Connecticut Crash Data Repository

User Guide

The Connecticut Crash Data Repository (CTCDR) User Guide will outline the basic and advanced features of the CTCDR and how they function. If you would like additional information on how to use the repository or data limitations, please contact Dr. Eric Jackson at Eric.D.Jackson@uconn.edu or Marisa Auguste at Marisa.Auguste@uconn.edu.

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Introduction

The Connecticut Crash Data Repository (CTCDR), was developed in 2011 by engineers and information technologists at the Connecticut Transportation Institute at the University of Connecticut (UConn). Funding for the CTCDR was provided by the Traffic Records Coordinating Committee (TRCC), which is managed by the Connecticut Department of Transportation's (CT DOT) Highway Safety Office (HSO). The CTCDR is a web tool designed to provide access to select motor vehicle crash information collected by state and local police. This data repository enables users to query, analyze and print/export the data for research and informational purposes. The CTCDR provides registered users with timely, accurate, complete, and uniform crash data. Before the creation of the CTCDR, Connecticut had two distinct repositories for motor vehicle crash data: one with the CT DOT and the other with the Department of Public Safety (DPS). In addition to two large- scaled repositories, there were numerous small- scale repositories retained at local police departments throughout the state. However, these crash data repositories were not easily linked to roadway information, traffic volumes, or land use data. Having the information from all these databases assembled into a single data repository reduces duplicative effort on the part of State agency employees and researchers on projects funded by the State.

The repository provides unprecedented public and private access to crash data to allow users to research crash safety in their neighborhood, town, county, or state. The DPS and CT DOT databases were merged to form one complete dataset: CTDOT (1995-2014). A second dataset: MMUCC (2015-) was developed in January 2015 to house crash data captured on the revised Connecticut Uniform Police Crash Report, better known as the PR-1. Prior to PR-1 revisions in 2015, certain crash elements driver behavior, were not being collected which meant that critical highway safety issues were not being addressed. The PR-1 revision followed the Model Minimum Uniform Crash Criteria (MMUCC) guidelines, a national standardization for recording attributes and elements of motor vehicle crashes. The revised PR-1 crash report provides data fields for collecting information regarding drivers' actions in the moments leading up to and in the aftermath of a crash. Gathering this information aligns with the State's reinforced emphasis on data driven performance measures and goals.

How to Register

To gain access to the CTCDR, users will need to register with a valid email address. Providing an email address allows the CTSRC research team to gain a better understanding of who is using the repository so we can continue to tailor tools to meet the needs of high-end users. On the welcome page, click on the *'Register'* button to provide your contact information and set your own login and password. Once you have registered, you will be able to log in and use all available query tools.
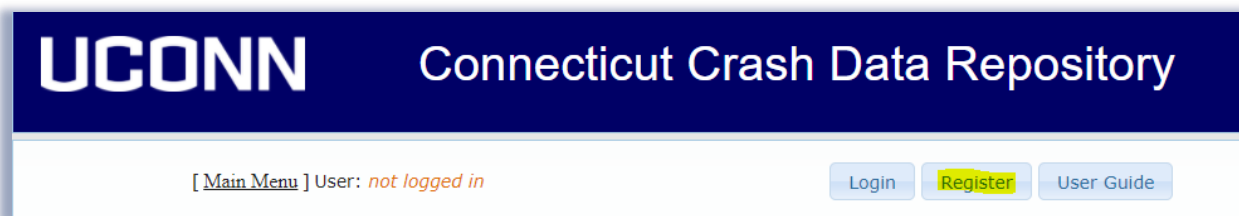

Fig. 1: CTCDR Home Bar

Notice to Users

- New data is added to the repository every night.
- All personal and privileged information has been removed to protect the identity of those involved.
- For crashes occurring before 2007 and between March 2011 to December 2011, property damage only (PDO) crashes occurring on local roads were not recorded in the CT DOT database. Therefore, PDO crash totals will vary significantly over these periods for no reason other than the data were not recorded for these crashes.
- New features are under development, and existing components undergo frequent changes. Please excuse any inconvenience ongoing development might cause.
- The repository is optimized for usage with <u>Firefox</u> and <u>Google Chrome</u>. Full support of other browsers will be added soon.
- **Crash data is based on the information the officer was able to obtain during his or her investigation. Some information, such as what the driver was distracted by, may be incomplete due to lack of evidence for such details.**

Connecticut Crash Data Repository

Fig. 2: CTCDR Home Page

The query tools in the repository are divided into Basic and Advanced Users query tools. This users' guide will walk you through how to use these tools to obtain your desired crash data. Depending upon what crash data the user is trying to obtain, it may not be necessary to use the extensive options provided within the advanced data query tool. The Basic Users' Tools are great for collecting general information about Connecticut motor vehicle crashes and the Advanced Users' Tools make conducting statistical tests such as trend analysis easier.

Fig. 3: Traffic Fatality Ticker

In addition to the Basic and Advanced Users' tool options, the CTCDR homepage also features a Traffic Fatality Ticker (Fig. 2). The ticker displays the total number of Connecticut traffic-related deaths that have occurred year to date for the last four years. The preliminary year-end total of traffic fatalities for the previous calendar year is also presented. The Traffic Fatality Ticker is updated on a bi-monthly basis.

Basic Users Tools

Basic Report Tool

Crash Dashboards

CAST & Crash Emphasis Dashboards

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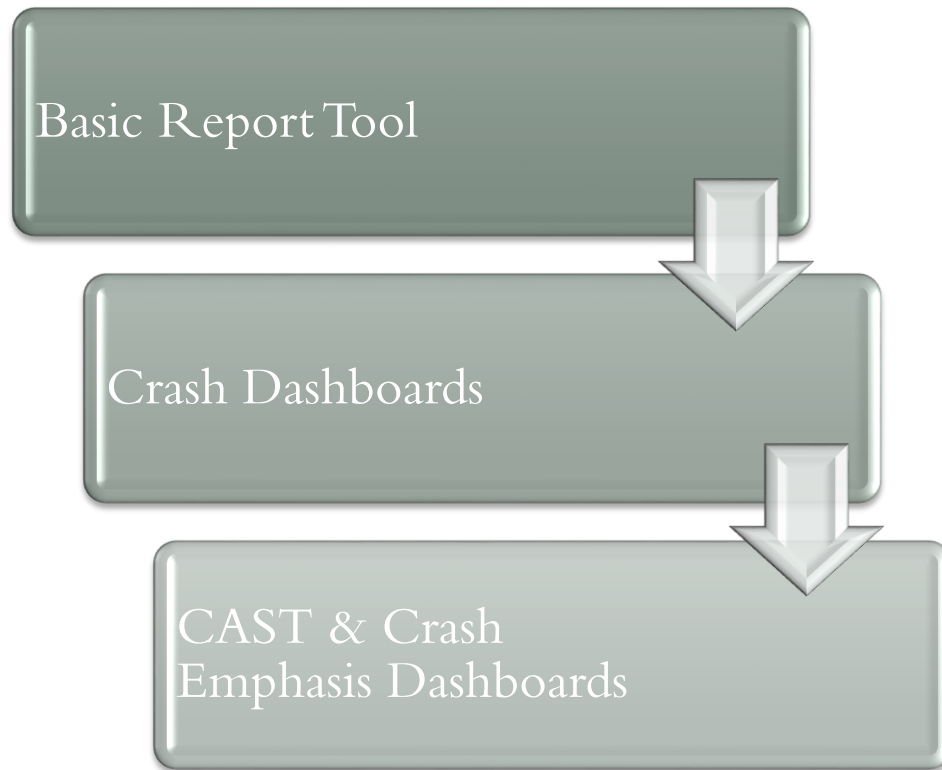
Basic Report Tool

The Basic Report Tool was developed specifically for law enforcement to provide them with the crash data for various enforcement grants. Officers can produce a basic crash report that displays the total number of crashes, fatalities, and injuries for the crash type related to a particular enforcement grant. Figure 4 displays the Basic Report Tool layout, including numerous query options. Officers have the option to select data for any five-year period going back to 2015. Listed under the *'Available Reports'* drop-down menu, are now **six** enforcement grant options: **DUI, Speed, Aggressive Driving, Click It or Ticket** and now **Bicycle** and **Pedestrian.** Additional selection options are listed below.

Fig. 4: Basic Report Tool

1 **Report Date Settings:** Select your years

2 **Available Reports:** Select your report type. Choose from the following:

- DUI Enforcement Grant
- Speed Enforcement Grant
- Bicycle Grant
- Click It or Ticket Grant
- Aggressive Driving Enforcement Grant
- Pedestrian Grant

3 **Road Classification (optional):** Select your road type. Choose from the following:

- Rural or Urban
- **Route Class:** *Interstate; US Route; State Route; Local Route; Unspecified*

4 **Crash Location:** Select your location of interest. Choose from the following:

- Town
- County
- Council of Government (COG)
- Metropolitan Planning Organization (MPO)
- DOT District
- Police Agency (i.e., Hartford PD)
- CSP Troop (i.e., Troop A)

Figure 5 displays a Pedestrian Grant generated with the Basic Crash Report for Stamford Police Dept. from 2015–2020. As the CTCDR does not yet contain citation data, this field is left blank for the officer to fill in. A place for officers to provide information for a reliable point of contact at their department should the CT DOT need to discuss their grant application is also included.

Please be advised that the requirements for the DUI Enforcement Grant have recently changed and now require agencies to provide five (5) years of crash data for their grant applications.

UCONN Connecticut Crash Data Repository

Summary: Pedestrian related crashes for the years between 2015 and 2020 in Stamford PD.

Road Classification: Any Route class. Any Rural or Urban.

PROJECT TITLE	APPLICANT

STATEMENT OF THE PROBLEM AND BACKGROUND INFORMATION (CONTINUED):

DATA MUST INCLUDE PEDESTRIAN-RELATED FATAL AND INJURY CRASH DATA.

Pedestrian Crashes in Stamford PD					
2015	2016	2017	2018	2019	2020
96	118	83	93	103	37

Pedestrian Fatalities in Stamford PD					
2015	2016	2017	2018	2019	2020
2	4	2	1	1	0

Pedestrian Injuries in Stamford PD					
2015	2016	2017	2018	2019	2020
112	124	94	105	108	45

Pedestrian Citations in Stamford PD					
2015	2016	2017	2018	2019	2020
N/A	N/A	N/A	N/A	N/A	N/A

You must provide point of contact information for this grant
(This would be the person who is the day-to-day point of contact)

Name of Contact:

Contact Title:

Work Phone:

Cell Phone:

FAX No.:

Email Address:

Print Report   New Report

Fig. 5: Basic Crash Report

Crash Dashboards

The Crash Dashboards were created to replace two data reports generated by CT DOT, The Connecticut Accident Summary Tables and the Accident Experience Summary Report. The dashboards, built with the data visualization software Tableau®, are intended to provide the user with a multi-page summary report of crash data from only a few simple query selections. There are three separate dashboards, all with similar layouts and features, but each containing a different subset of crash data. Each dashboard is explained in greater detail in the next sections.

Fig. 6: Crash Dashboard Homepage

1 **Header:** click at any time to return to the home page.

2 **2010 to 2014 CAST Dashboard:** Crash data from 2010-2014. Includes 2010 town-level Census data.

3 **2017 to Present CAST Dashboard:** Crash data from 2017 to present day, collected on the MMUCC revised PR-1 crash report.

4 **2017 to Present Crash Emphasis Dashboard:** Crash data from 2017 to present. Users can select specific emphasis areas of interest and view related statistics. (i.e., DUI, Motorcycle, Pedestrian)

Fig. 7: Search Criteria Page
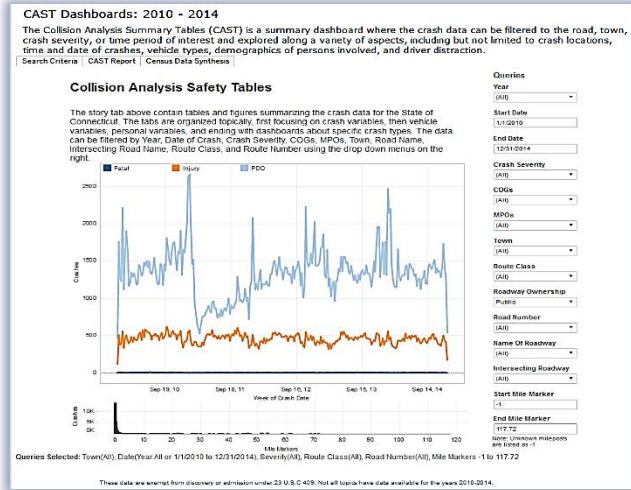
CAST Dashboard (2010 – 2014)

The CAST Dashboards are comprised of 26 pages of interactive charts and graphs of crash data. The pages are organized to cover a range of crash data. All query options are made on the first tab labeled 'Search Criteria', by selecting from the drop-down menus. The center graph on the first page exhibits the total number of Fatal, Injury, and Property Damage Only crashes for the selected calendar years by week. When choices are made for a query, this graph will update to reflect the selections in real-time. The 2010-2014 CAST Dashboard includes crash data whose variables have been formatted to fit the new Model Minimum Uniform Crash Criteria (MMUCC) categories on the revised PR-1 crash report form. Unfortunately, not all of the new fields are applicable to crash data prior to 2015 simply because the data was not being collected. Because of this, some fields may be blank, such as Driver Distraction.

Census Data

Census data is also available within the dashboards, under the 2010-2014 CAST Dashboard. Data source descriptions are listed on the first page. The census data is compiled from the state's 2014 daily vehicle miles traveled and road mileage, 2010-2014 crash data and 2010-2014 population data from the American community survey. The pages display population totals by age, gender, and personal income for each Connecticut town. Also included are town crash totals by DVMT and Miles of Roadway. The last page provides a summary table of data from the previous pages.
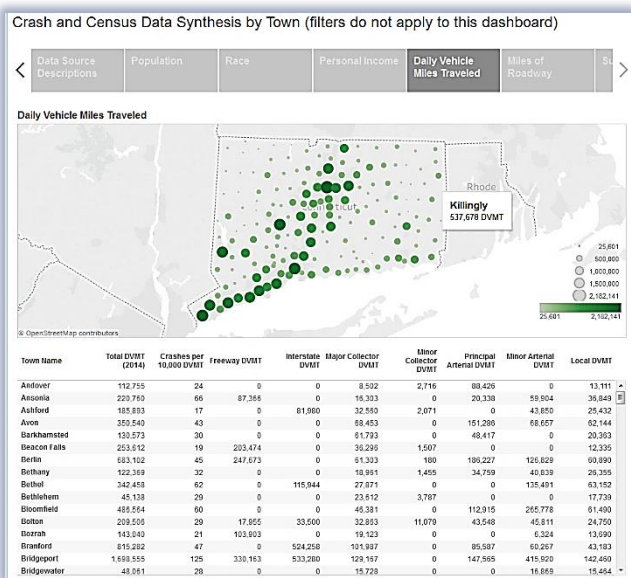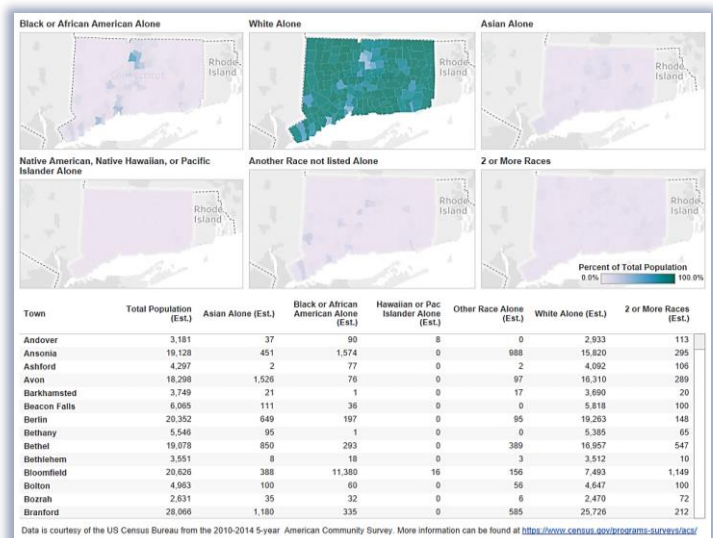

Fig. 8: Census Data – Race Demographics by Town

Fig. 9: Census Data – DVMT by Town

CAST Dashboard (2017 – Present)

The data starts with broad crash factors such as crash severity, time and date of crash and roadway features. Then vehicle information is displayed, including vehicle crash events and vehicle actions. Information about persons involved in the crash is detailed in the next section. This data includes condition at the time of crash as well as data pertaining to distracted drivers. Crash emphasis areas such as pedestrians, motorcycle crashes, and work zone crashes are provided on the final few pages. Hovering your mouse over any point in the graphs in the dashboard will cause a tooltip textbox to appear, providing some information
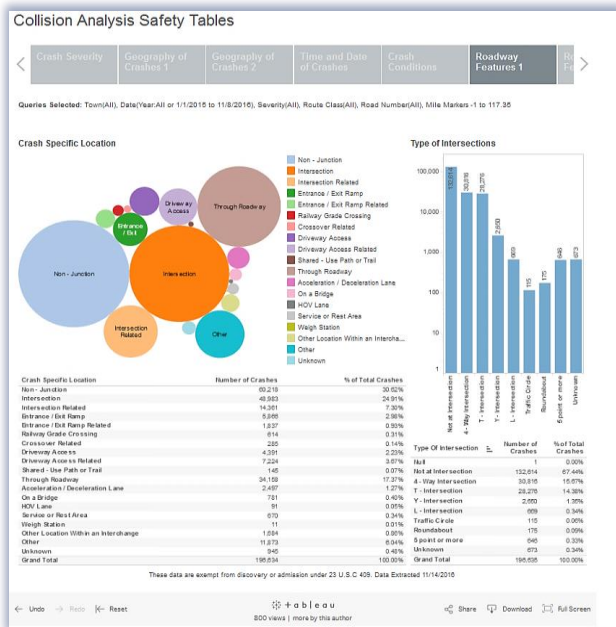

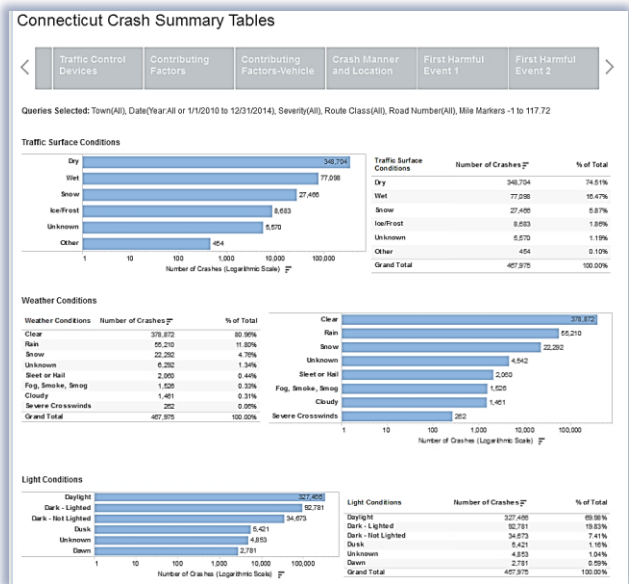Fig. 11: CAST Dashboard – Roadway Features 1 Page

Fig. 10: CAST Dashboard – Crash Conditions Page

about that data point. The 2017-Present CAST Dashboard includes crash data from January 1, 2017, to present day, collected on the MMUCC revised PR-1 form.

Please take note that all graphs within the dashboards are set to a logarithmic scale. This is done intentionally to make the data more visible, but please be aware if you choose the graphs in presentations.

Crash Emphasis Dashboards (2017 – Present)

The Crash Emphasis Areas Dashboards provides users with the ability to view crash data for specific emphasis areas such as roadway departure or crashes involving young drivers. This dashboard is smaller, containing only 15 pages of crash figures and the last **three years** of crash data. Many of the pages contained in the original dashboards were removed because they duplicated some of the emphasis area selections.
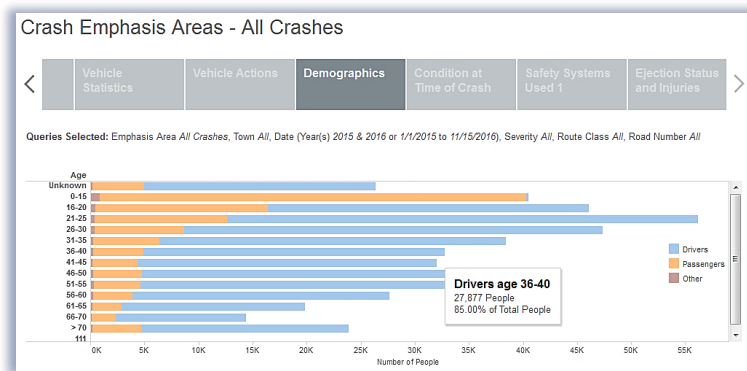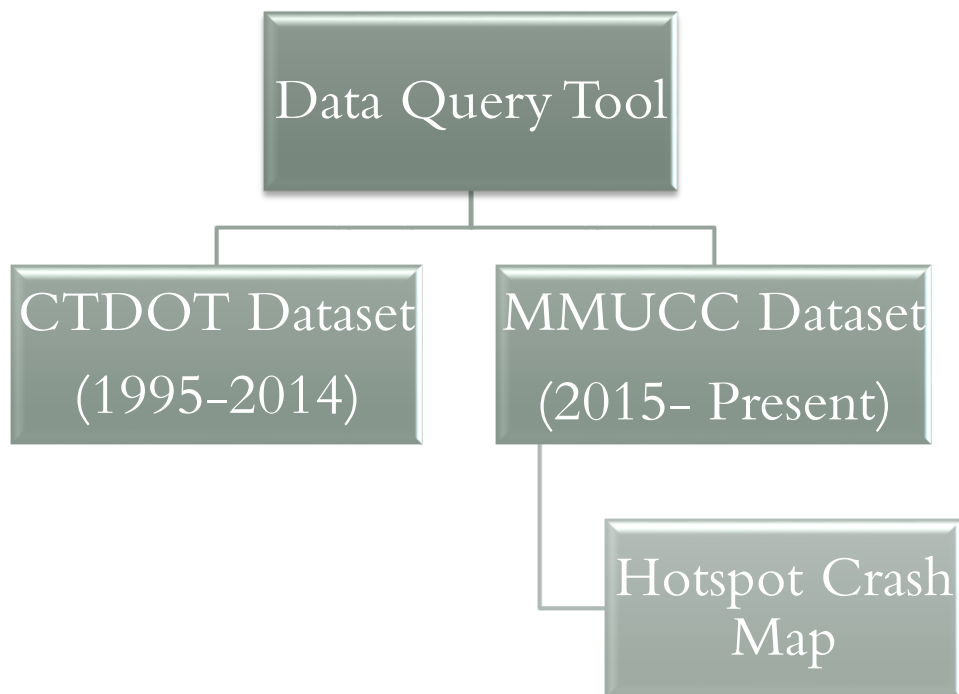

Fig. 12: CAST Dashboard – Demographics Page

The descriptions for each emphasis area is located under the second tab. The query descriptions explain how the crash data is filtered. For instance, if you wanted crash data for both bicyclists and pedestrians, you would select the non-motorist crash option. However, the pedestrian and bicyclists crash emphasis selections gives you the option to get data for each population.

Crash Emphasis Dashboard Query Descriptions are as follows:

- **Fatal Crashes** – All crashes where at least one person involved was fatally-injured. These data are based upon only the crash reports. The reports are delayed until the investigation is completed, which, in the case of fatal crashes, can take three to six months at a minimum. Therefore, crash counts for fatal crashes may conflict with other sources because the final crash report had not been filed at the time of the last update.
- **DUI Crashes** – Crashes where at least one driver involved is identified as under the influence of Medication, Drugs, or Alcohol at the time of the crash in the accident report.
- **Young Drivers** – Crashes where at least one of the drivers involved is between the ages of 15 to 25.
- **Crashes involving Motorcycles** – Crashes where at least one of the vehicles involved is a motorcycle.
- **Non-Motorist Crashes** – Crash where at least one of the people involved in the crash is either a bicyclist or a pedestrian.
- **Pedestrian-involved Crashes** – Crash where at least one of the people involved in the crash is a pedestrian.
- **Bicyclist-involved Crashes** – Crash where at least one of the people involved in the crash is a bicyclist.
- **Work Zone Crashes** – Crashes that were related to the presence of a Work Zone.
- **Crashes involving School Buses** – Crashes where at least one vehicle involved is a School Bus.
- **Crashes involving ATVs** – Crashes where at least one vehicle involved is an All-Terrain Vehicle (ATV).
- **Roadway Departure Crashes** – Crash where at least one driver's action was driving off of the roadway.
- **Intersections Crashes** - Crashes that occurred at an intersection or are intersection-related.
- **Railroad Crossing Crashes** - Crashes that occurred at a railroad grade crossing.
- **Crashes involving Transit Buses** - Crashes where at least one vehicle involved is a Transit Bus.
- **Federal Motor Carrier Safety Administration (FMCSA) Qualifying Crashes** - Crashes where at least one vehicle involved is an FMCSA qualifying vehicle and where there was either 1) a fatality, 2) an injury requiring transportation to a medical facility, or 3) disabling damage to one of the vehicles involved.
- **Crashes Involving Motor Coaches** – Crashes where at least one vehicle involved is a Motor Coach.
- **Crashes Involving a Wrong Way Vehicle** – Crashes where at least one vehicle was listed as traveling on the wrong side of the wrong direction.
- **Wrong Way Drivers Only** – Data are restricted to the driver and vehicle that was recorded traveling on the wrong side or wrong way. No other vehicles or people involved in the crashes are included.
- **Motorcycle Riders Only** – Data are restricted to motorcycles and riders only. No other vehicles or people involved in the crashes are included.
- **Crashes Involving Children Required to Use Car Seats** – Crashes where at least one passenger involved is a child required to be in a car seat. In Connecticut, children are required to use a car seat until they are aged 7 and heavier than 60 lbs.
- **Children Required to Use Car Seats Only** – Data are restricted to children who are passengers that should be in a car seat that the vehicles that they were riding in. No other vehicles or people involved in the crashes are included.

Advanced Users Tools

Data Query Tool

CTDOT Dataset (1995–2014)

MMUCC Dataset (2015– Present)

Hotspot Crash Map

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CTDOT Dataset: Main Query Criteria

Figures 13-16 display the available query tools for the **CTDOT dataset**. These options allow the user to refine their query criteria, create crosstabs of the results and export the raw data for more complex analysis. For example, these tools can be used to limit crash results to those involving only pedestrians, commercial vehicles, or drivers of a specific age range.

Fig. 13: Data Query Tool (CTDOT)

1 **Header:** Click at any time to return to the query tool.

2 **Query Commands:** Reset to default selections, save and load query history or run your query.

3 **Dataset:** Select your data source (see introduction).

4 **Crash Date & Time Setting:** Click the respective boxes to limit your results by date, month, day of the month, day of the week, or time of the day if desired. If you wish to have multiple time ranges for time of day, click the 'Add Limit' button for more options. You can select more than one option under month and day by holding down the CTRL button on your keyboard.

5 **Crash Severity:** You can limit your results to only return the desired crash severity. Leave all unchecked to return all crash severities.

6 **Crash Location:** If you are interested in specific crash sites, these sections will aid in getting you a subset of the data based on crash location. You can make selections within each section for data comparison and hold down the CTRL key to make multiple selections. You can also specify by Route Number, **Local Road Name**, **Intersection** or **Milepost Start** and **End**. If you start typing in the **Route Number** or **Local Road Name**, results are auto populated for selection. If you wish to have multiple roads, click the 'Add More' button for more options.

CTDOT Dataset: Additional Criteria

Crash:

The **Crash** query tab will allow users to limit the results returned based on the summary data from crash reports. These fields can be used to limit query results based on:

- Contributing Factor
- Collision Type
- Weather Conditions
- Road Surface Conditions
- Construction or Maintenance Related
- Light Conditions
- Crash Occurred On
- Other Roadway Feature
- Median Barrier Penetration

Traffic Unit:

Fig. 15: Traffic Unit Criteria (CTDOT)

Fig. 14: Crash Criteria (CTDOT)

The **Traffic Unit** query tab contains data fields for each vehicle and respective driver and/or pedestrian involved in a crash. These fields can be used to limit query results based on:

- Qualifying Commercial Vehicle Code
- Vehicle Type
- Vehicle Maneuver (Prefix and Suffix)
- Vehicle Operator or Pedestrian Age
- Vehicle Operator or Pedestrian Alcohol or Drugs Code
- At-Fault Traffic Unit Number
- Object Struck (First and Second)

★'Pedalcyde' under Vehicle Type is used to query for bicycle crashes in the CTDOT dataset

Involved Person:

The **Involved Person** query tab allows users to limit the results returned based on information collected for each individual involved in a crash. These fields can be used to limit query results based on:

- Involved Person Identifier
- Injury Classification
- Seating Position
- Involved Person Age
- Occupant Protection System Use
- Airbag Status
- Ejection Status

*The Involved Person Identifier 'P' is used to identify pedestrians in the CTDOT data.

Fig. 16: Involved Person Criteria (CTDOT)

ONCE ALL YOUR LIMITS HAVE BEEN ENTERED CLICK THE *'RUN QUERY'* BUTTON TO PROCEED WITH VIEWING YOUR DATA RESULTS.

CTDOT Dataset: Query Results

After clicking *'Run Query'* button, the results screen will appear as shown below in Figure 17.

1 Query Commands: Use these buttons to save or edit your current query or run a brand new one. You can also use the following buttons:

a. **Add Summary:** Allows users to generate a summary table based on the query results. You can choose how the summary results are counted, either by Crashes, Traffic Units, or Involved Persons (Fig. 18). A new tab will be added for each summary table generated (Fig. 19). Summaries tables can also be exported into Excel, CSV or PDF files. Click and drag your mouse over the cells in the summary table while holding down CTRL on your keyboard to create a chart of the data (Fig. 19).

b. **Add Route Histogram:** Allows users to summarize the results by route class. Figure 20 displays how to generate a results table. Bin Size adjusts the number of crashes per mile marker returned in the histogram.

c. **Export to CSV:** Allows users to export the raw data results to themselves. The results are sent to the registered email address in a Microsoft Excel CSV file.
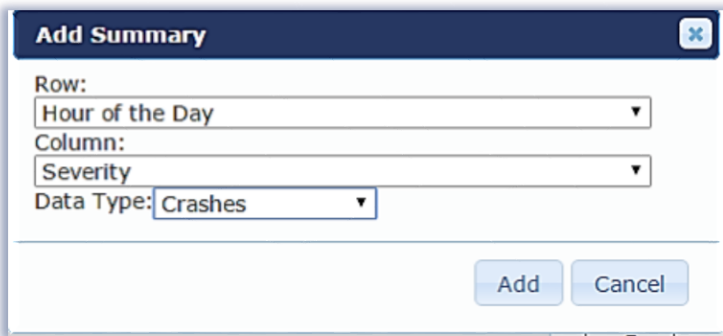
2 Search Criteria: Displays the selected search criteria.

3 Search Summary: Displays the total crashes, traffic units (vehicles), and people returned in the results.

4 Column Summaries: Results of the query are displayed in summary columns by crash, vehicle, and person variables. **These variables are linked together by a unique Crash ID, found in the second column.** Each row represents one record.

a. The ✏ icon next to the column labels changes the data to readable text.

5 **Visible Columns:** Allows users to have full control over columns that are shown on the results screen. Default sections are made based on the most frequently requested fields. (Figure 21).

Fig. 18: Add Summary Selection Box

Fig. 19: Summary Table Results

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Fig. 20: Route Histogram Button

Fig. 21: Visible Columns Selections

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MMUCC Dataset: Main Query Criteria

Figures 22- display the available query tools for advanced users when using the **MMUCC dataset**. As mentioned in the introduction, the query tools under the MMUCC dataset differs somewhat from the CTDOT dataset. The criteria are based on the 110 data elements now available on the revised PR-1 crash report.

Fig. 22: Data Query Tool (MMUCC)

1 **Header:** Click at any time to return to the query tool.

2 **Query Commands:** Reset to default selections, save, load query history, or run your query.

3 **Dataset:** Select your data source (see introduction).

4 **Crash Date & Time Setting:** Click the respective boxes to limit your results by date, month, day of the month, day of the week, or time of the day if desired. If you wish to have multiple time ranges for the time of day, click the '*Add Limit*' button for more options.

5 You can limit your results so that only the desired crash severity or crashes that occurred on private roads are returned. The severity boxes are already checked; leave all checked to return all crash severities. You can also select whether you would like to see closed or open fatality cases. All criteria in this section are included in the results as default and selections must be checked ✔ to return crashes fitting that criteria.

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6 **Crash Location:** If you are interested in specific crash sites, these sections will aid in getting you a subset of the data based on crash location. To select more than one town, hold down the CTRL key. Sections include **Town, County, Council of Government (COG), Metropolitan Planning Organization (MPO), District** and **Route Class.** You can also specify by **Route Number, Local Road Name, Intersection, Milepost Start and End,** and **Latitude and Longitude.** If you start typing in the Route Number or Local Road Name, results are auto-populated for selection. If you wish to query data for multiple roads, click the *'Add Limit'* button for more options.

MMUCC Dataset: Additional Criteria

Crash:

The **Crash** query tab will allow users to limit the results returned based on the summary data from crash reports. These fields can be used to limit query results based on:

- First Harmful Event
- Manner of Crash/Collision Impact
- Location of First Harmful Event
- Weather Condition
- Light Condition
- Road Surface Condition
- Contributing Circumstances (Environment & Road)
- Crash Specific Location
- Type of Intersection
- School Bus Related
- Work Zone Related
- Location of Crash Relative to Work Zone
- Type of Work Zone
- Worker Presence
- Law Enforcement Presence
- Number of Motor Vehicles

Fig 23: Crash Criteria (MMUCC)

Vehicles:

The **Vehicles** query tab contains data fields for each vehicle involved in a crash. These fields can be used to limit query results based on:

- Traffic way Description
- Number of Occupants in Vehicle
- Most Harmful Event
- Vehicle Maneuver/Action
- Contributing Circumstances (Motor Vehicle)
- Posted/Statutory Speed Limit
- Towed Status
- Initial Contact Point
- Extent of Damage
- Traffic Control Device Type
- Traffic Control Device Functional?

Fig. 24: Vehicles Criteria (MMUCC)

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Motor Vehicles:

The **Motor Vehicles** query tab allows users to limit the results returned based on the body type of the vehicles involved in a crash.

Fig. 25: Motor Vehicles Criteria (MMUCC)

Figure 26: Persons Criteria (MMUCC)

Persons:

The **Persons** query tab allows users to limit the results returned based on information collected for each individual involved in a crash. These fields can be used to limit query results based on:

- Age
- Person Type
- Injury Status
- Condition at Time of Crash

Motorists:

The **Motorists** query tab allows users to limit the results returned based on information collected for each vehicle operator involved in a crash. These fields can be used to limit query results based on:

- Ejection Status
- Restraint System
- Helmet Use
- Air Bag Status
- Speeding Related
- Driver Actions
- Driver Distracted By

Figure 27: Motorists Criteria (MMUCC)

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Non-Motorists:

The **Non-Motorists** query tab allows users to limit the results returned based on information collected for each pedestrian or cyclists involved in a crash. These fields can be used to limit query results based on:

- **Non-Motorist Not in Roadway**
- **Actions/Circumstances Prior to Crash**
- **To or From School**
- **Actions/Circumstances At Time of Crash**
- **Location at Time of Crash**
- **Safety Equipment**
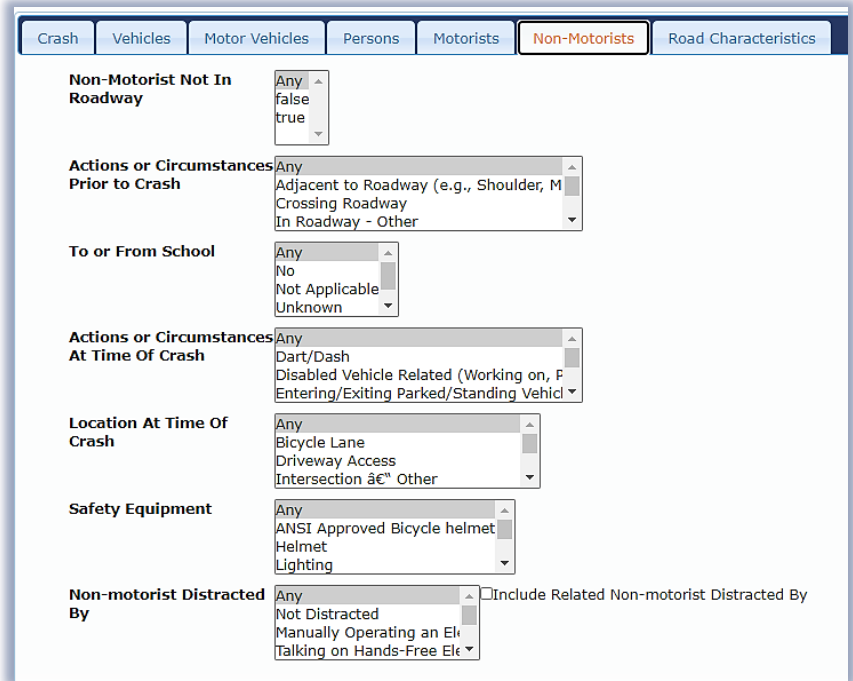- **Non-Motorist Distracted By**

Figure 28: Non-Motorists Criteria (MMUCC)
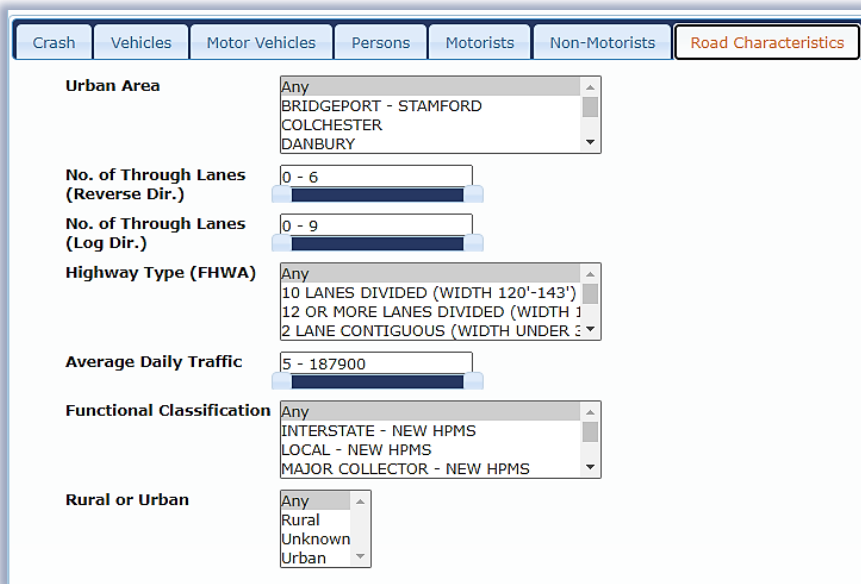
Road Characteristics:

Fig. 29: Road Characteristics Criteria (MMUCC)

The **Road Characteristics** query tab allows users to limit the results returned based on information collected about the road the crash occurred on. These fields can be used to limit query results based on:

- **Average Daily Traffic**
- **Rural or Urban**
- **Number of Lanes**

ONCE ALL YOUR LIMITS HAVE BEEN ENTERED, CLICK THE *'RUN QUERY'* BUTTON TO PROCEED WITH VIEWING YOUR DATA RESULTS.

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MMUCC Dataset: Query Results

As previously mentioned, queries run using the MMUCC dataset can be viewed on a hotspot map thanks to latitude and longitude coordinates provided by the CTDOT. The query results page is almost identical to the results page for the CTDOT dataset (Figure 30). The only difference is the addition of the 'View Crashes on Map' and the 'View Crashes on Map by Criteria' buttons. Both buttons will generate the hotspot map, but the latter option allows users to categorize their results by one of the same summary criteria options available with the 'Add Summary' button shown on page 18 in Figure 18.

Fig. 30: Query Results Screen (MMUCC)

1 **Query Commands:** Save or edit your query or run a brand new query. You can also use the following buttons:

  a. **Add Summary:** Allows users to generate a summary table based on the query results. You can choose how the summary results are counted, either by Crashes, Traffic Unit, or Involved Persons. A new tab will be added for each summary table generated. Figures 26 and 27 display how to generate a results table and how the tab will appear. Highlighting the figures in the summary table will create a chart below, similar to the Crash Summary Tool.

  b. **Add Route Histogram:** Allows users to summarize the results by route class. Figure 27 displays how to generate a results table.

  c. **Export to CSV:** Allows users to export the queried results to themselves. The results are compiled into a Microsoft Excel spreadsheet and sent via email.

2 **Search Criteria:** Lists all the query selections you made.

3 **Search Summary:** Lists how many crashes were generated based on the query selections. It is broken down into total crashes, total traffic vehicles, total involved persons, and trailer records for the crash results.

4 **View Crashes on Map:** Generates the hotspot map (Fig. 31).

    a. **View Crashes on Map with Criteria:** Map with markers as shown in Figure 33. If you zoom in on the map, it will change, and the results will get more and more refined.

5 **Visible Columns:** Allows users to have full control over the number of fields that are returned on the results screen. Default sections are made based on the most frequently requested fields. The boxes at the bottom of this screen allow users to select all and clear selections and then view the results based on the requested data fields (Fig. 28).

    6 The ✎ icon next to the column labels changes the data to readable text.

Crash Hotspot Mapping

Click the '*View Crashes on Map*' button to generate the Hotspot map shown in Figure 31. The crash hotspot map has been changed to incorporate a clustering feature. Locations where multiple crashes have occurred now display circular clusters along with the number of crashes associated with that area (Figure 32). This feature was implemented to make identifying high-crash locations easier. If you click the '*Heatmap*' button at the bottom left-hand side of your screen, the map will change to look like Figure 33, with the red-colored areas indicating a higher density of crashes. An Opacity Scale allows you to lower or raise the intensity of the heatmap.
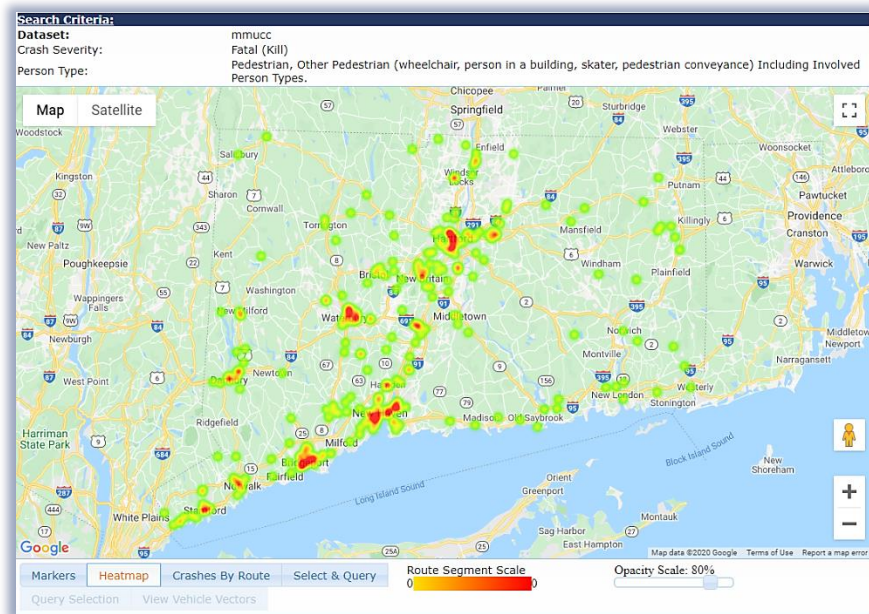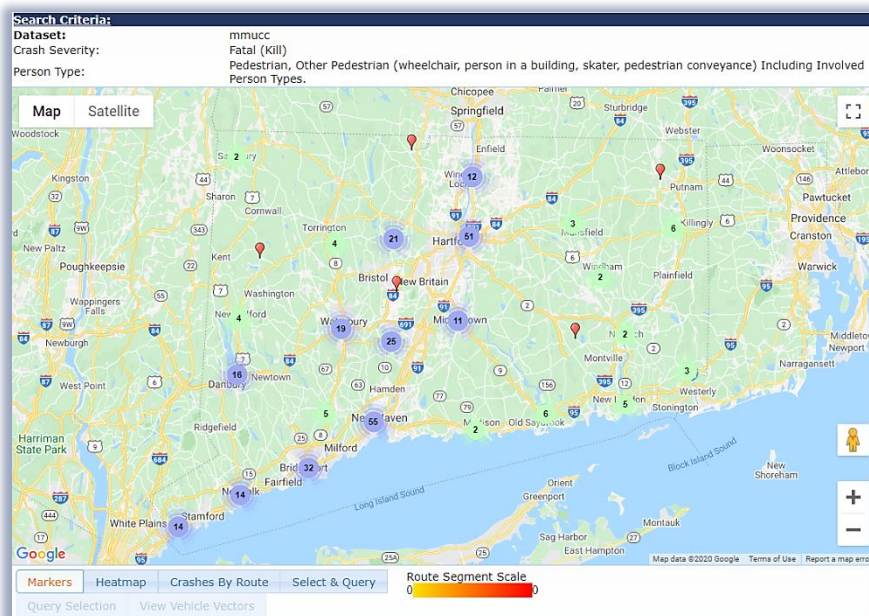

Fig. 31: Hotspot Map with Heat Density

Fig. 32: Hotspot Map with Crash Clusters

As you zoom in on the map, the clusters become more refined until eventually….

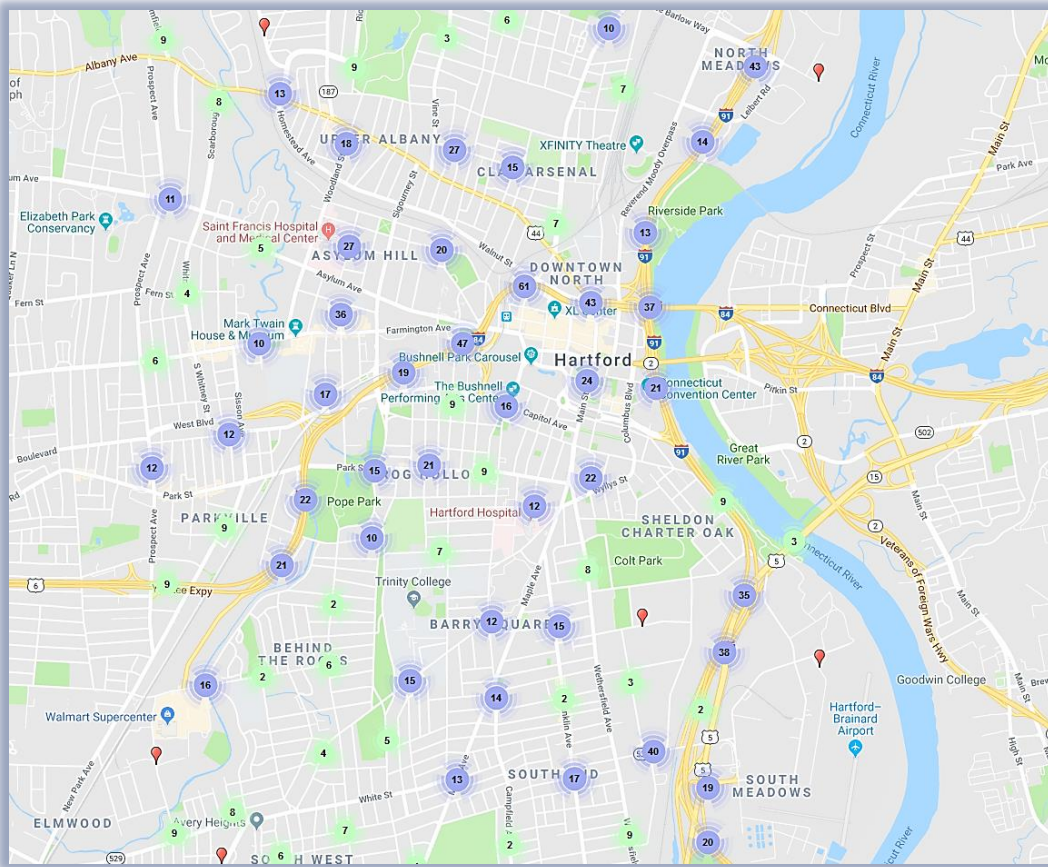
Fig. 33: Crash Cluster Feature

….you can identify individual crash pins. Each red marker represents an individual crash in the repository.
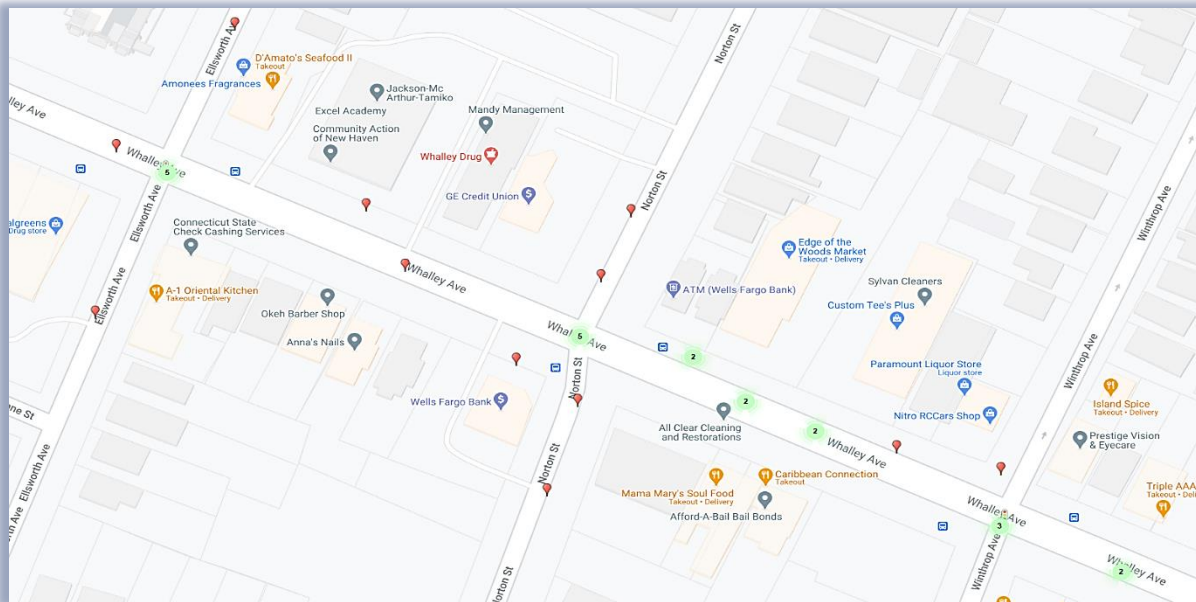

Fig. 34: Close-up of Crash Markers

Additionally, the map can be used to display crashes of a certain crash critiera (Figure 35). For example, Figure 36 displays crash pins by month of the year. You can also run a new query of a particular cluster of crashes by selecting a certain area on the map. Clicking the '*Select & Query*' button will allow you to click and drag your cursor on the map and highlight a section of markers. Once selected, hit the '*Query Selection*' button. This will take you back to the query results page, but the Search Criteria box will now include only the crashes you highlighted.
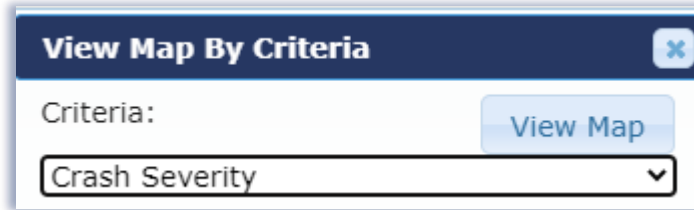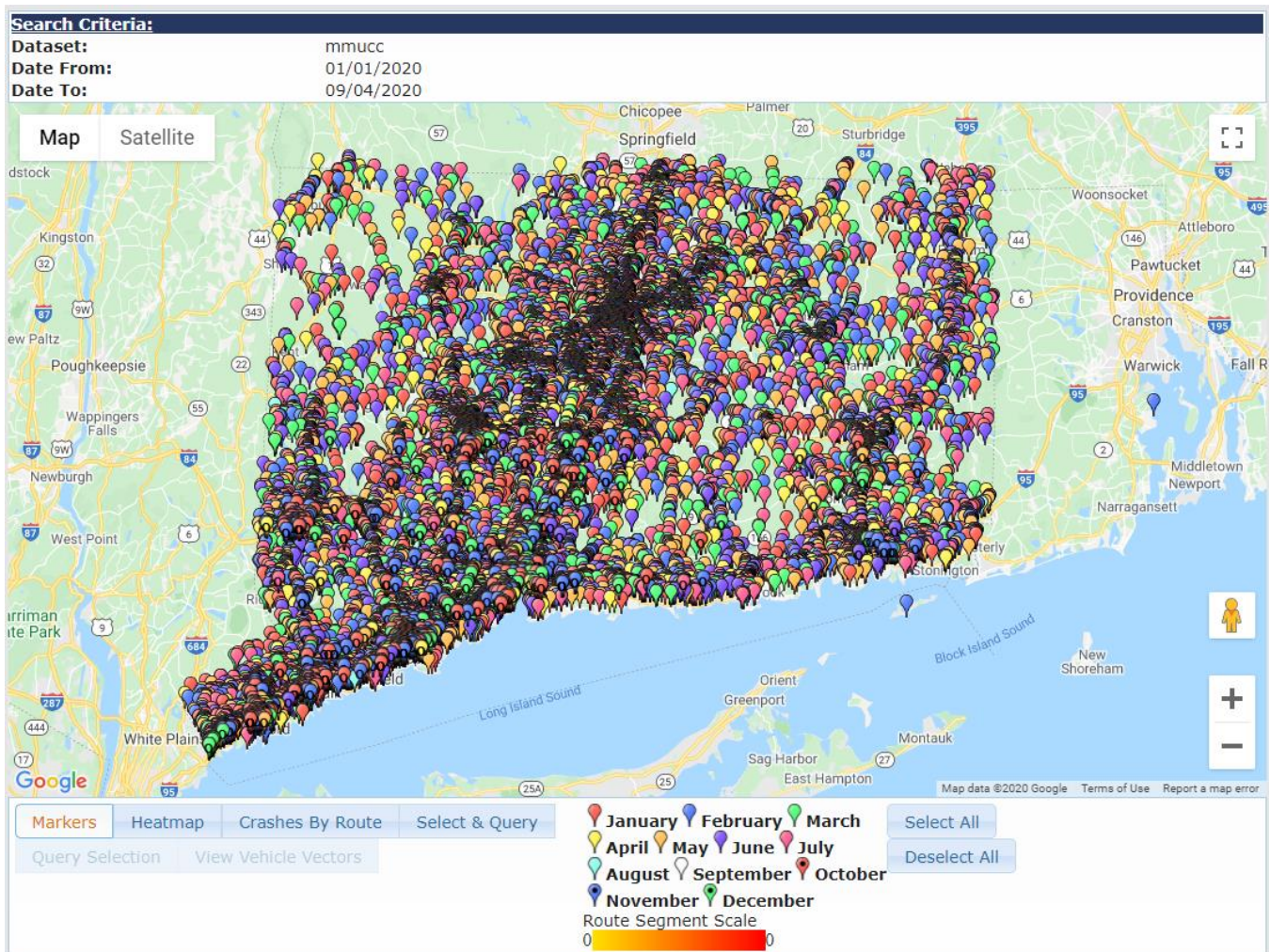

Fig. 35: View Map by Criteria Button

Fig. 36: Hotspot Map with Month Criteria

Use the 👤 icon to look at a street view of the crash location (Figure 37). Click on any of the red pins to bring up a Crash Description box for that specific crash (Figure 38). The Crash Description box gives a snapshot of information for that crash such as severity, day and time, and weather conditions.
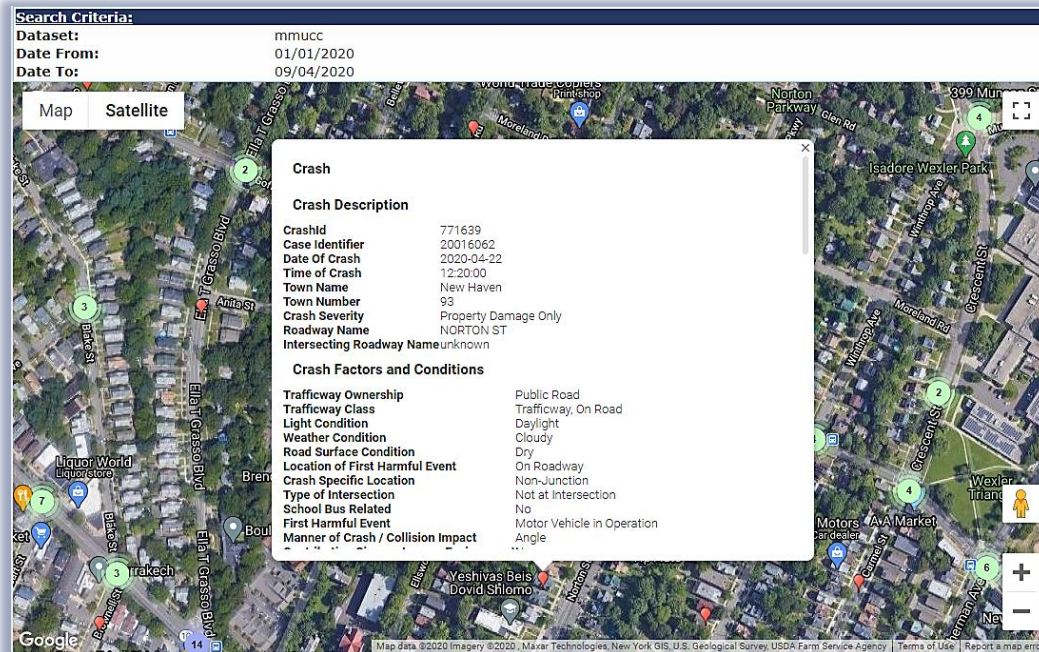

Fig. 37: Hotspot Map with Street View

Fig. 38: Hotspot Map with Crash Description Box

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