vehicles</td>
</tr>
<tr>
<td>Crash Location</td>
<td>Police Type</td>
</tr>
<tr>
<td>Date</td>
<td>Property Damage</td>
</tr>
<tr>
<td>First Harmful Event Location</td>
<td>Property Type Code</td>
</tr>
<tr>
<td>First Harmful Event Time</td>
<td>Reporting Officer</td>
</tr>
<tr>
<td>Latitude/Longitude</td>
<td>Road Contributing Circumstances</td>
</tr>
<tr>
<td>Light Conditions</td>
<td>Road Surface</td>
</tr>
<tr>
<td>Manner of Collision</td>
<td>Roadway Intersection Type</td>
</tr>
<tr>
<td>School Bus Related</td>
<td>Speed Limit</td>
</tr>
<tr>
<td>Traffic Control Device Type</td>
<td>Time</td>
</tr>
<tr>
<td>Traffic Device Functioning Code</td>
<td>Trafficway Description</td>
</tr>
<tr>
<td>Work Zone Related Code</td>
<td></td>
</tr>
</tbody>
</table>
Required Fields

- Name of Roadway and/or Route Number
- Direction of Roadway/Route
- Name of Intersecting Roadway and/or Route Number
- Direction of Intersecting Roadway/Route

Guidelines

- Use AT INTERSECTION method if the crash occurred within 30 feet of an intersection of two or more public roadways/streets.
- Identify roadways by both the roads’ names and the route numbers (if applicable).
- If there is a roadway that intersects with another roadway multiple times within a city/town, please identify any other intersecting streets to help accurately pinpoint the crash location.
- Place names (such as corner names, squares, etc.) that are known only to local residents may be used as landmarks, but not in lieu of the correct street names.
- Please identify any landmarks by street address (i.e. Dunkin Donuts at 123 Main St.).

Example

![Intersection Example](image)

Crash Data Audit Results

A statewide 2017 Crash Data Audit found the Intersection Method to be the location method with the highest percentage of crashes that could be adequately geolocated (81 percent). The rates of successful geolocation were much higher for local police than State Police. However, State Police rarely used this location method. The Direction was often missing on reports using the Intersection Method. The Narrative and/or Diagram, while useful for a multitude of other applications, cannot be used for automatic geolocating of crashes.

The common inconsistency on local police reports was whether the crash occurred in an intersection or in close proximity to an intersection.
Online Crash Reporting Resources

LOCATION METHODS
There are four primary methods that can be used to document the crash location: Intersection, Address, Mile Marker or Exit. When completing the location section, choose the method that will best represent the crash location. See examples and learn the guidelines here.

DATA IMPORTANCE
The purpose of crash data is to help decision-makers understand the nature, causes, and injury outcomes of crashes. This information provides context for the design of strategies and interventions that will reduce crashes and their consequences.

PDF MANUAL
Don't always have access to internet, or would you like a hard copy for your cruiser? Use the PDF Data Dictionary file.

Special thanks to primary content sources from MMUCC 5th Edition/NHTSA and ConnDOT Crash Investigator Guide.
### Google Analytics – Tracking Use

**Top Page Views**
- Manner of Collision
- Injury Status
- Trafficway Description
- Driver Contributing Code
- GVWR/GCWR
- Cargo Body Type

<table>
<thead>
<tr>
<th>City</th>
<th>Users</th>
<th>Sessions</th>
<th>Bounce Rate</th>
<th>Pages / Session</th>
<th>Avg. Session Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashburn</td>
<td>292</td>
<td>292</td>
<td>100%</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Boston</td>
<td>96</td>
<td>104</td>
<td>77%</td>
<td>1.80</td>
<td>66.21</td>
</tr>
<tr>
<td>New York</td>
<td>65</td>
<td>71</td>
<td>82%</td>
<td>1.58</td>
<td>58.61</td>
</tr>
<tr>
<td>Revere</td>
<td>32</td>
<td>36</td>
<td>81%</td>
<td>1.42</td>
<td>11.50</td>
</tr>
<tr>
<td>East Bridgewater</td>
<td>26</td>
<td>30</td>
<td>47%</td>
<td>4.30</td>
<td>322.13</td>
</tr>
<tr>
<td>Amherst</td>
<td>25</td>
<td>139</td>
<td>45%</td>
<td>2.81</td>
<td>253.76</td>
</tr>
<tr>
<td>Hartford</td>
<td>18</td>
<td>20</td>
<td>80%</td>
<td>1.45</td>
<td>51.80</td>
</tr>
<tr>
<td>Somerville</td>
<td>18</td>
<td>23</td>
<td>70%</td>
<td>1.83</td>
<td>107.52</td>
</tr>
<tr>
<td>Lexington</td>
<td>16</td>
<td>19</td>
<td>47%</td>
<td>2.84</td>
<td>221.05</td>
</tr>
<tr>
<td>Quincy</td>
<td>16</td>
<td>18</td>
<td>61%</td>
<td>2.33</td>
<td>114.17</td>
</tr>
<tr>
<td>New Haven</td>
<td>14</td>
<td>14</td>
<td>71%</td>
<td>1.57</td>
<td>89.43</td>
</tr>
<tr>
<td>Braintree</td>
<td>14</td>
<td>15</td>
<td>87%</td>
<td>1.20</td>
<td>119.00</td>
</tr>
<tr>
<td>Natick</td>
<td>14</td>
<td>17</td>
<td>24%</td>
<td>4.24</td>
<td>245.35</td>
</tr>
<tr>
<td>Cambridge</td>
<td>13</td>
<td>20</td>
<td>45%</td>
<td>4.20</td>
<td>293.55</td>
</tr>
<tr>
<td>Worcester</td>
<td>13</td>
<td>13</td>
<td>69%</td>
<td>1.69</td>
<td>76.23</td>
</tr>
<tr>
<td>Melrose</td>
<td>12</td>
<td>13</td>
<td>62%</td>
<td>1.77</td>
<td>26.23</td>
</tr>
<tr>
<td>New Bedford</td>
<td>12</td>
<td>12</td>
<td>50%</td>
<td>3.75</td>
<td>195.42</td>
</tr>
<tr>
<td>Pittsfield</td>
<td>12</td>
<td>13</td>
<td>69%</td>
<td>2.38</td>
<td>74.77</td>
</tr>
<tr>
<td>Providence</td>
<td>11</td>
<td>12</td>
<td>75%</td>
<td>1.42</td>
<td>80.67</td>
</tr>
<tr>
<td>Andover</td>
<td>11</td>
<td>11</td>
<td>45%</td>
<td>2.82</td>
<td>143.36</td>
</tr>
<tr>
<td>Barnstable</td>
<td>10</td>
<td>12</td>
<td>67%</td>
<td>2.00</td>
<td>48.67</td>
</tr>
<tr>
<td>Holyoke</td>
<td>10</td>
<td>11</td>
<td>36%</td>
<td>2.55</td>
<td>45.73</td>
</tr>
<tr>
<td>Peabody</td>
<td>10</td>
<td>15</td>
<td>47%</td>
<td>5.33</td>
<td>165.53</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1621</strong></td>
<td><strong>1931</strong></td>
<td><strong>71%</strong></td>
<td><strong>2.15</strong></td>
<td><strong>94.03</strong></td>
</tr>
</tbody>
</table>
Phase 2

**Soliciting Feedback**
- A survey and/or key informant interviews
- Google Analytics

**Expansion and Updates**
- RMV’s system edit checks and validation rules
- Traffic Records News page

**Further Promotion**
T-Force Toolkit

One stop shopping for all commercial truck/bus traffic enforcement resources

www.tforce toolkit.com
T-Force Toolkit Classroom Training

• Traffic stop from start to finish
• Similarities and Differences between traffic enforcement with trucks/buses and passenger cars
  • Officer Safety
  • Choosing the location
  • Approaching a large truck/bus
  • Visibility issues
  • Commercial Drivers License
  • Assisting the truck in re-entering traffic
Questions & Contact Information

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University of Massachusetts

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(413) 577 1035

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