

TOP 100

HIGH CRASH INTERSECTIONS

In the Pioneer Valley Region 2007 - 2009



May 2013

Prepared under the direction of the Pioneer Valley MPO by:
Pioneer Valley Planning Commission

Prepared in cooperation with the Massachusetts Department of Transportation and the U.S. Department of Transportation. The views and opinions of the Pioneer Valley Planning Commission expressed herein do not necessarily state or reflect those of the Massachusetts Department of Transportation or the U.S. Department of Transportation.

Cover Page

Background: Intersection of Boston Road and Parker Street, Springfield
Courtesy: Pioneer Valley Planning Commission

Images Starting from Top:

1. Intersection of Boston Road and Parker Street, Springfield
Courtesy: Pioneer Valley Planning Commission
2. Memorial Drive, Chicopee
Courtesy: Pioneer Valley Planning Commission
3. North End Bridge Rotary, West Springfield
Courtesy: The Pictometry International, 2009

Sources

Massachusetts Department of Transportation (MassDOT) Crash Data

2010 Decennial Census table QT-P2

Federal Highway Administration 2010 Highway Statistics Series table is DL-22

University of Massachusetts Traffic Safety Research Program (UMassSafe) Traffic Safety Data Warehouse

The City of Springfield Police Department

The City of West Springfield Police Department

All analyses are based on the best available data and understanding of data quality issues at the time of the analysis. Improved understanding of data quality or other analysis-related issues may lead to slight variation in actual counts reported. This analysis is based on data from RMV Division's Crash Data System (CDS). ± The number of total vehicle crashes in Massachusetts in 2009 declined substantially from 2008. The decrease in crashes mirrors national trends; however, the size of the decrease likely also reflects a change in 2009 police crash reporting procedures and its associated challenges:

UMassSafe

Traffic Safety

is one of the primary goals of transportation planning activities. The proficient use of transportation related funds in establishing a network of safe and efficient roadways is a prime goal of the Pioneer Valley Planning Commission. The Massachusetts Department of Transportation (MassDOT) – Highway Division maintains a database of crash incidents occurring at different locations throughout the State. This data is updated from time to time as conditions change as a result of changing traffic situations and transportation improvement projects.

The Pioneer Valley Planning Commission (PVPC) first published the list of Top 100 high crash intersections in the region in the year 2008 based on the latest crash data released by MassDOT for the calendar years of 2003 – 2005. The current report provides an update to the previously compiled high crash intersections list utilizing the crash data for the calendar years of 2007 - 2009. This report also includes a list of Top 25 high crash roadway segments which are derived based on non intersection crash clusters along all non local roadway segments in the region. A crash history of the nine major rotaries in the region has also been compiled as a part of this report.

This report helps in identifying locations in the region with a history of safety problems. There are several high and low cost improvement measures to enhance safety at any location with recorded safety issues. Some low cost improvement measures include updated signage, repainting pavement markings, maintaining and trimming vegetation to improve sight distances, and installing additional warning signs. Similarly, some of the long term improvement measures include the installation of a new traffic signal, geometric changes to a roadway segment or an intersection, additional turn lanes or storage lanes, and increasing the storage capacity of turn lanes. The objective of this report is to help local, regional and MassDOT officials to identify and update the inventory of high crash locations and help them plan for future transportation improvement projects in the Pioneer Valley region.

TOP 100 HIGH CRASH INTERSECTIONS

METHODOLOGY

PVPC utilized MassDOT crash data for the calendar years of 2007 to 2009 to compile the top 100 high crash intersections list. The MassDOT Highway Division obtains crash data from the Massachusetts Registry of Motor Vehicles (RMV) on a regular basis. The State and local police departments and motor vehicle operators (motorists) who are involved in crashes submit detailed crash reports to the RMV. The RMV Crash Records Section maintains crash data records in a database, which is ultimately the source of the MassDOT Highway Division crash data.

MassDOT has developed an automated procedure for matching and aggregating the crash data by geographical location using Geographic Information System (GIS) tools and procedures. According to the latest updates, MassDOT has been successful in geocoding more than 90% of all crashes.

PVPC staff reviewed this data to ensure consistency between the assigned location and information related to each crash. Using GIS tools, crashes attributed to each intersection were identified based on a 200 foot radius around each intersection. This ensured the process was consistent with the one adopted in PVPC's 2008 report. For some intersections in the region where more than four approaches merged, the buffer was redefined to ensure that no intersection crashes were omitted.

Crashes occurring at nine major rotaries are summarized in a separate table. Also crashes occurring at highway interchanges are included only when the exact point of incidence was able to be determined from the crash data.

LOCAL CRASH DATA

Crash data for the cities of Springfield and West Springfield was provided by the respective police departments for the years 2007 – 2009. This data was reviewed and analyzed by PVPC and combined with the MassDOT data to compile this report.

RANKING

The Equivalent Property Damage Only (EPDO) method was used to rank the top 100 high crash intersections. This method takes into account the total number of crashes at an intersection and the severity of each crash. Additional weight is applied to crashes in which an injury or a fatality occurs. Using the EPDO method, ten points are applied to each crash in which a fatality occurs, five points are applied to each crash in which one or more personal injuries occur, and

one point is applied to each crash which consists solely of property damage. Crashes with a severity of “Unknown” or “Not Reported” are assumed to have a severity of “Property Damage Only”.

STATUS

This column provides information on the recent status of transportation improvements that may enhance the safety of the intersection. The status is broadly classified into four categories. At some intersections, a transportation improvement project has recently been completed to improve safety (**\$**). Other intersections may be waiting for funding through the Transportation Improvement Program (TIP) to construct planned improvements (**#**). PVPC also conducts transportation planning studies as a part of its annual work program to develop recommendations to improve safety (**@**). A (**%**) is used to designate intersections with no identified improvements.

COMMUNITIES WITH HIGH CRASH INTERSECTIONS

The City of Springfield has the most intersections on the top 100 list for the region, followed by Holyoke and Chicopee. A total of fifty seven new intersections (including forty six from Springfield alone) were identified in the current list which were not included in the previous list published in 2008.

Community	Number of Intersections in Top 100
SPRINGFIELD	46
HOLYOKE	14
CHICOPEE	12
WEST SPRINGFIELD	8
WESTFIELD	8
NORTHAMPTON	3
LUDLOW	2
EAST LONGMEADOW	2
AGAWAM	1
PALMER	1
WILBRAHAM	1
SOUTH HADLEY	1
GRANBY	1
Total	100

Source: PVPC

TOP 100 HIGH CRASH INTERSECTIONS IN THE PIONEER VALLEY REGION 2007 - 2009

Rank	Community	Intersection	Total Crashes	EPDO [^]	Status	2007			2008			2009		
						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
1	SPRINGFIELD	BOSTON ROAD (ROUTE 20) / PARKER STREET	83	195	#	0	7	18	0	9	25	0	12	12
2	CHICOPEE	BRIDGE STREET (ROUTE 141) / EAST MAIN STREET (ROUTE 141) / BROADWAY / MAIN STREET / CHURCH STREET	77	177	#	0	8	17	0	8	19	0	9	16
3	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / GRATTAN STREET (ROUTE 141) / BRIDGE STREET (ROUTE 141) / MONTGOMERY STREET / SHERIDAN STREET	77	169	#	0	8	16	0	11	19	0	4	19
4	SPRINGFIELD	BOSTON ROAD (ROUTE 20) / PASCO ROAD (ROUTE 20)	55	159	#	0	5	10	0	13	10	0	8	9
5	SPRINGFIELD	ALLEN STREET / COOLEY STREET	62	150	@	0	12	10	0	8	20	0	2	10
6	WESTFIELD	EAST MAIN STREET (ROUTE 20) / LITTLE RIVER ROAD (ROUTE 187)	57	149	%	0	6	10	0	9	12	0	8	12
7	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / STOP AND SHOP DRIVEWAY / HOME DEPOT DRIVEWAY	65	145	%	0	2	20	0	11	10	0	7	15
8	SPRINGFIELD	DWIGHT STREET / STATE STREET	57	145	\$	0	7	10	0	7	13	0	8	12
9	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / MORGAN ROAD / DAGGETT DRIVE	103	143	\$	0	2	39	0	5	30	0	3	24
10	HOLYOKE	MAIN STREET (ROUTE 116 AND ROUTE 141) / CABOT STREET (ROUTE 116 AND ROUTE 141) / MAIN STREET / CABOT STREET	53	142	%	0	3	8	0	9	12	1	8	12

[^]EPDO-Equivalent Property Damage Only

STATUS: \$ Transportation Improvement Recently Completed

Project on Transportation Improvement Program/Proposed Local Improvement Project

@ Planning Study Completed

% No Planned Improvements

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Rank	Community	Intersection	Total Crashes	EPDO [^]	Status	2007			2008			2009		
						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
11	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / PENDLETON AVENUE	50	142	%	0	4	10	0	8	10	0	11	7
12	SPRINGFIELD	PAGE BOULEVARD (ROUTE 20) / CADWELL DRIVE / ROBBINS ROAD	47	135	@	0	9	13	0	7	4	0	6	8
13	WILBRAHAM	BOSTON ROAD (ROUTE 20) / STONY HILL ROAD	71	131	%	0	7	18	0	4	18	0	4	20
14	SPRINGFIELD	FEDERAL STREET / STATE STREET / WALNUT STREET	44	128	\$	0	9	5	0	4	9	0	8	9
15	SPRINGFIELD	EAST COLUMBUS AVENUE / UNION STREET	55	127	@	0	9	12	0	4	16	0	5	9
16	SPRINGFIELD	BELMONT AVENUE (ROUTE 83) / SUMNER AVENUE / DICKINSON STREET	63	123	%	0	6	14	0	5	17	0	4	17
17	SPRINGFIELD	BRADLEY ROAD / BRECKWOOD BOULEVARD / WILBRAHAM ROAD	46	122	%	0	11	6	0	2	10	0	6	11
18	WESTFIELD	FRANKLIN STREET (ROUTE 20) / WASHINGTON STREET	34	122	\$	0	7	5	0	8	3	0	7	4
19	SPRINGFIELD	PLAINFIELD STREET (ROUTE 20A) / MAIN STREET / CAREW STREET (ROUTE 20A) / ST GEORGE STREET	40	120	\$	0	3	7	0	9	7	0	8	6
20	WESTFIELD	PLEASANT STREET (ROUTE 10 AND ROUTE 202) / WEST SILVER STREET (ROUTE 10 AND ROUTE 202) / SOUTH MAPLE STREET (ROUTE 10 AND ROUTE 202) / WEST SILVER STREET	45	117	%	0	7	8	0	6	11	0	5	8

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
21	EAST LONGMEADOW	NORTH MAIN STREET (ROUTE 83) / HARKNESS AVENUE	59	115	%	0	6	17	0	3	13	0	5	15
22	SPRINGFIELD	LIBERTY STREET / SPRINGFIELD PLAZA DRIVEWAY	53	113	%	0	1	13	0	7	9	0	7	16
23	NORTHAMPTON	NORTH KING STREET (ROUTE 5 AND ROUTE 10) / KING STREET (ROUTE 5 AND ROUTE 10) / BRIDGE ROAD / DAMON ROAD	49	113	#	0	8	10	0	4	14	0	4	9
24	HOLYOKE	NORTHAMPTON STREET (ROUTE 5) / HAMPDEN STREET (ROUTE 141)	61	109	%	0	4	19	0	2	19	0	6	11
25	EAST LONGMEADOW	NORTH MAIN STREET (ROUTE 83) / MAPLESHADE AVENUE / WESTWOOD AVENUE	61	109	%	0	4	19	0	2	19	0	6	11
26	HOLYOKE	INTERSTATE HIGHWAY ROUTE 91 INTERCHANGE 16 SOUTH RAMP / CHERRY STREET (ROUTE 202) / SOLDIERS HOME ROAD	36	109	#	0	3	3	0	4	6	1	9	10
27	SPRINGFIELD	PAGE BOULEVARD / ROOSEVELT AVENUE / PAGE BOULEVARD (ROUTE 20A)	48	108	\$	0	1	11	0	2	11	0	12	11
28	SPRINGFIELD	STATE STREET / WILBRAHAM ROAD / CATHERINE STREET / EASTERN AVENUE	44	108	\$	0	5	7	0	6	12	0	5	9
29	SPRINGFIELD	ST JAMES BOULEVARD (ROUTE 20A) / ST JAMES AVENUE	51	107	@	0	1	15	0	8	11	0	5	11
30	SPRINGFIELD	ST JAMES AVENUE / TAPLEY STREET	38	106	%	0	5	4	0	2	5	0	10	12

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Rank	Community	Intersection	Total Crashes	EPDO [^]	Status	2007			2008			2009		
						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
31	HOLYOKE	LOWER WESTFIELD ROAD / HOLYOKE STREET / WHITING FARMS ROAD	53	105	%	0	4	12	0	4	12	0	5	16
32	SPRINGFIELD	ST JAMES AVENUE / CAREW STREET	45	105	@	0	5	11	0	5	9	0	5	10
33	SPRINGFIELD	SUMNER AVENUE / ALLEN STREET / HARKNESS AVENUE / ABBOTT STREET	52	104	#	0	2	12	0	4	12	0	7	15
34	SPRINGFIELD	CAREW STREET (ROUTE 20A) / BARTLETT STREET / CASS STREET	36	104	%	0	5	6	0	9	5	0	3	8
35	WEST SPRINGFIELD	ELM STREET (ROUTE 20) / PARK AVENUE (ROUTE 20) / PARK STREET (ROUTE 20) / UNION STREET / PARK STREET / PARK AVENUE	67	103	%	0	4	19	0	1	17	0	4	22
36	SPRINGFIELD	BOSTON ROAD / BAY STREET / BRECKWOOD BOULEVARD	42	102	%	0	4	10	0	5	6	0	6	11
37	SPRINGFIELD	ROOSEVELT AVENUE / BAY STREET	38	102	\$	0	2	6	0	4	6	0	10	10
38	SPRINGFIELD	CAREW STREET (ROUTE 20A) / DWIGHT STREET	38	102	%	0	3	5	0	7	7	0	6	10
39	SPRINGFIELD	STATE STREET / HANCOCK STREET / THOMPSON STREET	34	102	\$	0	6	6	0	7	6	0	4	5
40	CHICOPEE	CENTER STREET (ROUTE 116) / WEST STREET / HAMPDEN STREET	44	100	%	0	6	12	0	5	9	0	3	9

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
41	SPRINGFIELD	CAREW STREET (ROUTE 20A) / LIBERTY STREET	35	99	\$	0	4	4	0	8	6	0	4	9
42	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / FULLER ROAD	31	99	%	0	7	6	0	4	3	0	6	5
43	SPRINGFIELD	EAST COLUMBUS AVENUE / MAIN STREET / LONGHILL STREET	42	98	%	0	2	10	0	6	4	0	6	14
44	SPRINGFIELD	PARKER STREET / WILBRAHAM ROAD	53	97	%	0	3	7	0	3	14	0	5	21
45	SPRINGFIELD	ALDEN STREET / WALNUT STREET / HANCOCK STREET / ASHLEY STREET	37	93	@	0	6	8	0	4	9	0	4	6
46	SPRINGFIELD	MEMORIAL BRIDGE / EAST COLUMBUS AVENUE / BOLAND WAY	36	92	%	0	4	4	0	6	10	0	4	8
47	HOLYOKE	MAPLE STREET / RESNIC BOULEVARD	47	91	@	0	4	9	0	4	14	0	3	13
48	SPRINGFIELD	PARKER STREET / NORTH BRANCH PARKWAY	31	91	%	0	4	3	0	5	9	0	6	4
49	HOLYOKE	BEECH STREET (ROUTE 202) / RESNIC BOULEVARD / WEST FRANKLIN STREET	42	90	%	0	2	7	0	5	11	0	5	12
50	HOLYOKE	HOMESTEAD AVENUE (ROUTE 202) / WESTFIELD ROAD (ROUTE 202) / HOMESTEAD AVENUE / WESTFIELD ROAD	46	90	\$	0	4	12	0	3	12	0	4	11

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51	NORTHAMPTON	PLEASANT STREET (ROUTE 5) / CONZ STREET	38	90	#	0	6	8	0	5	11	0	2	6
52	SPRINGFIELD	BOSTON ROAD / WALMART SUPER CENTER DRIVEWAY	34	90	%	0	2	5	0	4	9	0	8	6
53	SPRINGFIELD	WILBRAHAM ROAD / ALDEN STREET / INSURANCE ROAD	34	90	%	0	3	8	0	4	5	0	7	7
54	SPRINGFIELD	WEST STREET (ROUTE 20) / PLAINFIELD STREET / AVOCADO STREET	34	90	%	0	5	3	0	7	13	0	2	4
55	SPRINGFIELD	PAGE BOULEVARD (ROUTE 20) / BERKSHIRE AVENUE	30	90	%	0	3	3	0	6	4	0	6	8
56	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / ASHLEY AVENUE	69	89	#	0	0	15	0	1	18	0	4	31
57	GRANBY	WEST STATE STREET (ROUTE 202) / PLEASANT STREET / AMHERST STREET	36	88	\$	0	6	2	0	2	13	0	5	8
58	CHICOPEE	GRATTAN STREET (ROUTE 141) / MCKINSTRY AVENUE / DALE STREET	39	87	#	0	5	13	0	4	6	0	3	8
59	HOLYOKE	HIGH STREET / SARGEANT STREET	23	87	%	0	4	2	0	6	3	0	6	2
60	WEST SPRINGFIELD	MEMORIAL AVENUE (ROUTE 147) / UNION STREET	61	85	@	0	2	24	0	2	15	0	2	16

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
61	SPRINGFIELD	DWIGHT STREET / WORTHINGTON STREET	45	85	@	0	4	11	0	1	18	0	5	6
62	LUDLOW	CENTER STREET (ROUTE 21) / CHERRY STREET	47	83	#	0	5	12	0	3	8	0	1	18
63	HOLYOKE	NORTHAMPTON STREET (ROUTE 5) / DWIGHT STREET (ROUTE 141) / EASTHAMPTON ROAD (ROUTE 141)	39	83	%	0	1	8	0	4	13	0	6	7
64	CHICOPEE	GRANBY ROAD / MCKINSTRY AVENUE / MONTGOMERY STREET	38	82	@	0	3	6	0	4	9	0	4	12
65	HOLYOKE	MAIN STREET / JACKSON STREET	34	82	@	0	7	6	0	2	9	0	3	7
66	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / JAMES STREET	37	81	%	0	2	11	0	4	7	0	5	8
67	SPRINGFIELD	MAPLE STREET / UNION STREET	33	81	%	0	3	7	0	8	10	0	1	4
68	SPRINGFIELD	ROOSEVELT AVENUE / WILBRAHAM ROAD	33	81	%	0	2	7	0	3	7	0	7	7
69	SPRINGFIELD	CHESTNUT STREET / WORTHINGTON STREET	24	80	%	0	6	1	0	4	4	0	4	5
70	WEST SPRINGFIELD	WESTFIELD STREET (ROUTE 20) / NORTH BOULEVARD / SOUTH BOULEVARD	55	79	\$	0	2	13	0	0	13	0	4	23

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
71	SPRINGFIELD	BAY STREET / BERKSHIRE AVENUE	31	79	@	0	7	11	0	2	1	0	3	7
72	SPRINGFIELD	MAIN STREET / UNION STREET	30	78	%	0	4	3	0	3	11	0	5	4
73	SPRINGFIELD	BERKSHIRE AVENUE / COTTAGE STREET	33	77	@	0	3	9	0	5	7	0	3	6
74	HOLYOKE	APPLETON STREET (ROUTE 141) / MAPLE STREET	36	76	%	0	3	8	0	3	10	0	4	8
75	WESTFIELD	NORTH ELM STREET (ROUTE 10 AND ROUTE 202) / HOLYOKE ROAD	24	76	%	0	4	6	0	7	3	0	2	2
76	SPRINGFIELD	KING STREET / WILBRAHAM AVENUE	24	76	%	0	6	6	0	4	1	0	3	4
77	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / GRANBY ROAD / WESTOVER ROAD	33	74	%	1	3	4	0	2	10	0	3	10
78	PALMER	NORTH MAIN STREET (ROUTE 20) / WILBRAHAM STREET (ROUTE 20) / SYKES STREET (ROUTE 181) / SHEARER STREET	30	74	@	0	5	7	0	4	9	0	2	3
79	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / EAST ELM STREET	37	73	#	0	2	7	0	2	9	0	5	12
80	HOLYOKE	CABOT STREET (ROUTE 116 AND ROUTE 141) / NORTH CANAL STREET / SOUTH CANAL STREET	33	73	%	0	1	6	0	2	8	0	7	9

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
81	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / IRENE STREET / JAMROG DRIVE	25	73	%	0	2	5	0	4	6	0	6	2
82	AGAWAM	NORTH WESTFIELD STREET (ROUTE 187) / SOUTH WESTFIELD STREET (ROUTE 187 AND ROUTE 57) / SPRINGFIELD STREET (ROUTE 147) / SOUTHWICK STREET (ROUTE 57)	40	72	#	0	1	13	0	1	6	0	6	13
83	CHICOPEE	CHICOPEE STREET (ROUTE 116) / PROSPECT STREET / ERLINE STREET	36	72	%	0	3	12	0	3	5	0	3	10
84	LUDLOW	MASSACHUSETTS TURNPIKE ROUTE 90 INTERCHANGE 7 / CENTER STREET (ROUTE 21) / HARDING AVENUE	39	71	\$	0	4	5	0	1	13	0	3	13
85	WESTFIELD	ELM STREET (ROUTE 10 AND ROUTE 202) / NORTH ELM STREET (ROUTE 10 AND ROUTE 202) / POCHASSIC STREET	42	70	\$	0	4	21	0	1	10	0	2	4
86	SPRINGFIELD	MAIN STREET / STATE STREET	26	70	\$	0	4	1	0	3	9	0	4	5
87	SPRINGFIELD	WALNUT STREET / UNION STREET	26	70	@	0	0	4	0	3	7	0	8	4
88	SPRINGFIELD	CAREW STREET (ROUTE 20A) / LIBCAR STREET / PENACOOK STREET	26	70	%	0	3	2	0	5	5	0	3	8
89	SOUTH HADLEY	GRANBY ROAD (ROUTE 202) / WILLIMANSETT STREET (ROUTE 33) / LYMAN STREET (ROUTE 33)	37	69	@	0	2	8	0	3	9	0	3	12
90	HOLYOKE	CABOT STREET / HIGH STREET	29	69	%	0	0	4	0	5	7	0	5	8

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						Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
91	SPRINGFIELD	SUMNER AVENUE / WHITE STREET	28	68	%	0	4	6	0	2	3	0	4	9
92	SPRINGFIELD	EASTERN AVENUE / MONROE STREET	16	68	%	0	4	1	0	2	1	0	7	1
93	SPRINGFIELD	BOSTON ROAD / WILKES STREET / TOPPS SHOPPING CENTER DRIVEWAY	31	67	%	0	0	6	0	6	8	0	3	8
94	NORTHAMPTON	KING STREET (ROUTE 5 AND ROUTE 10) / FINN STREET	31	67	@	0	5	5	0	2	8	0	2	9
95	HOLYOKE	COMMERCIAL STREET / JACKSON STREET	23	67	%	0	5	2	0	2	8	0	4	2
96	WEST SPRINGFIELD	RIVER STREET / PARK STREET / SOUTH BOULEVARD	50	66	@	0	1	18	0	3	15	0	0	13
97	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / ELM STREET	42	66	\$	0	4	10	0	0	11	0	2	15
98	WESTFIELD	MAIN STREET (ROUTE 20) / NOBLE STREET	30	66	%	0	1	11	0	3	5	0	5	5
99	WESTFIELD	EAST MAIN STREET (ROUTE 20) / SPRINGFIELD ROAD (ROUTE 20) / UNION STREET	26	66	%	0	1	8	0	3	4	0	6	4
100	WESTFIELD	NORTH ELM STREET (ROUTE 10 AND ROUTE 202) / RAILROAD AVENUE	45	65	\$	0	3	27	0	1	9	0	1	4

[^]EPDO-Equivalent Property Damage Only

STATUS: \$ Transportation Improvement Recently Completed

Project on Transportation Improvement Program/Proposed Local Improvement Project

@ Planning Study Completed

% No Planned Improvements

TOP 25 HIGH CRASH LOCATIONS in the Pioneer Valley Region

Rank	Community	Intersection	Total Crashes	EPDO*
1	SPRINGFIELD	BOSTON ROAD (ROUTE 20) / PARKER STREET	83	195
2	CHICOPEE	BRIDGE STREET (ROUTE 141) / EAST MAIN STREET (ROUTE 141) / BROADWAY / MAIN STREET / CHURCH STREET	77	177
3	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / GRATTAN STREET (ROUTE 141) / BRIDGE STREET (ROUTE 141) / MONTGOMERY STREET / SHERIDAN STREET	77	169
4	SPRINGFIELD	BOSTON ROAD (ROUTE 20) / PASCO ROAD (ROUTE 20)	55	159
5	SPRINGFIELD	ALLEN STREET / COOLEY STREET	62	150
6	WESTFIELD	EAST MAIN STREET (ROUTE 20) / LITTLE RIVER ROAD (ROUTE 187)	57	149
7	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / STOP AND SHOP DRIVEWAY / HOME DEPOT DRIVEWAY	65	145
8	SPRINGFIELD	DWIGHT STREET / STATE STREET	57	145
9	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / MORGAN ROAD / DAGGETT DRIVE	103	143
10	HOLYOKE	MAIN STREET (ROUTE 116 AND ROUTE 141) / CABOT STREET (ROUTE 116 AND ROUTE 141) / MAIN STREET / CABOT STREET	53	142
11	CHICOPEE	MEMORIAL DRIVE (ROUTE 33) / PENDELTON AVENUE	50	142
12	SPRINGFIELD	PAGE BOULEVARD (ROUTE 20) / CADWELL DRIVE / ROBBINS ROAD	47	135
13	WILBRAHAM	BOSTON ROAD (ROUTE 20) / STONY HILL ROAD	71	131
14	SPRINGFIELD	FEDERAL STREET / STATE STREET / WALNUT STREET	44	128
15	SPRINGFIELD	EAST COLUMBUS AVENUE / UNION STREET	55	127
16	SPRINGFIELD	BELMONT AVENUE (ROUTE 83) / SUMNER AVENUE / DICKINSON STREET	63	123
17	SPRINGFIELD	BRADLEY ROAD / BRECKWOOD BOULEVARD / WILBRAHAM ROAD	46	122
18	WESTFIELD	FRANKLIN STREET (ROUTE 20) / WASHINGTON STREET	34	122
19	SPRINGFIELD	PLAINFIELD STREET (ROUTE 20A) / MAIN STREET / CAREW STREET (ROUTE 20A) / ST GEORGE STREET	40	120
20	WESTFIELD	PLEASANT STREET (ROUTE 10 AND ROUTE 202) / WEST SILVER STREET (ROUTE 10 AND ROUTE 202) / SOUTH MAPLE STREET (ROUTE 10 AND ROUTE 202) / WEST SILVER STREET	45	117
21	EAST LONGMEADOW	NORTH MAIN STREET (ROUTE 83) / HARKNESS AVENUE	59	115
22	SPRINGFIELD	LIBERTY STREET / SPRINGFIELD PLAZA DRIVEWAY	53	113
23	NORTHAMPTON	NORTH KING STREET (ROUTE 5 AND ROUTE 10) / KING STREET (ROUTE 5 AND ROUTE 10) / BRIDGE ROAD / DAMON ROAD	49	113
24	HOLYOKE	NORTHAMPTON STREET (ROUTE 5) / HAMPDEN STREET (ROUTE 141)	61	109
25	EAST LONGMEADOW	NORTH MAIN STREET (ROUTE 83) / MAPLESHADE AVENUE / WESTWOOD AVENUE	61	109

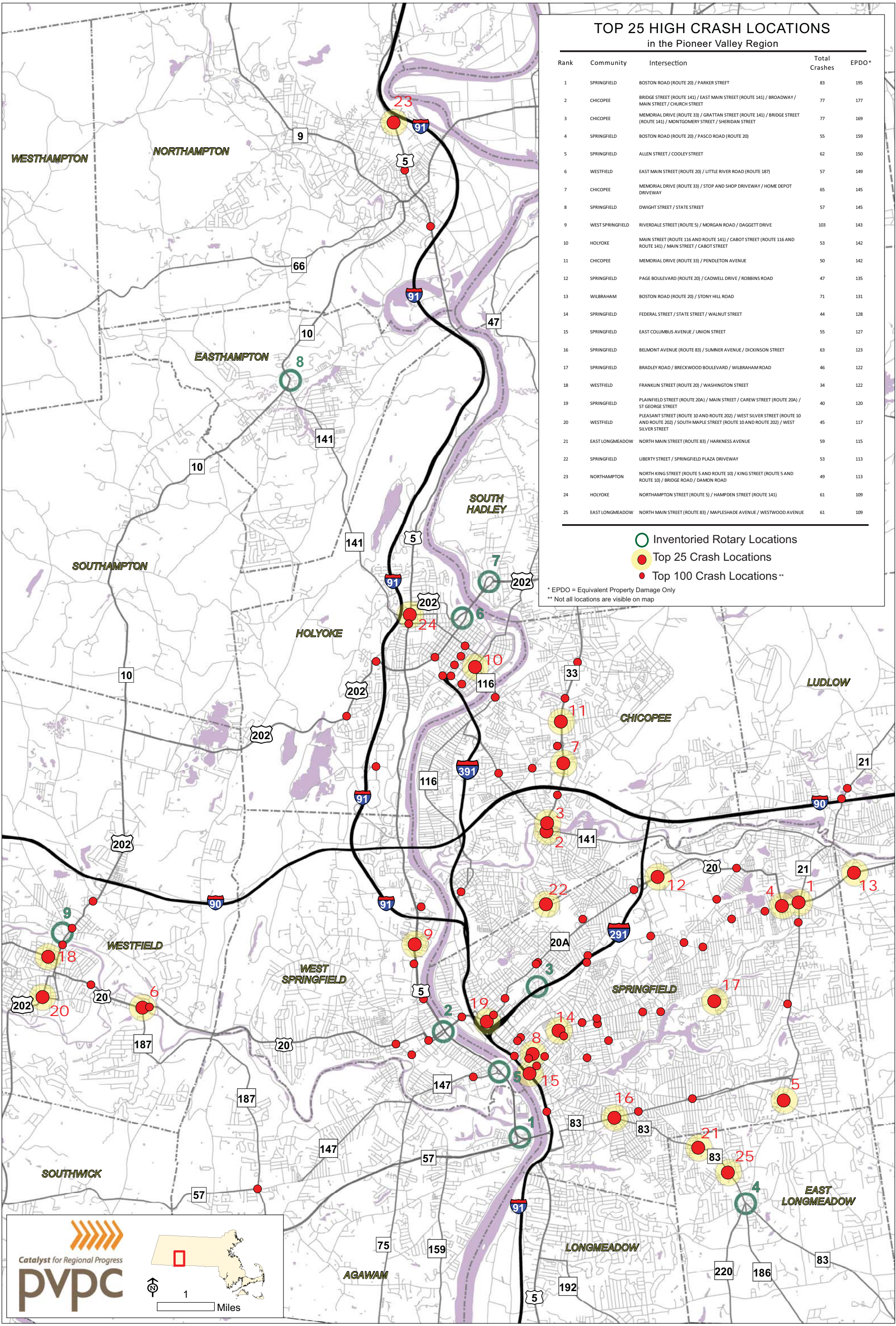
○ Inventoried Rotary Locations

● Top 25 Crash Locations

● Top 100 Crash Locations**

* EPDO = Equivalent Property Damage Only

** Not all locations are visible on map



Catalyst for Regional Progress
pvpc

1 Miles

ROTARIES

There are a total of nine rotaries in the Pioneer Valley region. A rotary is defined as an intersection where traffic flows in a circular pattern around a large center island. The diameter of the center island is usually much bigger than the diameter of a similar type of intersection called a roundabout. The larger diameter allows for higher speeds while traversing the rotary. The traffic approaching the weaving section traditionally yields to the existing traffic in the circular path. A combination of high traffic volumes, confusing layout and high travel speeds contribute to congestion and safety problems at many existing rotaries. The nine rotaries have been separated from the top high crash intersections list due to their different operational characteristics and in some cases high crash and equivalent property damage totals.

The Agawam Route 5 / Route 57 rotary ranks as the top high crash rotary as a result of a high EPDO score (2007-2009 Total Crashes – 250 with EPDO score of 400). However, the West Springfield Route 5/ Route 20 rotary has a higher number of crashes (270). Local crash data for this rotary was not available for the 2008 report and therefore the extent of the problem was not documented at that time. This is also true for the Springfield Armory Street / Liberty Street rotary which ranks third overall due to high percentage of crashes (42%) that resulted in a personal injury. The complex intersection of the seven roadways that comprise the East Longmeadow rotary had the fourth highest EPDO score for rotaries in the Pioneer Valley.

MassDOT installed new pavement markings and warning signs along the approaches and weaving section of the Agawam Route 5 / Route 57 rotary in August 2012. Below are the images of the South End Bridge approach pavement markings. These measures are expected to improve safety at this location.



*The Agawam Route 5 / Route 57 Rotary
Views from South End Bridge Approach
Source: PVPC*

INVENTORIED ROTARIES IN THE PIONEER VALLEY REGION

RANK	COMMUNITY	LOCATION	TOTAL CRASHES	EPDO [^]	2007			2008			2009		
					Fatal	Injury	Property Damage	Fatal	Injury	Property Damage	Fatal	Injury	Property Damage
1	AGAWAM	SOUTH END BRIDGE (ROUTE 5) / HENRY E BODURTHA HIGHWAY (ROUTE 57) / ROUTE 5 / MEADOW STREET	250	490	0	19	59	0	27	62	0	14	69
2	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / PARK AVENUE (ROUTE 20) / PARK STREET (ROUTE 20)	270	350	0	10	86	0	6	74	0	4	90
3	SPRINGFIELD	ARMORY STREET / LIBERTY STREET / STAFFORD STREET	130	350	0	16	31	0	15	21	0	24	23
4	EAST LONGMEADOW	NORTH MAIN STREET (ROUTE 83) / SOMERS ROAD (ROUTE 83) / SHAKER ROAD (ROUTE 220) / PROSPECT STREET (ROUTE 186) / MAPLE STREET / PLEASANT STREET / ELM STREET	142	194	0	5	34	0	2	49	0	6	46
5	WEST SPRINGFIELD	RIVERDALE STREET (ROUTE 5) / MEMORIAL AVENUE (ROUTE 147)	130	178	0	4	42	0	1	36	0	7	40
6	HOLYOKE	BEECH STREET (ROUTE 202) / MUELLER BRIDGE (ROUTE 202) / LYMAN STREET / HAMPDEN STREET	63	139	0	5	14	0	5	12	0	9	18
7	SOUTH HADLEY	PURPLE HEART DRIVE (ROUTE 202) / NORTH MAIN STREET	26	70	0	2	4	0	1	0	0	8	11
8	EASTHAMPTON	MAIN STREET (ROUTE 10) / NORTHAMPTON STREET (ROUTE 10) / PLEASANT STREET	9	33	0	1	3	0	2	0	0	3	0
9	WESTFIELD	MONTGOMERY STREET / POCHASSIC STREET / PARKER AVENUE	2	2	0	0	1	0	0	1	0	0	0

[^] EPDO - Equivalent Property Damage Only

THE TOP 25 HIGH CRASH ROADWAY SEGMENTS

To produce the top 25 high crash roadway segment locations in the region, PVPC utilized GIS tools to develop a cluster analysis method similar to MassDOT's method. The clusters are based on the 2007-2009 geocoded crashes. In order to eliminate the possibility of double counting and to separate intersections from roadway segments, only non intersection crashes were included. Intersection crashes were already analyzed while forming the top 100 intersections list. Local roads were also excluded from the analysis as crash data on some local roadways is known to be under reported.

METHODOLOGY

As described by MassDOT, the cluster analysis method is based on a 25 meter fixed search radius around each crash. This radius controls how far the application will search for adjacent crashes. Using a 25 meter radius, the analysis method found nearby crashes and merged their areas together into clusters. If two distinct clusters are found to share a common crash, the two clusters are merged into a single cluster. This method of search-and-merge results in a set of many distinct clusters of different sizes. The application then stores these clusters to a GIS output file, along with a count of crashes and all the other information related to individual crashes within each cluster.

RANKING

The top 25 clusters were listed by the number of Equivalent Property Damage Only (EPDO) crashes contained within their boundaries (fatal crashes are weighted by 10, injury crashes are weighted by 5 and property damage only or non-reported are weighted by 1). These clusters were found to be of varying lengths with a different number of travel lanes. To further standardize the comparison, individual clusters were analyzed in terms of their overall segment length, number of lanes within the cluster, total lane mileage, crashes per lane, existing annual daily traffic and *crash rates*¹ based on segment length and lane miles.

PVPC developed a Crash Score system based on four different ratings: 1) Crash Frequency (Total Crashes), 2) Severity (EPDO), 3) Crash Rate based on Segment Length, and 4) Crash Rate based on lane miles. Each of these rates received equal weight. The resulting Final Crash Rating was utilized to rank the top 25 high crash roadway segments in the region.

¹ THE COMBINATION OF CRASH FREQUENCY (CRASHES PER YEAR) AND VEHICLE EXPOSURE (TRAFFIC VOLUMES OR MILES TRAVELED) RESULTS IN A CRASH RATE. CRASH RATES ARE EXPRESSED AS "CRASHES PER MILLION VEHICLE MILES TRAVELED" (MVMT) FOR ROADWAY SEGMENTS. THIS METHOD TAKES INTO ACCOUNT THE LENGTH OF SEGMENT, AVERAGE NUMBER OF CRASHES AND AVERAGE ANNUAL DAILY TRAFFIC ALONG THE SEGMENT.

SEGMENT DESCRIPTIONS

1. Agawam – Western Arc of Agawam Rotary
Begins along the rotary at the Route 5 northern underpass and continues to the Route 57 westbound off ramp, it includes Route 5 crashes and the Route 5 off ramp to the rotary.
2. Chicopee - Memorial Drive Section in Front of Fairview Shopping Plaza
Begins approximately 1000 feet south of the Westover Rotary and extends to the front of the shopping plaza.
3. East Longmeadow - North Main Street and Rotary
Begins 600 feet north of the rotary and continues along North Main Street and along the eastern arc of the rotary.
4. Northampton - Main Street (Route 9 and Route 10) / King Street / Pleasant Street / State Street
The Main Street segment starts approximately 750 feet east of its intersection with King Street and Pleasant Street and continues to its intersection with Elm Street. This segment includes clusters along King Street, Pleasant Street, New South Street and State Street.
5. Westfield - North Elm Street at Intersection with Union Avenue and Pochassic Street
Begins north of its intersection with Union Street and extends south towards Railroad Avenue.
6. Westfield - North Elm Street
Starts approximately 1100 feet north of intersection with Union Street and extends in northeast towards Notre Dame Street.
7. Wilbraham - Boston Road / Stony Hill Road
This segment consists of a combined one half mile segment along Boston Road and Stony Hill Road.
8. Holyoke - I-91 at Exit 15
This segment consists of the northbound and southbound segments of Interstate 91 in the vicinity of Exit 15.
9. Agawam - Midsection of South End Bridge
This segment includes approximately 0.13 mile long section almost at the center of the South End Bridge.

-
10. Springfield - South End Bridge / South End Bridge On Ramp / I-91
Starts approximately 600 feet west of the South End Bridge's on-ramp to I-91 southbound and continues over the ramp for I-91 South and East Columbus Avenue. This segment includes crashes along I-91.
 11. Chicopee - Memorial Drive
This segment starts 500 feet south of Memorial Drive's intersection with Westover Road and includes crashes in both directions of this divided roadway.
 12. Agawam - Springfield Street / Southwick Street / North Westfield Street / South Westfield Street
This segment starts on Springfield Street approximately 1000 ft. east of the above intersection. It includes segments along Southwick Street, North Westfield Street and South Westfield Street.
 13. Chicopee - I-90 Exit 6
Includes eastbound and westbound travel lanes on I-90 in the vicinity of Exit 6.
 14. Chicopee - Montgomery Street / Memorial Drive / Bridge Street
Begins on Montgomery Street approximately 600 ft north of the above intersection. It includes segments along Memorial Drive and Bridge Street
 15. Springfield - I-91 at Exits 1 and 2
This segment includes northbound and southbound travel lanes along I-91 in the vicinity of Exits 1 and 2. It includes crashes the on-ramp from Longhill Street.
 16. Springfield - I-291 at Exit 4
Includes travel lanes in both directions on I-291 in the vicinity of St. James Avenue overpass.
 17. Westfield - Elm Street / Franklin Street
Begins on Elm Street approximately 1000 feet north of the above intersection. It includes a portion of Franklin Street.
 18. Springfield - I-91 at Intersection with I-291
It includes a segment along I-91 which begins south of Exit 8 southbound and also contains crashes along East Columbus Avenue and West Columbus Avenue Ramps.
 19. West Springfield - I-91 at Exit 13A and 13B
Includes northbound, southbound and ramps traffic in the vicinity of Exit 13.
 20. Springfield - I-291 at Exit 3
Includes eastbound and westbound traffic between the I-291 on and off ramps at Exit 3.

21. Chicopee - Chicopee Street / Prospect Street

Begins on Chicopee Street 1500 ft south of its intersection with Prospect Street and includes a portion of Prospect Street.

22. Springfield - I-91 at Exit 8 Northbound

This segment includes traffic lanes in both directions along I-91 in the vicinity of its northbound Exit 8 for I-291.

23. Northampton - King Street

Starts on King Street approximately 800 ft south of its intersection with Damon Road.

24. Springfield - I-91 at Exit 4 Southbound

Includes northbound and southbound traffic in the vicinity of Exit 4.

25. East Longmeadow – North Main Street

In the vicinity of the intersection of North Main Street with Harkness Street.

A total of 10 high crash roadway segments out of the top 25 are along Interstates. Once again The City of Springfield had the most segments (seven), followed by Chicopee (five), Agawam (three), and Westfield (three). The roadway segment along Main Street in Northampton is the longest segment at 0.73 miles.

TOP 25 HIGH CRASH ROADWAY SEGMENTS IN THE PIONEER VALLEY REGION 2007 - 2009
(excluding intersections)

Weighted Rank	Community	Roadway	Total Crashes	EPDO [^]	Length in miles	Total Lane Miles	Crashes per lane per mile	Annual Daily Traffic	Crash Rate based on lane miles	Crash Rate based on segment length	Overall Crash Rating
1	AGAWAM	Western Arc of Agawam Rotary	93	189	0.190	0.32	290.63	32,642	8.13	13.69	89
2	CHICOPEE	Memorial Drive Section in Front of Fairview Shopping Plaza	76	168	0.120	0.72	105.56	30,800	3.13	18.78	85
3	EAST LONGMEADOW	North Main Street and Rotary	72	96	0.180	0.29	248.28	11,588	19.57	31.52	82
4	NORTHAMPTON	Main Street (Route 9 and Route 10) / King Street / Pleasant Street / State Street	110	243	0.730	2.40	45.83	13,610	3.08	10.11	81
5	WESTFIELD	North Elm Street at Intersection with Union Avenue and Pochassic Street	60	100	0.250	0.88	68.42	13,400	4.66	16.36	77
6	WESTFIELD	North Elm Street	46	114	0.240	0.96	47.92	13,400	3.27	13.06	68
7	WILBRAHAM	Boston Road / Stony Hill Road	88	140	0.480	1.54	57.14	18,500	2.82	9.05	66
8	HOLYOKE	I-91 at Exit 15	68	148	0.082	0.49	138.21	71,004	1.78	10.67	65
9	AGAWAM	Midsection of South End Bridge	39	91	0.130	0.52	75.00	16,800	4.08	16.31	61
10	SPRINGFIELD	South End Bridge / South End Bridge On Ramp / I-91	105	205	0.395	1.08	97.22	61,000	1.46	3.98	57
11	CHICOPEE	Memorial Drive	42	86	0.081	0.49	86.42	30,800	2.56	15.37	55
12	AGAWAM	Springfield Street / Southwick Street / North Westfield Street / South Westfield Street	48	84	0.342	1.03	46.78	14,052	3.04	9.12	49
13	CHICOPEE	I-90 Exit 6	39	83	0.051	0.26	152.94	47,350	2.95	14.75	48

[^] EPDO - Equivalent Property Damage Only

**TOP 25 HIGH CRASH ROADWAY SEGMENTS IN THE PIONEER VALLEY REGION 2007 - 2009
(excluding intersections)**

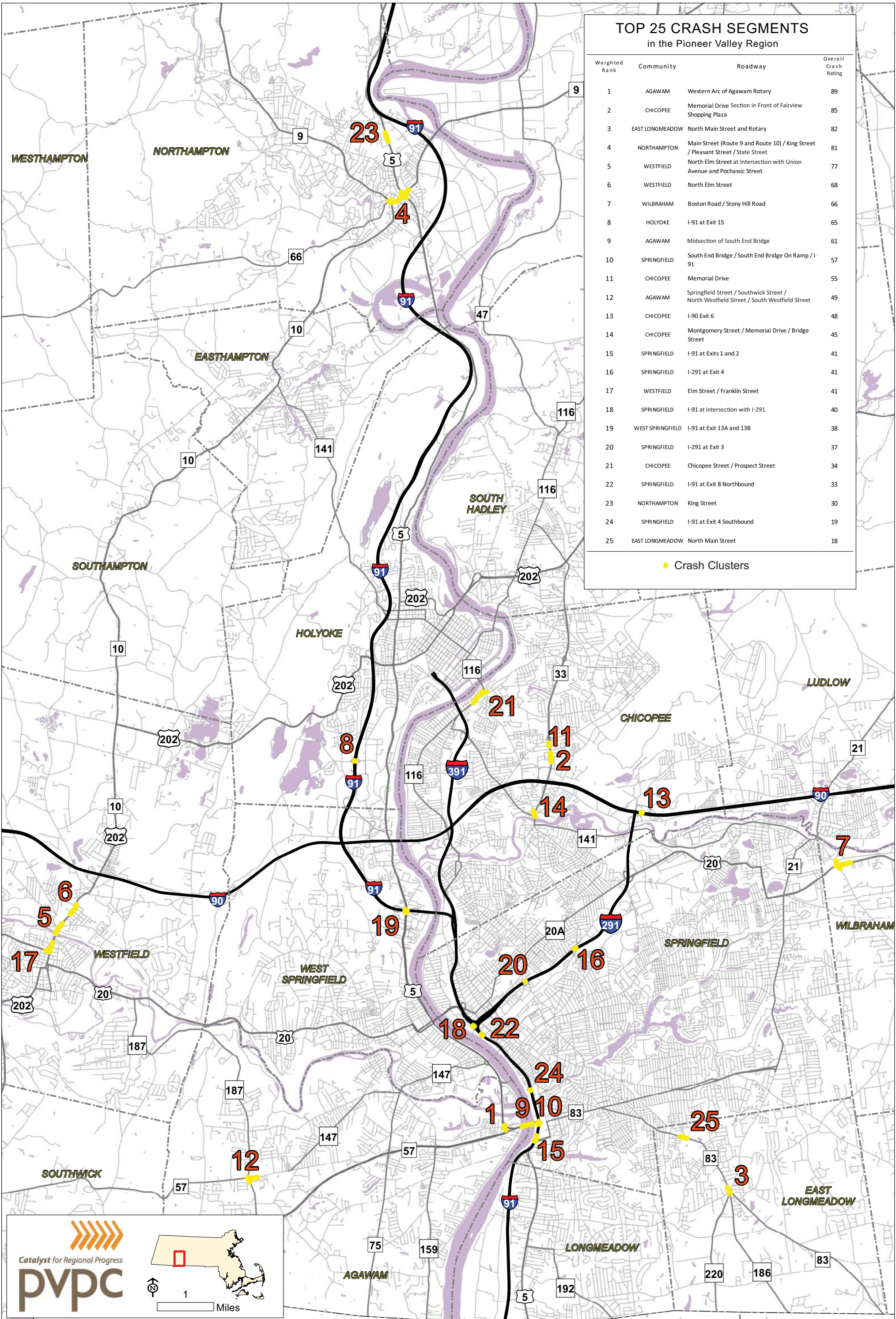
Weighted Rank	Community	Roadway	Total Crashes	EPDO [^]	Length in miles	Total Lane Miles	Crashes per lane per mile	Annual Daily Traffic	Crash Rate based on lane miles	Crash Rate based on segment length	Overall Crash Rating
14	CHICOPEE	Montgomery Street / Memorial Drive / Bridge Street	33	73	0.331	0.87	38.11	8,100	4.30	11.24	45
15	SPRINGFIELD	I-91 at Exits 1 and 2	69	142	0.200	0.90	76.67	79,580	0.88	3.96	41
16	SPRINGFIELD	I-291 at Exit 4	41	106	0.070	0.42	97.62	62,391	1.43	8.57	41
17	WESTFIELD	Elm Street / Franklin Street	36	72	0.309	1.24	29.13	16,844	1.58	6.32	41
18	SPRINGFIELD	I-91 at intersection with I-291	54	110	0.105	0.38	142.11	98,191	1.32	4.78	40
19	WEST SPRINGFIELD	I-91 at Exit 13A and 13B	49	105	0.112	0.47	103.81	75,270	1.26	5.31	38
20	SPRINGFIELD	I-291 at Exit 3	36	92	0.040	0.24	150.00	87,853	1.56	9.36	37
21	CHICOPEE	Chicopee Street / Prospect Street	46	86	0.653	1.41	32.65	12,800	2.33	5.03	34
22	SPRINGFIELD	I-91 at Exit 8 Northbound	45	97	0.064	0.38	117.19	98,000	1.09	6.55	33
23	NORTHAMPTON	King Street	37	77	0.200	0.80	46.25	20,976	2.01	8.05	30
24	SPRINGFIELD	I-91 at Exit 4 Southbound	30	75	0.042	0.25	119.05	79,580	1.37	8.20	19
25	EAST LONGMEADOW	North Main Street	32	72	0.155	0.47	68.82	18,093	3.47	10.42	18

[^] EPDO - Equivalent Property Damage Only

TOP 25 CRASH SEGMENTS in the Pioneer Valley Region

Weighted Rank	Community	Roadway	Overall Crash Rating
1	AGAWAM	Western Arc of Agawam Rotary	89
2	CHICOPEE	Memorial Drive Section in Front of Fairview Shopping Plaza	85
3	EAST LONGMEADOW	North Main Street and Rotary	82
4	NORTHAMPTON	Main Street (Route 9 and Route 10) / King Street / Pleasant Street / State Street	81
5	WESTFIELD	North Elm Street at Intersection with Union Avenue and Pochassic Street	77
6	WESTFIELD	North Elm Street	68
7	WILBRAHAM	Boston Road / Stony Hill Road	66
8	HOLYOKE	I-91 at Exit 15	65
9	AGAWAM	Midsection of South End Bridge	61
10	SPRINGFIELD	South End Bridge / South End Bridge On Ramp / I-91	57
11	CHICOPEE	Memorial Drive	55
12	AGAWAM	Springfield Street / Southwick Street / North Westfield Street / South Westfield Street	49
13	CHICOPEE	I-90 Exit 6	48
14	CHICOPEE	Montgomery Street / Memorial Drive / Bridge Street	45
15	SPRINGFIELD	I-91 at Exits 1 and 2	41
16	SPRINGFIELD	I-291 at Exit 4	41
17	WESTFIELD	Elm Street / Franklin Street	41
18	SPRINGFIELD	I-91 at intersection with I-291	40
19	WEST SPRINGFIELD	I-91 at Exit 13A and 13B	38
20	SPRINGFIELD	I-291 at Exit 3	37
21	CHICOPEE	Chicopee Street / Prospect Street	34
22	SPRINGFIELD	I-91 at Exit 8 Northbound	33
23	NORTHAMPTON	King Street	30
24	SPRINGFIELD	I-91 at Exit 4 Southbound	19
25	EAST LONGMEADOW	North Main Street	18

● Crash Clusters



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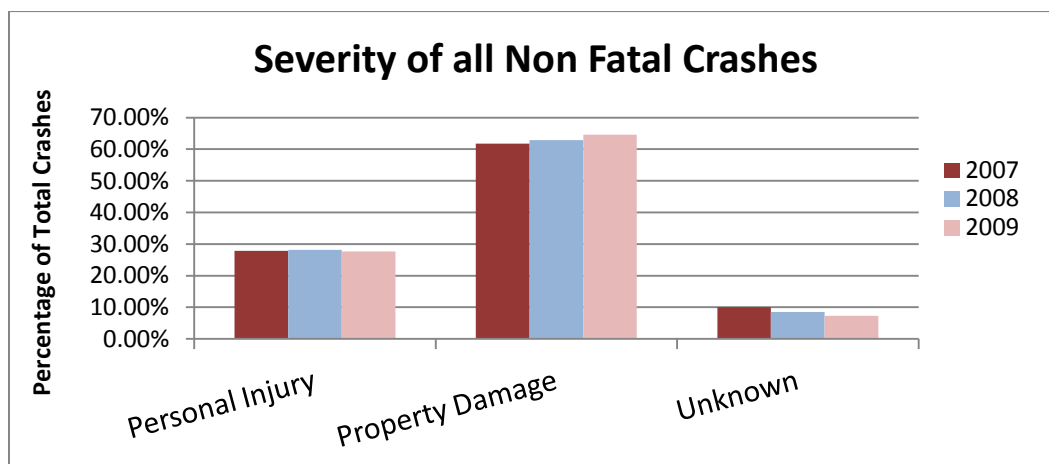
1 Miles

SEVERITY

PVPC obtained information on crash severity, driver age and non motorist crashes from University of Massachusetts Traffic Safety Research Program (UMassSafe) for the years 2007 - 2009.

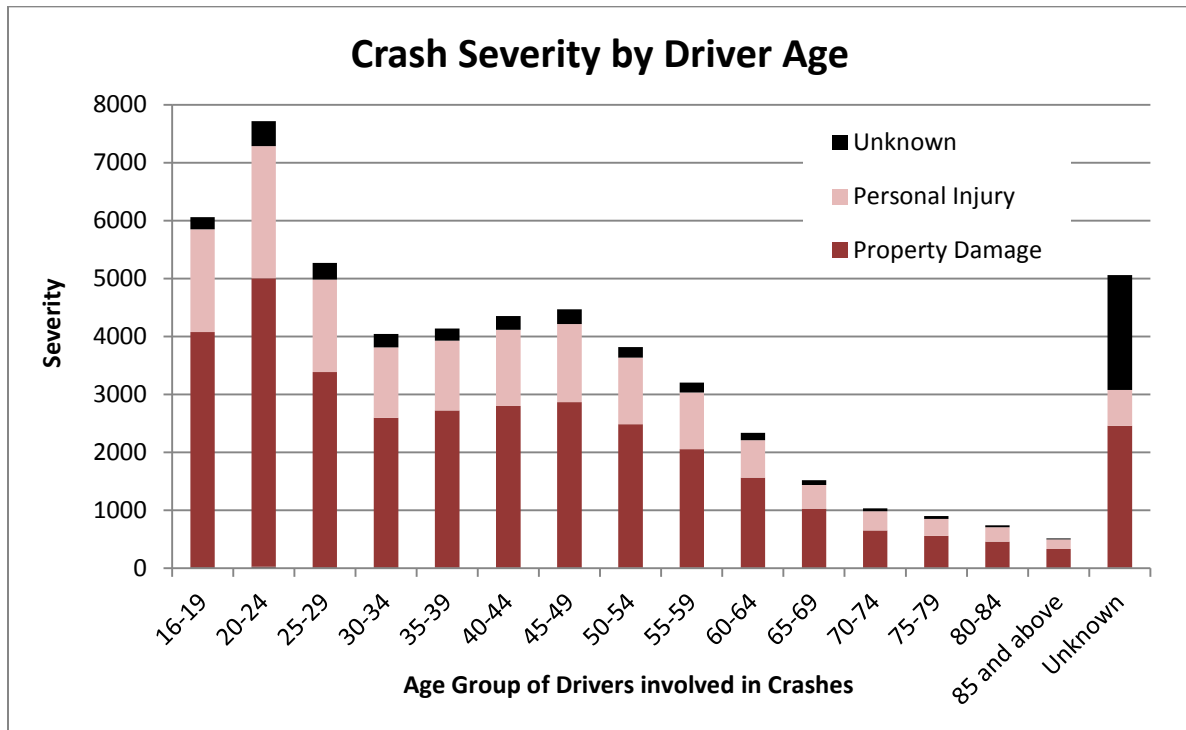
Driver Age	Crash Severity			
	Fatality	Property Damage	Personal Injury	Unknown
16-19	19	4056	1775	209
20-24	27	4979	2278	435
25-29	16	3372	1593	288
30-34	16	2581	1218	227
35-39	13	2714	1200	211
40-44	12	2790	1316	236
45-49	19	2849	1350	252
50-54	13	2476	1147	181
55-59	10	2048	975	170
60-64	7	1557	645	128
65-69	4	1025	409	82
70-74	2	650	334	47
75-79	6	555	289	50
80-84	4	454	248	35
85 and above	2	331	165	17
Unknown	10	2447	622	1981
Percentage of Total	0.33%	63.22%	28.21%	8.24%

Source: UMassSafe



Source: MassDOT

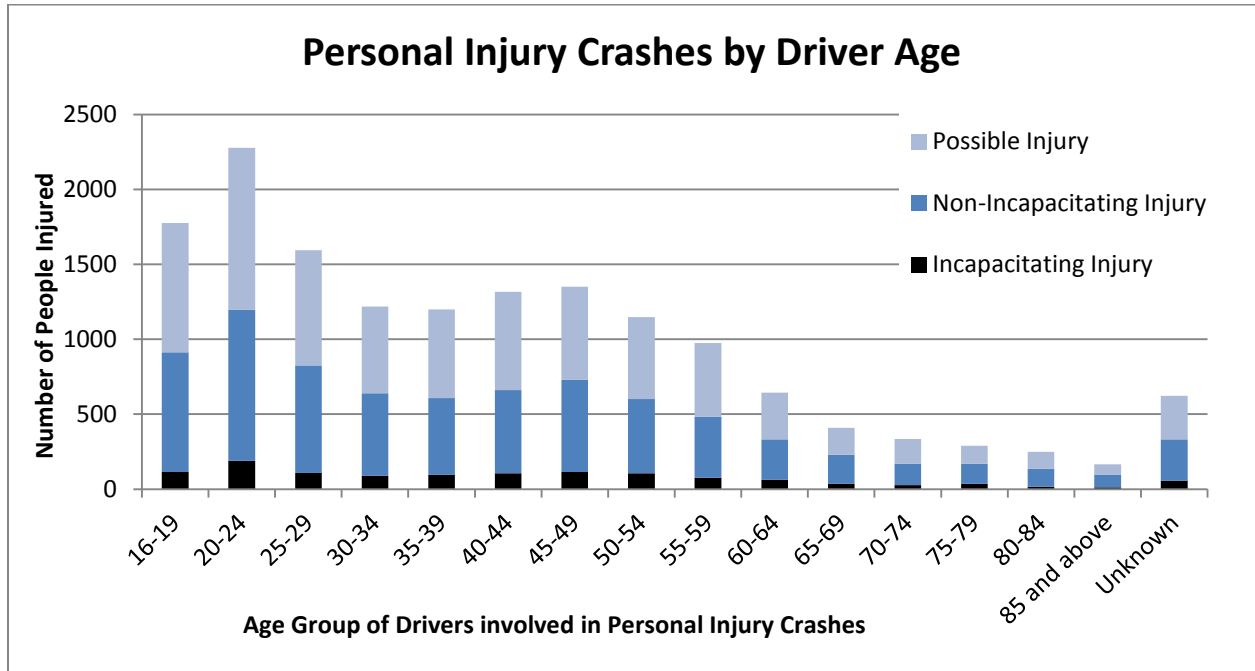
More than 60% of the reported crashes in the Pioneer Valley that occurred during this time period were property damage crashes. Approximately 30% of crashes resulted in some form of personal injury while less than 0.5% of all the crashes resulted in a fatality. These trends were found to be consistent across all the years.



Source: UMassSafe

Young drivers between the ages of 20 years to 24 years were involved in the most crashes when compared to other age groups. This was closely followed by teenage drivers. Age and severity information was not available for many of the reported crashes because of the quality of the reported data.

Injuries caused by the crashes were further classified into three categories: incapacitating, non-incapacitating and possible injury. A majority of injury crashes resulted in possible injury (48%) followed by some form of non-incapacitating injury (44%). Approximately 8% of the reported personal injuries were classified as permanently incapacitating injuries.

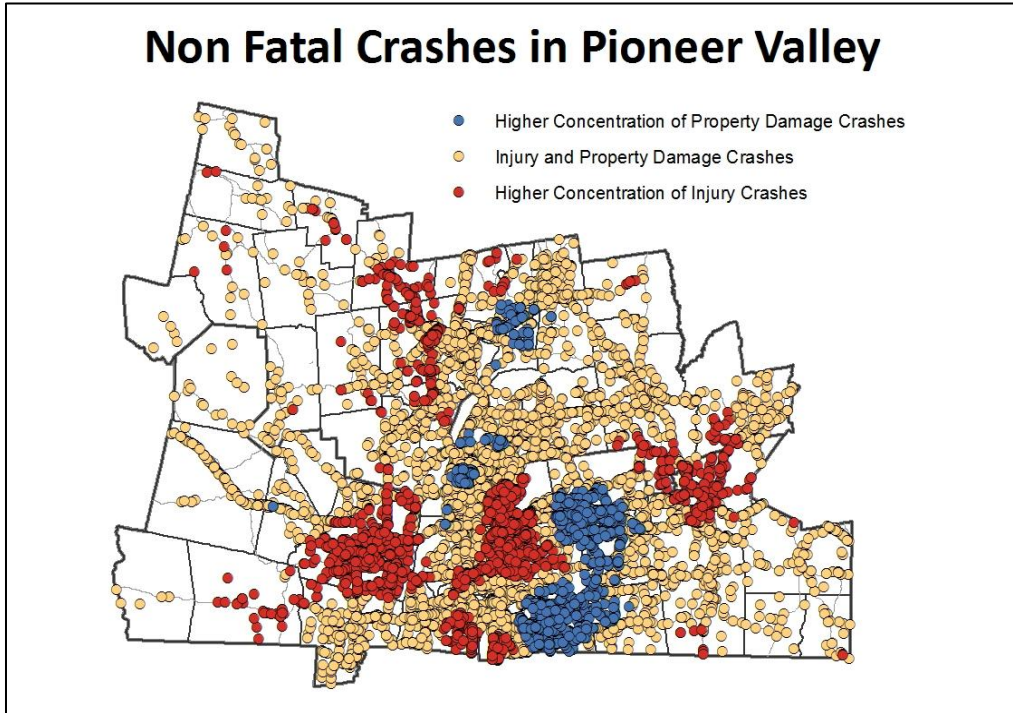


Source: UMassSafe

Once again young drivers (20 years – 24 years) were involved in crashes that resulted in more than 2,000 individuals getting injured. Nearly 200 of these injuries were reported as incapacitating injuries. Teenage drivers were also reported to be involved in crashes that caused more than 1,500 injuries, 114 of which were reported as incapacitating injuries.

NON FATAL CRASHES

PVPC conducted a Hot Spot analysis on all the non fatal crashes using ArcGIS to locate the areas with higher incidence of injury crashes or property damage crashes. The result of the analysis showed clusters with higher occurrence of injury crashes in the communities of Westfield, Springfield, Chicopee, Agawam, Longmeadow, and Palmer. Some scattered injury crash hot spots were also seen in Williamsburg, Northampton, Easthampton, Belchertown, Ware and Granville. Higher concentration of property damage crashes was seen in Hadley, Holyoke, Ludlow, Wilbraham, Hampden, and East Longmeadow.



Source: MassDOT

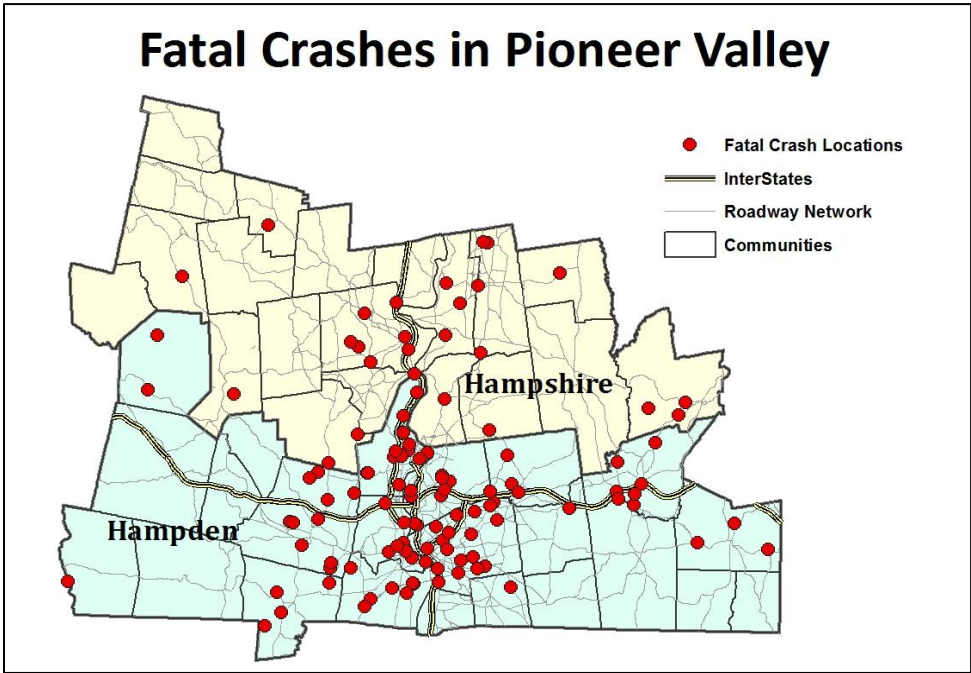
All the points in the above map (yellow, blue, and red) represent crash locations. A single point may represent more than one crash at the same time. A red or blue cluster in the above map does not mean that all the crashes in the vicinity of that region were either injury crashes or property damage crashes. It simply denotes the regions which are primary hot spots for either type of crash severity.

FATAL CRASHES

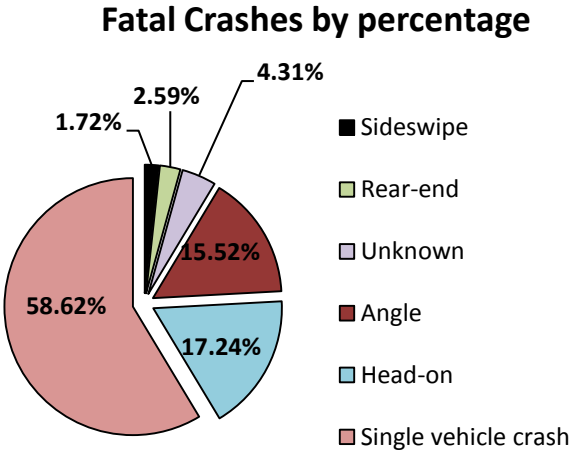
According to MassDOT database, there were a total of 116 fatal crashes in the Pioneer Valley between the years of 2007 – 2009. A majority of those crashes were single vehicle crashes.

Manner of Collision	Number of Fatal Crashes
Sideswipe	2
Rear-end	3
Unknown	5
Angle	18
Head-on	20
Single vehicle crash	68
Total	116

Source: MassDOT



Source: MassDOT



Source: MassDOT

Top Fatal Crash Communities

Community	Number of Fatal Crashes
Springfield	19
Holyoke	14
Westfield	10
Chicopee	9
West Springfield	8
Palmer	7
Agawam	7
Amherst	4
Southwick	4
Ludlow	4
Northampton	4

Source: MassDOT

FATALITIES

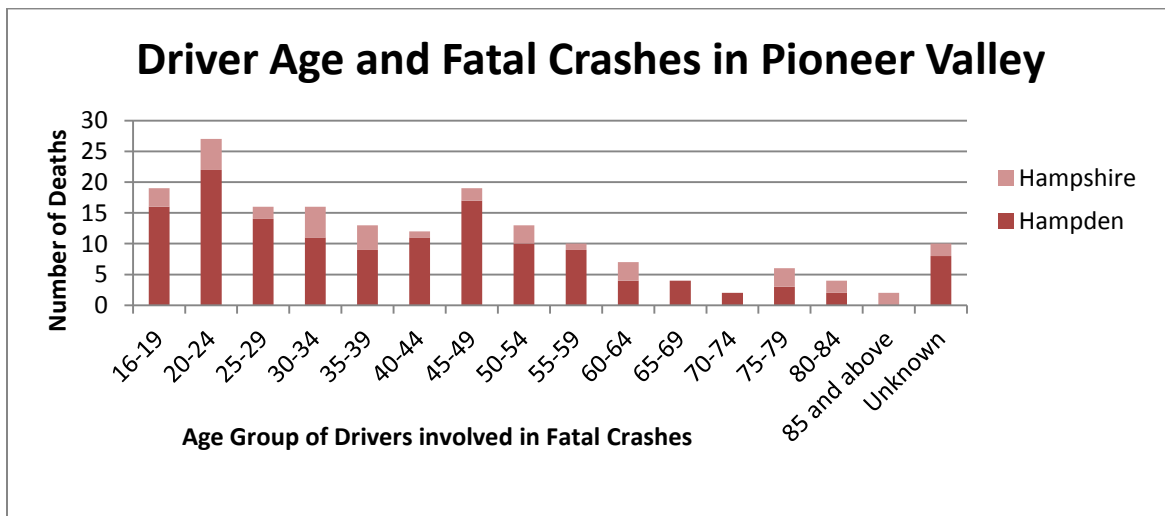
There were a total of 180 fatalities² caused by motor vehicle crashes in the Pioneer Valley (142 in Hampden County and 38 in Hampshire County) between the years of 2007 – 2009. During the same time period the State of Massachusetts reported a total of 1,138 fatalities caused motor vehicle crashes.

Year	Fatalities in the Region		
	Hampden	Hampshire	Massachusetts
2007	57	16	434
2008	39	10	364
2009	46	12	340
Total	142	38	1138

Source: UMassSafe

Comparing the annual data it can be seen that there is a gradual decline in fatalities statewide every year, however the number of fatalities in Pioneer Valley slightly increased from 2008 to 2009.

A total of 27 fatalities were a result of crashes that involved drivers between the ages of 20 years and 24 years. Teenage drivers were involved in crashes that resulted in 19 deaths. A slight increase in the number of fatalities was seen for drivers between the ages of 45 years to 49 years.



Source: UMassSafe

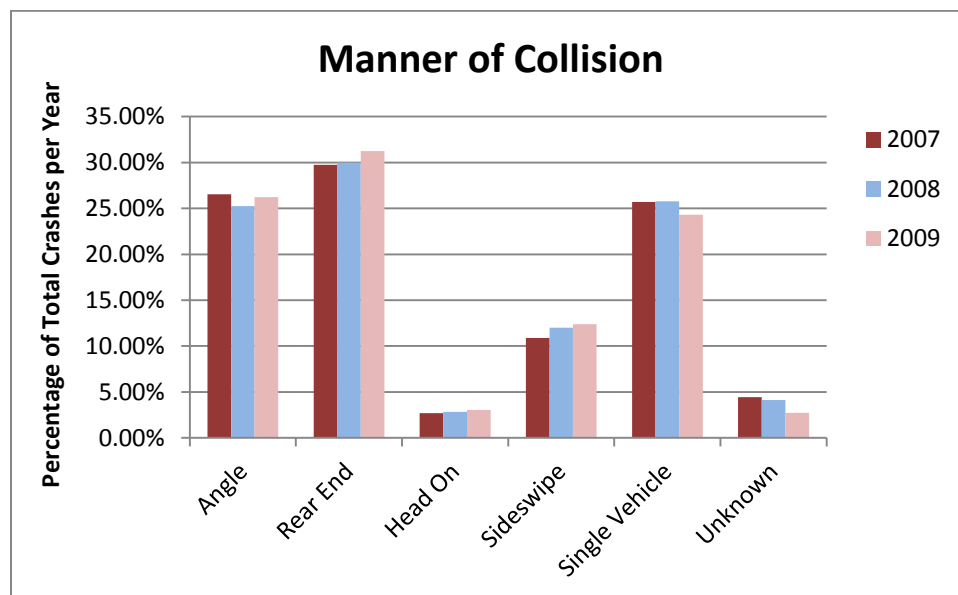
² THE NUMBER OF FATALITIES IS HIGHER THAN THE NUMBER OF FATAL CRASHES AS SOME OF THE FATAL CRASHES MIGHT RESULT IN MORE THAN ONE FATALITY.

MANNER OF COLLISION

PVPC summarized the manner of collision, weather condition and road condition data for all reported crashes in the MassDOT database. A majority of crashes were reported as rear end collisions (30%) during 2007 – 2009 in the Pioneer Valley. Angle crashes were a close second (25% and above), followed by single vehicle crashes (nearly 25% for each year). No significant diversity in manner of collision was observed when the data was examined for each year individually.

Year	Number of Crashes and Manner of Collision					
	Angle	Rear End	Head On	Sideswipe	Single Vehicle	Unknown
2007	2,823	3,162	285	1,156	2,734	473
2008	2,592	3,079	292	1,230	2,643	425
2009	2,582	3,076	301	1,220	2,393	270

Source: MassDOT

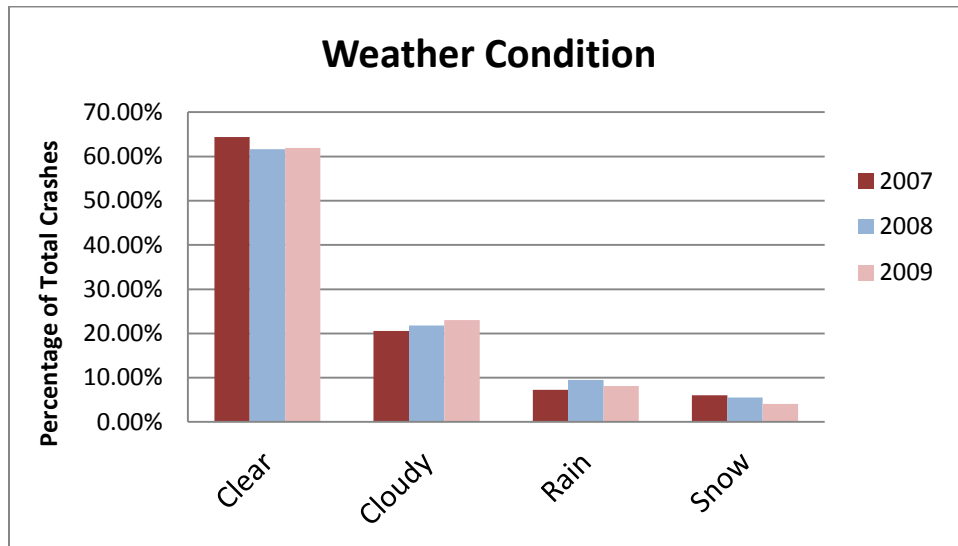


Source: MassDOT

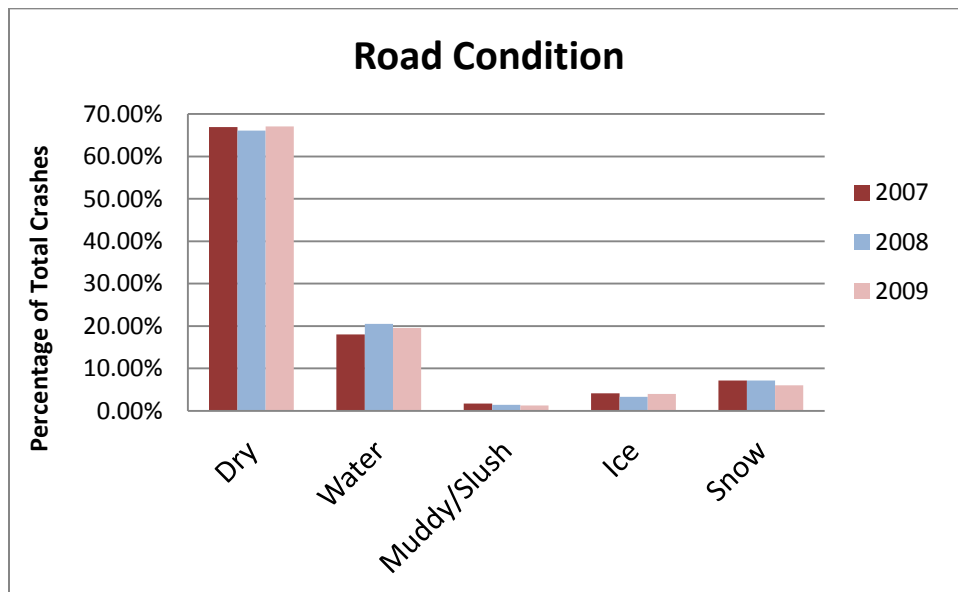
The number of crashes in which the manner of collision was reported as 'Unknown' decreased gradually each year from 2007 to 2009 which shows significant improvement in the quality of reported crash data.

WEATHER AND ROAD CONDITION

MassDOT data shows that more than 60% of crashes in the region occurred during clear weather and dry road conditions. About 5% of all crashes occurred during snowy conditions. In short, extreme weather and roadway conditions have not had a significant impact on crashes.



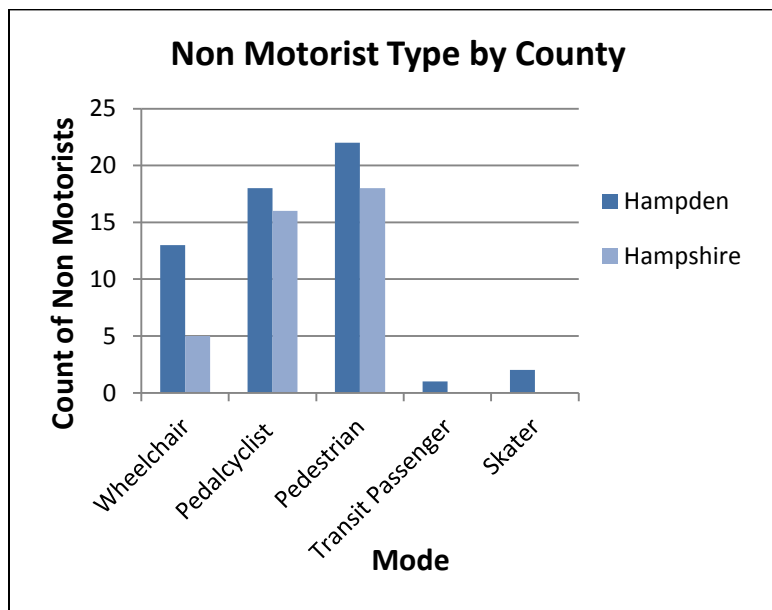
Source: MassDOT



Source: MassDOT

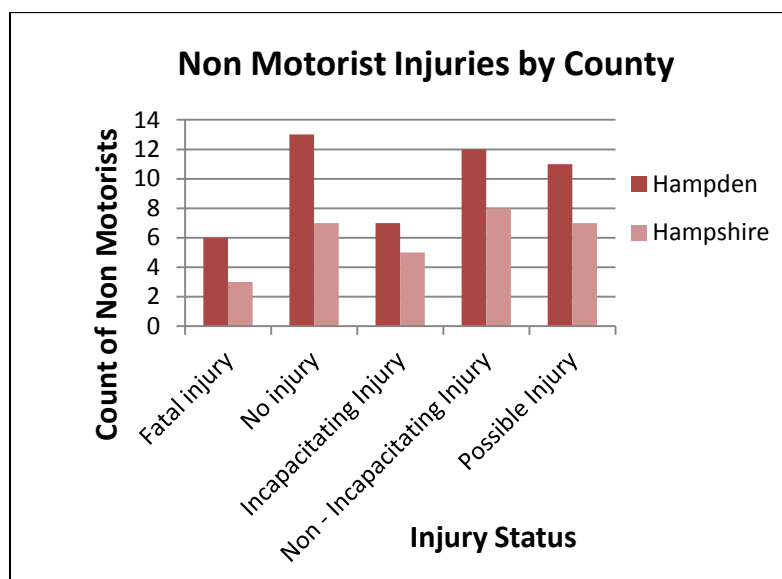
NON MOTORIST CRASHES

According to the available data on non motorist crashes from UMassSafe, a total of 118 non motorists were involved in motor vehicle related crashes in the Pioneer Valley between the years 2007 – 2009. Detailed information was available regarding the type of non motorists involved in these crashes for a total of 95 out of the 118 reported and documented cases.



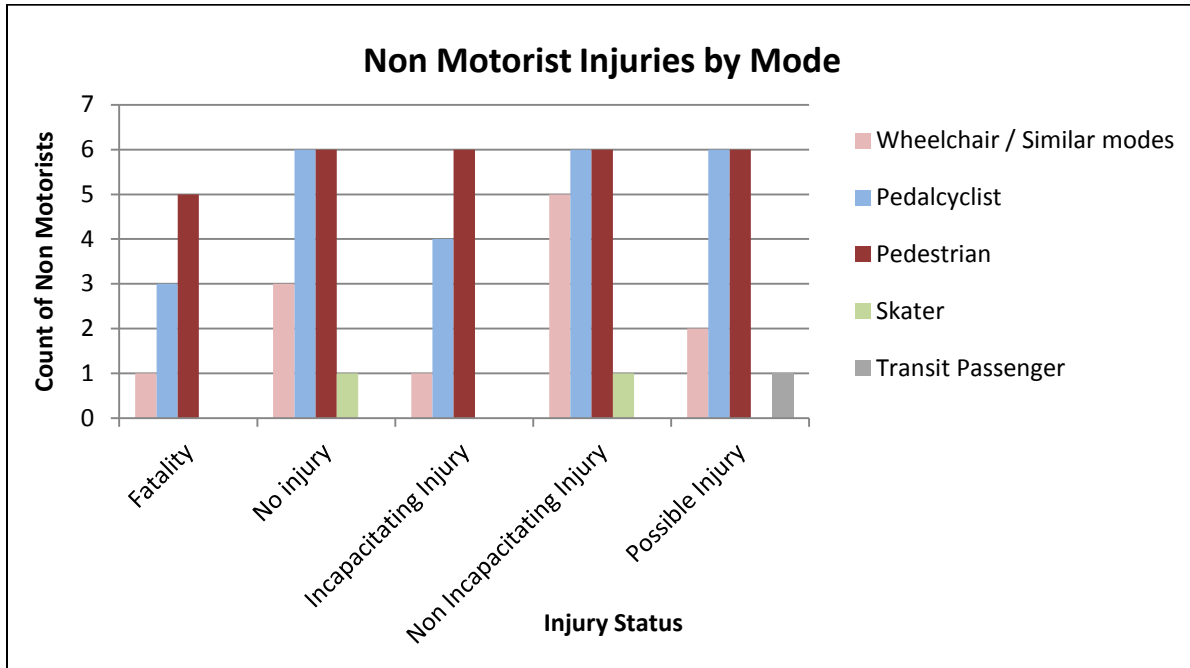
Source: UMassSafe

A pedalcyclist is defined as an operator of a bicycle, tricycle, unicycle or a pedal car. A transit passenger in the Pioneer Valley would most likely be a bus rider.



Source: UMassSafe

Information was available regarding the injury status for a total of 79 non motorists involved in crashes. A total of nine non motorists suffered fatal injuries as a result of a crash, six in Hampden County and three in Hampshire County. Five non motorists were pedestrians, three were pedalcyclists and one was using a wheelchair.



Source: UMassSafe

DRIVER AGE

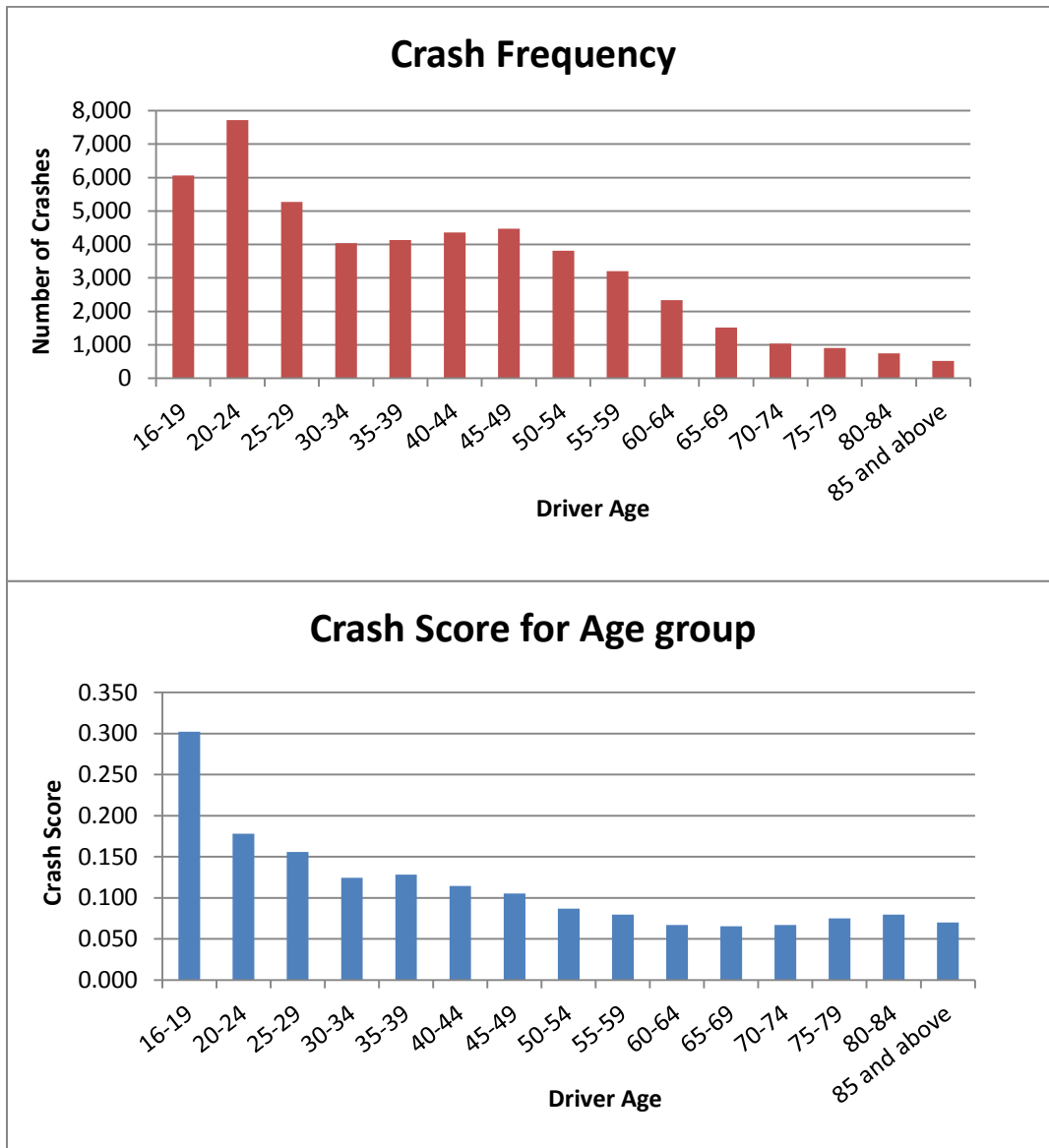
Young drivers between the ages of 20 years to 24 years were found to be involved in the most crashes in the Pioneer Valley. This information expressed by the frequency or the number of crashes does not take into account the number of licensed drivers in that respective age group. The possibility of a driver belonging to a particular age group getting involved in a crash is affected by the total number of drivers in that age group.

In order to bring the total number of drivers into account, PVPC developed a 'Crash Score' for each age group that reflects the probability of a driver belonging to an age group getting involved in a crash in the Pioneer Valley. This crash score is the weighted average of the number of crashes per age group and approximate number of drivers in that age group.

Driver Age	Crash Frequency	2010 Population		Licensed Massachusetts Drivers	Approximate Number of Drivers in Pioneer Valley	Crash Score for Age Group
		Massachusetts	Pioneer Valley			
16-19	6,059	377,301	45,312	166,976	20,053	0.302
20-24	7,719	475,668	55,087	374,053	43,319	0.178
25-29	5,271	441,525	36,833	405,667	33,842	0.156
30-34	4,042	403,616	33,635	389,304	32,442	0.125
35-39	4,138	418,195	35,250	382,292	32,224	0.128
40-44	4,355	468,954	40,688	438,350	38,033	0.115
45-49	4,470	515,434	45,972	476,804	42,527	0.105
50-54	3,818	497,001	46,475	470,019	43,952	0.087
55-59	3,203	432,822	42,061	413,448	40,178	0.080
60-64	2,337	370,547	35,702	361,195	34,801	0.067
65-69	1,520	264,459	24,614	250,008	23,269	0.065
70-74	1,033	192,001	17,584	168,561	15,437	0.067
75-79	900	162,592	15,175	128,424	11,986	0.075
80-84	741	138,473	13,334	96,705	9,312	0.080
85 and over	515	142,759	14,808	70,694	7,333	0.070

Source: 2010 U.S. Census, UMassSafe, Federal Highway Administration 2010 Highway Statistics Series

The information regarding the number of drivers in the Hampshire and Hamden Counties was derived based on the number of licensed drivers in the State. Proportional distribution was assumed and numbers for each age group were derived based on the 2010 Census population of the Pioneer Valley.



Source: PVPC, UMassSafe

A graphical comparison of the number of crashes to the crash score shows that even though more young drivers are involved in crashes, teenage drivers are far more likely to be involved in a crash as the number of licensed teenage drivers is much lower compared to the other age groups and the number of crashes is higher in comparison.

PUBLIC REVIEW AND COMMENTS

Several preliminary drafts of this report were presented to the Joint Transportation Committee (JTC) from time to time throughout the development process. A comprehensive draft document was uploaded after JTC's consent on the Pioneer Valley Planning Commission's website for public review and comments for more than 30 day review period starting from December 18th, 2012 till January 21st, 2013. Summarized below are the major comments and changes made to the draft before finalizing the report.

	Comment	Entity	Action
1.	Graphical Representation of all the crashes.	Joint Transportation Committee Remark	A map depicting areas with high concentration of injury crashes or property damage crashes or both was added on page 25 by conducting 'Hot Spot Analysis' in ArcGIS.
2.	A map of all the fatal crashes in the region.	Joint Transportation Committee Remark	A map depicting all the fatal crashes in the region was added to the draft along with additional fatal crash information on page 26.
3.	Move the chart description to follow the chart on the final page	Public Comment	Changes made accordingly to page 29.
4.	Please use the complete title of "UMassSafe" - University of Massachusetts Traffic Safety Research Program in the first reference in the document.	UmassSafe	Change made as requested.
5.	Under "Sources" The UMassSafe database is actually called the UMassSafe Traffic Safety Data Warehouse	UmassSafe	Change made as requested.

ENDORSEMENT

PIONEER VALLEY MPO ENDORSEMENT SHEET

The signatures below signify that all members of the Pioneer Valley Region's Metropolitan Planning Organization, or their designees, have met on May 1, 2013 and discussed the following item for endorsement: Top 100 High Crash Intersections in the Pioneer Valley Region 2007 – 2009

Massachusetts Department of Transportation (Mass DOT)

I, Secretary of the Massachusetts Department of Transportation, hereby

Endorse Do Not Endorse the above referenced item.


Richard Davey
Secretary & CEO Mass DOT

1 May 13
Date

Massachusetts Department of Transportation Highway Division

I, Administrator of the Highway Division of MassDOT, hereby

Endorse Do Not Endorse the above referenced item.


Frank DePaola
Highway Administrator, Mass DOT

5/1/13
Date

Pioneer Valley Planning Commission (PVPC)

I, Chair of the Pioneer Valley Planning Commission, hereby

Endorse Do Not Endorse the above referenced item.


Walter Gunn
Chair - PVPC

5-1-13
Date

Pioneer Valley Transit Authority (PVTA)

I, Chair of the Pioneer Valley Transit Authority, hereby

Endorse Do Not Endorse the above referenced item.


John Musante
Chair - PVTA

5/1/13
Date

City of Chicopee

I, Mayor of the City of Chicopee, hereby

Endorse Do Not Endorse the above referenced item.

Michael Bissonnette
Mayor-Chicopee

Date

City of Holyoke

I, Mayor of the City of Holyoke, hereby

Endorse Do Not Endorse the above referenced item.

Alex Morse
Mayor-Holyoke

Date

City of Northampton

I, Mayor of the City of Northampton, hereby

Endorse Do Not Endorse the above referenced item.

David Narkewicz
Mayor-Northampton

5/1/13

Date

City of Agawam

I, Mayor of the Town of Agawam, hereby

Endorse Do Not Endorse the above referenced item.

Richard Cohen
Mayor-Agawam

01 MAY 2013

Date

Town of Belchertown

I, Board of Selectmen member of the Town of Belchertown, hereby

Endorse Do Not Endorse the above referenced item.

George Archible
Selectman-Belchertown

01/5/2012

Date

Town of Hatfield

I, Board of Selectmen member of the Town of Hatfield, hereby

Endorse Do Not Endorse the above referenced item.

Marcus Boyle
Selectman-Hatfield

1 MAY 2013

Date



Pioneer Valley Planning Commission
60 Congress Street – Floor 1
Springfield, MA 01104

www.pvpc.org