September, 2022

Naugatuck Valley Council of Governments Regional Safety Plan

2022 Update

U.S. Department of Transportation

Federal Highway Administration

CT-262 (Buckingham Street), Watertown

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Source: VN Engineers

Report Terminology

TERM	DEFINITION
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
Cat Tracks	Dotted lines that extend lane line markings into the intersection for enhanced delination. They are typically applied at offset, skewed, multileg, complex intersections, or curved roadways, or where multiple turn lanes are used.
Collector Road	The Federal Highway Administration defines Collector Roads as the network that gathers traffic from local roads and directs them to the Arterial network.
FHWA	Federal Highway Administration
HSIP	Highway Safety Improvement Program
Injury A	Suspected Serious Injury
Injury B	Suspected Minor Injury
Injury C	Possible Injury
Injury K	Fatal Injury
Injury O	Property Damage Only
LPI	Leading pedestrian interval. A leading pedestrian interval (LPI) gives pedestrians the opportunity to enter an intersection 3-7 seconds before vehicles are given a green indication. With this head start, pedestrians can better establish their presence in the crosswalk before vehicles have priority to turn left.
Local Roads	The FHWA describes Local Roads as having the largest percentage of all roadways in terms of mileage. They are intended for short distance travel, except at the origin or destination end of the trip, due to their provision of direct access to abutting land. They are often designed to discourage through traffic.
LRTP	Long-Range Transportation Plan
MUTCD	Manual on Uniform Traffic Control Devices
MVMT	Million Vehicle Miles Traveled
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
Per VMT	Describes a crash rate per million vehicle miles
Per Capita	Describes a crash rate per population
Performance Measure	Indicators that enable decision-makers and other stakeholders to monitor changes in system conditions and performance against established visions, goals, and objectives.
RTSP	Regional Transportation Safety Plan
Reverse Curve	Reverse curves are two successive turns or curves that bend in opposite directions.
SHIP	State Highway Improvement Plan
SHSP	Strategic Highway Safety Plan
TIP	Transportation Improvement Program
VMT	Vehicle Miles Traveled

1. Introduction

Executive Summary

In 2017, the Connecticut Department of Transportation published the Connecticut Strategic Highway Safety Plan (SHSP) to guide the State in reducing fatal and serious injuries along CT roadways. This Regional Transportation Safety Plan (RTSP) is in congruence with the CT SHSP. It will serve as a road map and strategy to help the Naugatuck Valley Region and its 19 municipalities collaborate with the State in reducing fatal and injury crashes. It will also serve to increase safety awareness and allow the member towns, cities, and the region to focus on their transportation safety issues.

The approach used in this study applies similar methodology to the State plan, but it includes more local input, reflecting both the needs of each of its 19 individual communities and the region as a whole. In addition to the regional plan, each municipality has its own mini-report which includes specific crash data and priority locations and incorporates stakeholder feedback.

The plan is data-driven, multimodal, and multidisciplinary. It identifies the region's high frequency crash locations and outlines effective countermeasures and strategies to reduce crashes. The purpose of listing countermeasures is to help the region prioritize its projects and better position the region for any available safety funds.

The plan was developed involving local stakeholders from the four E's of transportation safety: Engineering, Enforcement, Education, and Emergency Response. The overall goal of the Naugatuck Valley Region's RTSP is to reduce traffic injuries and fatalities by 15% by 2025. This means a reduction from a three-year average of 2,994 injury and fatal crashes per year to an annual average of 2,545 fatal and injury crashes per year in the Naugatuck Valley Region.

This RTSP is a living document. Federal regulations require an update for the SHSP every five years, and this regional safety plan will follow this same update process. The regional plan will adhere to the same mandate as the SHSP, with the expectation that all updates will reflect the most current federal surface transportation legislation.

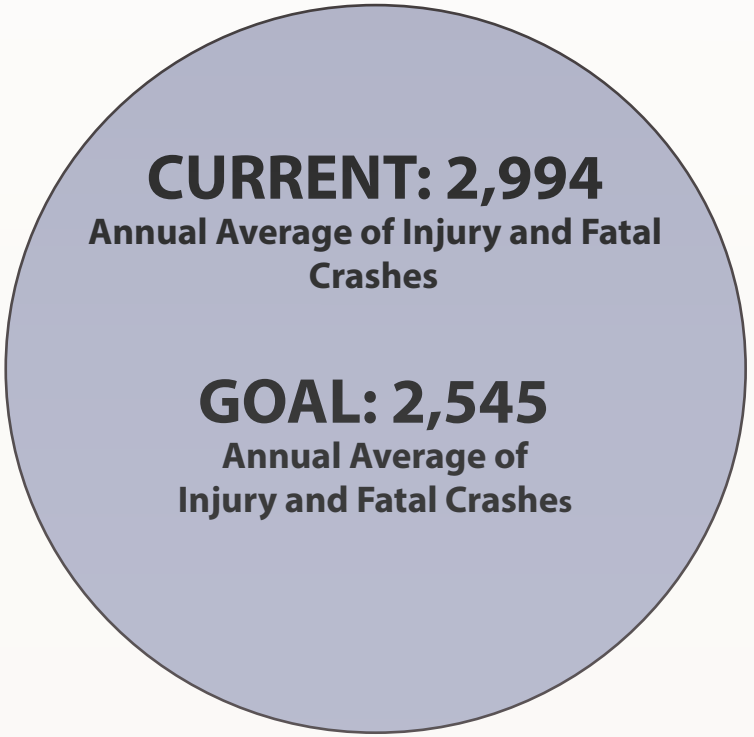
THE FOUR E'S OF TRANSPORTATION SAFETY

ENGINEERING: Highway design, traffic, maintenance, operations, and planning professionals.

ENFORCEMENT: State and local law enforcement agencies.

EDUCATION: Prevention specialists, communication professionals, educators, and citizen advocacy groups.

EMERGENCY RESPONSE: First responders, paramedics, fire, and rescue.



2. Stakeholders

Stakeholders engaged in the process and development of the Naugatuck Valley RTSP include representatives from the four E's. In order to ensure stakeholder input, the NVCOG member municipalities were involved with the plan development from the onset of the study. The following is a list of involved safety partners that provided input and feedback throughout the project's process:

NVCOG Member Towns

Ansonia
Beacon Falls
Bethlehem
Bristol
Cheshire
Derby
Middlebury
Naugatuck
Oxford
Plymouth
Prospect
Seymour
Shelton
Southbury
Thomaston
Waterbury
Watertown
Wolcott
Woodbury

CTDOT

NVCOG

State and Local Traffic Enforcement Officials

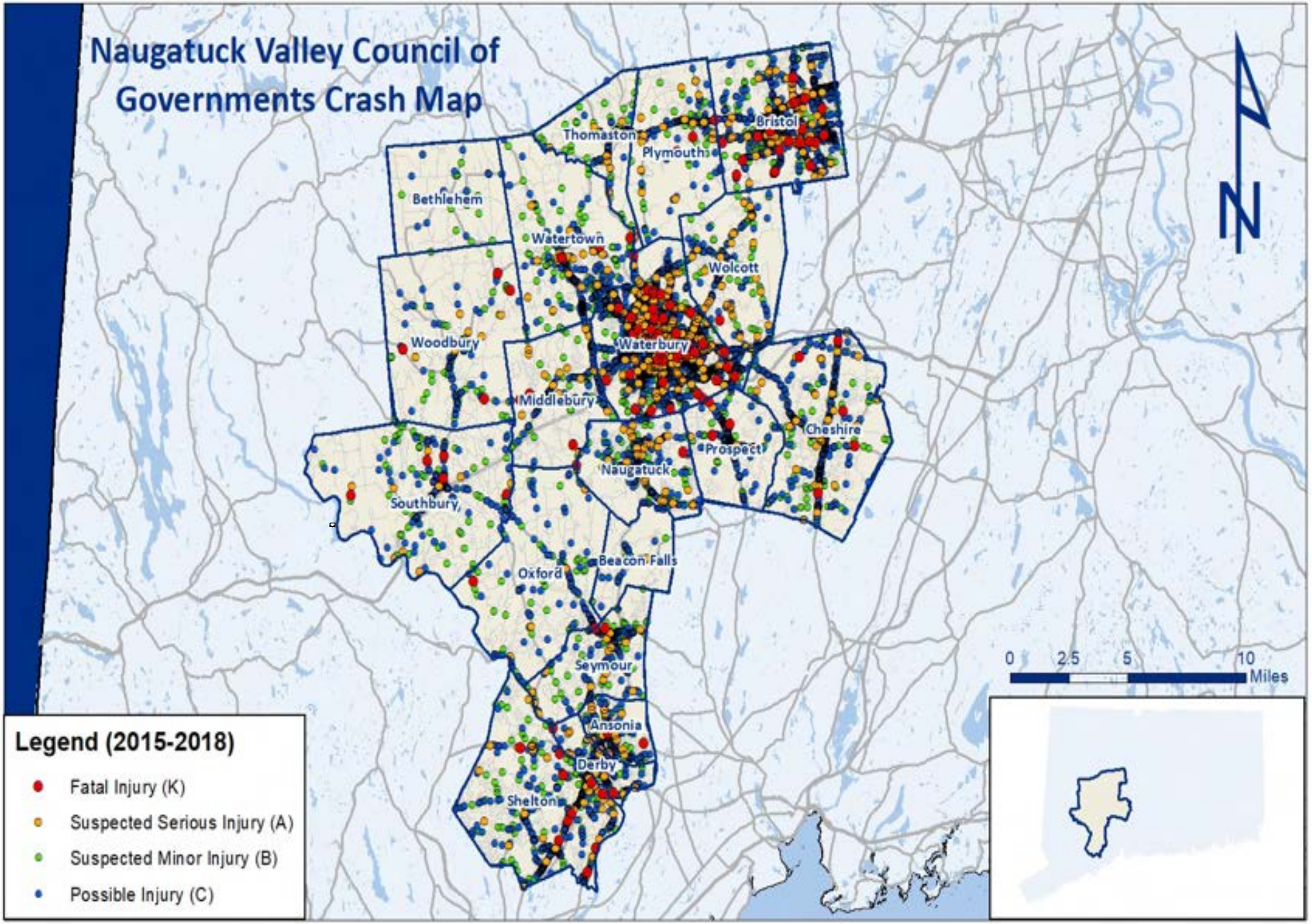
Municipal Fire Department officials and/ or First Responders

Municipal Officials

Municipal Public Works Director

NVCOG Member Town Representatives

David Cassetti
Christopher Bielik
Leonard Assard
Ellen Zoppo-Sassu
Rob Oris, Jr.
Richard Dziekan
Edward St. John
N. Warren Hess
George Temple
David Merchant
Robert Chatfield
W. Kurt Miller
Mark Lauretti
Jeffrey Manville
Ed Mone
Neil O'Leary
Thomas Winn
Tom Dunn
Barbara Perkinson


Naugatuck Valley Council of Governments Crash Map
Thomaston
Plymouth
Bristol
Bethlehem
Watertown
Wolcott
Woodbury
Waterbury
Middlebury
Cheshire
Prospect
Naugatuck
Southbury
Beacon Falls
Oxford
Seymour
Ansonia
Derby
Shelton
N
0 2.5 5 10
Miles
Legend (2015-2018)
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)

3. Regional Overview

Source: VN Engineers

The Naugatuck Valley Region is composed of 19-member municipalities that include Ansonia, Beacon Falls, Bethlehem, Bristol, Cheshire, Derby, Middlebury, Naugatuck, Oxford, Plymouth, Prospect, Seymour, Shelton, Southbury, Thomaston, Waterbury, Watertown, Wolcott, and Woodbury. The region encompasses roughly 550 square miles, with a population of about 589,135 people. The municipalities range from rural to exurban to suburban and urban communities, so each town and city has varying local traffic concerns and challenges.

In order to analyze and best understand the region's transportation network, each municipality in the Naugatuck Valley Region was invited to participate in the development of this plan to improve transportation within their individual town or city. The objective was to identify each municipality's concerns and then piece these together to present an overall regional safety plan. The insight and cooperation of each municipality and NVCOG were imperative to the success of this initiative.

The data gathered and used for this study represents crashes that occurred on both local and State roads. In many cases, numerous crashes occurred on State roads, most likely due to higher traffic volumes. All roads, except limited access highways, were included in the study. According to the State, each municipality is responsible for improvements on local roads, but local officials cannot make any physical changes or improvements to any State road without an encroachment permit from the State.

4. RTSP Planning Process

Beginning in 2017, Federal regulation mandates that states set five performance targets each year:

1. **Number of Fatalities**
2. **Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)**
3. **Number of Serious Injuries**
4. **Rate of Serious Injuries per 100 Million VMT**
5. **Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries (combined total)**

The crash statistics are evaluated on a five-year average. The Naugatuck Valley Regional Transportation Safety Plan will also look at these same performance metrics and establish the region's target objectives in congruence with the State's plan. This includes a 15% reduction in the number of fatalities and serious injuries on all public roads in the region by 2025. In order to obtain this goal, the RTSP includes estimated completion time (short, medium, and long), possible costs, and funding sources.

The Naugatuck Valley Regional Transportation Safety Plan process had a regional study and 19 municipal studies. The regional overview was a data-driven analysis of the top crash locations, which included a listing of possible countermeasures, and the selection of emphasis areas and strategies to reduce fatal and injury crashes. The municipal studies included data-driven crash locations and stakeholder input to reduce fatal and injury crashes in each municipality. Combining the data-driven analysis with stakeholder input provided for a more comprehensive regional transportation safety plan.

Wolcott Street, Waterbury

The municipal reports are in the appendices, but since they were completed prior to the regional analysis, their methodology is included first in this plan. More information on the regional analysis and methodology is found in Section Five.

The methodology for the municipal reports began with the collection of fatal and injury crash data from the period of January 1, 2015 to December 31, 2018. The data was collected from the University of Connecticut's Crash Data Repository website, specifically excluding limited access highways. The crash data studied in this report consisted of only fatal and injury crashes, after the removal of property damage only (PDO) crashes. PDO crashes were not included in this study because they were not included in the CT SHSP.

The extracted crash data was imported into the mapping program ArcGIS to create 19 individual fatal and injury crash maps, one for each Naugatuck Valley Region municipality. High frequency crash locations were identified and if an intersection or segment of roadway had a cluster of crashes, it was highlighted on the maps. Additional crash locations were identified by municipal representatives due to potential safety concerns or due to historic site-specific safety issues not reflected in the four years of data analyzed. These were not added to the maps, but the locations were included in the municipal reports in the Town Input sections.

Crash locations and corresponding severities were presented at each of the municipal meetings with chief elected officials, EMS, law enforcement agents, public works directors, and other municipal stakeholders. These meetings were an opportunity to receive municipal input into the crash locations and to get feedback on contributing factors. The input from municipal representatives influenced the development of countermeasure recommendations for the municipal reports.

The municipal reports include the meeting summary in the municipal input section. In addition, two field reviews were completed based on the priority locations of the municipal representatives . A summary of the field review and images taken are included in the Field Site Inventory section of the municipal reports. Countermeasure tables are also included at the end of each municipal report to suggest safety improvements that could be considered in each of the Region's member town or city.

The top crash locations in the region were also identified and the top 50 were further analyzed to identify contributing factors and possible countermeasures. For a more detailed description of this process, please see the Top Motorized Crash Locations in the Naugatuck Valley Region's Top Crash Locations section of this report found on page 12.

Source: VN Engineers

5. Top Regional Crash Locations

5.1 Methodology for Identifying Top Crash Locations in the Region

Overview

This report identifies the top crash intersections and corridors in the Region using the Equivalent Property Damage Only (EPDO) methodology built into the Connecticut Roadway Safety Management System. This method is based on the EPDO crash costs that were developed using Federal Highway Administration's (FHWA) national guidance. The EPDO method calculates a combined frequency and severity score for each site by assigning weighting factors to crashes by crash severity and monetary consequences. The weighting factors are based on the costs of property damage only crashes, and the calculated score accounts for the severity of crashes and the expected crash costs for each site. The weighting factors used in this study are estimated by the Federal Highway Administration (FHWA) and documented in the "Safety Analyst User Manual" based on the mean comprehensive monetary costs for each severity level.

EPDO Methodology

The EPDO network screening analysis was conducted according to the following steps in a GIS and tabular format.
The comprehensive monetary costs are as follows After applying an adjustment factor for Connecticut, each crash was assigned the following overall cost:

- **K (fatal)**: $5,800,000
- **A (suspected serious injury)**: $402,000
- **B (suspected minor injury)**: $80,000
- **C (possible injury)**: $42,000
- **O (no apparent injury)**: $4,000

The ratio of these combined direct and indirect crash-related costs provided the weights for each maximum severity associated with each crash:

- **K**: 1450
- **A**: 100
- **B**: 20
- **C**: 10
- **PDO**: 1

EPDO ADJUSTMENT FACTORS
FATAL=1450
SUSPECTED SERIOUS INJURY=100
SUSPECTED MINOR INJURY=20
POSSIBLE INJURY=10
NO APPARENT INJURY=1

Roads were segmented in GIS to break each centerline at each intersection. Crashes were joined to the road centerline network using a GIS spatial join. The maximum search radius was 100 feet for segments and 250 feet for intersections. If a crash occurred within 100 feet of more than one road centerline, it was joined to all centerlines within 100 feet.

Note: More complex methodologies join each crash to a single centerline; however, this is typically the result of exhaustive crash accuracy analysis and the error associated with multiple joins is addressed later in the methodology.

The associated weights for each joined crash were summed for each centerline segment and intersection. Segments were then ranked according to their summed EPDO weights divided by the mile length of the segment.

Note: More complex analyses segment the road network according to a uniform length (e.g., 0.1 miles). This accounts for bias associated with segments of differing length. The EPDO per mile method attempts to address this bias and provide a rough estimate for planning-level purposes.

The top 20% of scored segments were selected for further review; individual segments were aggregated by route or street name to develop contiguous individual sites. Any segment less than 0.02 miles long (approximately 100 feet) was not included in the analysis. Final corridors had to be at least 0.1 miles long and have at least 3 total crashes.

Final cuts were made to the ranked list of sites based on these criteria: ramps and interstates were removed and top ranked corridors and intersections were inspected visually to determine if there were overlapping sites. If intersections overlapped with a corridor(s), then the analyst determined if the high crash location was the result of the single intersection issue or the corridor as a whole. The top crash locations are divided into intersections (Table 5.2) and corridors (Table 5.3) and ranked based on EPDO.

Note: The final EPDO score should not be used as an objective standard. This observed crash-based analysis is subject to regression-to-the-mean[1] and should only be used as a relative metric for sites during the specific analysis period.

The top non-motorized crash locations were selected and ranked based on the same methodology. The non-motorized crash countermeasures were selected based on the Connecticut Uniform Police Crash Reports and a desktop review of the applicable locations.

1 Regression to the Mean
When identifying potential safety issues, the analyst must be aware of the statistical phenomenon of regression to the mean (RTM). RTM describes a situation in which crash rates are artificially high during the before period and would have been reduced even without an improvement to the site. Programs focused on high-hazard locations, such as the HSIP, are vulnerable to the RTM bias which is perhaps the most important cause of erroneous conclusions in highway-related evaluations. This threat is greatest when sites are chosen because of their extreme value (e.g., high number of crashes or crash rate) in a given time period.

KABCO SEVERITY RANKINGS

Severity	Crash Cost	EPDO Score
K-Fatal	$5,800,000	1450
A-Suspected Serious Injury	$402,000	100
B-Suspected Minor Injury	$80,000	20
C-Possible Injury	$42,000	10

2015-2018
TOTAL CRASH AND FATAL INJURIES BY TOWN

Municipality	Bike and Pedestrian Fatal and Injury Crashes	Motorized Fatal and Injury Crashes
Ansonia	20	340
Beacon Falls	3	50
Bethlehem	2	33
Bristol	102	1,633
Cheshire	46	459
Derby	24	311
Middlebury	7	236
Naugatuck	38	386
Oxford	2	179
Plymouth	4	260
Prospect	4	203
Seymour	7	269
Shelton	26	660
Southbury	8	266
Thomaston	2	165
Waterbury	435	4,920
Watertown	8	418
Wolcott	7	299
Woodbury	6	148
Total in NVCOG	**751**	**11,235**

5.2 Top Motorized Crash Locations with Countermeasures, 2015-2018

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Bethlehem	CT-61 (Main St S) from The Green to True Value Access	9	1,055	Speeding	Install dynamic speed feedback signs.	Low
Bristol	CT-72 (Pine St) from Lois St to Emmett St	37	4,238	Driveway access	Restrict Valero gas station to right-in, right-out access using flexible posts on centerline of Pine St.	Low
Bristol	N Main St from Bristol Fire Department to Bristol City Hall	25	2,550	Speeding	Install raised crosswalk at current crosswalk and/or chokers at other locations on segment.	Low-Medium
Bristol	CT-229 (Middle St) from Pine Brook Ter to Enterprise Dr	11	2,495	Speeding	Install dynamic speed feedback signs.	Low
Bristol	Stafford Ave from Bel Air Dr to Jewel St	4	2,150	Speeding	Install dynamic speed feedback signs.	Low
Bristol	CT-229 (Middle St) from CT-72 (Memorial Blvd) to Pine St	66	2,471	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Install left turn lane for access to gas stations or restrict access to right-in, right-out.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at all signals.	Low-Medium
Bristol	Pine St and CT-229 (Middle St)	58	1,158	Access management	Restrict access to right-in, right-out from gas station and coffee shop.	Low
Bristol	Pound St and CT-69 (West St)/Cemetery Ave	3	1,025	Rear-end crashes	Reduce the size of the West St and Pound St intersection and create a 90-degree angle intersection using flexible posts and paint.	Low-Medium
Cheshire	CT-68 (Yalesville Rd) from CT-68/70 (S Meriden Rd) to Prinz Ct	3	1,578	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Derby	CT-34 (New Haven Ave) from Chapel St to Ashwood Ter	30	1,185	Speeding	Install dynamic speed feedback signs.	Low
Oxford	CT-67 (Seymour Southbury Rd) from Great Hill Rd to Mountain Rd	29	969	Speeding	Install dynamic speed feedback signs.	Low
				Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
Prospect	CT-68 (Union City Rd) from Cedar Hill Dr/Dorothy Ave to Laura Ave	5	2,302	Speeding	Install dynamic speed feedback signs.	Low
Prospect	CT-69 (Waterbury Rd) from Murphy Rd to Greenwood Dr	5	2,831	Speeding	Install dynamic speed feedback signs.	Low
				Intersection-related crashes	Install intersection ahead signs for Murphy Rd and Greenwood Dr.	Low
Seymour	CT-67 (Bank St) from Martha St to Franklin St	9	1,575	Access management	Prohibit left turns out of driveway from 98 CT-67 (Bank St).	Low
Shelton	CT-110 (Howe Ave) from Hill St to Wharf St	16	2,565	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Install left turn lane for access to gas station.	Low
Southbury	US-6 (Main St N) from Old Field Hill Rd to Old Field Rd	10	1,046	Speeding	Install dynamic speed feedback signs.	Low.
Waterbury	Wolcott St from Niagara St to Lydia St	4	4,114	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	CT-69 (Prospect Rd) from Glen Rock Rd to Bateswood Rd	4	2,771	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	E Main St from Niagara St to Hamilton Park Rd/ Silver St	23	1,950	Speeding	Install dynamic speed feedback signs.	Low
				Pedestrian safety	Install high-visibility crosswalk with curb extensions at Silver St.	Low-Medium
					Remove street parking in conjunction with crosswalk curb extensions and relocate bus stops.	Medium
Waterbury	Captain Neville Dr from Austin Rd to 0.08 mi W of Progress Ln	4	1,828	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	E Main St from Wall St to Wolcott St	16	1,817	Angle crashes	Install lane designation pavement marking for E Main NB approach.	Low
				Pedestrian safety	Install high-visibility crosswalk with curb extensions at Rutledge St.	Low-Medium
					Remove street parking in conjunction with crosswalk curb extensions.	Medium
Waterbury	Wolcott St and Bouley Ave/Dallas Ave	5	1,775	Speeding	Install dynamic speed feedback signs.	Low
					Reduce speed limit and apply infrastructure changes that match the reduced speed limit.	Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	Spring Lake Rd from Jersey St to Naugatuck town line	4	1,523	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	CT-847 (Thomaston Ave) from CT-262 (Spruce Brook Rd) to Seidel Aluminum Access	5	1,086	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install dynamic speed feedback signs.	Low
Waterbury	CT-69 (Union St) and Silver St Expy	8	1,125	Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
					Install warning sign with flashers indicating "Be Prepared to Stop" for eastbound Washington St.	

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Scott Rd from Stonefield Dr to Hart Cir	9	4,613	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
Waterbury	Baldwin St from Scovill St to I-84 (Yankee Expy)/ McMahon St	19	3,457	Front to rear crashes	Install traffic signal retroreflective backplates at all signals.	Low-Medium
				Skidding on bridge	Install high friction surface treatment.	Low
				Front to rear crashes	Install advance warning signs with 12" flash-ers to warn of signal ahead at Baldwin St/ Scovill St.	Low-Medium
Waterbury	CT-846 (W Main St) from Naugatuck River to Thom-aston Ave	63	1,056	Front to rear crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	CT-846 (Watertown Ave) from Carter Ave to 0.05 mi N of Robbins St	5	1,454	Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Wolcott St from Dallas Ave to Maher Ave	7	1,125	Speeding	Install dynamic speed feedback signs.	Low
				Driveway density	Work with property owners to reduce the number of driveways.	High
				Road diet	Reduce number of through lanes to one in each direction and provide two-way left turn lane.	Low-Medium
Waterbury	Manor Ave from Wacona Ave to CT-69 (Meriden Rd)	15	5,464	Driveway density	Work with property owners to reduce the number of driveways.	High
Waterbury	Wolcott St from Harper Ave to Bouley Ave	14	3,331	Speeding	Install dynamic speed feedback signs.	Low
				Driveway density	Work with property owners to reduce the number of driveways.	High
				Turning conflicts	Reduce number of through lanes to one in each direction and provide two-way left turn lane.	Low-Medium
Waterbury	Perkins Ave from Cooke St to Judith Ln	25	967	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Cooke St from Faber Ave to Nottingham Ter	3	18,150	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Pedestrian safety	Relocate crosswalk from Faber Ave to Nottingham Ter adjacent to bus stops and install high-visibility crosswalk.	Low-Medium
Waterbury	Long Hill Rd from Division St/Drake St to Birch St	4	9,200	Speeds on downhill grade	Install dynamic speed feedback signs.	Low
					Install downgrade warning signs.	Low
				Curve of Long Hill Rd at Division St/Drake St	Install advance warning signs with 12" flashers to warn of skewed intersection.	Low-Medium
Waterbury	Bronson St from Cooke St to Pearl St	6	9,094	Turning speeds from Cooke St	Install flexible yellow centerline posts on Cooke St to slow left turns from Cooke St on to Bronson St.	Low
				Parked vehicles near intersection	Restrict parking on Bronson St within 100 ft of Cooke St.	Low
Waterbury	Baldwin St from Galivan St to E Liberty St	10	7,765	Speeding	Install dynamic speed feedback signs.	Low
				Parked vehicles near intersection	Install curb extensions at each of Galivan St and E Liberty St to provide improved pedestrian crossing amenities and prohibit parking at intersections.	Low-Medium
Waterbury	Cooke St from Gordon St to Hawley St	7	7,280	Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Hill St from Lannen St/ Hotchkiss St to Hillview Ave	3	7,260	Pedestrian safety	Install high-visibility crosswalk at Hillview Ave in proximity to bus stops.	Low-Medium
				Speeding	Install dynamic speed feedback signs.	Low
Waterbury	Cooke St from Kaytonne Ave to McDonald Ave	3	6,125	Speeding	Install dynamic speed feedback signs.	Low

Top Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	CRASHES	EPDO	ISSUE	COUNTERMEASURE	COST
Waterbury	Lakewood Rd and Grilleytown Rd	8	1,120	Speeding	Install dynamic speed feedback signs.	Low
				Lane departure crashes	Install high friction surface treatment.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at signal.	Low-Medium
Waterbury	CT-73 (Watertown Ave) from Waterbury Municipal Stadium Parking to Irvington Ave	16	2,362	Speeding	Install dynamic speed feedback signs.	Low
				Access management	Reconfigure stadium parking lot to provide only one access point with a signalized intersection at Media Ave.	High
Waterbury	Frost Rd from Joseph St to Selah St	14	2,049	Speeding	Install dynamic speed feedback signs.	Low
					Install speed humps.	Low-Medium
Waterbury	Hill St and Inman Ave/ Platt St	3	1,000	Speeding	Install dynamic speed feedback signs for southbound Hill St.	Low
				Angle crashes	Install flexible posts for centerline of Hill St to guide turns from Platt St.	Low
Waterbury	E Main St from Wolcott St to Orchard St	55	996	Speeding	Install dynamic speed feedback signs.	Low
					Apply infrastructure changes that match the signed speed limit.	Medium
Waterbury	Wolcott St from Maher Ave to Wesco Rd	72	1,383	Speeding	Install dynamic speed feedback signs.	Low
				High turning movements	Install alternating center turn lanes and /or center medians.	Medium
				Driveway density	Work with property owners to reduce the number of driveways.	High
Watertown	CT-63 (Main St) from Heminway Park Rd to Depot St	18	4,101	Speeding	Install dynamic speed feedback signs.	Low
				Rear-end crashes	Install traffic signal retroreflective backplates at Echo Lake Rd signal.	Low-Medium
Wolcott	CT-69 (Wolcott Rd) from Tosun Rd to Old Connecticut 69 (South)	7	1,752	Speeding	Install dynamic speed feedback signs.	Low

5.3 Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Ansonia	CT-727 (Pershing Dr) from Division St to 16 north of Division St	2 Pedestrians	One of the pedestrians was hit midblock. The other pedestrian crossed at the signalized intersection against the Do Not Walk cue. Four-lane wide cross-section on CT-727 in commercial area with high number of curb cuts. Crosswalks on northern and eastern leg of intersection.	Increase northbound pedestrian and bike visibility from driveway to the intersection of CT-727 (Pershing Dr) at Division St. Check signal timing and ensure pedestrian signals are working.	Watch for Me CT Campaign
Ansonia	CT-115 (N Main St) from 3rd St to 5th St	2 Pedestrians	One pedestrian was substance-impaired. Both pedestrians were hit crossing midblock. For northbound CT-115 motorists, there is no signage or indication that there is a transition to a more populated area.	Install signage or gateway treatment to alert drivers that they are approaching populated area.	Watch for Me CT Campaign
Ansonia	CT-115 (Main St) and W Main St	2 Pedestrians	Both pedestrians were struck by westbound W Main St/parking lot left-turning traffic onto southbound CT-115 (Main St) at a marked crosswalk and sustained suspected minor injuries. Wide intersection. Large turning radii on West Main St possibly for truck access.	Enhance crosswalks. Add yield to pedestrians in crosswalk on the signal span wires if feasible.	Watch for Me CT Campaign
Bristol	CT-72 (Pine St) from Lois St to Emmett St	2 Pedestrians 1 Bicyclist (1 Fatal)	All three crashes were west of the CT-72 (Pine St) intersection with Emmett St. Wide cross-section. Dark conditions and substance impairment were contributing factors.	Enhance crosswalks at the CT-72 (Pine St) intersection with Emmett St. Investigate roadway illumination. Road diet.	Watch for Me CT Campaign Drive Sober Campaign
Bristol	N Main St from Bristol Fire Department to City Hall	2 Pedestrians (1 Fatal)	Walking with traffic and dark-not lighted condition. Faded pavement markings. Travel lane widths are too wide.	Enhance crosswalks, Narrow travel lanes. Repaint and restripe crosswalks and add traffic calming medians, etc.	Watch for Me CT Campaign
Bristol	US-6 (Farmington Ave) and Jerome Ave	1 Pedestrian (Fatal)	Pedestrian hit while crossing westbound US-6 (Farmington Ave) at Jerome Ave in a marked crosswalk. Dark-lighted conditions. Pedestrian was substance-impaired, wide cross-section on US-6.	Enhance crosswalks at the CT-6 (Farmington Ave) intersection with Jerome Ave. Investigate roadway illumination.	Watch for Me CT Campaign
Bristol	Prospect St from Queen St to Munchausen Ave.	1 Pedestrian 1 Bicyclist	The bicyclist was hit in roadway riding against traffic. The pedestrian was hit crossing Prospect St midblock. Residential road with no edge lines. Vertical curvature could contribute to speeding.	Bike and pedestrian warning signs. Traffic calming on Prospect St. Stripe edgelines. Speed tables.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Bristol	Prospect St from Queen St to Munchausen Ave	1Pedestrian 1 Bicyclist	The bicyclist was hit riding against traffic. The young pedestrian was hit crossing Prospect St mid-block. Residential road with no edge lines. Vertical curvature could contribute to speeding.	Watch for children sign. Bike and pedestrian warning signs. Traffic calming on Prospect St. Stripe edgelines. Speed tables. Dynamic speed feedback signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Bristol	US-6 (North Street) from Hungerford Alley to CT-69 (Burlington Ave)	3 Pedestrians	One pedestrian was hit at an intersection-marked crosswalk by car making left. Two were hit at mid-block unmarked crossings. Skewed wide intersection at US-6 and CT-69. This intersection is adjacent to active railroad tracks.	Tighten up and realign intersection. Traffic signal retroreflective-backplates. Dynamic speed feedback for westbound US-6.	Watch for Me CT Campaign
Bristol	CT-229 (King St) and Woodland St No. 1	2 Bicyclists	One bicyclist hit under dark not lighted-conditions, one hit riding against traffic on CT-229.	Sharrows on CT-229 and Woodland St. Dynamic speed feedback signs on CT-229. Investigate illumination.	Watch for Me CT Campaign Share the Road Promote Traffic Skills 101 Course
Bristol	US-6 (Farmington Ave) and Columbus Ave	2 Pedestrians	Both pedestrians were hit by southbound parking lot left-turning traffic onto eastbound US-6 (Farmington Ave) at a marked crosswalk. High number of curb cuts. Faded crosswalks. No pedestrian signal. Four lane cross-section on US-6.	Repaint all crosswalks at intersection. Add countdown pedestrian signals. Reduce number of curb cuts or install a pedestrian hybrid beacon (PHB)	Watch for Me CT Campaign
Bristol	CT-229 (King St/ Middle St) and CT-72 (Riverside Ave)	1 Pedestrian	The pedestrian was struck by southbound CT-229 (King St) left-turning traffic onto eastbound CT-72 (Riverside Ave) at a marked crosswalk and sustained possible injuries. The pedestrian was not visible (dark clothing, no lighting, etc.).	Repaint crosswalk at the east approach of CT-72 (Riverside Ave) as high-visibility. Investigate illumination.	Watch for Me CT Campaign
Bristol	CT-69 (West St) and Laurel St	1 Pedestrian	Pedestrian sustained suspected minor injuries crossing at an unmarked crosswalk across Laurel Street while not visible (dark clothing, dark-not lighted etc.).	Ensure existing roadway illumination is in operation and is sufficient. Restripe crosswalk on Laurel St.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Cheshire	CT-10 (S Main St) from Brentwood Dr to Mansion Rd	1 Pedestrian (Fatal) 1 Bicyclist	Bicyclist hit when car didn't yield right of way. Pedestrian was hit crossing CT-10 (S Main St) in dark-lighted conditions mid-block.	Sharrows. Pedestrian warning signs. Dynamic speed feedback signs.	Watch for Me CT Campaign Enforcement
Cheshire	Sandbank Rd (MP 0.00 to 0.18)	2 Bicyclists	Both bicyclists were hit crossing Sandbank Rd on the linear trail.	As this is already a raised crosswalk, explore the application of making Linear Trail crosswalk at Sandbank Rd higher visibility. Add transverse rumble strips on Sandbank Road on the approaches to trail crossing.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Cheshire	CT-70 (W Main St) from Carter Ln to Robin Ln	1 Pedestrian 1 Bicyclist	One bicyclist hit while cycling along the roadway with traffic when crossing a driveway. No crosswalks on side streets.	Stripe crosswalk on Ives Row. Pedestrian and bicyclist warning signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Cheshire	CT-68 (W Main St) and Cherry St	1 Pedestrian	Pedestrian hit crossing Cherry St in crosswalk.	Restripe crosswalk on Cherry St.	Watch for Me CT Campaign
Cheshire	CT-10 (S Main St) from Elmwood Dr to Chipman Dr	1 Pedestrian 1 Bicyclist	One pedestrian hit during incident response. One bicyclist hit riding on sidewalk in driveway entrance.	Narrow travel lanes and widen shoulder. Pedestrian and bike warning signs.	Watch for Me CT Campaign Promote Traffic Skills 101 Course Traffic Incident Management
Cheshire	CT-10 (S Main St) and Higgins Rd	2 Bicyclists	Both bicyclists were struck crossing the Higgins Rd crosswalk at CT-10.	Narrow travel lanes and widen shoulder. Pedestrian and bike warning signs. Manage vegetation. Bump outs on Higgins Rd.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Derby	CT-34 (Main St) at CT-712 (Bridge St)	2 Pedestrians	Both pedestrians hit in marked crosswalks by turning vehicles. Wide cross-sections. No Turn on Red sign for CT-34 EB.	Repaint existing crosswalks. Add crosswalk to Olivia St. Realign the intersection of Olivia St to improve sight distance and reduce crossing distances.	Watch for Me CT Campaign Enforce No Turn on Red
Naugatuck	CT-63 (New Haven Rd) and Cross St	2 Pedestrians	Both pedestrians hit in roadway shoulder (no sidewalk) Both under dark conditions.	Evaluate the need for widening the buffered shoulder along eastbound CT-63 (New Haven Rd). Investigate illumination. Pedestrian warning signs.	Watch for Me CT Campaign
Naugatuck	CT-68 (Bridge St) and Spring St	2 Pedestrians	Both pedestrians hit by cars at the intersection. One pedestrian did not have right of way. There are no pedestrian signals or crosswalk on the northern leg of CT-68, maybe due to misaligned curbs. No Turn on Red signs on all approaches except the Plaza Exit on southside.	Restripe crosswalks.	Watch for Me CT Campaign Enforce No Turn on Red
Naugatuck	CT-63 (Meadow St) and Division St	2 Pedestrians 1 Bicyclist	The bicyclist was struck front-to-rear by a southbound CT-63 (Meadow St) left-turning vehicle while traveling northbound on CT-63 (Meadow St). Two pedestrians hit while crossing CT-63 (Meadow St) at a marked crosswalk. Salem Elementary School and several churches are in intersection vicinity.	Traffic signal retroreflective backplates.	Watch for Me CT Campaign
Shelton	CT-108 (Coram Ave) from White St to Center St	5 Pedestrians	Four pedestrians hit crossing at a non-intersection and one in a marked crosswalk. Vertical curvature on CT-108. No edgelines.	Repaint existing CT-108 (Coram Ave) crosswalk at the municipal/US Postal Service parking lots as high-visibility and at the intersection with Center St. Stripe edgelines on CT-108-to narrow lanes to 11'. Investigate additional signage.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Shelton	CT-110 (Howe Ave) from White St to Center St	2 Pedestrians 1 Bicyclist	All crashes under dark-lighted conditions. One vehicle ran a red light and struck pedestrian.	Traffic signal retroreflective backplates. Investigate roadway illumination on CT-110, especially at intersections.	Watch for Me CT Campaign
Shelton	CT-110 (Howe Ave) and CT-108 (Center St)	2 Pedestrians	Both pedestrians hit under dark conditions crossing CT-110, one was in a crosswalk and one was not.	Investigate roadway illumination at crosswalks. Traffic signal retroreflective backplates. Curb extensions.	Watch for Me CT Campaign
Southbury	US-6 (Main St N) and Heritage Rd	1 Pedestrian	Substance-impaired pedestrian under dark conditions hit in unmarked crosswalk.	Stripe high-visibility crosswalk on Heritage Rd and across US-6 on southern leg.	Watch for Me CT Campaign
Waterbury	E Main St from Niagara St to Hamilton Park Rd	3 Pedestrians	Crashes both in daylight and under dark-lighted conditions. Faded pavement markings, no edgelines. Wide crossing on Niagara St.	Stripe Edgelines and on-street parking lines. Add bump outs across E Main St. Reconfigure Niagara St and Silver St at East Main St.	Watch for Me CT Campaign
Waterbury	E Main St from Wolcott St to Orchard St	3 Pedestrians (1 Fatal)	Three pedestrian crashes occurred along this segment, one in daylight and two under dark-lighted, wet conditions. Mid block crossing crash, Motorist struck pedestrian on sidewalk. Low curb reveal Sidewalks in poor condition.	Raise the curb on East Main St. Restripe crosswalks. RRFB at mid-block by YMCA.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	Willow St from Plaza Ave to Tower Rd	2 Pedestrians	Two pedestrians were hit one in daylight and one dart/dash crash in dark-lighted conditions. Vertical curvature and no edgelines.	Stripe edgelines and on-street parking markings. Investigate roadway illumination and adequate signage.	Watch for Me CT Campaign Enforcement
Waterbury	Frost Rd from Rockridge Rd to to CT-844 (Meriden Rd)	3 Pedestrians	Two of the three crashes involved dark-lighted conditions, while the other was dark-not lighted. Jaywalking. No edgelines, retail on both sides of roadway.	Stripe edgelines. Enhance crosswalks at Frost Rd and CT-844.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	Johnson St from Sperry St to Chestnut Ave	1 Pedestrian	Pedestrian walking in roadway under dark-not lighted and wet conditions. Sidewalks are in poor condition.	Improve sidewalks. Investigate roadway illumination. Traffic calming.	Watch for Me CT Campaign
Waterbury	CT-847 (S Main St) and E Liberty St	4 Pedestrians (1 Fatal)	Two car angle crash at signalized intersection resulted in one car hitting four pedestrians walking on sidewalk.	Traffic signal retroreflective backplates. Remove older utility poles at the intersection to improve sight distance.	Watch for Me CT Campaign
Waterbury	Chase Ave from Hill St to 450 feet east of Hill St	3 Pedestrians	All pedestrians hit crossing Chase Ave mid-block under dark conditions. Four lane wide cross-section. No pedestrian amenities for crossing Chase Ave in this segment.	Road Diet on Chase Ave. Investigate illumination.	Watch for Me CT Campaign
Waterbury	Baldwin St from Scovill St to E Main St	4 Pedestrians	Pedestrians were struck when crossing Baldwin St. One pedestrian jaywalked. Two were in marked crosswalks. Baldwin St does not have edge lines. Near school and retail.	Add high-visibility crosswalks and bulb outs at the Baldwin St intersection with Scovill St and Mill St. Stripe edge lines.	Watch for Me CT Campaign
Waterbury	East Main St from Baldwin St to Orange St	6 Pedestrians 1 Bicyclist	Three crashes involved motorists turning and not yielding to pedestrians in crosswalks. One pedestrian was hit outside crosswalk. Bicyclist hit crossing roadway.	Add high-visibility crosswalks and bulb outs at the East Main St intersection with Cherry St and Baldwin St. Yield to pedestrians in crosswalks signs.	Watch for Me CT Campaign
Waterbury	North Main St from West Farm St to Division St	3 Pedestrians 1 Bicyclist	All three crashes were in daylight under clear conditions. Pedestrians were hit at mid-block and at intersection. No Turn on Red sign at the North Main St and East Farm St and West Farm St intersection.	Traffic calming on North Main St. Stripe edgelines. Enhance crosswalks.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	Congress Ave from Poplar Pl to James St	1 Pedestrian 1 Bicyclist	Congress Ave has vertical and horizontal curvature. Sight distance to crosswalk on Congress Ave near where pedestrian was hit is limited by curve for northbound motorists. Roadway has faded pavement markings .	Advanced crossing signs on Congress Ave. Add speed tables on Congress Ave or raised crosswalks. Stripe edgelines for shoulder to accommodate bicyclists.	Watch for Me CT Campaign
Waterbury	Walnut St from Locust St to E Farm St	3 Pedestrians	All three crashes involved pedestrians crossing at E Farm St and Walnut St under dark conditions. West bound Walnut is not under stop control at the intersection.	Traffic calming. Realign Walnut St and East Farm St and have traffic stop in all directions (LRARP approved project). Potential roundabout. Add high-visibility crosswalks at intersection. Investigate illumination.	Watch for Me CT Campaign
Waterbury	Highland Ave from Cynthia St to Ledgeside Ave	2 Pedestrians	Two pedestrians hit crossing roadway mid-block. Highland Ave has vertical curvature which could increase speeds. There are no crosswalks or stop control on Highland Ave at these intersections.	Stripe edgelines. Dynamic speed feedback signs. Install midblock crosswalks with RRFBs.	Watch for Me CT Campaign
Waterbury	Cooke St from Avalon Circle N to Avalon Circle S	2 Pedestrians	One pedestrian cited for failure to yield right-of-way when crossing the roadway, while the other pedestrian was hit in the roadway distracted. Cooke St has vertical curvature so northbound motorists could be exceeding speed limit.	Traffic calming on Cooke St. Stripe edgelines. Dynamic speed feedback signs.	Watch for Me CT Campaign Speed enforcement.
Waterbury	East Main St from Englewood Ave to Wales St	2 Pedestrians	Both pedestrians received a verbal warning, one for wrong-way walking and the other for being in the roadway improperly.	Stripe edgelines. Restripe crosswalks. Add bump outs at crosswalks.	Watch for Me CT Campaign
Waterbury	Cherry St from Maple Ave to Walnut St	2 Pedestrians 1 Bicyclist	Poor pavement condition and no pavement markings. Pedestrians struck crossing the street mid-block and the bicyclist was hit riding with traffic.	Enhance crosswalks. Consider bike lanes.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Wolcott St) from Mattatuck Plaza Entrance to Bernie's Plaza Entrance	7 Pedestrians	The pedestrian crashes are centered around the CT-69 (Wolcott St) intersection with Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center. Crosswalks are faded. Cross-section on CT-69 is four lanes.	High-visibility crosswalks at the north and west approaches of CT-69 (Wolcott St) at Lakewood Rd, as well as at the north, east, and west approaches of CT-69 (Wolcott St) at Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center. Repaint crosswalks at the south approach of CT-69 (Wolcott St) at Lakewood Rd, as well as the south approach of CT-69 (Wolcott St) at Mattatuck Plaza Shopping Center and Naugatuck Valley Shopping Center as high-visibility. Extend sidewalk. Consider a road diet.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course
Waterbury	CT-847 (W Main St) from the Metro North Overpass to Judd St	4 Pedestrians (1 fatal) 2 Bicyclist (1fatal)	Two fatal crashes in this section of CT-847. There is a mid-block crossing with a pedestrian crossing sign. Westbound CT-847 is 25 feet wide with only one indicated travel lane. There are no edge lines.	Raise the mid-block crossing or install a PHB. Stripe two westbound lanes or add bike lane. Road diet.	Watch for Me CT Campaign/Promote Traffic Skills 101 Course
Waterbury	CT-846 (W Main St) from Naugatuck River to CT-847 (Thomaston Ave)	2 Pedestrians	Pedestrians sustained suspected minor injuries, but received verbal warnings. One pedestrian was crossing the roadway and the other was in the roadway improperly. The Thomaston Ave and West Main Street intersection has faded crosswalks with wide cross-sections.	Restripe crosswalks. Consider extending island on Thomaston Ave to provide pedestrian refuge. Possible road diet on CT-846.	Watch for Me CT Campaign
Waterbury	E Main St from Exchange Pl to Phoenix Ave	3 Pedestrians	All pedestrians were hit crossing the street at intersections. The Exchange Pl and E Main St intersection is wide.	Add bump outs to shorten crossings. Restripe crosswalk. Revise pedestrian interval at signal.	Watch for Me CT Campaign Enforce turning violations at the signal.

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-847 (W Main St/ Meadow St) from Judd St to Brown Pl	2 Pedestrians	Both pedestrians were hit crossing roadway, one at a marked crosswalk and the other mid-block. Intersection of CT-847 and Willow Street is a wide skewed intersection.	Bulb outs to shorten crossing at CT-847 and Willow St. Traffic signal retroreflective backplates. Restripe roadway and edge lines.	Watch for Me CT Campaign
Waterbury	CT-847 (S Main St) from Union St to McMahon St	4 Pedestrians 1 Bicyclist	Three pedestrians were hit crossing the Our Lady of Lourdes church parking lot while on the sidewalk. One pedestrian struck crossing roadway mid-block. The bicyclist hit at signalized intersection.	Stripe edgelines on CT-847.	Watch for Me CT Campaign Promote Traffic Skills 101 Course. Share the Road
Waterbury	E Main St from Brook St to 350 feet east of Brook St	3 Pedestrians	Two crashes at mid-block-marked crosswalks.	Repaint and elevate existing mid-block crosswalks on E Main St as high-visibility.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-69 (Meriden Rd) from Eastwood Ave to Hungerford Ave	4 Pedestrians	Two pedestrians were hit at intersection. Two were hit mid-block. Crosswalks are faded.	Restripe crosswalks. Add crosswalk on Manor Ave. Dynamic speed feedback sign.	Watch for Me CT Campaign
Waterbury	N Main St from City Mills Ln to Winchester St	1 Pedestrian 1 Bicyclist	The bicyclist was hit while cycling with traffic in the travel lane and the pedestrian was hit while walking adjacent to a parking lot.	Stripe edge lines on North Main St.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	Bunker Hill Ave from Farnham Ave to Tremont St	2 Pedestrians	These two crashes involved entering or exiting parked or standing vehicles in the vicinity of Bunker Hill School.	Add a buffered shoulder along northbound Bunker Hill Ave for protection of pedestrians in front of Bunker Hill School. Add flashing beacons to school zone warning signs. Stripe edgelines. Consider speed tables.	Watch for Me CT Campaign Enforcement during school arrival and dismissal hours

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-846 (Watertown Ave) from Aurora St to Edwin Ave.	3 Pedestrians	One crash involved two pedestrians reportedly hit on side of roadway. However with the very low to zero curb reveal, they could have been on sidewalk when hit. The other pedestrian was hit while crossing at an unmarked mid-block location.	Stripe edgelines. Replace crumbling sidewalks and curbing.	Watch for Me CT Campaign
Waterbury	S. Elm St from E. Clay St to Union St.	3 Pedestrians	Two pedestrians struck crossing in crosswalk at Union St next to hospital. Rainy conditions. One crossing mid-block. Next to St Mary's Hospital and Sacred Heart High School.	Curb extension at Union St and S Elm St intersection. Stripe edgelines.	Watch for Me CT Campaign
Waterbury	CT-847 (Thomaston Ave) from 200 ft north of CT-846 (W Main St) to 1400 ft north of CT-846 (W Main St)	2 Pedestrians	Both pedestrians struck crossing mid-block. Thomaston Ave has high number of curb cuts and sidewalks are in poor condition. Crosswalks at CT-847 and CT-846 are wide and faded.	Realign the intersection of CT-847 and CT-846. Enhance crosswalk and add pedestrian refuge island at CT-847 and CT-846.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-845 (Chase Pkwy) from W Main St to I-84 EB Ramp	2 Pedestrians	Both pedestrians struck crossing driveways on CT-845. Near various schools.	Explore application of high-visibility crosswalks across Old Colony Dr.	Watch for Me CT Campaign Promote Traffic Skills 101 Course
Waterbury	CT-847 (Grand St) and Bank St	1 Pedestrian 1 Bicyclist	Bike and pedestrians all struck crossing at marked crosswalk. Bank St crossings are wide.	Add curb extensions on Bank St.	Watch for Me CT Campaign
Waterbury	CT-69 (Hamilton Ave) and Edgewood Ave	1 Pedestrian	Pedestrian hit crossing at signalized T-intersection. There are no crosswalks or pedestrian signals. On a slope so speed could be contributing factor.	Strip high-visibility crosswalks on all legs of intersection. Traffic signal retroreflective backplates.	Watch for Me CT Campaign
Waterbury	CT-847 (Thomaston Ave) and Huntington Ave	3 Pedestrians	Both pedestrians were struck at the marked crosswalk and one was hit mid-block.	Repaint crosswalks at intersection as high-visibility.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Wolcott St) from Maher Ave to Wesco Rd	2 Pedestrians 1 Bicyclist	One pedestrian struck in crosswalk, the other pedestrian and bicyclist were hit mid-block. This is a highly commercial area with four lane cross-section and high number of curb cuts. There are no edgelines. This is a bus route.	Repaint existing Wolcott St crosswalks at the Waterbury Plaza Shopping Center as high-visibility. Paint edgelines. Traffic signal retroreflective backplates. Investigate road diet.	Watch for Me CT Campaign
Waterbury	CT-69 (Wolcott St) from Long Hill Rd to Stillson Rd	5 Pedestrians 1 Bicyclist	Various factors: vehicle failing to obey traffic signs and signals,traffic incident management crash, one substance-impaired crash. Wide cross-sections, faded pavement markings.	Traffic signal retroreflective backplates. Repaint and enhance the crosswalks. Investigate road diet.	Watch for Me CT Campaign
Waterbury	East Main St from Wall St to Rutledge St	7 Pedestrians 1 Bicyclist	Pedestrians hit crossing roadway not in crosswalk. One pedestrian hit in marked crosswalk. Bicyclist failed to yield right-of-way to vehicle.	High-visibility mid-block crosswalk at the east approach of East Main St at Wall St with RRFBs. Add high-visibility crosswalk across Wall St. Repaint crosswalk at the west approach of East Main St as high-visibility. Stripe edgelines. Add bump outs on East Main St.	Watch for Me CT Campaign
Waterbury	E Farm St from Walnut St to N Walnut St	3 Pedestrians 1 Bicyclist	Dark-not lighted conditions, substance-impaired and the other pedestrian involved in a dart/dash crash. Jaywalking. No edgelines, retail on both sides of roadway. The bicyclist was hit at driveway access point.	Stripe edgelines. Evaluate roadway/lane configuration, similar to the Walnut St segment. Add roadway illumination. Install bump outs. Consider some raised speed tables near churches.	Watch for Me CT Campaign
Waterbury	CT-69 (Silver St Expy/ Meriden Rd) and E Main St	4 Pedestrians	Pedestrians struck at signalized intersection in crosswalks. One pedestrian hit mid-block. Wide crossing distances on CT-69 and E Main St. Vertical curvature.	Curb extensions where feasible. Restripe high-visibility crosswalks.	Watch for Me CT Campaign

Top Non-Motorized Crash Locations with Countermeasures, 2015-2018

MUNICIPALITY	LOCATION	PERSON TYPE	ISSUES	INFRASTRUCTURE COUNTERMEASURES	NON-INFRASTRUCTURE COUNTERMEASURES
Waterbury	CT-69 (Meriden Rd) and Manor Ave	3 Pedestrians	One pedestrian hit at mid-block location. Two hit at marked intersection with crosswalks.	Explore application of high-visibility crosswalk across Manor Ave at CT-69 (Meriden Rd) and enhance crosswalk on CT-69. Curb extension on Meriden Road.	Watch for Me CT Campaign
Waterbury	CT-69 (Wolcott St) and Lakewood Rd	3 Pedestrians	Two pedestrians hit under dark conditions, one at unmarked crossing near intersection and one was hit in crosswalk. The crosswalk on Wolcott St is very wide. There are no sidewalks, but worn dirt paths indicate pedestrian activity.	Explore application of high-visibility crosswalk on the three legs of the intersection. Investigate illumination.	Watch for Me CT Campaign
Waterbury	CT-847 (Willow St/ Meadow St) at West Main St No 2	3 Pedestrians	One pedestrian hit in marked crosswalk. Two pedestrians hit mid-block. Five legged intersection.	Install traffic signal retroreflective backplates. Restripe crosswalks as high-visibility at the intersection. Consider roundabout.	Watch for Me CT Campaign
Waterbury	CT-847 (W Main St) at Sperry St	2 Pedestrians	One pedestrian hit at intersection and one just west of intersection. There are no crosswalks and stop control limited to Sperry Rd at West Main St. West Main Street has no edgelines.	Realign and narrow the Sperry Road intersection-start with delineators. Stripe edgelines on West Main St.	Watch for Me CT Campaign
Watertown[1]	CT-63 (Litchfield Rd/ Main St/Straits Tpke) (MP 23.87-24.05)	2 Pedestrians (2 Fatals)	Dark conditions. One Pedestrian hit crossing at a marked midblock crosswalk. One pedestrian was hit while exiting car.	Investigate roadway illumination. Traffic calming. PHB.	Watch for Me CT Campaign
Woodbury	US-6 (Main St N) from Middle Road Tpke to 925 ft south of Middle Road Tpke	1 Pedestrian 1 Bicyclist	Pedestrian struck by car turning into driveway. Bicyclist struck riding in shoulder.	Evaluate the need for bike lanes, particularly in the southbound direction. Widen shoulders where feasible next VIP. Sharrows. Dynamic speed feedback signs. Pedestrian and Bike warning signs.	Watch for Me CT Campaign Share the Road Campaign

1 According to Town representatives, one of these fatalities involved a substance-impaired motorist.

6. Public Education Resources to Support Behavior Change

Drowsy Driving	Develop evidence-based awareness and educational message strategies that address why drowsy driving is risky, how motorists can prevent drowsy driving, signs and symptoms of drowsy driving, and strategies for dealing with drowsiness as a driver. Investigate drowsy driving legislation and potential for changing awareness and attitudes towards drowsy driving. Identify high-risk drivers for drowsy driving. The National Sleep Foundation has a Drowsy Driving Prevention Week in November to help reduce the number of drowsy driving related crashes in the United States. Campaign materials are provided for this campaign event through the National Highway Traffic Safety Administration (NHTSA). The United States Department of Transportation (USDOT) Traffic Safety Marketing (TSM) provides a fact sheet, sample news release, and an educational sheet that addresses drowsy driving prevention.						
Resources for Drowsy Driving	National Safety Council	NHTSA	Federal Motor Carrier Safety Administration	National Institute of Health National Heart Lung, and Blood Institute	Center for Disease Control and Prevention		
Speeding	"When Speeding Kills" marketing campaign materials are provided by the Connecticut Department of Transportation to encourage safe travel speeds in Connecticut. Alternative campaign materials that share the message "Stop Speeding before it Stops You," are provided by the United States Department of Transportation's Traffic Safety Marketing (TSM) website. Banner ads, media, logos, radio ads, television ads, and web videos for speed campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA.						
Resources for Speeding	Traffic Safety Marketing	NHTSA	CTDOT	Governor's Highway Safety Association	Vision Zero	National Transportation Safety Board	
Drunk Driving	The United States Department of Transportation and the National Highway Traffic Safety Administration (NHTSA) provide marketing campaign materials for year-round education such as "Buzzed Driving is Drunk Driving" or "Drive Sober or Get Pulled Over." The United States Department of Transportation encourages the use of their "No Refusal Toolkit" which is an enforcement strategy that allows jurisdictions to obtain search warrants for blood samples from drivers suspected of drinking who refuse breath tests. The USDOT website explains that this program should be publicized to let the public know that the chance of being caught and facing the consequences of drunk driving is high. Banner ads, media, logos, radio ads, television ads, and web videos for drunk driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Drunk Driving	Traffic Safety Marketing	NHTSA	Mothers Against Drunk Driving	Center for Disease Control and Prevention	Foundation for Advancing Alcohol Responsibility	CTDOT	
Drugged Driving	NHTSA and the USDOT are working on studies to understand how illegal drugs and prescription medications affect drivers and provide marketing campaign materials are to be used as tools to raise awareness. The USDOT TSM provides a Fact Sheet, Sample News Release, and an educational sheet that address drug-impaired driving prevention. Banner ads, media, logos, radio ads, television ads, and web videos for drug-impaired driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Drugged Driving	NHTSA	Traffic Safety Marketing	National Institute on Drug Abuse	Stop Drugged Driving (Institute for Behavior and Health, Inc.)	Governor's Highway Safety Association	CTDOT	Mothers Against Drunk Driving

Public Education Resources to Support Behavior Change

Distracted Driving	NHTSA describes distracted driving as any activity that diverts the attention of the driver from driving, including using electronic devices, eating and drinking, talking to people in your vehicle, changing the station on the radio, entertainment/navigation systems, etc. NHTSA provides resources on its website to educate Americans on the dangers of distracted driving. NHTSA provides suggestions for how teens, parents, employers, and educators can get involved with preventing distracted driving and how to make your voice heard to educate your community. The United States Department of Transportation provides Traffic Safety Marketing focused on combating distracted driving through Television Ads that are available to every community. Banner ads, media, logos, radio ads, television ads, and web videos for distracted driving campaigns are provided by the USDOT Traffic Safety Marketing and NHTSA. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Distracted Driving	Traffic Safety Marketing	NHTSA	National Safety Council	Governor's Highway Safety Association	Center for Disease Control and Prevention	Insurance Institute for Highway Safety	CTDOT
Pedestrian and Bike Safety	The Watch for Me CT campaign is run by the Connecticut Department of Transportation in partnership with the Connecticut Children's Medical Center Injury Prevention Center. They share a message of responsibility for everyone on Connecticut roads, including pedestrians and bicyclists. The Watch for Me CT website provides facts about pedestrian crashes, pedestrian laws, and safety tips. The Watch for Me CT website also includes tips for drivers and campaign materials. NHTSA's pedestrian safety web page provides pedestrian safety related research, tips, curriculum, and programs that can be shared in any community to discuss pedestrian safety. The US DOT's Traffic Safety Marketing website provides campaign materials such as banner ads, media, logos, radio ads, television ads, and web videos for pedestrian campaigns used throughout the Country. NHTSA also provides a yearly Communications Calendar that the organization uses to encourage communities to share campaign material by topic at specific times of the year as an increased awareness strategy.						
Resources for Pedestrian and Bike Safety	Watch for Me CT	Federal Highway Administration	National Complete Streets Coalition	NHTSA	America Walks	Vision Zero	
Older Driver Safety	Older driver campaigns focus on providing resources for older drivers, their families, caregivers, medical providers and law enforcement to educate how medical conditions can affect driving, how to assess older driver safety issues, and other transportation options provided in case an older driver's mobility is threatened when they are no longer recommended to drive a motor vehicle. NHTSA provides information for what to do if an individual has concerns about an older driver's ability to drive and what the proper licensing procedures are for older drivers. The USDOT Traffic Safety Marketing web page provides marketing resources for the DriveWell campaign that focuses on older driver safety and mobility.						
Resources for Older Drivers	NHTSA	Department of Motor Vehicles	AAA CT	National Institute on Aging	American Association of Retired Persons	Insurance Institute for Highway Safety	

7. Funding

Funding

Department of Energy and Environmental Protection Recreational Trails Funds: Bicycles, Pedestrians, Horseback, Recreational Vehicle
This program is administered through the Connecticut Department of Energy & Environmental Protection (DEEP). Funds can be used for projects such as new trail construction, maintenance and restoration of existing trails, acquisition of land or easements for a trail. Note: There is currently no funding available for this program.
Small Towns Economic Assistance Program (STEAP) Funds: Bicycles, Pedestrians, Passenger Vehicles
STEAP funds are issued by the State Bond Commission and can be used for capital projects which are new construction, expansion, renovation or replacement of existing facilities. The funding is directed towards small towns.
Local Capital Improvement Program (LoCIP) Funds: Bicycles, Pedestrians, Passenger Vehicles
This program provides financial assistance to municipalities for eligible projects in the form of annual entitlement grants funded with State general obligation bonds. LoCIP grants can fund road construction, renovation and repair, sidewalk and pavement improvements, bridges, and bikeway and greenway establishment.
Highway Safety Programs Funds: Driver and Passenger Behavior
The Connecticut Highway Safety program supports Federal Section 402 highway safety grant funds that are made available to the State to carry out its annual Highway Safety Plan. Grants are issued to address programs pertaining to impaired driving, public information and education, work zone safety and highway safety related legislation, police traffic services, occupant protection, and child passenger safety.
Federal-Aid Essentials for Local Public Agencies
This website provides local public agency staffers a centralized hub for guidance, policies, procedures, and best practices for administering federal-aid projects. The website includes a library of videos covering key aspects of the project development and delivery process.
Local Transportation Capital Improvement Program (LOTCIP) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit, Bridges
Provides State monies to municipalities for transportation capital improvement projects. Councils of Governments are responsible for soliciting and selecting projects and administering the program. Eligible projects include reconstruction, pavement rehabilitation, sidewalks, and multi-use trails. Except for off-road bike projects, all projects must be located on/along federally eligible roadways.

Funding

Transportation Alternatives (TA) Set-Aside Program Funds: Bicycles, Pedestrian
Provides federal funding, half administered through the State and half administered through Regional Planning Organizations for surface transportation projects in categories that are not typically eligible for funding under other federal sources. Bicycle and pedestrian projects have typically been targeted for these funds.
Congestion Mitigation and Air Quality (CMAQ) Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit
The Congestion Mitigation and Air Quality program is managed by the CTDOT as a competitive grant program. A portion of funding is programmed for projects of regional significance. It provides funds for projects that will improve air quality such as congestion reduction and traffic flow improvements, and transit improvements.
Community Connectivity Program (CCP) Funds: Bicycles, Pedestrians
This Program offers Connecticut's towns and cities assistance in conducting Road Safety Audits (RSA) at important bike and pedestrian corridors and intersections. An RSA is a process that identifies safety issues and countermeasures to help improve safety and reduce vehicle crashes. Note: As of 7/27/2018, the Department is pleased to announce that on Wednesday, July 25th, the State Bond Commission approved the DOT's request to fund the Community Connectivity Grant Program. All municipalities that submitted applications for grants were formally notified on 9/21/2018.
Local Road Accident Reduction Program (LRARP) Funds: Bicycles, Pedestrians, Passenger Vehicles
This program aims to fund projects that improve motor vehicle safety on local public roadways. The funding for the LRARP comes from the Federal Highway Safety Improvement Program (HSIP) which also funds projects on State highways and railroad/highway grade crossings.

8. Emphasis Areas

The top emphasis areas in the Naugatuck Valley Region were selected based on the conclusion that these contributed to the majority of the injury and fatal crashes verified from the 2015-2018 data and the feedback from the individual town representatives. The seven emphasis areas are:

1. **Critical Roadway Locations: Includes both roadway departure and intersection crashes.**
2. **Driver Behavior: Includes aggressive driving, unrestrained occupants, substance-impaired driving, and distracted driving.**
3. **Older Drivers: Includes drivers aged 65 years and older.**
4. **Young Drivers: Includes drivers aged 15-25 years old.**
5. **Non-Motorized Users: Includes pedestrians and bicyclists.**
6. **Motorcyclist Safety.**
7. **Traffic Incident Management.**

These emphasis areas were selected based on crash types that have the highest potential of achieving the State's 15% injury and fatal crash rate reduction goal and fatal crash rates by 2025. From these identified emphasis areas, strategies and countermeasures were developed in conjunction with stakeholders' input. Each emphasis area's countermeasures were developed according to the four E's of transportation safety. For a total of all fatal and injury crashes by emphasis area, see Appendix B.

Performance Measures: The Naugatuck Valley RTSP follows the 2017 CT SHSP strategy of implementing countermeasures identified for each emphasis area. In all cases, implementation includes site-specific and systemic safety improvements. Connecticut has set annual safety performance measure targets which the regions are encouraged to follow. The region can also establish their own performance measures, independent of the State's goals.

CT-68 (Cheshire Road), Prospect

8.1 Critical Roadway Locations

The critical roadway locations emphasis areas include both roadway departure and intersection crashes. Intersection crashes are conflicts that occur due to complex travel patterns. Congestion, limited sight distance, driver behavior, and other variables exacerbate the inherent crash potential at each intersection. Intersections vary widely from geometry, classification (urban or rural), traffic control (signalized or unsignalized), traffic volumes, and design (conventional design or alternative designs such as roundabouts). Additionally, at-grade rail crossings are considered intersections as trains and roadway users cross paths. Reducing the number of intersection fatalities and injuries is possible by applying a multidisciplinary approach using strategies that focus on engineering, education, and enforcement.

Roadway departure crashes are described as conflicts that result when vehicles cross an edge line, a center line, or otherwise leave a travel lane. There are several factors that can contribute to a lane departure crash, including roadway characteristics like horizontal curvature and pavement condition. Other weather-related conditions like rain, snow, or ice can impede a driver's sight of the roadway and make controlling vehicles difficult. Time of day can also play a role in lane departure crashes due to decreased visibility, which can affect driving performance.

Behavioural issues like speeding, impaired driving, and distracted driving can affect the driver's safe vehicle operation and may cause them to depart from the roadway. To improve lane departure safety, countermeasures that address keeping vehicles in the travel lane, provide for a safe recovery, and reduce crash severity are imperative. The region can use both systemic and site-specific engineering strategies combined with education and enforcement.

8.1.1 Intersections

Performance Measure: From 2015-2018, there were 4,842 intersection crashes resulting in injuries or fatalities within the Naugatuck Valley Region or an annual average of 1,211 crashes per year. Of those 4,842 intersection injury and fatal crashes reported, 34 were fatal. The Region's 2015-2018 intersection injury and fatal crashes make up 8% of the 59,224 intersection injury and fatal crashes in Connecticut.

Performance Objective: Decrease intersection injuries and fatalities by 20% over the 5-year period of the SHSP. This will result in preventing 242 combined injuries and fatalities per year.

Mountain Road/CT-229 (Middle Street), Bristol

Strategies for Intersections:

Engineering: Implement proven and low-cost spot improvements and systemic safety improvements to reduce intersection crashes. Examples include enhancing signs and pavement markings, modifying signals and signal timing, adding turn lanes, and controlling access through medians.

Enforcement: Conduct high-visibility enforcement, media campaigns and public outreach at selected locations with a significant number of intersection crashes.

Education: Advertise and promote the Safety Circuit Rider and other similar programs that provide training and outreach about intersection safety.

Engineering: Incorporate safety elements and countermeasures into all regional roadway and intersection project designs and maintenance improvements.

Engineering: Consider No Turn on Red restrictions at identified crash locations.

8.1.2 Roadway Departures

Performance Measure: From 2015-2018, there were 2,194 roadway departure crashes resulting in injuries or fatalities within the Naugatuck Valley Region or an annual average of 549 crashes per year. Of those 2,194 reported roadway departure crashes, 29 were fatal. The Region's roadway departure injury and fatal crashes accounts for 9% of the 24,935 total roadway departure injury and fatal crashes in Connecticut.

Performance Objective: Decrease injuries and fatalities by 20% over a five year period. This will result in preventing 110 combined injuries and fatalities per year.

Rimmons Hill Road, Beacon Falls

Strategies for Roadway Departures:

Engineering
Design the roadside to include protection systems (such as cable median, crash cushions and guiderail end treatments) or manage roadside vegetation, trees and other fixed objects to minimize the severity of crashes.

Engineering
Implement proven systemic safety countermeasures to lessen roadway departure crashes. Examples include high friction surface treatments, improved signage and pavement markings on curves, safety edges, and center line and edge line rumble strips.

Enforcement
Conduct high-visibility regional and local enforcement, media campaigns and public outreach on identified corridors with a high number of severe roadway departure crashes.

Education
Utilize established regional and State programs, such as the Safety Circuit Rider, to provide education, training, and outreach.

Source: kwikbondpolymers.com

8.2 Driver Behavior

The second emphasis area is Driver Behavior which includes the subset areas of speeding or aggressive driving, unrestrained occupants, substance-involved driving, and distracted driving. These subsections are related to driver behavior and not due to traffic or roadway characteristics, although they can be interdependent.

8.2.1 Aggressive Driving

The aggressive driving emphasis area includes any driver behavior that involves speeding, recklessness, driving too close, running red lights, and making unsafe lane changes. Any behavior that "exceeds the norms of safe driving" and places other motorists in danger is considered as aggressive driving. This does not include road rage which is considered assault.

Performance Measure: Speeding-related injury and fatal crashes totaled 1,544 from 2015-2018. There were 36 fatal crashes with an annual average of 386 injury and fatal crashes per year from 2015-2018. The Naugatuck Valley Region's aggressive driving injury and fatal crashes make up 17% of the 9,347 total aggressive driving injury and fatal crashes in Connecticut.

Performance Objective: Exceeding the state's goal of an 8% reduction of speed related fatalities, the region's objective is to lower the average of 9 speed related deaths per year to 8 per year by 2025.

Source: The Day

NHTSA
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

Source: NHTSA

Strategies for Aggressive Driving:

Engineering/Enforcement: Explore the possibility of creating safety corridors where a segment of roadway has higher-than-expected number of fatal and serious injury crashes due to driver behaviors. Additional signage followed by increased traffic enforcement and zero tolerance for violations.

Enforcement: Regional and municipal support for High Visibility Enforcement campaigns that specifically target speed and aggressive driving. This could include enhanced patrols using roads signs, electronic message boards and command posts.

Enforcement: Regional collaboration and resource sharing of scientifically valid speed measurement technology for enforcement.

Education: Coordinate with local agencies, local police and fire departments, hospitals, the auto insurance industry, and driving schools to disseminate and educate the public on the hazards of aggressive driving.

Engineering: Integrate the speed management countermeasures into roadway departure, intersection, and pedestrian safety areas.

8.2.2 Unrestrained Occupants

The unrestrained occupants emphasis area involves either passengers or drivers who do not wear seat belts while traveling, including children not properly positioned in restraint systems. Connecticut enacted a law in October 2017, requiring that children be in booster seats until they reach a minimum of 60 pounds and they turn eight years old, that toddlers ride in a forward-facing seat with a five-point harness until they are 5 years old and weigh at least 40 pounds, and that infants be in rear-facing seats until they are two years old and 30 pounds.

Performance Measure: From 2015-2018, there were 821 crashes involving unrestrained occupants that resulted in injury or fatality, which is an annual average of 205 crashes per year. Out of these 821 crashes reported, 26 of them were fatal. NVCOG unrestrained occupant injury and fatal crashes make up 15% of the total 5,423 unrestrained occupant injury and fatal crashes in Connecticut.

Performance Objective: Reduce the number of unrestrained occupant injury and fatal crashes from the four-year average of 205 crashes per year by 10% to an average of 185 crashes per year by 2025. Increase the statewide observed seat belt use rate from 85.4% in 2015 to 88% or above in 2018. In August 2017, Connecticut surpassed its goal of 88% seat belt compliance rate to 90.3%.

8.2.3 Substance-Impaired Driving

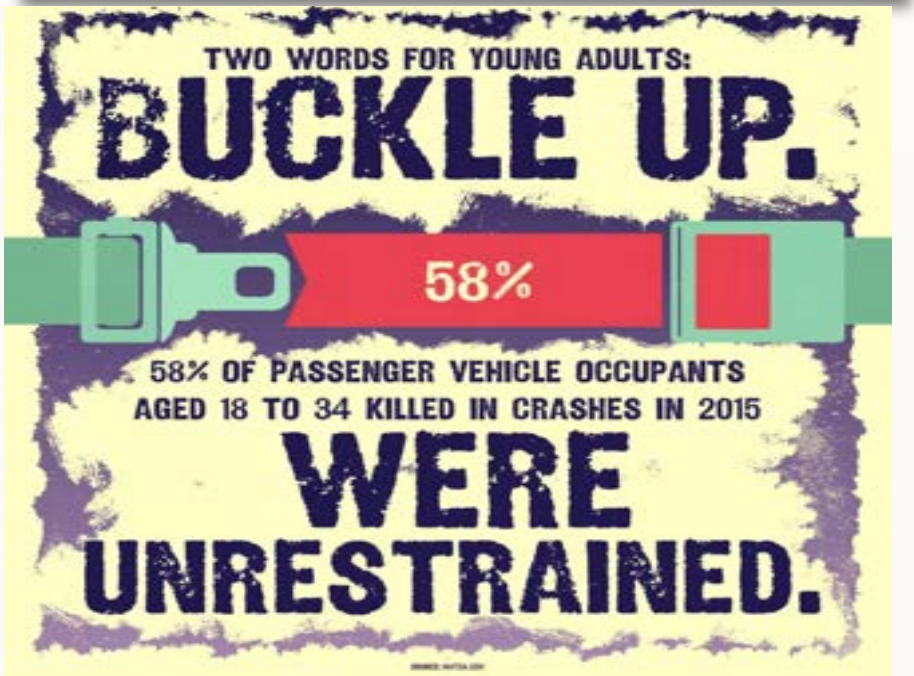
Substance-impaired driving involves motorists who are under the influence of alcohol and/or drugs, both prescribed/non-prescribed, and/or illegal. A driver with a Blood Alcohol Concentration (BAC) of .08 or higher is considered alcohol impaired. Drug impairment is more challenging to detect and confirm because there is no standard breathalyzer test. In addition, it is hard to determine drug effects on driving behavior, which also makes it difficult to develop effective laws and strategies for enforcement. However, according to NHTSA, many of the alcohol-impaired driving countermeasures may deter drug-impaired driving.

Strategies for Unrestrained Occupants:

Enforcement: Coordinate with NHTSA's calendar of high visibility enforcement of safety belts and child safety enforcement and coordinate with AAA, CTDOT, and T2 Center to explore potential educational/outreach efforts promoting seat belt use. Continue regional and municipal enforcement using checkpoints and roving and saturation patrols.

Education: Communicate the new child safety seat laws, coordinating with multi agencies like Safe Kids CT, local police and fire departments, hospitals in the region the YMCA, and others to disseminate information with educate the public.

Enforcement and Education: Coordinate with private sector stakeholders to host car seat clinics and publicize the safe fitting stations in the region using earned media outlets.



Source: US DOT

Strategies for Substance-Impaired Driving:

Enforcement and Education: Encourage the State to provide the funding for officers to take the Advanced Roadside Impaired Driving Enforcement (ARIDE) program and to get certified as Drug Recognition Experts (DRE) offered by the Department of Emergency Services and Public Protection. Cooperate with the SHSP goal to increase the number of certified standardized field sobriety test practitioners and instructors.

Education: Expand regional and town-specific outreach of impaired driving beyond the traditional mass media campaign by using innovative and unique delivery methods that reach specific populations of the targeted audience through local police and fire departments, the hospitals in the region, the YMCA, and driving schools to disseminate information and educate the public. Highlight the importance of sober driving during the month of December, during the Office of National Drug Control Policy's National Drunk and Drugged Driving Prevention month, and NHTSA's drive sober or get pulled over mobilization.

Education: Continue to support Mothers Against Drunk Driving (MADD) CT chapter's outreach and education efforts, including the Victim Impact Panels that take place at Waterbury City Hall.

Engineering: Municipalities should support policies and programs that increase the availability, convenience, affordability, and safety of transportation alternatives for drinkers who may drive especially during nighttime and weekend hours) and boosting or incentivizing transportation alternatives in rural areas, which are disproportionately impacted by alcohol-impaired driving crashes and fatalities.

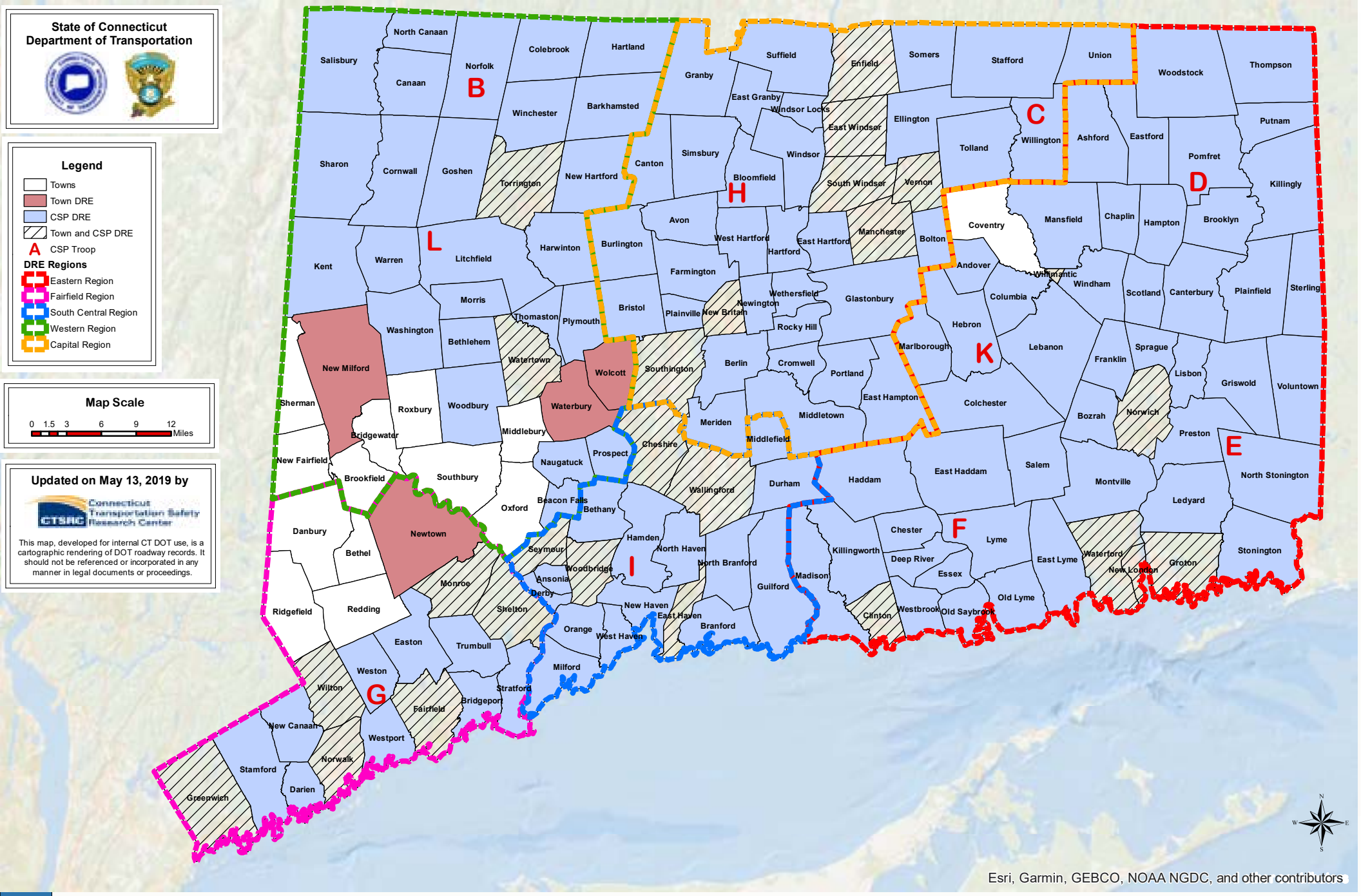
Enforcement: Continue to enforce the interlock devices for all Connecticut DUI/DWI/OUI first time offenders. Conduct regional high visibility impaired driving enforcement program.

Performance Measure: From 2015-2018, there were 640 reported substance-impaired driving crashes that resulted in injury or death, which is an annual average of 160 crashes per year. Of these 640 crashes, 25 were fatal. The Naugatuck Valley Region's substance-impaired injury crashes make up 18% of the 3,489 statewide substance-impaired injury and fatal crashes.

Performance Objective: Increase the number of Drug Recognition Expert (DRE) practitioners in the Naugatuck Valley Region by 2025. The State's goal was to increase the DREs in Connecticut from 31 in 2016 to 45 in 2018. By January 2020, there were 61 DREs in the entire State. The objective is to increase DRE practitioners by one additional DRE per NVCOG member municipality by 2025. This would be an additional 19 DREs.

Source: NHTSA

Connecticut Regional Drug Recognition Experts



8.2.4 Distracted Driving

Distracted driving is another subset of the driver behavior emphasis area. It involves any motorist whose attention is diverted by a variety of activities besides navigation. Common sources of driver distraction are cell phone use, eating, drinking, or adjusting the radio. Due to the increase of text messaging, GPS navigation systems, and other technologies, distracted driving is on the increase.

Performance Measure: From 2015-2018 there were 915 reported injury and fatal crashes related to distracted driving, an average of 229 crashes annually. Four of the 915 crashes were fatal. The Naugatuck Valley Region's distracted driving injury and fatal crashes make up 24% of the total 3,744 distracted driving injury and fatal crashes in Connecticut.

Performance Objective: In line with the CT SHSP, the lack of useful crash data in the area of distracted driving has made it difficult to select a goal measuring the impacts on distraction-related crashes. The performance objective is to decrease fatalities and injuries as a result of crashes caused by driver distraction, especially those caused by handheld mobile phone use. To that end, the quantifiable performance objective is focused on hi-high visibility enforcement (HVE) activities and to maintain or increase the number of police agencies participating in high visibility distracted driving enforcement (HVE) from 50 in 2016 to 60 by 2025.

Source: WTNH.com

Source: portal.ct.gov/DOT

Strategies for Distracted Driving:

Enforcement: Conduct distracted driver observational surveys, similar to those done for seat belt use.

Enforcement: Update to the MMUCC 5th Edition to include distraction on involved non-motorists crashes.

Enforcement: Regionally conduct high visibility distracted-related enforcement, focusing on municipalities with a higher rates of distracted driving related fatalities and serious injuries.

Enforcement: In addition to high visibility enforcement, use unmarked patrol vehicles or spotter techniques in high traffic areas.

Education: Increase regional public outreach of distracted driving that reach specific populations of the targeted audience. Coordinate with NHTSA's calendar of outreach.

Education: Coordinate distracted driver messages with multiple agencies: DMV, AAA CT Chapter, Local and State law enforcement, Emergency Management Services, hospitals in the region, the YMCA, and driving schools to disseminate information and educate the public.

8.3 Older Drivers

The third emphasis area is older drivers, which are categorized as drivers 65 years and older. Although age itself is not the principal determinant in driving performance as people age their mental and physical abilities change which can affect their driving. The most common of these conditions is poor vision, but other cognitive skills may be affected, including memory and coordination. In addition, older drivers crash survivability is another safety concern. Due to the fact that population in the Naugatuck Valley Region is aging, this emphasis area is of particular importance.

Source: CDC.gov

Strategies for Older Drivers:

Education: Consider supporting stricter CT DMV policy of License Renewal for Senior Drivers and consider mandatory in person tests with vision exam for drivers 65 years and older.

Education: Coordinate with multiple agencies such as the United Way of Greater-Central Agency on Aging, the various local chapters of the YMCA, and the Connecticut Association of Senior Center Personnel to address older driver challenges and general safety.

Education: Using earned media outlets promote NHTSA's DriveWell Toolkit to aid older drivers.

Education: Continue to promote alternative ways for older people to get around and promote Know How to Go website.

Education: Encourage older drivers to use AARP Smart Driver Course available online or in a classroom in the region.

Performance Measure: From 2015-2018, there were 1,163 crashes in the Naugatuck Valley Region involving older drivers that ended in injuries or fatalities. This is an average of 291 crashes annually and 23 of the 1,163 older driver crashes from 2015-2018 were fatal.

This region's older driver injury and fatal crashes make up 11% of the total 10,605 older driver injury and fatal crashes in Connecticut.

Performance Objective: Decrease the number of drivers aged 65 or older involved in fatal crashes from an average of almost 6 fatal crashes per year to annual average of 4 fatal crashes per year by 2025.

8.4 Young Drivers

Young drivers are motorists between the ages of 15-25. Due to their driving inexperience and behavior that can involve an increase in novelty seeking and risk-taking, this subset of drivers is at a greater risk of being involved in traffic crashes.

Connecticut has a graduated driver licensing (GDL) program, limiting passenger allowance in the first 12 months of licensing, imposing a driver curfew until their 18th birthday, requiring all passengers in vehicles to use seat belts, and prohibiting all use of cell phones and mobile electronic devices while driving. The State also requires pre-licensure driver education for drivers and parents.

Source: Thebalance.com

Strategies for Young Drivers:

Engineering, Education, Enforcement: Continue regional support for statewide graduated driver licensing.

Enforcement: Regional education and enforcement of Young Driver Laws, including the State's .02 BAC laws for young drivers by organizing and conducting high visibility enforcement campaigns.

Education: Coordinate young driver messages with multiple agencies in Spanish and English at DMV offices, auto insurance agencies, AAA CT Chapters, State and local law enforcement agencies, Emergency Management Services, public and private schools, local chapters of the YMCA, and the State Board of Education.

Performance Measure: From 2015-2018, there were 2,454 crashes involving young drivers that ended in injuries or fatalities. This is an average of 614 crashes annually and 26 of these 2,454 crashes were fatal. The region's young driver injury and fatal crashes make up 11% of the 22,204 young driver injury and fatal crashes in Connecticut.

Performance Objective: Decrease the region's four-year average of 6 young driver fatal crashes (2015-2018) to 2 or less annual young driver fatal crashes by the year 2025.

8.5 Non-Motorized Users

The non-motorized users emphasis area includes crashes involving pedestrians and bicyclists. Pedestrians and bicyclists are more susceptible to injuries and fatalities when involved in a crash with a motor vehicle. Pedestrian friendly environments are consistent with complete streets, desirable residential and employment sites, and sustainable/low cost transportation.

From 2015-2018, there were 751 crashes that resulted in bicyclist or pedestrian fatalities or injuries within the Naugatuck Valley Region, and 29 of these 751 crashes were fatal.

8.5.1 Pedestrians

Performance Measure: From 2015-2018, there were 638 injury and fatal pedestrian crashes in the Naugatuck Valley Region, 26 of these were fatal. That is an average of 160 crashes per year. The Region's pedestrian injury and fatal crashes make up 12% of the total 5,236 pedestrian injury and fatal crashes in Connecticut.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP's goal of reducing pedestrian injury and fatal crashes 15% over the 5-year period of the SHSP (ending in 2025). This will result in preventing 24 combined pedestrian injury and fatal crashes per year.

8.5.2 Bicyclists

Performance Measure: From 2015-2018, there were 113 bicycle crashes in Naugatuck Valley Region and 3 were fatal. That is an average of 28 injury and fatal crashes per year. The Naugatuck Valley Region's bicyclist injury and fatal crashes make up 7% of the 1,610 injury and fatal bicycle crashes in Connecticut.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP goal of decreasing bicyclist injuries and fatalities by 15% over the 5-year period of the SHSP (ending in 2025). This will result in preventing 4 combined bicyclist injury and fatal crashes per year.

CT-110 (Howe Street), Shelton

Source: safety.fhwa.dot.gov

Strategies for Non-Motorized Users

Education: Coordinate with state, regional, and local advocacy groups and bike store owners, including Bike Walk CT, the CTDOT Bike and Pedestrian Advisory Board, and other stakeholders to strategize best practices for the region.

Engineering: Coordinate with CTDOT on the *Pedestrian Signing and Pavement Marking Project,* which improves crosswalk visibility on local roads.

Education and Enforcement: Promote the Watch for Me CT Program.

Education: Regionally promote the CT Bike Ped Plan interactive bike map.

Engineering: Encourage municipal and regional adoption of the CTDOT's Complete Streets Policy, which ensures that the needs of all users of all abilities and ages (specifically including pedestrians, bicyclists, transit users, and vehicle operators) in the planning, programming, design, construction, retrofit, and maintenance activities related to all roads and streets as a means of providing a "safe, efficient transportation network which enhances quality of life and economic vitality."

Engineering: Continue to update the Regional Pedestrian and Bike Plan and to follow the feasible action plan steps in the upcoming complete streets plan.

Education and Enforcement: Educate regional law enforcement personnel on the 2014 Vulnerable User Law and the 2015 Bike Bill.

Education: Promote the Connecticut Technology Transfer Center's educational outreach initiatives that promote bike and pedestrian safety.

CT-115 (North Main Street), Ansonia

8.6 Motorcyclist Safety

Motorcyclist safety is an area of traffic concern both regionally and nationally. According to NHTSA 2015 Countermeasures that Work report, "per vehicle mile travelled, motorcyclists are about 26 times more likely than passenger car occupants to die in traffic crashes". (NHTSA Countermeasures that Work, 2015 8th edition). A motorcyclist travels at the same speeds and in the same lanes as other motorized vehicles, but without the same degree of protection.

Source: idrivesafely.com

Performance Measure: From 2015-2018, there were 583 motorcycle crashes that ended in injury or fatal to the persons involved, where 19 crashes were fatal. The annual average for injury and fatal motorcycle crashes is 146 crashes per year. Naugatuck Valley Region's motorcycle injury and fatal crashes make up 14% of the 4,040 total motorcycle injury and fatal crashes in Connecticut.

Strategies for Motorcyclist Safety:

Education: Continue to endorse CT DMV's Connecticut Rider Education Program (CONREP) for Motorcycle Safety. Current locations in the Naugatuck Valley Region include Naugatuck Valley Community College in Waterbury.

Engineering, Education, Enforcement: Continue to support the insurance industry's rate discount for CONREP graduates.

Engineering, Education, Enforcement: Coordinate with local motorcycle dealerships, CT DMV, hospitals in the region, and other public and private sector agencies to promote safety campaigns, encouraging riders to wear helmets, goggles and protective clothing and gear, and for motorists to share the road. These campaigns can be amped up during May's Motorcycle Safety Awareness Month.

Education, Enforcement: Regionally support None for The Road campaign and the www.rider4ever.org encouraging riders to not drink and ride and to ride safely.

Education: Regionally promote various motorcycle safety awareness resources, such as Helmetcheck.org, the Motorcycle Safety Foundation, Interactive Scenic Ride Map, and CT Travel Smart websites.

Performance Objective: The Naugatuck Valley RTSP is in congruence with the SHSP goal of decreasing the number of motorcyclist fatalities from the 4-year average of 5 to 3 in 2025.

There were 7 unhelmeted fatalities from 2015-2018, which is an average of 2 per year. The goal is to increase media outreach and encourage motorcycle riders to wear protective clothing and gear and to decrease the number of unhelmeted fatalities from the 2015-2018 average of 2 per year to 0 per year by 2025.

8.7 Traffic Incident Management

A traffic incident is an event (such as a vehicle crash, work zone activity, or vehicle breakdown) that disrupts the normal operation of the transportation system. Traffic incidents are an important concern in Connecticut because they can potentially cause safety issues, increasing the risk to uninvolved motorists, congestion delays, and secondary incidents. The CTDOT recommends a statewide Traffic Incident Management (TIM) plan be implemented to coordinate the use of human, institutional, mechanical, and technological resources to reduce the duration and impact of incidents.

TIM "consists of a planned and coordinated multidisciplinary process to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible." Effective TIM reduces the duration and impacts of traffic incidents, improves the safety of motorists, crash victims, and emergency responders.

Performance Objectives: In congruence with the CT SHSP's goals, the Naugatuck Valley Region's goal is to promote the safety of motorists, crash victims, and incident responders by reducing secondary crashes and associated fatalities and serious injuries. In order to achieve this goal the region could increase its first responders attendance in incident management training by 50%. Currently, the NVCOG region participates on the Greater Hartford TIM Coalition which has prioritized this emphasis area and has developed a plan to reduce TIM related injury and fatal crashes.

Source: FHWA

Strategies for Traffic Incident Management

Education: Continue to support the CT Travel Smart website and to promote this resource regionally through media and public outreach campaigns.

Education: Continue to conduct public awareness programs for effective on-scene traffic incident management by road users.

Enforcement: Support the State operated State Farm Safety Patrol Program.

Engineering: Continue collaborating with CTDOT to implement Intelligent Transportation Systems (ITS) to update the freeway traffic management system and improve incident management efforts.

Education: Support the CT SHSP objective to establish a statewide TIM program with a lead agency to administer clearly defined responsibilities that meet the requirements of the National Incident Management System (NIMS).

Education: Continue the planning, implementation, and coordination of activities, such as the adoption of a Unified Response Manual, updating of diversion plans, TIM training, and participation in the FHWA annual TIM Self-Assessment. Also work on the development and implementation of a public awareness campaign for motor vehicle laws relating to highway incidents such as the "Move It" and the "Move Over."

Education: Continue to research the benefits and impacts of providing a regional approach to operating and maintaining local traffic signal systems. Collaborate with the Greater Hartford TIM Coalition to develop best practices.

Enforcement: Conduct after Action Reviews to improve response and scene management.

Engineering: Include Weather Responsive Traffic Management (WRTM) strategies, such as Road Weather Information Systems (RWIS).

Engineering Education, and Enforcement: Support the development and tracking of TIM performance metrics following national standards and definitions.

9 Technological Advances Affecting Traffic Safety

9.1 Connected and Automated Vehicles

Connected vehicle (CV) and automated vehicle (AV) technologies (described below) are in various stages of discovery, development and deployment nationwide. These technologies have the potential to play an integral role in improving the future of traffic safety. According to the National Highway Traffic Safety Administration (NHTSA), of all motor vehicle crashes on public roadways today, "94% are due to human error or choices." Each year in Connecticut these human errors or choices results in more than 100,000 crashes, more than 30,000 injuries and more than 250 deaths.

Automated Driver Assistance Systems

Today, most of the newer motor vehicles sold in the United States have at least some form of automated driver assistance system (ADAS) technologies included that increase safety. ADAS is the hardware and software within vehicles in that is collectively capable of supporting or providing alerts to the driver (e.g. blind spot detection, lane departure warning, front collision warning, etc.) or assisting the driver to automatically perform some of the real-time operational and tactical functions in on-road traffic (steering, accelerating, braking, etc.). The term ADAS includes the Society of Automotive Engineering International (SAE) driving automation levels 0, 1 and 2. Note, for vehicles equipped with ADAS, the driver is still responsible for performing most or all of the driving tasks, thus active driver performance, supervision and/or intervention is required.

Automated Driving Systems

The future of automated vehicles is focused on automated driving systems (ADS). These technologies are being studied, developed and pilot tested around the world today and have the potential to exponentially improve safety and save lives. ADS is the combination of hardware and software within vehicles that are collectively capable of performing all of the real-time operational and tactical functions required to operate a vehicle in on-road traffic on a sustained basis, regardless of whether the ADS is limited to a specific operational design domains under which it is able to function. The term ADS, includes SAE driving automation levels 3, 4 and 5. The primary difference between these levels has to do with the conditions under which the ADS is able to perform and whether or not there are any expectations for a human driver to intervene. The performance of level 3 and level 4 driving automation is the primary focus for research, development and pilot testing around the world today.
See page 168 for an info graphic showing the various levels of driving automation.

Source: NHTSA

Connected Vehicles

In addition to the automated vehicle technologies described above, the development and implementation of connected vehicle (CV) technologies also have significant promise to improve safety on public roadways. According to NHTSA, 80% of unimpaired crashes could be prevented by the deployment of CV technologies. [1] CV are described as vehicles that use specific wireless communication protocols (e.g. DSRC, C-V2X, 5G) to communicate with their surroundings for the purpose of improving traffic flows and preventing collisions. These technologies are able to send and receive real time transportation safety, mobility and other travel data to and from other vehicles, roadside infrastructure (e.g. traffic signals), users of the transportation system (e.g. drivers, pedestrians) and even the cloud.

Source: NHTSA

Several CV technologies have undergone many years of national research, testing and standards development and could soon begin to be deployed nationwide on a systematic scale. However, standing in the way of large nationwide deployments are key federal policy decisions by the Federal Communications Commission (FCC) to preserve the 5.9 GHz spectrum and the resulting competition between which communication protocols (e.g. DSRC, C-V2X, 5G) will dominate the market. Additionally, both state and local infrastructure owner operators (IOO) will ultimately play a significant role in the implementation of connected vehicle to infrastructure (V2I) technologies. In order to be future proof, IOOs will need more certainty from national direction, market adoption and standards before upgrading their infrastructure in support of V2I.

1 NHTSA, https://www.its.dot.gov/factsheets/pdf/safetypilot_nhtsa_factsheet.pdf

Connecticut Update

The CTDOT is currently undertaking two projects along a 10-mile segment of the Berlin Turnpike to replace and upgrade 28 signalized intersections near the CTDOT headquarters building. These projects will serve as early adopters for testing and deploying emerging technologies, including connected vehicle to infrastructure (V2I) applications that have the potential for improving safety and mobility, enhancing CTDOT traffic signal operations and reducing congestion. Both projects will require installation of modern traffic signal controllers, new backhaul communications (fiber) and include the implementation of adaptive signal control technology and automated traffic signal performance measures software.

As part of the replacement and upgrade, the CTDOT will install roadside units (RSU) at each intersection and equip various state-owned fleet vehicles with corresponding on-board units (OBU) to test and deploy different V2I applications (e.g. signal phasing and timing, signal priority, etc.). Both projects will investigate the application of dual mode RSUs capable of sending and receiving V2I data using dedicated short-range communications (DSRC) and current generation cellular networks for connected vehicles, typically referred to as C-V2X. Both projects will also involve the submission of licensing applications to the Federal Communications Commission (FCC) to utilize multiple channels within the 5.9 GHz spectrum for connected vehicle technology. Once operational, the CTDOT looks to apply lessons learned from these projects as a template for other traffic signal replacement projects moving forward (where applicable).

In addition to the Berlin Turnpike, the CTDOT also owns and operates an ideal facility for piloting and deploying AV transit technologies – the CTfastrak bus rapid transit (BRT) corridor. This facility is a nine-mile, bus-only, fixed guideway in central Connecticut that connects four municipalities including the state's capital city of Hartford, West Hartford, Newington and New Britain. Success with AV transit technologies here has the potential to advance the marketability of near-term AV transit technologies as well as improve service and efficiencies that could free up resources to be deployed in other locations that have transit needs. The Department will continue to target the CTfastrak as a priority area for testing and deploying AV transit technologies.

Over the next few years, the Department and its assembled team, including the Federal Transit Administration (FTA), Center for Transportation and the Environment (CTE), New Flyer Industries, Robotic Research, Inc., University of Connecticut (UConn), and the Capitol Region Council of Governments (CRCOG), will be working collaboratively to advance a state-of-the-art pilot project to test the performance and operation of full size, automated, and battery electric buses in revenue service on the CTfastrak BRT. This demonstration project is anticipated to deploy three 40' New Flyer Excelsior Charge battery electric buses equipped with increasing levels of driving automation, capable of up to high automation (SAE level 4). Automated driving capabilities demonstrated will include steering, precision docking at CTfastrak station platforms, and platooning.

The automated buses deployed as part of this project will always have a safety attendant behind the wheel to drive and/or take control of operations as necessary. The buses will be operated and maintained by the Hartford division of CTtransit, which is the brand name for transit services operated by private transit providers under contract with the Department. Extensive testing will take place without passengers at an off-road test facility and on CTfastrak prior to the buses operating in service for passengers. Traffic signals along the CTfastrak fixed guideway will also be updated in order to broadcast connected vehicle to infrastructure signal phasing and timing (SPaT) data and MAP data. This broadcasted SPaT and MAP data will be integrated with the automated driving system on the buses to further enhance safety through intersections.

9.2 Concerns with Data Collection

Connecticut uses the Model Minimum Uniform Crash Criteria Guideline (MMUCC) developed by the National Highway Traffic Safety Administration (NHTSA) and the Governors Highway Safety Association (GHSA).

The purpose of this is to standardize data nationally, so that collected data can be compared and used for strategies to prevent crashes. There are some factors that affect traffic safety that are difficult to observe and measure:

- *Alcohol and drugs, low alcohol concentration, other drugs including prescription, illicit, and over-the- counter drugs*
- *Fatigue and distraction*
- *Communications technologies and advanced driver assistance systems*
- *Factors involving teen or novice driving*

MMUCC no longer defines how data elements should be collected (at scene/linked or derived). States are encouraged to link or derive data wherever feasible to minimize the impact on law enforcement. In January 2015, Connecticut initiated the transition to the updated electronic crash reporting system. The purpose is to help local police departments obtain public safety equipment. Improved tools, resources and technology would allow local police departments to better implement new E-Crash investigation and enforcement initiatives.[1]

1.CT Traffic Records Strategic Plan (CT-TRCC) July 1, 2020

10. Implementation, Evaluation & Update Requirements

10.1 Implementation

The Naugatuck Valley RTSP is a supplemental document to the NVCOG Transportation Plan, the Transportation Improvement Plan (TIP), and the Unified Planning Work Program (UPWP). Collectively, these plans can assist the region in prioritizing projects that will improve roadway safety. The member municipalities should be dedicated to the implementation of safety improvements and the reduction of fatal and injury crashes based on appropriate countermeasures, some of which are included in this report.

NVCOG, the NVCOG Transportation Committee, member municipalities, and CTDOT have provided their local and regional knowledge, input and strategies to this safety plan. Development of this plan was an iterative process with municipal and regional input included from the onset. Throughout the implementation of this plan, NVCOG staff and the Transportation Committee can provide guidance and be dedicated to bringing appropriate strategies to fruition.

NVCOG could provide oversight of this safety effort and report progress to CTDOT and the member municipalities at least once a year. Each emphasis area could be reported at a NVCOG monthly meeting to ensure progress is being made and to provide member municipalities the opportunity to evaluate the implemented strategies. It is recommended that the implementation of each strategy be documented, and the performance measures monitored to provide transparency and ensure progress. Reporting could detail current strategy activities, accomplishments, safety performance measures, and any issues that may need additional support or guidance.

10.2 Evaluation

The Naugatuck Valley RTSP evaluation process will follow the CT SHSP required adherence to the 2016 FHWA Guidance on Strategic Highway Safety Plans and the FAST Act. The RTSP is to be updated every five years. The COG should be responsible for communicating with the member municipalities and CTDOT, and in addition routinely evaluate safety data to determine the selected emphasis areas are still relevant. If any strategies prove ineffective or irrelevant, the region can make appropriate adjustments to their approach.

Areas for Evaluation and Implementation:

- *Are strategies current and relevant to ongoing data trends?*
- *Are strategies being incorporated into local, regional, and state projects?*
- *Is the data showing that fatalities and injuries in NVCOG are trending towards a 15% reduction by 2022?*
- *Does the annual reporting reflect the RTSP performance objectives?*

Reporting should include information on which strategies are being implemented, what goals have been accomplished, the progress of performance measures, best practices and any lessons learned.

Recommended Steps to be taken by NVCOG

- Annual reporting of RTSP strategies and performance measure progress.
- Coordination with CTDOT's SHSP committee and emphasis area sub committees to collaborate on state and regional goals.
- Annual review of goals and development of new strategies when warranted.

CT-188 (Quaker Farms Road), Oxford

10.3 Updating the RTSP

The Regional Transportation Safety Plan is a living document congruent with the CT SHSP. Federal regulations require an update for the SHSP every five years and this regional safety plan will follow this same update process, ensuring federal compliance. Each COG is responsible for updating their regional transportation safety plan every five years. The regional plan will adhere to the same mandates, with updates reflecting the most current federal surface transportation legislation.

10.4 Implementation Periods Defined

For the purposes of the RTSP, short-term is understood to mean modifications that can be expected to be completed very quickly, perhaps within six months, and certainly in less than a year if funding is available. These include relatively low-cost alternatives, such as striping and signing, and items that do not require additional study, design, or investigation (such as right-of-way acquisition). Mid-term recommendations may be costlier and require establishment of a funding source, or they may need some additional study or design before implementation. Nonetheless, they should not require significant lengths of time before they can be implemented. Typically, they should be completed within a window of eighteen months to two years. Long-term improvements are those that require substantial study and engineering and may require significant funding mechanisms and/or right-of-way acquisition. These projects generally fall into a horizon of two years or more after funding is secured.

10.5 Other Resources

Connecticut Technology Transfer Center's Safety Circuit Rider and Traffic Signal Circuit Rider Programs

The Connecticut Technology Transfer Center's Safety Circuit Rider Program and the Traffic Signal Circuit Rider Program are statewide programs aimed at reducing the frequency and severity of fatal and injury crashes by assisting and supporting local road safety authorities. Both programs offer safety-related information, educational programs, technical assistance, and various training opportunities at no cost to all Connecticut municipalities.

The following assistance is available through the Safety Circuit Rider Program:

- Coordination of Road Safety Assessments (RSAs)
- Collection and analysis of traffic volume data
- Identification of low-cost safety improvements
- Assistance in the development of Local Road Safety Plans
- Development of a Connecticut Toolbox of Safety Resources
- Development of a series of Roadway Safety Briefs
- Delivery of Local Road Safety Training

The following assistance is available through the Traffic Signal Circuit Rider Program:

- Support for the development of management plans with clear goals and objectives for the operation, maintenance, and design of traffic signal infrastructure
- Training on traffic signal topics relevant to local agencies through seminars, technical briefs, and site visits
- Assistance for the development of traffic signal timing at isolated intersections and coordinated systems, including evaluating relevant performance measures
- Promotion of opportunities for federal-aid funding for traffic signal operations and encourage the integration of traffic signal operations into metropolitan transportation plans and programs
- Equipment Loan Program

Appendix A

Municipal Reports

Introduction to the Individual Municipal Reports

The town reports in **Appendix A** provide a more in-depth analysis and overview of traffic safety in each of the 19 NVCOG member municipalities. Each municipal report includes basic demographic information, data identified corridors, intersections and bike and pedestrian crash totals. In addition to the data-identified sites, locations that exhibit safety concerns for the municipal representatives were documented. From the data identified and prioritized locations systemic improvements and site-specific strategies were developed to minimize or prevent fatal and injury crashes in the future. These are listed in tabular format with estimated costs.

Mountain Road/CT-229 (Middle Street), Bristol

CITY OF ANSONIA

2016 US Census Population Estimate: 18,732
Area: 6.20 square miles
Population Density: 3,021 persons per square mile
2016 Vehicle Miles Traveled (VMT): 80,598,205
2016 VMT per Capita: 4,303
Setting: Urban
Town Representatives: Andrew Cota (Chief of Police)
Data Identified Data-Driven Corridors: N/A
Data Identified High Crash Intersections: Division Street and CT-334-Pershing Drive
Bike and Pedestrian Injury and Fatal Crash Totals, 2015-2018: 20
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 360

North Main Street

Overview

Ansonia, also referred to as "The Copper City", is a city in New Haven County on Naugatuck River bordered by Seymour to the north, Woodbridge to the east, Derby to the south, and Shelton to the west. The City's main thoroughfares are CT-8, CT-115, and CT-243.

City Input

Fatal Crashes from 2015-2018

- Ford Street - Young pedestrian fatal crash.
- CT-115 (Main Street) and Bridge Street - Motorized angle fatal crash.

SR-727 (Pershing Drive) and Division Street

This is a signalized, four-way intersection with multiple lane approaches and high frequency rear-end and angle crashes. The traffic volume is high as this serves as the main access point to CT-8 (General Samuel Jaskilka Highway). The curb cuts from gas stations and the pharmacy contribute to high conflict points.

CT-115 (Main Street/Derby Avenue) and CT-243 (Elm Street)

This intersection has high frequency angle crashes and high traffic volumes. In the past, the State has made improvements to this intersection, but it is still a high-crash location.

CT-243 (Platt Street) and Spring Street

This is a skewed intersection with sight distance issues.

CT-243 (Pulaski Highway/Prindle Avenue/Platt Street/Elm Street)
This is a high frequency crash corridor with horizontal curvature, some curves are 90 degrees State has applied high-friction surface treatment which has mitigated some crashes, but many crashes still occur during inclement weather. The State does a good job plowing state-owned roads in the City. This corridor is close to many of the town schools and sidewalks and RRFB will be installed on the corridor to protect high school pedestrians. The CT-243 (Pulaski Highway/Prindle Avenue/Platt Street/Elm Street) corridor has through traffic exiting and entering from the Town of Woodbridge.

Bridge Street and West Main Street
This is a high-crash signalized intersection. A Target store nearby is a major traffic generator. The Chief of Police suspects that sun glare might contribute to high crash numbers. Installation of traffic signal retroreflective backplates could mitigate the sun glare visibility issue.

City divided by the Naugatuck River
Three bridges in the city connect the east to the west side, concentrating traffic at these locations.

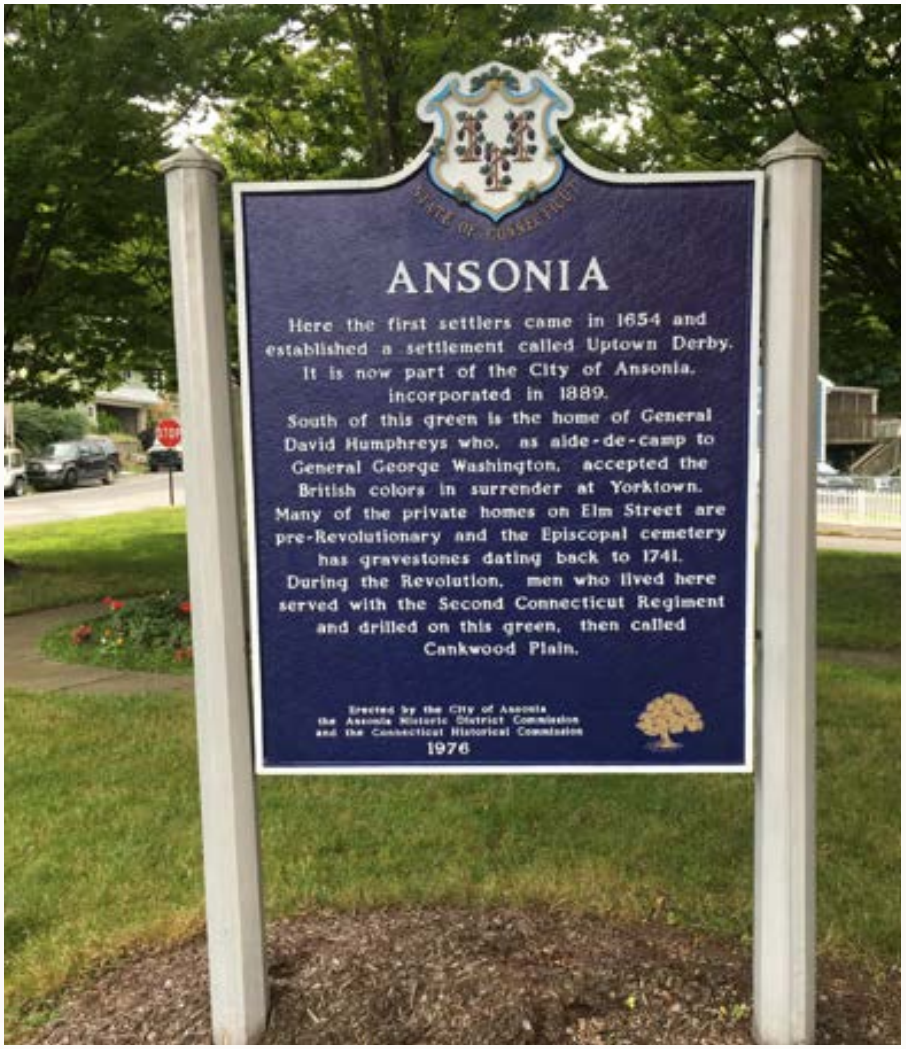
North State Street and CT-115 (North Main Street)
This is a skewed, T-intersection with a stop-controlled side street which has limited sight distance. The intersection has a steep downgrade when approaching the side street and there is an uncontrolled mid-block pedestrian crossing.

Wakelee Avenue
This is the main north-south corridor through the City, adjacent to CT-8 (General Samuel Jaskilka Highway). Crashes occur throughout the corridor, which has high-conflict points at driveways and intersections.

CT-8 on and off ramps near northern City line
This is the sole exit for Southbound CT-8 (General Samuel Jaskilka Highway) motorists in the City of Ansonia and has high crash frequency.

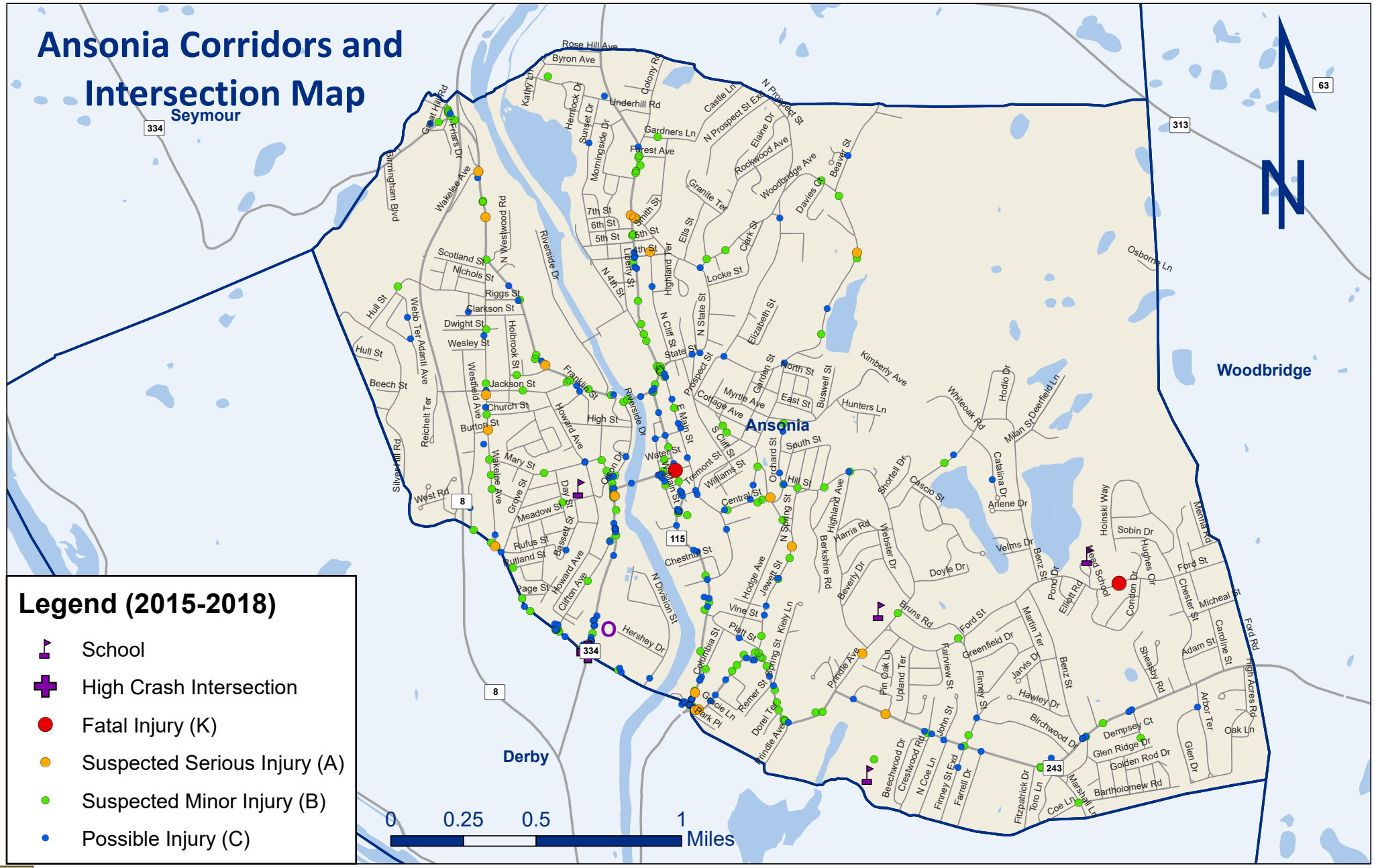
Bikes and Pedestrians
The City has had some minor bicycle injury crashes and pedestrians rarely use crosswalks. Education may be needed.

Enforcement
The City is working on installing a speed trailer and a data collecting trailer.



Source: VN Engineers

Ansonia Corridors and Intersection Map



Ansonia Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	0	1
Suspected Serious Injury (A)	6	8	2	3
Suspected Minor Injury (B)	43	46	38	42
Possible Injury (C)	36	40	44	50
Total Injury Crashes	86	94	84	96

Field Site Inventory

CT-115 (North Main Street)/North State Street

This is a skewed stop-controlled intersection. The existing wall on the private property, the utility pole and the vegetation on the north-east corner impede the sight distance from North State Street looking north onto CT-115 (North Main Street). In addition there is horizontal curvature along CT-115 (North Main Street) just north of North State Street. Looking south from CT-115 (North Main Street) has challenges due to vegetation on the southeast corner. There is a crosswalk on the southern leg of CT-115 (North Main Street) with an outdated pedestrian crossing sign.

CT-115 (North Main Street) consists of one travel lane in each direction and a shoulder. There is a bus stop at this intersection and the CT-15 (North Main Street) posted speed limit is 30 MPH. North State Street consists of one travel lane in each direction. There are faded pavement marking lines.

Recommendations:

- Trim vegetation.
- Relocate pole.
- Realign intersection.
- Update pedestrian crossing signs.
- RRFBs.
- Restripe pavement on North State Street.
- Investigate curve signage and intersection ahead warning signs.

CT-115 (N Main St)

CT-115 (N Main ST)/N State St

Field Site Inventory

SR-727 (Pershing Drive)/Division Street

The intersection of SR-727 (Pershing Drive) and Division Street is a four-way, signalized intersection in a built-up commercial area. The SR-727 (Pershing Drive) Northbound approach consists of an exclusive right-turn lane, two through lanes and an exclusive left-turn lane. The SR-727 (Pershing Drive) Southbound approach consists of an exclusive left-turn lane, a through lane and shared through-right turn lane. The Division Street Westbound approach consists of an exclusive left-turn lane, through lane and exclusive right-turn lane. The Division Street Eastbound approach consists of an exclusive left-turn lane and shared though-right turn lane. Crosswalks are located across the SR-727 (Pershing Drive) Southbound approach and Division Street Westbound approach. Crashes have been reported associated with the high turn-over driveway onto SR-727 (Pershing Drive) associated with the gas and convenience store located on the northwest corner of the intersection. The driveway is under stop control and located approximately 175 ft north of the intersection. Vehicle queuing associated with the SR-727 (Pershing Drive) Southbound approach to the intersection occurs past the commercial driveway blocking vehicles from exiting, particularly vehicles exiting to the north due to the three SR-727 (Pershing Drive) Southbound travel lanes. Driveway-exiting vehicles are many times "waved out" by a queued motorist in the first lane only to be sideswiped by a vehicle in the second lane.

Recommendation:

- Consider prohibiting left-turns for the commercial driveway through signage and/or physical constraints.

SR-727 (Pershing Dr)/Division St

Ansonia Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-115 (North Main St)/North State St	Sight distance	Remove vegetation	Low
		Relocate pole	Low
		T-up intersection	Medium
	Mid block pedestrian crossing	Update pedestrian crossing signs	Low
		RRFB	Medium
	Speeding	Restripe pavement on North State Street to 11' lanes	Low
SR-727 (Pershing Dr)/Division St	Driveway-related crashes	Consider prohibiting left-turns for the commercial driveway through signage or physical constraints	Low-Medium
Bridge St and West Main St	Sun glare-related crashes	Traffic signal retroreflective backplates	Low-Medium
Citywide	Pedestrian safety	Ensure pedestrian crossings are optimally located	Low-Medium
		Education - Watch for Me CT	Low
	High curb cut-related crashes	Corridor access management	Low-Medium
		Dynamic speed feedback signs	Low
	Crashes at intersections	Traffic signal retroreflective backplates	Low-Medium
		Consider clearance interval retiming	Low-Medium

TOWN OF BEACON FALLS

2016 US Census Population Estimate: 6,095
Area: 9.90 square miles
Population Density: 616 persons per square mile
2016 Vehicle Miles Traveled (VMT): 92,737,375
2016 VMT per Capita: 15,215
Setting: Rural/Suburban
Town Representatives: Chris Bielik (First Selectman), Jamie Gracy (PW), Eddie Rodriguez (Town PD)
Data-Identified High Frequency Crash Corridors: N/A
Data-Identified High Crash Intersections: N/A
Bike and Pedestrian Injury and Fatal Crash Totals: 3
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 53


Bethany Road/Munson Road

Overview

Beacon Falls is a rural/suburban town in New Haven County located in southwestern CT, where it is bisected by the Naugatuck River. It is bordered by Naugatuck to the north, Bethany to the east, Oxford to the west, and Seymour to the south. The Town's main thoroughfares are CT-8, CT-42, CT-721, and CT-852.

Town Input

Blackberry Hill Road
This is a local road with steep vertical curvature. It is used as a cut through between Beacon Falls and CT-63 (Amity Road) via Falls Road in the Town of Bethany. There are no grade warning or chevron curve signs. The roadway conditions are a concern of the Town, particularly in winter due to the steep grade. In an effort to lower speeds, 25 MPH speed limit signs will be installed to replace the 35 MPH speed limits signs on this roadway.

Rimmon Hill Road
This is a local roadway through a residential area with horizontal and vertical curvature. The Woodland Regional High School football stadium, located at the top of the roadway has parking on the opposite side of the roadway and dark not-lighted crossings are present. The faded pedestrian crossing markings and a lack of advanced pedestrian warning signs in dark-not lighted conditions are a concern for the Town of Beacon Falls. Furthermore, the approach is along a horizontal curve with limited sight distance. The Town wants additional protection for the pedestrians and has been in contact with Eversource to install a utility pole to mount lighting at the crosswalk. The horses also use Rimmon Hill Road to cross on Saturday and Sundays. The horses' owners place an in-street horse crossing warning sign at this location.

CT-42 (Pines Bridge Road/Marilyn Avenue/South Main Street/Bethany Road/Munson Road/Lasky Road)
This is a main, east-west corridor through the town. The majority of crashes are due to higher ADT, especially through the center of town.

CT-42 (Bethany Road/Munson Road)/Blackberry Hill Road/Skokorat Street)
This is a stop-controlled four-way intersection with a high concentration of crashes.

Beacon Valley Road
This corridor has a high concentration of crashes. A current construction project on CT-8 (Ansonia-Derby-Shelton Expressway) Exit 25 (Cross Street) is forcing trucks and the motorists through Beacon Falls onto Beacon Valley Road. The residents are unhappy with the traffic diversion through their neighborhood. The project will be ending soon.

Skokorat Street
This local roadway has vertical and horizontal curvature. The town representatives believe the crashes did not show in the collected data because they may have been classified as property damage only. This roadway has heavy traffic and high curbs cuts, though it is located in a residential land use. This roadway is used as a cut-through to CT-67 (New Haven Road/Bank Street/Oxford Road) in the Town of Seymour. The speed limit is posted at 25 MPH and is part of the CTDOT Curve Signing Program.

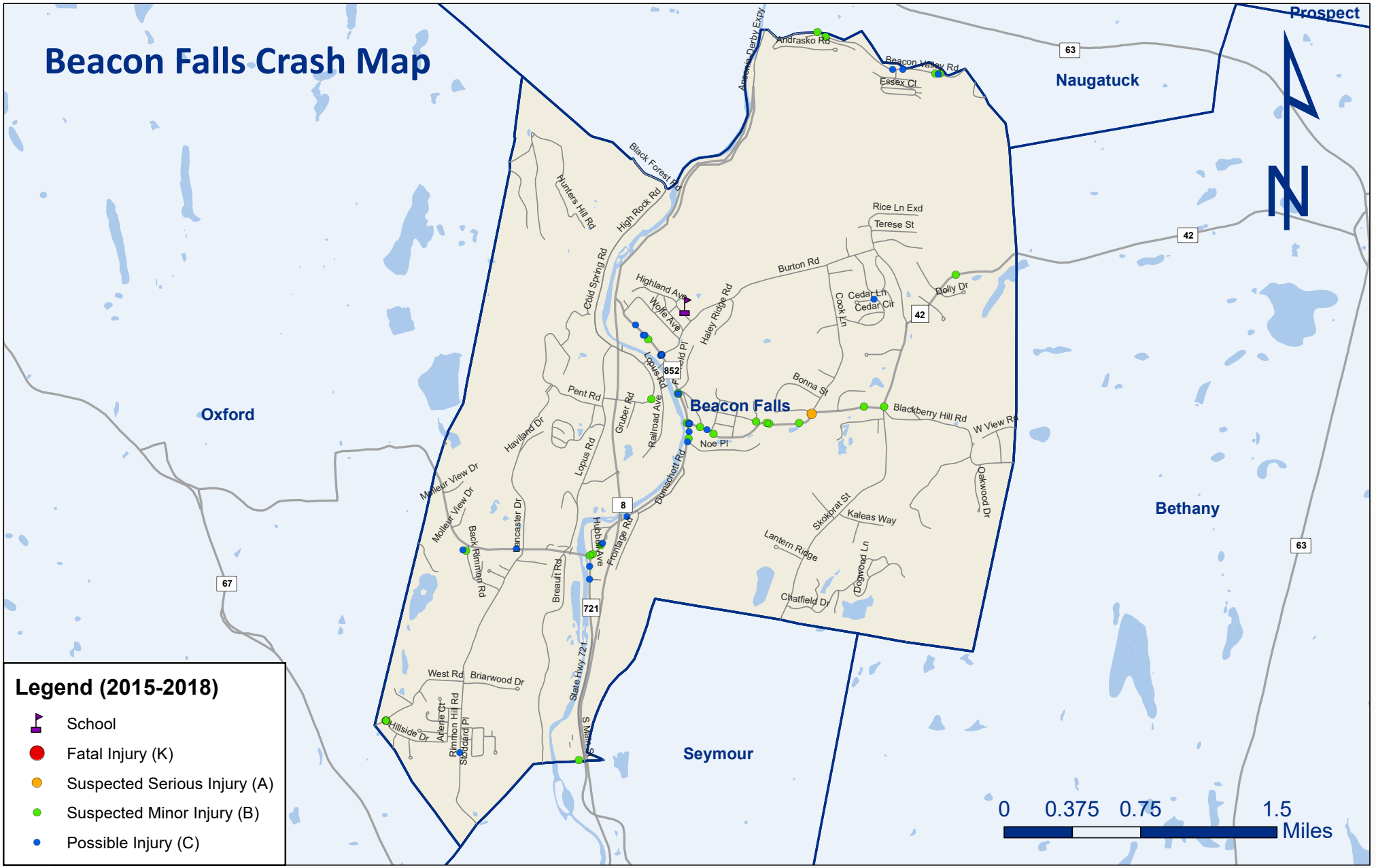
Bicyclists and Pedestrians
The Naugatuck River Greenway segment runs from Burton Road to CT-42 (Munson Road/Lasky Road). This greenway has potential to extend to CT-8 (Ansonia-Derby-Shelton Expressway) with the availability of future funding. The Town of Beacon Falls does not have many cyclist due to roadway geometry.

Enforcement
The Beacon Falls Police Department is using dynamic speed feedback signs in Town. Several speed feedback signs are permanently mounted on Burton Road and Beacon Valley Road. The town will be placing additional signs with data collection abilities at Skokorat Street and Rimmon Hill Road.


Rimmons Hill Road

Beacon Falls Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	1	0	0	0
Suspected Minor Injury (B)	8	8	6	6
Possible Injury (C)	6	7	5	6
Total Injury Crashes	15	15	11	12


Beacon Falls Crash Map
Prospect
Naugatuck
Oxford
Beacon Falls
Bethany
Seymour
Andrasko Rd
Beacon Valley Rd
Essex Ct
Ansonia-Derby Expy
Black Forest Rd
High Rock Rd
Hunters Hill Rd
Cold Spring Rd
Rice Ln Exd
Terese St
Burton Rd
Highland Ave
Wolfe Ave
Haley Ridge Rd
Cook Ln
Cedar Ln
Cedar Cir
Dolly Dr
Bonna St
Blackberry Hill Rd
W View Rd
Pent Rd
Lopus Rd
Gruber Rd
Railroad Ave
Noe Pl
Dunschott Rd
Havilland Dr
Mollear View Dr
Back Rimmon Rd
Lancaster Dr
Hubbell Ave
Frontage Rd
Breault Rd
Skokorat St
Kaleas Way
Lantern Ridge
Dogwood Ln
Oakwood Dr
Chatfield Dr
West Rd
Briarwood Dr
Hillside Dr
Arlene Dr
Rimmon Hill Rd
Stoddard Pl
State Hwy 721
S Main St
63
42
852
8
721
67
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.375 0.75 1.5
Miles

Field Site Inventory

Blackberry Hill Road

Blackberry Hill Road is a rural roadway consisting of one travel lane in each direction and no shoulders. It has steep down grade and horizontal curvature, but there are no grade advisory signs or chevron curve signs. Blackberry Hill Road intersects CT-42 (Bethany Road/Munson Road), and Skokorat Street at a wide off-set, four-way stop-controlled intersection.

Recommendations:

- Install chevron curve signs and advance curve warning signs.
- Add intermittent center-line rumble strips along down grade.
- High friction surface treatment.
- Install grade advisory signs.
- Bump out intersection and realign.

Blackberry Hill Rd/CT-42 (Bethany Rd/Munson Rd)/Skokorat St

Rimmon Hill Road

Rimmon Hill Road is a rural roadway consisting of one travel lane in each direction, no shoulders, and a narrow cross-section. This road has horizontal and vertical curvature. At the Woodland Regional High School football stadium, there is a faded pedestrian crosswalk linking the stadium entrance to a parking lot. There are no advanced pedestrian warning signs and illumination is limited due to the positions of the utility poles on Rimmon Hill Road. The town stated that it is a highly active crossing when there is a football game.

Recommendations:

- Install chevron curve signs and advance curve warning signs.
- Install pedestrian crossing ahead signage.
- Enhance crosswalk visibility.
- Provide vegetation management.


Rimmon Hill Rd/Woodland Regional High School football stadium

Beacon Falls Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Blackberry Hill Road	Speeding	Traffic calming	Low
		Enforce speed limit	Low-Medium
		Dynamic speed feedback signs	Low
	Horizontal and vertical curvature	Centerline rumble strips through the curves	Low
		Enhanced delineation	Low
Rimmon Hill Road	Pedestrian safety	Install pedestrian crossing ahead signage	Low
		Add crosswalk visibility enhancements	Low
		Add crosswalk lighting	Low
		Provide vegetation management	Low
Skokorat Street	Vertical and horizontal curvature	Horizontal curve warning signs scheduled to be installed	Low
	Speeding	Dynamic speed feedback signs	Low
		Enforcement	Low-Medium
CT-42 (Bethany Road/ Munson Road)/Blackberry Hill Road/Skokorat Street	High crashes at intersection	Investigate sight distance	Low-Medium

TOWN OF BETHLEHEM

2016 US Census Population Estimate: 3,447
Area: 19.70 square miles
Population Density: 175 persons per square mile
2016 Vehicle Miles Traveled (VMT): 16,510,045
2016 VMT per Capita: 4,790
Setting: Rural
Town Representatives: Lenny Assard (First Selectman), Conan Delia (Resident State Trooper)
Data Identified Data-Driven Corridors: N/A
Data Identified Data-Driven Intersections: N/A
Bike and Pedestrian Injury and Fatal Crashes, 2015-2018: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 35

CT-132 Kasson Rd

Overview

Bethlehem is a rural town in Litchfield County, bordered by Morris to the north, Watertown to the east, Washington to the west and Woodbury to the south. The Town of Bethlehem's main thoroughfares are CT-61 and CT-132.

Town Input

Fatal Crashes from 2015-2018

- There was one fatal crash as a result of a motorist reversing into a ditch and being ejected through the sunroof.

CT-132 (Lakes Road/East Street)/Magnolia Hill Road/Nonnewaug Road

This is a high-frequency crash location with stop control on the local road. CT-132 (Lakes Road/East Street) has a sharp curve, and Nonnewaug Road intersects in the middle of the curve where sight distance is extremely limited. The trees along CT-132 (Lakes Road/East Street) further inhibit the sight distance, and the town believes removing some of them would improve the safety of this intersection. This intersection is a site of a 2009 motorcycle fatal angle crash. CTDOT had developed two concept plans to redesign the intersection, and the town is amenable to the design, but not sure what phase the project is in currently.

CT-132 (Kasson Road) and Hard Hill North and South

This high-frequency crash location has stop control on the local roads. The sight distance is limited due to the vertical curvature along CT132 (Kasson Road). The State has since installed a flashing yellow beacon at this intersection.

CT-61 (Main Street North)/Bellamy Lane/Kasson Road

This is a high-frequency crash, four-way intersection with stop control on Bellamy Lane and Kasson Road. Bellamy Lane approach and stop bar are skewed at the intersection. The utility poles along Bellamy Road at CT-61 (Main Street North) block sight lines for the motorists exiting Bellamy Lane. This intersection was the site of a near fatal bike crash that is outside of this study period.

CT-132 (Kasson Road) and Woodland Road

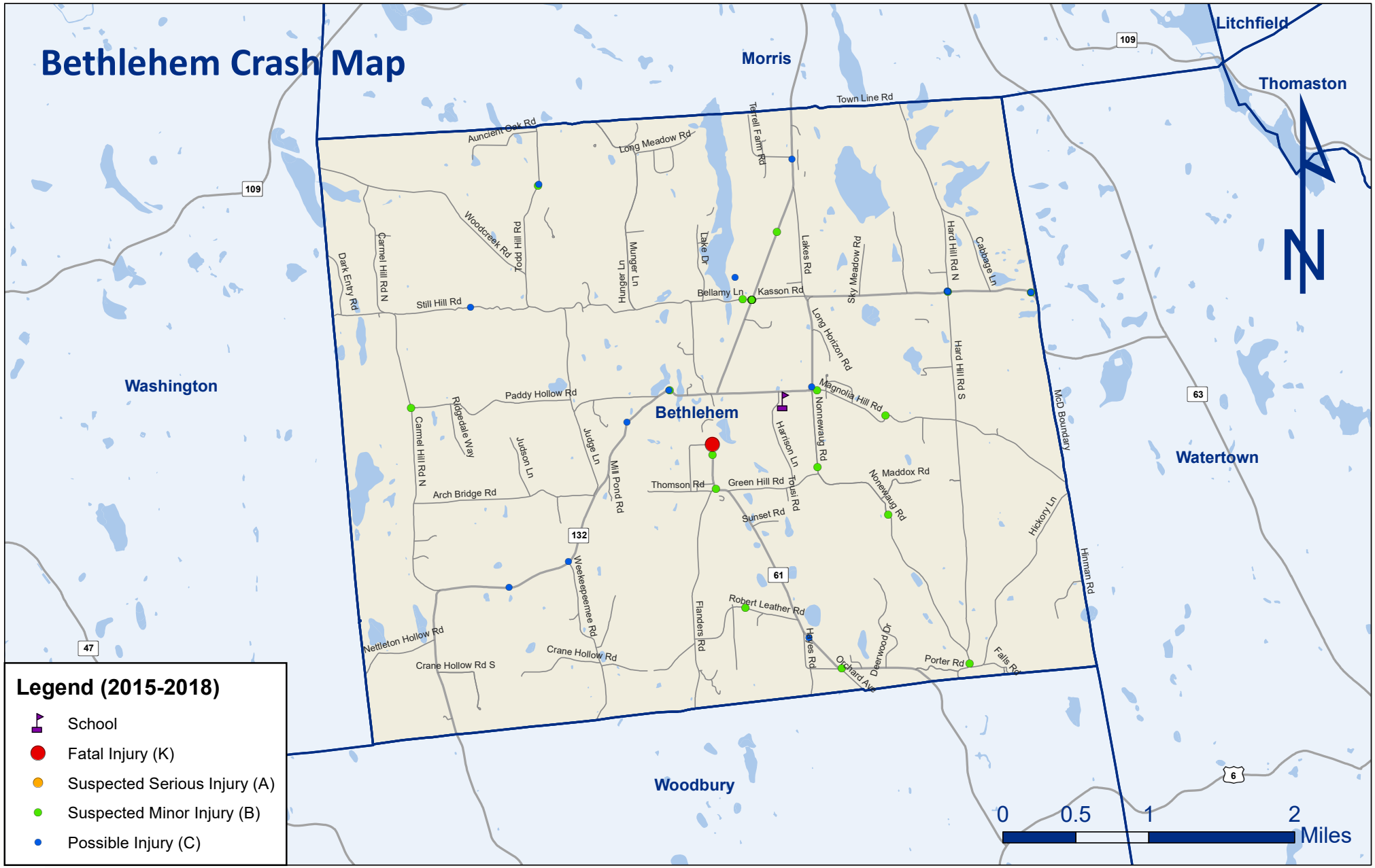
Woodland Road is a privately-owned road leading to about 20 residences. It forms a T-intersection with CT-132 (Kasson Road). The Town is very concerned with this segment of CT-132 (Kasson Road) because the Eastbound CT-132 (Kasson Road) is marked so that cars can pass each other despite the potential conflict with the motorists turning in and out of Woodland Road. The State has said that because CT-132 (Kasson Road) is not a Town-owned road, they will not change the lane-passing designation. The residents said that there are near misses with oncoming and turning traffic and that they want passing to be eliminated along this segment. In addition, there is a bus stop at Woodland Road and CT-132 (Kasson Road) which elevates the importance of evaluating this again.

Enforcement

The Town of Bethlehem is a part of the resident state trooper program Troop L. The Troopers use dynamic speed feedback signs in the Town. Trooper Conan Delia expressed concern that the PR-1 forms are not always accurate because the geocoded location is often from the origin of the 911 call-in or an estimate based on cross streets.

Bethlehem Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	0	0
Suspected Serious Injury (A)	0	0	0	0
Suspected Minor Injury (B)	4	4	8	5
Possible Injury (C)	4	3	4	2
Total Injury Crashes	9	7	12	7


Bethlehem Crash Map
Morris
Litchfield
Thomaston
Washington
Bethlehem
Watertown
Woodbury
Town Line Rd
Auncient Oak Rd
Long Meadow Rd
Terrell Farm Rd
Dark Entry Rd
Carmel Hill Rd N
Woodcreek Rd
Pod Hill Rd
Munger Ln
Hunger Ln
Lake Dr
Lakes Rd
Sky Meadow Rd
Hard Hill Rd N
Cabbage Ln
Still Hill Rd
Bellamy Ln
Kasson Rd
Long Horizon Rd
Hard Hill Rd S
Paddy Hollow Rd
Magnolia Hill Rd
Ridgedale Way
Judson Ln
Judge Ln
Mill Pond Rd
Harrison Ln
Nonnewaug Rd
Thomson Rd
Green Hill Rd
Tousi Rd
Maddox Rd
Arch Bridge Rd
Sunset Rd
Hickory Ln
McD Boundary
Weekeepeemee Rd
Flanders Rd
Robert Leather Rd
Hayes Rd
Orchard Ave
Deerwood Dr
Porter Rd
Falls Rd
Hinman Rd
Nettleton Hollow Rd
Crane Hollow Rd
Crane Hollow Rd S
109
132
61
63
47
6
0 0.5 1 2 Miles
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)

Field Site Inventory

CT-61 (Main Street North)/Bellamy Lane/Kasson Road

This is a two-way stop-controlled intersection with a vertical curvature in all directions and a limited sight distance. The sight distance from Kasson Road is obstructed by a utility pole and by vegetation. Furthermore, the intersection is skewed. Each stop sign has supplemental plaque warning the motorists that cross traffic does not stop.

Bellamy Lane consists of one travel lane in each direction and no shoulders. The sight distance is not limited from Bellamy Lane, but motorists still have to deal with high travel speeds on CT-61 (Main Street North). CT-61 (Main Street North) speed limit is posted at 40 MPH, but the motorists travel at higher speeds. CT-61 (Main Street North) consist of one travel lane in each direction with approximately 2-foot shoulders.

Recommendations:

- Relocate the utility pole.
- Provide vegetation management.
- Analyze roadway geometry.
- Install dynamic speed feedback signs.

CT-132 (Kasson Road)/Woodland Road

The intersection of CT-132 (Kasson Road) and Woodland Road (private road) is a 3-way intersection with CT-132 (Kasson Road) as the mainline and Woodland Road as the side street under inferred stop control with no stop sign or stop bar. CT-132 (Kasson Road) has a posted speed limit of 40 MPH and is designated as a passing zone through the intersection. Woodland Road provides access to approximately 20 residential homes with peak traffic use during the AM and PM commuter periods. The intersection is also designated as a School Bus Stop raising significant concerns associated with the posted passing zone and high travel/passing speeds, particularly during the morning and afternoon pick-up and drop-off periods.

Recommendation:

- Consider installing a stop sign and stop bar for the Woodland Street approach and eliminating the passing zone through the intersection.
- Provide regulatory enforcement.

CT-61(Main St North)/Bellamy Ln

CT-132 (Kasson Rd) looking west from Woodland Rd

Bethlehem Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-132 (Lakes Road/East Street)/Magnolia Hill Road/Nonnewaug Road	High frequency crashes and limited sight distance	CTDOT redesigning intersection	Medium-High
CT-61 (Main Street North)/ Bellamy Lane/Kasson Road	Utility pole impedes sight lines	Relocate the utility pole	Medium-High
	Vegetation overgrowth	Provide vegetation management	Low
	Skewed intersection	Analyze roadway geometry	Low-Medium
	High speed-related crash frequency	Install dynamic speed feedback signs	Medium
CT-132 (Kasson Road) and Woodland Road	Intersection related crashes	Traffic calming on CT-132	Low
	Motorists bypassing on shoulder	Consider installing a stop sign and stop bar for the Woodland Road approach and eliminating the passing zone through the intersection	Low
CT-61 (Main Street South) and Green Hill Road	High frequency crash intersection	CTDOT installing flashing yellow beacon	Low-Medium
		Dynamic speed feedback signs on CT-61	Low
		Speed enforcement	Low-Medium

CITY OF BRISTOL

2016 US Census Population Estimate: 60,147
Area: 26.80 square miles
Population Density: 2,244 persons per square mile
2016 Vehicle Miles Traveled (VMT): 254,215,565
2016 VMT per Capita: 4,227
Setting: Suburban City
Town and Regional Representatives: Raymond Rogozinski (Bristol DPW), Patrick Krajewski (PD), Michael Duval (PD)
Data Identified High Crash Corridors: US-6-Farmington Avenue (From John Avenue to Town Line); US-6-Farmington Avenue/North Street/Terryville Avenue (From Vanderbilt Road to Matthews Street); CT-229-King Street (From West Washington Street to Business Park Road); CT-72-Pine Street (From Todd Street to Downs Street)
Data Identified High Crash Intersections: CT-229-King Street and Moody Street; CT-CT-229-Middle Street and CT-72-Riverside Avenue; CT-229-Middle Street and Pine Street; Pine Street and Emmett Street; East Road and Willis Street; Center Street and Summer Street
Bike and Ped Injury and Fatal Crash Injuries: 102
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 1,735

Mountain Road/CT-229 (Middle Street)

Overview

Bristol is a suburban city in Hartford County, bordered by Burlington to the north, Farmington and Plainville to the east, Plymouth to the west and Wolcott and Southington to the south. The City's main thoroughfares are US-6, CT-69, CT-72, and CT-229.

Bristol Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	5	5	6	4
Suspected Serious Injury (A)	16	31	20	17
Suspected Minor Injury (B)	140	135	130	167
Possible Injury (C)	290	287	268	214
Total Injury Crashes	451	458	424	402

City Input

Fatal Crashes from 2015-2018

There were 20 fatal crashes reported from 2015-2018, along non-limited access highways within the city limits. The following fatal crashes were discussed:

- Willis Street - Angle motorcycle fatal crash.
- Witches Rock Road - Distracted driving fatal crash.
- CT-229 (King Street) - Motorcycle fatal crash.
- Waterbury Road – Front-to-rear fatal crash, sun glare related.
- CT-229 (Middle Street) - Substance-impaired fatal crash.
- US-6 (Farmington Avenue) - Motorcycle fatal crash.
- US-6 (Farmington Avenue) - Substance-impaired pedestrian fatal crash.
- Stafford Avenue – Substance-impaired fatal crash.
- Union Street - Pedestrian fatal crash.
- CT-229 (Middle Street) - Pedestrian fatal crash.
- Broad Street - Roadway departure fatal crash.
- CT-72 (Pine Street) - Bicycle fatal crash.

Willis Street, Waterbury Road and Wolcott Street
All three roadways have similar characteristics: wide cross section with new pavement and a propensity for drivers speeding. Willis Street has daily police enforcement. The city representatives discussed centerline rumble strips as a possible solution along these three roadways.

CT-229 (King Street/Middle Street)
This is a high-crash, north-south corridor. NVCOG is initiating a transportation study of the CT-229 (King Street/Middle Street) corridor past the city limits of Bristol. This will hopefully address problematic intersections at CT-229 (Middle Street) and Pine Street as well as the corridor-wide issues.

CT-72 (Pine Street/Riverside Avenue/Main Street/School Street/Divinity Street/Park Street/Terryville Road)
This is a high-crash east-west corridor with heavy traffic volumes. The South Street and Mountain Road portion of CT-72 (Riverside Avenue) expands out to two lanes in both directions, and the City of Bristol representatives stated that this wide cross section is unnecessary and permits motorists to make unsafe lane changes. In addition the lane widths forced the construction of a retaining wall on the south side along the Mountain Road segment.

One of the high priority segments for the city is from CT-229 (Middle Street) to CT-69 (West Street). CTDOT has a project to redesign the intersection of CT-69 (West Street) and CT-72 (Divinity Street/School Street). The intersection of CT-72 (Riverside Avenue), Downs Street and Blakeslee Street is a high-crash intersection, and CTDOT initiated a project to redesign this intersection.

CTDOT has conceptual plans to realign CT-72 (School Street) and pass through Brackett Park to address poor horizontal curvature through this section of the corridor. This project is widely supported by the Staff administration and city residents. The city wants to streetscape from CT-72 (Main Street) to Memorial Boulevard.

Memorial Boulevard
This is a four-lane cross section divided by a grass median corridor. There is a truck prohibition on Memorial Blvd, but trucks still use this roadway. The city is going to use CT Community Connectivity Program grant funds to reduce the cross section to one lane in each direction with adjacent bicycle lanes.

CT-69 (Burlington Avenue/West Street/Wolcott Street/Wolcott Road)
This is a north-south corridor with a high volume of crashes. If feasible, the city wants to add left turn lanes at the intersection of CT-69, South Street and South Street extension.

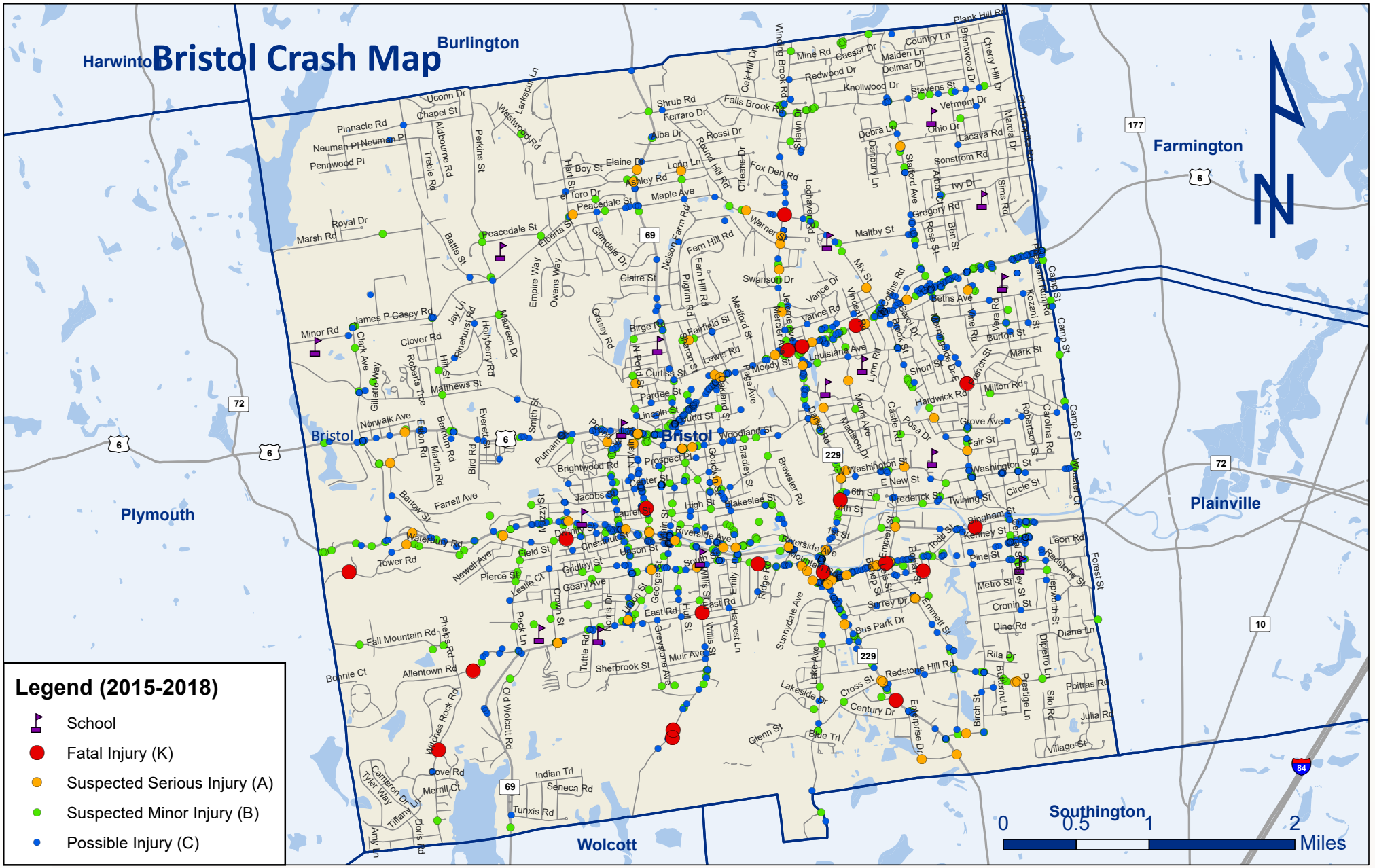
Signal Timing
The city owns 23 traffic signals with recently upgraded video detection and has also received funding for signal retiming.

Bikes and Pedestrians
The City of Bristol wants to add a pedestrian parkway connecting Rockwell Park, Brackett Park and Memorial Park. Currently, the city does not have a large bike population, except among younger school-aged residents.

Enforcement
The city uses DUI and Distracted Driving (spotter used) grants for enforcement. Dynamic speed feedback signs are used, but two transferable signs were recently purchased.

Rockwell Park entrance Source: Bristol, CT

Source: WatchForMeCT.org


Bristol Crash Map
Harwinton
Burlington
Farmington
Plymouth
Bristol
Plainville
Southington
Wolcott
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles

Field Site Inventory

Mountain Road/CT-229 (Middle Street)

This four way signalized intersection has a very wide cross section with travel lanes measuring almost 20 feet. The cross section changes from two to four travel lanes when South Street becomes Mountain Road west of CT-229 (Middle Street). A very high retaining wall is on the south side of Mountain Road with nets, jersey barriers and a guide rail for protection. There are incomplete sidewalks on the east and west sides of Mountain Rd. There is also vertical curvatures on Mountain Road when approaching CT-229 (Middle Street).

Recommendations:

- Narrow roadway to one lane in each direction. Road diet to maintain roadway consistency until CT-229 (Middle St).
- Narrow travel lanes to 11' if not able to complete as part of CTDOT road diet feasibility. (CT-229 from Cross St to ESPN Drive is under review by CTDOT for road diet feasibility)

Rockwell Park/Brackett Park/Memorial Park- Pedestrian Connectivity

Rockwell Park, Brackett Park and Memorial Park are active pedestrian and bicycle destinations surrounded by dense residential and commercial land uses within the City of Bristol. These pedestrian and bicycle destinations are within a linear mile and generally connected by the Pequabuck River corridor. However, there is limited pedestrian and bicycle infrastructure to facilitate this connection.

Recommendation:

- To improve pedestrian and bicycle mobility and encourage walking and bicycling, the city would like to connect these resources with a multi-use trail and/or a combinations of multi-use trails, sidewalks and various bicycle accommodations.

Mountain Rd/CT-229 (Middle St)

North Main Street north of the police station

Bristol Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-69 and CT-72[1]	High crash intersection	Initiate CTDOT's redesign of intersection	See below
CT-72 (South Street and Mountain Rd section)	Wide cross section and aggressive driving	Narrow lane widths to 11' and widen shoulders where applicable	Medium
CT-72 and Memorial Parkway	Pedestrian and bike mobility	Streetscaping	Low
	Wide cross section on Memorial Pkwy	Use CT Community Connectivity Grant to reduce lanes and add bike lanes	Medium (grant funded)
Rockwell Park, Brackett Park and Memorial Park	Pedestrian connectivity	Add pedestrian walkway	Medium-High
CT-69 and South St	High number of crashes at intersection	Add left turn lane	Low-Medium
Citywide	Speeding	Narrow lanes to 11' where feasible	Low
		Add centerline rumble strips to reduce lane departures	Low
	Uncoordinated signal timing	Coordinate city-owned signals and state-owned signals	Low-Medium

1 There is an active project listed on the TIP to construct intersection improvements at CT-69. Includes realignment of the intersection. Total cost estimate; $13,000.00.

TOWN OF CHESHIRE

2016 US Census Population Estimate: 29,282
Area: 33.40 square miles
Population Density: 877 persons per square mile
2016 Vehicle Miles Traveled (VMT): 295,963,170
2016 VMT per Capita: 10,107
Setting: Urban
Town and Regional Representatives: Sean Kimball (Town Manager), Brian Pichnarcik (PD), Jeffrey Sutherland (PD), Neil Dryfe (PD), Christian Meyer (NVCOG), Walter Gancarz (Town Engineering), Don Nolte (Cheshire Operations)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Ped Injury and Fatal Crash Injuries: 46
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 505

CT-10

Overview

Cheshire is an urban town in New Haven County, bordered by Southington and Wolcott to the north, Meriden and Wallingford to the east, Prospect and Waterbury to the west and Bethany and Hamden to the south. The town's main thoroughfares are I-84, I-691, CT-10, CT-42, CT-68, CT-70, and CT-801.

Town Input

Fatal Crashes from 2015-2018

- CT-10 (Highland Avenue) - Fatal motorcycle angle crash.
- Knotter Drive - Possible medically-related fatal crash.
- Country Club Road - Medically-related fatal crash.
- CT-70 (West Main Street) and Willow Street - Older driver fatal angle crash.
- CT-10 (South Main Street) near King Road - Dark-lighted pedestrian fatal crash.
- CT-70 (South Meriden Road) near Talmadge Road - Driver fatigue fatal crash.

CT-70 (South Meriden Road/Academy Road/Main Street/West Main Street/Waterbury Road)
This corridor has high volumes of traffic and high concentration of crashes. The signals at CT-70 (South Meriden Road)/CT-68 (Academy Road), and CT-70 (West Main Street)/Mountain Road intersections are very congested and need upgrading to include left-turn clearance. The state has proposed a project to upgrade these signals in 2023.

The Farmington Canal Heritage Trail crossing on CT-70 (West Main Street) has a pedestrian hybrid beacon (PHB) signal, which has caused some user confusion. When the red traffic signal flashes for motorists, the pedestrian countdown timing is still activated, which can falsely indicate that vehicles have stopped. This is especially problematic for cyclists. The other trail crossings have crosswalks and some in-street pedestrian crossing signs but no actuated signals.

Mount Sanford and South Brooksvale Road
This is a stop-controlled, skewed T-intersection with sight distance issues. The state has proposed a realignment to improve sight distance, which the Town Council has approved. This project is being advanced by the Town under LOTCIP funds.

CT-42 (Bethany Mountain Road)
This roadway has vertical and horizontal curvatures and icy conditions in winter. There are advanced curve warning signs with advisory speed limits and chevron along the horizontal curves. Roadway departure crashes are common, and the state had applied a high-friction surface treatment which has mitigated those type of crashes. The state has since repaved this roadway but has not reapplied the treatment, which the town wants them to do, especially before winter.

Jinny Hill Road and Cook Hill Road
This intersection has vertical and horizontal curvatures. The town would like centerline rumble strips along the horizontal curves, but does not have machines to install them.

Local Roads
The following roads are used as cut-throughs and are often cited as areas of speeding by residents: Mountain Road, Cook Hill Road, Peck Lane, and Cheshire Road. NVCOG has a grant for an origin and destination study. They can coordinate with and assist the Town of Cheshire to legitimize their concerns regarding the roadway's usage. The possible countermeasures could include reducing travel lane widths and other traffic calming countermeasures where feasible.

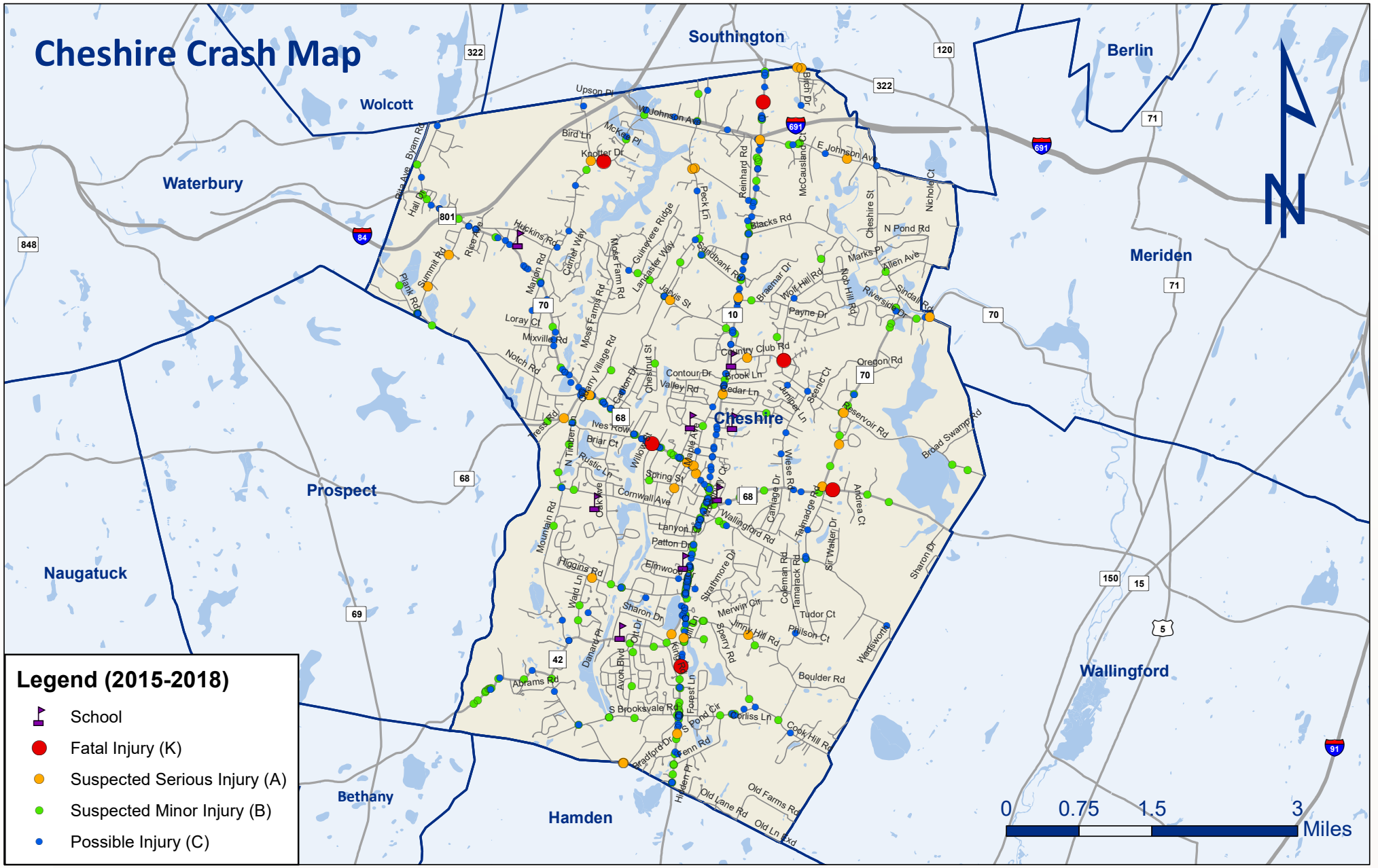
Speeding
The police have stated that about 90% of their complaints are speed related. The town uses dynamic speed feedback signs. The collected data shows that the 85th percentile for speed in Cheshire is between 37-42 MPH, but most of the town's roads are posted at 25 MPH. The Town of Cheshire wants a town-wide speed and traffic study to determine best practices.

Through Trucks
There are through truck issues in the northern end of the town with trucks cutting through local roadways to access I-84 (Yankee Expressway). Whole Foods is redesigning their exit driveway to try to force commercial drivers to use CT-10 (Highland Avenue) and curb the use of local roads. The town of Southington has the same issue and applied for through truck prohibitions but were denied by the state.

Pedestrian
There are conflicts between vehicles and pedestrians at the Farmington Canal Heritage Trail crossings. The Town installed pedestrian signals at West Main Street and Rumberg Road, at Big Y plaza, and crossing signs at CT-10 (South Main Street) in response to fatal pedestrian crashes.

Cheshire Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	3	0	2	1
Suspected Serious Injury (A)	7	7	10	6
Suspected Minor Injury (B)	56	53	51	47
Possible Injury (C)	66	60	63	73
Total Injury Crashes	132	120	126	127


Cheshire Crash Map
Southington
Berlin
Wolcott
Waterbury
Meriden
Prospect
Naugatuck
Wallingford
Bethany
Hamden
Cheshire
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

CT-10 (South Main Street)

This high-frequency crash corridor has predominantly two-lane cross sections with intermittent four-lane cross sections and turning lanes with high-volume traffic. CT-10 (South Main Street) from CT-70 (Academy Road) south to Hamden has congestion issue. This corridor has one travel lane in each direction which widens out around the high school entrances and left turn lanes at signals. Southside of CT-10 (South Main Street) has some two-way center left-turn lane pockets, but cars queue to make left turns midblock along corridor at various spots. There are sidewalks along both sides of the corridor.

Recommendation:

- Investigate two-way center left-turn lanes to alleviate congestion from cars turning left. This will improve mobility, possibly reducing angle crashes.

Mountain Road

Mountain Road is a rural residential roadway that experiences high traffic volumes due to significant north-south cut-through traffic. The roadway cross-section is generally narrow and consists of one travel lane in each direction with no shoulders. The posted speed limit is 25 mph; however, significantly higher travel speeds have consistently been observed by the town.

Recommendation:

- Consider traffic calming measures such as speed tables and speed feedback signs at key locations.

CT-10 (South Main St)

Mountain Road

Cheshire Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-10 (Highland Avenue/ South Main Street)	Insufficient left turn lanes	Road diet with two way center left turn lanes	Medium
	High turning movements		
CT-70	Congestion at signals	State proposed signal redesign on CT-70 and Mountain Rd and CT-70 and Academy Rd (2023)	Medium
CT-42 (Bethany Mountain Rd)	Roadway repaved without high friction surface treatment	Redo high friction surface treatment for roadway departure crashes	Low
Various local roads	High traffic volumes	NVCOG origin and destination study	Low
Jinny Hill Road and Cook Hill Road	Horizontal curvature	Centerline rumble strip spot treatment-coordinate with state	Medium
Mountain Road	Speeding	Speed tables	Low-Medium
		Dynamic speed feedback signs	Low
Farmington Canal Heritage Trail Crossing on CT-70	Pedestrian hybrid signal user confusion	Add signs on trail to indicate that pedestrian signal time not concurrent with motorists signal	Low
		Education on PHB signals	Low

CITY OF DERBY

2016 US Census Population Estimate: 12,631
Area: 5.40 square miles
Population Density: 2,339 persons per square mile
2016 Vehicle Miles Traveled (VMT): 122,833,085
2016 VMT per Capita: 9,725
Setting: Urban
Town and Regional Representatives: Richard Dziekan (Mayor), Andrew Baklik (City of Derby), Scott Todd (Police Department)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: CT-34-New Haven Avenue/Derby Avenue and Old New Haven Avenue; CT-34-New Haven Avenue/Derby Avenue and Sentinel Hill Road
Bike and Ped Injury and Fatal Crash Injuries: 24
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 335

Elizabeth Street

Overview

Derby is a city in New Haven County, bordered by Seymour and Ansonia to the north, Woodbridge to the east, Shelton to the west, and Shelton and Orange to the south. The city's main thoroughfares are CT-8, and CT-34.

City Input

Fatal Crashes from 2015-2018

- CT-34 (Roosevelt Drive) - Front to front fatal crash near Seymour town line, prior to CTDOT reinstalling the centerline rumble strips, due to a roadway project.

CT-34 (Roosevelt Drive/Main Street/Derby Avenue/New Haven Avenue)
This corridor has high traffic volume. The centerline rumble strips along the western section within Derby have reduced the frequency of crashes. The east-west corridor along the river has various segments of higher crashes. The state and NVCOG are widening the roadway from Bridge Street to CT-8 (General Samuel Jaskilka Highway) from two to four lanes and adding a center median and turning lanes. In addition, Minerva and Elizabeth Street will be converted to one-ways to address the issues at the CT-34 (Main Street) signal. The bike path will be moved off the road and closer to the Naugatuck River Greenway trail.

CT-34 (New Haven Avenue/Derby Avenue) and Sentinel Hill Road
This signalized intersection had the highest frequency crashes in 2015-2018 in Derby. The City stated that sun glare is a possible contributor to crashes, preventing motorists from seeing the signal. This site is a possible candidate for installation of retroreflective backplates. The state redesigned this intersection recently, which the city anticipates will mitigate the issues at this location. This project was completed.

CT-34 (New Haven Avenue/Derby Avenue) and Sodom Lane
This intersection in the commercial area of the city has high frequency of crashes. It has short left turn lanes storage and speeding is common. The city said it is slated for pedestrian improvements.

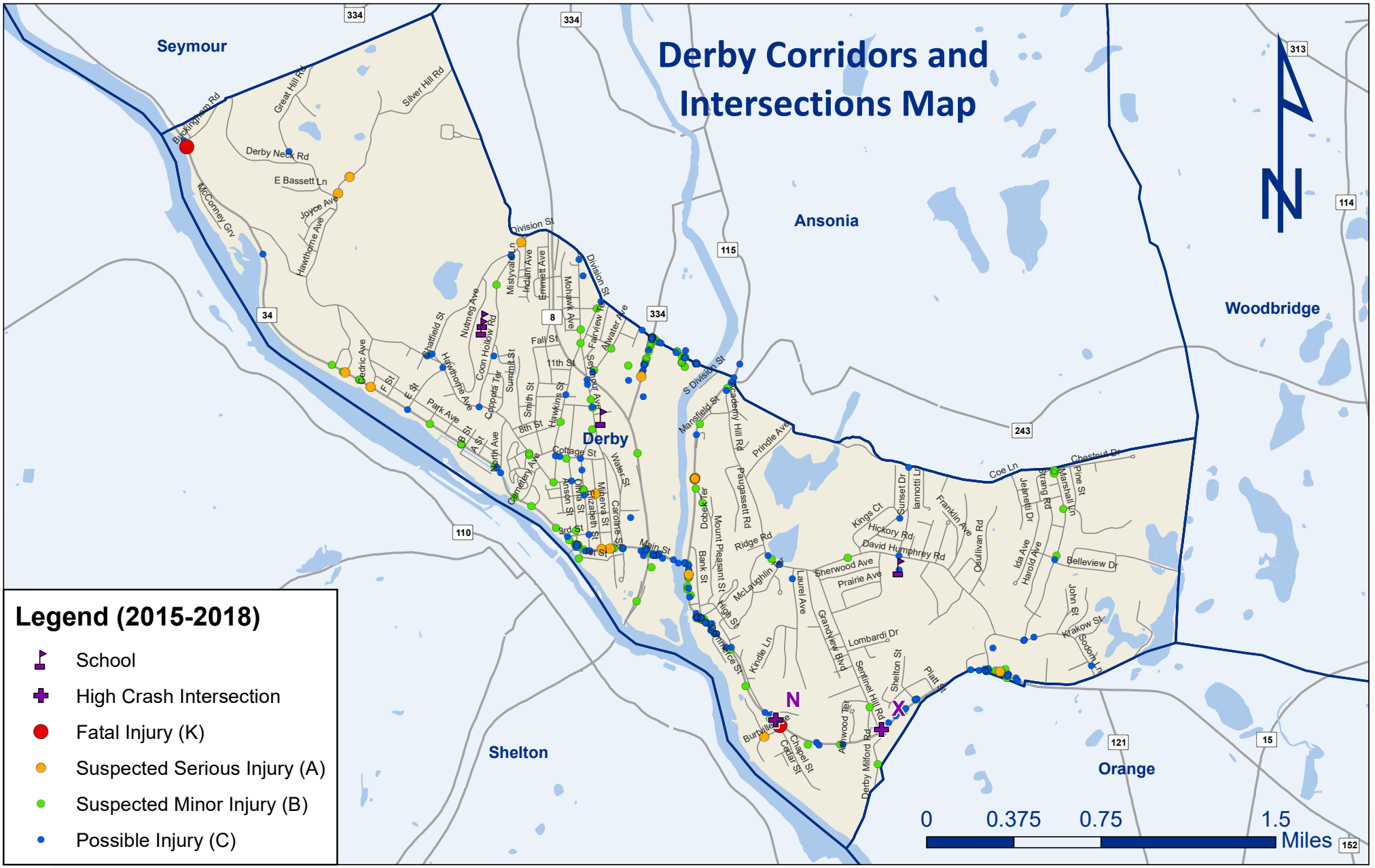
Seymour Avenue/Atwater Avenue/CT-8 (General Samuel Jaskilka Highway) Off Ramps
This is a four-legged, skewed, signalized intersection with a cluster of crashes and confusing geometry. It has an older city-owned signal which needs updating.

CT Community Connectivity Grant for CT-34 (New Haven Avenue/Derby Avenue) Pedestrian Safety Improvements
CTDOT has a project that will include sidewalks, crosswalks, and pedestrian signals on CT-34 (New Haven Avenue/Derby Avenue)/Gilbert Street/Bank Street, and CT-34 (New Haven Avenue/Derby Avenue)/Sodom Lane intersections.

State pedestrian and chevron curve signage programs
The state has systematically installed pedestrian crossing signs throughout Derby, creating, what feels like, sign clutter. The City of Derby feels that many of the signs are excessive and, since the affiliated crosswalks are often at intersections, several of them are unnecessary. The state has advised the city that they can remove whichever signs are not needed. Unlike many other municipalities, the City of Derby opted to maintain all the installed chevron curve signs, especially along CT-34 (Roosevelt Drive/Main Street/Derby Avenue/New Haven Avenue) due to its previous high rate of crashes.

Derby Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	0	1
Suspected Serious Injury (A)	4	8	4	2
Suspected Minor Injury (B)	33	37	40	19
Possible Injury (C)	51	49	54	32
Total Crashes	88	95	98	54


Derby Corridors and Intersections Map
Seymour
Ansonia
Woodbridge
Shelton
Orange
Derby
Legend (2015-2018)
School
High Crash Intersection
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.375 0.75 1.5
Miles
N
X
Division St
Main St
Ridge Rd
Derby Neck Rd
Great Hill Rd
Silver Hill Rd
Buckingham Rd
E Bassett Ln
Joyce Ave
Hawthorne Ave
McConney Grv
Nutmeg Ave
Coon Hollow Rd
Mistyvale Ln
Indian Ave
Emmett Ave
Mohawk Ave
Fairview Ave
Awater Ave
Fall St
11th St
Seymour Ave
Smith St
Hawkins St
8th St
Park Ave
Cottage St
Water St
Cemetery Ave
Anson St
Olivia St
Elizabeth St
Minerva St
Caroline St
3rd St
2nd St
1st St
Cedric Ave
Chatfield St
Summit St
Coppola Ter
E St
F St
S Division St
Mansfield St
Academy Hill Rd
Prindle Ave
Paugassett Rd
Dodge Ter
Mount Pleasant St
Bank St
High St
McLaughlin Ter
Laurel Ave
Grandview Blvd
Kindle Ln
Commerce St
Burwell Ave
Chapel St
Cedar St
Sherwood Ave
Prairie Ave
Lombardi Dr
Sentinel Hill Rd
Derby Milford Rd
Shelton St
Platt St
Kings Ct
Hickory Rd
David Humphrey Rd
Sunset Dr
Iannotti Ln
Franklin Ave
O'sullivan Rd
Coe Ln
Chestnut Dr
Pine St
Marshall Ln
Strang Rd
Jeanetti Dr
Ida Ave
Harold Ave
Belleview Dr
John St
Krakow St
Scoboria Ln
334
34
8
110
115
243
313
114
121
15
152

Field Site Inventory

Academy Hill Road/CT-115 (Derby Avenue)

This is a skewed intersection with stop control on Academy Hill Road. CT-115 (Derby Avenue) consists of a two-lane cross section with on-street parking on the west side. The speed limit is posted at 30 MPH. CT-115 northbound approaches Academy Hill Road on a horizontal curvature which impedes sight distance. There is a combination horizontal alignment/intersection warning sign with a flashing beacon for northbound CT-115. Academy Hill Road has a two lane cross section and approaches CT-115 along vertical curvature. For cars exiting Academy Hill Road there is very limited sight distance due to the horizontal curvature, vegetation and a retaining wall on the east side of CT-115.

Recommendations:

- Eliminate a few parking spots.
- Realign CT-115 to the north to improve sight distance from Academy Hill Road.
- Realign intersection to be more perendicular.
- Remove vegetation.
- Dynamic speed feedback signs prior to curve on CT-115

CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Avenue/Seymour Avenue

Seymour Avenue and Atwater Avenue come together at a signalized intersection while providing access to CT-8 (General Samuel Jaskilka Hwy) Northbound and Southbound, as well as an off-ramp from CT-8 (General Samuel Jaskilka Hwy) Exit 17. The intersection is significantly skewed and elongated by approximately 300 ft due to the CT-8 (General Samuel Jaskilka Hwy) underpass of Seymour Avenue. The traffic signal controls the Seymour Avenue northbound and southbound approaches, the CT-8 (General Samuel Jaskilka Hwy) Exit 17 off-ramp and the Atwater Avenue approach. The signal equipment is antiquated and the signal timings and phasing need to be optimized to respond to peak period traffic volumes.

Recommendation:

- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.

Academy Hill Rd/CT-115 (Derby Ave)

CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Ave/Seymour Ave

Derby Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-34 (Roosevelt Drive/ Main Street/Derby Avenue/New Haven Avenue)	Capacity issues	NVCOG project which will widen roadway and add lanes	High
CT-34 (New Haven Avenue/Derby Avenue) and Sentinel Hill Road	High frequency crashes at signal	Traffic signal retroreflective backplates	Low- Medium
Seymour Avenue/Atwater Avenue/CT-8 (General Samuel Jaskilka Highway) Off Ramps	Outdated signal	Update traffic signal equipment	Medium-High
Academy Hill Road/CT-115 (Derby Avenue)	Inadequate sight distance	Realign intersection	Low-Medium
		Realign CT-115 farther east along curve	Low-Medium
		Remove vegetation	Low
		Dynamic speed feedback signs prior to curve on CT-115	Low
		Realign Academy Hill Road at CT-115	Low-Medium
CT-8 (General Samuel Jaskilka Hwy) Exit 17 Ramps/Atwater Avenue/ Seymour Avenue	Outdated signalization	Update traffic signal equipment and optimize timing	Medium
	Capacity issues		

TOWN OF MIDDLEBURY

2016 US Census Population Estimate: 7,641

Area: 18.50 square miles

Population Density: 413 persons per square mile

2016 Vehicle Miles Traveled (VMT): 192,405,005

2016 VMT per Capita: 25,181

Setting: Rural suburban

Town and Regional Representatives: Edward St. John (First Selectman), Curtis Bosco (Zoning Enforcement Officer), Fran Dabbo (Town Police Chief)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: CT-64-Middlebury Road and CT-63-Straits Turnpike

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 243

CT-63 (Straits Turnpike)

Overview

Middlebury is a rural town in New Haven County, bordered by Woodbury and Watertown to the north, Waterbury and Naugatuck to the east, Woodbury and Southbury to the west and Oxford to the south. The town's main thoroughfares are I-84, CT-63, CT-64, and CT-188.

Town Input

Fatal Crash Summary from 2015-2018

- CT-64 (Middlebury Road) and Christian Road - Motorcycle angle fatal crash.
- CT-64 (Middlebury Road) west of Tranquility Road - Young driver front-to-front fatal crash.
- South Street - Possible suicide fatal crash.

CT-63 (Straits Turnpike)

This high-frequency crash corridor has a narrow two-lane cross section with travel lane constraints and high volumes of traffic. It is located in the commercial area of the town.

CT-63 (Straits Turnpike) and Park Road/Park Road Extension

There are three proposed developments at this intersection: a gas station, a medical center and a car dealership. The town is working with the state and the developers on traffic and access management decisions.

CT-63 (Straits Turnpike) and CT-64 (Middlebury Road)
This is a four-way, signalized intersection with a high concentration of crashes which CTDOT has redesigned. There will be a new connector between CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) that will divert a substantial amount of traffic from the intersection. (CTDOT Project number 0080-0128).

CT-188 (Southford Road) and Christian Road
This is a side street, stop-controlled, four-way intersection with sight distance issues and a high concentration of crashes. The CT-188 (Southford Road) corridor has significant speeding issues.

CT-64 (Middlebury Road) and Lake Quassy Entrance
There are no turning lanes from CT-64 into Lake Quassy. The driveway is offset from Christian Road. The Town would like a crosswalk to connect the two parking areas on opposite sides of CT-64. Some events attract many people, and safety is a concern for both motorists and pedestrians. The town representatives stated that a flashing yellow beacon would help alert the motorists to be more cautious along this segment of CT-64 (Middlebury Road).

CT-64 (Middlebury Road)
This corridor is used as the parallel route due to I-84 (Yankee Expressway) and does not have any off-ramps in the Town of Middlebury (Exit 17 is used for access). Any I-84 incident shifts the traffic to CT-64 (Middlebury Road). In addition, CT-64 (Middlebury Road) is used as a cut-through by the residents from the Towns of Southbury, Woodbury, Roxbury and Washington.

CT-64 (Middlebury Road) and Four Corner Store Driveways
There are two access drives near the signalized intersection of CT-64 (Middlebury Road)/Reagan Road/Glenwood Avenue. The peak period traffic queues can block egress from driveways onto CT-64 (Middlebury Road) northbound, creating additional traffic congestion during these hours.

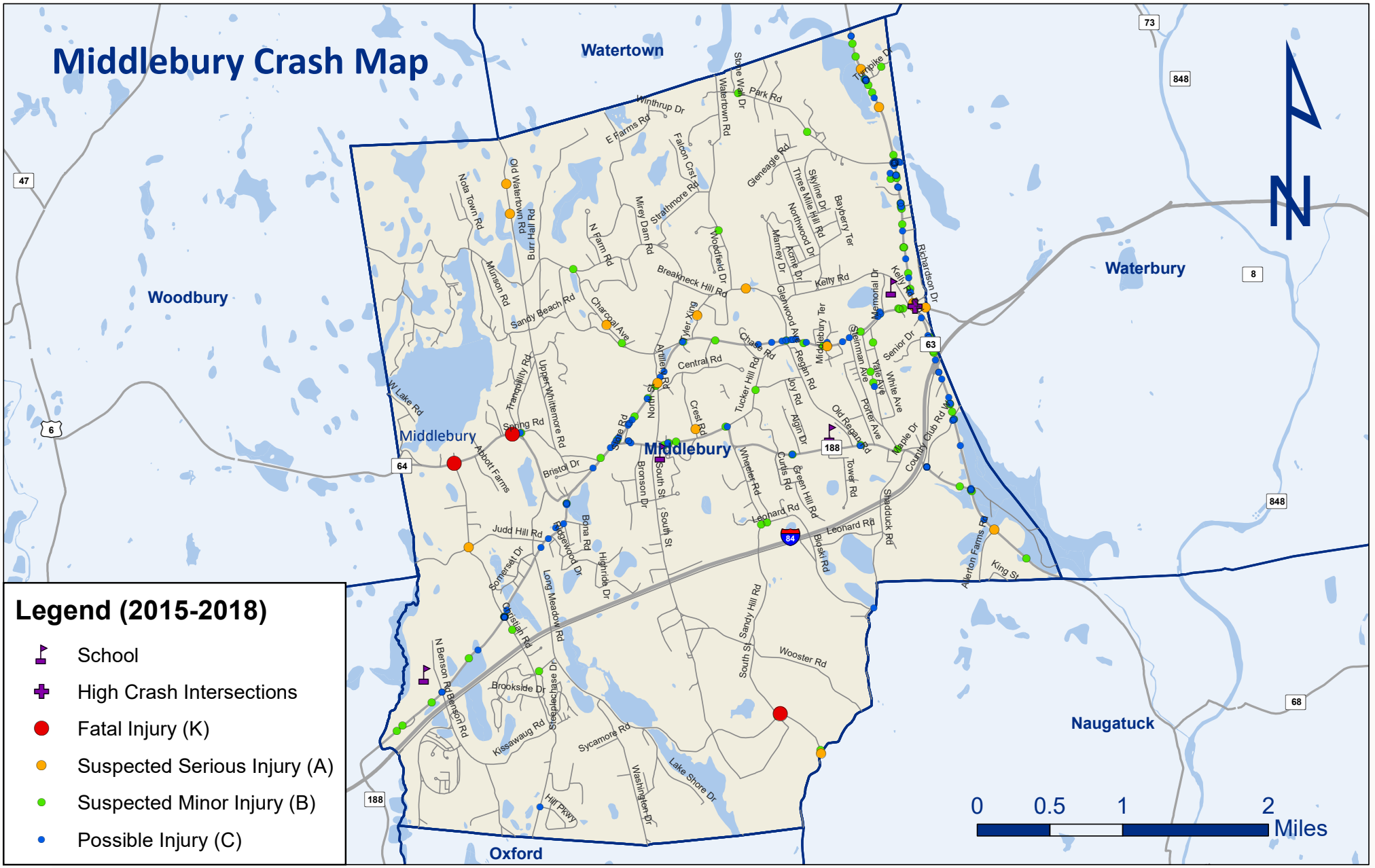
Center Line Rumble Strips
The Town of Middlebury said that local or state roads in the town do not have rumble strips. They think it would help to reduce lane departures on CT-64 (Middlebury Road).

Greenway
The Middlebury Greenway is a multiuse trail that runs parallel to CT-64 (Middlebury Road). The town wants to encourage residents to use the Greenway and stay off the roads for biking and walking because their roadways are narrow and have horizontal curvature. In addition, speeding and distracted driving make the roadways less amenable for non-motorized users.

Source: VN Engineers

Middlebury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	0	2
Suspected Serious Injury (A)	6	8	2	0
Suspected Minor Injury (B)	21	37	13	21
Possible Injury (C)	32	32	29	39
Total Crashes	59	78	44	62


Middlebury Crash Map
Watertown
Woodbury
Waterbury
Middlebury
Naugatuck
Oxford
Legend (2015-2018)
School
High Crash Intersections
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.5 1 2 Miles
N
Park Rd
Winthrup Dr
E Farms Rd
Falcon Crst Dr
Watertown Rd
Stone Wall Dr
Turnpike Dr
Gleneagle Rd
Skyline Dr
Three Mile Hill Rd
Northwood Dr
Bayberry Ter
Marney Dr
Kome Dr
Kelly Rd
Memorial Dr
Richardson Dr
Old Watertown Rd
Burr Hill Rd
Nota Town Rd
Munson Rd
Sandy Beach Rd
Mirey Dam Rd
N Farm Rd
Strathmore Rd
Woodfield Dr
Breakneck Hill Rd
Charcoal Ave
Tyler King
Glenwood Ave
Middlebury Ter
Chase Rd
Regan Rd
Senior Dr
Yale Ave
White Ave
Porter Ave
Old Reagan Rd
Joy Rd
Algin Dr
Tucker Hill Rd
Crest Rd
Central Rd
Artillery Rd
Union St
Tranquility Rd
Upper Whittemore Rd
Spring Rd
W Lake Rd
Abbott Farms
Bristol Dr
Bronson Dr
South St
Wheeler Rd
Curtis Rd
Green Hill Rd
Tower Rd
Maple Dr
County Club Rd W
Leonard Rd
Judd Hill Rd
Edgewood Dr
Bona Rd
Highride Dr
Somerset Dr
Long Meadow Rd
Christian Rd
Shadduck Rd
Bidski Rd
Alerton Farms Rd
King St
Wooster Rd
South St
Sandy Hill Rd
N Benson Rd
Benson Rd
Brookside Dr
Steeplechase Dr
Kissawaug Rd
Sycamore Rd
Lake Shore Dr
Washington Dr
Hill Pkwy
73
848
47
8
63
6
64
188
84
68

Field Site Inventory

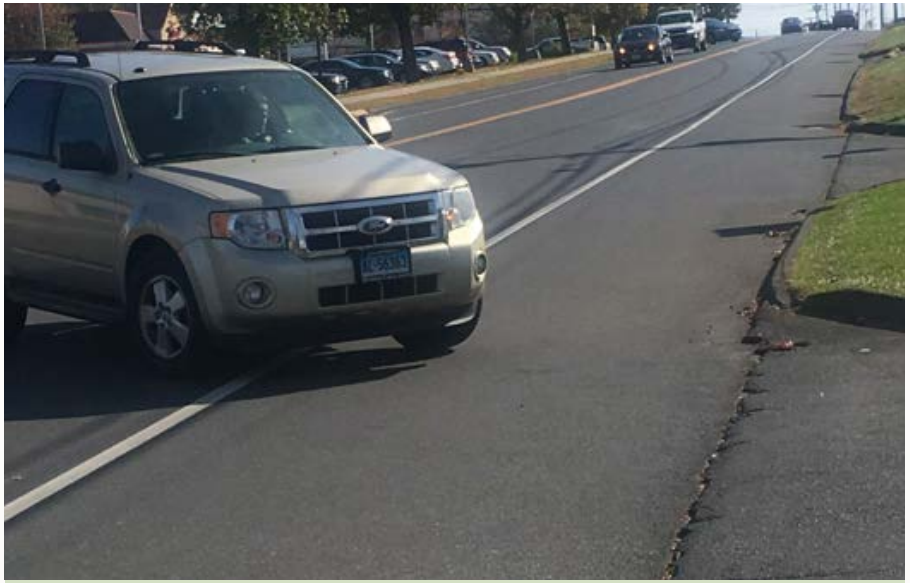
CT-63 (Straits Turnpike) north of CT-64 (Middlebury Road)

CT-63 north of CT-64 is a two-lane cross section through a rural residential area. At Jo Ann Drive, CT-63 expands to two travel lanes with intermittent turning lanes and then the lanes reduce back to two through lanes with no turning lanes from Park Rd to north of Turnpike Drive.

This section of CT-63 has a stretch of commercial businesses, with a high concentration of car dealerships. There are no turning lanes into businesses along this segment, but the cross section is wide enough to accommodate potential turn lanes. The businesses have one or two access points each.

Recommendations:

- Traffic signal retroreflective backplates along entire corridor.
- Coordinate with CTDOT on improvements at CT-64 (Middlebury Road) and CT-63 (Straits Turnpike).
- Strict access management at new development sites to limit turning conflicts.
- Determine if traffic signal upgrades are needed.
- Add turning lanes by striping and/or widening roadway to the west at various intersections along corridor, especially in the section of Sperrys Pond and just north of CT-64 (Middlebury Road).
- Investigate feasibility of adding center two-way left-turn lanes in the section on northern side near car dealerships.



CT-63 North of CT-64

CT-63 business driveways

Field Site Inventory

CT-188 (Southford Road)/Christian Road

The intersection of CT-188 (Southford Road) and Christian Road is a rural, unsignalized, 4-way, slightly skewed intersection with CT-188 (Southford Road) as the mainline and the Christian Road approaches under stop control. Sight distances from Christian Road are compromised by the CT-188 (Southford Road) crest vertical curve to the south and a steep upgradient and sharp horizontal curve to the north. CT-188 (Southford Road) has a posted speed limit of 40 MPH, however much higher speeds are reported further contributing to the sight distance challenges.

Recommendations:

- Consider installing Intersection Warning Sign for CT-188 SB (Southford Rd) approach to the intersection.
- Clear vegetation in the vicinity of the CT-188 NB (Southford Rd) approach Intersection Warning sign.
- Consider narrowing the travel lanes on CT-188 (Southford Rd).
- Consider installing curve warning signs.

CT-188 (Southford Rd)/Christian Rd

Christian Rd at CT-188 (Southford Rd)

Middlebury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-63 north of CT-64	Lane constraints	Add turning lanes by striping and or widening roadway to the west at various intersections along corridor especially in the section of Sperrys Pond and just north of CT-64 (Middlebury Road)	Low
		Investigate feasibility of adding two-way center left turn lanes in section on northern side near car dealerships	Low
	High volume of traffic	Traffic signal retroreflective backplates	Low-Medium
		Signal optimization	Medium
	High turning movements	Corridor access management	Low-Medium
CT-188 (Southford Road)/ Christian Road	Speeding	Consider narrowing the travel lanes for the CT-188 (Southford Road) approaches to the intersection to assist in addressing high speeds on CT-188 (Southford Road)	Low
	Poor sight distance	Consider installing horizontal curve signing	Medium
CT-64 (Middlebury Road) and Lake Quassy Entrance	Pedestrian crossing	PHB with crosswalks	Low
	Lack of turning lanes into Lake Quassy along high speed corridor	Investigate possibilities of adding turning lanes	Low-Medium
CT-63 (Straits Turnpike) and Park Road/Park Road Extension	Proposed developments will increase turning movements	Corridor access management	Low
CT-64	Lane departures	Centerline rumble strips	Low
Town-wide	High turning movements at intersections with high curb cuts	Town-wide corridor access management policy	Low
	Speeding	Dynamic speed feedback signs	Low

BOROUGH OF NAUGATUCK

2016 US Census Population Estimate: 31,392

Area: 16.50 square miles

Population Density: 1,903 persons per square mile

2016 Vehicle Miles Traveled (VMT): 157,417,565

2016 VMT per Capita: 5,015

Setting: Rural

Town and Regional Representatives: Peter Hess (Mayor), Wayne Zirolli (Borough Engineer), James Stewart (DPW), Steven Hunt (PD), Colin McAllister (PD), Bryon Cammarata (PD)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 38

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 424

Church Street

Overview

Naugatuck is a consolidated borough in New Haven County, bordered by Waterbury and Middlebury to the north, Beacon Falls and Bethany to the south, Middlebury and Oxford to the west and Prospect to the east. The borough spans both sides of Naugatuck River and includes the communities of Union City, Straitsville, and Millville. The Borough of Naugatuck's main thoroughfares are CT-8, CT-63, and CT-68.

Borough Input

Fatal Crashes from 2015-2018

- May Street - One vehicle roadway departure fatal crash (possible suicide).
- Guntown Road - Front-to-front fatal crash in a narrow section of the roadway.
- Spring Street - Front-to-front crash along a horizontal curve. The injuries from the crash resulted in death six months after the crash, but the crash is not officially classified as fatal according to USDOT regulations.

CT-68 (Prospect Street)/Union Street/Golden Connecticut
The state redesigned the traffic signal for this congested intersection. There is an area of congestion and bottle necking over the bridge.

YMCA at Church Street and Cedar Street
Older pedestrians have complained that the pedestrian crossing is not safe for them due to the motorists not stopping or yielding.

CT-63 (New Haven Road)
The segment of CT-63 (New Haven Road) from Cross Street to the Bethany Town Line is a concern for the Town due to speeding and the high number of intersecting side streets. Naugatuck police focus enforcement on CT-63 (New Haven Road) for distracted driving and restraint systems (Click it or Ticket). The Town said there will be more commercial and industrial development (more traffic generators) south of Cross Street, including truck traffic. The Borough of Naugatuck wants a corridor study to determine what improvements could be made along CT-63 (New Haven Road) for mobility and safety.

Maple Street/South Main Street/CT-8 (Ansonia-Derby-Shelton Expressway) Off-Ramps
This is a confusing signalized intersection with CT-8 (Ansonia-Derby-Shelton Expressway) off-ramp. The state is installing a new signal and redesigning the intersection. The channelized island on Maple Street is still intact, and the borough wants it removed.

CT-63 (Cherry Street/Meadow Street) and Rubber Avenue
The Borough of Naugatuck received LOTCIP funding to improve this signalized intersection. The borough is going to install a roundabout by 2020. The project is already designed, and the public information hearing was held with mixed reviews from residents.

Hoadley Street/Rubber Avenue/Melbourne Street
This intersection has LRARP funds for traffic signal improvements.

North Main Street
The borough is installing traffic calming with LOTCIP funding (bump outs, crosswalks, etc.) to reconstruct the intersection.

Cross Street
The borough is realigning Cross Street and installing crosswalks and realigning the intersection of Cotton Hollow and Cross Street.

CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street
This is a multi-legged, stop-controlled intersection with a cluster of crashes and confusing geometry. Various roads are bisected with grassy medians, impeding the flow on CT-63. The borough wants to investigate a potential roundabout to improve mobility, reduce confusion, and reduce crash severity and frequency.

CT-63 and Cherry Street
This is a signalized intersection with three legs of Cherry Street intersecting CT-63. In addition, there are center medians. The signalized intersection of Scott Road and CT-63 (Cherry Street) is less than 300 feet away. This intersection is another potential roundabout candidate to alleviate confusion and improve mobility.

Connecticut Connectivity Grant
The Borough received funding to install and improve sidewalks in downtown area.

Naugatuck River Greenway
The Borough of Naugatuck has received two grants to install more sections of the greenway through LOTCIP and TAP. Their main challenge on the northern end is the cost of a potential pedestrian bridge and/or receiving access from Waterbury and the railroad to build the path along the west side, adjacent to the active rail line. The borough would install protective fencing as precaution.

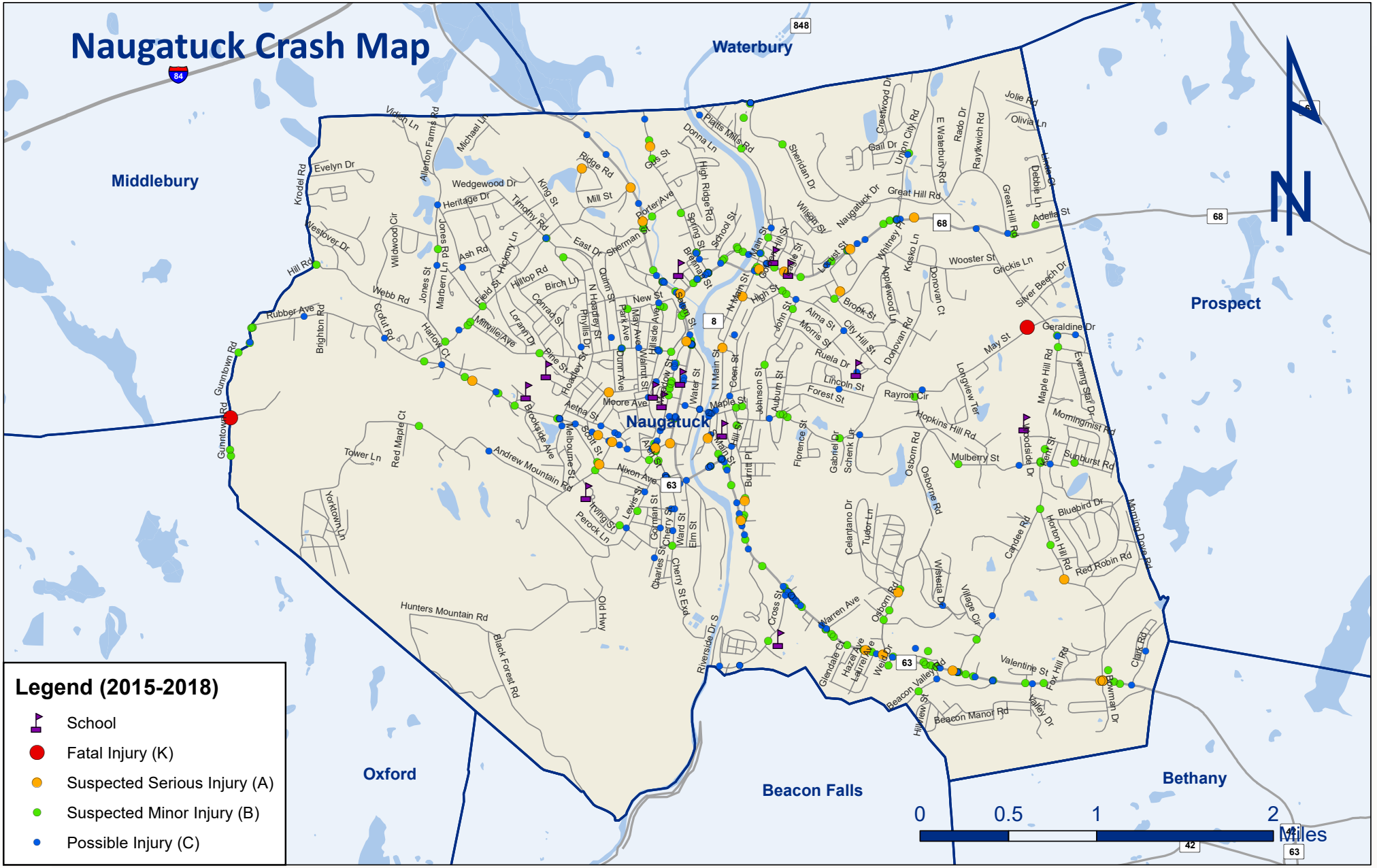

Meadow Street

Naugatuck Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	1
Suspected Serious Injury (A)	7	4	10	10
Suspected Minor Injury (B)	40	59	49	45
Possible Injury (C)	27	53	68	50
Total Crashes	74	116	128	106

CT-63 and Cherry Street

Water Street


Naugatuck Crash Map
Waterbury
Middlebury
Prospect
Oxford
Beacon Falls
Bethany
Naugatuck
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles

Field Site Inventory

CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street

The intersection of CT-63 (Meadow Street/Church Street) and Water Street is a four-legged, unsignalized intersection with all approaches under stop control. The CT-63 southbound approach and departure lanes are separated by a landscaped island and a pedestrian crosswalk that traverses the Meadow Street approach to the intersection. The intersection is complicated by a short, one-way access lane from the adjacent intersection of Water Street and Church Street to CT-63 just 200 ft north of the intersection of CT-63 and Water Street. The one-way access lane intersects with CT-63 at a skew and is under stop control. This geometry forms a large island between Water Street, CT-63 and the one-way access lane.

Recommendation:

- Consider a roundabout and remove the one-way access lane from Water Street to CT-63 to eliminate sight-line restrictions associated with this skewed intersection.

CT-63 and Cherry Street

The intersection of CT-63 and Cherry Street is three-way signalized intersection with the CT-63 westbound approach consisting of an exclusive left-turn lane, through lane and exclusive right-turn lane to access Scott Street. The CT-63 Southbound approach consists of single through lane and by-pass right-turn lane separated by a large grass island to access Cherry Street. The Cherry Street Northbound approach consists of a de facto exclusive left-turn lane to access CT-62 Westbound and a by-pass right-turn lane separate by a large grass island to access CT-63 Eastbound. The intersection is very large due to the large grass islands associated with the by-pass lanes and large median islands separated CT-63 approaches through the intersection.

Recommendations:

- Consider a roundabout to address confusing intersection geometry, reduce the footprint of the intersection and improve pedestrian and bicycle mobility.
- Signal coordination.

CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/ Meadow Street

Aerial of CT-63 and Cherry St

Naugatuck Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-63 (Church Street/ Millville Avenue/Meadow Street) and Church Street/ Meadow Street	Multi-legged,stop-controlled inter-section decreases flow	Investigate roundabout potential	Medium-High
	High frequency of crashes		
CT-63 (New Haven Road)	Corridor wide speeding and congestion issues	Corridor study to determine issues and countermeasures	Medium
		Continued enforcement	Low
		Dynamic speed feedback signs	Low
CT-63 and Cherry Street	Traffic signals less than 300 feet away	Roundabout	Medium-High
	Reduced mobility	Signal coordination	Low-Medium
YMCA at Church Street and Cedar Street	Pedestrian crossing	Enhanced crosswalk	Low
		RRFB	Low
Town-wide	Intersection issues	Various projects already funded	Low-Medium
		Roundabout designed for CT-63 and Rubber Ave	Medium-High
		Increased roundabout education and outreach: https://safety.fhwa.dot.gov/intersection/ innovative/roundabouts/	Low

TOWN OF OXFORD

2016 US Census Population Estimate: 12,984
Area: 33.30 square miles
Population Density: 390 persons per square mile
2016 Vehicle Miles Traveled (VMT): 81,572,025
2016 VMT per Capita: 6,283
Setting: Rural/Suburban
Town and Regional Representatives: Wayne Watt (Town of Oxford), Kristyn Rosa (Town of Oxford), Keith Buinauskas (PD), Christian Meyer (NVCOG)
Data Identified High Crash Corridors: N/A
Data Identified High Crash Intersections: N/A
Bike and Ped Injury and Fatal Crash Injuries: 2
Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 181

CT-188 (Quaker Farms Road)

Overview

Oxford is a residential town in New Haven County, bordered by Naugatuck and Middlebury to the north, Beacon Falls and Naugatuck to the east, Seymour and Monroe and Newtown (through Housatonic River) to the south, and Southbury to the west. The Town of Oxford's main thoroughfares are CT-42, CT-67, and CT-188.

Town Input

Fatal Crashes from 2015-2018

- Maple Tree Hill Road - Motorcycle fatal crash.
- CT-67 (Seymour Southbury Road) - Run-off-road fatal crash.

Kettletown Road and Maple Tree Hill Road
This is a severely skewed, three-way intersection with a center approach island. It has a challenging geometry due to elevation difference between the two roads and very poor sight lines.

CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road
This is a four-way, unsignalized intersection with a side street under stop control. High speeds on CT-188 (Quaker Farms Road) make it difficult to judge gaps. Sight distance from Silano Drive is limited due to the vertical crest curve on the CT-188 (Quaker Farms Road). The town has recently installed LED stop signs for the side street approaches.

CT-67 (Seymour Southbury Road/Oxford Road) and Old State Road 67: (Numerous locations)
Old State Road intersects with CT-67 (Seymour Southbury Road/Oxford Road) at skewed intersections with poor sight distances and challenging geometry at various locations, including:

- Near Hawley Road.
- Near Christian Street.
- Near CT-42.
- Near Chestnut Tree Hill Ext.
- Near Seth Den Road.
- Echo Valley Road.

Great Hill Road
This corridor has significant horizontal and vertical curvatures and speeding issues. The corridor may need additional enhanced curve warning signs or other warning signage.

Maple Tree Hill Road

CT-34 (Roosevelt Drive)
This corridor has significant horizontal and vertical curvatures and speeding issues. The corridor may need additional enhanced curve warning signs or other warning signage.

CT-67 (Oxford Road) and CT-42 (Chesnut Tree Hill Road Extension)
This intersection has heavy traffic congestion during peak periods. The intersection of Riggs Road is within 500 feet and further contributes to the corridor's congestion.

CT-188 (Quaker Farms Road) at Oxford High School
CT-188 (Quaker Farms Road) needs to be designated as a school zone with associated signage and speed limits.

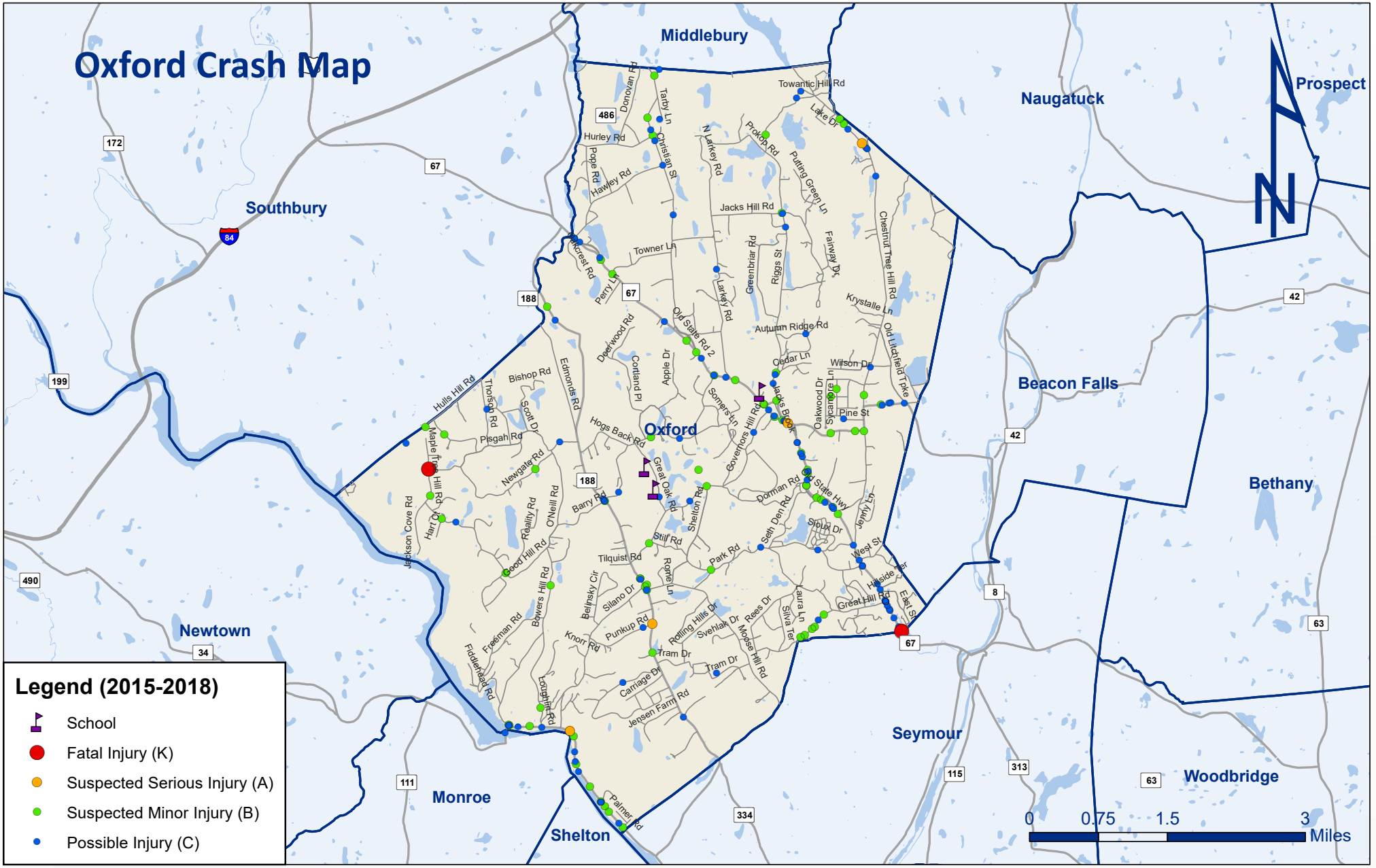
Center Line Rumble Strips
Center line rumble strips have been installed on portions of state corridors and have been effective.

Speeding
Speeding is an issue throughout the Town of Oxford. CT-188 (Quaker Farms Road) and CT-67 (Seymour Southbury Road/Oxford Road) have speeding issues and the town is considering various traffic calming measures to deter cut-through traffic.

Pedestrian and Bicyclists
The town has limited pedestrian and bicycle activity. NVCOG is administering a pedestrian and bicyclist focused corridor study along Oxford Road to improve safety and connectivity to existing non-motorized resources/ infrastructure.

Oxford Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	2	0	0
Suspected Serious Injury (A)	1	2	0	1
Suspected Minor Injury (B)	18	22	16	16
Possible Injury (C)	20	26	30	27
Total Crashes	39	52	46	44


Oxford Crash Map
Middlebury
Naugatuck
Prospect
Southbury
Beacon Falls
Oxford
Bethany
Newtown
Seymour
Monroe
Shelton
Woodbridge
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3 Miles

Field Site Inventory

Kettletown Road/Maple Tree Hill Road

Kettletown Road and Maple Tree Hill Road form a three-way, unsignalized intersection. Kettletown Road runs north-south through the intersection with Maple Tree Hill Road entering the intersection from the east at a severe skew, at higher elevation and under stop control. The Maple Tree Hill Road southbound approach is also split by a grass island to provide improved sight lines for motorists accessing Kettletown Road Northbound.

Recommendations:

- Consider lowering the Maple Tree Hill Road approach to address the elevation difference of the two roadways.
- Consider realigning the Maple Tree Hill Road approach to the north to address the severe skew.

CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road

The intersection of CT-188 (Quaker Farms Road), Silano Drive and Moose Hill Road is a four-way, unsignalized intersection with CT-188 (Quaker Farms Road) as the mainline and Silano Drive and Moose Hill Road under stop control. Through the intersection, CT-188 (Quaker Farms Road) presents a steep gradient/horizontal curve. The posted speed limit is 45 MPH with much higher speeds reported. For motorists exiting Silano Drive, sight lines are impeded to the south by a vertical crest curve and by wayfinding signage adjacent to the stop sign. The town recently installed LED stop signs for both side street approaches.

Recommendation:

- Consider adding retroreflective strips on stop sign posts and relocating wayfinding signage to the northwest corner of the intersection.

Kettletown Rd/Maple Tree Hill Rd


CT-188 (Quaker Farms Rd)/Silano Dr/Moose Hill Rd

Oxford Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Kettletown Road/Maple Tree Hill Road	Elevation differences	Consider lowering the Maple Tree Hill Road approach	Medium-High
	Skewed intersection	Consider realigning the Maple Tree Hill Road approach to the north	Medium-High
CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road	Limited sight distance	Consider adding retroreflective strips on stop sign posts and relocating wayfinding signage to the northwest corner of the intersection	Low
Great Hill Road	Speeding	Dynamic speed feedback signs	Low
	Horizontal curvature	Enhanced delineation	Low
		Centerline rumble strips	Low
CT-34 (Roosevelt Drive)	Speeding	Dynamic speed feedback signs	Low
	Horizontal curvature	Enhanced delineation	Low
		Centerline rumble strips	Low
CT-188 (Quaker Farms Road) at Oxford High School	Lack of school zone designation	Designate the area around the high school as a school zone with signage, pavement markings, and reduced speed limit	Low
Townwide	Speeding	Traffic calming	Low-Medium
		Dynamic speed feedback signs	Low

TOWN OF PLYMOUTH

2016 US Census Population Estimate: 11,749

Area: 22.30 square miles

Population Density: 527 persons per square mile

2016 Vehicle Miles Traveled (VMT): 56,634,495

2016 VMT per Capita: 4,820

Setting: Rural

Town and Regional Representatives: Christopher Latimer (PD)

Data Identified High Crash Corridors: US-6-Main Street (From North Riverside Avenue to Holt Street)

Data Identified High Crash Intersections: North Riverside Avenue and US-6-Main Street

Bike and Ped Injury and Fatal Crash Injuries: 4

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 264

US-6 (Main Street)

Overview

Plymouth is a rural town in Litchfield County, bordered by Harwinton to the north, Wolcott and Waterbury to the south, Thomaston and Watertown to the west, and Bristol to the east. The Town of Plymouth includes the Villages of Plymouth Center, Terryville and Pequabuck. The town's main thoroughfares are US-6, CT-72 and CT-262.

Town Input

Fatal Crashes from 2015-2018

- US-6 (Main Street) - Older person angle fatal crash.
- South Main Street - Substance-involved and speeding fatal crash.
- CT-262 (South Street/Mt Tobe Road/Spruce Brook Road) - Young driver, substance-impaired and speed-related roadway departure crash.

US-6 (Main Street)

Most crashes in the Town of Plymouth occur on US-6 (Main Street). This is a major connector for motorists travelling between CT-8 (James H Darcey Memorial Highway) and I-84 (Yankee Expressway). It is a two-lane east-west corridor with high volumes of traffic. The cross section is narrow with tight abutting physical constraints and intermittent sidewalks. The speed limit is posted from 30-40 MPH. The town uses speed trailers to collect data along US-6. Sun glare is an issue for drivers.

CT-72 (North Riverside Avenue/South Riverside Avenue) and US-6 (Main Street) intersection

This is a signalized intersection with a high frequency of crashes and limited sight distance. This intersection was recently updated and reconstructed by CTDOT. The current configuration for eastbound US-6 (Main Street) is a right and left through lane. The through traffic bypasses the left turning motorists as they queue, which causes angle crashes. CT-72 (North Riverside Avenue/South Riverside Avenue) is offset at the intersection.

US-6 (Main Street) and Carter Road

There are frequent roadway departure crashes near this intersection due to the horizontal curvature. US-6 (Main Street) eastbound traffic has two lanes and westbound has one. This intersection is a high-frequency crash location due the westbound traffic turning left onto Carter Road and roadway departure crashes along the horizontal curve. One utility pole on the south side has been struck and replaced several times, but some damaged poles are still there. Installing a guardrail for protection is a possible recommendation.

Bemis Street

This is a cut-through roadway (east-west road) that parallels US-6 (Main Street) and is used by drivers to avoid US-6 (Main Street). There are physical constraints and the cross section is narrow. The roadway was recently paved and frequent speeding has been observed. "No through truck" signs are posted on this roadway, but they are ignored.

CT-72 (Poland Brook Road/North Riverside Avenue/South Riverside Avenue)

Roadway departure crashes are common along this corridor. CT-72 (Poland Brook Road/North Riverside Avenue/South Riverside Avenue) has tight constraints in the section south of US-6 (Main Street) and has icy and slippery weather issues.

US-6 (Main Street) and North Main Street

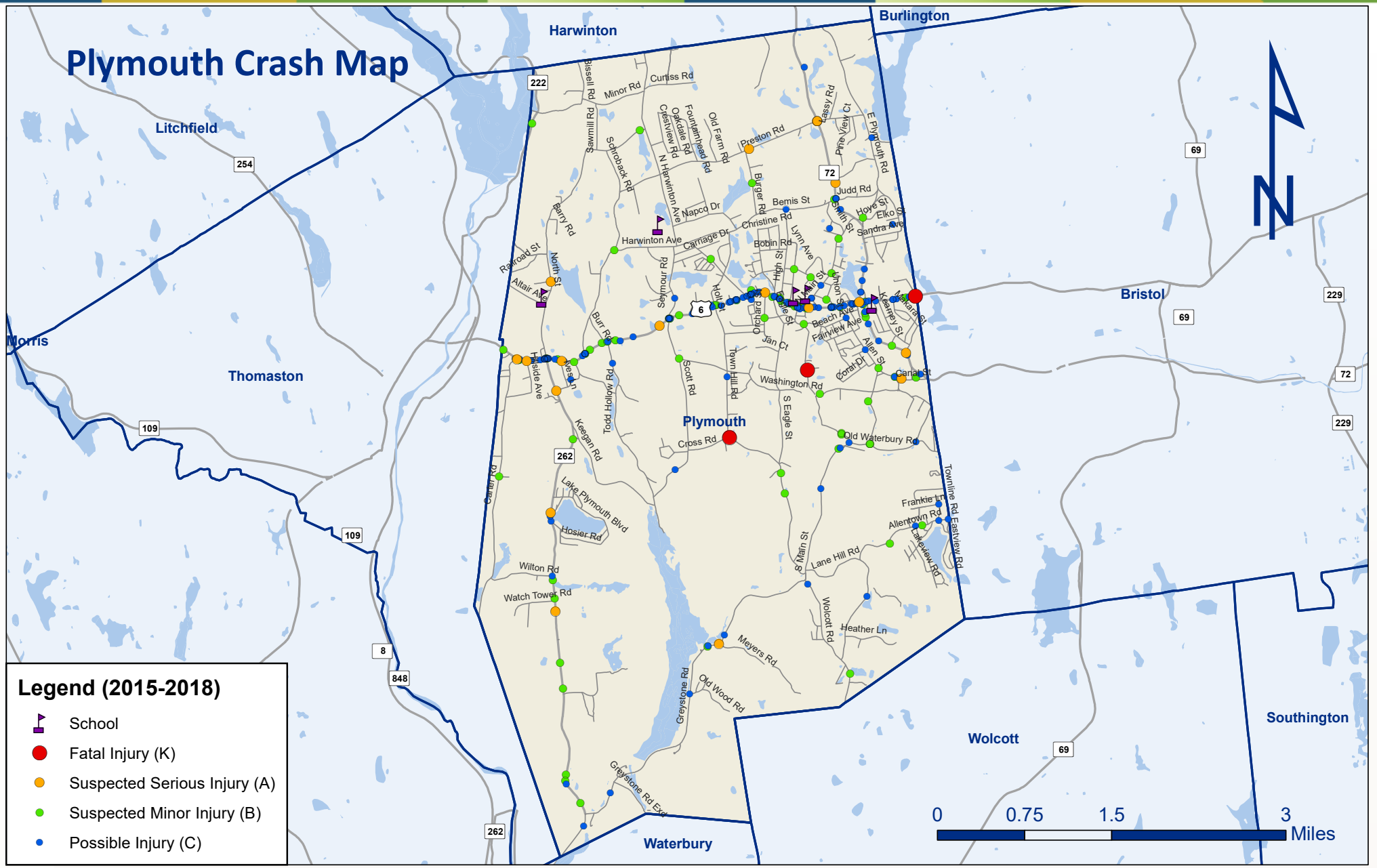
The State is planning to reconstruct this intersection, which has a triangle configuration with the town green in the center. The design is currently underway.

Pedestrians

Pedestrians walk on the shoulder on US-6 (Main Street) and on North Main Street at night.

Plymouth Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	1	1
Suspected Serious Injury (A)	0	10	4	4
Suspected Minor Injury (B)	20	21	30	21
Possible Injury (C)	26	39	45	41
Total Crashes	47	70	80	67


Plymouth Crash Map
Harwinton
Burlington
Litchfield
Morris
Thomaston
Bristol
Plymouth
Wolcott
Southington
Waterbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles
N

Field Site Inventory

US-6 (Main Street)/Carter Road

This is a skewed T-intersection with Carter Road under stop control at US-6 (Main Street) and free flow along US-6. Carter Rd intersects US-6 along a horizontal and vertical curve. US-6 (Main Street) eastbound traffic has a two lane cross section and westbound has one. The US-6 (Main Street) speed limit is posted at 25 MPH, and there are enhanced horizontal curve warning signs at intersection. Five utility poles were replaced due to roadway departure crashes along the southside of US-6, but there were still a few damaged poles when this site visit was conducted.

Recommendations:

- Investigate application of high friction surface treatment.
- Consider reducing eastbound lanes to one lane and widen the shoulder.
- Add edge line rumble strips.
- Install Flashing LED on enhanced horizontal curve warning signs.

CT-72 (S. Riverside Avenue) from US-6 (Main Street) to Bristol Town Line

The intersection of CT-72 (S. Riverside Avenue) and US-6 (Main Street) is a four-way signalized intersection with atypical geometry. The section of CT-72 (S. Riverside Avenue) between this intersection and the Bristol town line is a winding section of road with one travel lane in each direction. Horizontal curve warning signs are provided along these curves. However, vegetation is overgrown in some areas, partially obscuring visibility of warning signs. Slippery road conditions have been noted as a contributing factor in multiple collisions along this corridor.

Recommendations:

- Trim vegetation to improve visibility of signs.
- Investigate need for application of high friction surface treatment.

Utility poles on US-6 (Main St) along horizontal curvature

CT-72 and US-6

Plymouth Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Main Street)/Carter Road	Roadway departure crashes along horizontal curve	Enhanced delineation	Low
		High friction surface treatment	Low
		Eliminate climbing lane on US-6	Low-Medium
		Install edge line rumble strips if warranted	Low
CT-72 (S. Riverside Avenue) from US-6 (Main Street) to Bristol Town Line	High frequency crashes	High friction surface treatment	Low
	Horizontal curve signs blocked by vegetation	Vegetation management	Medium
US-6	High frequency of crashes	Dynamic speed feedback signs	Low
		Signal optimization	Medium
		Traffic signal retroreflective backplates	Low-Medium
Bemis Street	Speeding	Dynamic speed feedback signs	Low
		Narrow travel lanes if feasible	Low

TOWN OF PROSPECT

2016 US Census Population Estimate: 9,755

Area: 14.50 square miles

Population Density: 673 persons per square mile

2016 Vehicle Miles Traveled (VMT): 53,521,045

2016 VMT per Capita: 5,487

Setting: Rural

Town and Regional Representatives: Robert J. Chatfield (Mayor), Lt. Nelson J. Abaruza (Director of Public Safety)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 4

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 207

Talmadge Road

Overview

Prospect is a rural town located at the highest elevation in New Haven County, bordered by Waterbury to the north, Bethany to the south, Naugatuck to the west, and Cheshire to the east. The town's main thoroughfares are CT-42, CT-68, and CT-69.

Town Input

Fatal Crashes from 2015-2018

- Talmadge Hill Road and CT-68 (Cheshire Road) - Young driver, multi-car, angle crash resulting in one fatality.
- CT-68 (Union City Road) near Laura Avenue - Front-to-front lane departure fatal crash.
- Summit Road - Substance-involved roadway departure fatal crash.
- CT-69 (Waterbury Road) - Young driver lane departure fatal crash.

CT-68 (Cheshire Road)/Matthew Street/Talmadge Hill Road CT-68 (Cheshire Road)/Matthew Street/Talmadge Hill Road

This is a two-way stop-controlled intersection with sight distance issues from the local side streets. CT-68 (Cheshire Road) has vertical curvature that extends from Prospect east to Cheshire, and the speed limit is posted at 45 MPH. A crest in the roadway on CT-68 (Cheshire Road), just north of this intersection, limits the sight distance and the stopping time due to high speeds. There is a utility pole at Talmadge Hill Road and CT-68 (Cheshire Road) that is in the line of sight. The town installed stop ahead warning signs and pavement markings on Matthew Street and Talmadge Hill Road to alert drivers. This intersection is a site of a recent fatal crash.

Edge Line Pavement Markings

The Town of Prospect installed edge lines on most of their roads to help mitigate roadway departure crashes.

Summit Road and Peter Gilkey Road
This intersection had numerous crashes over the years. There is a steep downgrade into a horizontal curve at the unsignalized intersection. The geometry of the intersection can confuse the motorists travelling northbound on Summit Road, drawing them into Gilkey Road instead of keeping them on Summit Road through the horizontal curve.

CT-69 (Waterbury Road)
The town requested the state move the merge lane on CT-69 (Waterbury Road) farther north due to a concentration of crashes occurring at the previous merge location, in front of Oliver's Supermarket (closer to the Town Center), which the state did. The Town stated that the crash frequency has been reduced significantly since the state redesigned the merge lane.

Regional Middle School District
The middle school located behind the town hall on Center Street serves multiple towns and has a high percentage of students who use parent drop-off instead of school busses, resulting in congestion during the AM period.

Motorcycles
The town has had some issues with motorcycles speeding on CT-69 (Waterbury Road/New Haven Road).

Signs on CT-42 (Mountain Road)
The state repaved CT-42 (Mountain Road). The Town of Prospect border signs were not reinstalled in the correct locations; they are too far east into Cheshire. This has caused emergency response issues because there has been some confusion as to which town is responsible. The town wants the state to relocate signs at town lines.

Center Line Rumbles
The town has rumble strips on Straitsville Road and Scott Road. They would like them on CT-68 (Union City Road/Cheshire Road) and CT-69 (Waterbury Road/New Haven Road) and Summit Road as well.

Chevron Curve Signs
CTDOT is installing chevron curve signs along CT-68 (Cheshire Road) east of Roaring Brook Road where there have been a series of crashes.

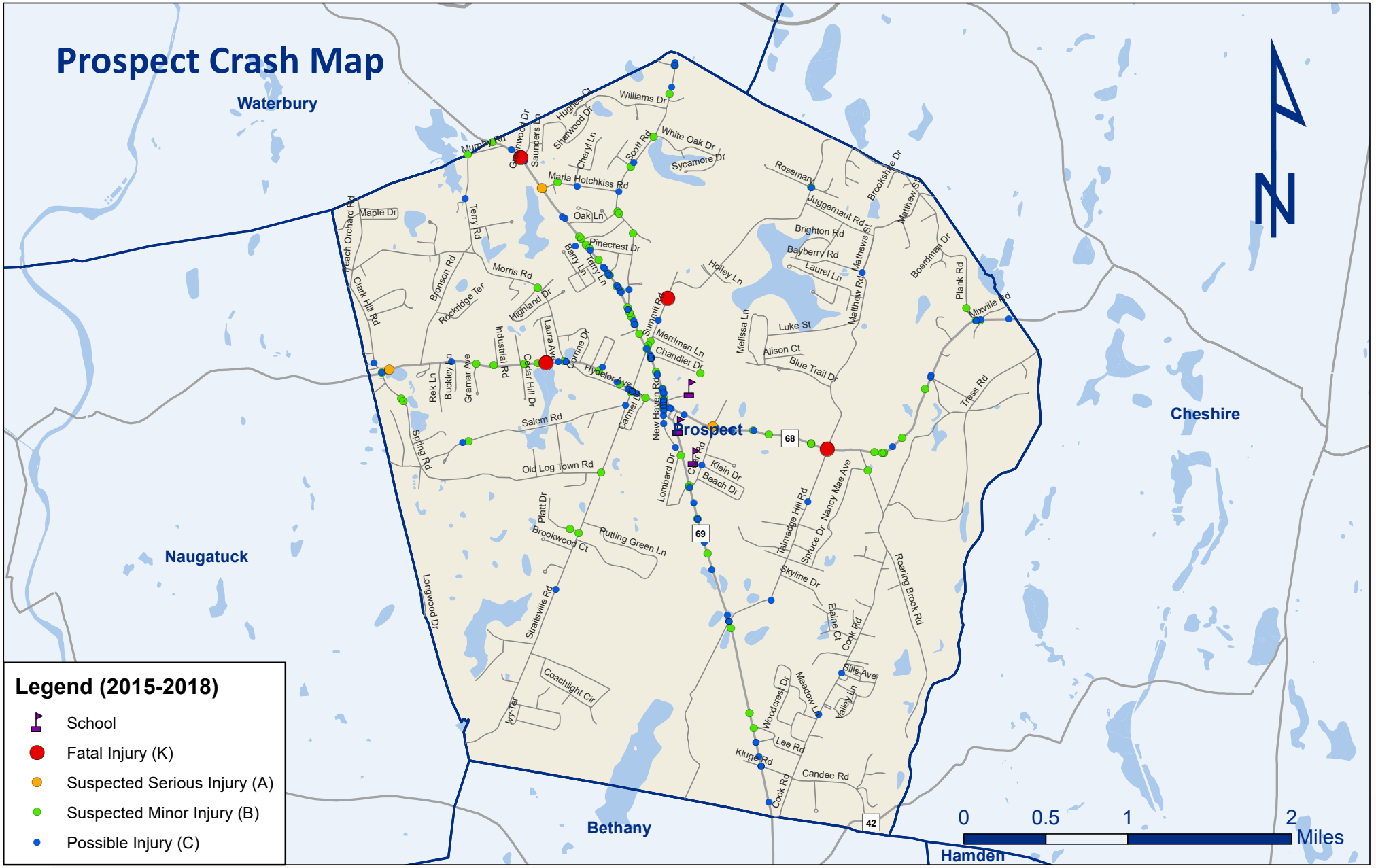
Dynamic Speed Feedback Signs
The town employs these signs on various roadways. Some of them are permanently mounted, and some are transferable and collect various traffic data.

Pedestrians
The Town of Prospect is using a LOTCIP grant to fund sidewalks on the west side of CT-69 (Waterbury Road) from the Center of Town to Hotchkiss Fields. In addition, they will be upgrading the current pedestrian crossings with ADA compliant ramps and pedestrian signals at CT-68 (Union City Road/Cheshire Road) and CT-69 (Waterbury Road/New Haven Road).

Bicycles
CT-69 (Waterbury Road/New Haven Road) and Straitsville Road in Prospect are used as a training route for cyclists in the warmer months. The intersection at CT-69 (New Haven Road) and Lee Road is of concern to cyclists since some have been hit there before due to the crest on CT-69 (New Haven Road).

Prospect Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	1	1	2
Suspected Serious Injury (A)	2	1	0	0
Suspected Minor Injury (B)	22	31	21	12
Possible Injury (C)	30	26	26	32
Total Crashes	54	59	48	46


Prospect Crash Map
Waterbury
Naugatuck
Prospect
Cheshire
Bethany
Hamden
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.5
1
2
Miles
N
Williams Dr
White Oak Dr
Sycamore Dr
Maria Hotchkiss Rd
Oak Ln
Pinecrest Dr
Morris Rd
Highland Dr
Merriman Ln
Chandler Dr
Salem Rd
Old Log Town Rd
Rutting Green Ln
Skyline Dr
Lee Rd
Candee Rd
Cook Rd
Brighton Rd
Bayberry Rd
Laurel Ln
Luke St
Alison Ct
Blue Trail Dr
Plank Rd
Mixville Rd
Tress Rd
Roaring Brook Rd
Nancy Mae Ave
Spruce Dr
Talmadge Hill Rd
Klein Dr
Beach Dr
Lombard Dr
New Haven Rd
Summit Rd
Cedar Hill Dr
Laura Ave
Industrial Rd
Gramar Ave
Buckley Ln
Rek Ln
Spring Rd
Clark Hill Rd
Peach Orchard Rd
Maple Dr
Bronson Rd
Rockridge Ter
Terry Rd
Murphy Rd
Cherwood Dr
Saunders Ct
Hughes Ct
Sherwood Dr
Cheryl Ln
Scott Rd
Roseman
Juggernaut Rd
Brookshire Dr
Matthew St
Mathews St
Matthew Rd
Boardman Dr
Holley Ln
Melissa Ln
Corrine Dr
Hydelore Ave
Carmel Dr
Cedar Rd
Platt Dr
Brookwood Ct
Longwood Dr
Straitsville Rd
Coachlight Cir
Ivy Ter
Woodcrest Dr
Meadow Ln
Valley Ln
Elaine Ct
Sills Ave
Kluge Rd
68
69
42

Field Site Inventory

CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road

This is a two-way intersection with a stop control at the Talmadge Hill Road and Matthew Road approaches. Stop pavement markings are present. The vegetation is managed on CT-68 (Cheshire Road); trees have been cut down recently. The crest on CT-68 (Cheshire Road) impedes the sight distance for the motorists heading east towards Cheshire from both side of the streets. The utility pole on the southeast corner is in the line of sight for the motorists on Talmadge Hill Road. There is a vertical curvature downslope for eastbound traffic. The CT-68 (Cheshire Road) speed limit is posted at 45 MPH, but the motorists travel at higher speeds.

Recommendations:

- Lower crest on CT-68 (Cheshire Road).
- Continue to manage vegetation.
- Install Dynamic Speed Feedback signs on CT-68 (Cheshire Road).

Summit Road/Peter Gilkey Road

The intersection of Summit Road and Peter Gilkey Road is a skewed, three-way, unsignalized intersection within a residential neighborhood with Summit Road as the mainline. Peter Gilkey Road is a dead-end road servicing four houses and is under stop control at Summit Road. Summit Road runs north/south as the main movement with a posted speed limit of 25 MPH. The Summit Road northbound approaches the intersection on a steep downgrade and into a sharp horizontal curve to the right beginning at the intersection. Due to the sharp horizontal curve, northbound motorists can be confused and continue straight onto Peter Gilkey Road crossing on-coming traffic. Antiquated warning and chevron signs are present on the northbound approach to alert motorists of the upcoming conditions.

Recommendations:

- Consider adding additional chevron signs and upgrading the warning signs with retroreflective signs and retroreflective signpost strips.
- Consider reducing the width of the Peter Gilkey Road approach and better align it with Summit Road to address the skew.

Talmadge Hill Rd/Matthew Rd/ CT-68 (Cheshire Rd)


Summit Rd/Peter Gilkey Rd

Prospect Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road	Frequent site of angle crashes	Lower crest on CT-68 (Cheshire Road).	Medium
		Continue to manage vegetation.	Low
		Install Dynamic Speed Feedback signs on CT-68 (Cheshire Road)	Low
Summit Road/Peter Gilkey Road	Older chevron signs along horizontal curve	Add additional chevron signs and upgrading the warning signs with retroreflective signs and retroreflective sign-post strips.	Low
	Skewed intersection	Reduce the width of the Peter Gilkey Road approach and better align with Summit Road	Low
	Confusing roadway geometry	Reduce the Peter Gilkey Road approach cross section, additional chevrons can be installed in better line of sight for Summit Road northbound motorists.	Low
CT-42 (Mountain Road)	Town signs are not at town lines	Ask state to relocate signs along CT-42 on the town line	Medium
Various roadways (CT-68, CT-69 and Summit Rd)	Roadway departure crashes	Install centerline rumble strips	Low
Townwide	Motorcycle Crashes	Motorcycle education and outreach in local papers	Low
	Pedestrians	Install sidewalks	Low
	Bicycles	Sharrows and Share the Road signs	Low
	General Safety	Use variable message signs to alert motorists to pedestrians, bicyclists and motorcycles	Medium

TOWN OF SEYMOUR

2016 US Census Population Estimate: 16,553

Area: 15.00 square miles

Population Density: 1,104 persons per square mile

2016 Vehicle Miles Traveled (VMT): 153,687,630

2016 VMT per Capita: 9,285

Setting: Suburban

Town and Regional Representatives: Rory Burke (Town Administrative Assistant), Steve Prajer (PD), Roberto Rinaldi (PD)

Data Identified High Crash Corridors: Bank Street (From Wakeley Street Extension to Town Line)

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 276

Source: VN Engineers

Overview

Seymour is a rural town located in western New Haven County, bordered by Beacon Falls to the north, Bethany and Woodbridge to the east, Ansonia and Shelton (separated by Housatonic River) to the south, and Oxford to the west. The town's main thoroughfares are CT-8, CT-34, CT-67, CT-115, CT-188, CT-313, and CT-721.

Town Input

Fatal Crashes from 2015-2018

- Rimmon Street - Young driver, substance-impaired, fatal crash; the roadway was reconstructed by CTDOT in response to crash.

Holbrook Road
This corridor had a series of roadway departure crashes along its horizontal curvatures. Enhanced horizontal curve warning signs were installed, but no guiderails were added. The town applied for a LOTCIP grant to address the corridor's issues. The corridor project design is at 90%.

CT-313 (River Street/Broad Street/Maple Street/Rimmon Road)
This corridor has reported roadway departure crashes. There have been a series of crashes due to speeding and vertical/horizontal curvatures east of Clinton Road.

CT 313 (Maple Street/Rimmon Road) and Clinton Road
There is severe horizontal curvature along CT-313 (Maple Street/Rimmon Road) at the intersection with Clinton Road. This intersection has unconventional geometry with a high frequency of roadway departure and speed-related crashes.

CT-313 (Maple Street)/Old Ansonia Road/Haddard Road
This is an offset intersection with poor sight distance and a high concentration of crashes. The state will add reflective strips to the enhanced horizontal curve warning signs. The state did some vegetation management, but the town said that it still needs improvement.

Drainage Issues
The town has some drainage issues on the following roadways:

- Skokorat Street - Icing due to run-off seepage.
- CT-313 (Maple Street) - Between Warren Drive and Walnut Street - Drainage issue primarily in Spring.
- CT-313 (Maple Street/Rimmon Road) near Clinton Road - Fog and icing-related to nearby waterfall.

CT-8 (Ansonia-Derby-Shelton Expressway) Exit 19 SB Off-Ramp
This is a short, stop-controlled ramp with a high concentration of crashes. The town wants to shut this ramp down due to the limited sight distance at the off-ramp. The nearby off-ramp Exit 20 (approximately 1 mile away) provides adequate access.

Bungay Road
This corridor has vertical and horizontal curvatures. The vertical curvature creates a significant "dip" and the horizontal curvature has significant adjacent drop-off. The section of roadway north of Old Town Road has had a series of crashes.

CT-67 (New Haven Road/Derby Street/Bank Street/Oxford Road)
This corridor has the most crashes and the highest volume of traffic in the Town of Seymour. The state is improving the section of CT-67 (Bank Street) west of Stop and Shop. The Stop and Shop intersection has been redesigned as well.

CT-67 (New Haven Road) and Silvermine Road
There is a through truck prohibition on Silvermine Road with adequate signage, but trucks use it to access the industrial park. Silvermine Road has steep vertical curvature (18% grade) which is difficult for large trucks due to the transition in grade from CT-67 (New Haven Road). Cogwheel Lane runs parallel to Silvermine Road and was design for trucks associated with the industrial park. The town has a proposed design to impede truck access on Silvermine Road using a channelized island. The Town of Seymour has worked with various GPS systems to direct trucks from CT-8 up Cogwheel Lane which runs parallel, but every six months the GPS program resets and trucks are directed back to Silvermine Road.

Mountain Road and Brook Street
This intersection is a frequent roadway departure crash site. It has horizontal curvature and intermittent guiderails.

Speeding
Speeding is an issue throughout the town. The police have been using data, speed feedback trailers, radar, and enforcement to mitigate it.

CT-188 (Squantuck Road) and CT-34 (Roosevelt Drive)
This is a stop-controlled T-intersection. CT-188 (Squantuck Road) ends in a 9% downgrade at this junction. This is a site of various roadway departure crashes: some of them hitting a residence located on CT-34 (Roosevelt Drive), and others crashing into the Housatonic River.

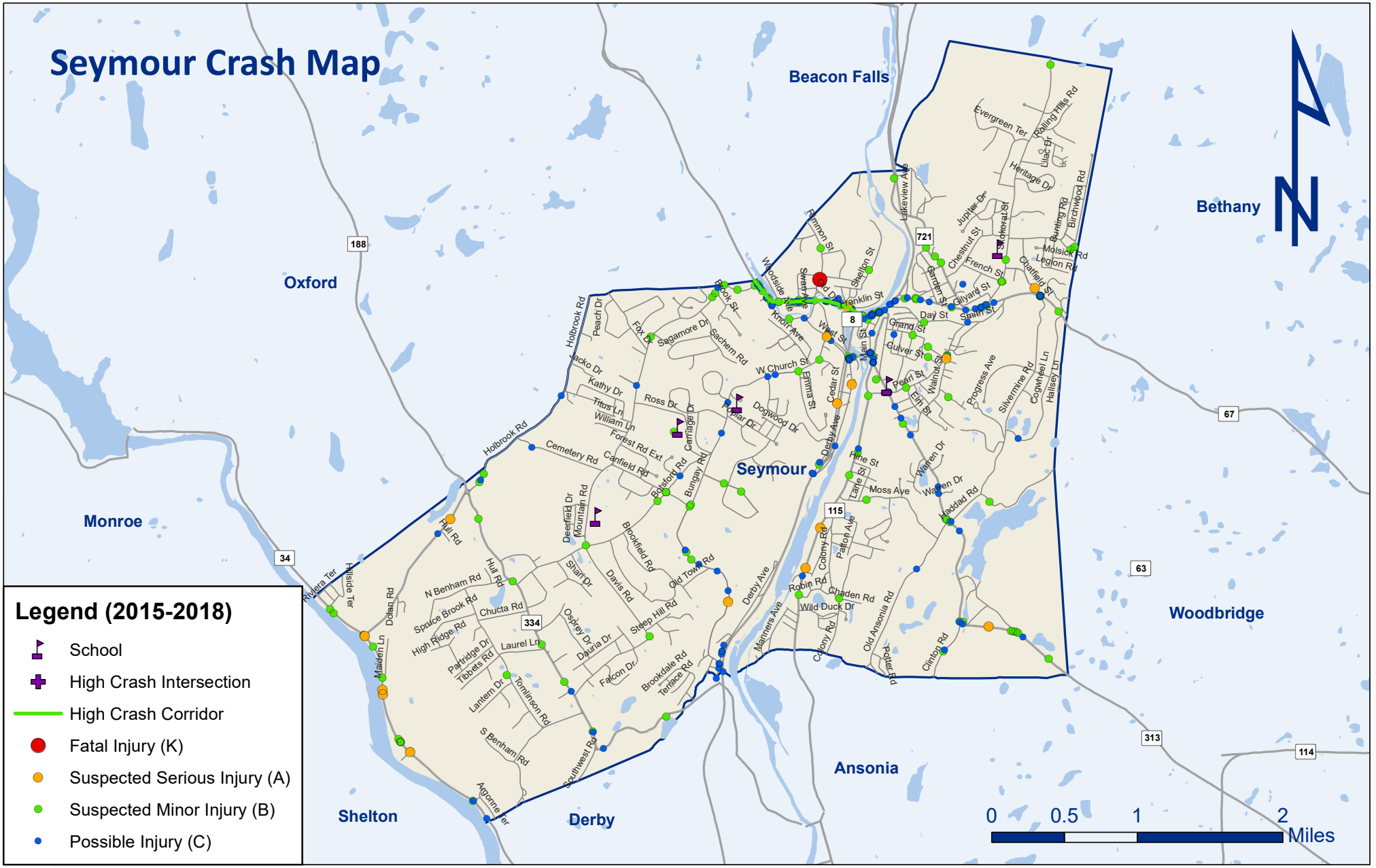
High Friction Surface Treatment
The town is interested in learning more about this countermeasure for possible spot installations at high crash locations along the curves. The town inquired into its long-term impacts on pavement.

Pedestrians and Bikes
The Town of Seymour is not typically a bicyclist destination. The town representatives wants to install more sidewalks and are seeking funding opportunities. There is CT Community Connectivity Grant for sidewalks on Woodside Avenue.


CT-313 (Clinton Road)

Seymour Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	0
Suspected Serious Injury (A)	2	2	7	4
Suspected Minor Injury (B)	29	49	28	25
Possible Injury (C)	22	27	44	36
Total Crashes	53	78	80	65


Seymour Crash Map
Beacon Falls
Bethany
Oxford
Monroe
Seymour
Shelton
Derby
Ansonia
Woodbridge
Legend (2015-2018)
School
High Crash Intersection
High Crash Corridor
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.5 1 2
Miles

Field Site Inventory

CT-313 (Maple Street/Rimmon Road)/Clinton Road

Clinton Road bisects CT-313 (Maple Street/Rimmon Road) along a sharp horizontal curve. Clinton Road has two-way legs: one is a stop-controlled, and the other is a yield-controlled. CT-313 (Maple Street/Rimmon Road) speed limit is posted at 20 MPH in this segment, but the motorists travel at higher speeds. The sight distance from Clinton Road looking west from the yield-controlled segment is inadequate. The cars making left turn from northbound CT-313 (Maple Street/Rimmon Road) should take the first leg of Clinton Road, due to the horizontal curvature. The second entrance does not provide the northbound CT-313 (Maple Street/Rimmon Road) approaching vehicles with adequate stopping distance.

Recommendations:

- Make stop-controlled leg on Clinton Rd one-way access.
- T-up yield controlled leg and convert to one-way egress under stop control.
- Dynamic speed feedback signs on CT-313.

CT-188 (Squantuck Road)/CT-34 (Roosevelt Drive)

The intersection of CT-188 (Squantuck Road) and CT-34 (Roosevelt Drive) is unsignalized three-way intersection with CT-34 (Roosevelt Drive) as the mainline and CT-188 (Squantuck Road) under stop control as the side street. There is a 9% downgrade on the CT-188 (Squantuck Road) southbound approach to the intersection with an appropriate stop ahead warning sign and oversize stop sign at the intersection. For motorists exiting CT-188 (Squantuck Road), sight lines are impeded to the west by vegetation and route signage and to the east by a crest vertical curve. Centerline rumble strips are present on all approaches to the intersection.

Recommendations:

- On the northwest corner trim vegetation and relocate route signage to improve sight lines for motorist making a left from CT-188 (Squantuck Road) to CT-34 (Roosevelt Drive).
- Consider a far side stop sign for the CT-188 (Squantuck Road) approach.

CT-313 (Maple St/Rimmon Rd)/Clinton Rd

CT-188 (Squantuck Rd) at CT-34 (Roosevelt Dr)

Seymour Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-313 (River Street/Broad Street/Maple Street /Rimmon Road	Roadway departure crashes along horizontal curvature	Enhanced delineation	Low
		High friction surface treatment	Low
	Vegetation overgrowth	Manage vegetation at CT-313 (Maple Street)/Old Ansonia Road/Haddard Road	Low-Medium
CT-313 (Maple Street/Rimmon Road)/Clinton Road	Skewed intersection along horizontal and vertical curvature with limited sight distance	Make stop-controlled leg on Clinton Rd one-way access	Medium
		T-up yield controlled leg and covert to one-way egress under stop control	Low
	Speeding on CT-313	Dynamic speed feedback signs on CT-313	Medium
Various locations on CT-313 and Skokorat St	Drainage Issues	Address with state or local public works	Low
CT-188 (Squantuck Road)/ CT-34 (Roosevelt Drive)	Roadway departure crashes from motorists continuing westbound from CT-188 at CT-34. CT-188 terminates at this intersection.	On the northwest corner trim vegetation and relocate route signage to improve sight lines for motorist making a left from CT-188 (Squantuck Road) to CT-34 (Roosevelt Drive)	Low
		Consider a far side stop sign for the CT-188 (Squantuck Road) approach	Low
Townwide	Roadway departure crashes	Enhanced delineation	Low
		High friction surface treatments	Low

CITY OF SHELTON

2016 US Census Population Estimate: 41,334

Area: 31.90 square miles

Population Density: 1,296 persons per square mile

2016 Vehicle Miles Traveled (VMT): 330,815,195

2016 VMT per Capita: 8,003

Setting: Urban

Town and Regional Representatives: Rimas Balsys (City Engineer), Mark Siglinger (PD), Mark Ptak (PD), Bob Kozlowsky (PD)

Data Identified High Crash Corridors: CT-110-Howe Avenue (From Myrtle Street to Canal Street West)

Data Identified High Crash Intersections: CT-110-Howe Avenue and Bridge Street

Bike and Ped Injury and Fatal Crash Injuries: 26

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 686

CT-110 (Howe Avenue)

Overview

Shelton is a city in Fairfield County, bordered by Seymour, Ansonia, and Derby to the north through the Housatonic River, Orange and Milford to the east through the Housatonic River, Trumbull and Stratford to the south and Monroe and Trumbull to the west. The city's main thoroughfares are CT-8, CT-108, CT-110, and CT-714.

City Input

Fatal Crashes from 2015-2018

The police representatives stated that the fatal crashes that occurred during the study period were due to behavioral issues, such as: impairment, distraction, medical issues, etc.

Population Growth

The City of Shelton is undergoing an increase in population and a corresponding increase in retail and housing developments. There has been an influx of residents and developers. This has put a strain on the city's infrastructure because most developments are too small to individually warrant infrastructure upgrades, but collectively they are impacting roadway and intersection capacity.

Huntington Street

This local road is used as a cut-through to access CT-8, and it has heavy volumes of traffic and frequent crashes.

CT-714 (Bridgeport Avenue)
This high-frequency crash corridor has high volumes of traffic and distracted drivers. The majority of these crashes are front-to-rear crashes according to the police. The increase in hotels and retail development along the corridor is creating spot congestions, and when CT-8 is congested or experiences an incident, the traffic diverts onto CT-714 (Bridgeport Avenue). The former UI building is being redeveloped in this corridor with the addition of a traffic signal at the CT-174 (Bridgeport Avenue) and Parrot Drive intersection. Center line rumble strips were installed.

CT 110 (Howe Avenue)

Downtown
There was a cluster of crashes along CT-110 (Howe Avenue) at the intersections with White Street, Bridge Street and Center Street. The area has experienced significant residential growth with new apartment complexes. Uncoordinated traffic signals, on-street parking, "No Right on Reds" signs and exclusive pedestrian phases are contributing to the traffic congestion. This area has capacity issues due to short blocks and narrow roadway cross sections. There is no CT-8 southbound entrance ramp at Exit 14, and the motorists divert through downtown to Bridge Street to access Exit 15 in Derby.

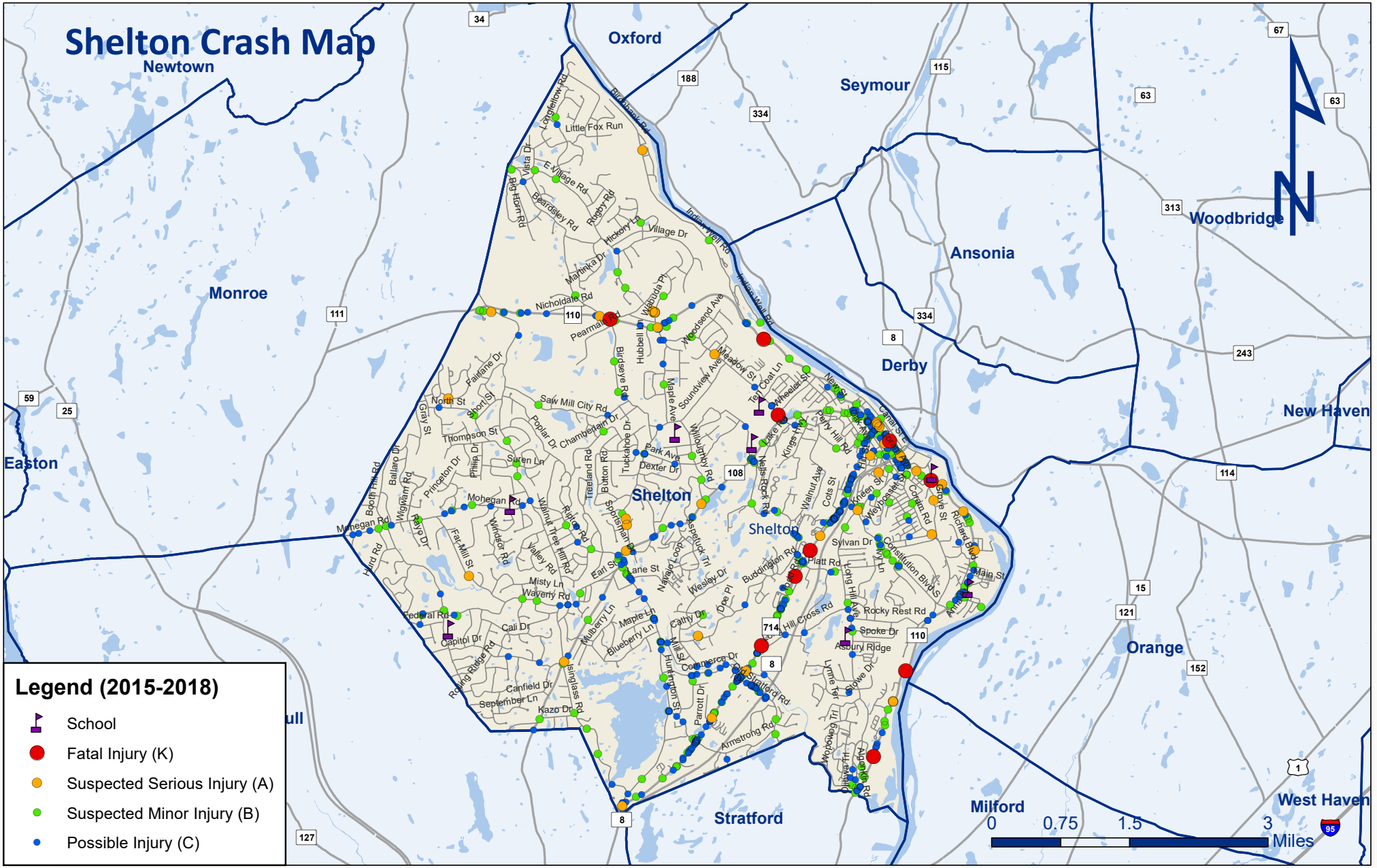
CT-108 (Shelton Avenue/Huntington Street/Nichols Avenue)
The City of Shelton participated in the CT Community Connectivity Program along CT-108 (Shelton Avenue/Huntington Street/Nichols Avenue) to connect the River Walk to the Naugatuck River Greenway, Senior Center and the high school. The recommendation was to install sidewalks along the corridor, but the city has not received funding. The city still would like to see the project move forward when other funding opportunities arise.

Huntington Street and Commerce Drive
This is a stop-controlled T-intersection with high volumes of traffic due to corporate office buildings on Commerce Drive to the east. There were high frequency of crashes. Commerce Drive is under a stop control and consists of a four-lane cross-section. The city is seeking funding sources for a potential roundabout at this intersection.

CT-110 (River Road)
The southside of CT-110, near the Stratford town line, has a concentration of crashes, and the city said these are attributable to the high volume of Sikorsky employees using CT-110 (River Road) for work home commute.

Shelton Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	2	4	3	1
Suspected Serious Injury (A)	10	15	9	8
Suspected Minor Injury (B)	75	65	75	57
Possible Injury (C)	79	104	85	94
Total Crashes	166	188	172	160


Shelton Crash Map
Newtown
Oxford
Seymour
Woodbridge
Ansonia
Monroe
Derby
New Haven
Easton
Shelton
Stratford
Milford
West Haven
Orange
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3 Miles

Field Site Inventory

CT-110 (Howe Avenue) from White Street to Center Street

CT-110 (Howe Avenue) is located in Shelton's downtown. It is a pedestrianized area with sidewalks on both sides of the roadway. The crosssection consists of on-street parking and travel lanes in both directions.
The primary intersection is the off set, signalized, four-way intersection with Bridge Street which connects to Derby. According to the town, this is a high frequency crash site. There are No turn on Red prohibitions for all approaches except northbound on Howe Avenue. The on-street parking just north of intersection is too close to the corner. There are crosswalks and an exclusive pedestrian phase at the signal. The buildings are built out to the sidewalk limiting sight distance. The intersections of Howe Avenue and Center Street and Howe Avenue and White Street and Howe Avenue and Bridge Street are all signalized and within less than 650 feet of each other.

Recommendations:

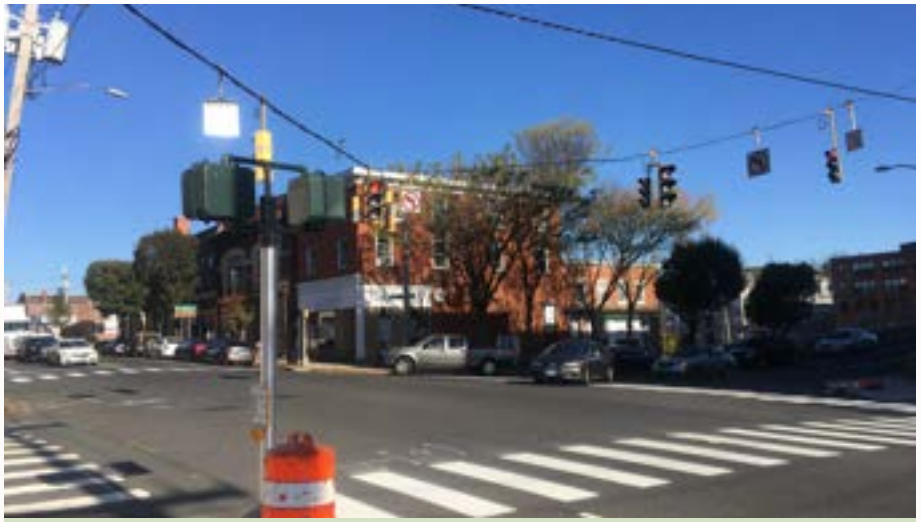
- Daylighting by removing parking spaces adjacent to signals
- Signal coordination to reduce congestion.
- Traffic signal retroreflective backplates.
- Concurrent pedestrian phase with LPI.

CT-714 (Bridgeport Avenue)

Bridgeport Avenue (CT-714) is a heavily commercialized corridor that experiences peak period traffic congestion. The corridor continues to experience additional commercial growth further contributing to corridor wide traffic congestion. In addition, Bridgeport Avenue parallels CT-8 and is often used to avoid congestion on CT-8. Bridgeport Avenue generally consists of one travel lane in each direction, multiple turn lanes at signalized intersections, wide shoulders, centerline rumble strips and a posted speed limit varying between 30 MPH and 40 MPH. Many side streets and driveways prohibit exiting left-turns due to the heavy congestion and associated lack of available gaps in traffic. In addition, the wide shoulders are often used to by-pass queued vehicles.

Recommendation:

- Consider installing center two-way left-turn lanes at key locations to address left-turn conflicts at numerous commercial driveways. Consider access management strategies to consolidate driveways to minimize access/egress points along the commercial corridor.



CT-110 (Howe Avenue)/Bridge Street

CT-714

Shelton Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-714 (Bridgeport Avenue)	High front to rear crashes	Traffic signal optimization	Medium
		Traffic signal retroreflective backplates	Low-Medium
CT-108 (Shelton Avenue/ Huntington Street/Nichols Avenue)	Lack of sidewalks and funding	Apply for alternative source of funding for sidewalks.	Low-Medium
CT-110 (Howe Avenue) from White Street to Center Street	Pedestrian safety	Daylighting by removing parking spaces adjacent to signals	Low
	Congestion	Signal coordination to reduce congestion.	Low-Medium
		Traffic signal retroreflective backplates.	Low-Medium
	Pedestrian safety and congestion	Concurrent pedestrian phase with LPI.	Low-Medium
CT-110 (River Road) near Stratford Town line	Cluster of crashes	Corridor Study	Low-Medium
Huntington Street and Commerce Drive	High frequency crash intersection	Roundabout	Medium-High
Citywide	Increased congestion due to development	City could enact zoning policy requiring developers to make transportation improvements affected by projects.	Low-Medium

TOWN OF SOUTHBURY

2016 US Census Population Estimate: 19,572

Area: 40.10 square miles

Population Density: 488 persons per square mile

2016 Vehicle Miles Traveled (VMT): 257,293,245

2016 VMT per Capita: 13,146

Setting: Rural Suburban

Town and Regional Representatives: Officer Robert Bette (PD), Cpt. Christopher Grillo (PD)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 8

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 274

CT-172 (South Britain Road)/CT-67 (Roxbury Road)

Overview

Southbury is a rural suburban town in New Haven County, bordered by Roxbury and Woodbury to the north, Middlebury and Oxford to the east, Newtown to the south through Housatonic River, and Bridgewater to the west. The town's main thoroughfares are I-84, US-6, CT-67, and CT-172.

Town Input

Fatal Crashes from 2015-2018

- Strongtown Road - Front-to-front, fog-related fatal crash.
- US-6 (Main Street North) and Old Waterbury Road - Angle fatal crash, a truck's failure to stop at signal.
- US-6 (Main Street North) - Front-to-front weather-related fatal crash.
- Heritage Road - Speed-related fatal crash.
- Purchase Brook Road - Roadway departure fatal crash.

Older Drivers
The Heritage Village is a fifty-five (55) and over community in the Town of Southbury with 6,000 residents. The troopers said that this population has unique challenges with driving, and many parking-lot crashes.

CT-67 (Southford Road) and CT-188 (Strongtown Road)
This is an offset signalized intersection with unique geometry and a high number of angle crashes. There are poor sight lines from Dunkin' Donuts on the western side of the intersection.

CT-67 (Southford Road) and US-6 (Main Street North)
This intersection has high traffic volume. The State has optimized and increased clearance time at the traffic signal.

Center Line Rumbles
The following corridors have center line rumble strips: CT-67 (Roxbury Road), Heritage Road, and Main Street South.

US-6 (Main Street North/Yankee Expressway)
This corridor has a wide cross section and front-to-rear crashes. The congestion at this corridor is associated with high volumes of traffic, which slow traffic but also minimize the severity of most crashes.

Main Street South/I-84 (Yankee Expressway) ramps/CT-172 (South Britain Road)
Sight distance is an issue at this intersection. It is adjacent to a commuter lot and has a No Turn on Red prohibition for US-6 (Yankee Expressway/ Main Street North) northbound. The police and town's foreman coordinate to manage the vegetation because it is a concern for the town.

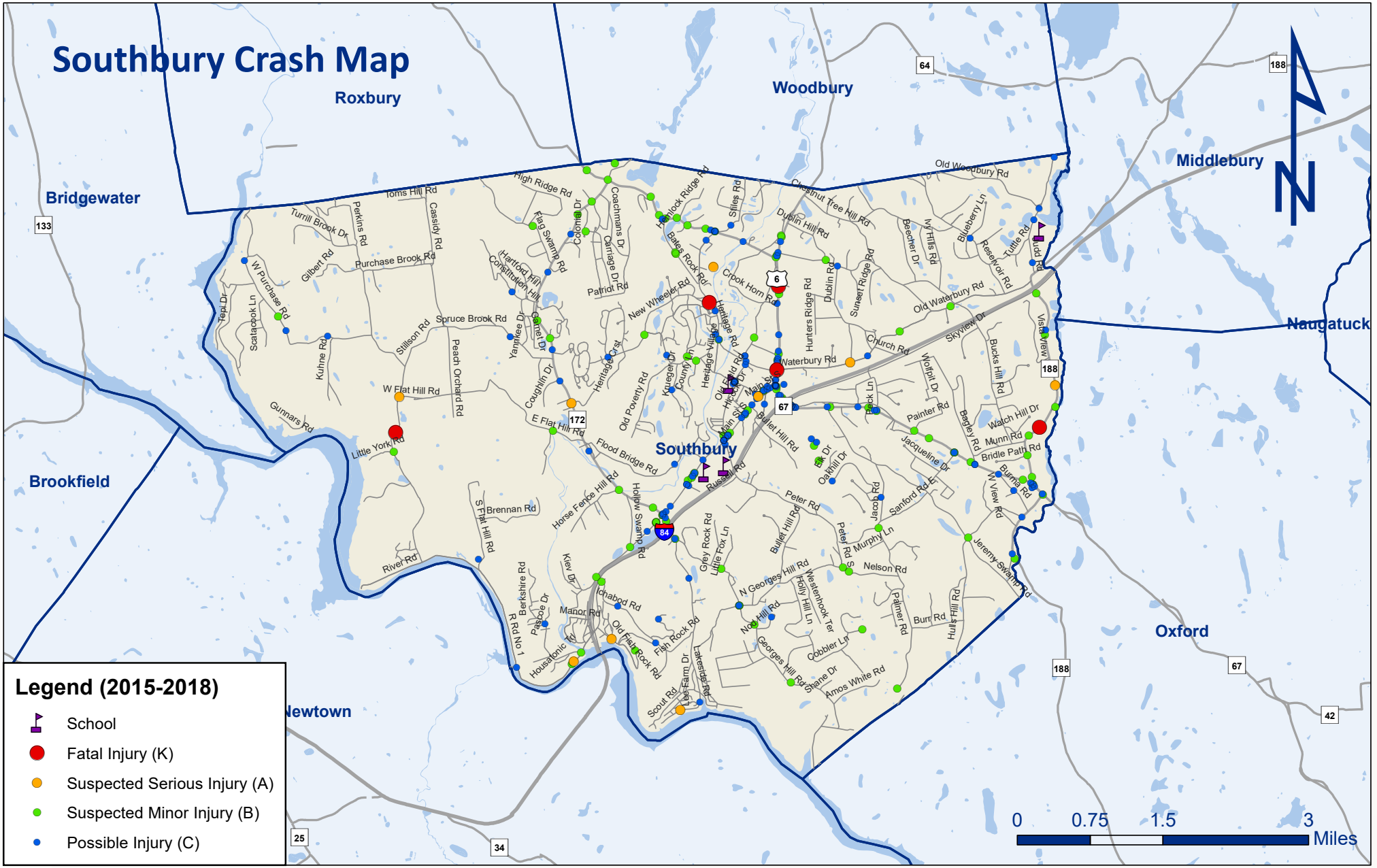
Main Street South and Floodbridge Road
There were two pedestrian crashes at Main Street South and Floodbridge Road in front of the elementary school and the senior center. A crosswalk with an RRFB is on the north side of the intersection but may need to be relocated. The town representatives stated this was not the optimal location for the crossing. There are no school zone markings affiliated with school.

CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road
This is a four-way, offset stop-controlled intersection with frequent crashes. There is a private property on the northeast side of intersection that gets hit by the motorists who misjudge the skewed geometry of the roadway. The resident has installed reflective items and lights to try to alert drivers, but crashes are still prevalent.

Lakeside Road/Georges Hill Road/CT-172 (South Britain Road)
This is a skewed intersection and a possible roundabout location according to the town representatives.

Southbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	4	0	1
Suspected Serious Injury (A)	2	2	4	1
Suspected Minor Injury (B)	28	36	33	19
Possible Injury (C)	44	39	29	32
Total Crashes	74	81	66	53


Southbury Crash Map
Roxbury
Woodbury
Middlebury
Bridgewater
Naugatuck
Brookfield
Newtown
Oxford
Southbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3
Miles

Field Site Inventory

CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road

This is a wide offset, four-way, stop-controlled intersection. The sight distance from CT-172 (Pierce Hollow Road) to the west is limited by a private home and by vegetation which abut the road. CT-172 ends and becomes Transylvania Road north of CT-67. The roadway veers to the left north of CT-67 and a property on the northeast corner has been hit many times. A fence with retroreflective items was installed by homeowner to try and prevent roadway departure crashes due to the skew.

Recommendations:

- Reduce the pavement width of CT-172 (Pierce Hollow Road).
- Add cat tracks along CT-67 (Roxbury Road).
- Add retroreflective and flashing beacons to the bidirectional arrows.
- Investigate lighting at intersection.
- Manage vegetation.

Main Street South/Flood Bridge Road - Pedestrian Crossing

The intersection of Main Street South and Flood Bridge Road is a four-way, unsignalized intersection with Main Street South as the main line and the Flood Bridge Road approach and the driveway from the Southbury Senior Center under stop control. The Main Street South approaches both consist of a through lane and exclusive left-turn lanes. Crosswalks are present across the Flood Road eastbound approach and the northbound approach of Main Street South. The crosswalk across the Main Street South northbound approach is accompanied by a push button Rectangular Rapid-Flashing Beacon (RRFB) on each side of the street. The local Police Department believes crosswalk and RRFBs should be relocated across the Main Street South southbound approach to better accommodate older drivers associated with the Senior Center. Field observations indicate the sidewalk approaches to the crosswalk and RRFBs push buttons are not ADA compliant.

Recommendations:

- Perform a traffic study to determine the best location of the crosswalk given the high user of older drivers exiting the Senior Center driveway.
- Upgrade the sidewalk approaches and RRFBs push button locations to meet ADA compliance. State has plan to update this RRFBs.

CT-172 (Pierce Hollow Rd)/CT-67 (Roxbury Rd)/Transylvania Rd

Main Street South at Flood Bridge Rd pedestrian crossing

Southbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road	Skewed intersection with roadway departures	Tighten up CT-172 (Pierce Hollow Road)	Low-Medium
		Add cat tracks along CT-67 (Roxbury Road)	Low
		Add retroreflective and flashing beacons to the bidirectional arrows	Low
		Investigate lighting at intersection	Low
	Sight distance from CT-172	Manage vegetation on southwest corner	Low
Lakeside Road/Georges Hill Road/CT-172 (South Britain Road)	High crash location	Investigate roundabout	Low-Medium
Main Street South/Flood Bridge Road - pedestrian crossing	Location of pedestrian crossing and ADA compliance	Perform a traffic study to determine the best location of the crosswalk given the high use of older drivers exiting the senior center driveway	Low
		Upgrade the sidewalk approaches and RRFBs push button locations to meet ADA compliance	Low-Medium
Main Street in front of Pomperaug Elementary School	Lack of school zone markings	Install School Zone signs and pavement markings	Low

TOWN OF THOMASTON

2016 US Census Population Estimate: 7,595

Area: 12.20 square miles

Population Density: 623 persons per square mile

2016 Vehicle Miles Traveled (VMT): 77,606,665

2016 VMT per Capita: 10,218

Setting: Rural

Town and Regional Representatives: Glenn Clark (PWD), Det. Keith Koval (PD)

Data Identified High Crash Corridors: CT-254-South Main Street/US-6-East Main Street (From Watertown Road to Town Line)

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 2

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 167

CT-254

Overview

Thomaston is a rural town in Litchfield County, bordered by Harwinton to the north, Plymouth to the east, Watertown to the south and Litchfield and Morris to the west. The town's main thoroughfares are US-6, CT-8, CT-109, CT-222, CT-254, and CT-848.

Thomaston Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	1	5	3	3
Suspected Minor Injury (B)	20	25	31	12
Possible Injury (C)	11	22	16	18
Total Crashes	32	52	50	33

Town Input

CT-222 (Hill Road)
The town said that there was a fatal crash along the horizontal curves near the Harwinton town line. This corridor has a series of horizontal curves through multiple bordering towns. The state has assessed the road to determine mitigation strategies, but the strategies have not been implemented.

US-6 (East Main Street)
The segment of US-6 designated as East Main Street is the highest crash corridor in Thomaston according to the town representatives. It is a confluence of the Route 8 Exit 39 ramps, local side streets, a Park and Ride and a Dunkin' Donuts. The town stated that some factors contribute to this area's high crash numbers: the two through-lanes along eastbound US-6, the vertical curvature, insufficient gaps for side-street motorists, speeds and the speed differentials between off-ramp traffic and through traffic. The Town of Thomaston said that this corridor is their top priority for roadway improvements.

CT-8 (James H. Darcey Memorial Highway) Exit 38 Off-Ramp and Reynolds Bridge Road
This is a high-crash intersection with unconventional geometry.

CT-109 (Branch Road) over the Wigwam Reservoir
This bridge was reconstructed without the town's input, and a sharp horizontal curve on the northbound approach to the bridge is a concern for the town.

CT-109 (Watertown Road/Branch Road)
The posted speed limit is 40 MPH on CT-109, but speeding is an issue along the corridor. The town said that they want to lower the posted speed to 35 MPH because there are two schools located west of US-6 on CT-109. There is a school zone arrival and dismissal speed limit, but there are school related activities outside of these hours that require reduced vehicle speeds. The town representatives stated they have been working with the state to establish school zones along both the US-6 (Watertown Road) and CT-109 (Branch Road) approaches to the two schools. They said that the state did not endorse a school zone designation for the high school (which also has a middle school in the facility). In addition, the town representatives stated that the crosswalks on CT-109 (Branch Road) are not in the most optimal locations.

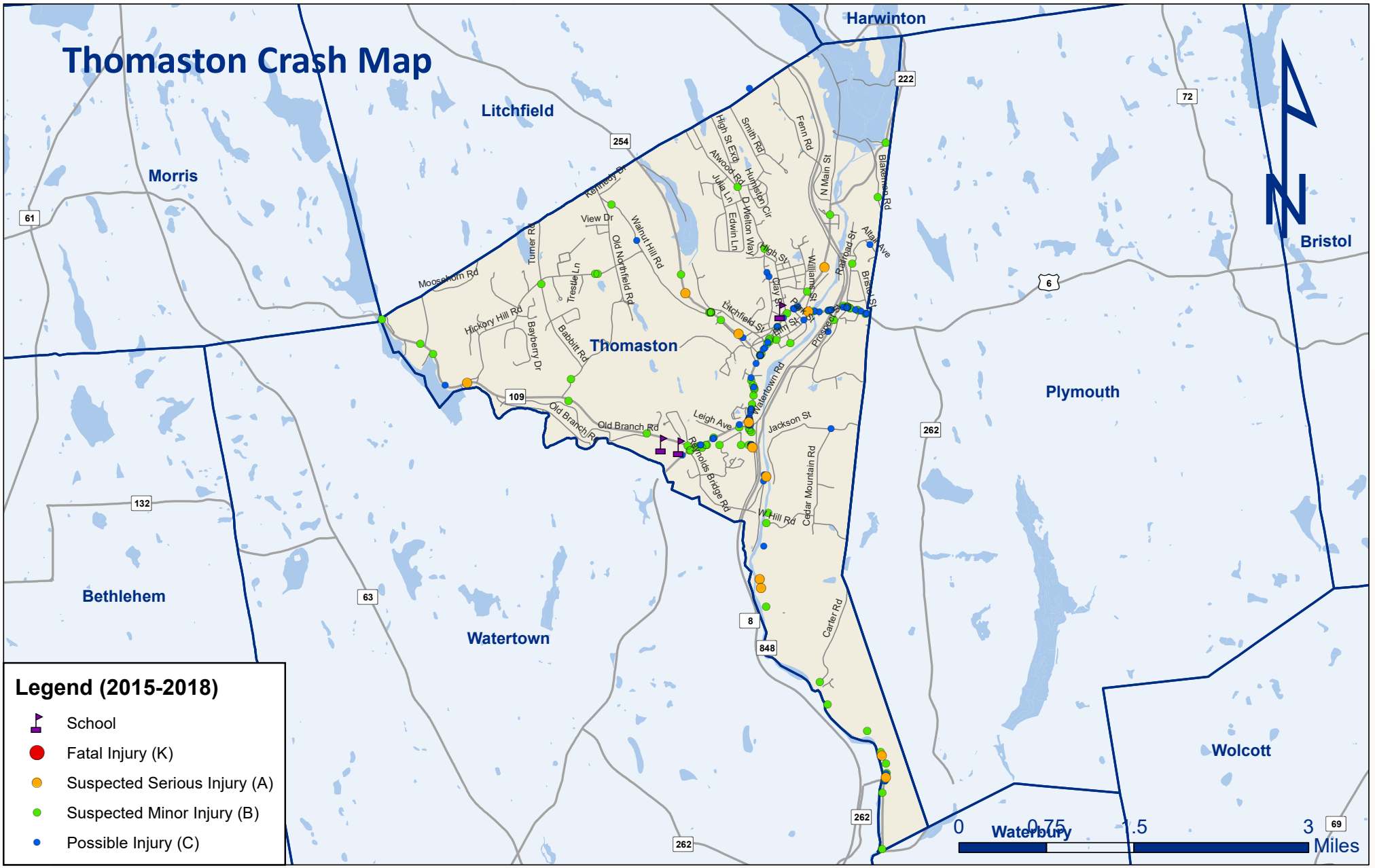
CT-848 (Old Route 8 or Waterbury Road)
Speeding along the corridor and sight distance at Frost Bridge Road are issues. The corridor has a concentration of crashes along challenging horizontal curves. There was a recent fatal crash in 2019 on this corridor.

CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street
This skewed intersection has a posted speed limit of 45 MPH, but speeding is common. The limited sight distance and speeding make it difficult for the traffic to exit Walnut Hill Road which has been the site of several crashes. The town believes a roundabout would be a good gateway treatment to reduce the crash frequency and severity at this intersection.

CT-254 (Northfield Road) and South Main Street
This is a signalized, T-intersection and the state is redesigning the traffic signal.

Center Line Rumble Strips
Thomaston's local roadways didn't meet the requirement for the state's installation of centerline rumble strips. The town would like to see them installed at appropriate locations along the state roads.

Bike and Pedestrians
The Town of Thomaston is not a destination for cyclists and there have not been many crashes. The Naugatuck River Greenway section is being built from the Watertown town line north to Thomaston.


Thomaston Crash Map
Harwinton
Litchfield
Morris
Bristol
Thomaston
Plymouth
Bethlehem
Watertown
Wolcott
Waterbury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street

The intersection of CT-254 (Northfield Road) Walnut Hill Road and Litchfield Street is a rural,unsignalized, four-way intersection with CT-254 (Northfield Road) as the mainline, the Walnut Hill Road approach is under stop control and the Litchfield Street approach is one-way away from the intersection. Sight distances from Walnut Hill Road are compromised by the CT-254 (Northfield Road) horizontal curve to the east. CT-254 (Northfield Road) has a posted speed limit of 45 MPH, however much higher speeds are reported,further contributing to the sight distance challenges for gap acceptance.

Recommendations:

- Consider centerline rumble strips on the CT-254 (Northfield Road) approaches to assist in addressing high speeds.
- Consider a roundabout at this location as a gateway treatment to the downtown area and to address high travel speeds.

US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange

US-6 consists of a four lane cross section along vertical curvature at the CT-8 (James H. Darcey Memorial Highway) interchange. Motorists exiting onto US-6 from the northbound CT-8 off- ramp have to navigate an unsignalized merge on an upgrade for eastbound travel. In addition, the US-6 westbound cross section widens from one travel lane to two at this junction making it hard for motorists to take a left to head east on US-6. To further exacerbate the challenging intersection there is a Dunkin Donuts on the northeast side of US-6 and Pleasant St and a Park and Ride lot on the northwest side of US-6 and Pleasant St. The combination of high speeds, vertical curvature, the addition of another travel lane on US-6 at the off-ramp and the high turning movements make this interchange difficult to navigate.

Recommendations:

- Consider relocating the additional lane on US-6 farther west past the CT-8 off-ramp.
- Dynamic speed feedback signs.
- Consider a signal at the off-ramp.

CT-254

US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange

Thomaston Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (East Main Street) and the CT-8 off ramps	Insufficient gaps for motorists on off-ramp	Consider relocating the additional lane on US-6 farther west past the CT-8 off-ramp	Low-Medium
		Consider a signal at the off-ramp	Medium-High
	Speeding	Dynamic speed feedback signs	Low
CT-222 (Hill Road)	Horizontal curves	Enhanced delineation through curves	Low-Medium
		High friction surface treatment	Low
CT-109 (Watertown Road/ Branch Road)	School zones without school zone designations	Designate school zones and add pavement markings	Low
	After school hour events	Manually activate school zone speed limit	Low
	Pedestrian crossing locations	Conduct study to determine if these need to be relocated	Low-Medium
CT-848 (Old Route 8 or Waterbury Road)	Horizontal curves	High friction surface treatment	Low
	Speeding	Narrow travel lanes	Low
		Dynamic speed feedback signs	Low

CITY OF WATERBURY

2016 US Census Population Estimate: 108,272

Area: 29.00 square miles

Population Density: 3,734 persons per square mile

2016 Vehicle Miles Traveled (VMT): 729,166,705

2016 VMT per Capita: 6,735

Setting: Urban

Town and Regional Representatives: Ken Stanco (Mayor's Office), Mackenzie Demac (Mayor's Office), Gardo Garabedian (DPW), Christian Meyer (NVCOG)

Data Identified High Crash Corridors: Chase Avenue from Cooke Street to North Main Street; CT-69 (Wolcott Street) from Sharon Road to Pritchard Road); West Main Street from Meadow Street to Highland Avenue

Data Identified High Crash Intersections: CT-69 (Wolcott Street) and Lakewood Road; Wolcott Street and CT-69 ; Thomaston Avenue and West Main Street; East Main Street and Baldwin Street; East Main Street and CT-69 (Meriden Road); Washington Avenue and Union Street

Bike and Ped Injury and Fatal Crash Injuries: 435

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 5,355

CT-69 (Stillson Road)

Overview

Waterbury is the second-largest city in New Haven County, bordered by Plymouth to the north, Wolcott and Cheshire to the east, Prospect and Naugatuck to the south and Watertown and Middlebury to the west. The city's main thoroughfares are I-84, CT-8, CT-69, CT-73, CT-801, and CT-844.

Waterbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	15	8	12	9
Suspected Serious Injury (A)	48	59	47	50
Suspected Minor Injury (B)	433	555	548	522
Possible Injury (C)	648	740	839	822
Total Crashes	1,144	1,362	1,446	1,403

City Input

Downtown Signalization Improvements
There is an ongoing project to improve and coordinate fifteen traffic signal in the downtown area. This should improve mobility and lessen crashes.

Wolcott Street/CT-69 (Stillson Road) and Wolcott Street/Lakewood Road
The city said that this high frequency crash intersection has turning movement issues due to signal timing.

East Main Street and Brass Mill Drive
This high-crash intersection is considered dangerous for pedestrians (one fatal pedestrian crash occurred). The CTDOT is redesigning the intersection through the Local Road Accident Reduction Program (LRARP).

Watertown Avenue and East Aurora Street
This intersection is used as a detour for I-84 (Yankee Expressway) east from CT-8 (James H. Darcey Memorial Highway) northbound. It has speed-related crashes due to the detour.

Chase Avenue
This was identified as a high-frequency crash corridor. The CTDOT has made improvements to this corridor by widening the cross section from two to four lanes, optimizing traffic signals and adding left-turn lanes. This should lessen the frequency of crashes.

Thomaston Ave and West Main Street
This is a signalized intersection with a high concentration of crashes. The city wants to redesign the traffic signal at this intersection to incorporate turn movements since there are no turning lanes or exclusive left-turn signals.

CT-8 (James H. Darcey Memorial Highway) Off Ramp and Huntington Avenue
The City of Waterbury has conceptual plans for improvements at this intersection but the current status of the project is uncertain. The intersection has capacity issues with various interdependent traffic signals at the CT-8 (James H. Darcey Memorial Highway) off-ramp/Huntington Avenue, Chase River Road, and Colonial Avenue/Huntington Avenue that cause the traffic to back up onto CT-8 (James H. Darcey Memorial Highway).

Scoville Street and Baldwin Street
This is a signalized intersection with high concentration of crashes. According to the city, the crashes are due to a lack of a left-turn phase.

CT-69 (Meriden Road) and East Main Street
This high-crash signalized intersection has capacity issues, resulting in traffic back ups. The right lane was closed years ago, and the crashes have since increased in frequency.

CT-69 (Meriden Road/Woodtick Road) and Southmayd Road
This intersection has a lane configuration issue.

Chase Avenue and North Main Street/Farmwood Road and Lakewood Road
This off-set, signalized intersection has a high concentration of crashes.

Pedestrians and Bicyclists
The City of Waterbury has a high volume of pedestrian and bicyclists and high frequency non-motorized crashes. The city thinks that the Watch for Me CT campaign might benefit the community. The pedestrian and bicyclist safety projects might be developed through the Department of Health and NVCOG funds, if they are available. Pedestrian safety is included in the NVCOG Pedestrian Plan.

West Main Street
This is a high frequency crash corridor. NVCOG is conducting a corridor study focusing on pedestrian safety.

Chase Parkway
The city wants a project that would extend the Chase Parkway to CT-64 (Middlebury Road), and alleviate the capacity at CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) intersection.

Captain Neville Drive and Austin Road
NVCOG is conducting an intersection safety study to address the high number of crashes.

Walnut Street/East farm Street and Walnut Street/North Walnut Street
Currently these intersections are under redesign using LRARP funds.

Field Site Inventory

CT-69 (Meriden Road)/East Main Street/Sylver Street Expressway

This is a wide, four-way, signalized intersection with crosswalks and pedestrian beacons on all four corners. CT-69 (Meriden Road) narrows down to one lane westbound and has restricted left turns. East Main Street has no edge lines and restricted and permissive left turns. There are businesses on two sides of intersection. A high volume of pedestrians and motorized vehicles, a wide cross section, vertical curvature, pedestrians crossing midblock and aggressive driving create conflict.

Recommendations:

- Consider installing No Right on Red at all approaches.
- Install traffic signal retroreflective backplates.
- Restripe edge lines on East Main Street.
- Reduce lane widths at intersection.
- Investigate exclusive pedestrian phase.
- Access management from Walgreens Pharmacy.

CT-69 (Wolcott Street and Stillson Road)

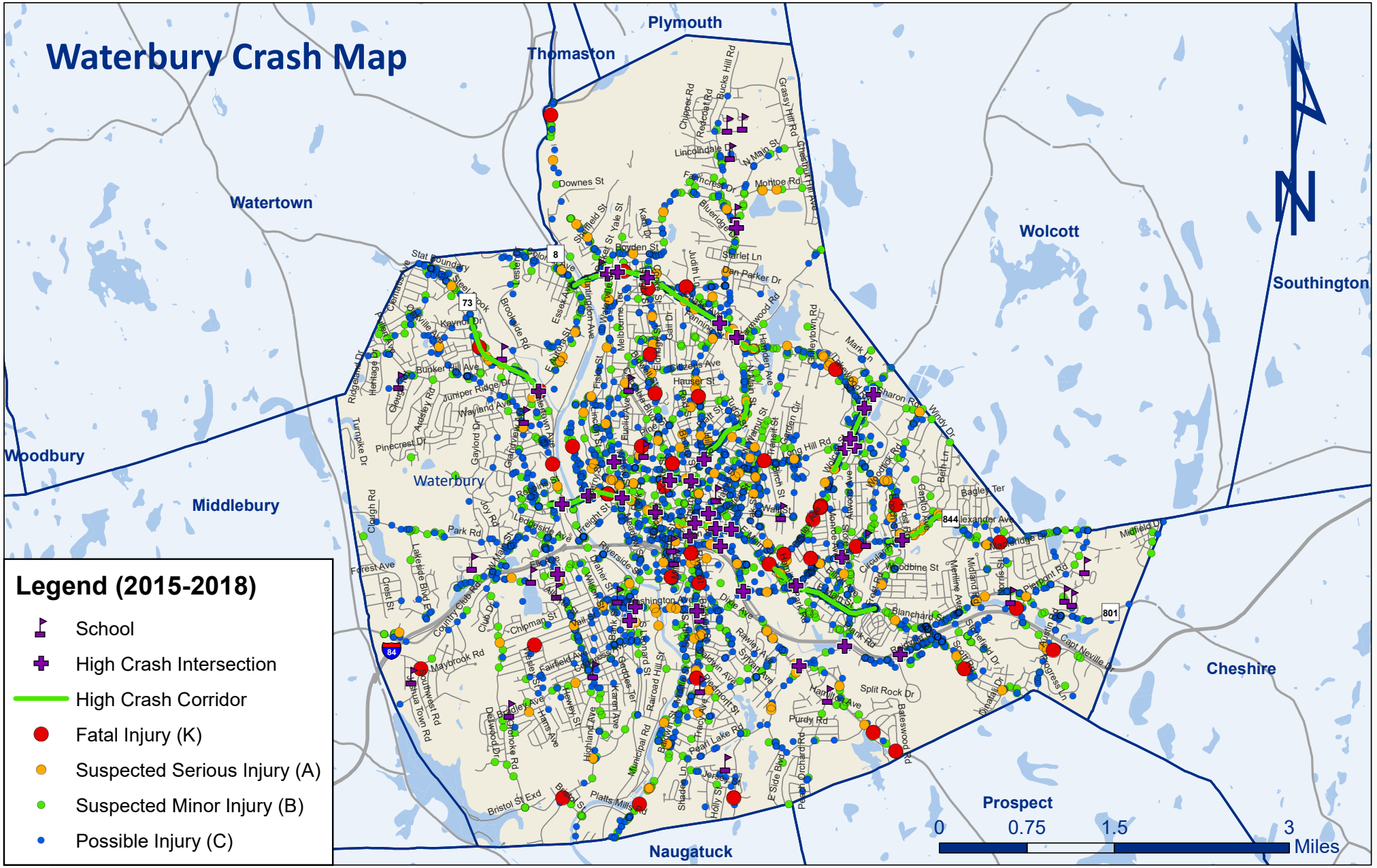
The intersection of CT-69 (Wolcott Street and Stillson Road) is a four-way, signalized intersection surrounded by commercial uses. The CT-69 (Wolcott Street) northbound approach consists of an exclusive left lane, two through lanes and an exclusive right lane. The CT-69 (Wolcott Street) Southbound approach consists an exclusive left-lane, a through lane and a shared through-right turn lane. The CT-69 (Stillson Road) approach (westbound) enters the intersection at a skew and consists of an exclusive right-turn lane and a shared through-left turn lane. The eastbound approach serves a large retail plaza and has no clearly defined lane designation. The intersection experiences high levels of congestion during peak periods further exasperated by numerous curb-cuts to adjacent high turnover commercial uses.

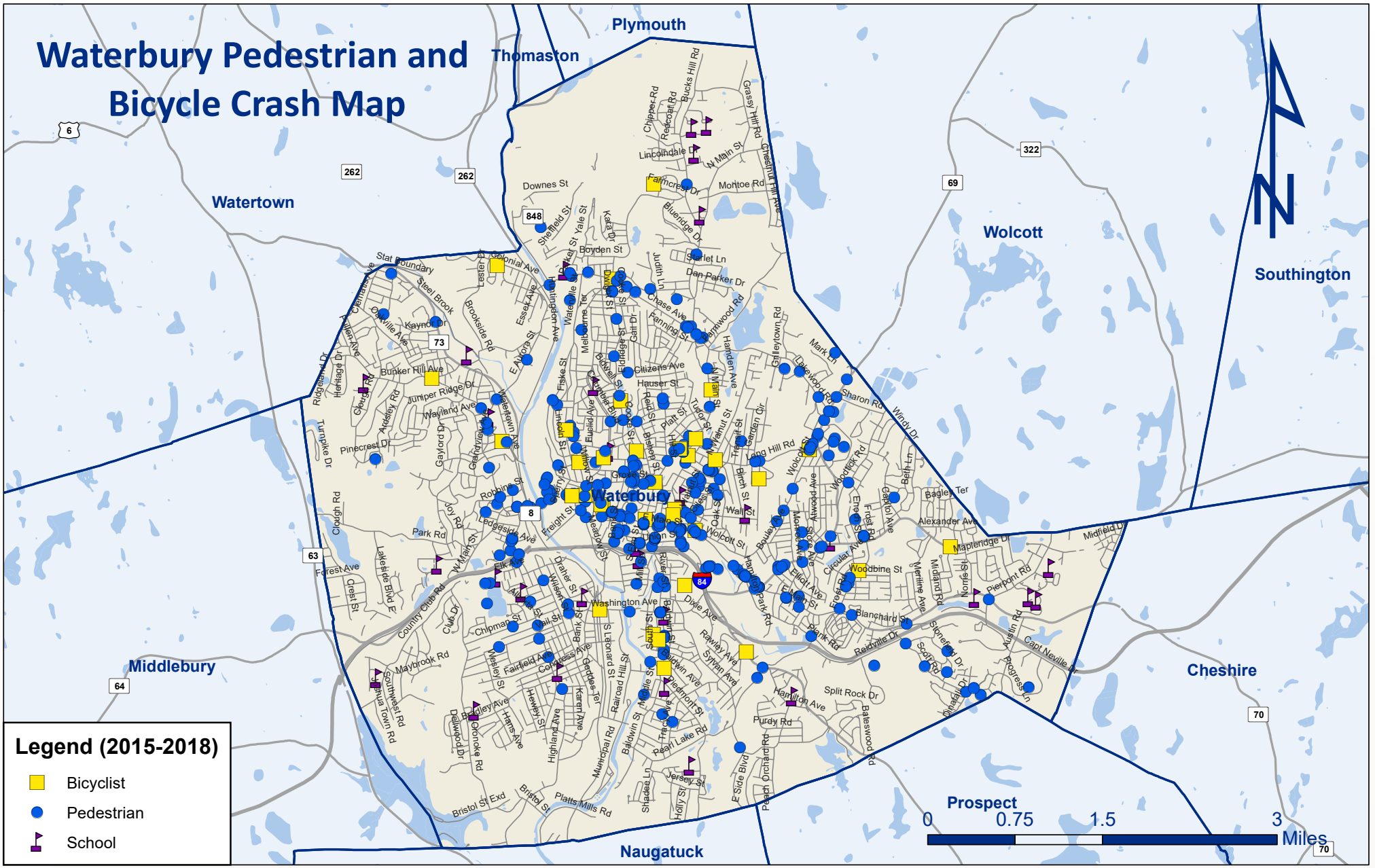
Recommendations:

- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.
- Consider access management techniques to address numerous commercial curb-cuts on CT-69 (Wolcott Street).

CT-69 (Meriden Rd)/East Main St/Sylver St Expy

CT-69 (Wolcott St/Stillson Rd)


Waterbury Crash Map
Plymouth
Thomaston
Watertown
Wolcott
Southington
Woodbury
Middlebury
Waterbury
Cheshire
Prospect
Naugatuck
Legend (2015-2018)
School
High Crash Intersection
High Crash Corridor
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles


Waterbury Pedestrian and Bicycle Crash Map
Plymouth
Thomaston
Watertown
Wolcott
Southington
Middlebury
Cheshire
Naugatuck
Prospect
Waterbury
Legend (2015-2018)
Bicyclist
Pedestrian
School
0
0.75
1.5
3
Miles
N

Waterbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Thomaston Ave and West Main Street	Angle crashes at signalized intersection	Upgrade signal and include left turn clearance phase	Medium-High
CT-8 (James H. Darcey Memorial Highway) Off Ramp and Huntington Avenue	Capacity issues and congestion due to signal timing	City has signal design to address this intersection	Medium
West Main Street	High frequency crash corridor	NVCOG conducting a study on West Main St and focusing on pedestrians	Low-Medium
CT-63 (Straits Turnpike) and CT-64 (Middlebury Road) intersection.	Capacity issue	Extend the Chase Parkway to CT-64 (Middlebury Road)	Medium-High
Scoville Street and Baldwin Street	Angle crashes	Redesign signal to include a left turn phase	Medium-High
CT-69 (Meriden Road)/East Main Street/Sylver Street Expressway	High frequency crashes intersection	Consider installing No Right on Red at all approaches	Low
		Install traffic signal retroreflective backplates	Low-Medium
		Restripe edge lines at East Main Street	Low
		Tighten up intersection	Medium
		Investigate exclusive pedestrian phase with LPI	Low
		Restrict egress and ingress at gas station and Walgreens	Low
CT-69 (Wolcott Street) and Stillson Road	High frequency crash intersection	Modernize the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes	Medium
		Traffic signal retroreflective backplates	Low-Medium
	High turning movements	Access management techniques to address numerous commercial curb-cuts on CT-69 (Wolcott Street)	Low-Medium
Citywide	Pedestrian and bicyclist crashes	Develop a pedestrian and bike master plan using Dept of Health and NVCOG guidance	Medium
	Signal timing related crashes	Review and revise signal timings	Low-Medium

TOWN OF WATERTOWN

2016 US Census Population Estimate: 21,790

Area: 29.60 square miles

Population Density: 736 persons per square mile

2016 Vehicle Miles Traveled (VMT): 173,295,430

2016 VMT per Capita: 7,953

Setting: Suburban

Town and Regional Representatives: Roy Cavanaugh (DPW), Tim Gavallas (PD), John Gavallas (PD), Joshua Bernegger (PD)

Data Identified High Crash Corridors: CT-63 (Main Street) from US-6 (Deforest Street) to CT-63 (Straits Turnpike)

Data Identified High Crash Intersections: CT-262 (Frost Bridge Road) and CT-8 (James H. Darcey Memorial Highway) off-ramp

Bike and Ped Injury and Fatal Crash Injuries: 8

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 417

CT-262 (Buckingham Street)

Overview

Watertown is a suburban town in Litchfield County, bordered by Morris, Litchfield and Thomaston to the north, Plymouth and Waterbury to the east, Middlebury to the south and Woodbury and Bethlehem to the west. Oakville is located in the southeast and it is the most populous community in the Town of Watertown. The Town's main thoroughfares are US-6, CT-8, CT-63, CT-73, CT-132, and CT-262.

Watertown Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	2	0	2
Suspected Serious Injury (A)	1	5	10	6
Suspected Minor Injury (B)	49	50	57	34
Possible Injury (C)	46	58	49	48
Total Crashes	96	115	116	90

Town Input

Fatal Crashes from 2015-2018

- CT-63 (Main Street) - This corridor was the site of two fatal pedestrian crashes:
  1. Substance-impaired, motorist-pedestrian fatal crash.
  2. Pedestrian fatal crash at mid-block crossing.

Note: The Main Street Committee is still planning to meet. The municipality is working with a consulting engineering firm to present safety options to the public. Watertown was awarded a Small Town Economic Assistance Program (STEAP) grant to install 2 RRFBs on CT-63 (Main Street), modify the signalization of CT-63 (Main St) at Woodruff Avenue, and install new sidewalks on the west side of CT-63 (Main Street) from Woodruff Avenue to French Street.

- CT-262 (Frost Bridge Road) and Echo Lake Road – Weather-related angle fatal crash.
- Echo Lake Road - Motorcycle fatal crash in driveway.

CT-262 (Buckingham Street) and Nova Scotia Hill Road

This is a high frequency crash location. It is a four-legged intersection with two-way stop control on Nova Scotia Hill Road. There is limited sight distance due to the horizontal and vertical curvature. The posted speed limit is 40 MPH on CT-262 (Buckingham Street), but the motorists travel at higher speeds. The Veteran's Memorial Park which hosts many youth sporting events. The Local Traffic Authority (LTA) submitted a request to CTDOT to convert this intersection to a four-way stop, but no response has been provided.

CT-63 (Straits Turnpike) and CT-73 (Main Street)

The town said that this intersection is over its capacity.

Lake Winnemaug Road and Sperry Road

This is a skewed intersection and the site of a fatal crash prior to study period. The town will realign the intersection to fix the skewed angle.

Colonial Street and Davis Street

This is an off-set intersection with a high concentration of crashes. The previous two-way stop-controlled intersection has been modified to four-way.

Echo Lake Road and CT-262 (Frost Bridge Road)

CT-262 (Frost Bridge Road) is stop-controlled with very limited sight distance looking west due to the overpass structures from CT-8 (James H. Darcey Memorial Highway), and the horizontal curvature on Echo Lake Road. CT-262 (Frost Bridge Road) runs parallel to CT-8 (James H. Darcey Memorial Highway). This was the site of a fatal crash, and the town wants to mitigate the limited sight distance issue.

CT-63 (Litchfield Road/Main Street/Straits Turnpike)

This corridor has some issues that are affecting the mobility along the corridor. The traffic backs up all the way south to CT-73 (Main Street) due to a lack of traffic signal optimization. This situation forces the motorists onto more local roadways, causing speeding from frustration due to congestion. There is a new traffic signal at the Starbucks on CT-63 (Main Street) and French Street, but the cycles are too quick for northbound travel. Cherry Avenue at CT-63 (Main Street) was recently converted to a right turn only to improve the traffic flow.

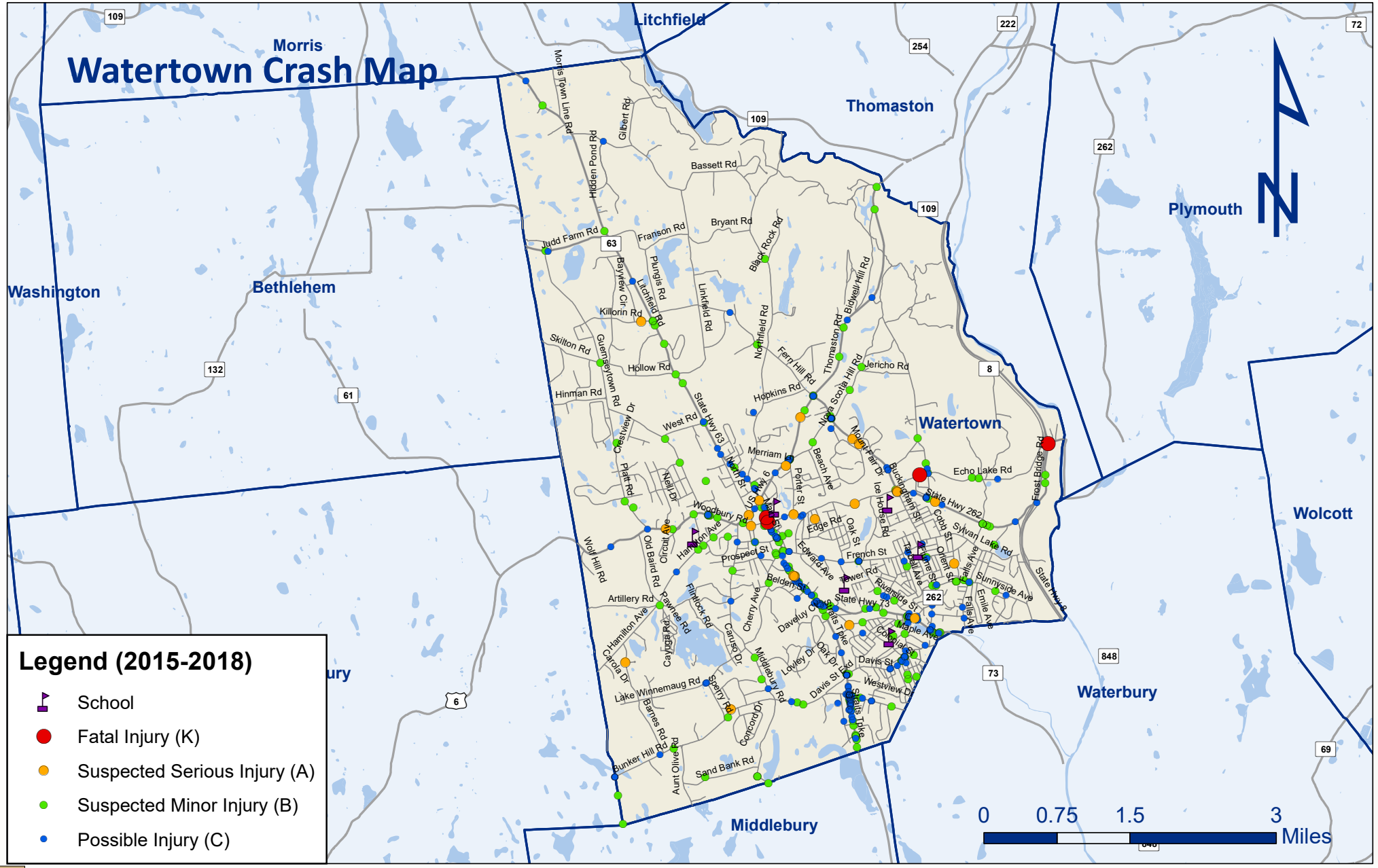
The town would like Edgewood Avenue to be converted to one way out towards CT-63 (Main Street) to help alleviate some of the issues along the corridor. The southern segment of CT-63 (Straits Turnpike) near the Middlebury town line has a concentration of minor injury crashes. The Town is considering adding a two-way center left-turn lane, because the current cross section is sufficiently wide for an additional lane. In the last few years, this corridor had two pedestrian fatal crashes in two mid-block crossings. The town is supportive of bump outs if state will plow, and it is unsure when the CTDOT is going to optimize the traffic signals.

State systemic improvements

The state installed enhanced horizontal curve warning signs and center line rumble strips on town roadways as part of their statewide program. Residents initially complained to the town, but now the town representatives stated there has been no recent comments.

Origin and Destination Study

NVCOG has a one-year subscription to monitor the motorists' origin and destination patterns which the town is going to use to help determine traffic generators. They hope to use this information to improve traffic flow.


Watertown Crash Map
Morris
Litchfield
Thomaston
Plymouth
Washington
Bethlehem
Watertown
Wolcott
Waterbury
Middlebury
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0 0.75 1.5 3
Miles

Field Site Inventory

CT-262 (Buckingham Street) and Nova Scotia Hill Road

This intersection has stop-controls on both legs of Nova Scotia Hill Road when approaching CT-262 (Buckingham Street) and vertical curvatures on both approaches. There is limited sight distance from Nova Scotia Hill Road and flashing yellow signals at CT-262 (Buckingham Street). CT-262 (Buckingham Street) has a horizontal curvature at this intersection.

Recommendations:

- Monitor vegetation all year round, especially late summer.
- Investigate four-way stop and signal warrant.
- Install dynamic speed feedback signs on CT-262 (Buckingham Street).

CT-262 (Frost Bridge Road)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp

The intersection of Frost Bridge Road and the CT-8 (James H Darcey Memorial Hwy) Exit 37 Northbound off-ramp is an unsignalized, three-way intersection with Frost Bridge Road as the mainline and the CT-8 (James H Darcey Memorial Hwy) off-ramp under stop control. The off-ramp approaches Frost Bridge Road at a significant skew with a raised island separating left-turns and right-turns, each under their own stop control. Frost Bridge Road has a posted speed limit of 30 MPH, with much higher speeds potentially associated with wide shoulders and a steep downgrade on the eastbound approach to the intersection. Sight distance is compromised for motorists making a left-turn from the ramp to Frost Bridge Road by the CT-8 (James H Darcey Memorial Hwy) bridge abutment, horizontal curvature, vegetation overgrowth and regulatory signage immediately adjacent to the stop sign.

Recommendations:

- Trim overgrown vegetation and relocate regulatory signs obstructing sight lines looking to the west.
- Consider center line rumble strip along Frost Bridge Road to potentially address high speeds through the intersection.
- Install intersection ahead warning sign on the Frost Bridge Road Eastbound approach to the intersection.

CT-262 (Buckingham St)/Nova Scotia Hill Rd

CT-262 (Frost Bridge Rd)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp

Watertown Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
CT-262 (Buckingham Street) and Nova Scotia Hill Road	Vegetation overgrowth	Monitor vegetation all year round, especially late summer.	Low
	High frequency crashes	Investigate four-way stop and signal warrant.	Low
	Speeding	Install dynamic speed feedback signs on CT-262 (Buckingham Street).	Low
CT-262 (Frost Bridge Road)/ CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp	Obstructed sight distance	Trim overgrown vegetation and relocate regulatory signs obstructing sight lines looking to the west.	Low
	Speeding	Consider center line rumble strip along Frost Bridge Road to potentially address high speeds through the intersection.	Low
	Intersection related crashes	Install intersection ahead warning sign on the Frost Bridge Road eastbound approach to the intersection.	Low
CT-63 (Litchfield Road/Main Street/Straits Turnpike)	Congestion	Convert Edgewood Ave to one way towards CT-63	Low-Medium
		Two way center left turn lane	Low-medium
	Pedestrian crashes	Curb Extensions	Low-Medium
Townwide	Congestion	NVCOG origin and destination study assistance	Low

TOWN OF WOLCOTT

2016 US Census Population Estimate: 16,643

Area: 21.10 square miles

Population Density: 789 persons per square mile

2016 Vehicle Miles Traveled (VMT): 74,859,310

2016 VMT per Capita: 4,498

Setting: Suburban

Town and Regional Representatives: Thomas G Dunn (Mayor), Mark Possidento (Town Engineer), Patrick Malloy (PD), David Kalinowski (DPW)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 7

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 306

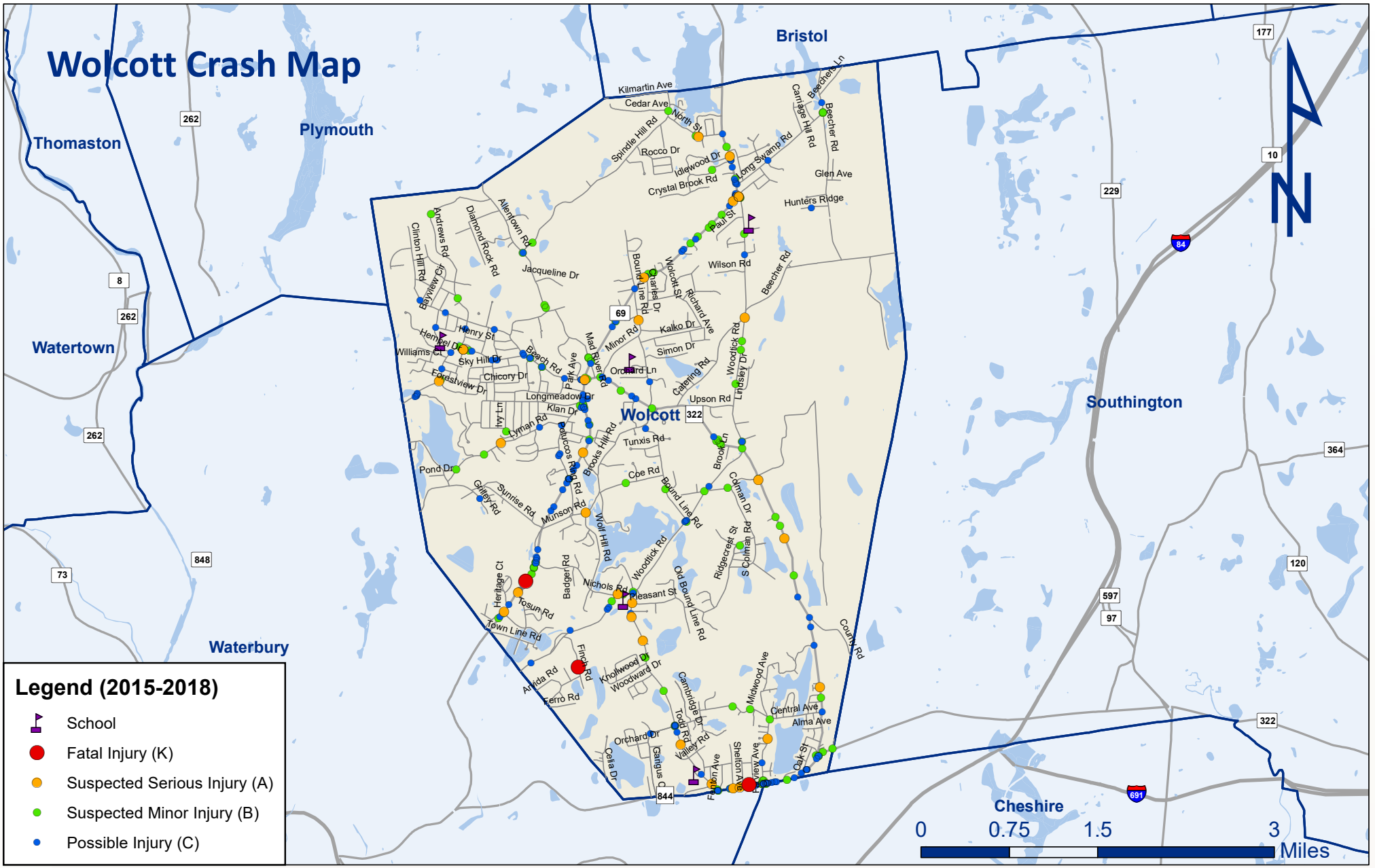
Spindle Hill Road

Overview

Wolcott is a suburban town in New Haven County, bordered by Bristol to the north, Southington to the east, Waterbury and Cheshire to the south and Waterbury and Plymouth to the west. The town's main thoroughfares are CT-69, CT-322, and CT-844.

Wolcott Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	0	0	1	1
Suspected Serious Injury (A)	14	6	2	8
Suspected Minor Injury (B)	18	28	34	31
Possible Injury (C)	36	50	38	39
Total Crashes	68	84	75	79


Wolcott Crash Map
Bristol
Plymouth
Thomaston
Watertown
Waterbury
Southington
Cheshire
Wolcott
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles
N

Town Input

Fatal Crash from 2015-2018

- CT-69 (Wolcott Road) - Fatal front-to-front crash, but not coded as fatal.

State Systemic Program

Center Line Rumble Strips
The centerline rumble strips on CT-69 (Wolcott Road) are currently ground down due to repaving, but the State is reinstalling them. Woodtick Road and Long Swamp Road have centerline rumble strips.

Pedestrian Crossings Signs
Pedestrian crossing signage and markings were were installed in front of the schools on Woodtick Road.

Horizontal Curve Signs
The town has installed horizontal curve signs along local roads.

CT-69 (Wolcott Road) and Woodtick Road

This is a high-frequency crash, stop-controlled intersection. It has horizontal curvature prior to the stop sign on Woodtick Road at CT-69 (Wolcott Road), with the side street in the middle of curve. The crashes along the curve are not due to the intersection with CT-69 (Wolcott Road), but rather the atypical geometry of the intersection approach. The state previously realigned the skewed intersection in 2012, but the crashes have increased according to the town representatives. The town just installed guardrails and LED lights to the chevron curve signs. They said that since this recent upgrade there have been no crashes at this location. They are going to wait and see if these improvements reduce crash frequency and severity. If not, they are open to further countermeasure recommendations.

Todd Road

This is a high-frequency crash roadway. The town is addressing the sight distance issues due to the vegetation and icing condition from the pitch of the roadway by proposing a four-way stop sign on Todd Road and Central Avenue. The Town of Wolcott is using LOTCIP funding to work on some of this roadway issues, one solution being a reduction of the posted speed limit to 25 MPH.

Spindle Hill Road

This roadway has a series of reverse curves with some weather-related roadway departure crashes.

CT-322 (Meriden Road/East Street) and CT-844 (Meriden Road)

This intersection is near a bus stop and a housing complex area. There was a pedestrian fatal crash at the midblock crossing near 1585 Meriden Road. The State eliminated one of the three midblock crossings in this area, because they said it had no purpose.

Community Connectivity Grant

The Town is using a community connectivity grant to add sidewalks on North Street.

Spindle Hill Road

Field Site Inventory

Spindle Hill Road reverse curves

Spindle Hill Road is a rural road located in a residential area with a two lane cross-section and no shoulders. The roadway has vertical and horizontal curvature, including reverse curves. The speed limit is posted at 25 MPH.

Recommendations:

- Enhanced delineation through curves (including wider edge lines and chevron signs).
- High friction surface pavement friction treatment through curvature.
- Dynamic speed feedback signs.

CT-69 (Wolcott Road)/Woodtick Road

The intersection of CT-69 (Wolcott Road) and Woodtick Road is an unsignalized three-way intersection with CT-69 (Wolcott Road) as the mainline and the Northbound Woodtick Road approach under stop control. Prior to the intersection, Woodtick Road is a major north-south local road with a posted speed of 25 MPH as it approaches CT-69 (Wolcott Road) through a school zone. After the school zone the posted speed limit further reduces to 20 MPH as it enters a sharp horizontal curve through the unsignalized intersection of Clark Road and finally to its junction with CT-69 (Wolcott Road). The unsignalized intersection of Clark Road is at the terminus of the horizontal curve and set back approximately 100 ft from the intersection of Woodtick Road and CT-69 (Wolcott Road). The location of Clark Road can confuse motorists traveling through the horizontal curve at higher speeds causing roadway departure crashes. Due to high frequency of crashes at this location, the town has recently installed additional solar powered flashing LED chevron signs (non-MUTCD compliant) through the horizontal curve to reduce speeds and further delineate the curve.

Recommendations:

- Continue to monitor the effectiveness of the flashing LED chevron signs and consider installing an additional chevron sign closer to the intersection of Clark Road.
- Consider other traffic calming measures to address high travel speeds approaching the horizontal curve. These could include rumble strip bars, optical speed bars, neckdowns, enforcement, etc.

Spindle Hill Rd reverse curves

Woodtick Rd approaching CT-69 (Wolcott Rd)

Wolcott Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
Spindle Hill Road reverse curves	Roadway departure crashes through curves	Enhanced delineation through curves (including wider edge lines, chevron signs).	Low
		High friction surface treatment through curvature.	Low
		Dynamic speed feedback signs.	Low
CT-69 (Wolcott Road)/Woodtick Road	Crashes along horizontal curve prior to stop sign	Continue to monitor the effectiveness of the flashing LED chevron signs and consider installing an additional chevron sign closer to the intersection of Clark Road.	Low
		Consider other traffic calming measures to address high travel speeds including edge line rumble strips, high friction surface treatment	Low
Todd Road	Drainage issue and icing	Investigate roadway pitch	Medium
	Crashes at Todd Road and Central Ave	Investigate four-way stop	Low

TOWN OF WOODBURY

2016 US Census Population Estimate: 9,591

Area: 36.70 square miles

Population Density: 261 persons per square mile

2016 Vehicle Miles Traveled (VMT): 67,608,585

2016 VMT per Capita: 7,079

Setting: Rural

Town and Regional Representatives: Barbara Perkinson (First Selectman), Rich Lamothe (DPW), Joseph Roden (Resident State Trooper)

Data Identified High Crash Corridors: N/A

Data Identified High Crash Intersections: N/A

Bike and Ped Injury and Fatal Crash Injuries: 6

Total Number of Crashes Involving Injuries or Fatalities, 2015-2018: 154

Source: VN Engineers

Overview

Woodbury is a rural town in Litchfield County, bordered by Washington and Bethlehem to the north, Watertown and Middlebury to the east, Southbury to the south and Roxbury to the west. The town's main thoroughfares are US-6, CT-47, CT-61, CT-64, CT-132, and CT-317.

Woodbury Total Crashes by Severity

Crash Severity	2015	2016	2017	2018
Fatal Injury (K)	1	0	2	1
Suspected Serious Injury (A)	2	3	1	0
Suspected Minor Injury (B)	19	23	18	18
Possible Injury (C)	23	17	12	14
Total Crashes	45	43	33	33

Town Input

Fatal Crashes from 2015-2018

- CT-317 (Good Hill Road) - Young driver roadway departure fatal crash.
- CT-64 (Sherman Hill Road) - Substance-involved fatal crash.
- CT-61 (Quassapaug Road) - Young driver fatal crash.
- CT-61 (Quassapaug Road/Bethlehem Road) and US-6 (Main Street North) - Speed-related fatal crash.

US-6 (Main Street North/Main Street South)

This corridor has the highest volume of crashes and the highest ADT. The state is redoing the signal at US-6 (Main Street South) and CT-317 (Sycamore Avenue), including the pedestrian signals. The state is planning on narrowing travel lanes on US-6 (Main Street South) and is considering adding a left turn lane at this intersection. The town has parking spaces close to this intersection, which they hope will be unaffected. These parking lots have been used by the affiliates of the Church and other downtown businesses.

CT-64 (Sherman Hill Road) and Old Sherman Hill Road

The town said that the sight distance and the vertical curvature on CT-64 (Sherman Hill Road) are concerns at this unsignalized intersection. The state trooper said that this intersection is his top safety concern.

Mountain Road

This roadway is used as a by-pass for US-6 (Main Street South) and the town representatives stated that speed is a concern. The town repaved this roadway and added a double-yellow centerline to reduce speeding, and the DPW plans on adding edge lines. The speed limit was reduced from 30 to 25 MPH.

US-6 (Main Street North) and Quanopaug Trails

The roadway elevation differentials impede the sight distance for motorists on Quanopaug Trail. The State already lowered the roadway once to try to remedy the issue, but the elevation disparity still impedes sight distance.

US-6 (Main Street North) and CT-61 (Bethlehem Road)

This is a four-way intersection with stop-control on CT-61. It was the site of a fatal crash. Speed-related crashes and sight distance issues from CT-61 (Bethlehem Road) were cited as concerns.

Center and Edge Line Rumble Strips

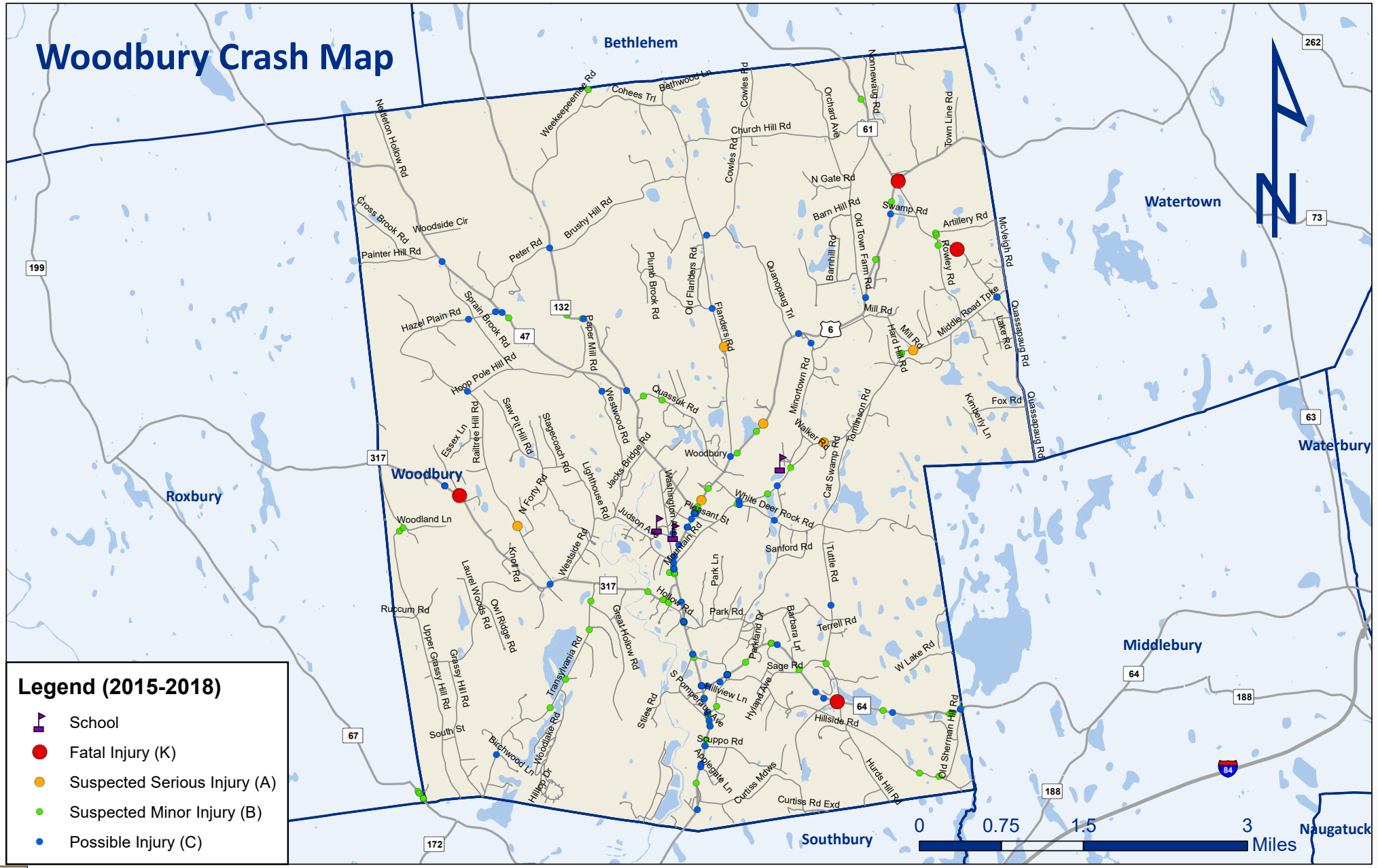
Center line rumble strips have been installed on US-6 (Main Street North) from CT-47 (Washington Road) to Watertown town line. The edge lines on US-6 (Main Street South) are on the southern segment towards Southbury.

Speeding

Speeding is an issue throughout the town. The Police are collecting ADT and travel speeds for enforcement strategies. The state trooper does not think that the speed feedback signs are effective enough, and he stated there are currently no grant opportunities to assist the town.

Pedestrians and Bicyclists

The Town of Woodbury has a historic Main Street with high volumes of pedestrian traffic. The town had moved the pedestrian crossing signs on Mountain Road to improve pedestrian sight distance. The state installed RRFBs on US-6 (Main Street North/Main Street South), but the town is still concerned that motorists don't yield to pedestrians in crosswalks. Bicyclists are common in the town in summer months due to the nearby triathlons.


Woodbury Crash Map
Bethlehem
Watertown
Woodbury
Roxbury
Middlebury
Waterbury
Southbury
Naugatuck
Legend (2015-2018)
School
Fatal Injury (K)
Suspected Serious Injury (A)
Suspected Minor Injury (B)
Possible Injury (C)
0
0.75
1.5
3
Miles

Field Site Inventory

US-6 (Main Street North)/CT-61 (Bethlehem Road and Quassapaug Rd)

This is a two-way intersection with stop control on CT-61(Bethlehem Road/Quassapaug Rd). The CT-61 approach lanes are divided by a grassy median for both northbound and southbound traffic. In addition, there is a sweeping off-ramp for westbound US-6 motorists who turn onto CT-61 northbound. There is vertical and horizontal curvature on the US-6 (Main Street North) approaches to CT-61. CT-61 (Bethlehem Road) Northbound has a sight distance issue due to horizontal curvature on US-6 (Main Street North). The sight distance from CT-61 (Main Street North) southbound is adequate.

Recommendations:

- Trim vegetation especially along the southside of US-6 (Main Street North) eastbound.
- Install flashing yellow beacons on the intersection ahead warning signs.
- Eliminate the grassy median and the most western legs of the CT-61 approaches. Realign both CT-61 approach farther east to improve sight distance.
- Install Dynamic Speed Feedback signs on US-6 (Main Street North).

US-6 (Main Street South)/CT-317 (Sycamore Avenue)

The intersection of US-6 (Main Street South) and CT-317 (Sycamore Avenue) is a four-way signalized intersection in the center of town. All approaches to the intersection consist of a single general-purpose lane. The US-6 (Main Street South) northbound approach includes a wide shoulder and the US-6 (Main Street South) southbound approach has adjacent perpendicular parking accommodating approximately 16 vehicles. This parking is important to the surrounding businesses and community. The traffic signal equipment is antiquated and the intersection experiences significant congestion during the morning and evening peak periods. Pedestrian crosswalks are located across all approaches with the crosswalks across US-6 (Main Street South) supported by pedestrian activated push buttons, while the side streets are not.

Recommendations:

- Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes.
- If geometry improvements are needed, consider complete street design solutions that maintain the adjacent on-street parking.

US-6 (Main St North)/CT-61 (Bethlehem Rd)

Aerial of US-6 (Main St South)/CT-317 (Sycamore Ave)

Woodbury Countermeasure Considerations

Locations	Issues	Countermeasures	Estimated Cost
US-6 (Main Street North)/ CT-61 (Bethlehem Road/ Quassapaug Road)	Horizontal and vertical curvature at intersection	Trim vegetation especially along US-6 (Main Street North) eastbound.	Low
	Intersection crashes	Install yellow flashers on the intersection warning signs	Low
		Realign CT-61 approaches farther east	Medium
	Speeding	Install Dynamic Speed Feedback signs on US-6 (Main Street North) approach	Low-Medium
US-6 (Main Street South)/ CT-317 (Sycamore Avenue)	Congestion	Consider modernizing the traffic signal equipment and optimizing the signal phasing and timing to respond to current and forecasted traffic volumes	Medium
Mountain Road	Speeding	Narrow travel lanes	Medium
		Enforcement	Low-Medium
Townwide	Pedestrians and bicyclists	Watch for Me CT	Low
		Curb extensions at crosswalks	Low-Medium
		Sharrows on popular bicycle routes	Medium

Appendix B: Emphasis Areas

INTERSECTION FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	29	39	21	36
Beacon Falls	3	6	4	3
Bethlehem	2	1	6	3
Bristol	168	190	189	165
Cheshire	43	51	50	52
Derby	35	49	40	16
Middlebury	19	32	23	33
Naugatuck	31	54	65	36
Oxford	7	9	15	9
Plymouth	13	20	18	25
Prospect	20	20	20	12
Seymour	22	36	32	24
Shelton	68	78	81	79
Southbury	38	39	26	21
Thomaston	12	18	12	10
Waterbury	468	577	604	594
Watertown	36	51	51	44
Wolcott	22	28	23	17
Woodbury	11	14	10	14
NVCOG Totals	**1047**	**1312**	**1290**	**1193**

ROADWAY DEPARTURE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	18	20	18	20
Beacon Falls	10	5	5	5
Bethlehem	7	4	3	3
Bristol	63	79	70	72
Cheshire	17	27	19	21
Derby	14	9	13	4
Middlebury	12	20	8	8
Naugatuck	14	31	21	25
Oxford	13	20	19	19
Plymouth	16	20	27	14
Prospect	9	14	10	10
Seymour	18	18	14	22
Shelton	36	42	33	32
Southbury	13	19	27	14
Thomaston	5	18	19	6
Waterbury	154	216	227	193
Watertown	21	18	28	17
Wolcott	18	21	12	18
Woodbury	18	15	16	10
NVCOG Totals	**476**	**616**	**589**	**513**

AGGRESSIVE DRIVING (SPEEDING) FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	18	13	7	13
Beacon Falls	7	3	0	0
Bethlehem	3	4	3	1
Bristol	39	45	52	41
Cheshire	10	15	15	12
Derby	10	10	6	3
Middlebury	3	13	4	6
Naugatuck	15	20	20	14
Oxford	8	14	6	10
Plymouth	6	22	18	12
Prospect	9	11	9	9
Seymour	7	9	11	6
Shelton	16	23	17	15
Southbury	5	14	21	4
Thomaston	5	13	14	7
Waterbury	133	159	188	164
Watertown	13	14	28	20
Wolcott	10	12	9	16
Woodbury	8	11	7	6
NVCOG Totals	**325**	**425**	**435**	**359**

UNRESTRAINED OCCUPANT FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	6	5	3	6
Beacon Falls	3	5	1	0
Bethlehem	2	1	1	1
Bristol	21	26	17	18
Cheshire	12	10	12	7
Derby	8	9	13	2
Middlebury	12	7	8	6
Naugatuck	10	36	38	13
Oxford	1	4	2	2
Plymouth	15	16	18	16
Prospect	4	1	2	0
Seymour	12	8	22	9
Shelton	5	13	2	4
Southbury	0	1	5	4
Thomaston	1	5	7	6
Waterbury	51	51	54	53
Watertown	8	9	9	5
Wolcott	22	15	15	18
Woodbury	3	3	0	1
NVCOG Totals	**196**	**225**	**229**	**171**

SUBSTANCE-IMPAIRED FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	6	12	7	11
Beacon Falls	1	1	1	0
Bethlehem	2	1	1	1
Bristol	36	41	37	11
Cheshire	8	5	5	6
Derby	8	8	6	2
Middlebury	0	2	0	1
Naugatuck	8	17	6	15
Oxford	2	6	2	2
Plymouth	4	4	1	8
Prospect	3	1	3	0
Seymour	3	4	7	12
Shelton	9	11	11	11
Southbury	5	7	7	2
Thomaston	0	6	2	0
Waterbury	34	50	56	40
Watertown	5	6	6	9
Wolcott	3	9	7	5
Woodbury	2	4	4	1
NVCOG Totals	**139**	**195**	**169**	**137**

DISTRACTED DRIVING FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	13	8	8	5
Beacon Falls	1	0	0	1
Bethlehem	0	1	0	1
Bristol	35	37	27	24
Cheshire	20	25	18	15
Derby	9	7	12	6
Middlebury	9	14	6	5
Naugatuck	8	14	17	12
Oxford	6	5	5	0
Plymouth	9	6	9	7
Prospect	6	13	7	5
Seymour	4	4	7	8
Shelton	16	19	14	11
Southbury	12	13	5	5
Thomaston	11	7	6	4
Waterbury	70	72	65	50
Watertown	7	8	9	8
Wolcott	8	7	5	1
Woodbury	6	5	8	4
NVCOG Totals	**250**	**265**	**228**	**172**

OLDER DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	14	9	7	11
Beacon Falls	1	0	1	0
Bethlehem	0	1	1	2
Bristol	52	37	54	47
Cheshire	14	12	24	13
Derby	4	8	11	5
Middlebury	9	11	7	10
Naugatuck	4	9	12	10
Oxford	9	5	9	8
Plymouth	2	3	5	13
Prospect	7	9	5	7
Seymour	5	6	11	8
Shelton	32	22	24	24
Southbury	12	19	10	7
Thomaston	7	4	4	5
Waterbury	70	88	98	87
Watertown	12	20	14	15
Wolcott	6	14	5	14
Woodbury	10	11	9	8
NVCOG Totals	**270**	**288**	**311**	**294**

YOUNG DRIVER FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	28	19	19	19
Beacon Falls	7	6	1	2
Bethlehem	1	3	4	2
Bristol	79	89	87	82
Cheshire	33	21	17	34
Derby	18	20	19	5
Middlebury	14	21	14	11
Naugatuck	9	24	19	17
Oxford	13	16	15	15
Plymouth	10	17	18	16
Prospect	8	12	12	8
Seymour	17	18	16	12
Shelton	36	46	29	34
Southbury	13	20	15	8
Thomaston	6	8	10	5
Waterbury	243	287	263	238
Watertown	26	27	30	20
Wolcott	23	24	17	16
Woodbury	12	11	8	12
NVCOG Totals	**596**	**689**	**613**	**556**

PEDESTRIAN FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	3	7	2	7
Beacon Falls	1	0	1	0
Bethlehem	0	1	0	0
Bristol	21	21	20	20
Cheshire	2	2	6	16
Derby	8	8	5	2
Middlebury	1	1	2	2
Naugatuck	11	7	7	6
Oxford	0	0	1	0
Plymouth	0	3	0	0
Prospect	2	1	1	0
Seymour	2	0	1	1
Shelton	4	9	7	2
Southbury	1	3	1	1
Thomaston	1	0	0	0
Waterbury	90	76	109	115
Watertown	0	3	2	1
Wolcott	0	3	1	2
Woodbury	2	1	1	1
NVCOG Totals	**149**	**146**	**167**	**176**

BICYCLE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	0	1	0	0
Beacon Falls	0	0	0	1
Bethlehem	0	0	1	0
Bristol	7	5	5	3
Cheshire	6	5	4	5
Derby	1	0	0	0
Middlebury	0	1	0	0
Naugatuck	4	0	3	0
Oxford	0	0	1	0
Plymouth	0	0	1	0
Prospect	0	0	0	0
Seymour	0	0	2	1
Shelton	1	0	3	0
Southbury	1	0	1	0
Thomaston	0	1	0	0
Waterbury	9	19	10	7
Watertown	1	0	1	0
Wolcott	0	0	1	0
Woodbury	0	1	0	0
NVCOG Totals	**30**	**33**	**33**	**17**

MOTORCYCLE FATAL AND INJURY CRASHES

Municipality	2015	2016	2017	2018
Ansonia	3	4	1	5
Beacon Falls	1	0	0	0
Bethlehem	2	1	0	2
Bristol	28	29	41	26
Cheshire	5	3	5	4
Derby	5	3	8	2
Middlebury	3	3	2	3
Naugatuck	10	8	4	5
Oxford	3	5	1	5
Plymouth	3	8	8	2
Prospect	4	6	1	1
Seymour	4	7	4	5
Shelton	10	13	14	8
Southbury	4	4	5	2
Thomaston	4	7	8	2
Waterbury	40	46	32	52
Watertown	5	11	4	5
Wolcott	3	6	3	3
Woodbury	5	1	1	2
NVCOG Totals	**142**	**165**	**142**	**134**

Emphasis Areas by Municipalities

Town	Intersection Crashes		Roadway Departure Crashes		Aggressive Driving Crashes		Unrestrained Occupant Crashes		Substance-Impaired Crashes		Distracted Driving Crashes		Older Driver Crashes		Young Driver Crashes		Pedestrian Crashes		Bicycle Crashes		Motorcycle Crashes	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Ansonia	125	0.21	76	0.30	51	0.55	20	0.37	36	1.03	34	0.91	41	0.39	85	0.38	19	0.36	1	0.06	13	0.32
Beacon Falls	16	0.03	25	0.10	10	0.11	9	0.17	3	0.09	2	0.05	2	0.02	16	0.07	2	0.04	1	0.06	1	0.02
Bethlehem	12	0.02	17	0.07	11	0.12	5	0.09	5	0.14	2	0.05	4	0.04	10	0.05	1	0.02	1	0.06	5	0.12
Bristol	712	1.20	284	1.14	177	1.90	82	1.51	125	3.58	123	3.29	190	1.79	337	1.52	82	1.57	20	1.24	124	3.07
Cheshire	196	0.33	84	0.34	52	0.56	41	0.76	24	0.69	78	2.08	63	0.59	105	0.47	26	0.50	20	1.24	17	0.42
Derby	140	0.24	40	0.16	29	0.31	32	0.59	24	0.69	34	0.91	28	0.26	62	0.28	23	0.44	1	0.06	18	0.45
Middlebury	107	0.18	48	0.19	26	0.28	33	0.61	3	0.09	34	0.91	37	0.35	60	0.27	6	0.11	1	0.06	11	0.27
Naugatuck	186	0.31	91	0.36	69	0.74	97	1.79	46	1.32	51	1.36	35	0.33	69	0.31	31	0.59	7	0.43	27	0.67
Oxford	40	0.07	71	0.28	38	0.41	9	0.17	12	0.34	16	0.43	31	0.29	59	0.27	1	0.02	1	0.06	14	0.35
Plymouth	76	0.13	77	0.30	58	0.62	65	1.20	17	0.49	31	0.83	23	0.22	61	0.27	3	0.06	1	0.06	21	0.52
Prospect	72	0.12	43	0.17	38	0.41	7	0.13	7	0.20	31	0.83	28	0.26	40	0.18	4	0.07	0	0.00	12	0.30
Seymour	114	0.19	72	0.29	33	0.35	51	0.94	26	0.75	23	0.61	30	0.28	63	0.28	4	0.07	3	0.06	20	0.50
Shelton	306	0.52	143	0.57	71	0.76	24	0.44	42	1.20	60	1.60	102	0.96	145	0.65	22	0.42	4	0.25	45	1.11
Southbury	124	0.21	73	0.29	44	0.47	10	0.18	21	0.60	35	0.93	48	0.45	56	0.25	6	0.11	2	0.12	15	0.37
Thomaston	52	0.09	48	0.19	39	0.42	19	0.35	8	0.23	28	0.75	20	0.19	29	0.13	1	0.02	1	0.06	21	0.52
Waterbury	2,243	3.80	790	3.17	644	6.89	209	3.85	180	5.16	257	6.86	343	3.23	1,031	4.64	390	0.07	45	2.80	170	4.21
Watertown	182	0.31	84	0.34	75	0.80	31	0.57	26	0.75	32	0.85	61	0.58	103	0.46	6	0.11	2	0.12	25	0.62
Wolcott	90	0.15	69	0.28	47	0.50	70	1.29	24	0.69	21	0.56	39	0.37	80	0.36	6	0.11	1	0.06	15	0.37
Woodbury	49	0.08	59	0.24	32	0.34	7	0.13	11	0.32	23	0.61	38	0.36	43	0.19	5	0.10	1	0.06	9	0.22
NVCOG Totals	4,842	8.18	2,194	8.80	1,544	16.5	821	15.14	640	18.34	915	24.44	1,163	10.97	2,454	11.05	638	12.18	113	7.02	583	14.43

Appendix C: Infrastructure Countermeasure Table

The countermeasures included in this report were determined based on an analysis of historical data for crashes involving injuries or fatalities, discussions with Region and town officials, the Connecticut Strategic Highway Safety Plan, FHWA's List of Proven Countermeasures and NHTSA's Countermeasures that Work, 8th edition.

	Measure	Description	Application
Signage	**Speed Feedback Signs**[1,2] Cost: Low	A changeable message sign that displays the speed of approaching vehicles.	To be used where motorized vehicle speed is a concern.
Signage	**Retroreflective Signal Backplates** Cost: Low-Medium	Improved visibility of a signal head with a backplate is made even more conspicuous by framing it with a retroreflective border.	Signal heads that have backplates equipped with retroreflective borders are more visible and conspicuous in both daytime and nighttime conditions. Cost may depend on the need to replace span wire with mast arms.
Signal	**Change Left-Turn Phase to Protected Phasing** Cost: Low	Modify existing phasing to a protected phase.	"Protected-only" phasing consists of providing a separate phase for left-turning traffic and allowing left turns to be made only on a green left arrow signal indication, with no pedestrian movement or vehicular traffic conflicting with the left turn. As a result, left-turn movements with "protected-only" phasing have a higher capacity than those with "permissive-only" phasing due to fewer conflicts.[3]
Signage	**Flashing Advance Warning Beacons** Cost: Low to Medium	A beacon that provides a warning to motorists about an intersection ahead.	To be used in advance of an intersection.
Signage	**No Right Turn on Red** Cost: Low	A sign that prohibits right turns during the red phase due to exclusive pedestrian phases, high traffic or pedestrian volumes, or inadequate visibility.	Together with a leading pedestrian interval, the restriction can benefit pedestrians with minimal impact on traffic. Part-time prohibitions during the busiest times of the day may be adequate to address the problem.
Signage	**Additional Horizontal Curve Warning and Chevron Signs** Cost: Low	Additional signs help to increase the noticeability of signage in situations where standard signage is insufficient.	While agencies apply signing devices uniformly, adding additional signs may be necessary depending on an assessment of speed, unexpected geometric features, traffic volume, and crash data.

1 Federal Highway Administration. (2009). Engineering Countermeasures for Reducing Speeds: A Desktop Reference of Potential Effectiveness. Washington, D.C.: Federal Highway Administration.
2 Overuse of signs and pavement markings may reduce their effectiveness. These devices should be used in locations where the needs are greatest.
3 Federal Highway Administration. (2004). Signalized Intersections: Informational Guide. https://www.fhwa.dot.gov/publications/research/safety/04091/04.cfm

	Measure	Description	Application
Pavement Markings	**Regulatory Pavement Markings**[1] Cost: Low	Pavement markings, such as "25 MPH", that emphasize regulatory signage (MUTCD Section 3B.20).	To be used as a supplement to regulatory signs.
Pavement Markings	**Crosswalks** Cost: Varies, Low -markings only Medium -markings and simple ADA landings; High-significant pedestrian safety features required	Pavement markings delineating a portion of the roadway that is designated for pedestrian or bicycle crossing. There are several types including: continental, zebra, and standard (MUTCD Section 3B.18).	To be used at intersections or mid-block crossings. Crosswalks may be used in areas with lower traffic volumes, lower speeds, and a limited number of travel lanes. See Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations for additional guidance regarding when to install a marked crosswalk.
Pavement Markings	**Road Reconfigurations** Cost: Low to High	Roadway retrofit techniques designed to produce a wide variety of benefits including reduced traffic speeds, reduced crashes, improved access management, improved accessibility for pedestrians or bicyclists, improved parking utilization, as well as improved economic vitality for businesses along those streets. Can include a variety of measures such as road diets and lane narrowing to include bike lanes.	For use in areas where speed and pedestrian and bicycle accessibility are a concern.
Physical Environment	**Buffered Shoulders** Cost: Low for restriping existing paved shoulder, high for constructing new paved shoulder	A paved shoulder that is separated by a pavement marking to create a buffer from the vehicle travel lanes. The buffer space may be marked with diagonal pavement markings and ranges from 1 to 4 feet wide.	To be used in areas where pedestrian, bicycle, and/or horse-drawn vehicle volumes and motor vehicle volumes and speeds combine to create the need for separated and buffered space along the roadway.
Physical Environment	**Bike Lanes**[2] Cost: *Varies	A lane in the roadway designated for bicycle use with striping, signing, and pavement markings (MUTCD Chapter 9B and 9C).	To be used in areas with high volumes and speeds of motor vehicles and bicycles (RV).
Physical Environment	**Roadway Surface Improvements** Cost: Varies greatly based on conditions present	Roadway surface improvements include maintenance and paving activities to provide a smooth and slip-resistant traveling surface for pedestrians and cyclists.	Facilities used by pedestrians and cyclists should be smoother than those deemed acceptable for motorized traffic to maintain stability. Therefore, it is important that debris be cleared from facilities used by pedestrians and cyclists. If rumble strips are present, sufficient gaps should be provided for cyclists to move from the shoulder to the travel lane. Additionally, there should be sufficient width for cyclists to ride between the edge of the rumble strip and the edge of the shoulder.

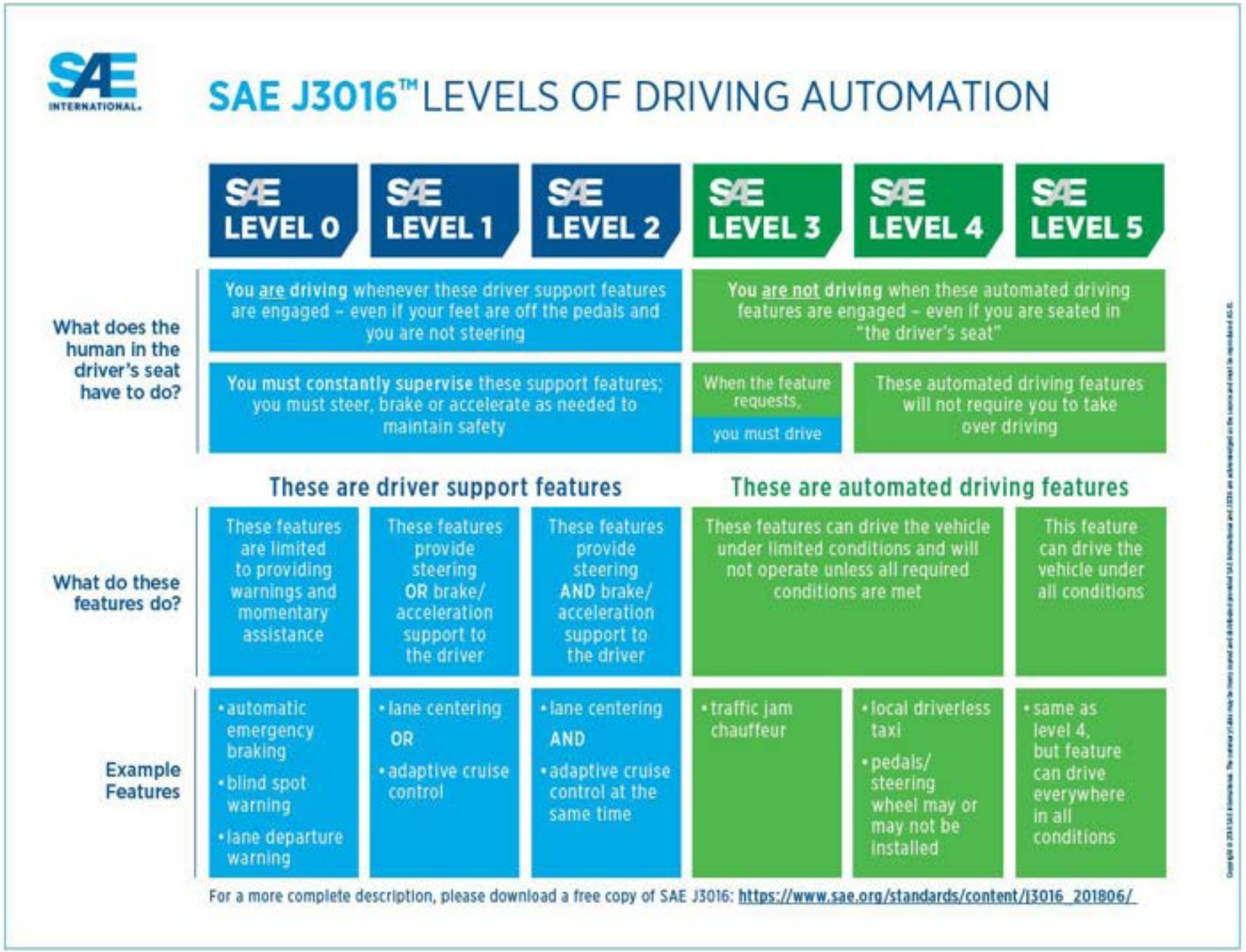
1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration.
2 American Association of State Highway Safety Officials. (1999). Guide for the Development of Bicycle Facilities. Washington, D.C.: American Association of State Highway Safety Officials.

	Measure	Description	Application
Physical Environment	**Median Crossing Islands** Cost: Medium	A raised island in the center of the roadway with a refuge area that is accessible for pedestrians of all abilities. Can also provide a refuge area for cyclists, especially at locations where a shared use path crosses a roadway. The island allows pedestrians and cyclists to cross one direction of traffic at a time.	To be used when pedestrians and cyclists have to cross high-volume, multilane roadways (MUTCD Chapter 3I), (RV).
Physical Environment	**Rectangular Rapid Flash LED Beacons**[1] Cost: Medium	A beacon that provides a warning to motorists about the presence of a crosswalk. Beacon is yellow, rectangular, and has a rapid "wig-wag" flash like police lights. Beacon should operate only when a pedestrian is present; utilize either push button or passive detection.	For use at mid-block crossings and intersections that do not warrant a signal.
Physical Environment	**Roadway Illumination**[2] Cost: Medium	Lighting directed to illuminate the roadway.	To be used on sections of roadway with high volumes of nighttime non-motorized activity.
Physical Environment	**Road Diets** Cost: Low to Medium	A redistribution of space in the roadway leading to a reduction in the number of travel lanes for motor vehicles on a roadway. The road diet is one of FHWA's Proven Safety Countermeasures and may provide space for bike lanes, sidewalk, or medians, and can help to reduce motor vehicle speed.	For use in areas with pedestrian crossings, multiple lanes of traffic, and high vehicle speeds.
Physical Environment	**Gateways** Cost: Low to High	Visual or physical markers to serve as an indicator to motorists that they are entering an urbanized area and to slow down.	For use at the entrance of a residential or commercial area.
Physical Environment	**Shared Use Paths** Cost: Medium to High	A facility separated from motorized vehicular traffic by a landscaped space or barrier. Shared use paths may be used by cyclists, pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Such facilities are often referred to as "trails."	To be used in areas with a high volume of pedestrians and bicyclists and high motor vehicle speeds or volumes.

1 Federal Highway Administration. (2008). Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures. Retrieved August 29, 2011 from Federal Highway Administration: http://safety.fhwa.dot.gov/policy/memo071008.
2 Hall, J. W., Brogan, J. D., & Kondreddi, M. (2004). Pedestrian Safety on Rural Highways. FHWA-SA-04-008. Washington, D.C.: Federal Highway Administration.

	Measure	Description	Application
Signage	**Pedestrian Hybrid Beacons** Cost: High	The pedestrian hybrid beacons (PHB) is a traffic control device designed to help pedestrians safely cross busy or higher-speed roadways at mid-block crossings and uncontrolled intersections.	The PHB is an intermediate option between a flashing beacon and a full pedestrian signal because it assigns right of way and provides positive stop control. It also allows motorists to proceed once the pedestrian has cleared their side of the travel lane, reducing vehicle delay.
Pavement Markings	**Roadway (or Transverse) Rumble Strips** Cost: Low	Raised bars or grooves placed across the travel lane that can be either black or white.	To be used to alert drivers of the need to reduce speed in locations where other measures cannot be applied or have been tested and have not succeeded in addressing speeding issues. Bicyclist (and motorcyclist) concerns should be addressed by a break in the strips and installing a warning sign reading "RUMBLE STRIPS AHEAD." May have limited use because of citizens concerns over noise from vehicles driving over.
Pavement Markings	**Shoulder Rumble Strips** Cost: Low	Raised bars or grooves placed at the edge of the travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway
Pavement Markings	**Centerline Rumble Strips** Cost: Low	Raised bars or grooves placed at or near the centerline travel lane.	Longitudinal rumble strips are milled or raised elements on the pavement intended to alert drivers through vibration and sound that their vehicles have left the travel lane. They can be installed on the shoulder, edge line of the travel lane, or at or near center line of an undivided roadway.
Pavement Markings	**Lane Narrowing** Cost: Low to High	The narrowing of travel lanes—either visually (by using pavement markings) or physically narrowing (with measures such as curb extensions). One example of visually narrowing lanes is a painted island that is an island defined by pavement markings and created with the function of reducing lane widths for traffic calming purposes.[1]	For use in areas with wide travel lanes and where speed is a concern (MUTCD Chapter 3I).

1 Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration


SAE INTERNATIONAL
SAE J3016™ LEVELS OF DRIVING AUTOMATION
SAE LEVEL 0
SAE LEVEL 1
SAE LEVEL 2
SAE LEVEL 3
SAE LEVEL 4
SAE LEVEL 5
What does the human in the driver's seat have to do?
You are driving whenever these driver support features are engaged – even if your feet are off the pedals and you are not steering
You are not driving when these automated driving features are engaged – even if you are seated in "the driver's seat"
You must constantly supervise these support features; you must steer, brake or accelerate as needed to maintain safety
When the feature requests, you must drive
These automated driving features will not require you to take over driving
These are driver support features
These are automated driving features
What do these features do?
These features are limited to providing warnings and momentary assistance
These features provide steering OR brake/ acceleration support to the driver
These features provide steering AND brake/ acceleration support to the driver
These features can drive the vehicle under limited conditions and will not operate unless all required conditions are met
This feature can drive the vehicle under all conditions
Example Features
• automatic emergency braking
• blind spot warning
• lane departure warning
• lane centering OR
• adaptive cruise control
• lane centering AND
• adaptive cruise control at the same time
• traffic jam chauffeur
• local driverless taxi
• pedals/ steering wheel may or may not be installed
• same as level 4, but feature can drive everywhere in all conditions
For a more complete description, please download a free copy of SAE J3016: https://www.sae.org/standards/content/j3016_201806/

Regional Transportation Safety Plan Resources

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Source: VN Engineers

REGIONAL TRANSPORTATION SAFETY PLAN
2022 ADDENDUM

NAUGATUCK VALLEY
COUNCIL of GOVERNMENTS

NVCOG Regional Safety Action Plan – 2022 Addendum

VN Engineers, Inc. (VN), in collaboration with the Connecticut Department of Transportation (CTDOT) and the Naugatuck Valley Council of Governments (NVCOG), completed the first Regional Transportation Safety Plan (RTSP) in 2019. This plan used a data-based approach to identify the locations in the region which presented the greatest safety risk for users of the transportation system, and through a broad set of engagement developed mitigation actions for these locations. It also identified solutions for enforcement, education, and emergency response to supplement the engineering solution, taking a full system approach to system safety. This first plan was adopted by the NVCOG Policy Board on June 11, 2021.

The RTSP is intended to be updated every five years. However, this mid-term addendum has been compiled to support the region's Vision Zero policy and goal, which was adopted by the NVCOG Policy Board on September 9, 2022.

The 2025 RTSP update will integrate the region's Vision Zero policies, but, until that document is compiled, this addendum adds an expanded project list, based both on data and on the input from municipal leaders and the public. An expanded public engagement strategy was developed for this update and is detailed in this section as well. Updated crash data for the region, looking at the three full years of 2019, 2020, and 2021, were analyzed. COVID-19 has had a significant impact on traffic patterns and safety within the region, so updated data was a critical element of updating the action plan items. Finally, a more thorough equity analysis was completed, ensuring that the 2022 project listing update programmed a fair amount into the Environmental Justice and Equity areas of concern within the region. These added sections, on the following pages, serve as an addition to the 2020 RTSP and provide the region with a Vision Zero Action Plan that meets the region's new policies and goals.

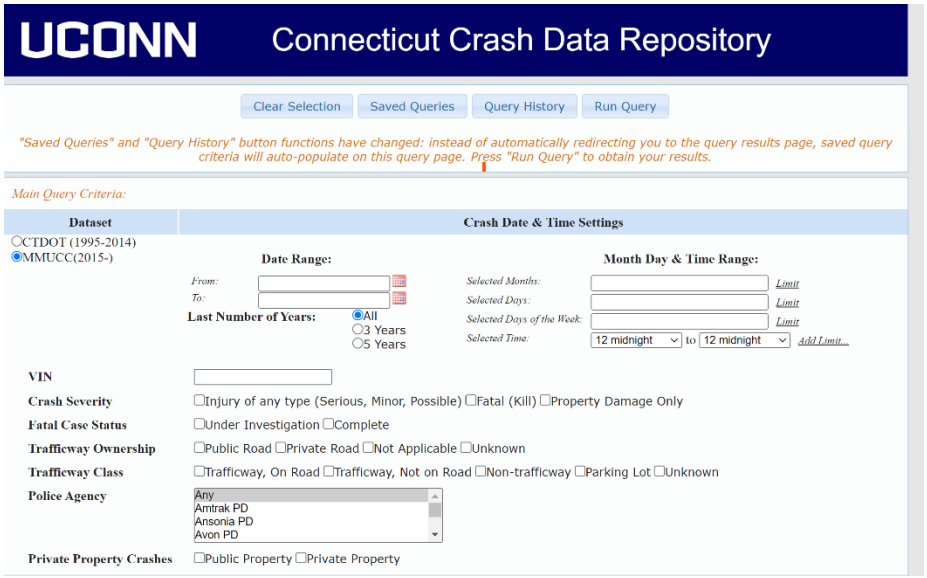
NVCOG Regional Safety Action Plan – 2022 Addendum

Table of Contents

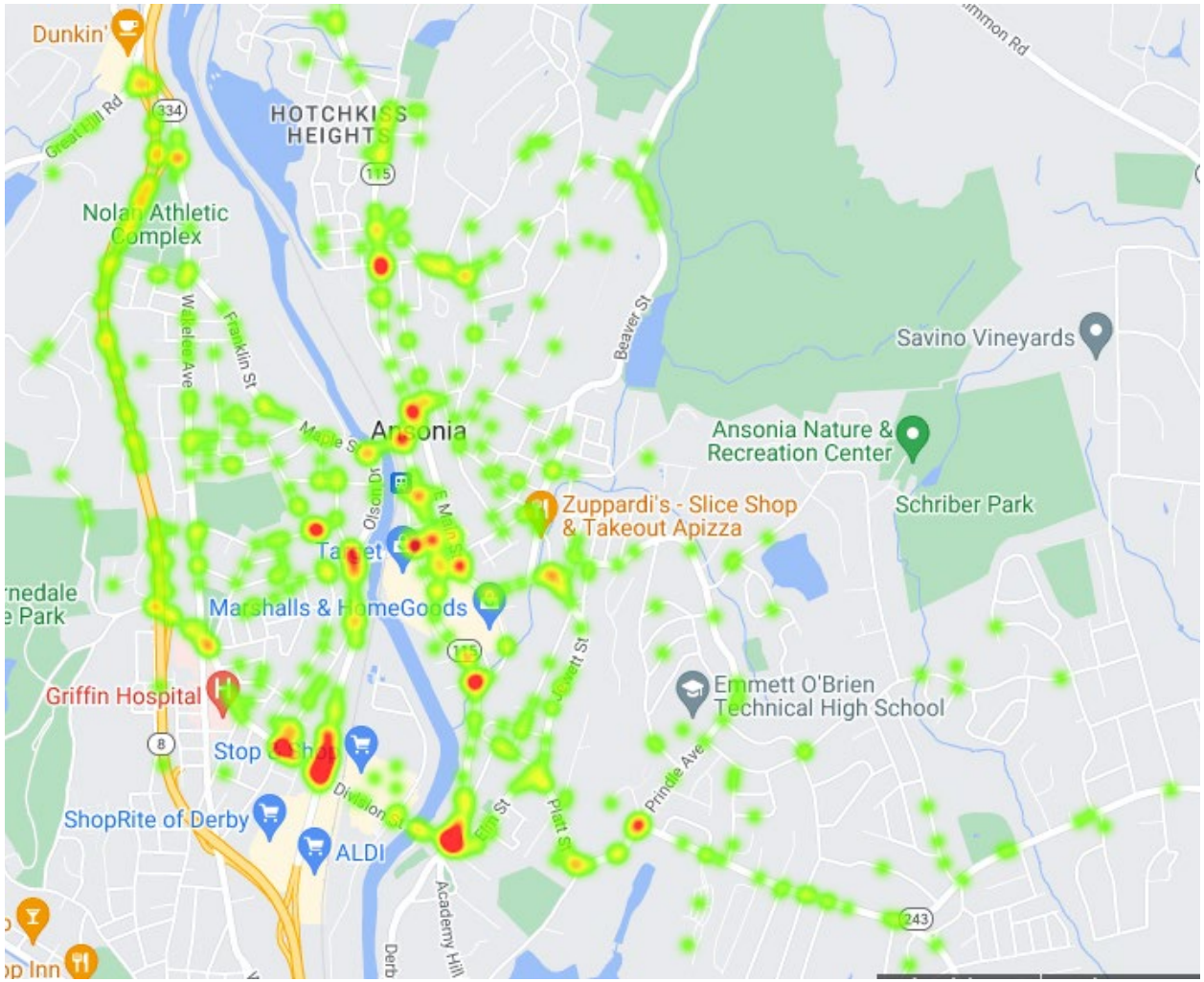
NVCOG Regional Safety Action Plan – 2022 Addendum

Regional Crash Data Update

The following shows the updated crash data for the region as provided by the University of Connecticut Crash Data Repository. This system provides detailed crash data records for the full state of Connecticut and allows for review of all relevant factors. This section begins with a review of the high intensity network within each NVCOG municipality, utilizing tables and maps provided directly by the UConn system. The second part of this section are tables reviewing crash data by location and cause.



NVCOG Regional Safety Action Plan – 2022 Addendum

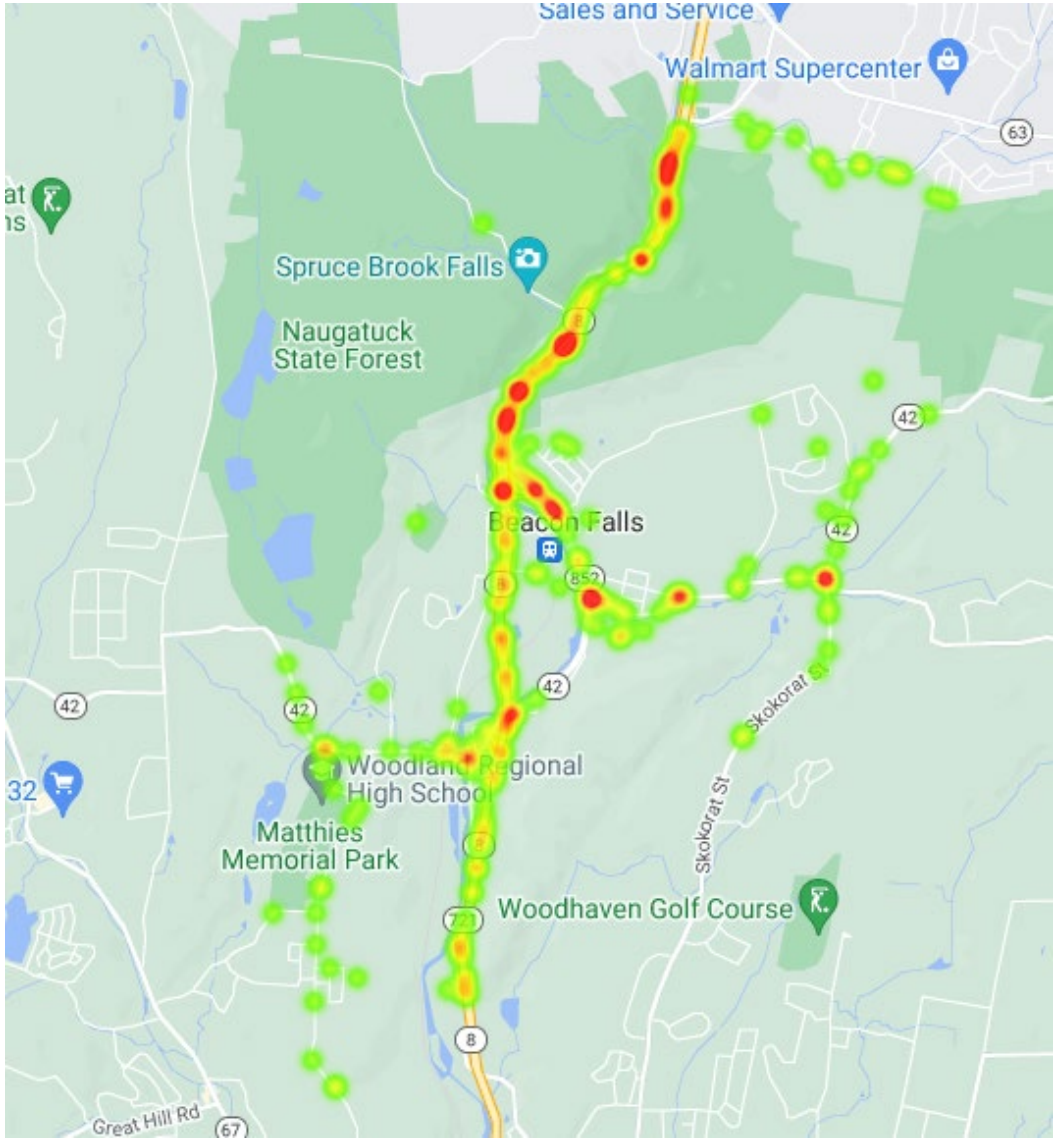


Ansonia

Between January 1st 2019 and December 31st 2021, Ansonia had 970 crashes. Ansonia's high crash intensity network includes:

1. Division Street between Elm Street and Clifton Avenue
2. Route 243 between Division Street and the intersection of Pindle Avenue and Pulaski Highway
3. Main Street at Father Salemi Drive and Henry Healey Drive
4. Howard Avenue at Grove Street
5. Pershing Drive between Division Street and Olson Drive
6. Entire length of Bridge Street
7. Main Street between State Street and Tremont Street
8. Main Street at 4th Street
9. Route 8 within Ansonia

NVCOG Regional Safety Action Plan – 2022 Addendum



Beacon Falls

Between January 1st 2019 and December 31st 2021, Beacon Falls had 348 crashes. Beacon Falls' high crash intensity network includes:

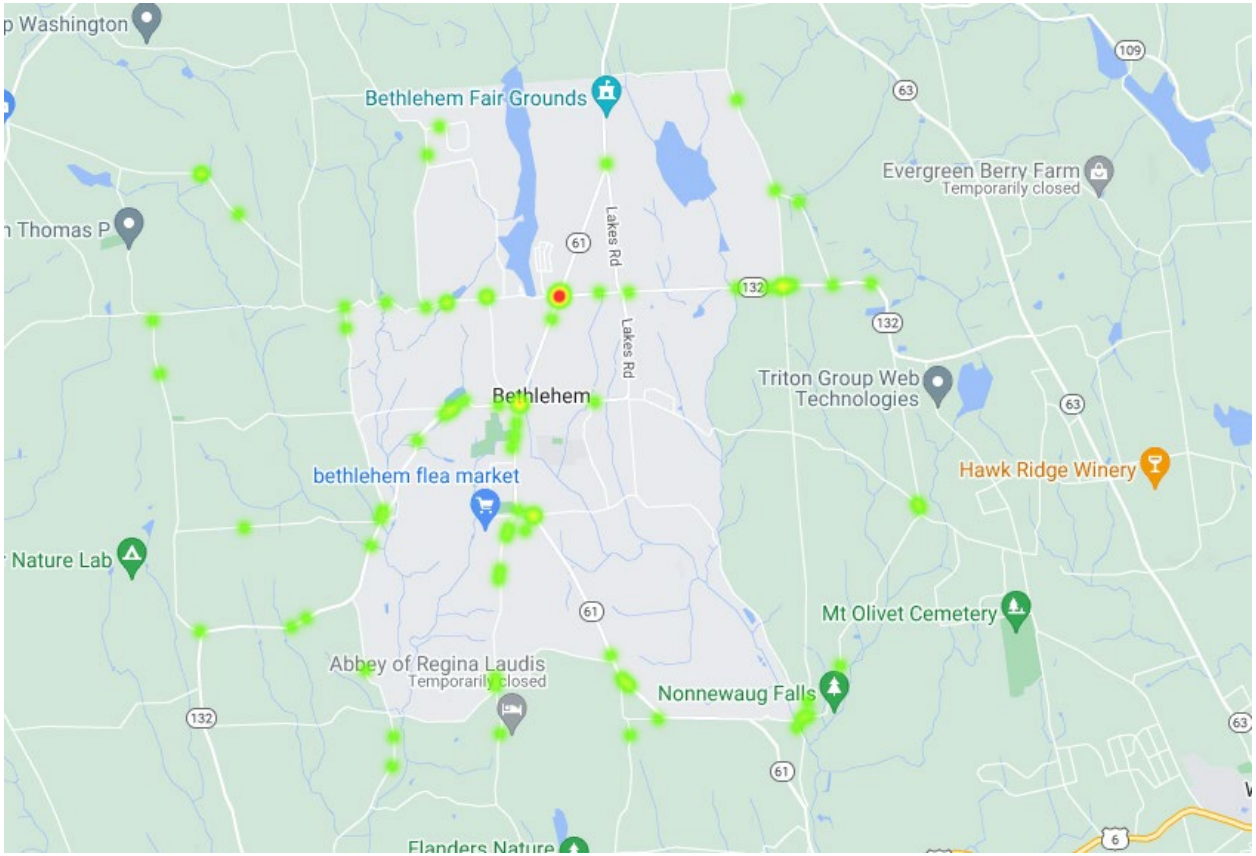
1. Route 8 within Beacon Falls
2. Route 42 between Breault Road and the Route 8 Northbound off-ramp
3. Route 852 from downtown Beacon Falls to the intersection Route 42
4. Route 42 from Route 852 to Skokorat Street

NVCOG Regional Safety Action Plan – 2022 Addendum

Bethlehem

Between January 1st 2019 and December 31st 2021, Bethlehem had 92 crashes. Bethlehem's high crash intensity network includes:

1. Main Street North at Bellamy Lane and Kasson Road
2. Main Street North at West Road and East Street



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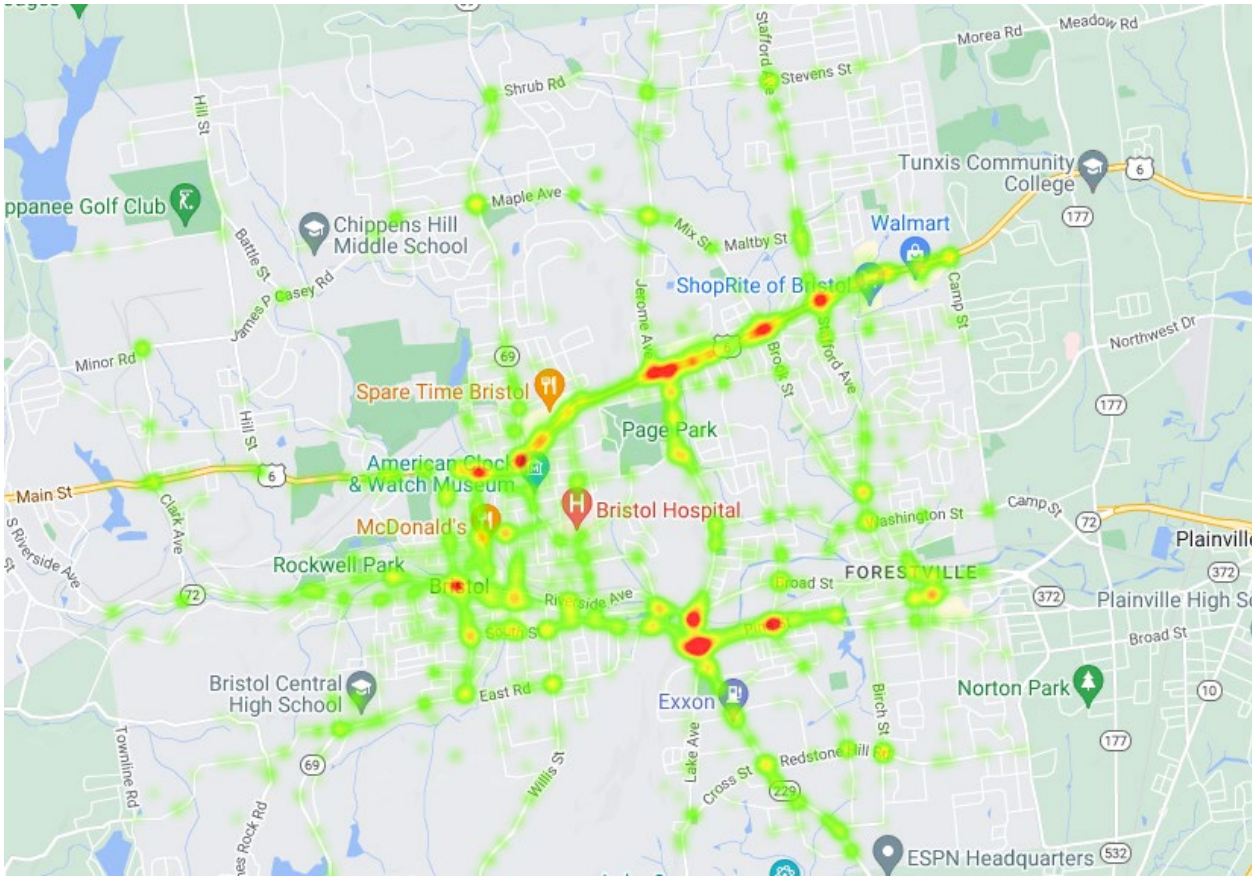
Bristol

Between January 1st 2019 and December 31st 2021, Bristol had 4,384 crashes. Bristol's high crash intensity network includes:

1. Route 229 from the Bristol city line to Route 6
2. Entire length of South Street
3. Entire length of Mountain Road
4. Route 6 between Route 69 and the Bristol city line
5. North Main Street between North Street and South Street
6. Route 72 between Divinity Street and East Bartlett Barns Highway



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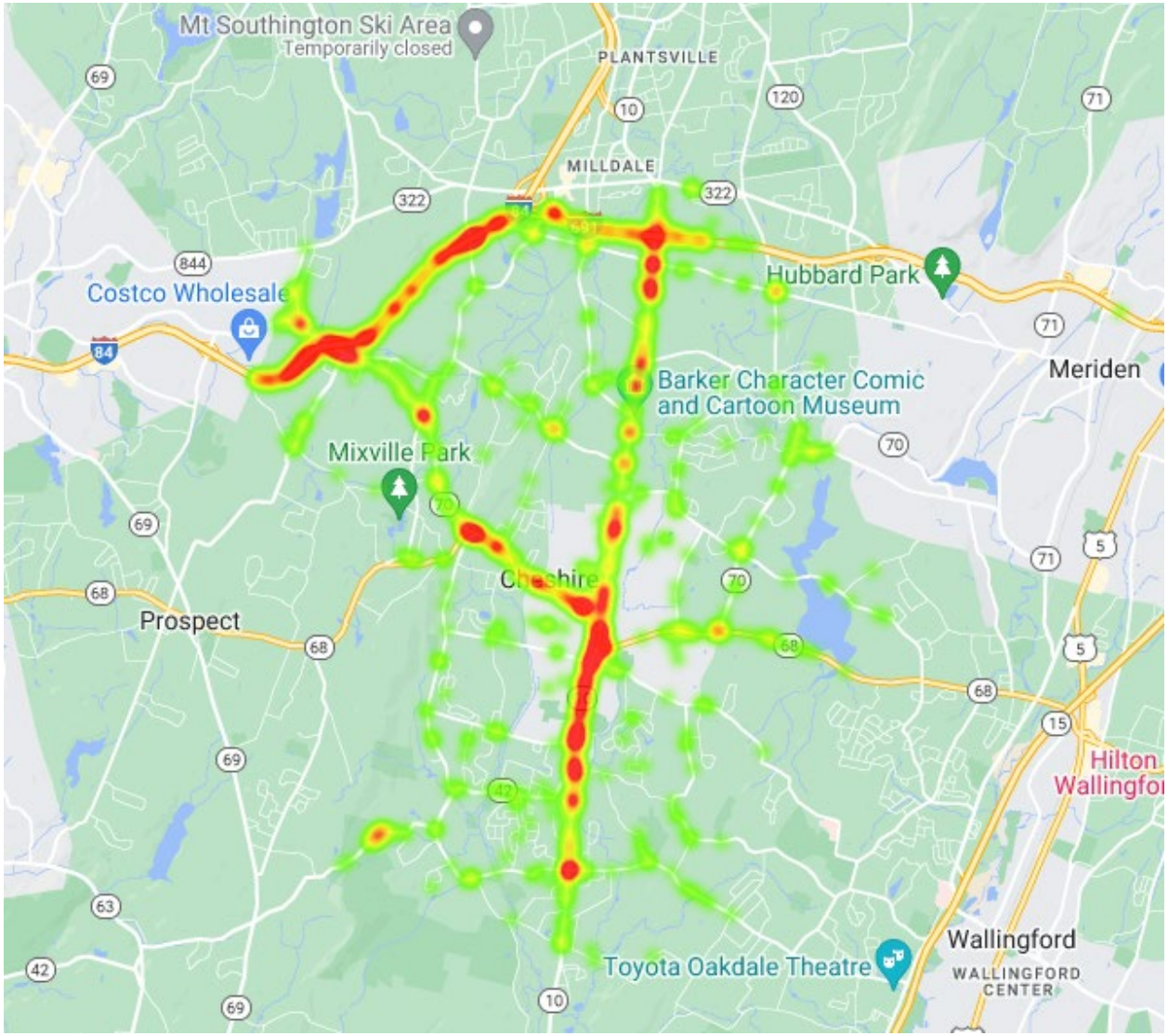
Cheshire

Between January 1st 2019 and December 31st 2021, Cheshire had 1,815 crashes. Cheshire's high crash intensity network includes:

1. I-84 within Cheshire
2. I-691 within Cheshire
3. Length of Byam Road
4. Route 810/Route 70 west of Route 10
5. Route 10 within Cheshire
6. Route 42 west of South Brooksvale Road
7. Intersection of Route 70 and Route 68 east of Route 10



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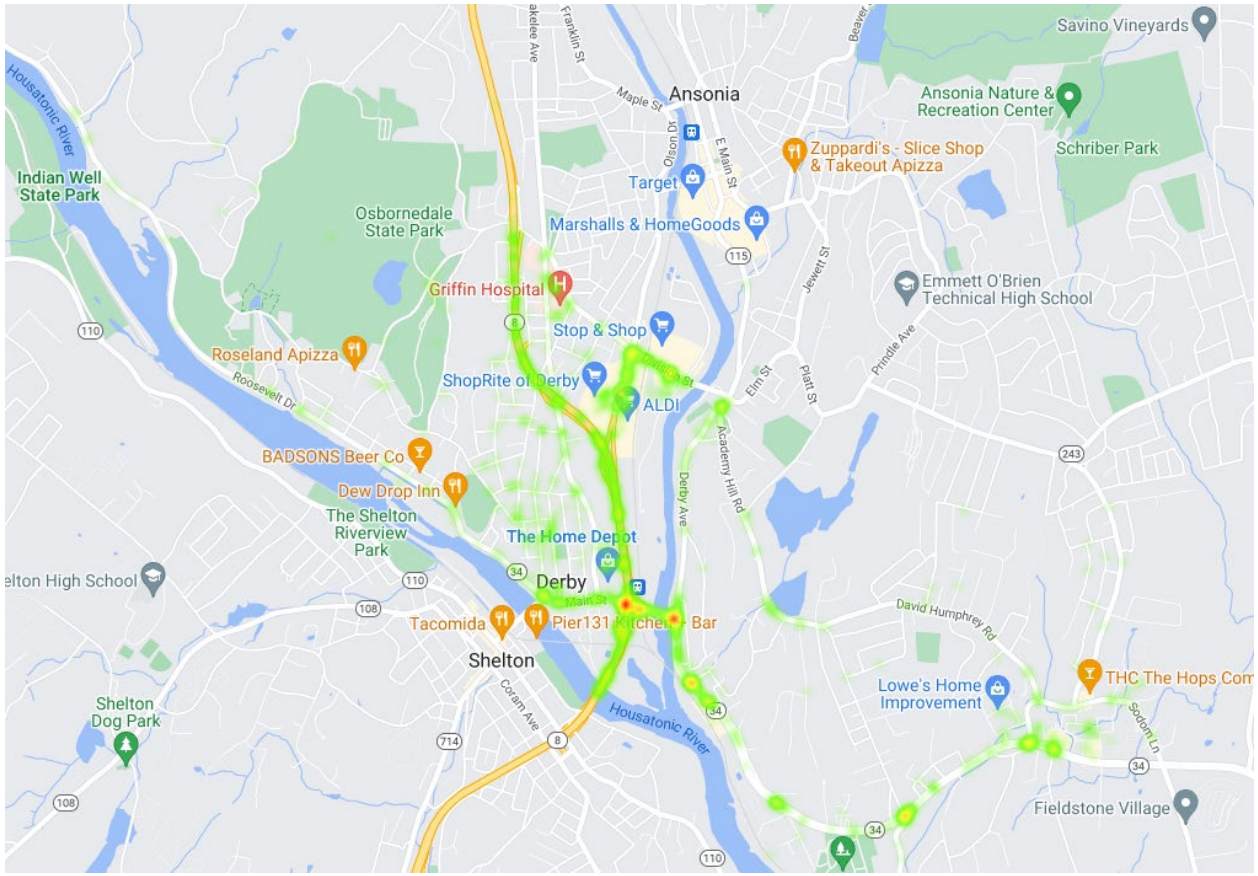

Derby

Between January 1st 2019 and December 31st 2021, Derby had 1,414 crashes. Derby's high crash intensity network includes:

1. Route 8 within Derby
2. Pershing Drive between Division Street to Route 8
3. Division Street between Pershing Drive to Naugatuck River
4. Route 34 between Derby-Shelton Bridge and Derby City and Orange Town line
5. Intersection of Derby Avenue at Academy Hill Road

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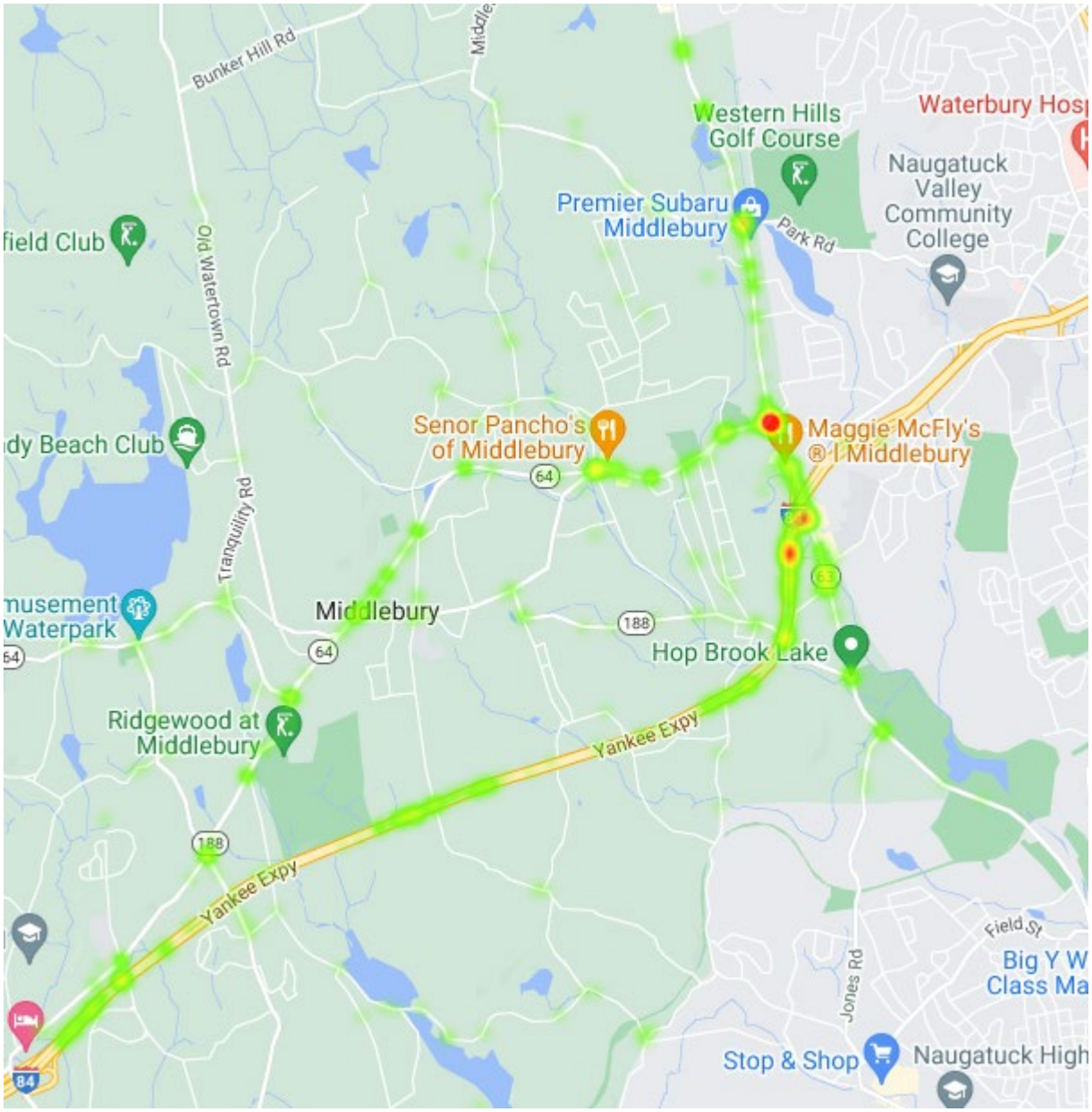
Middlebury

Between January 1st 2019 and December 31st 2021, Middlebury had 778 crashes. Middlebury's high crash intensity network includes:

1. I-84 within Middlebury
2. Route 64 between Route 188 to Route 63
3. Route 63 between Park Road to Allerton Farms Road



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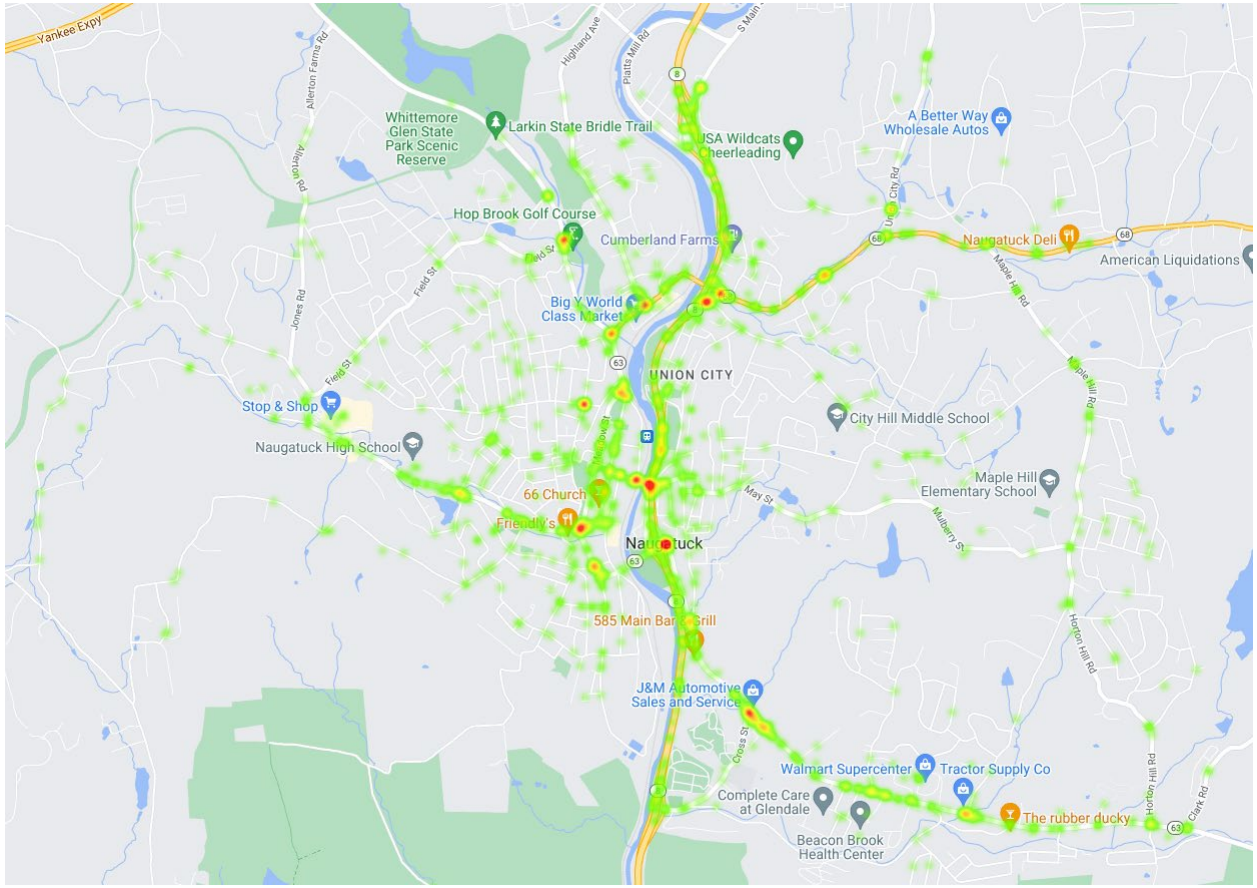

Naugatuck

Between January 1st 2019 and December 31st 2021, Naugatuck had 969 crashes. Naugatuck's high crash intensity network includes:

1. Route 8 within Naugatuck
2. Maple Street Between Church Street and Route 8 Interchange
3. Route 63 between Route 68 and Naugatuck borough line and Bethany town line
4. Rubber Avenue Between Neumann Street and Old Firehouse Road
5. Intersection of Route 8 Ramps, Union Street, City Hill Street, North Main Street
6. Route 68 between Route 63 and Union City Road
7. Intersection of Millville Avenue at Hillside Avenue
8. Intersection of Route 63 at Porter Avenue

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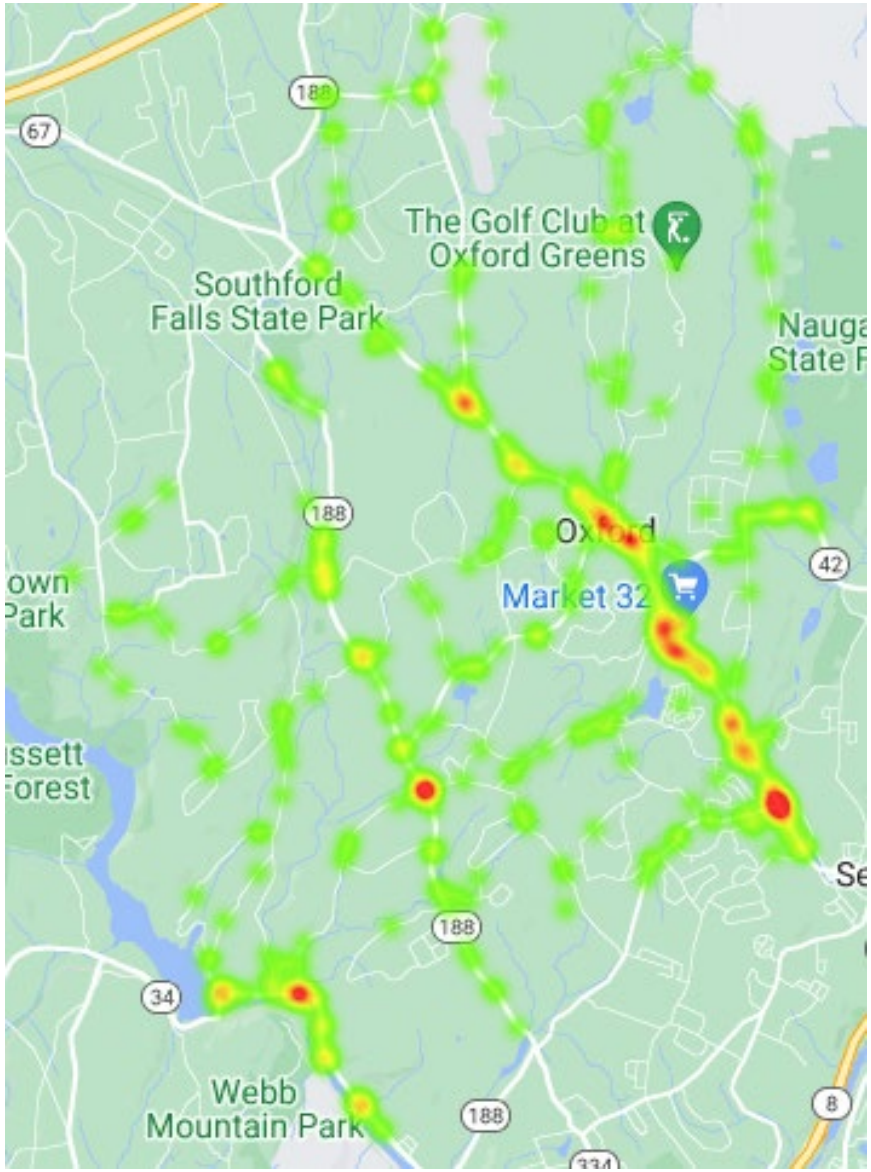

Oxford

Between January 1st 2019 and December 31st 2021, Oxford had 518 crashes. Oxford's high crash intensity network includes:

1. Route 67 within Oxford
2. Route 188 between Moose Hill Road and the north of Edmonds Road
3. Route 34 within Oxford

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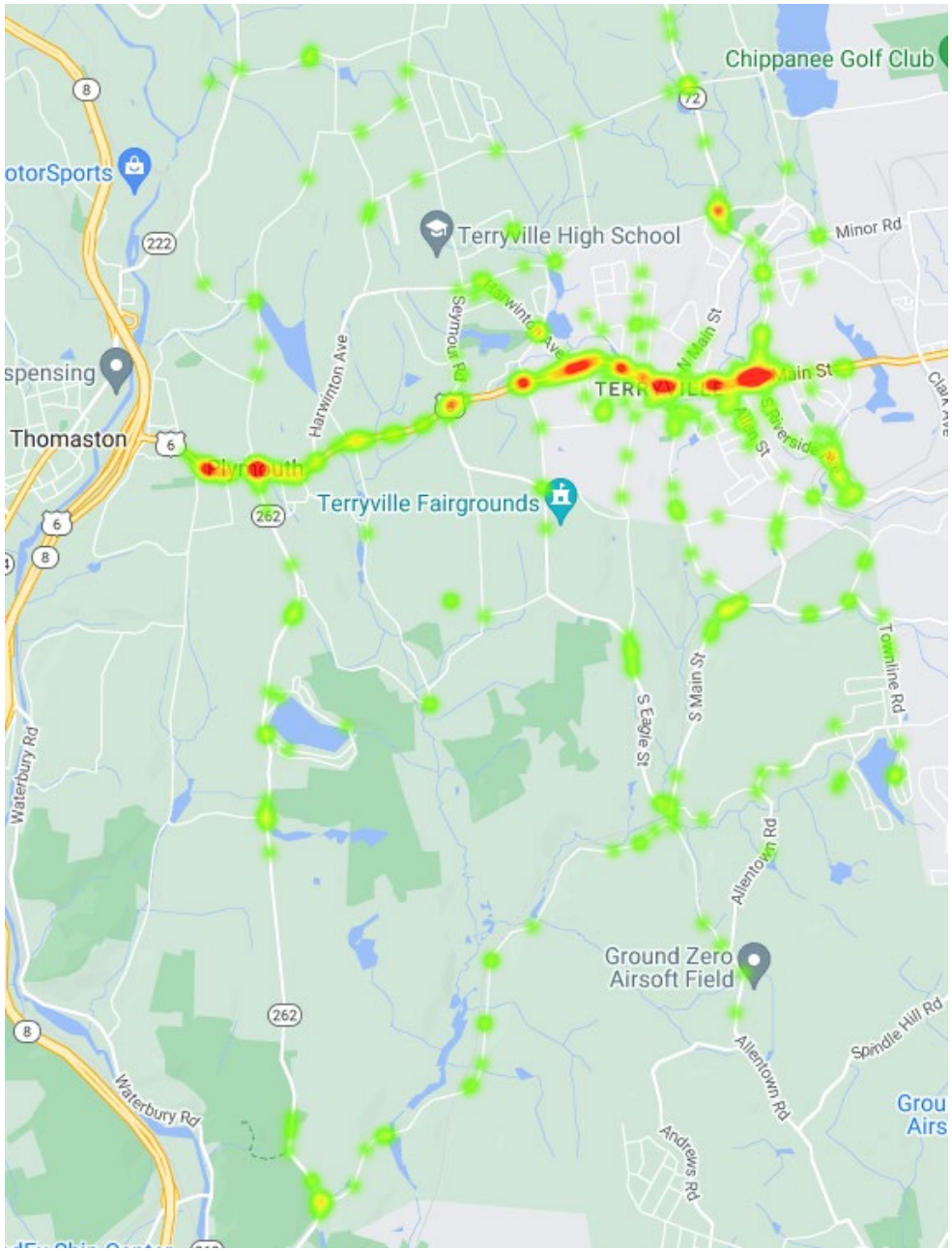

Plymouth

Between January 1st 2019 and December 31st 2021, Plymouth had 602 crashes. Plymouth's high crash intensity network includes:

1. Route 6 within Plymouth
2. Intersection of Poland Brook Road at Judd Road
3. Route 72 between Route 6 and the Plymouth town line/Bristol city line

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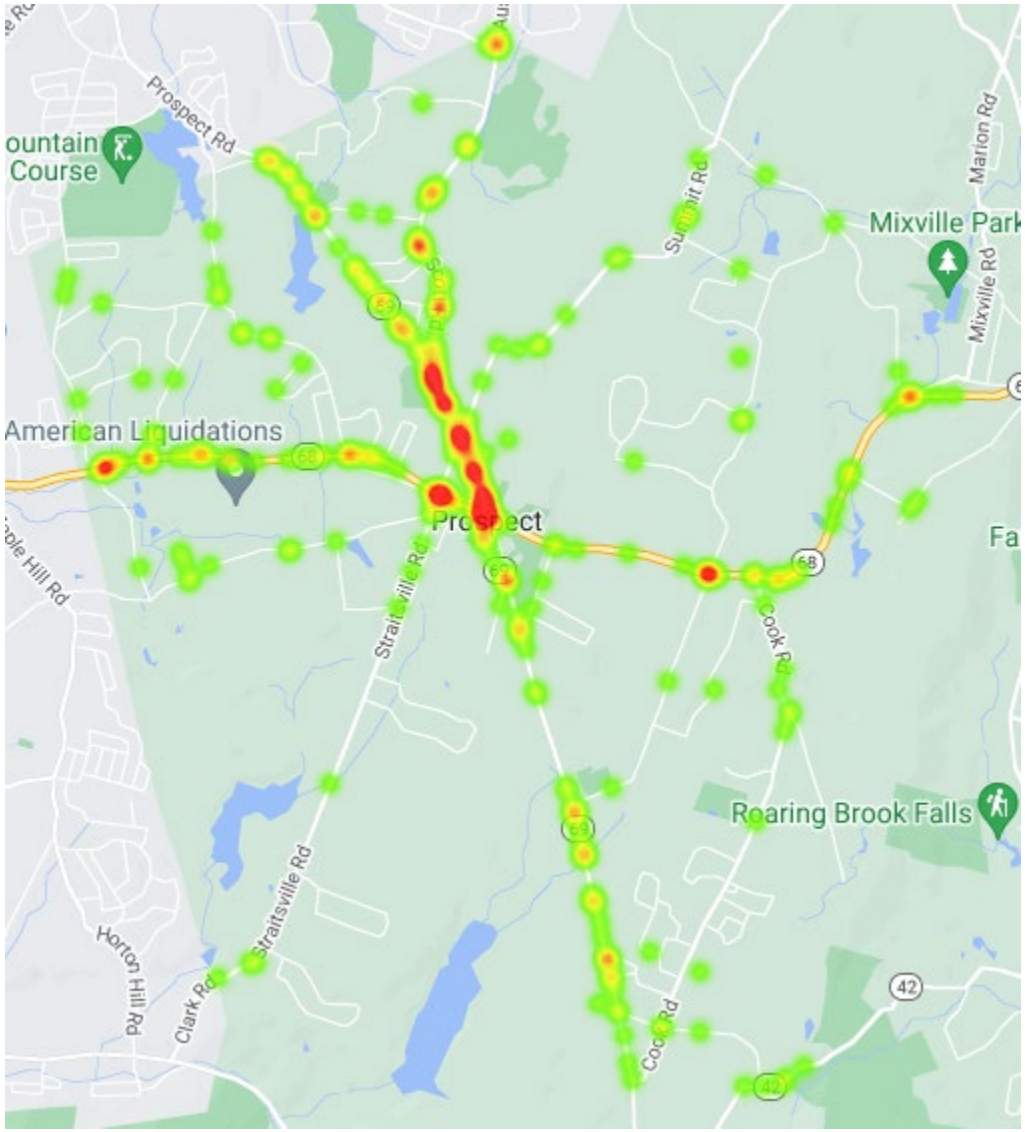

Prospect

Between January 1st 2019 and December 31st 2021, Prospect had 419 crashes. Prospect's high crash intensity network includes:

1. Route 69 within Prospect
2. Route 68 Within Prospect
3. Scott Road between Route 69 and Prospect town line and Waterbury city line

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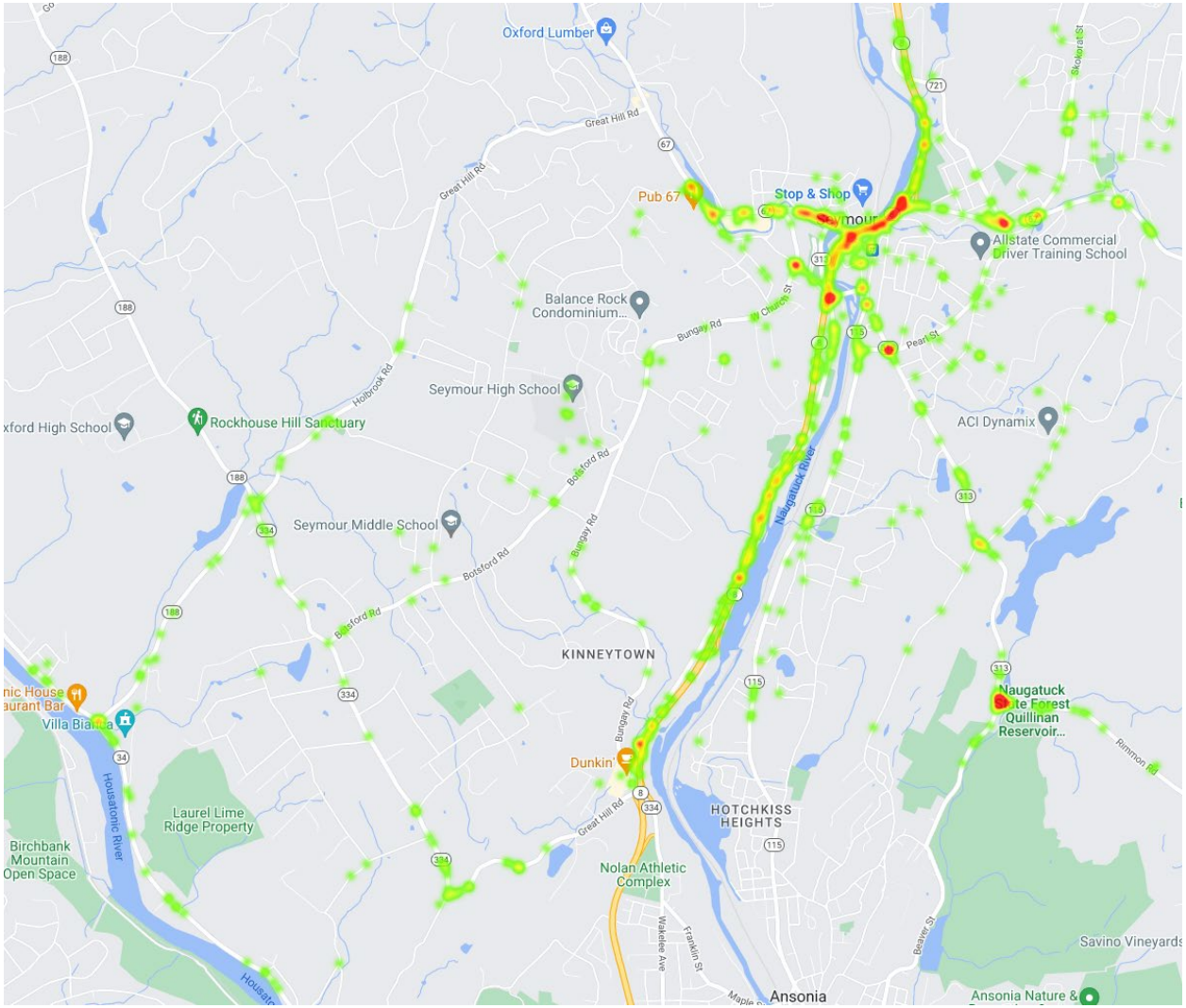
Seymour

Between January 1st 2019 and December 31st 2021, Seymour had 1,204 crashes. Seymour's high crash intensity network includes:

1. Route 8 within Seymour
2. Route 67 within Seymour
3. Intersection of West Church Street, Church Street, and West Street
4. Route 313 within Seymour



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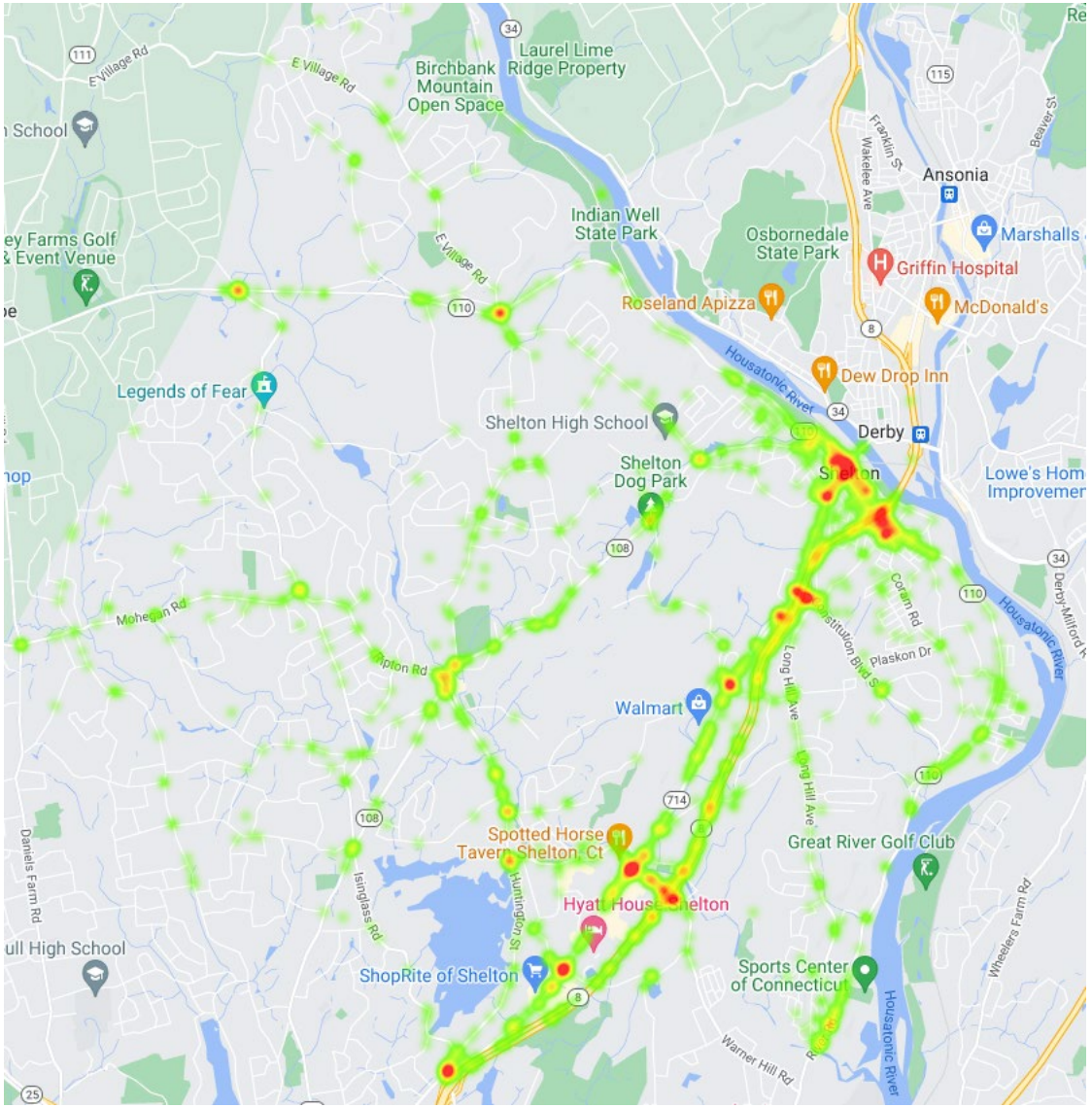
Shelton

Between January 1st 2019 and December 31st 2021, Shelton had 2,314 crashes. Shelton's high crash intensity network includes:

1. Route 8 within Shelton
2. Route 110 between Roberts Street and Grove Street
3. Route 714 between Route 110 and Huntington Road
4. Intersection of Route 110 at Long Hill Avenue
5. Intersection of Route 110 at Seneca Road
6. Roads circling the Huntington Green
7. Intersection of Route 110 at Walnut Tree Hill Road
8. Intersection of Route 110 at East Village Road and Maple Avenue
9. Huntington Street between the Huntington Green and Commerce Drive



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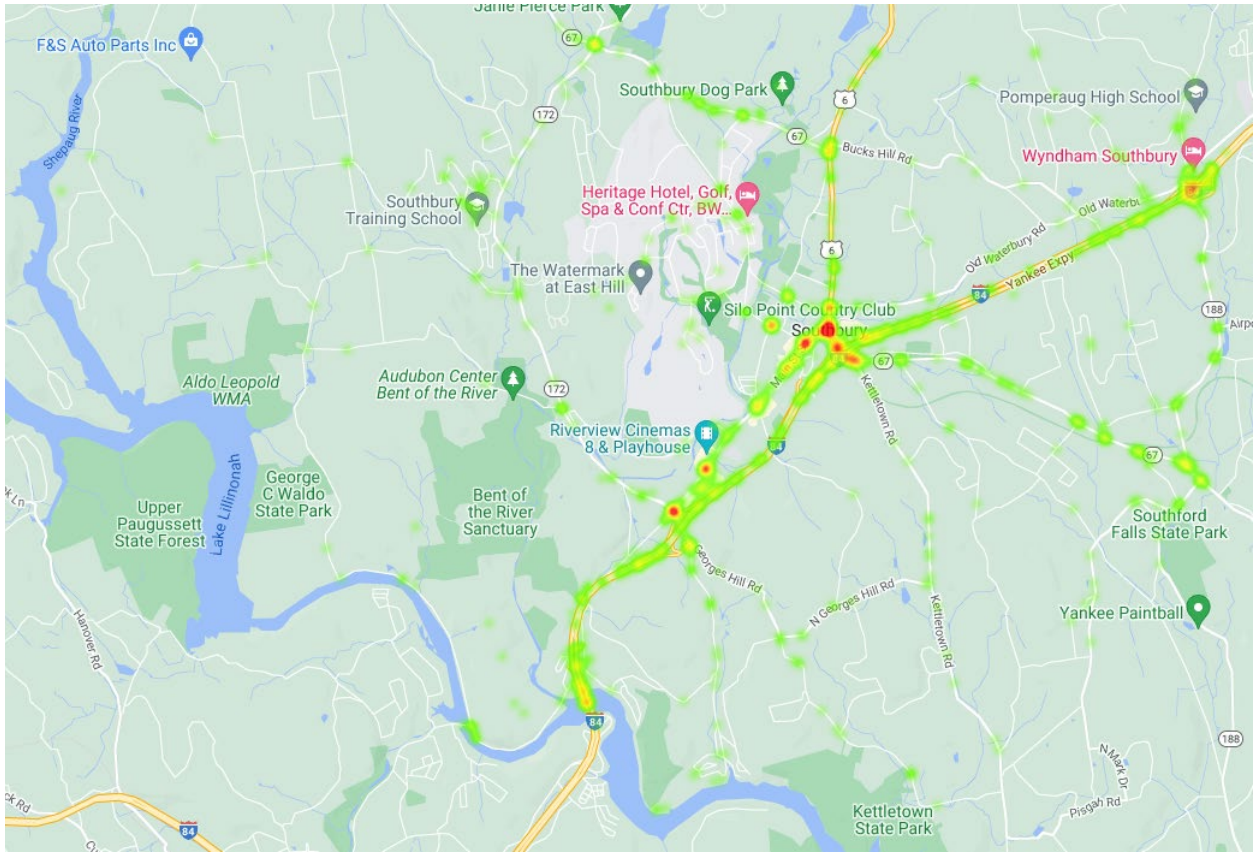

Southbury

Between January 1st 2019 and December 31st 2021, Southbury had 1,355 crashes. Southbury's high crash intensity network includes:

1. I-84 within Southbury
2. Intersection of Main Street South at Brown Road
3. Intersection of Route 172 and Main Street South
4. Intersection of Main Street South at Poverty Road and Oak Tree Road
5. Route 6 within Southbury
6. Route 67 within Southbury

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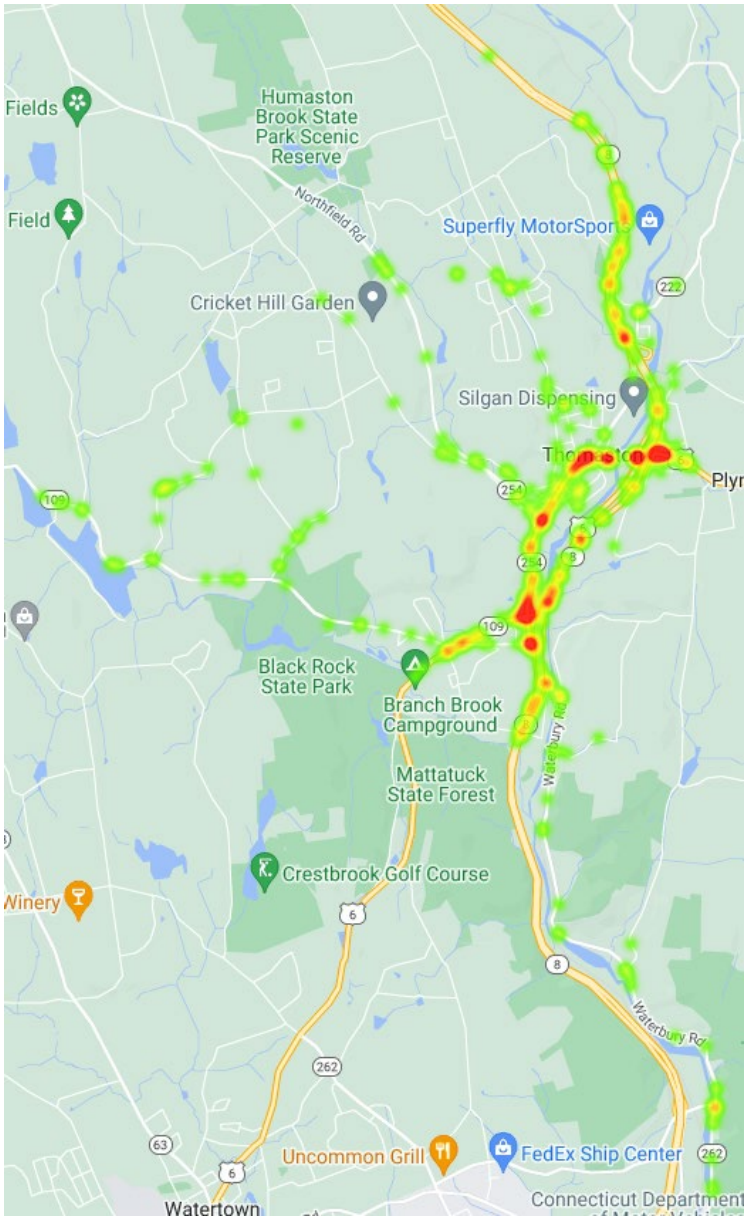

Thomaston

Between January 1st 2019 and December 31st 2021, Thomaston had 619 crashes. Thomaston's high crash intensity network includes:

1. Route 8 within Thomaston
2. Route 6 within Thomaston
3. Route 109 between Route and Route 224
4. Route 254 between Route 109 and Route 6
5. Intersection of Route 262 and Waterbury Road

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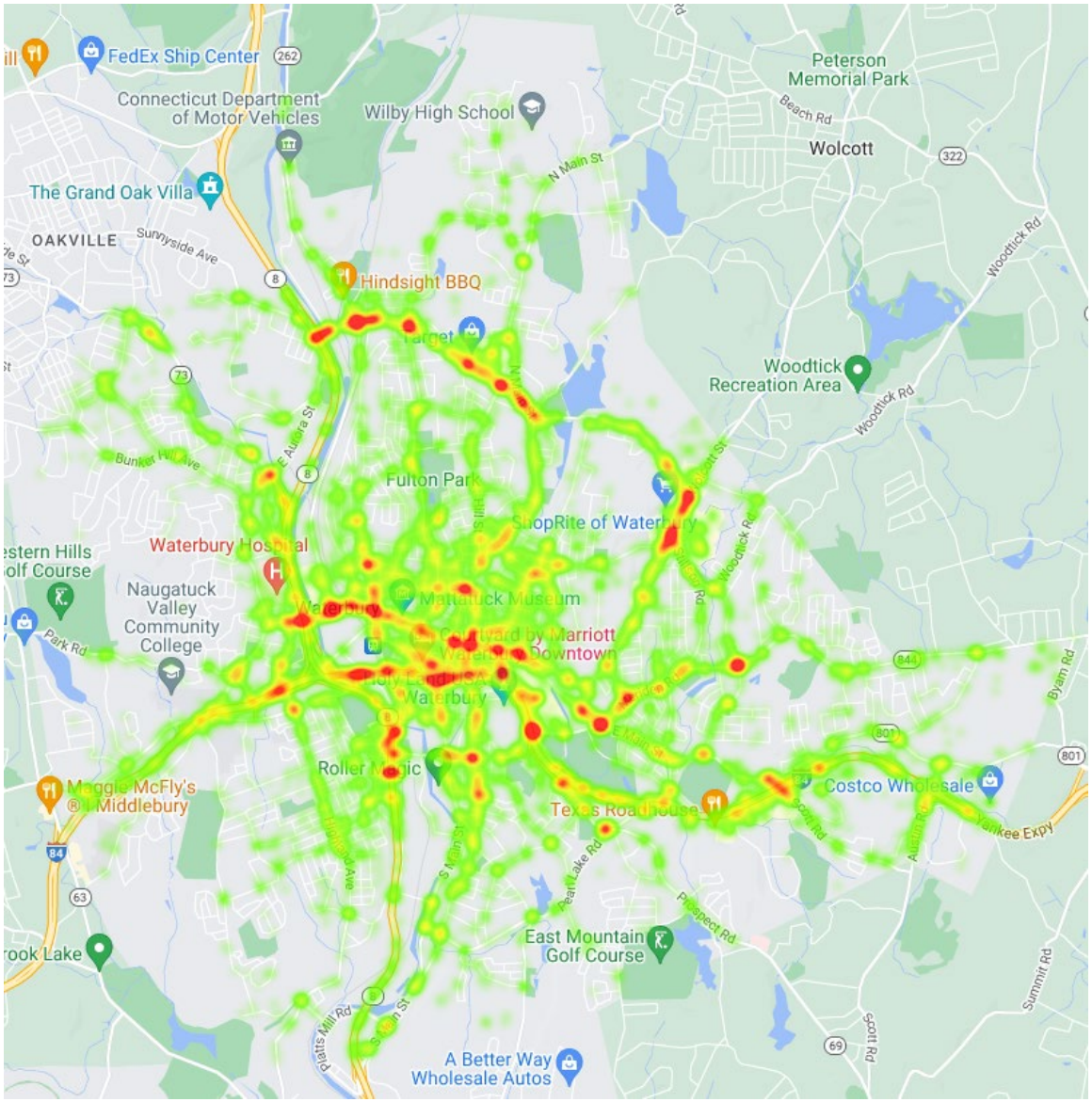

Waterbury

Between January 1st 2019 and December 31st 2021, Waterbury had 15,980 crashes. Waterbury's high crash intensity network includes:

1. Route 8 within Waterbury
2. I-84 within Waterbury
3. West Main Street between Route 8 and Main Street Confluence
4. East Main Street between Main Street Confluence and Waterbury city line/ Cheshire town line
5. North Main Street between Main Street Confluence and Wolcott town line/ Waterbury city line
6. South Main Street between Main Street Confluence and Naugatuck borough line/ Waterbury city line
7. Route 844 within Waterbury
8. Route 69 within Waterbury
9. Highland Avenue between Bristol Street and West Main Street
10. Intersection of Rudy Avenue at Aurora Street, East Aurora Street, and Route 8 Ramps
11. Intersection of Willow Street at Hillside Avenue
12. Huntingdon Avenue between Colonial Avenue and Thomaston Avenue

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13. Homer Street between Thomaston Avenue and Cooke Street
14. Chase Avenue between Cooke Street and North Main Street
15. Lakewood Road between North Main Street and Route 69
16. Baldwin Street between South Main Street and East Main Street
17. Washington Street between South Main Street and Hamilton Avenue
18. Bank Street between Riverside Street and South Main Street
19. Entire length of Grand Street
20. Union Street between South Main Street and Hamilton Avenue
21. Meadow Street between West Main Street and Bank Street
22. Scott Road between East Main Street and Schraffts Drive
23. Entire length of Brass Mill Drive

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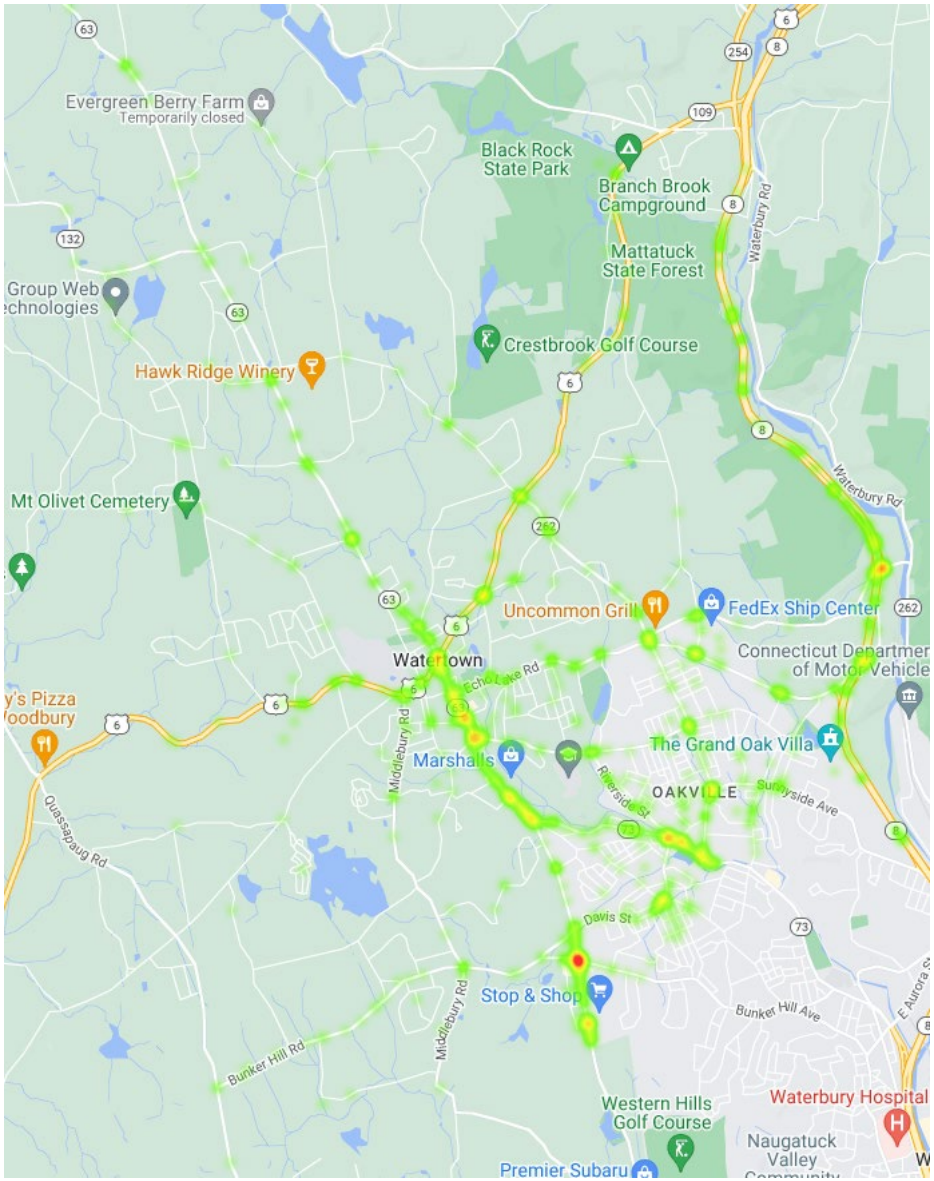
Watertown

Between January 1st 2019 and December 31st 2021, Watertown had 1,201 crashes. Watertown's high crash intensity network includes:

1. Route 8 within Watertown
2. Route 63 within Watertown
3. Route 73 within Watertown
4. Intersection of Buckingham Street at Ball Farm Road and Sunnyside Avenue



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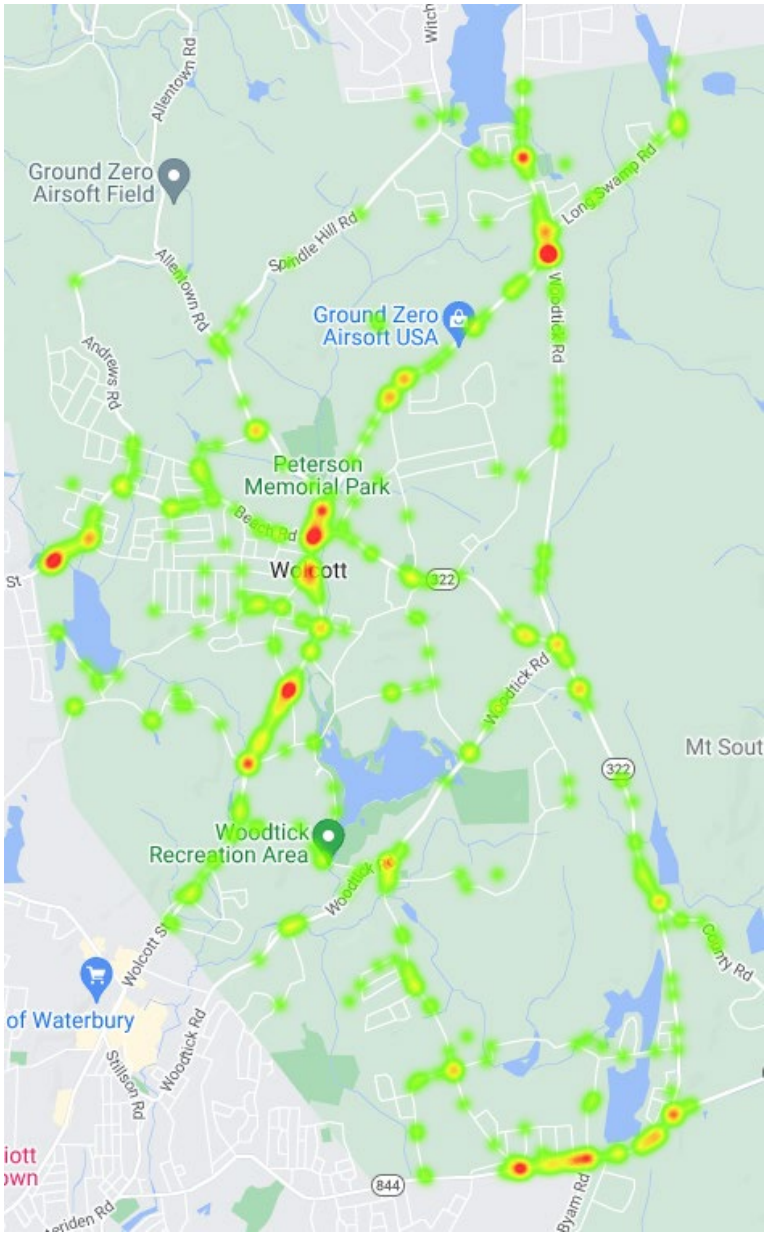

Wolcott

Between January 1st 2019 and December 31st 2021, Wolcott had 670 crashes. Wolcott's high crash intensity network includes:

1. Route 69 within Wolcott
2. Route 322 within Wolcott
3. Spindle Hill Road between Waterbury city line/Wolcott town line and Allentown Road
4. Route 844 between Waterbury city line/Wolcott town line and Southington town line/Wolcott town line
5. Intersection of Woodtick Road at Scovill Road and Todd Road

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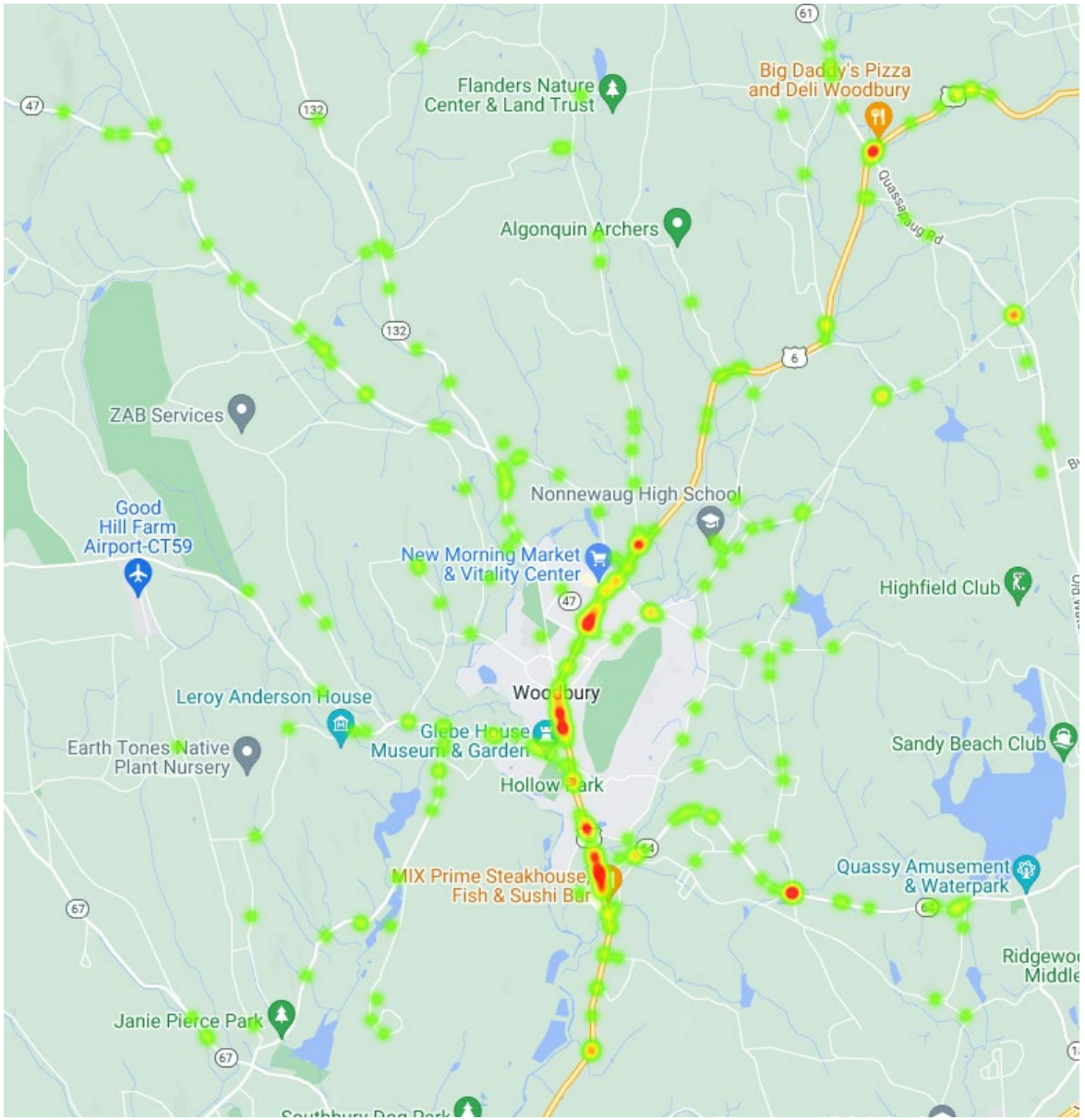
Woodbury

Between January 1st 2019 and December 31st 2021, Woodbury had 390 crashes. Woodbury's high crash intensity network includes:

1. Route 6 within Woodbury
2. Route 64 within Woodbury
3. Intersection of Quassapaug Road and Middle Road Turnpike



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Regional Crash Data Summary

The following tables summarize the full series of crash data available from January 1, 2019, through December 31, 2021. These tables break out crash data by municipality, then separately break down crashes involving pedestrians and cyclists. Across all 19 towns, data was then rationalized to show a crash and fatality rate per 100,000 people.

The raw data tables, directly as provided by the UConn Crash Data Repository, are attached to this document as appendix A.

Figure 1 The Derby-Shelton Bridge from the Shelton Waterfront. The bridge is currently undergoing an update to better connect the Derby Greenway with the Shelton Riverwalk.

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Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	Total Fatalities + Serious Injuries as a % of Total Crashes
Ansonia	970	1	15	16	0.10%	1.55%	1.65%
Beacon Falls	345	3	2	5	0.87%	0.58%	1.45%
Bethlehem	92	2	0	2	2.17%	0.00%	2.17%
Bristol	4,381	8	80	88	0.18%	1.83%	2.01%
Cheshire	1,814	5	22	27	0.28%	1.21%	1.49%
Derby	1,408	3	16	19	0.21%	1.14%	1.35%
Middlebury	775	4	7	11	0.52%	0.90%	1.42%
Naugatuck	1,822	2	21	23	0.11%	1.15%	1.26%
Oxford	518	1	7	8	0.19%	1.35%	1.54%
Plymouth	603	0	14	14	0.00%	2.32%	2.32%
Prospect	420	2	3	5	0.48%	0.71%	1.19%
Seymour	1,207	6	12	18	0.50%	0.99%	1.49%
Shelton	2,313	7	35	42	0.30%	1.51%	1.82%
Southbury	1,361	9	13	22	0.66%	0.96%	1.62%
Thomaston	619	2	7	9	0.32%	1.13%	1.45%
Waterbury	15,976	31	166	197	0.19%	1.04%	1.23%
Watertown	1,204	6	26	32	0.50%	2.16%	2.66%
Wolcott	668	1	23	24	0.15%	3.44%	3.59%
Woodbury	392	1	5	6	0.26%	1.28%	1.53%
NVCOG Total	36,888	94	474	568	0.25%	1.28%	1.54%

Table 1 Breakdown of 3-year crash history by municipality. Data source: UConn Crash Data Repository

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Municipality	2020 Population	Crash per 100,000 Population
Ansonia	18,918	5.3
Beacon Falls	6,000	16.7
Bethlehem	3,385	29.5
Bristol	60,833	1.6
Cheshire	28,733	3.5
Derby	12,325	8.1
Middlebury	7,574	13.2
Naugatuck	31,519	3.2
Oxford	12,706	7.9
Plymouth	11,671	8.6
Prospect	9,401	10.6
Seymour	16,748	6.0
Shelton	40,869	2.4
Southbury	19,879	5.0
Thomaston	7,442	13.4
Waterbury	114,403	0.9
Watertown	22,105	4.5
Wolcott	16,142	6.2
Woodbury	9,723	10.3
NVCOG Total	450,376	0.2

Table 2 Crash rates per 100,000 residents. Data Source: UConn Crash Data Repository; 2020 US Census

Municipality	DUI	Speeding
Ansonia	44	87
Beacon Falls	5	89
Bethlehem	6	19
Bristol	170	241
Cheshire	28	202
Derby	30	147
Middlebury	20	78
Naugatuck	105	190
Oxford	8	92
Plymouth	32	90
Prospect	10	53
Seymour	82	194
Shelton	74	262
Southbury	34	154
Thomaston	14	120
Waterbury	299	1,240
Watertown	39	151
Wolcott	28	148
Woodbury	16	71
NVCOG Total	1,044	3,628

Table 3 Significant contributing factor as determined by on-site officer. Data Source: UConn Crash Data Repository

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Pedestrian Crash Data

Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	% Fatality and Serious Injury
Ansonia	13	0	3	3	0.0%	23.1%	23.1%
Beacon Falls	0	0	0	0	N/A	N/A	N/A
Bethlehem	0	0	0	0	N/A	N/A	N/A
Bristol	55	3	12	15	5.5%	21.8%	27.3%
Cheshire	10	1	1	2	10.0%	10.0%	20.0%
Derby	9	1	3	4	11.1%	33.3%	44.4%
Middlebury	2	1	0	1	50.0%	0.0%	50.0%
Naugatuck	24	0	4	4	0.0%	16.7%	16.7%
Oxford	2	0	0	0	0.0%	0.0%	0.0%
Plymouth	7	0	2	2	0.0%	28.6%	28.6%
Prospect	3	0	0	0	0.0%	0.0%	0.0%
Seymour	14	1	3	4	7.1%	21.4%	28.6%
Shelton	12	0	4	4	0.0%	33.3%	33.3%
Southbury	5	2	0	2	40.0%	0.0%	40.0%
Thomaston	0	0	0	0	N/A	N/A	N/A
Waterbury	328	11	42	53	3.4%	12.8%	16.2%
Watertown	4	0	1	1	0.0%	25.0%	25.0%
Wolcott	4	0	1	1	0.0%	25.0%	25.0%
Woodbury	4	1	1	2	25.0%	25.0%	50.0%
NVCOG Total	496	21	77	98	4.2%	15.5%	19.8%

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Bicyclist Crash Data

Municipality	Total Crashes	Fatalities	Serious Injury	Total Fatalities + Serious Injuries	Fatalities as a % of Total Crashes	Serious Injuries as a % of Total Crashes	% Fatality and Serious Injury
Ansonia	4	0	0	0	0.0%	0.0%	0.0%
Beacon Falls	0	0	0	0	N/A	N/A	N/A
Bethlehem	0	0	0	0	N/A	N/A	N/A
Bristol	20	0	4	4	0.0%	20.0%	20.0%
Cheshire	13	0	1	1	0.0%	7.7%	7.7%
Derby	4	0	0	0	0.0%	0.0%	0.0%
Middlebury	1	0	0	0	0.0%	0.0%	0.0%
Naugatuck	5	0	1	1	0.0%	20.0%	20.0%
Oxford	2	0	0	0	0.0%	0.0%	0.0%
Plymouth	3	0	0	0	0.0%	0.0%	0.0%
Prospect	0	0	0	0	N/A	N/A	N/A
Seymour	1	0	0	0	0.0%	0.0%	0.0%
Shelton	5	0	0	0	0.0%	0.0%	0.0%
Southbury	2	0	0	0	0.0%	0.0%	0.0%
Thomaston	2	0	0	0	0.0%	0.0%	0.0%
Waterbury	47	0	1	1	0.0%	2.1%	2.1%
Watertown	3	0	0	0	0.0%	0.0%	0.0%
Wolcott	0	0	0	0	N/A	N/A	N/A
Woodbury	0	0	0	0	N/A	N/A	N/A
NVCOG Total	112	0	7	7	0.0%	6.3%	6.3%

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Figure 2 The City of Ansonia recently began a shared Micro Mobility Program, placing electric scooters throughout the city.

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Public Engagement Strategy

Regional Stakeholders

The 2019 Regional Transportation Safety Plan, completed by VN Engineers, Inc (VN), in collaboration with the Naugatuck Valley Council of Governments (NVCOG) and Connecticut Department of Transportation (CTDOT) engaged in a thorough public engagement process. This process will be detailed below, followed by a description of the NVCOG's efforts to produce a 2022 update to this plan that includes updated crash data, an expanded list of regional safety priorities, and integrates into the 2023 update of the CNVMPO and GBVMPO Metropolitan Transportation Plans.

To accurately build a picture of safety within the region, critical stakeholders were identified early in the process and engaged regularly throughout development of the high intensity crash network and mitigation strategies. First, the Local Traffic Authority (LTA) from each town was contacted to serve as the primary representative in the data collection process. In many NVCOG municipalities, the LTA is a member of the local police department, but this is not universally true. The LTAs provided VN with significant detail about crash hot spots within the town, potential contributing factors, and mitigation factors that the municipality believed would be helpful. These concerns and recommendations were critical to the development of the list of mitigation actions.

In each town, regardless of the LTA's affiliation with the police department, local law enforcement was included to discuss potential education and enforcement opportunities. Individual meetings with each local police department provided the means for an in-depth conversation about driver behavior concerns, potential for stepped-up enforcement, and education campaigns. In addition to the nineteen local police departments, the Connecticut State Police provided valuable input on the region's freeway network.

In the subsequent years, the NVCOG has maintained an open line of communication with LTAs and police departments. Through regular data exchanges and consultation about specific mitigation solutions, the 2022 update continued to place significant value in the concerns and proposals of local police, who will continue to be a vital part of the ongoing work to end traffic fatalities and serious injuries within the region.

In addition to police departments, fire and EMS services also provided input into the region's safety issues and potential solutions. As those tasked with responding when crashes occur, these departments were able to provide invaluable information about the post-crash scene, risks to them.

The regional Transportation Technical Advisory Committee (TTAC) serves as a long-standing group of public works directors, city engineers, and other appointed members from member municipalities. The TTAC provides expertise and an opportunity for collaboration on transportation related issues and holds open meetings during which public comment is accepted. The NVCOG aims to expand the TTAC to include non-voting representatives from local transit agencies and freight carriers. This expanded group will dedicate an agenda item to regional safety concerns and best practices as a standing item.

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Going forward, the NVCOG is working to establish a traffic enforcement working group, made up of LTAs from each town as well as designated officers from each municipal police department that can serve as a clearing house of best practices and an opportunity to continue gathering data on the most dangerous locations within the region. This committee will be a part of the region's overall Vision Zero effort, seeking to advise the region's policy board on issues related to education and enforcement.

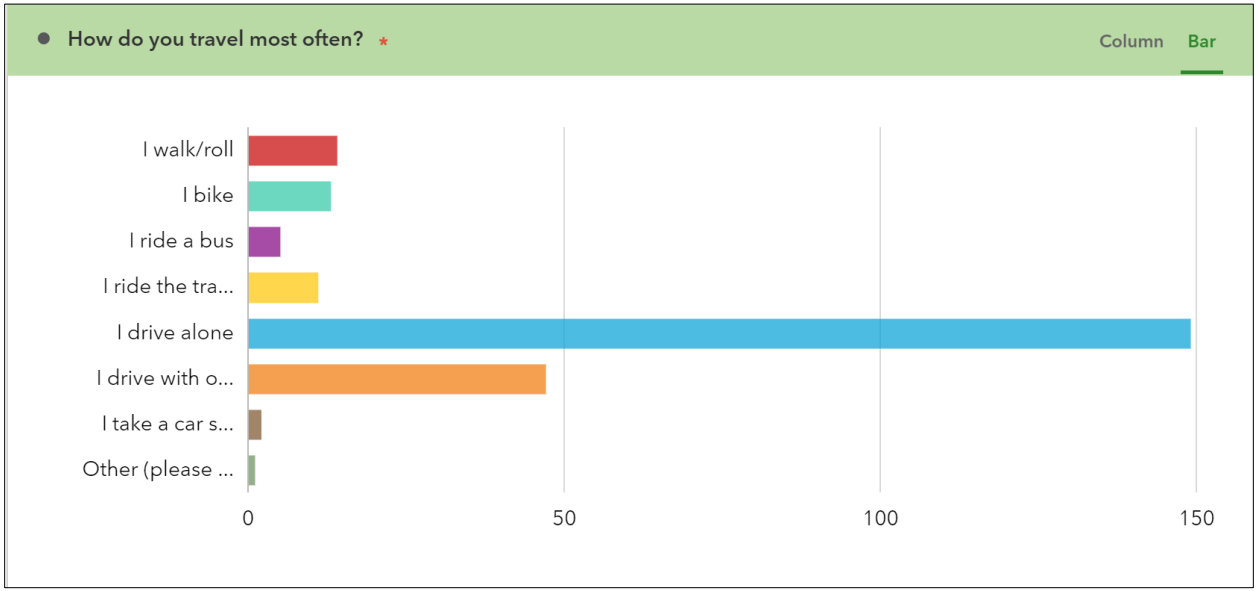
Public Survey

To ensure broader public participation in the 2022 update, the NVCOG created an online survey. This survey, promoted through local media, social media, and through in-person attendance at local events, was aimed at anyone living or working within the region. Originally designed to have a conclusion, the survey will remain active in some form more permanently to allow for constant feedback from the region. In addition to the survey focused on broader safety concerns and issues, the NVCOG website does continually host a form within which anyone can report specific safety concerns, whether it be as simple as a broken or malfunctioning signal to a lack of adequate pedestrian facilities.

As of the adoption of this plan, 180 survey responses have been received. Though the survey will continue on beyond this plan and help direct the region's Metropolitan Transportation Plan, the results received to date were utilized to help inform the safety actions identified in this plan and shape the strategy for safety in the future. Graphs portraying results of select questions are presented below:

This question helps to identify the means by which most residents are traveling. With 84% of respondents saying they travel often by driving alone, and an additional 24% saying they travel often in a car with at least one other person, the impact of cars to the safety of our transportation system becomes immediately apparent. This allows us to focus our attention on reducing vehicle on vehicle crashes while also seeing the need to reduce the impact of crashes between one car and a non-motorized user.

The next chart shows responses to a question asking about mobility. With nearly 20% of respondents (18.64%) responding that



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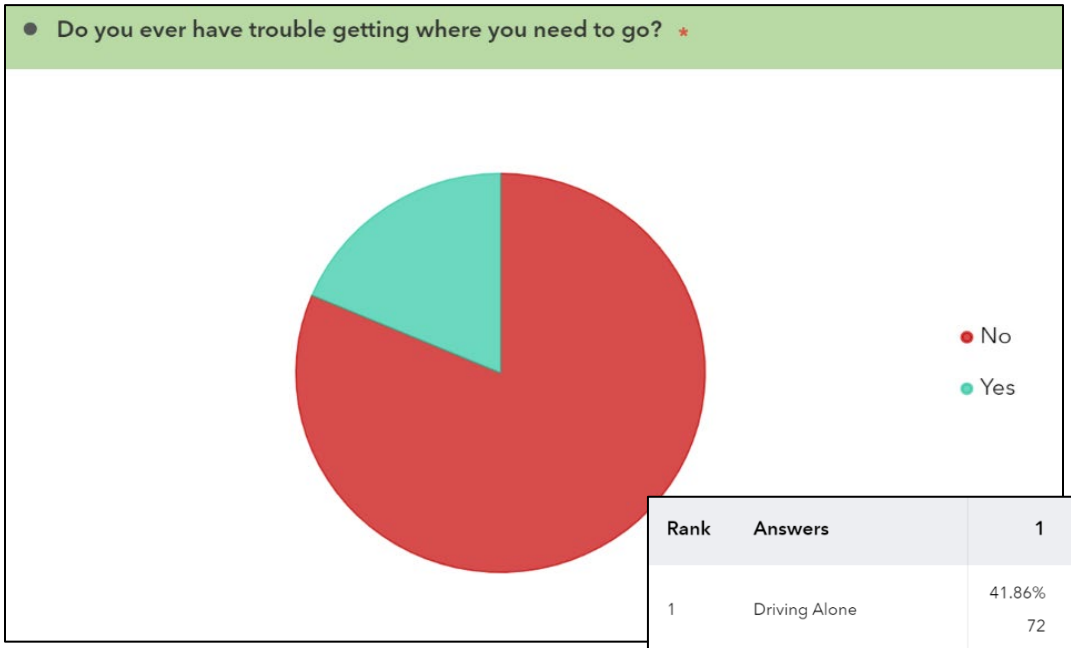

they have difficulty traveling the region at least some of the time. Many of the respondents who expanded on their answer identified traffic as the first most common issue they experience, followed by a lack of public transit. Several respondents, however, mentioned that they felt unsafe walking/rolling or biking within their community which made short trips difficult, especially within urban areas.

While understanding current travel trends helps identify the most pressing safety needs, looking to how people would like to travel in the future ensures that our safety enhancements remain relevant and offer expanded mode choice in addition to reducing fatalities and severe injuries. The below table shows the responses to a ranked choice question regarding desired future mode choice.

With many respondents identifying walking/rolling, cycling, and other micromobility options highly, planning for the safety of these modes is essential. Riding the train also is a popular choice,

Rank	Answers	1	2	3	4	5	6	7	Average score
1	Driving Alone	41.86% 72	13.37% 23	9.88% 17	5.81% 10	6.98% 12	8.72% 15	13.37% 23	4.98
2	Train	14.53% 25	22.09% 38	20.35% 35	13.95% 24	9.3% 16	11.05% 19	8.72% 15	4.51
3	Walking/Rolling	11.63% 20	16.28% 28	13.37% 23	18.02% 31	17.44% 30	15.12% 26	8.14% 14	4.09
4	Bicycle	10.47% 18	14.53% 25	14.53% 25	15.7% 27	15.7% 27	17.44% 30	11.63% 20	3.90
5	Electric scooter/bicycle	6.4% 11	10.47% 18	13.37% 23	20.35% 35	20.93% 36	12.79% 22	15.7% 27	3.60
6	Carpooling/Ride sharing	3.49% 6	17.44% 30	18.02% 31	5.81% 10	15.12% 26	19.19% 33	20.93% 36	3.47

so ensuring that access is easy and on-board safety is considered will also ensure a safer system going forward.

All respondents were asked about how comfortable they were walking/rolling within their communities. Only respondents who said they rode a bike regularly were asked about their comfort level while riding.

Finally, a series of demographic questions were asked to ensure that a broad range of the population is represented, or that responses can be viewed through the lens of the typical respondent and adjusted accordingly. The results of this survey, to date, represent a fairly equal breakdown of those identifying themselves as men, woman, and those who selected non-binary or other. Respondents, however, tended to be older and wealthier than the regional average, and a majority of respondents held a bachelor's degree or above, so additional emphasis was placed on the responses of lower income and high school graduate respondents to accurately reflect the region's demographics.

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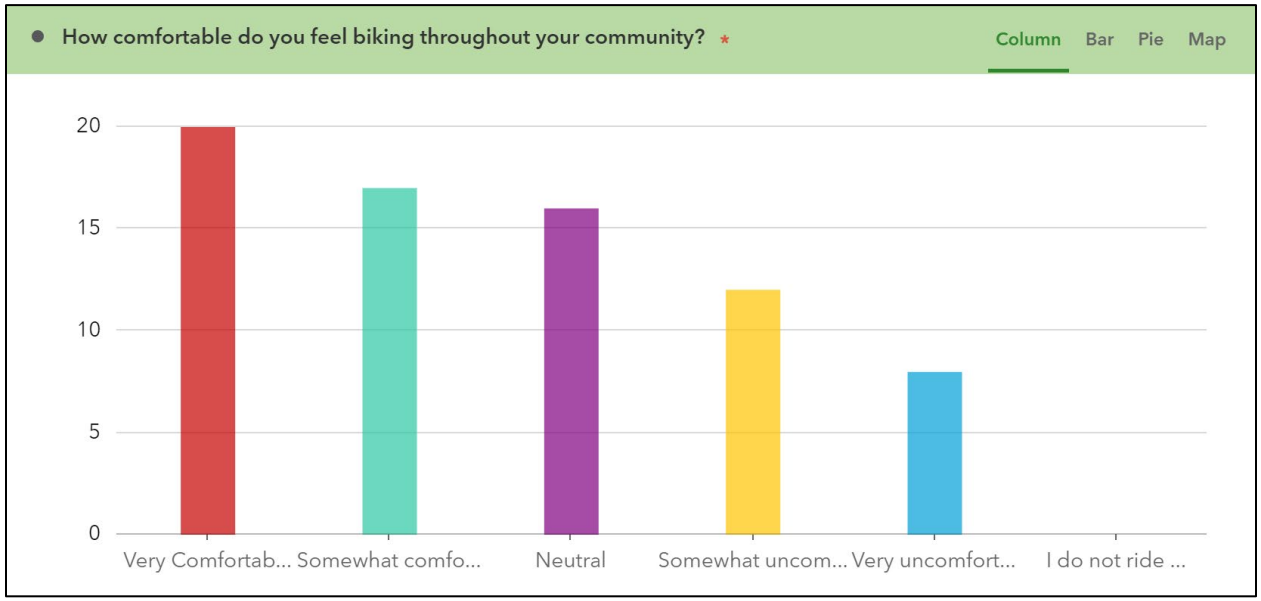

Public Meetings

Over the course of 2022, public meetings held for specific safety actions included broader conversations about safety goals within the region. Meetings held for projects including the CT Route 229 Corridor Study, Waterbury West Main Street Corridor Study, and Oxford Main Street Alternative Transportation Study, have included opportunities for broader discussions around future transportation needs, identify safety hazards, and present desired safety improvements.

Detailed meeting summaries for these can be found on the NVCOG website associated with the respective projects, as well as full video recordings are available on the NVCOG's YouTube channel. Since these projects were focused on complete streets and non-motorized improvements, many of the comments received were focused on these topics. Most comments at these events focused on the need for safer routes for pedestrians and cyclists. These studies covered the full range of development patterns in the region, with West Main Street being an urban street within the region's largest and most densely populated city, Route 229 covering a more suburban part of Bristol, and Main Street in Oxford traveling through both suburban and rural parts of the town, and the comments in support of safer routes for non-motorized users were echoed in all development patterns. The primary concern brought forward against these improvements was a loss to public parking, particularly on-street parking in the urban setting of West Main Street. All of these comments are factored in to the region's action plans, and ensuring that the proposed safety enhancements compliment and improve our communities rather than reducing access or alienate the public.

The public is also invited to comment at the regularly scheduled meetings of the NVCOG's Transportation Technical Advisory Committee and full Policy Board meetings. Prior to the adoption of the region's Complete Streets Policy, adoption of this Regional Transportation Safety Plan, and endorsement of the region's Vision Zero strategy, the public was presented the opportunity to comment to these boards. No comments, either for or against, were received from the public during these meetings.

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Key Takeaways

Based on the outreach undertaken to prepare this plan, NVCOG staff believes that the action items highlighted in the proposed project and systemic action list will not only be the most effective based on crash history and safety data but also based on the input from residents and visitors to the region. There is a clear desire, demonstrated by the comments made in public meetings and many of the survey responses, for safer, more connected bicycle facilities and improved sidewalks, which fits our own understanding of the region as having gaps in the network for non-motorized users. In line with this, as shown by data from the UConn Crash Data Repository, Waterbury has the highest pedestrian crash and fatality rate in Connecticut, further demonstrating the need for these non-motorized user enhancements.

Though pedestrians account for an outsized share of fatalities in the region, the great majority of people still drive as their primary form of transportation, and typically cover far more distance and spend far more time in a car than any other method, so safety improvements for drivers are also critical. Additional enforcement is the most cited desired improvement, but there are patterns of requests for intersection improvements, addressing dangerous merges and weaves, and improving lane markings.

The NVCOG has committed to expanding public outreach efforts. As such, the work done to compile this safety plan update is considered to be only the start to a larger and ongoing regional effort to engage and educate about roadway safety. In line with the region's Vision Zero commitment, new reporting tools will be created and maintained by the NVCOG to share progress and safety information with the general public. The Transportation Technical Advisory Committee will take on a more active role in hearing safety concerns from the general public. Finally, the NVCOG will maintain several means of providing feedback about safety issues within the region, including a map on which individuals can report issues, a comment system by which concerns can be submitted, and an ongoing effort to increase access to public meetings.

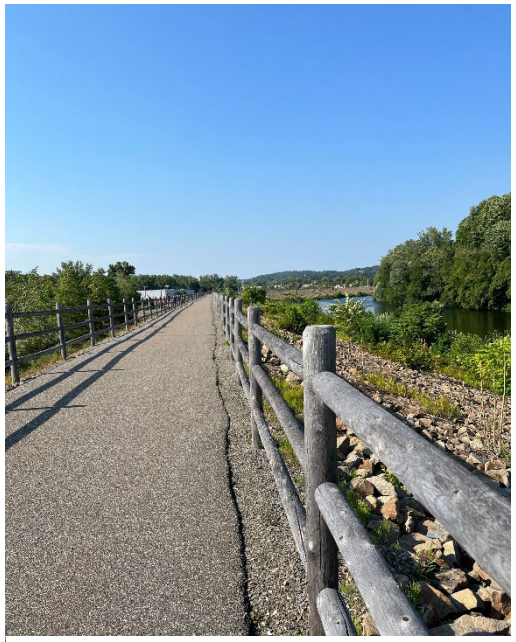

Figure 3 The Derby Greenway provides an off-road alternative for pedestrians and cyclists between Downtown Derby and commercial areas along the Derby/Ansonia town line

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Project Additions

Municipality	Project Description
Ansonia	Convert Main St and East Main St to one-way couplets between Maple St and Tremont St; implement road diet to reduce travel lanes and expand sidewalk area; install curb extensions, upgrade pedestrian signals and enhance crosswalks with visibility markings. Upgrade and improve the crosswalks and pedestrian signal at the Division St and North Division St intersection and crossing of the NRG Trail.
Ansonia	Provides improvements to the CT-115 (North Main Street)/North State Street. Includes the installation of new pedestrian accommodations, RRFBs, signage, and restriping.
Ansonia	Provide access management at the commercial driveway at SR-727 (Pershing Drive)/Division Street, mainly restricting left turns
Ansonia	T up intersection of N Main Street and Colony Road
Beacon Falls	Implement a road diet along North Main Street from Church Street south to Depot street, constructing multi-use trail, improving pedestrian crossings at Burton Road, including replacing the signals with an MUTCD compliant signal with pedestrian heads at Bethany Road. Improve interchange crosswalks and extend splitter island to provide pedestrian refuge at all of the locations.
Beacon Falls	Install safety improvements along Blackberry Road including signage, centerline rumble strips, intersection realignment, and high friction pavement.
Beacon Falls	Install a crosswalk on Rimmon Hill Road at the Woodland Regional High School. Includes vegetation management, crosswalk visibility, and pedestrian crossing signage.
Bethlehem	Improve the CT-61 (Main Street North)/Bellamy Lane/Kasson Road intersection by relocating a utility pole, manage vegetation management, analyze roadway geometry, and install dynamic feedback signs
Bethlehem	Improve CT-132 (Kasson Road)/Woodland Road intersection with a stop sign and narrowing intersection by eliminating the passing zone.
Bristol	Construct a pedestrian and bicycle sidepath along Park St and Memorial Blvd between Rockwell Park and Route 229; implement road diets along several roads and install traffic calming measures
Bristol	Planned improvements along Route 229 will address the existing safety and operational deficiencies, including an incomplete sidewalk network, lack of safe cyclist facilities, and several dangerous pedestrian crossings.
Bristol	Along Shrub Road, install sidewalks and traffic calming measures to improve user safety.
Bristol	Along Redstone Hill Road between Birch Street and the Plainville town line, construct sidewalks on both sides of the roadway with traffic calming elements.
Bristol	Along East Road located between Route 69 and South Street, complete sidewalks on both sides,

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	traffic calming, and install a pedestrian crossing at South Street and East Street
Cheshire	Investigate and/or install two-way center turning lanes along Route 10 south of the Route 70 intersection
Derby	Replace and upgrade the traffic signals at the Route 8 on and off ramps, at Seymour Ave and Atwater Ave, including pedestrian signals and crosswalks with high visibility markings. Includes improving sidewalks, reducing pavement area, and adding islands as necessary to better control traffic flow and define how vehicles should move through the intersection.
Derby	Improve Academy Hill Road/CT-115 (Derby Avenue) intersection by realigning Route 115, removing nearby parking spaces, and install dynamic speed feedback signs
	Install traffic signal retroreflective backplates along Route 63 north of intersection with Route 64. Add turning lanes by restriping roadway and two-way turn lanes as needed
Middlebury	Install intersection warning signs at CT-188 (Southford Road)/Christian Road. Clear vegetation at the intersection and narrow lanes at this location
Middlebury	Install various pedestrian safety features along Church Street through the downtown area south of Maple Street, including curb extensions, enhanced crosswalks, pedestrian signals and traffic signal upgrades.
Naugatuck	Construct a roundabout at the intersection of CT-63 (Church Street/Millville Avenue/Meadow Street) and Church Street/Meadow Street.
Naugatuck	Construct a roundabout at the intersection of CT-63 and Cherry Street.
Oxford	Install bollards along the recently completed section of Oxford Main Street sidepath to delineate non-motorized spaces. Extend the planned sidepath from Quarry Walk to the Seymour town line.
Oxford	Reconfigure intersection of Kettletown Road/Maple Tree Hill Road to address elevation differences between the two roadways. Realign intersection to remove skew.
Oxford	Install wayfinding signage and retroreflective strips on signs located at the intersection of CT-188 (Quaker Farms Road)/Silano Drive/Moose Hill Road.
Plymouth	Install high friction pavement at the intersection of US-6 (Main Street)/Carter Road. Reduce number of eastbound lanes, install edge line rumble strips, and install flashing LED signs.
Plymouth	Trim vegetation to improve sign visibility along CT Route 72 from US Route 6 to Bristol town line. Install high friction pavement if needed.
Prospect	At the intersection of CT-68 (Cheshire Road)/Talmadge Hill Road/Matthew Road, lower crest on CT 68 and install dynamic feedback signs.
Prospect	Install chevron signs and update warning signs at the intersection of Summit Road/Peter

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	Gilkey Road. Reduce lane width on Peter Gilkey Road on the approach with the intersection.
Seymour	Reconfigure intersection of CT-313 (Maple Street/Rimmon Road)/Clinton Road by changing stop controlled leg on Clinton Road one way access, T up yield controlled leg and convert to one way stop control, and install dynamic feedback signs.
Seymour	Trim vegetation at intersection of CT-188 (Squantuck Road)/CT-34 (Roosevelt Drive) and add stop sign for CT 188 approach.
Shelton	Along Howe Avenue between White Street to Center Street, remove parking spaces near intersections, coordinate signals, install traffic signal retroreflective backplates, and install pedestrian concurrent phasing.
Shelton	Consolidate access driveways and install two-way turning lanes as needed along Bridgeport Avenue.
Shelton	Reconfigure Howe Avenue to reduce speeds and to utilize space such as angled parking.
Shelton	Reconfigure intersection of Howe Avenue and Derby Shelton Bridge. Mainly reduce the crossing width along Derby Shelton Bridge leg.
Southbury	At the intersection of CT-172 (Pierce Hollow Road)/CT-67 (Roxbury Road)/Transylvania Road, reduce pavement width, install retroreflective signs and flashing beacons, and improve lighting in the area.
Southbury	Replace and upgrade five traffic signals along Main Street South between US Route 6 and Route 172 to meet current MUTCD standards.
	These include the intersections of Main Street and Depot Hill, Peter Road, Brown Road, Shop Rite Plaza, and a signal at the Intersection of Heritage and Old Field Roads. Includes enhancing crosswalks with high visibility markings and adding and/or upgrading pedestrian signals.
Southbury	At the Main Street South/Flood Bridge Road - Pedestrian Crossing, upgrade the sidewalk approaches, and push button locations to meet ADA compliance.
Thomaston	Enhance and improve pedestrian features along South Main St, Main St and North Main St through the downtown area, including improving sidewalks, upgrading pedestrian signals and upgrading crosswalks with high visibility markings.
Thomaston	Install a roundabout at the intersection of CT-254 (Northfield Road)/Walnut Hill Road/Litchfield Street and install centerline rumble strips along CT 254
Thomaston	Install a traffic signal on the US-6 (East Main Street)/CT-8 (James H. Darcey Memorial Highway) interchange northbound off ramp. Shorten the additional lane along route 6. Install dynamic feedback signs.
Waterbury	Implement various pedestrian enhancements at high crash incident locations throughout the city, including upgrading crosswalks with high visibility markings or installing in-ground crosswalk lighting, adding Rectangular Rapid Flashing Beacons at some mid-block crosswalk locations, and enhancing pedestrian signals to

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	comply with current MUTCD standards. Upgrade traffic signals at various locations, including Lakewood Avenue and Route 63 to provide safer pedestrian crossing.
Waterbury	Construct various road improvements along West Main Street between Riverside Drive and the Waterbury Green ("The Green"), including rationalizing the number of travel lanes, reducing road width, enhancing pedestrian safety, and improving connectivity and mobility.
Waterbury	At the intersection of CT-69 (Meriden Road)/East Main Street/Sylver Street Express-way, install No Right on Red for all approaches, install traffic signal retroreflective backplates, restripe the intersection, reduce lane widths, include an exclusive pedestrian phase, and provide driveway access management.
Waterbury	At the intersection of CT-69 (Wolcott Street and Stillson Road), provide access management near the intersection and modernize/replace the existing signal
Waterbury	Two lane roundabout at the intersection of Lakewood Road, North Main, and Farmwood Road.
Waterbury	Remove one lane in each direction along Baldwin Street between East Main Street and the I-84 EB on-ramp. Perform road diet along entire street length and install multimodal accommodations with potential streetscape. Reduce intersection sizes the majority of intersections along the corridor.
Waterbury	Perform road diet along Cherry Street. Reduce lane withs and provide streetscape and/or multimodal accommodations. Reduce intersection sizes where appropriate.
Waterbury	Provide access management by removing driveways along Route 69 between Manor Avenue and Woodward Avenue. Install traffic calming measures. Install a new traffic signal.
Waterbury	Implement a road diet along North Main Street, and Chase Avenue, starting from the intersection of North Main Street and Lakewood Avenue and heading west. Remove a travel lane form each direction and install multimodal accommodations. T up intersections and reduce intersection footprints if possible.
Waterbury	Narrow lane widths along Silver Street Parkway to reduce travel speeds. Remove turn only lanes along the corridor if possible. Shorten crossing distance over Brass Mill Driveway.
Waterbury	T up intersection of Hamilton Avenue and Prospect Road. Reduce intersection footprint if possible. Install high friction pavement if needed.
Watertown	Implement various pedestrian enhancements at high crash incident locations along Route 63 through the downtown area and along Route 73 through the Oakville section, including upgrading crosswalks with high visibility markings or installing in-ground crosswalk lighting, adding Rectangular Rapid Flashing Beacons at some mid-block crosswalk locations, enhancing pedestrian signals to comply with

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	current MUTCD standards, and installing curb extensions.
Watertown	Install dynamic feedback signs on CT 262 near the intersection of CT 262 and Nova Scotia Hill Road
Watertown	At the CT-262 (Frost Bridge Road)/CT-8 (James H Darcey Memorial Hwy) Exit 37 NB Off-Ramp, install intersection ahead warning signs on the Frost Bridge Eastbound approach and install centerline rumble strips within the vicinity of the intersection.
Wolcott	Along Spindle Hill Road, install turn signage, high friction pavement, and dynamic feedback signs to increase roadway safety.
Wolcott	Consider installing traffic calming measures such as rumble strips, speed bars, neckdowns, signage, etc.
Woodbury	Install a roundabout at the intersection of US-6 (Main Street North)/CT-61 (Bethlehem Road and Quassapaug Rd).
Woodbury	Upgrade traffic signal at US-6 (Main Street South)/CT-317 (Sycamore Avenue) by installing traffic signal retroreflective backplates, and signal retiming. Perform geometric improvements if needed.
Waterbury, Middlebury, Southbury	Illumination along I-84 in both directions. Investigate the impact of illumination along the highway in rural areas.
Ansonia, Beacon Falls, Derby, Naugatuck, Seymour, Shelton, Thomaston, Waterbury, Watertown	Illumination along Route 8 in both directions. Investigate the impact of illumination along the highway in rural areas.
Seymour, Ansonia, Derby	Highway safety improvements along Route 8.
All municipalities	Upgrade Pedestrian Signal heads at intersections within the region to new technology and standards
All municipalities	Install traffic signal retroreflective backplates on all signals. Upgrade signal timings and install traffic cameras and other safety features as needed.
All municipalities	Install retroreflective crosswalk striping at all crosswalks within the region.
All municipalities	Install and repaint roadway striping within the region including but not limited to center lines, edge lines, and epoxy symbols and legends.
All municipalities	Install Centerline Rumble Strips along roadways with higher speeds and/or volumes where appropriate within the region.
All municipalities	Install High Friction Pavement on roadways along curves with crashes that can be easily mitigated with this treatment.
All municipalities	Install RRFBs at midblock crossings or HAWKs at midblock crossings with higher vehicle volumes within the region.
All municipalities	Install bollards and bollard flexposts as needed to provide roadway users separation from vehicles.

All municipalities	Upgrade and update signage to MUTCD compliance for all signs within the region.
All municipalities	Install bicycle lanes along roadways demarcated by pavement striping or physical separation within the region.
All municipalities	Construct sidewalk bumpouts and/or raised crosswalks at several crossing locations to lower vehicle speeds at crossings and to reduce crossing lengths.
All municipalities	Provide vegetation removal/trimming to improve sight distances around intersections, crosswalks, and roadway signage.
All municipalities	Road diet program with quick implementation with aspects including restriping, curbing, and other means to minimize roadway width.
All municipalities	Region wide program to upgrade streetlights to improve lighting and to replace older lights to LEDs.
All municipalities	Upgrade sidewalks and sidewalk ramps to meet ADA compliance for sidewalks within the region.

Figure 4 Waterbury Line train stopped at the Waterbury station

Equity and Inclusion Analysis

In developing this plan, the NVCOG put an extra focus on ensuring that the suggested improvements not only occurred on the high intensity network of crashes, but also were distributed fairly amongst municipalities within the region and within distressed communities. Two methodologies were utilized for this analysis to ensure that project distribution was truly equitable. Those methods are discussed below.

Justice40

First, the region developed a map identifying census tracts meeting the criteria for historically disadvantaged communities using the Biden Administration's Justice40 initiative definition. Using this definition, communities within the cities of Ansonia, Bristol, Derby, Shelton, and Waterbury were recognized, and an analysis was done to ensure that a fair percentage of proposed improvements occurred within these regions. This represents 20.56% of the region's population, or a total of 91,492 residents. In the expanded project listing, 28.23% of the total project funds are spent within one of these census tracts, exceeding the share of the population.

To calculate this result fairly, the NewMix project, which is the Connecticut Department of Transportation's project to replace the elevated highways and interchange of Interstate 84 and CT Route 8, was excluded. At an estimated price of between $3 and $9 Billion, this project represents an extreme amount compared to the estimated $255.2 Million of other projects. As such, though this number occurs within a disadvantaged tract, it was not included in our analysis.

Environmental Justice Communities

In addition to the analysis utilizing the Justice40 definition, actions within the plan were reviewed in accordance with environmental justice areas as identified in the 2022 update of the NVCOG Title VI plan. To develop this analysis data from the American Community Survey (ACS) 2020 was utilized to identify block groups that had significant non-English speaking or minority populations, were historically economically disadvantaged, and suffered an unfair burden of environmental degradation. Though the environmental damage in most of these areas was caused by the region's industrial past, many of these areas also face burdens from the transportation system, particularly by proximity to highways. This list included most of the area covered by the Justice40 census tracts, added additional areas in the five cities with Justice40 tracts, as well as added territory within Cheshire, Naugatuck, and Seymour.

Utilizing the NVCOG methodology, 24.5% of the region's population lives within a block group identified as an area of environmental justice concern. Without expanding the analysis to include projects programmed for within the additional areas, this still shows more dollars programed into these areas than the percentage of population. Adding the estimated costs of projects in the added area, the total expenditures within EJ block groups increases to 32.02%, still meeting the goal of matching or exceeding investments into areas of concern.

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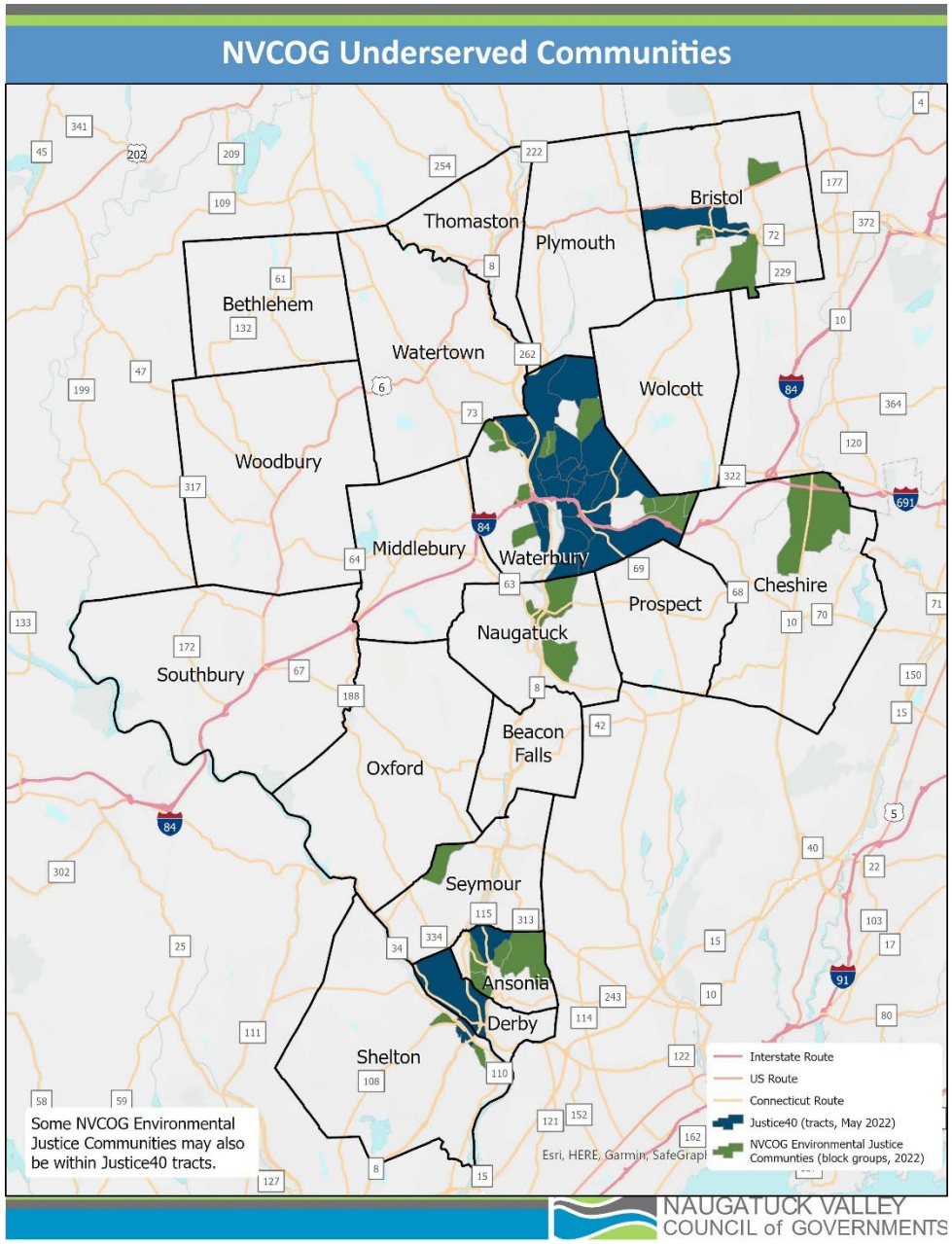

None of this analysis takes into account the various regional items, such as region wide signal enhancement funding, striping and crosswalk improvement projects, or illumination. Because these projects are designed to mostly upgrade or rehabilitate existing facilities, specific locations have yet to be identified and will be included in analysis as they move to design and implementation.

*Addendum Map 1, right, is attached as a full page in appendix X

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Potential Effectiveness of Countermeasures

- **Action**: Implement revisions and upgrades to traffic signal equipment to increase visibility and driver awareness and bring signals into compliance with the *MUTCD*.
    - Add backplates with retroreflective borders to traffic signal heads; increase visibility and driver awareness:
        - 15% reduction in total crashes.
    - Signal timing and sequencing of the cycle to better balance yellow interval and reduce red light running which will substantially reduce the potential and exposure of crashes:
        - 36-to-50% reduction in red-light running
        - 8-to-14% reduction in total crashes
        - 12%. Reduction in injury crashes
    - Signal locations will also be evaluated for adding a Leading Pedestrian Interval to give pedestrians the opportunity to enter the crosswalk earlier than the vehicles are permitted to move and increases visibility:
        - 13% reduction in pedestrian-vehicle crashes at intersections

- **Action**: Increase visibility at crosswalks throughout the region. Poor lighting conditions, obstructions such as parked cars, and horizontal or vertical roadway curvature can reduce visibility at crosswalks. Countermeasures to address visibility at crosswalks include high visibility markings, new signage and markings to provide advance warning to drivers and alert them of the possible presence of pedestrians crossing the street, and assess the need for and install Rectangular Rapid Flashing Beacons at high activity and uncontrolled crossing,
    - 25-to-42% reduction in pedestrian-vehicle crashes for actions that improve visibility
    - 47%reduction in pedestrian-vehicle crashes at locations where RRFBs are installed
    - Increases motorist yield rates to about 97% where RRFBs are installed

- **Action**: Provide dedicated physical spaces for pedestrians and bicyclists to use, including sidewalks, bike lanes and sidepaths. Data indicate that many fatal and injury crashes involving pedestrians and bicyclists occur because of the lack of proper separation from motorized vehicles. A high percentage of bicycle-vehicle crashes occur while a vehicle is over-taking a bicyclist along a road. Because of the size and speed differential, severe injuries often result.
    - 65-to-89% reduction in crashes involving pedestrians walking along the road by installing sidewalks or closing gaps in the sidewalk network
    - 30% reduction in bicyclist-vehicle crashes along two-lane roads by providing adequate shoulder width or a dedicated bicycle lane.

- **Action**: Narrow the road width or reduce the number of travel lanes help lower travel speeds and enhance pedestrian safety. Road diets can improve safety, calm traffic, result in more consistent speeds, and provide better mobility and access for all road users. Reduced road width also provides the opportunity to convert the street environment to function as a more “complete street” area that better accommodates all users. Road diets reduce the distance pedestrians have to traverse

when crossing the street, minimizing their exposure to vehicle traffic.
    - 19-to-47% reduction in crashes

- **Action**: Apply Pavement Friction Management at locations where vehicles are frequently turning, slowing, and stopping to prevent roadway departure, intersection, and pedestrian-related crashes. These include along horizontal curves, interchange ramps, intersection approaches, higher-speed signalized and stop-controlled intersections, crosswalk approaches. Specific locations throughout the region will be determined and the treatment will be applied at locations that would realize the most benefit.
    - 20% reduction in crashes at intersections
    - 48% reduction in crashes along horizontal curves

- **Action**: Enhance delineation at horizontal curves to alert drivers of a sharp curve and possible safety hazard that requires a reduction in travel speed.
    -
- **Action**: Install longitudinal center line rumble strips to alert drivers of an inadvertent crossing into the opposite lane
    - 44% and 64% reduction in fatal head-on crashes where center line rumble strips have been installed