



# University Technical Assistance

# Technical Assistance - Types of Services

With fewer resources, enforcement agencies need to be strategic in their approach to crash reduction programming.

UMassSafe conducts crash and inspection data analysis and mapping throughout the Commonwealth in order to guide, support, and evaluate highway safety efforts.

Understanding where the crashes and safety violations occur, and their characteristics, help shape the enforcement response.

Field Data  
Collection

CVSP  
Development

Grant Writing

Crash &  
Inspection Data  
Analysis

Crash Mapping  
& Spatial  
Analysis

Problem  
Identification &  
Visualizations

Online  
Resource  
Toolkits

Curriculum  
Development

Web-Based  
Data Tools

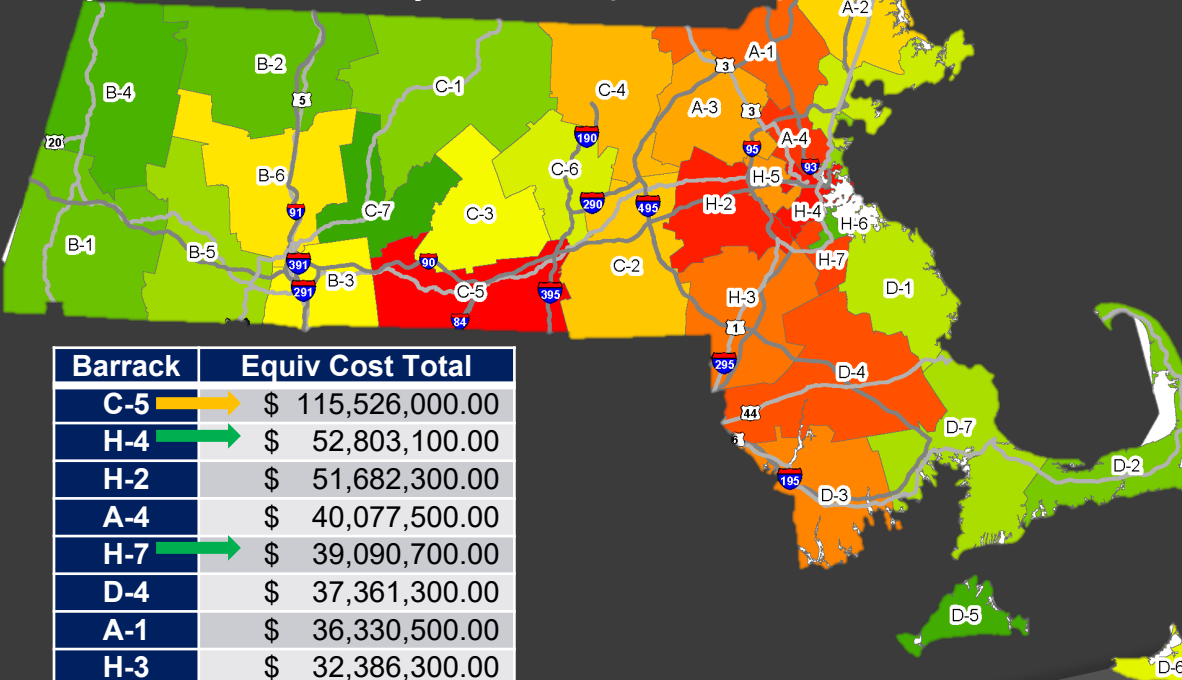
# Crash Location Analysis

## Resource Allocation



Compare number of inspections against number of crashes, and equivalent cost, for additional insights when determining resource allocation

*Massachusetts Commercial Motor Vehicle Crashes: Comprehensive Costs by Barracks (FFY 2023)*

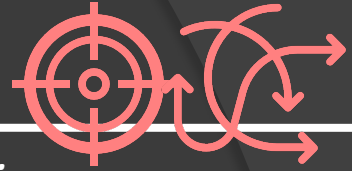


Barrack	Equiv Cost Total
C-5	\$ 115,526,000.00
H-4	\$ 52,803,100.00
H-2	\$ 51,682,300.00
A-4	\$ 40,077,500.00
H-7	\$ 39,090,700.00
D-4	\$ 37,361,300.00
A-1	\$ 36,330,500.00
H-3	\$ 32,386,300.00
D-3	\$ 31,760,200.00
H-5	\$ 28,885,500.00
A-3	\$ 26,317,300.00

MSP	Total Inspections	Total Crashes	Inspections per Crash
<b>Troop A</b>	4,034	510	7.9
A-1	893	138	6.5
A-2	681	40	17.0
A-3	615	89	6.9
A-4	984	114	8.6
A-5	484	56	8.6
A-6	377	73	5.2
<b>Troop B</b>	2,615	263	9.9
B-1	18	15	1.2
B-2	89	15	5.9
B-3	2,163	140	15.5
B-4	52	14	3.7
B-5	86	29	3.0
B-6	207	50	4.1
<b>Troop C</b>	1,909	412	4.6
C-1	52	9	5.8
C-2	888	115	7.7
C-3	25	13	1.9
C-4	351	89	3.9
C-5	387	100	3.9
C-6	180	80	2.3
C-7	26	6	4.3
<b>Troop D</b>	2,567	384	6.7
D-1	395	61	6.5
D-2	98	45	2.2
D-3	433	76	5.7
D-4	737	148	5.0
D-5		3	0.0
D-6		1	0.0
D-7	904	50	18.1
<b>Troop H</b>	4,987	528	9.4
H-2	384	103	3.7
H-3	1,552	126	12.3
H-4	1,801	138	13.1
H-5	92	67	1.4
H-6	251	30	8.4
H-7	907	64	14.2
<b>Total</b>	16,112	2,097	7.7

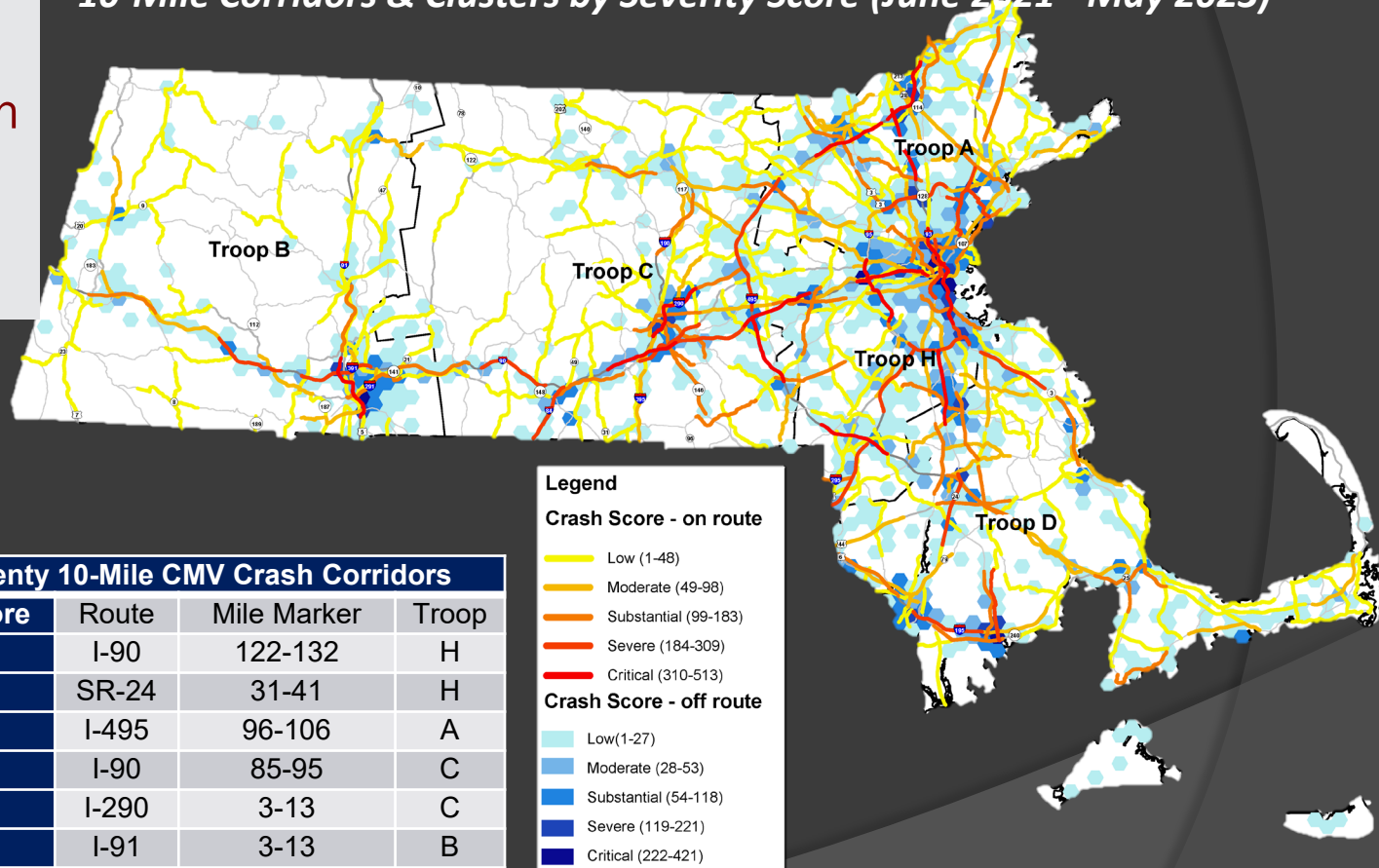
# Crash Location Analysis

## Efficient Problem Identification by Route



High-crash corridor maps identify areas needing prioritization and inform troopers when determining patrol routes

*Massachusetts Commercial Motor Vehicle Crashes:  
10-Mile Corridors & Clusters by Severity Score (June 2021 - May 2023)*



Top Twenty 10-Mile CMV Crash Corridors			
Crash Score	Route	Mile Marker	Troop
513	I-90	122-132	H
500	SR-24	31-41	H
448	I-495	96-106	A
435	I-90	85-95	C
426	I-290	3-13	C
423	I-91	3-13	B
406	US-1	38-48	H
404	I-93	14-24	H
366	I-495	85-95	A
357	I-93	31-41	A

**Legend**

**Crash Score - on route**

- Low (1-48)
- Moderate (49-98)
- Substantial (99-183)
- Severe (184-309)
- Critical (310-513)

**Crash Score - off route**

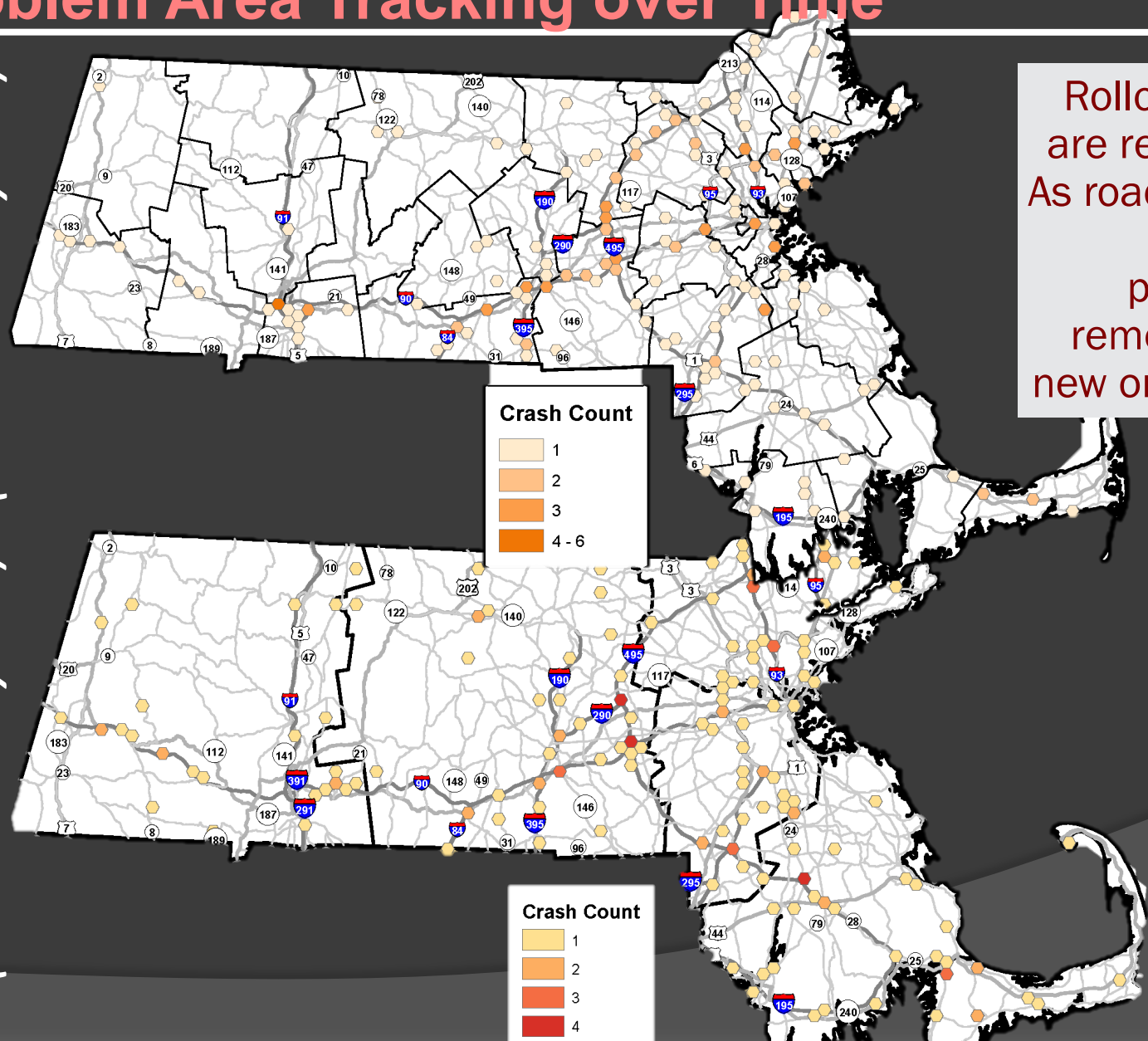
- Low(1-27)
- Moderate (28-53)
- Substantial (54-118)
- Severe (119-221)
- Critical (222-421)

# Crash Location Analysis

## Problem Area Tracking over Time

Rollover Crash Clusters  
(June 2019 – May 2021)

Rollover Crash Clusters  
(June 2021 – May 2023)

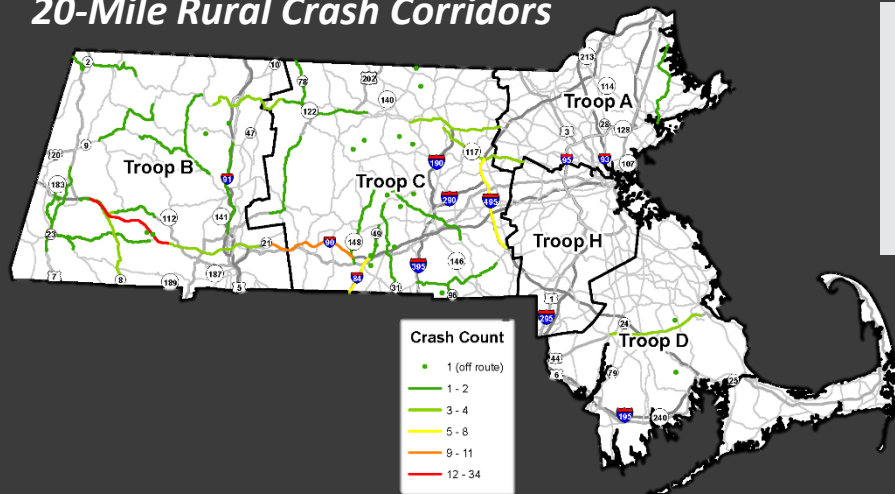


Rollover cluster maps are repeated annually. As roadway designs are improved, some problem spots are remedied while other new ones may develop.

# Using Data to Guide Safety Programming

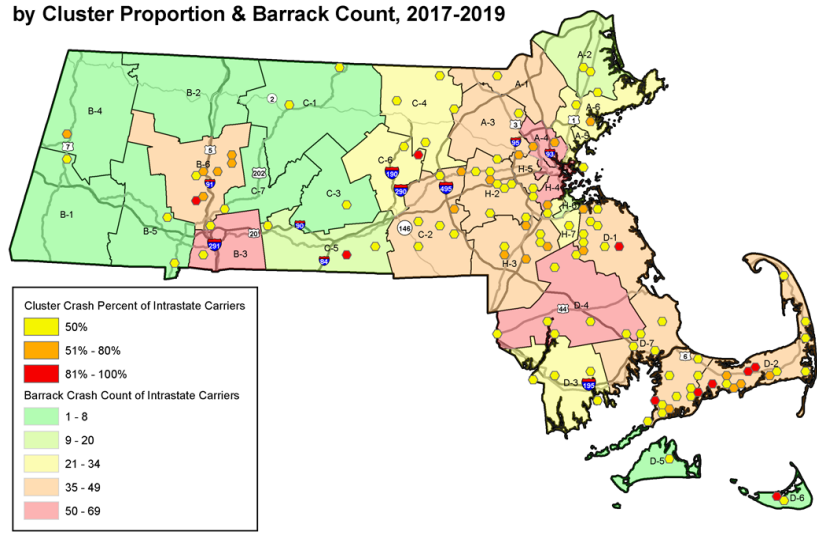
## Problem Identification of Intrastate Carrier Crashes

### 20-Mile Rural Crash Corridors



Intrastate carrier and rural-roadway crashes were on the rise so crash attributes were examined to look for patterns that differed from Interstate carrier crashes.

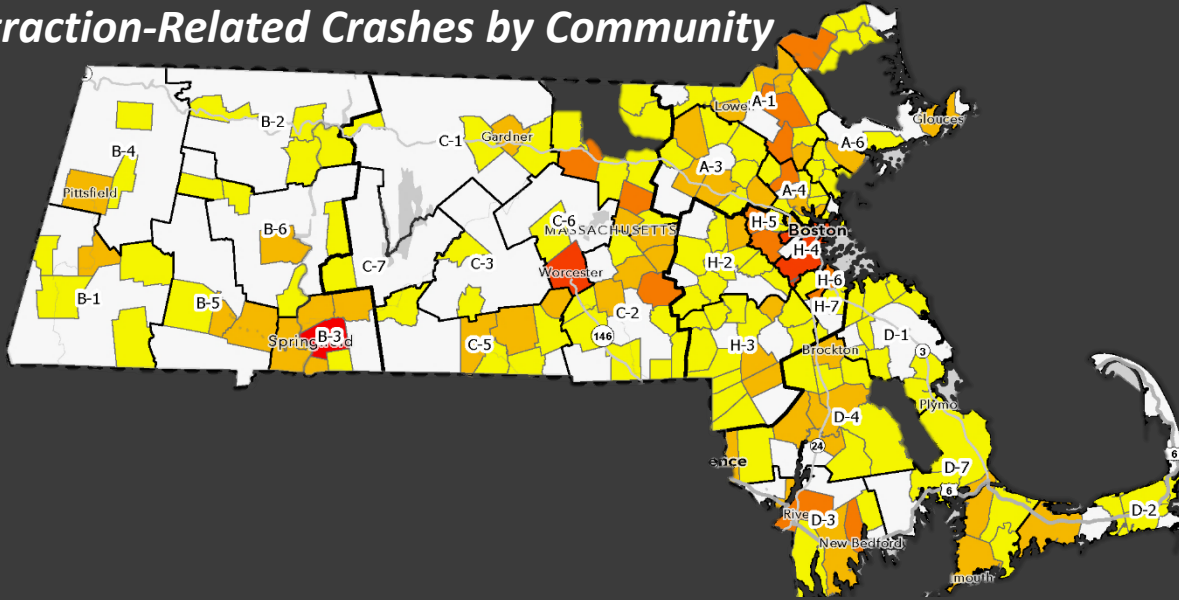
Massachusetts Intrastate Carrier CMV Crashes by Cluster Proportion & Barrack Count, 2017-2019



First Harmful Event	Intrastate	Interstate
Collision w/ motor vehicle in traffic	78.2%	78.6%
Collision w/ parked motor vehicle	6.1%	3.6%
Collision w/ guardrail	1.5%	3.1%
Overturn/rollover	1.6%	2.0%
Collision w/ pedestrian	2.0%	0.9%
Collision w/ bridge overhead structure	0.9%	1.5%
Collision with bridge	0.3%	1.3%
Collision with utility pole	1.4%	0.9%
Collision with tree	1.6%	0.9%
Collision with median barrier	0.2%	1.0%
Jackknife	0.1%	0.7%
Collision with embankment	0.4%	0.6%
Collision with curb	0.6%	0.4%
Collision w/ other light pole or other post/support	0.9%	0.4%

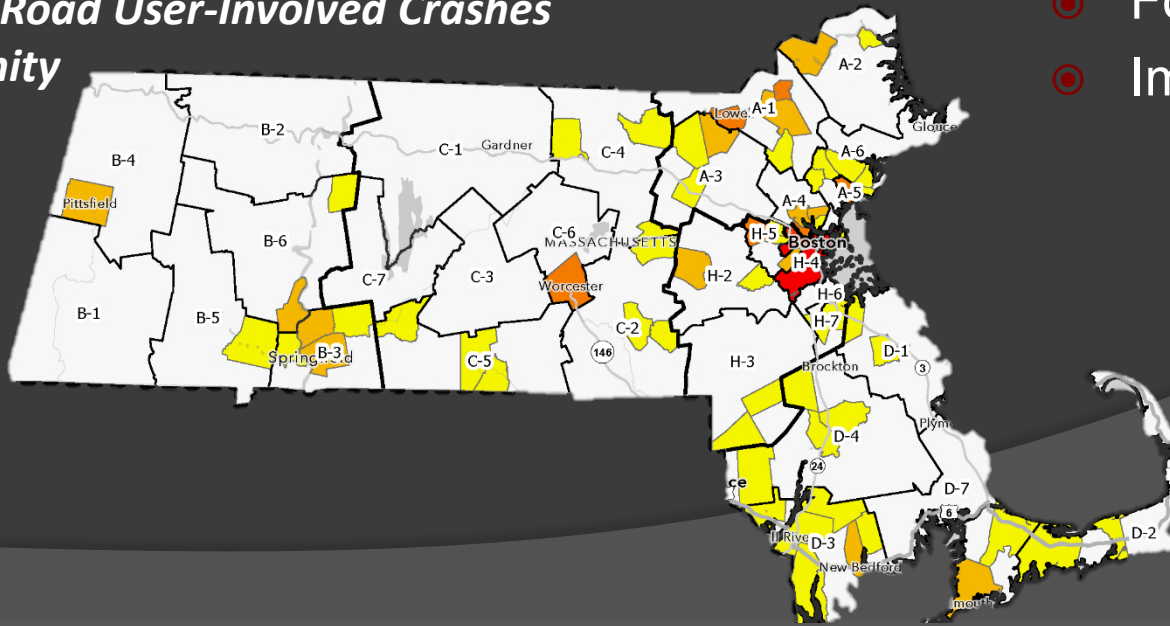
# Other Topical Crash & Enforcement Maps

*Distraction-Related Crashes by Community*



- Work Zone clusters & 1-mile segments
- 20-mile rural corridors
- 5-mile bus-crash corridors
- Speeding
- Following too closely
- Impaired Driving

*Vulnerable Road User-Involved Crashes by Community*



# Questions & Contact Information

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