TRANSPORTATION SAFETY PROGRAM

V

V. TRANSPORTATION SAFETY PROGRAM

A. INTRODUCTION

The Central Massachusetts Metropolitan Planning Organization (CMMPO) recognizes the importance of transportation safety planning for all agencies and users of the regional transportation system. The organization's transportation safety plan employs a multi-modal strategy, encompassing roadway, transit, bicycle, pedestrian and rail travel throughout the central Massachusetts region.

SAFETEA-LU EMPHASIS ON SAFETY: The Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU) authorized a new core federal-aid funding program beginning in FY 2006 to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. It created a positive agenda for increased safety on our highways by almost doubling the funds for infrastructure safety and requiring strategic highway safety planning, focusing on results. By October 2007, States were required to have a Strategic Highway Safety Plan that identified safety problems and opportunities in order to use Highway Safety Improvement Program (HSIP) funds for new eligible activities under 23 USC 148.

In order to comply with SAFETEA-LU legislation, the Federal Transit Administration sought to establish safety standards and coordination mechanisms between public transportation agencies and the Departments of Homeland Security and Transportation to increase safety and security in the public transportation network. Capital funding was also expanded to include crime prevention to increase safety for both transit employees and riders.

In Massachusetts, lane departure crashes represent 19% of all crashes, cause 25% of all vehicle crash injuries, and produce 46% of all vehicle crash fatalities[1]. In Central Massachusetts, MassDOT research noted that the percentage of lane departure crashes resulting in incapacitating injuries that took place on icy, snowy, or slushy roads was higher than Massachusetts as a whole (19% vs. 12%).

CMRPC, acting as staff to the CMMPO, partnered with MassDOT to communicate with local police departments, fire departments, and town officials to verify accident information and develop strategies to improve safety. As part of this effort, in November 2006 MassDOT led a forum to solicit information regarding lane departure crash locations, contributing factors, and feasible improvements. This was followed by a CMRPC survey to help select potential sites for road safety-audits in locations with a high number of lane-departure crashes. Based on the survey, MassDOT agreed to perform road safety audit studies on Interstate 290 in Worcester and the undivided segment of Route 49 in Charlton/Sturbridge. As a result engineering and policy efforts will be undertaken to prevent vehicle crashes and/or minimize injuries and fatalities at these locations.

[1] MassDOT, *Massachusetts Lane Departure Crash Data Analysis (2002-2004)*, January, 2006.

B. PUBLIC TRANSIT SAFETY

The CMMPO and the Worcester Regional Transit Authority (WRTA) recognize that a safe and efficient public transportation system is an integral component of the urban fabric. In addition to operational efficiency of the bus routes, passenger safety, comfort, and convenience are all considerations in the planning activities that support the fixed-route bus service. The WRTA has established an extensive safety program that is intended to provide a safe environment for its employees and customers and to protect its assets from the threat of loss, damage or abuse.

B.1 Safety Improvements to Policy & Procedures

Through its fixed route operations the transit authority has instituted a variety of policies and procedures to improve overall safety in the system. To ensure the comprehensiveness of the program, all policies and procedures are covered in the training of newly hired employees and through periodic retraining of all employees. They include:

- Personnel Selection
- Accidents and Incidents Procedures
- Driver Training
- Maintenance Plan
- Drug & Alcohol Testing Program
- Safety Data Acquisition/Analysis
- Safety Committee

B.2 Safety at Region's Top Bus Stops

Bus stop location data was collected in 2007 and 2008. This was a joint effort between CMRPC and WRTA. The data contained the location of the bus stop, type of stop, condition of stop, condition of sidewalk and many other pertinent data. This data was mapped using GIS software. CMRPC also maintains a database containing WRTA ridership sample data by bus route. This data was analyzed along with the bus stop location and a map of high boarding and alighting locations was determined. Using the crash data from MassDOT, the bus-stop locations with highest Bicycle & Pedestrian crash clusters and also crashes at high ridership locations were identified.

A collaborative effort was undertaken between the CMMPO and the WRTA to identify existing bus stops using Geographic Positioning Systems (GPS) technology. The information was then downloaded to a GIS platform to spatially locate the bus stops for improved management. Bus stop data collected in 2007 and 2008 was mapped using GIS software. The database containing WRTA ridership sample data by bus route was also mapped. Using the crash data from MassDOT, the bus-stop locations with

BUS STOP SIGNAGE: The safest location of bus stops for pick-up or discharge of passengers is decided in a collaborative effort between the Worcester City Council, Worcester Department of Public Works (DPW), and the WRTA. Due to periodic changes to the fixed route service, bus stop signage also requires frequently updates. An active list of these locations must be maintained by both the Worcester DPW which is responsible for the signs, and the WRTA which monitors bus service. It is becoming increasingly apparent that maintaining an updated list of all bus stops poses a challenge for both agencies.

BUS STOP SAFETY AUDIT: In order to assist the WRTA meet its mission to provide convenient, comfortable, safe, reliable, cost-effective mobility services for the region it is necessary to evaluate the efficacy of designated bus stops. To advance this effort, the FHWA has advocated the use of Road Safety Audits (RSA). Such an audit will be performed by an independent interdisciplinary team of 3-5 persons consisting of community members and professionals to examine the design of designated high frequency bus stops in order to reduce both verified and potential hazards at these locations using the following methodology:

- Generate a checklist of criteria for evaluating safety and accessibility at bus stops
- Classify the designated bus stops consistent with the checklist
- Develop a bus stop rating system to evaluate safety and accessibility
- Utilize bus stop ratings to evaluate and improve safety on public transit routes

C. RAIL SAFETY

Massachusetts had one of the best rail safety records in the nation from 2008- 2010. Worcester County suffered 40 injuries and 5 fatalities in the same period[2]. As, the U.S. Department of Transportation is advocating substantial increases in passenger, light-rail, and freight over the next three decades, the region is looking to participate in improving rail safety. All levels of government and private stakeholder, are expected to work together to meet these safety challenges. *Operation Lifesaver*, a rail safety education partner is helping to raise awareness to improve public safety at highway-rail grade crossings and tracks through public awareness using education, enforcement and engineering, making communities with tracks and railroad property safer, reducing collision incidents and decreasing the likelihood of injuries and fatalities. The region concurs with *Operation Lifesaver* and advocates the use of safe engineering practices for at-grade railroad crossings where two or more modes of transportation intersect to include the following devices to improve rail safety in the central Massachusetts.

- *Traffic control devices* at highway-rail grade crossings such as signs, signals, pavement markings, or other warning devices designed to help manage traffic flow and reduce risk.
- *Apply established standards* for signage at highway-rail grade crossings.

[2] *Federal Railroad Administration, Office of Safety Analysis, Annual Casualties By State, Railroad or Type*

- *Designate Quiet Zones* with flashing light signals with gates, constant warning time train detection circuitry and power-off indicators visible to the train crew.
- *Gates with channelization* or medians, four-quadrant gates, one-way streets, and crossing closures.
- *Wayside horn* mounted at the crossing and activated simultaneously with flashing lights
- *Emergency Notification Sign (ENS)* posted at highway-rail grade crossing, with telephone number to notify the railroad of device malfunction.
- *Warning signs* informing pedestrians and bicyclists that they are trespassing on private property and could be fined, seriously injured or killed.

D. PEDESTRIAN AND BICYCLIST SAFETY

Within the CMMPO region, there are a total of 107 individual pedestrian crash locations with six (6) of those locations within the Top 5% of all pedestrian crash locations in the region. For bicycles, there were 36 individual bicycle crash locations with two (2) of those locations within the Top 5% of all bicycle crash locations in the region. The Bicycle and Pedestrian plan recommends prioritizing locations with high bike and pedestrian crashes for future improvements.

E. HIGHWAY SAFETY

E.1 Funding Safety Projects

Starting in October 1, 2007, States were required to have a State Highway Safety Program (SHSP) that identified and analyzed safety problems and opportunities in order to use Highway Safety Improvement Program (HSIP) funds for new eligible activities under 23 USC 148. The HSIP is a “core funding” program administered by Federal Highway Administration, which apportions funds to States under Section 104(b) (5) for a range of eligible activities focused primarily on infrastructure-related safety improvements. The purpose of the HSIP is to achieve a significant reduction in traffic fatalities and serious injuries on public roads.

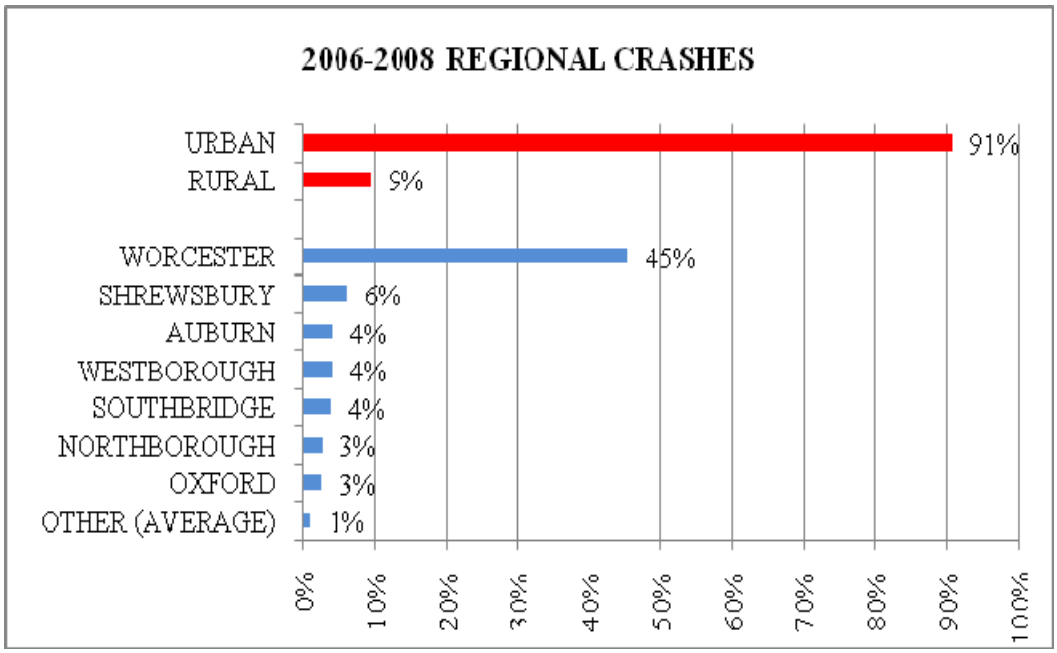
E.2 HSIP Selection Criteria

Projects using Federal HSIP funding are required to be selected by a data driven process. To satisfy this requirement the Massachusetts Department of Transportation (MassDOT) obtains crash data from local police reports collected by the Registry of Motor Vehicles (RMV) Crash Records Section. With the assistance of a consulting agency Geonetics, they developed an automated procedure for processing, standardizing, matching and aggregating the crash data by geographical location using Geographic Information System (GIS) tools and procedures. The information was grouped into crash clusters, bike clusters and pedestrian clusters. For the CMRPC region, automobiles crashes from 2006 -2008 and pedestrian and bicycle crashes from 2002-2008 were extracted from the MassDOT statewide dataset.

- The top 5% of automobile crash clusters are listed in Table V-1. They are derived from all crash clusters identified by MassDOT on local roads (excluding interstate highways).
- The top 5% of pedestrian and bicycle crash clusters are listed in Table V-2. They are derived from all pedestrian / bicycle crash clusters identified by MassDOT.
- The top crash corridors are listed in Table V-3. They were identified on road segments where the top 5% of combined automobile pedestrian and bicycle crash clusters occurred.
- HSIP eligible funding categories include,
  - Intersection safety improvements;
  - Pavement and shoulder widening (including addition of a passing lane);
  - Installation of rumble strips or other warning devices as long as they don't affect the mobility of bicyclists; pedestrians and the disabled;
  - Installing skid-resistant surfaces at high-crash locations;
  - An improvement for bicycles or pedestrian safety or the safety of the disabled;
  - Elimination of hazards at railroad grade crossings (including grade separations);
  - Construction of a rail-highway grade crossing feature (including the installation of protective devices);
  - Traffic enforcement activity at a rail-highway grade crossing;
  - Construction of traffic calming features;
  - Elimination of a roadside obstacle;
  - Improvement of highway signage or pavement markings;
  - Installation of a priority control system at signalized intersections for emergency vehicles;
  - Installation of traffic control or other warning devices at high-crash locations;
  - Safety conscious planning;
  - Improvements in the collection and analysis of crash data;
  - Planning emergency communications;
  - Work zone operational improvements or traffic enforcement activities;
  - Guardrail installation;
  - Barriers and crash attenuators;
  - Structures or other measures to eliminate or reduce accidents involving wildlife;
  - Installation and maintenance of signs at pedestrian/bicycle crossings and in school zones;
  - Signage and construction of pedestrian/bicycle crossings and at school zones;
  - Construction and operational improvements on high-risk rural roads; and
  - Improvement projects on any public roadway or publicly owned bike or pedestrian pathway or trail[3]

[3] Cambridge Systematics, Inc., "Guiding Principles for the Massachusetts Strategic Highway Safety Plan"

The Central Massachusetts Regional Planning Commission consists of 39 towns surrounding the City of Worcester (Figure V-1). Major transportation routes include east/west bound traffic served by interstates 90 and 290, while interstates 290,190, 84, 395 and 495 serve north/south bound traffic. From 2006-2008 there were over 30,000 crashes in the region. 45% of all crashes were in the City of Worcester and 91% of all crashes were in the urbanized area.



E.3 Some HSIP Funded Projects in the Region

- City of Worcester - The FY2011 Transportation Improvement Program (TIP) included $5.1M in HSIP funds for the Belmont Street East resurfacing project[4].
- City of Worcester – The FY2012 State Transportation Improvement Program (STIP) approved $1.0 M HSIP funds for intersection & signal design improvements at Lincoln Street, Highland Street, Pleasant Street corridor[5].

[4] CMMPO Minutes of December 2, 2009 Meeting
[5] http://www.eot.state.ma.us/downloads/stip/2009/2012_highway_0210.pdf

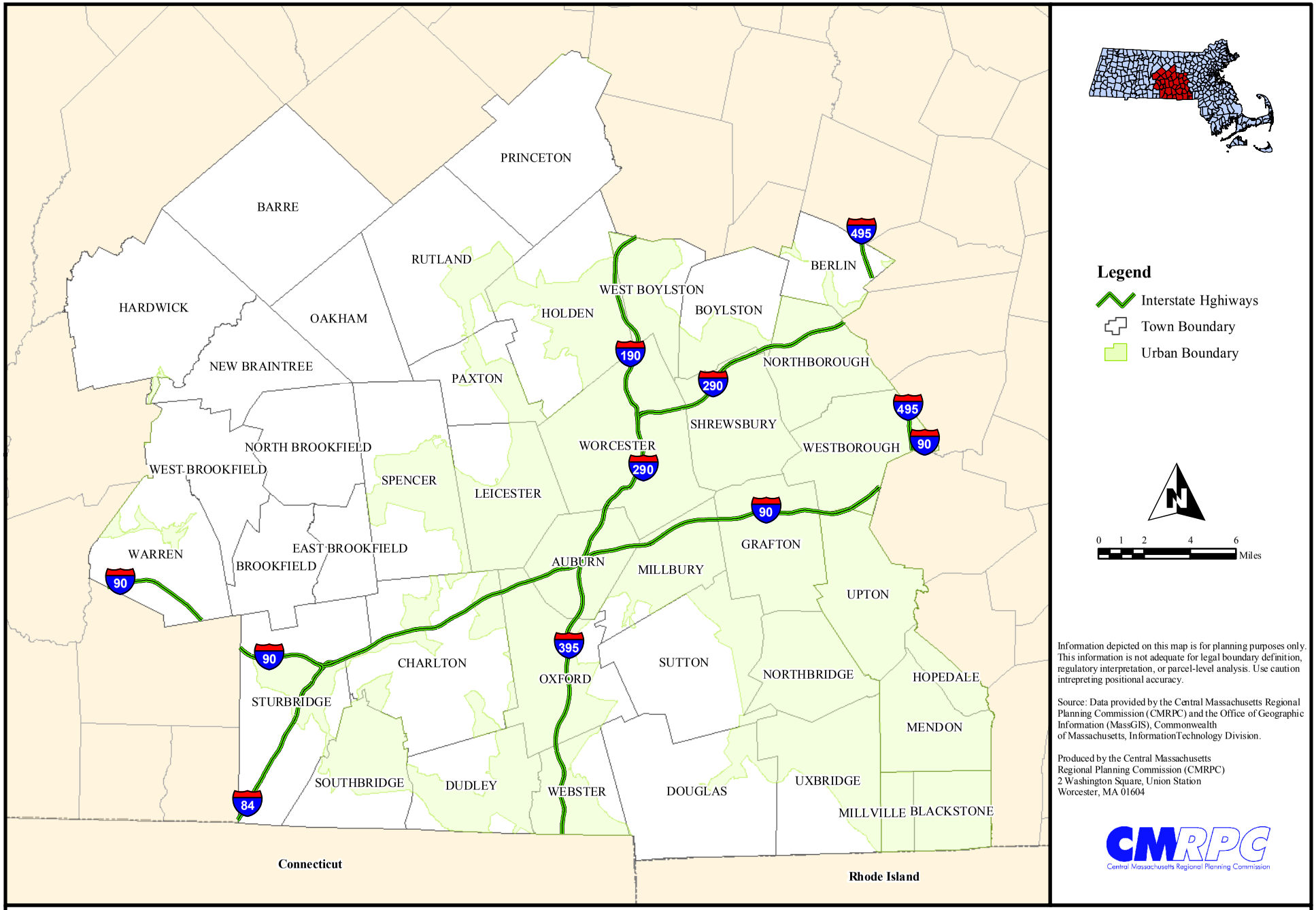


Figure V-1 Central Massachusetts Regional Planning Commission

E.4 Methodology for Selecting HSIP Eligible Projects

Each year MassDOT identifies a list of Top 200 Crash Locations derived from crash data obtained during the past three years. They use two important criteria to compare crashes. One is the '*Equivalent Property Damage Only (EPDO)*' and the other is the '*Crash Cluster*', both of which are briefly described below.

E.4.1 Equivalent Property Damage Only (EPDO)

Equivalent Property Damage Only (EPDO) crashes are weighted by fatal crashes assigned a value of 10, injury crashes a value of 5, and property damage only or non-reported a value of 1. This weighting system helps us to compare crash impact.

E.4.2 Crash Clusters

The crash clusters method locates clusters by merging adjacent crash locations into clusters. It finds nearby crashes then creates an imaginary buffer of 25 meter radius for automobiles (100 meter radius for pedestrian / bicycle) crashes. The resulting polygons are merged, resulting in crash clusters. Note that clusters are only applied to crash locations where there is no grade separation.

E.4.3 Geocoded & Ungeocoded Crashes

During the period 2006 – 2008 almost 37,000 crashes occurred in Central Massachusetts. MassDOT and CMRPC staff have successfully located nearly 90% of these crashes using a method known as geocoding to identify the geographic location of each crash. Crashes which occur at roads with similar names, intersections with multiple roads or incorrect data entry from police crash reports are difficult to geocode. This year the match rate improved from 80% to 90% from the previous period.

E.4.4 Statewide Top 200 Crash Cluster Locations

MassDOT releases a list of the top 200 high crash intersections throughout the Commonwealth during a three year period. There are 39 intersections in CMRPC listed on the statewide top 200 list for the period 2006-2008. By far the largest number of the top 200 intersections occurs in the City of Worcester which has 34. The Town of Shrewsbury has 2 and the Towns of Mendon / Spencer / Westborough all have 1 each. Figure V-2 below illustrates the towns with top 200 intersections in the region. For more details on the exact location see Table V-1 for automobiles clusters, Table V-2 and Table V-5 for pedestrian and bicycle clusters (Tables located at the end of this chapter).

State Route 9 has several automobile crash clusters. 50% of the 34 intersections in the City of Worcester are located on State Route 9 from Lake Avenue to the intersection at Maywood Street.

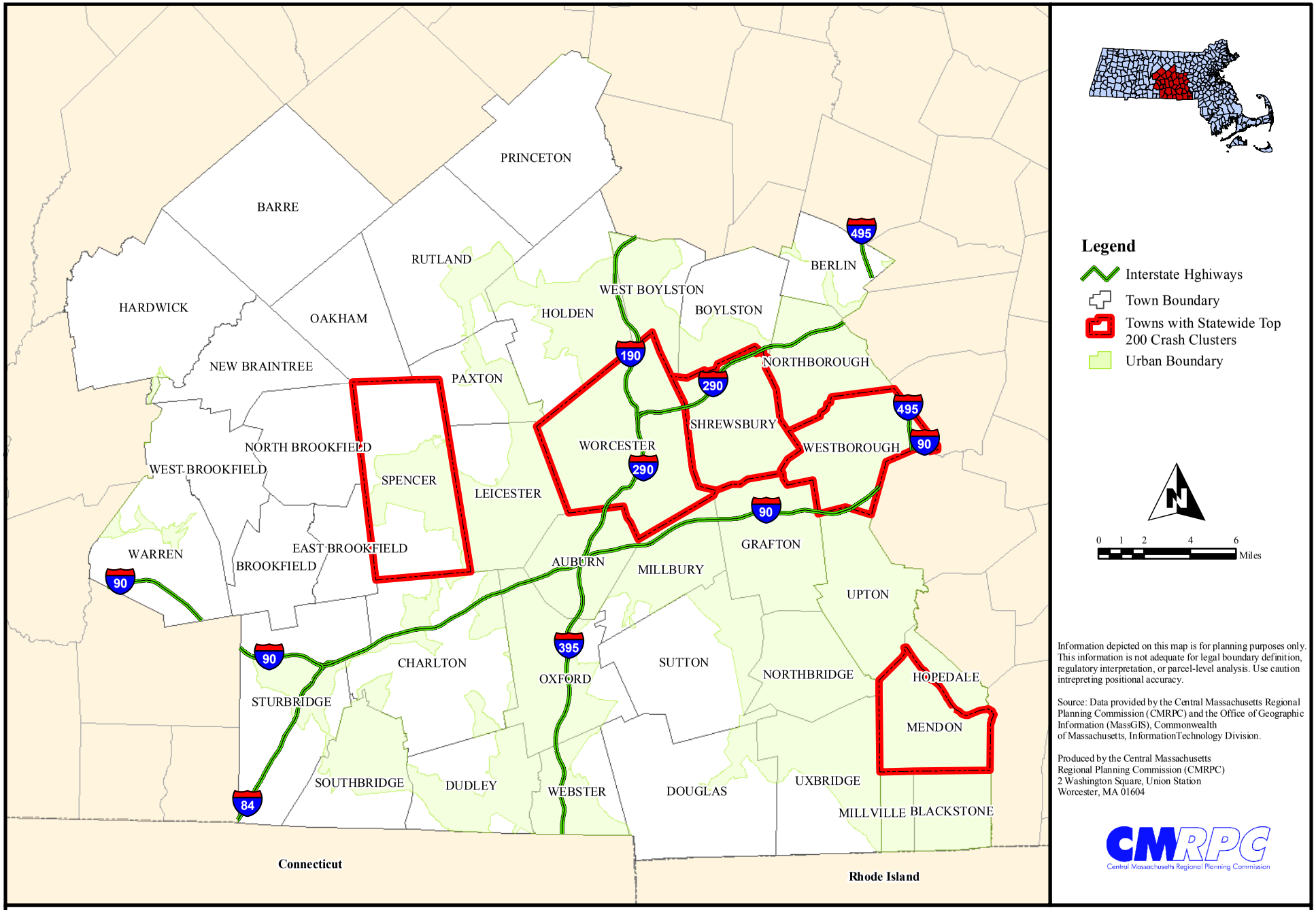


Figure V-2 CMRPC Towns with Statewide Top 200 Crash Clusters

E.4.5 The Region's Highest Ranked Crash Clusters

The regions highest ranked clusters all occur in the City of Worcester shown in the yellow circle in Figure V-3.

- AUTOMOBILE CLUSTERS
  - **RANK 1-** Lincoln Square / Main Street / Major Taylor Boulevard
  - **RANK 2-** Belmont Street / Oak Avenue

- PEDESTRIAN CLUSTERS
  - **RANK 1-** Main Street / Austin Street / Chandler Street
  - **RANK 2-** Main Street / Murray Avenue

- BICYCLE CLUSTERS
  - **RANK 1-** Interstate 290 / Belmont Street
  - **RANK 2-** Main Street / King Street

E.5 High Priority Safety Locations in the Region

As described earlier in the introduction, the top 5% of clusters in the region for each category (automobile/ pedestrian / bicycle) are eligible for HSIP funding. A list of HSIP eligible projects for CMRPC was generated by selecting the top 5% of each type of crash cluster (ranked by EPDO). 204 automobile, 7 pedestrian and 4 bicycle clusters were found eligible for HSIP funding. Communities that wish to pursue this method of funding to improve safety at these locations may need to perform a Road Safety Audit (RSA) which is described later in this document. Communities may wish to contact CMRPC for futher assistance.

Tables at the end of this chapter identify locations where safety improvement projects may be eligible for HSIP funding.

Region's Top 5% Automobile Crash Clusters (Table V-1) (see end of chapter)

Region's Top 5% Bicycle & Pedestrian Clusters (Table V-2)

Region's Top Crash Corridors (Table V-3)

E.5.1 Top 5% Automobile Crash Clusters

Among automobile crash clusters, 75 % are on State Routes and 25% on local roads. 60% are located in the City of Worcester, 23% are on Route 9, 12 % on Route 20. Remarkably the two highest ranked crash clusters are located on either side of interstate 290 along Belmont Street (Route 9). Clusters at this location include:

- Rank 1- crash cluster at Lincoln Square / Major Taylor Boulevard
- Rank 2- crash cluster at Belmont Street /Oak Avenue is located near the UMass Memorial
- Rank 5 – crash cluster at Belmont / Goldsberry Street is flanked by Rank 1 and Rank 2 crash clusters.
- Overlapping clusters Rank 1- bike cluster, Rank 2 - crash cluster and Rank 3- pedestrian cluster are all located at Belmont Street /Oak Avenue.
- In 2009, the traffic-tracking agency INRIX, which culls information nationwide, found that the one mile section of I-290 westbound, which includes the Route 9/Exit 17 and Route 70/Exit 18 ranked among the top 100 bottlenecks nationwide with 9 hours of weekly congestion with travel speeds slowing down to 21 mph during peak periods. [6]

High congestion also leads to increased carbon emissions resulting in lower air quality. The traffic problems here will continue to grow as population is expected to increase over the next decade. Given the confluence of automobile, bicycle, and pedestrian clusters along Belmont Street / I-290 intersection, coupled with the most congested road segment in the region it would be prudent to examine alternative proposals that increase safety, decrease congestion, improve air quality and increase the efficiency of the transportation links at this location. The City of Worcester may be able to combine funding sources from the Highway Safety Improvement Program, Intelligent Transportation System and Congestion Mitigation and Air Quality to improve safety and congestion.

[6] http://scorecard.inrix.com/scorecard/pdf/NTSC0920Full%20Report.pdf

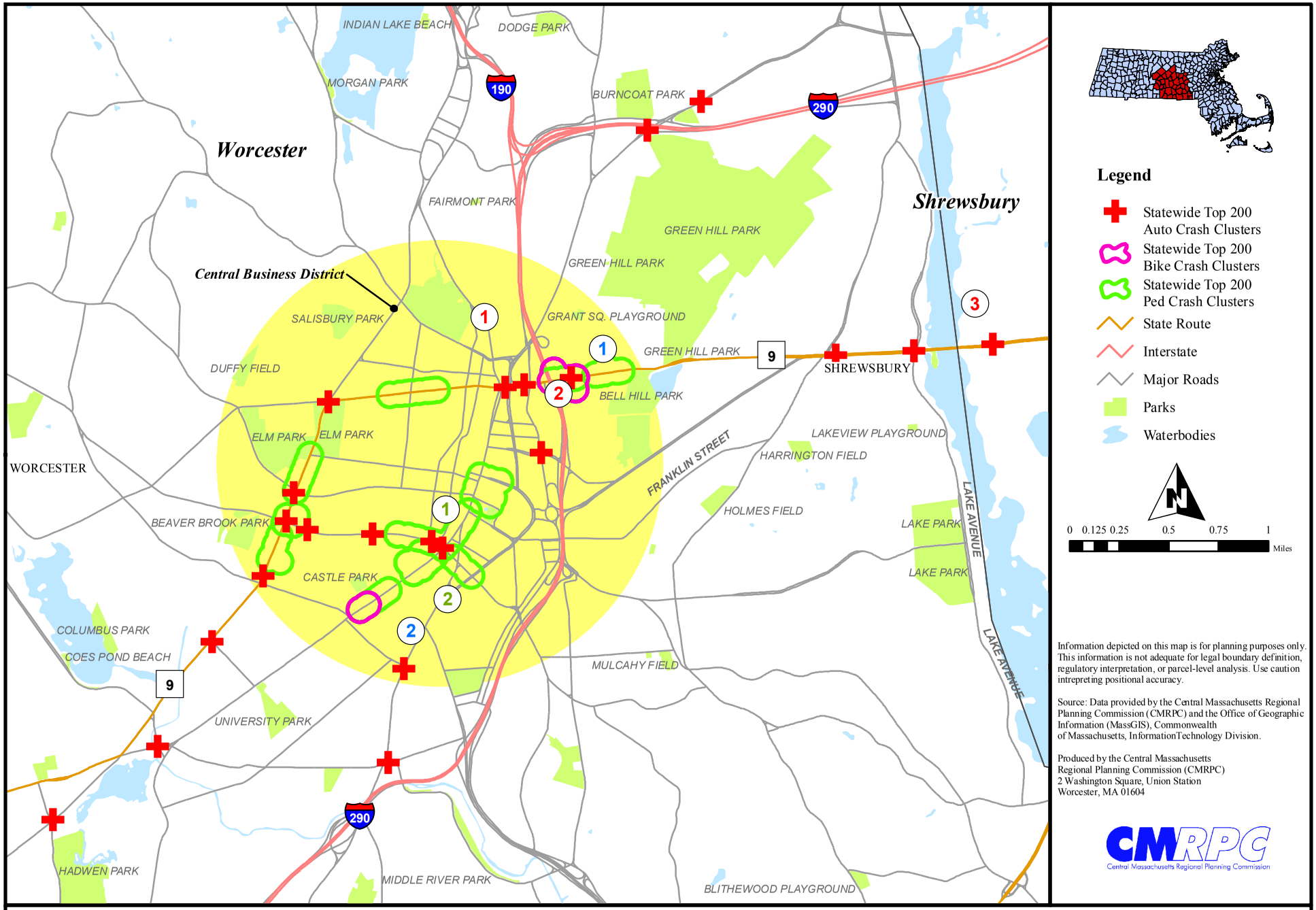


Figure V-3 CMRPC Highest Ranked Crash Clusters

E.5.2 Top 5% Bicycle and Pedestrian Clusters

Bike and pedestrian in the top 5% are listed in Table V-2. Nine of ten HSIP eligible bike and pedestrian clusters in the region are located in the City of Worcester and one is located in the Town of Spencer.

E.5.3 Top Crash Corridors

35 of the region's top 5% automobile, bicycle and pedestrian clusters are located in the City of Worcester (Table V-1 & Table V-2). The locations where multi modal crashes occurred were in close proximity to each other along Route 9, Route 122 and Main Street in the central business district. The geographic distribution showed that combined clusters occurred along specific road segments. These safety issues could be addressed more efficiently if they were studied in conjunction with each other rather than separately. The regions highest ranked automobile, pedestrian and bicycle clusters including several of the statewide top 200 clusters are located along the following corridors in the City of Worcester.

- RANK 1 Crash Corridor -Belmont Street From Everard Street To Main Street (Figure V-4)
- RANK 2 Crash Corridor -Chandler Street / Madison Street From Piedmont Street to Gold Street (Figure V-5)
- RANK 3 Crash Corridor -Park Avenue From Elm Street To May Street (Figure V-6)
- RANK 4 Crash Corridor -Main Street From May Street To Madison Street (Figure V-5)

E.5.4 Other Crash Locations – Not Eligible for HSIP Funding

Several communities in the region did not have high priority crash clusters eligible for HSIP funding. Here, intersections with high Equivalent Property Damage (EPDO) were selected to generate a list of crash locations important to each community. Communities are encouraged to explore funding sources from other infrastructure funding sources such as local funds or public private partnership programs.

- Other Automobile Crash Clusters (Table V-4)
- Other Pedestrian Clusters (Table V-5)
- Other Bicycle Clusters (Table V-5)

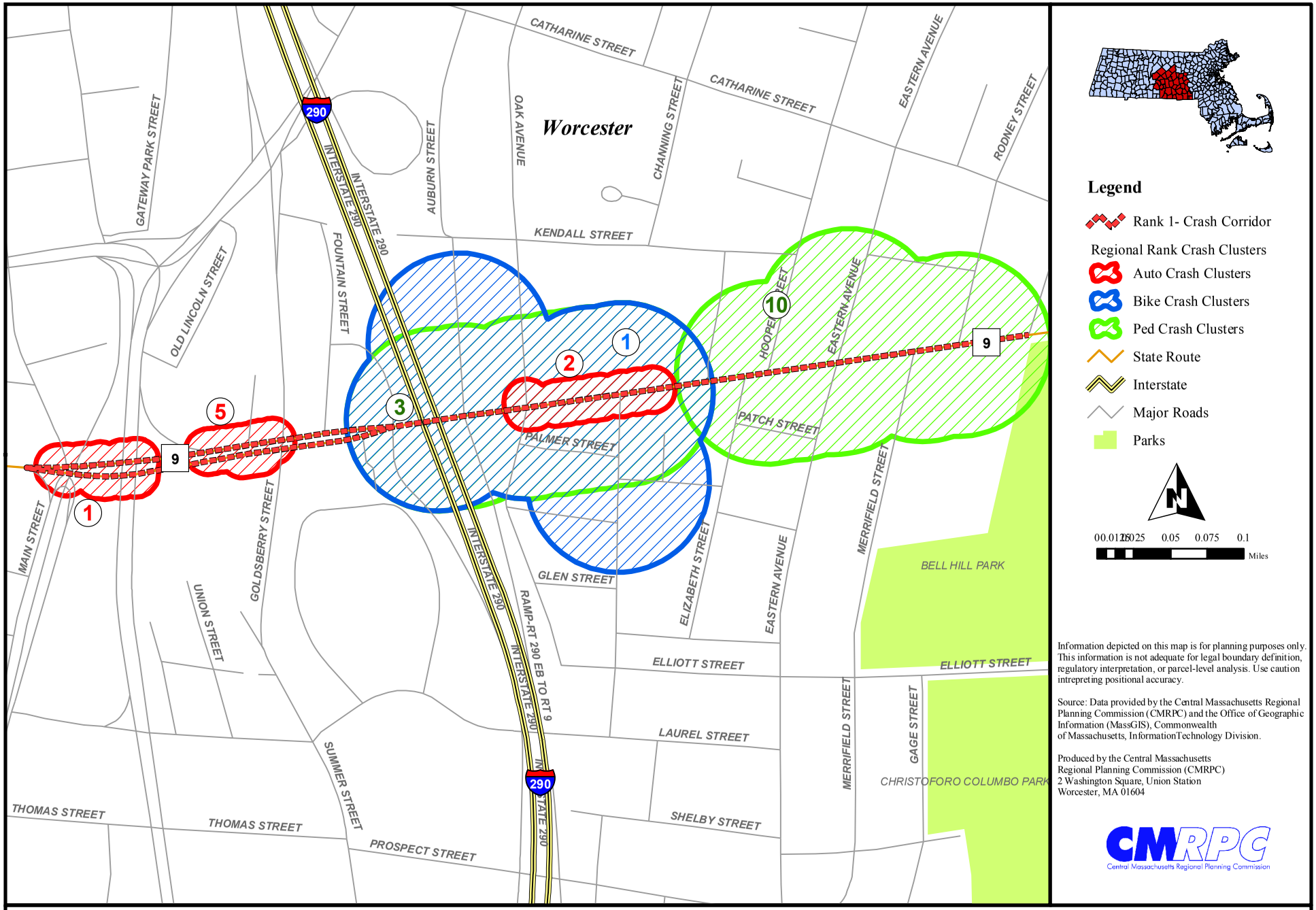


Figure V-4 Rank 1 Crash Corridor with Crash Clusters

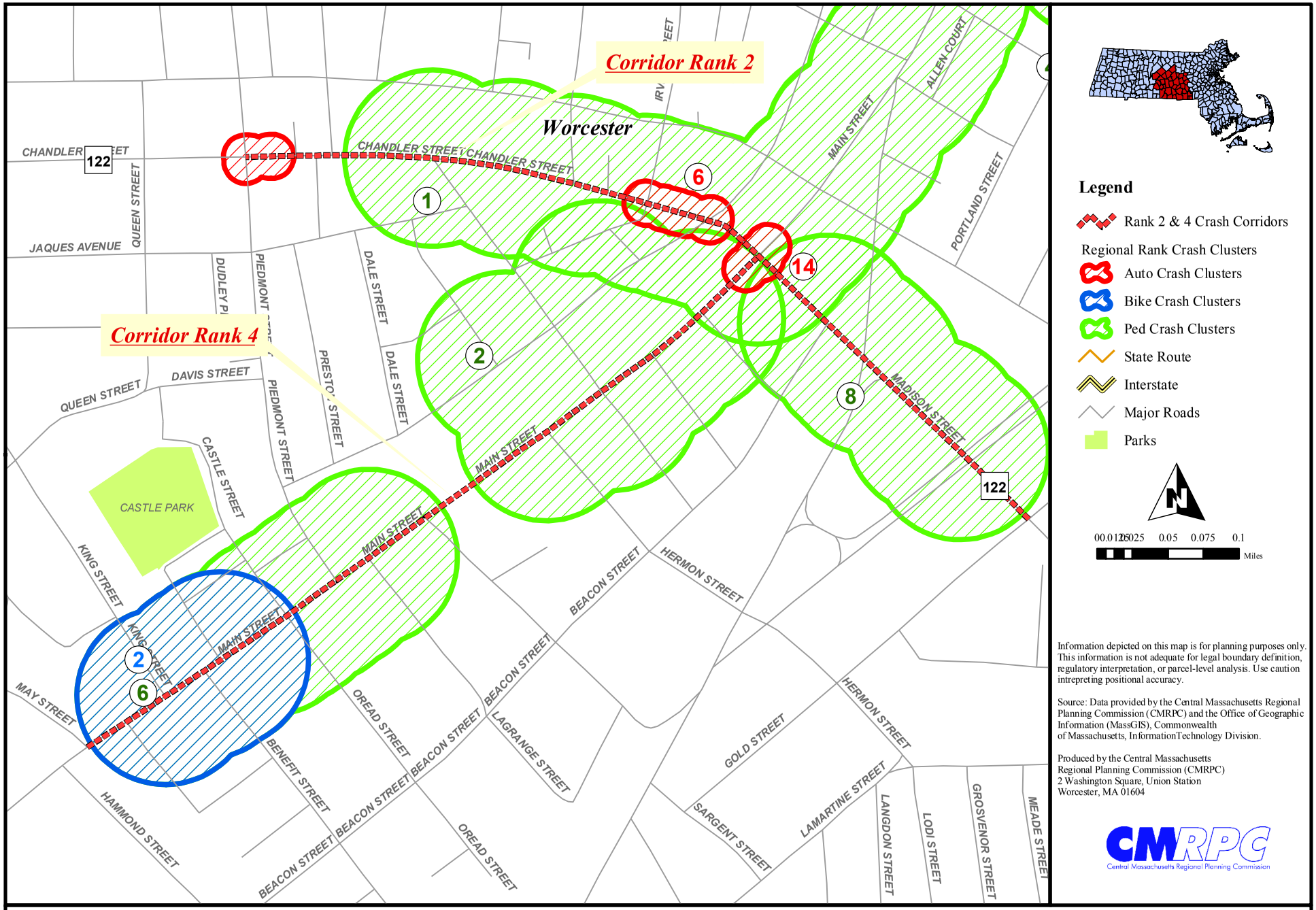


Figure V-5 Rank 2 & 4 Crash Corridors with Crash Clusters

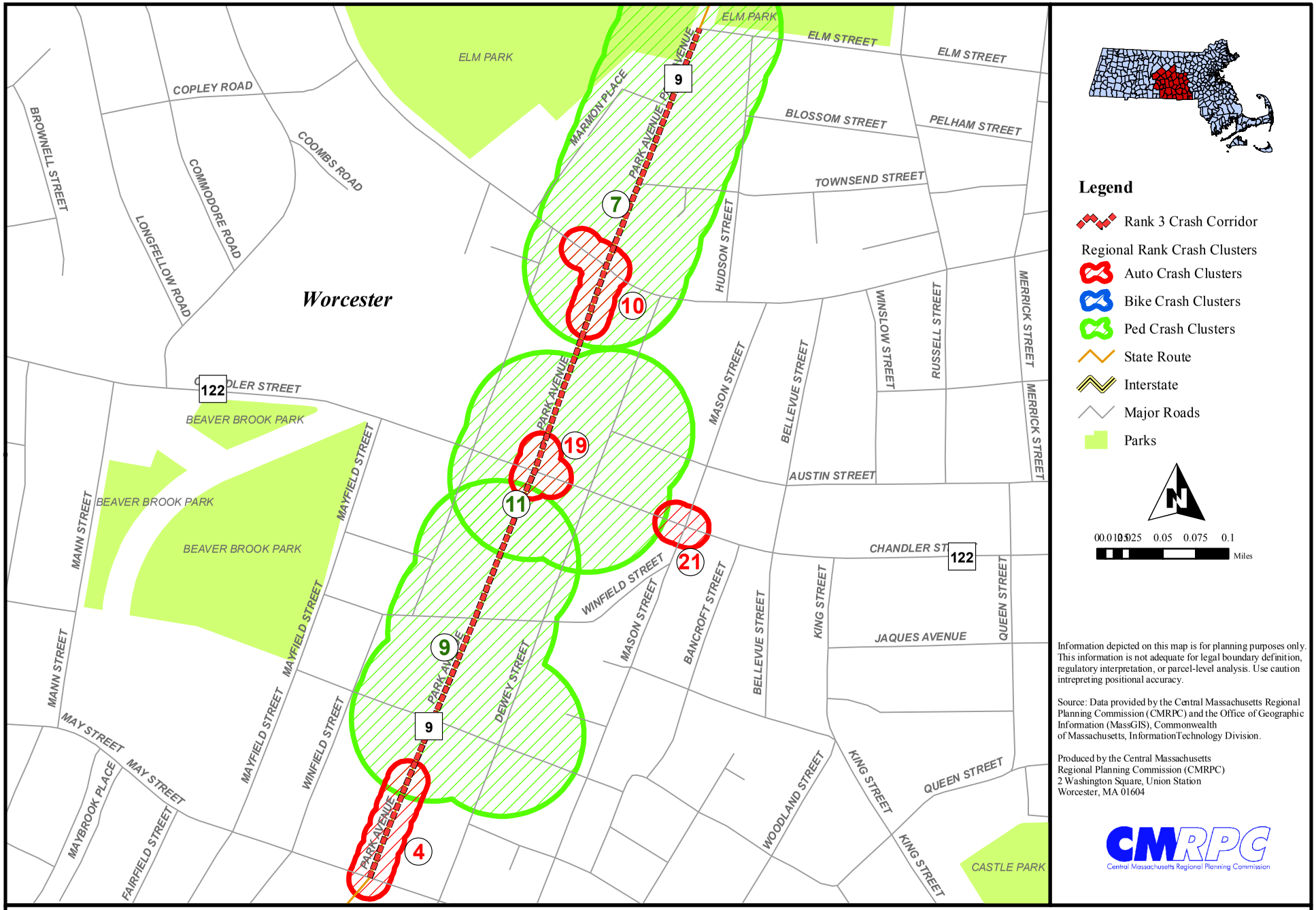


Figure V-6 Rank 3 Crash Corridor with Crash Clusters

F. CONCLUSION

The Highway Safety Improvement Program (HSIP) hopes to reduce the number of fatal and injury crashes by targeting improvements at high crash locations. Cities and towns in the region can utilize the lists provided in this document to consider safety improvements at specific intersections. Specifically, HSIP funding can be used for designing, planning and implementing of intersection improvements at those intersections listed in Table V-1 through Table V-4.

Where intersections are not HSIP eligible but show a high number of crashes, communities may be able to seek assistance from alternate funding sources to make similar improvements. Also, municipalities may want to consider making traffic safety improvements using low-cost, ready-to-use methods that enhance safety at those crash clusters listed in Table V-4 and Table V-5. Specific areas of highway safety include identifying roadside hazards with appropriate signage, markings, and lighting; appropriate use of traffic control devices such as traffic signals; and a variety of other low-cost safety improvements.

F.1 Traffic Safety Toolbox

Traffic Safety Toolbox developed by MassDOT also provides a resource for municipal practitioners. The following topics can be explored at http://www.mhd.state.ma.us/safetytoolbox/ :

- Advanced Warning Signs
- Crosswalks
- Low Cost Intersection Safety Fixes
- Low Cost Non-Intersection Safety Fixes
- Pavement Markings – Center lines & Edge lines
- Pavement Markings - Other
- Retro reflectivity
- Sight Distance
- Speed Limits & Speed Limit Setting
- Stop Sign Installation
- Work Zones
- Roadway Safety Audits

F.2 Roadway Safety Audits

Roadway Safety Audits (RSA) can be used to assist in assessing conditions at selected crash locations. The RSA is a formal safety performance examination of crash intersections conducted by an independent audit team.

- A safety audit uses a 3-5 person interdisciplinary team.
- The safety audit team should consist of community members and professionals.
- A field review is a mandatory component of the safety audit.
- Safety audits use checklists and field reviews to examine all design features.

Such an RSA can detect potential safety problems and identify various improvements that could alleviate safety problems. The costs and benefits of each countermeasure proposed by the team must be individually evaluated to select those that are most suitable for the specific community.

F.3 Integration of Safety with Other Ongoing Efforts

Linking high crash location data with ongoing multimodal efforts will be one of the focuses moving forward with safety planning program in the region. The following activities are envisioned:

F.3.1 Walkability Workshop Integrated with Roadway Safety Audits

As part of the pedestrian mobility improvements efforts, walkability workshops have been performed in different communities, including field data collection of sidewalk condition. Since, the high pedestrian crash locations in the region have been identified; roadway safety audits will be performed alongside walkability surveys to recommend safety as well as mobility improvements.

F.3.2 Roadway Safety Audit at High Transit Ridership Locations

Bus-stop locations with high crashes as well as high ridership locations have been identified. Roadway safety audits at these locations will be performed to improve safety for both pedestrians and transit riders.

Table V-1

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A1	Yes	Yes	WORCESTER	LINCOLN SQUARE / MAIN ST / MAJOR TAYLOR BLVD	SR9 EB / SR70 NB	124	0	26	98	228
A2	Yes	Yes	WORCESTER	BELMONT ST / OAK AV	SR9 EB	99	0	26	73	203
A3	Yes	Yes	SHREWSBURY	BOSTON TURNPIKE / SOUTH QUINSIGAMOND AV	SR9 EB	109	0	20	89	189
A4	Yes	Yes	WORCESTER	PARK AV / MAY ST	SR9 EB	98	0	22	76	186
A5	Yes	Yes	WORCESTER	BELMONT ST / GOLDSBERRY ST / LINCOLN ST	SR9 EB	90	0	22	68	178
A6		Yes	NORTHBOROUGH	BELMONT ST / SOUTHWEST CONNECTOR	SR9 EB / US20 EB	81	0	24	57	177
A7		Yes	WESTBOROUGH	BOSTON WORCESTER TURNPIKE / EAST MAIN ST	SR9 EB / SR30 EB	105	0	18	87	177
A8	Yes	Yes	WORCESTER	CHANDLER ST / MURRAY AV	SR122 NB	73	0	24	49	169
A9	Yes	Yes	WORCESTER	SOUTHBRIDGE ST / HAMMOND ST		66	0	25	41	166
A10	Yes	Yes	SHREWSBURY	BOSTON TURNPIKE / SOUTH ST	SR9 EB	80	0	20	60	160
A11	Yes	Yes	WORCESTER	BELMONT ST / PLANTATION ST	SR9 EB	71	0	21	50	155
A12	Yes	Yes	WESTBOROUGH	BOSTON WORCESTER TURNPIKE / LYMAN ST	SR9 EB	84	0	16	68	148
A13	Yes	Yes	WORCESTER	PARK AV / PLEASANT ST	SR9 EB	72	0	19	53	148
A14	Yes	Yes	WORCESTER	LINCOLN ST / MELROSE ST / RAMP-RT 70 TO RT 290 EB	SR70 NB	50	1	20	29	139
A15	Yes	Yes	WORCESTER	LINCOLN ST / MARSH AV	SR70 NB	74	0	16	58	138
A16	Yes	Yes	WORCESTER	PARK AV / HIGHLAND ST	SR12 NB / SR9 EB	71	0	16	55	135
A17	Yes	Yes	WORCESTER	CHANDLER ST / PIEDMONT ST	SR122 NB	43	0	22	21	131
A18	Yes	Yes	WORCESTER	MAIN ST / CHANDLER ST / MADISON ST	SR122 NB	63	0	17	46	131
A19	Yes	Yes	WORCESTER	MAIN ST / MILL ST / CAMBRIDGE ST		65	0	16	49	129
A20	Yes	Yes	WORCESTER	STAFFORD ST / CURTIS PKWY		57	0	18	39	129
A21	Yes	Yes	MENDON	MILFORD RD / MAIN ST / HASTINGS ST	SR16 EB / SR16 EB	56	0	18	38	128
A22		Yes	WESTBOROUGH	MAIN ST ROTARY / WEST MAIN ST	SR30 EB / SR30 EB	83	0	11	72	127
A23		Yes	WESTBOROUGH	BOSTON WORCESTER TURNPIKE / MILK ST	SR9 EB / SR135 EB	73	0	13	60	125
A24	Yes	Yes	WORCESTER	BELMONT ST / LAKE AV NORTH	SR9 EB	56	0	16	40	120
A25	Yes	Yes	WORCESTER	CAMBRIDGE ST / SOUTHBRIDGE ST		63	0	14	49	119
A26	Yes	Yes	WORCESTER	PARK AV / CHANDLER ST	SR9 EB / SR122 NB	58	0	14	44	114
A27	Yes	Yes	WORCESTER	MAYWOOD ST / PARK AV	SR9 EB	43	0	17	26	111
A28	Yes	Yes	WORCESTER	CHANDLER ST / MASON ST	SR122 NB	45	0	16	29	109
A29	Yes	Yes	WORCESTER	EAST CENTRAL ST / SUMMER ST / CENTRAL ST		53	0	14	39	109

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

						2006 - 2008				
Id	**State Top 200**	**[3] HSIP Eligible**	**TOWN**	**† LOCATION**	**ROUTE**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
A30		Yes	WESTBOROUGH	BOSTON WORCESTER TURNPIKE / OTIS ST	SR9 EB	54	0	13	41	106
A31		Yes	WORCESTER	HIGHLAND ST / NORTH ASHLAND ST	SR9 EB	54	0	13	41	106
A32		Yes	WORCESTER	MAIN ST / STAFFORD ST / PARK AV	SR9 EB	46	0	15	31	106
A33		Yes	WORCESTER	HARDING ST / HARRISON ST	SR122 NB	41	0	16	25	105
A34		Yes	WORCESTER	LINCOLN ST / COUNTRY CLUB BLVD	SR70 NB	37	0	17	20	105
A35		Yes	WORCESTER	HIGHLAND ST / HARVARD ST	SR9 EB	61	0	11	50	105
A36		Yes	OXFORD	SOUTHBRIDGE RD / LEICESTER RD	US20 EB / SR56 NB	48	0	14	34	104
A37		Yes	SHREWSBURY	BOSTON TURNPIKE / HARRINGTON AV	SR9 EB	64	0	10	54	104
A38		Yes	WORCESTER	SOUTHWEST CUTOFF / GREENWOOD ST	US20 EB	52	0	13	39	104
A39		Yes	WORCESTER	GRAFTON ST / MENDON ST	SR122 NB	46	0	14	32	102
A40		Yes	WORCESTER	PROVIDENCE ST / MILLBURY ST	SR122A NB	48	0	13	35	100
A41		Yes	SUTTON	WORCESTER PROVIDENCE TURNPIKE / BOSTON RD	SR146 NB	46	0	13	33	98
A42		Yes	SHREWSBURY	BOSTON TURNPIKE / LAKE ST	SR9 EB	35	2	11	22	97
A43		Yes	WORCESTER	BELMONT ST / EASTERN AV	SR9 EB	56	0	10	46	96
A44		Yes	CHARLTON	STURBRIDGE RD / MASONIC HOME RD	US20 EB / SR31 NB	51	0	11	40	95
A45		Yes	WORCESTER	MAIN ST / MAYWOOD ST		35	0	15	20	95
A46		Yes	MILLBURY	ROUTE 20 / PURPLE HEART HIGHWAY	SR146 NB / US20 EB	42	0	13	29	94
A47		Yes	WORCESTER	HIGHLAND ST / LANCASTER ST	SR9 EB	40	0	13	27	92
A48		Yes	OXFORD	MAIN ST / SUTTON AV	SR12 NB	67	0	6	61	91
A49		Yes	WORCESTER	VERNON ST / MADISON ST	SR122A NB / SR122 NI	51	0	10	41	91
A50		Yes	AUBURN	SOUTHBRIDGE ST / HILL ST	US20 EB	37	0	13	24	89
A51		Yes	SHREWSBURY	MAIN ST / CHURCH RD / BOYLSTON ST	SR140 NB	53	0	9	44	89
A52		Yes	WORCESTER	HARDING ST / WINTER ST	SR122 NB	36	0	13	23	88
A53		Yes	WORCESTER	LINCOLN ST / PLANTATION ST		39	0	12	27	87
A54		Yes	WORCESTER	SOUTHBRIDGE ST / MADISON ST	SR122 NB	38	0	12	26	86
A55		Yes	WORCESTER	MILL ST / PARK AV	SR9 EB / SR12 NB	42	0	11	31	86
A56		Yes	SHREWSBURY	BOSTON TURNPIKE / OAK ST	SR9 EB	49	0	9	40	85
A57		Yes	WORCESTER	LINCOLN ST / TRINITY AV	SR70 NB	32	0	13	19	84
A58		Yes	WORCESTER	WEST BOYLSTON ST / MOUNTAIN ST WEST	SR12 NB	43	0	10	33	83
A59		Yes	HOLDEN	MAIN ST / RESERVOIR ST	SR122A NB / SR31 NB	38	0	11	27	82
A60		Yes	WORCESTER	MAIN ST / AUSTIN ST / MYRTLE ST		34	0	12	22	82
A61		Yes	WORCESTER	MAY ST / MAIN ST		34	0	12	22	82

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A62		Yes	WORCESTER	LINCOLN ST / TYLER PRENTICE RD	SR70 NB	36	0	11	25	80
A63		Yes	WORCESTER	MAIN ST / HAMMOND ST		39	0	10	29	79
A64		Yes	AUBURN	WASHINGTON ST / PROSPECT ST	US20 EB	33	1	9	23	78
A65		Yes	WORCESTER	VERNON ST / DORCHESTER ST	SR122A NB	38	0	10	28	78
A66		Yes	SHREWSBURY	HARTFORD TURNPIKE / GRAFTON ST	US20 EB	41	0	9	32	77
A67		Yes	WORCESTER	BELMONT ST / SHREWSBURY ST	SR9 EB	36	0	10	26	76
A68		Yes	AUBURN	AUBURN ST / SOUTHBRIDGE ST	SR12 NB	34	0	10	24	74
A69		Yes	WORCESTER	I 190 / GOLD STAR BLVD	I190 NB / SR12 NB	29	1	9	19	74
A70		Yes	WORCESTER	MILL ST / JUNE ST		26	0	12	14	74
A71		Yes	CHARLTON	STURBRIDGE RD / SOUTHBRIDGE RD	US20 EB	28	0	11	17	72
A72		Yes	WORCESTER	SOUTHWEST CUTOFF / SUNDERLAND RD	US20 EB	36	0	9	27	72
A73		Yes	WORCESTER	GRAFTON ST / HAMILTON ST	SR122 NB	31	0	10	21	71
A74		Yes	WORCESTER	MAIN ST / CURTIS PKWY	SR9 EB	35	0	9	26	71
A75		Yes	WORCESTER	BELMONT ST / FRANK ST	SR9 EB	38	0	8	30	70
A76		Yes	WORCESTER	MOUNTAIN ST WEST / BROOKS ST / I 190 SB CD RD		38	0	8	30	70
A77		Yes	NORTHBOROUGH	MAIN ST / PATTY LANE / HUDSON ST	US20 EB	37	0	8	29	69
A78		Yes	NORTHBRIDGE	PROVIDENCE RD / SUTTON ST	SR122 NB	37	0	8	29	69
A79		Yes	WORCESTER	PARK AV / CHARLOTTE ST	SR9 EB	25	0	11	14	69
A80		Yes	UXBRIDGE	MENDON ST / SOUTH MAIN ST	SR16 EB / SR122 NB	32	0	9	23	68
A81		Yes	WORCESTER	MAIN ST / KING ST		28	0	10	18	68
A82		Yes	WORCESTER	PLEASANT ST / SEVER ST		32	0	9	23	68
A83		Yes	WORCESTER	CHANDLER ST / QUEEN ST	SR122 NB	35	0	8	27	67
A84		Yes	WORCESTER	ELM ST / WEST ST		23	0	11	12	67
A85		Yes	NORTHBOROUGH	WEST MAIN ST / CHURCH ST	US20 EB	42	0	6	36	66
A86		Yes	NORTHBRIDGE	CHURCH ST / PROVIDENCE RD	SR122 NB	38	0	7	31	66
A87		Yes	WORCESTER	MADISON ST	SR122 NB	30	0	9	21	66
A88		Yes	WORCESTER	HAMILTON ST / FAIRMONT AV		26	0	10	16	66
A89		Yes	AUBURN	APPLETON RD / WASHINGTON ST	US20 EB	21	0	11	10	65
A90		Yes	WORCESTER	PARK AV / SAGAMORE RD	SR12 NB	29	0	9	20	65
A91		Yes	WORCESTER	LOVELL ST / PARK AV / LOVELL ST	SR9 EB	29	0	9	20	65
A92		Yes	SHREWSBURY	HARTFORD TURNPIKE / LAKE ST	US20 EB	28	0	9	19	64
A93		Yes	WEST BOYLSTON	WORCESTER ST / CENTRAL ST / WEST BOYLSTON ST	SR12 NB / SR12 NB	20	0	11	9	64

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

						2006 - 2008				
Id	**State Top 200**	**[3] HSIP Eligible**	**TOWN**	**† LOCATION**	**ROUTE**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
A94		Yes	WORCESTER	CHANDLER ST / MILL ST	SR122 NB	36	0	7	29	64
A95		Yes	WORCESTER	MADISON ST / WASHINGTON ST	SR122 NB	28	0	9	19	64
A96		Yes	WORCESTER	LINCOLN ST / SHAFFNER ST / BURNCOAT ST	SR70 NB	32	0	8	24	64
A97		Yes	HOLDEN	MAIN ST / SALISBURY ST	SR122A NB	23	0	10	13	63
A98		Yes	SOUTHBRIDGE	MAIN ST / ELM ST	SR131 EB / SR198 NB	27	0	9	18	63
A99		Yes	WORCESTER	GRAFTON ST / PLANTATION ST	SR122 NB	27	0	9	18	63
A100		Yes	SHREWSBURY	MAIN ST / HOLDEN ST / NORTH QUINSIGAMOND AV		34	0	7	27	62
A101		Yes	WORCESTER	PARK AV	SR9 EB	26	0	9	17	62
A102		Yes	WORCESTER	MAY ST / WOODLAND ST		30	0	8	22	62
A103		Yes	WORCESTER	GOLD STAR BLVD / MILLBROOK ST	SR12 NB	25	0	9	16	61
A104		Yes	WORCESTER	CAMBRIDGE ST / FREMONT ST		29	0	8	21	61
A105		Yes	STURBRIDGE	ROUTE 20 / PODUNK PIKE	US20 EB / SR49 NB	28	0	8	20	60
A106		Yes	WORCESTER	PARK AV / SALISBURY ST	SR12 NB	36	0	6	30	60
A107		Yes	WORCESTER	BURNCOAT ST / MILLBROOK ST		28	0	8	20	60
A108		Yes	AUBURN	SOUTHBRIDGE ST / PROSPECT ST	SR12 NB	31	0	7	24	59
A109		Yes	SHREWSBURY	MEMORIAL DR / HARTFORD TURNPIKE	US20 EB / SR140 NB	27	0	8	19	59
A110		Yes	UPTON	WESTBORO RD / SCHOOL ST / HIGH ST / HOPKINTON RD		31	0	7	24	59
A111		Yes	WORCESTER	HIGHLAND ST / RUSSELL ST	SR9 EB	31	0	7	24	59
A112		Yes	SHREWSBURY	SOUTH QUINSIGAMOND AV		30	0	7	23	58
A113		Yes	SOUTHBRIDGE	MAIN ST / PLEASANT ST	SR131 EB	22	0	9	13	58
A114		Yes	WORCESTER	SOUTHWEST CUTOFF / GRAFTON ST	SR122 NB / US20 EB	21	1	7	13	58
A115		Yes	WORCESTER	GROVE ST / GOLD STAR BLVD	SR12 SB / SR12 NB	28	1	5	22	57
A116		Yes	WORCESTER	GOLD STAR BLVD	SR12 NB	29	0	7	22	57
A117		Yes	WORCESTER	PARK AV / INSTITUTE RD	SR12 NB	25	0	8	17	57
A118		Yes	WORCESTER	MAIN ST / SYLVAN ST	SR9 EB	25	0	8	17	57
A119		Yes	WORCESTER	PARK AV / PARKER ST	SR9 EB	32	1	4	27	57
A120		Yes	WORCESTER	PLEASANT ST / MOWER ST / CHANDLER ST	SR122 NB / SR122 NB	32	0	6	26	56
A121		Yes	WORCESTER	MAY ST / JUNE ST		24	0	8	16	56
A122		Yes	AUBURN	SOUTHBRIDGE ST	US20 EB	27	0	7	20	55
A123		Yes	WORCESTER	GRAFTON ST / RAMP-RT 122 TO RT 290 EB	SR122 NB	23	0	8	15	55
A124		Yes	WORCESTER	GROVE ST / GLENNIE ST		27	0	7	20	55
A125		Yes	CHARLTON	STURBRIDGE RD / CARPENTER HILL RD / STAFFORD ST	US20 EB	26	0	7	19	54

[1] PDO - Property Damage Only
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[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A126		Yes	HOPEDALE, MENDON	HARTFORD AV EAST / CAPE RD / SOUTH MAIN ST	SR140 NB / SR140 NB	30	0	6	24	54
A127		Yes	MENDON, HOPEDALE	HARTFORD AV EAST / CAPE RD / SOUTH MAIN ST	SR140 NB / SR140 NB	30	0	6	24	54
A128		Yes	WORCESTER	CHESTER ST / GROVE ST	SR122A NB	26	0	7	19	54
A129		Yes	WORCESTER	HIGHLAND ST / WEST ST	SR9 EB	22	0	8	14	54
A130		Yes	WORCESTER	HAMILTON ST / PLANTATION ST		26	0	7	19	54
A131		Yes	WORCESTER	MAIN ST / FRONT ST		26	0	7	19	54
A132		Yes	WORCESTER	QUINSIGAMOND AV / LAFAYETTE ST		26	0	7	19	54
A133		Yes	SHREWSBURY	BOSTON TURNPIKE / GRAFTON ST	SR9 EB	29	0	6	23	53
A134		Yes	WORCESTER	BURNCOAT ST / RAMP-RT 190 TO BURNCOAT ST		21	0	8	13	53
A135		Yes	WORCESTER	MAJOR TAYLOR BLVD / EAST CENTRAL ST		17	0	9	8	53
A136		Yes	AUBURN	WASHINGTON ST / SOUTH ST	US20 EB	32	0	5	27	52
A137		Yes	SOUTHBRIDGE	WORCESTER ST / MECHANIC ST	SR169 NB / SR169 NB	28	0	6	22	52
A138		Yes	SPENCER	MAIN ST / MAPLE ST	SR9 EB / SR31 NB	28	0	6	22	52
A139		Yes	WORCESTER	PARK AV / PRATT ST	SR12 NB	20	0	8	12	52
A140		Yes	WORCESTER	MASSASOIT RD / SOUTHWEST CUTOFF	US20 EB	28	0	6	22	52
A141		Yes	WORCESTER	MAIN ST / NORWOOD ST		24	0	7	17	52
A142		Yes	OXFORD	SUTTON AV		19	0	8	11	51
A143		Yes	SHREWSBURY	MAIN ST / MAPLE AV		39	0	3	36	51
A144		Yes	SOUTHBRIDGE	CENTRAL ST / PAIGE HILL RD		27	0	6	21	51
A145		Yes	WORCESTER	CAMBRIDGE ST / EXETER ST		17	2	4	11	51
A146		Yes	WORCESTER	PROVIDENCE ST / ASTRID AV	SR122A NB	19	0	8	11	51
A147		Yes	WORCESTER	PARK AV / TOWNSEND ST	SR9 EB	31	0	5	26	51
A148		Yes	WORCESTER	FRANKLIN ST / FRONT ST		19	0	8	11	51
A149		Yes	WORCESTER	PLEASANT ST / RICHMOND AV		27	0	6	21	51
A150		Yes	DUDLEY	WEST MAIN ST / VILLAGE ST / SCHOFIELD AV	SR12 NB / SR12 NB	34	0	4	30	50
A151		Yes	WESTBOROUGH	EAST MAIN ST / FLANDERS RD	SR30 EB	18	0	8	10	50
A152		Yes	WORCESTER	GRAFTON ST / SUNDERLAND RD	SR122 NB	30	0	5	25	50
A153		Yes	WORCESTER	VERNON ST / WINTHROP ST	SR122A NB / SR122A	26	0	6	20	50
A154		Yes	WORCESTER	SALISBURY ST / CONCORD ST		22	0	7	15	50
A155		Yes	SHREWSBURY	BOSTON TURNPIKE / DEWEY RD	SR9 EB	29	0	5	24	49
A156		Yes	WORCESTER	GRAFTON ST / DORCHESTER ST	SR122 NB	16	1	6	9	49
A157		Yes	WORCESTER	CHANDLER ST / MAY ST	SR122 NB	17	0	8	9	49

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A158		Yes	WORCESTER	BOYLSTON ST / PLANTATION ST	SR70 NB	21	0	7	14	49
A159		Yes	WORCESTER	CAMBRIDGE ST / HAYNES ST		13	0	9	4	49
A160		Yes	WORCESTER	GOLD STAR BLVD	SR12 NB	28	0	5	23	48
A161		Yes	WORCESTER	CHANDLER ST / KING ST	SR122 NB	20	0	7	13	48
A162		Yes	WORCESTER	CAMBRIDGE ST / CAMP ST		20	0	7	13	48
A163		Yes	WORCESTER	CANTERBURY ST / GARDNER ST		20	0	7	13	48
A164		Yes	WORCESTER	SOUTHBRIDGE ST / LAFAYETTE ST		24	0	6	18	48
A165		Yes	AUBURN, OXFORD	SOUTHBRIDGE RD / MAIN ST	US20 EB / SR12 NB	22	1	4	17	47
A166		Yes	CHARLTON	STURBRIDGE RD / OX BOW RD	US20 EB	19	0	7	12	47
A167		Yes	OXFORD, AUBURN	SOUTHBRIDGE RD / MAIN ST	US20 EB / SR12 NB	22	1	4	17	47
A168		Yes	STURBRIDGE	ROUTE 20 / FISKE HILL RD	US20 EB	19	0	7	12	47
A169		Yes	WORCESTER	WATER ST / HARRISON ST	SR122 SB	23	0	6	17	47
A170		Yes	WORCESTER	WINTHROP ST / PROVIDENCE ST	SR122A NB	23	0	6	17	47
A171		Yes	WORCESTER	MAIN ST / GODDARD MEMORIAL DR	SR9 EB	19	0	7	12	47
A172		Yes	WORCESTER	CAMBRIDGE ST / MCKEON RD		19	0	7	12	47
A173		Yes	WORCESTER	PROVIDENCE ST / DORCHESTER ST		27	0	5	22	47
A174		Yes	CHARLTON	SOUTHBRIDGE RD / STURBRIDGE RD	SR169 NB / US20 EB	22	0	6	16	46
A175		Yes	HOLDEN	MAIN ST / SHREWSBURY ST	SR122A NB	26	0	5	21	46
A176		Yes	SHREWSBURY	MAPLE AV / BOSTON TURNPIKE	SR9 EB	30	0	4	26	46
A177		Yes	SPENCER	MAIN ST / MECHANIC ST	SR9 EB	21	1	4	16	46
A178		Yes	UXBRIDGE	HARTFORD AV WEST / NORTH MAIN ST	SR122 NB	26	0	5	21	46
A179		Yes	WORCESTER	WEST BOYLSTON ST / BOARDMAN ST	SR12 SB	22	0	6	16	46
A180		Yes	WORCESTER	LINCOLN ST / RAMP-RT 290 WB TO RT 70	SR70 NB	18	0	7	11	46
A181		Yes	WORCESTER	BELMONT ST / ALVARADO AV	SR9 EB	26	0	5	21	46
A182		Yes	WORCESTER	BEACON ST / HAMMOND ST		22	0	6	16	46
A183		Yes	WORCESTER	STAFFORD ST		18	0	7	11	46
A184		Yes	MILLBURY, WORCESTER	SOUTHWEST CUTOFF / GRANITE ST	US20 EB	17	0	7	10	45
A185		Yes	WORCESTER	PLANTATION ST / WINCO RD		16	1	5	10	45
A186		Yes	WORCESTER	SOUTHBRIDGE ST / SOUTHGATE ST		20	1	4	15	45
A187		Yes	WORCESTER	CHANDLER ST / BELLEVUE ST	SR122 NB	21	0	6	15	45
A188		Yes	WORCESTER	LINDEN ST / ELM ST		17	0	7	10	45
A189		Yes	WORCESTER, MILLBURY	SOUTHWEST CUTOFF / GRANITE ST	US20 EB	17	0	7	10	45

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Region's Top 5% Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

						2006 - 2008				
Id	**State Top 200**	**[3] HSIP Eligible**	**TOWN**	**† LOCATION**	**ROUTE**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
A190		Yes	LEICESTER	MAIN ST / PLEASANT ST	SR9 EB / SR56 NB	21	0	5	16	41
A191		Yes	SPENCER	PLEASANT ST / NORTH SPENCER RD	SR31 NB / SR31 NB	16	0	6	10	40
A192		Yes	DUDLEY	WEST MAIN ST / AIRPORT RD	SR197 NB	17	0	5	12	37
A193		Yes	LEICESTER	PAXTON ST / MARSHALL ST	SR56 NB	17	0	5	12	37
A194		Yes	MENDON	UXBRIDGE RD / HARTFORD AV WEST	SR16 EB	17	0	5	12	37
A195		Yes	MILLBURY	PURPLE HEART HIGHWAY / WEST MAIN ST	SR146 NB	29	0	2	27	37
A196		Yes	WEST BOYLSTON	FRANKLIN ST / WEST BOYLSTON ST	SR12 NB	17	0	5	12	37
A197		Yes	STURBRIDGE	MAIN ST / STALLION HILL RD	US20 EB	16	0	5	11	36
A198		Yes	PAXTON	PLEASANT ST / WEST ST	SR122 NB / SR31 NB	11	0	6	5	35
A199		Yes	STURBRIDGE	ROUTE 20 / SOUTHBRIDGE RD	US20 EB	19	0	4	15	35
A200		Yes	DUDLEY	BRANDON RD / SCHOFIELD AV /BRANDON RD	SR12 NB	18	0	4	14	34
A201		Yes	DUDLEY	WEST MAIN ST / PAGLIONE / MASON RD	SR197 NB	18	0	4	14	34
A202		Yes	MENDON	BATES ST / BELLINGHAM ST		10	0	6	4	34
A203		Yes	MILLBURY	GREENWOOD ST / MCCRACKEN RD		21	0	3	18	33
A204		Yes	UXBRIDGE	NORTH MAIN ST / DOUGLAS ST	SR16 EB / SR16 EB	13	0	5	8	33

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Table V-2
Region's Top 5% Pedestrian Crash Clusters

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	Figure No.	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
P1	Yes	Yes	WORCESTER	MAIN ST / AUSTIN ST / CHANDLER ST	SR122 NB		33	0	27	6	141
P2	Yes	Yes	WORCESTER	MAIN ST / MURRAY AV			17	0	14	3	73
P3	Yes	Yes	WORCESTER	BELMONT ST / I 290	I290 EB / SR9 EB		19	1	11	7	72
P4	Yes	Yes	WORCESTER	FOSTER ST / MAIN ST			17	0	13	4	69
P5	Yes	Yes	SPENCER	MAIN ST / ELM ST / MAPLE ST	SR9 EB / SR31 NB		16	1	10	5	65
P6	Yes	Yes	WORCESTER	MAIN ST / PIEDMONT ST			13	0	12	1	61
P7	Yes	Yes	WORCESTER	PARK AV / PLEASANT ST	SR9 EB		13	1	7	5	50

Top 5% Bicycle Crash Clusters

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	Figure No.	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
B1	Yes	Yes	WORCESTER	I 290 / BELMONT ST	I290 EB / SR9 EB	4	8	0	6	2	32
B2	Yes	Yes	WORCESTER	MAIN ST / KING ST		18	6	0	5	1	26
B3		Yes	WORCESTER	PARK AV / PLEASANT ST	SR9 EB		6	0	4	2	22
B4		Yes	WORCESTER	PARK AV / MILL ST	SR9 EB / SR12 NB		6	0	4	2	22

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Table V-3

Region's Top Crash Corridors

Excludes Interstate Highways

Combined Crash / Bike / Ped Cluster Road Segments - HSIP Eligible

								2006 - 2008				
Id	**# Crash Clusters**	**# Bike Clusters**	**# Ped Clusters**	**TOWN**	**LOCATION**	**ROUTE**	**Mileage**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
C1	3	1	2	WORCESTER	BELMONT ST FROM EVERARD ST TO MAIN ST	SR9	0.94	496	0	117	379	964
C2	3	0	3	WORCESTER	CHANDLER ST / MADISON ST FROM PIEDMONT ST TO GOLD ST	SR122	0.64	307	0	98	209	699
C3	3	0	3	WORCESTER	PARK AV FROM ELM ST TO MAY ST	SR9	0.69	648	1	399	248	648
C4	0	1	2	WORCESTER	MAIN ST FROM MAY ST TO MADISON ST	MAIN ST	0.57	150	0	42	108	318

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Table V-4
Other Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A205		No	BARRE	SOUTH BARRE RD / VALLEY RD	SR32 NB / SR122 NB	7	0	3	4	19
A206		No	BARRE	VALLEY RD / HUBBARDSTON RD / MECHANIC ST	SR62 EB / SR62 EB	7	0	3	4	19
A207		No	BARRE	SOUTH ST / CONCERT MALL / SUMMER ST	SR32 NB / SR32 NB	8	0	2	6	16
A208		No	BERLIN	GATES POND RD / CENTRAL ST	SR62 EB	12	0	4	8	28
A209		No	BERLIN	CENTRAL ST	SR62 EB	6	0	3	3	18
A210		No	BERLIN	SAWYER HILL RD / CENTRAL ST	SR62 EB	5	0	3	2	17
A211		No	BLACKSTONE	MAIN ST / SAINT PAUL ST	SR122 NB	17	0	2	15	25
A212		No	BLACKSTONE	RATHBUN ST / DOLLARD AV		6	0	3	3	18
A213		No	BOYLSTON	MAIN ST / WEST BOYLSTON ST	SR70 NB / SR140 NB	14	0	4	10	30
A214		No	BOYLSTON	SCHOOL ST / EAST TEMPLE ST		10	0	4	6	26
A215		No	BOYLSTON	CROSS ST / CENTRAL ST		9	0	3	6	21
A216		No	BOYLSTON	SHREWSBURY ST	SR140 NB	4	0	4	0	20
A217		No	BROOKFIELD	WEST MAIN ST / RIVER ST / POST RD	SR9 EB / SR148 NB	5	0	3	2	17
A218		No	DOUGLAS	WEBSTER ST / CEDAR ST	SR16 EB	10	0	5	5	30
A219		No	DOUGLAS	MARTIN RD / FRANKLIN ST		4	0	3	1	16
A220		No	EAST BROOKFIELD	MAIN ST / HARRINGTON ST	SR9 EB	8	0	4	4	24
A221		No	EAST BROOKFIELD	MAIN ST	SR9 EB	2	0	2	0	10
A222		No	EAST BROOKFIELD	PODUNK RD		2	0	2	0	10
A223		No	GRAFTON	WORCESTER ST / SNOW RD	SR122 NB	19	0	3	16	31
A224		No	GRAFTON	WORCESTER ST / HITCHINGS RD	SR122 NB	12	0	4	8	28
A225		No	GRAFTON	NORTH MAIN ST / SHREWSBURY ST	SR140NB	8	1	2	5	25
A226		No	GRAFTON	WORCESTER ST / BRIDGE ST	SR122NB	12		3	9	24
A227		No	GRAFTON	WORCESTER ST / PROVIDENCE RD	SR122NB	16		2	14	24
A228		No	GRAFTON	WORCESTER ST / WHEELER RD	SR122NB	12		3	9	24
A229		No	GRAFTON	PROVIDENCE RD / MILLBURY ST	SR122NB	9		3	6	21
A230		No	GRAFTON	NORTH MAIN ST / BRIDGE ST	SR230EB	7	1	1	5	20
A231		No	HARDWICK	CHURCH ST / MAIN ST	SR32 NB / SR32 NB	3	0	2	1	11
A232		No	HOPEDALE	MENDON ST / HOPEDALE ST	SR16 EB	16	0	3	13	28
A233		No	HOPEDALE	SOUTH MAIN ST	SR140 NB	11	0	4	7	27
A234		No	LEICESTER	MAIN ST	SR9 EB	23	0	2	21	31
A235		No	MILLVILLE	MAIN ST / LINCOLN ST	SR122 NB	9	0	1	8	13

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Other Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
A236		No	MILLVILLE	CHESTNUT HILL RD / TOWER ST		3	0	2	1	11
A237		No	NEW BRAINTREE	BARRE RD / RAVINE RD	SR67 NB	6	0	3	3	18
A238		No	NORTH BROOKFIELD	WARD ST / OLD EAST BROOKFIELD RD / ELM ST		3	0	3	0	15
A239		No	NORTH BROOKFIELD	WEST BROOKFIELD RD / BROOKFIELD RD	SR67 NB / SR148 NB	4	0	2	2	12
A240		No	NORTH BROOKFIELD	WARD ST / RYAN RD		4	0	2	2	12
A241		No	NORTHBRIDGE	CHURCH ST / THURSTON AV		7	0	3	4	19
A242		No	OAKHAM	WORCESTER RD	SR122 NB	2	0	2	0	10
A243		No	OAKHAM	NORTH BROOKFIELD RD	SR148 NB	2	0	2	0	10
A244		No	PAXTON	PLEASANT ST / RESERVOIR DR	SR56 NB	7		1	5	20
A245		No	PAXTON	RICHARDS AV / COMMON ST	SR56 NB / SR31 NB	8	0	2	6	16
A246		No	PAXTON	PLEASANT ST / INDIAN HILL RD	SR122 NB	4		2	2	12
A247		No	PAXTON	PLEASANT ST / GROVE ST	SR56 NB	6		1	5	10
A248		No	PAXTON	PLEASANT ST / COLONY LN	SR122 NB	5		1	4	9
A249		No	PAXTON	PLEASANT ST / CAMP	SR122 NB	5		1	4	9
A250		No	PRINCETON	REDEMPTION ROCK TRAIL NORTH / ROCKY POND RD	SR140 NB	3	0	2	1	11
A251		No	PRINCETON	BEAMAN RD / REDEMPTION ROCK TRAIL NORTH / MAIN ST	SR31 NB / SR140 NB	3	0	2	1	11
A252		No	RUTLAND	PLEASANTDALE RD / BARRE PAXTON RD	SR122 NB	17	0	3	14	29
A253		No	RUTLAND	MAIN ST / MAPLE AV	SR122A NB / SR56 NB	12	0	2	10	20
A254		No	SHREWSBURY	BOYLSTON ST / COLONIAL DR	SR140 NB / SR140 NB	9	0	3	6	21
A255		No	STURBRIDGE	HOLLAND RD / BROMFIELD RD	US20 EB	21	0	2	19	29
A256		No	STURBRIDGE	ROUTE 20 / HALL RD	US20 EB	13	0	4	9	29
A257		No	SUTTON	PUTNAM HILL RD / CENTRAL TURNPIKE		6	0	2	4	14
A258		No	SUTTON	BOSTON RD / UXBRIDGE RD		5	0	2	3	13
A259		No	UPTON	MAIN ST / GROVE ST / MILFORD ST	SR140 NB / SR140 NB	11	0	3	8	23
A260		No	WARREN	MAIN ST / MAPLE ST	SR19 NB / SR19 NB	2	0	2	0	10
A261		No	WARREN	OLD WEST WARREN RD / HIGHLAND ST		2	0	2	0	10
A262		No	WEBSTER	EAST MAIN ST / LINCOLN ST	SR12 NB	15	0	4	11	31
A263		No	WEBSTER	EAST MAIN ST / CODY ST	SR12 NB	9	0	5	4	29
A264		No	WEBSTER	EAST MAIN ST / RACICOT AV	SR12 NB	9	0	5	4	29
A265		No	WEST BOYLSTON	WOODLAND ST / PROSPECT ST		10	0	5	5	30
A266		No	WEST BROOKFIELD	SCHOOL ST / NORTH MAIN ST	SR67 NB	6	0	1	5	10
A267		No	WEST BROOKFIELD	PLEASANT ST / MAIN ST	SR9 /SR67	5		1	4	9

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Other Automobile Crash Clusters

Excludes Interstate Highways

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Ranked on EPDO

						2006 - 2008				
Id	**State Top 200**	**[3] HSIP Eligible**	**TOWN**	**† LOCATION**	**ROUTE**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
A268		No	WEST BROOKFIELD	MAIN ST / NORTH MAIN ST	SR67 NB	5		1	4	9
A269		No	WEST BROOKFIELD	WEST MAIN ST / GILBERTVILLE RD	SR32 / SR9	4		1	3	8
A270		No	WORCESTER	CAMBRIDGE ST / RICHARDS ST		7	0	2	5	15

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Table V-5
Other Pedestrian Crash Clusters

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

							2006 - 2008				
Id	**State Top 200**	**[3] HSIP Eligible**	**TOWN**	**† LOCATION**	**ROUTE**	**Figure No.**	**Crash Count**	**Fatal Crashes**	**Injury Crashes**	**[1] PDO & Non Reported Crashes**	**[2] EPDO**
P8		No	BLACKSTONE	MAIN ST / SAINT PAUL ST	SR122 NB		4	0	4	0	20
P9		No	OXFORD	MAIN ST / SUTTON AV	SR12 NB		5	0	3	2	17
P10		No	SOUTHBRIDGE	MAIN ST / HAMILTON ST	SR131 EB		4	0	4	0	20
P11		No	SOUTHBRIDGE	WORCESTER ST / CHARLTON ST			4	0	4	0	20
P12		No	SOUTHBRIDGE	MAIN ST / ELM ST	SR131 EB / SR198 NB		4	0	3	1	16
P13		No	WEBSTER	MAIN ST / HIGH ST / SCHOOL ST	SR12 NB		5	0	3	2	17
P14		No	WEBSTER	NEGUS ST / CHURCH ST			3	0	2	1	11
P15	Yes	No	WORCESTER	MADISON ST / FRANCIS J. MCGRATH BLVD	SR122 NB		12	0	9	3	48
P16	Yes	No	WORCESTER	HIGHLAND ST / WEST ST	SR9 EB		16	0	8	8	48
P17	Yes	No	WORCESTER	PARK AV / DEWEY ST	SR9 EB		7	2	5	0	45
P18	Yes	No	WORCESTER	BELMONT ST / EASTERN AV	SR9 EB		10	0	8	2	42
P19	Yes	No	WORCESTER	DEWEY ST / CHANDLER ST / PARK AV	SR9 EB / SR122 NB		7	1	6	0	40
P20		No	WORCESTER	PLEASANT ST / MERRICK ST			11	0	7	4	39
P21		No	WORCESTER	WINTHROP ST / VERNON ST	SR122A NB / SR122A NB		10	0	7	3	38
P22		No	WORCESTER	CHANDLER ST / AUSTIN ST	SR122 NB		11	0	6	5	35
P23		No	WORCESTER	MAIN ST / MAY ST			8	0	6	2	32
P24		No	WORCESTER	MAIN ST / BEAVER ST / MAYWOOD ST			8	0	5	3	28
P25		No	WORCESTER	I 290 / VERNON ST / HARDING ST	SR122A NB / SR122 NB		7	0	5	2	27
P26		No	WORCESTER	GRAFTON ST / ORIENT ST	SR122 NB		7	0	5	2	27
P27		No	WORCESTER	MAIN ST / TIRRELL ST			7	0	5	2	27
P28		No	WORCESTER	PARK AV / WESTFIELD ST / PARK AV	SR9 EB		6	0	5	1	26
P29		No	WORCESTER	DORCHESTER ST / HOUGHTON ST			6	0	5	1	26
P30		No	WORCESTER	PARK AV / MAYWOOD ST	SR9 EB		7	0	4	3	23
P31		No	WORCESTER	LINCOLN ST / PAINE ST	SR70 NB		6	0	4	2	22
P32		No	WORCESTER	FRANKLIN ST / FRANCIS J. MCGRATH BLVD			6	0	4	2	22
P33		No	WORCESTER	I 290 / WASHINGTON SQUARE	I290 EB		5	0	4	1	21
P34		No	WORCESTER	MAIN ST / EUREKA ST	SR9 EB		5	0	4	1	21
P35		No	WORCESTER	CAMBRIDGE ST / IVES ST			5	0	4	1	21
P36		No	WORCESTER	JAMES ST / GENESEE ST			5	0	4	1	21
P37		No	WORCESTER	I 290 / FRANKLIN ST / RAMP-RT 122 TO RT 290 EB	I290 EB		4	0	4	0	20
P38		No	WORCESTER	PARK AV / LOVELL ST	SR9 EB		4	0	4	0	20

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways

Other Pedestrian Crash Clusters

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Source : Mass DOT Highway

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	Figure No.	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
P39		No	WORCESTER	PARK AV / MAY ST / DEWEY ST	SR9 EB		7	0	3	4	19
P40		No	WORCESTER	I290 / RAMP-RT 70 TO RT 290 EB / LINCOLN ST / CRESCENT ST	I290 EB / SR70 NB		5	0	3	2	17
P41		No	WORCESTER	MAIN ST / HOLLAND RD	SR9 EB		4	0	3	1	16
P42		No	WORCESTER	I 290 / ENDICOTT ST / PURPLE HEART HIGHWAY	I290 EB / SR146 NB		3	0	3	0	15
P43		No	WORCESTER	I 290 / LINCOLN ST / CONCORD ST	I290 EB / SR70 NB		3	0	3	0	15
P44		No	WORCESTER	WEST BOYLSTON ST / SUMMERHILL AV	SR12 NB		3	0	3	0	15
P45		No	WORCESTER	GRAFTON ST / FAIRMONT AV	SR122 NB		3	0	3	0	15
P46		No	WORCESTER	BELMONT ST	SR9 EB		3	0	3	0	15
P47		No	WORCESTER	GREAT BROOK VALLEY AV / BROOKVIEW DR			3	0	3	0	15
P48		No	WORCESTER	GREENWOOD ST / ADELLE CIRCUIT			3	0	3	0	15
P49		No	WORCESTER	MAIN ST / OBERLIN ST			3	0	3	0	15

Other Bicycle Crash Clusters

Crash Cluster : Locates crashes using a 25 meter radius and merges areas into clusters.

Ranked on EPDO

Source : Mass DOT Highway

Id	State Top 200	[3] HSIP Eligible	TOWN	† LOCATION	ROUTE	Figure No.	2006 - 2008 Crash Count	Fatal Crashes	Injury Crashes	[1] PDO & Non Reported Crashes	[2] EPDO
B5		No	OXFORD	MAIN ST / CHARLTON ST	SR12 NB		4	0	3	1	16
B6		No	OXFORD	MAIN ST / DANA RD / MILLBURY BLVD	SR12 NB		3	0	2	1	11
B7		No	SOUTHBRIDGE	HAMILTON ST / HOOK ST			5	0	2	3	13
B8		No	SOUTHBRIDGE	CENTRAL ST / WORCESTER ST			3	0	2	1	11
B9		No	WEBSTER	EAST MAIN ST / RACICOT AV / PARK AV	SR12 NB		3	0	3	0	15
B10		No	WESTBOROUGH	MILK ST / EAST MAIN ST	SR135 EB / SR30 EB		4	0	3	1	16
B11		No	WORCESTER	CHANDLER ST / BELLEVUE ST	SR122 NB		5	0	4	1	21
B12		No	WORCESTER	OAK AV / KENDALL ST			4	0	4	0	20
B13		No	WORCESTER	PIEDMONT ST / CHANDLER ST	SR122 NB		5	0	3	2	17
B14		No	WORCESTER	MAIN ST / MURRAY AV			5	0	3	2	17
B15		No	WORCESTER	PARK AV / MAY ST	SR9 EB		7	0	2	5	15
B16		No	WORCESTER	MAIN ST / CRYSTAL ST / MAYWOOD ST			3	0	3	0	15
B17		No	WORCESTER	PLEASANT ST / DELLWOOD RD / MORELAND ST			3	0	3	0	15

[1] PDO - Property Damage Only
[2] EPDO - Equivalent Property Damage Only weighted by fatal crashes = 10, injury crashes = 5, PDO =1
[3] HSIP- Hiway Safety Improvement Program
† Excluding Interstate Highways