CONNECTICUT

Regional Transportation Safety Plan

NORTHWEST HILLS





U.S. Department of Transportation Federal Highway Administration









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report terminology

TERM	DEFINITION
AADT	Average Annual Daily Traffic
AASHTO	American Association of State Highway Transportation Officials
ADT	Average Daily Traffic
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.
HRRR	High Risk Rural Roads
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
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
SHIP	State Highway Improvement Plan
SHSP	Strategic Highway Safety Plan
TIP	Transportation Improvement Program
VMT	Vehicle Miles Traveled

I introduction

In 2017 the Connecticut Department of Transportation published the Connecticut Strategic Highway Safety Plan (SHSP) to guide the State in reducing fatalities and serious injuries along CT roadways. The Northwest Hills Regional Transportation Safety Plan in congruence with the SHSP, serves as a road map and strategy to help the region and all twenty-one municipalities collaborate with the State to reach the same objective of reducing fatalities and injuries, increasing safety awareness and allowing the Towns and region to focus on their unique safety issues.

The approach used in this study uses similar methodology to the State plan, but on a local and regional level, reflecting the needs of the individual communities and the region as a whole. Each municipal report includes Town-specific crash data and incorporates local stakeholder input to develop countermeasures to mitigate fatal and injury crashes.

The study is data-driven, multimodal and multidisciplinary. This study outlines effective measures and goals to reduce potential future crashes by using a proactive approach. The study will better position the region to compete for safety funds and focus on regional data and local roads. 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 NHCOG RTSP is to reduce traffic fatalities and injuries by 15% between 2018-2022. This means a reduction from a three-year average of 535 fatalities and injuries to an annual average of 455 fatalities and injuries. Data from the Connecticut Crash Data Repository was analyzed, and municipal representatives were consulted to identify the top areas for focus to mitigate fatal and injury crashes.

The Regional Transportation Safety Plan is a living document. Federal regulations require an update for the SHSP every five years and this regional safety plan will follow the same update process.

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 regional action plan

Based on trends occurring in the Northwest Hills Region and from feedback provided by the Municipal representatives, the following countermeasures should be prioritized on a regional level. Local recommendations for each town are presented in the appendix of this report.

Edge line rumble strips with bicycle gaps: This treatment could be installed along certain roadways to prevent roadway departure crashes. The strips are milled and/or raised elements on the shoulder line that alert drivers through vibration and sound that they have left the travel lane. Placing rumble strips on the edge line instead of the shoulder provides adequate paved shoulder width for cyclists. Additionally, the bicycle gaps allow for areas that bikes can transition to the road as needed. The following roadways could consider edge line rumble strips with bicycle gaps if they are not already installed:

CT-69 (Burlington)
CT-118 (Harwinton)
CT-341 (Kent)
CT-63 (Litchfield)
CT-219 (New Hartford)
US-44 (New Hartford)
CT-4 (Torrington)
US-202 (Washington)
CT-4 (Goshen)
CT-112 (Salibury)
US-7 (North Canaan)
Lake Road (Warren)

Pedestrian Improvements: Because pedestrian fatal crashes are on the rise nation-wide, improving pedestrian infrastructure is imperative to all regional plans. High visibility crosswalks, rapid rectangular flashing beacons, advanced pedestrian warning signs, HAWK signals, pedestrian countdown signals, and sidewalk extension or installation are treatments that could improve pedestrian safety. The Northwest Hills regional bike and pedestrian countermeasure list (pages 22-28 c) provides the exact location and corresponding countermeasures for mitigating pedestrian crashes.

Speed Mitigation: Speed is a major contributor to frequency and severity of crashes and is a primary concern for the Northwest Hills Region. Speed mitigation through enforcement, traffic-calming countermeasures and dynamic speed feedback signs should be considered at the following locations:

US-44, US-202 (New Hartford) US-7 (Canaan) CT-199, US-202 (Washington) US-44 CT-183 (Winchester) US-44 near Salisbury School and Downtown (Salisbury) CT-112 Lime Rock Road (Salisbury) Stafford Road East, CT-4, CT-69 and CT-179 (Burlington) South Canaan Road (Canaan) Litchfield Road, CT-4 (Harwinton) Segar Mountain Road (Kent) Goshen Road, CT-118 and Bantam Road (Litchfield) Main Street and US-7 (North Canaan) Workman Ave, US-202, CT-4, Kennedy Drive, New Harwinton Road, East Main Street, Highland Avenue, South Main Street (Torrington) US-44 and CT-183 (Winchester)

Regional Action Plan Continued



3 stakeholders

Stakeholders engaged in the process and development of the NHCOG RTSP include representatives from the four E's. In order to ensure stakeholder input, the NHCOG member Towns 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:

NHCOG MEMBER TOWNS

Barkhamsted **Burlington** Canaan Colebrook Cornwall Goshen Hartland Harwinton Kent Litchfield Morris New Hartford Norfolk North Canaan Roxbury Salisbury Sharon Torrington Warren Washington

Winchester



NHCOG ADVISORY COMMITTEE

Don Stein, Barkhamsted

Tom Weik, Morris

Mike Criss, Harwinton

Craig Nelson, Warren

Raz Alexe, Litchfield

Rick Lynn, NHCOG





NHCOG MEMBER TOWN REPRESENTATIVES

Barkhamsted, Don Stein Burlington, Ted Shafer Canaan, Kevin Moynihan Colebrook, Tom McKeon Cornwall, Gordon Ridgway Goshen, Bob Valentine Hartland, Wade Cole Harwinton, Michael Criss Kent, Bruce Adams Litchfield, Leo Paul Morris, Tom Weik New Hartford, Dan Jerram Norfolk, Matthew Riska North Canaan, Charles Perotti Roxbury, Barbara Henry Salisbury, Curtis Rand Sharon, Brent Colley Torrington, Elinor Carbone Warren, Craig Nelson Washington, Mark Lyon Winchester, Robert Geiger

4 regional overview



The Northwest Hills Region is a predominantly rural area situated in the northwest corner of CT, bordered by Massachusetts to the north and New York to the west. It is composed of twenty-one municipalities set among rolling hills and higher peaks toward the north and west. Torrington is the urban hub of the region, located in the center of the area. The area is a popular destination for tourists due to its historical architecture, fall foliage and Town greens. It attracts seasonal visitors and is also a popular second home destination. Overall the population of the region is aging and declining, due to young people leaving the area. According to the NHCOG Plan of Conservation and Development between 2010 and 2015 the region lost 3,500 residents and they predict that by 2025 28% of the region will be of retirement age.

The topography, aging population, limited law enforcement and higher percentage of tourists create a unique challenge for traffic safety. Many NHCOG member Town representatives reported that the combination of horizontal and vertical curvature and the high volume of out-of-Town drivers unfamiliar with the local roadway geometry contributed to crashes. Speeding was reported as a systemic issue with limited enforcement resources. Senior populations also present a unique subset of driver related concerns that affects the region.

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 the state system most likely due to the corresponding higher traffic volumes. All roads, except limited access highways, were included in this study.



5 nhcog rtsp planning process

The initial phase of developing the NHCOG Regional Transportation Safety Plan included the collection and analysis of 2015-2017 crash data and the individual meetings with chief elected officials, EMS, law enforcement agents, public works directors, and other municipal stakeholders with knowledge of local safety issues and the dedication to improving safety and reducing crashes. Meetings were arranged with each of the 21 municipalities to discuss current trends and to document their input to be included in the plan. Prior to each municipal meeting, 2015-2017 fatal and injury crash data for each respective NHCOG Town was collected and analyzed.

5.1 Data Collection and Methodology

5.1.1 Data Collection

Crash data for the Northwest Hills Council of Governments (NHCOG) region was downloaded from the Connecticut Crash Data Repository. This repository is developed from state and local police crash incident reports and is maintained through the University of Connecticut. The query tool was used to search by the appropriate date range, crash location, crash severity, and dataset.

The data was retrieved in three different table formats: by crash, by vehicle, and by person. Crash data excluded all limited access roads within the three-year data period from January 1, 2015 to December 31, 2017. The crash data analyzed consisted of only injury and fatal crashes after the removal of property damage only crashes. Data-Driven intersection locations were identified with ArcGIS using the integrate and collect events tools. The resulting data set was then spatially joined to identify where crashes clustered at intersections. If an intersection had three or more crashes, it was considered a data-driven intersection in the region.

Data-Driven corridor locations were identified by a critical review of crash frequency on road segments at each Town's level. Additional corridor locations were identified after meeting with Town representatives. If an intersection had three or more crashes, it was considered a high crash intersection in the region and included in the Town maps. Additional intersection and corridor locations were identified by Town representatives due to the potential safety concerns or due to historic site-specific safety issues not reflected in the three years of data analyzed. These were not plotted on the crash maps but were included in the Town reports.

Maps of each Town in the region were made to discuss high crash corridors with Town officials across NHCOG. These meetings were an opportunity to receive Town input on how they perceived this snapshot of data with their experience in local government and as residents of each Town. In many cases, officials confirmed our data and gave specific insights into roadway and behavioral characteristics that were causing these locations to be unsafe. Some crashes tended to be weather or behavioral related rather than due to deficiencies in the configuration and condition of the roadway. The input from Town representatives influenced the development of countermeasure recommendations for these plans.

5.1.2 Field Work

After each local stakeholder meeting the regional transportation safety plan team conducted fieldwork at various crash sites, based on data and/or the input from Town representatives. Field site assessments included notes of road geometry, road conditions, and driver behavior while in the field. These field notes and pictures were reviewed with data from police incident reports to determine a series of countermeasures at priority locations. Manner of crash was also used to determine if road geometry was the most contributing factor for crashes at the top 40 locations in the region.

Each Town report was written with a summary of demographic data, and relative location in the region. The Town reports include the meeting summary in the Town Comments section.

Field reviews were completed based on the priority locations of the Town representatives and the crash data. A summary of the field review and images taken are included in the Field Study section of the Town reports. Countermeasure Tables are included at the end of each Town report to suggest safety improvements that could be considered in each NHCOG Town.

The top 40 crash locations in the region required more detailed analysis to develop specific countermeasure recommendations. For a more detailed description of this process please see the NHCOG Top 40 Crash Locations section of this report.

FIVE PERFORMANCE TARGETS

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

- Number of Fatalities
- Rate of Fatalities per 100 Million Vehicle Miles Traveled (VMT)¹
- Number of Serious Injuries
- Rate of Serious Injuries per 100 Million VMT
- Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries (combined total)

These performance metrics will be reevaluated on a five-year average. The NHCOG Regional Transportation Safety Plan has reviewed these same performance metrics and establish the NHCOG 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 NHCOG by 2022. In order to reach this goal, the RTSP includes estimated completion time (short, medium, and long) and possible cost and funding sources.

TABLE 1: 2015-2017 TOTAL CRASH AND FATAL INJURY BY TOWN

Town	Total	Fatal Injury	Injury
Barkhamsted	65	2	63
Burlington	88	1	87
Canaan	25	2	23
Colebrook	10	0	10
Cornwall	27	0	27
Goshen	31	0	31
Hartland	18	1	17
Harwinton	72	3	69
Kent	40	1	39
Litchfield	140	2	138
Morris	29	0	29
New Hartford	116	5	111
Norfolk	28	0	28
North Canaan	41	3	38
Roxbury	30	0	30
Salisbury	69	2	67
Sharon	40	0	40
Torrington	569	6	563
Warren	15	1	14
Washington	58	3	55
Winchester	95	0	95
Total in NHCOG	1606	32	1574

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2015-2017 NHCOG Fatal and Injury Crashes by Town

All Crashes	2015	2016	2017
Barkhamsted			
Fatal Injury (K)	1	1	0
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	10	14	11
Possible Injury (C)	9	9	8
lotal	21	24	20
Burlington			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	1	0	4
Suspected Minor Injury (B)	13	16	13
Possible injury (C)	14	14	12
TOLAI	29	50	29
Canaan			
Fatal Injury (K)	1	1	0
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	3	3	5
Total	10	7	2
			-
COIEDROOK	0	0	4
Suspected Serious Injury (A)	0	0	1
Possible Injury (C)	1	2	5 1
Total	1	4	5
Communell	_		-
Cornwall	1	1	1
Suspected Minor Injury (R)	1	1	1
Possible Injury (C)	4	3	3
Total	9	8	10
Coshon			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (A)	2	5	6
Possible Injury (C)	4	4	9
Total	6	10	15
Hartland			
Fatal Injury (K)	0	1	0
Suspected Serious Iniury (A)	0	0	2
Suspected Minor Injury (R)	2	3	5
Possible Injury (C)	0	3	2
Total	2	7	9

	2015	2016	2017
Harwinton			
Fatal Injury (K)	1	2	0
Suspected Serious Injury (A)	1	1	1
Suspected Minor Injury (B)	12	17	12
Possible Injury (C)	8	7	10
Total	22	27	23
Kent			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	6	11	11
Possible Injury (C)	4	1	4
Total	11	13	16
Litchfield			
Fatal Injury (K)	0	2	0
Suspected Serious Injury (A)	3	3	2
Suspected Minor Injury (B)	10	25	26
Possible Injury (C)	23	20	26
Total	36	50	54
Morris			
Suspected Minor Injury (B)	4	7	5
Possible Injury (C)	5	6	2
Total	9	13	7
New Hartford			
Fatal Injury (K)	0	2	3
Suspected Serious Injury (A)	5	1	1
Suspected Minor Injury (B)	18	23	24
Possible Injury (C)	14	14	11
Total	37	40	39
Norfolk			
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	6	2	9
Possible Injury (C)	/	2	0
Total	14	5	9
North Canaan	-	-	-
Fatal Injury (K)	2	1	0
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	8	8	7
Possible Injury (C)	4	5	5
Total	14	15	12

	2015	2016	2017
Roxbury			
Suspected Minor Injury (B)	7	6	8
Possible Injury (C)	1	5	3
Total	8	11	11
Salisbury			
Fatal Injury (K)	0	2	0
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	12	12	13
Possible Injury (C)	10	10	8
Total	23	24	22
Sharon			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	11	9	5
Possible Injury (C)	4	4	6
Total	15	13	12
Torrington			
Fatal Injury (K)	3	1	2
Suspected Serious Injury (A)	9	12	15
Suspected Minor Injury (B)	85	93	88
Possible Injury (C)	81	96	84
Total	178	202	189
Warren			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	5	1	3
Possible Injury (C)	1	1	2
Total	7	2	6
Washington			
Fatal Injury (K)	0	0	3
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	11	14	10
Possible Injury (C)	4	8	6
Total	16	23	19
Winchester			
Suspected Serious Injury (A)	3	1	5
Suspected Minor Injury (B)	17	9	16
Possible Injury (C)	22	8	14
Total	42	18	35
NHCOG Totals	510	546	550

6 identified top crash locations

Methodology for selecting the top 80 crash locations: The crash data is subdivided into four general codes. K= Fatality, A= Suspected Serious Injury, B= Suspected Minor Injury, and C= Possible Injury.

In order to select the top 80 motorized vehicle crash locations the K, A, B, C codes were assigned severity ranking weighting scores of 12, 6, 3, 1 and Equivalent Property Damage Only (EPDO) amounts. For example, 1 K (fatal) crash is equivalent to 949 EPDO crashes since the societal cost of a fatality (\$16,185,746 as used by CT DOT) is 949 times the cost of a Property Damage Only crash (\$17,061 as used by CT DOT).

TABLE 2: K, A, B, C SEVERITY RANKINGS

Severity	Rank	Crash Cost ¹	EPDO Score
К	12	\$16,185,746	949
А	6	\$938,535	55
В	3	\$283,430	17
С	1	\$179,924	11

Each corridor and intersection were re-sorted using the EPDO score rather than the prior 12, 6, 3, 1 method. The corridors were sorted from highest to lowest based on the EPDO Severity per mile year, selecting top 27 corridors as the EPDO scores dropped after that. The intersections based on the EPDO year were categorized from highest to lowest. The study considered the top 30 intersections, regardless if they overlapped with the 27 corridors in the prior step to identify and address the most critical intersections.

The next highest 22 intersections that did not overlap with any corridor to account for other intersections that weren't captured in the 27 corridors. Then a final intersection was included because it had an extremely high crash cost rate for the few vehicles using that intersection.

Top 80 Motorized Crash Locations, 2015-2017

TOWN	ROAD 1	ROAD 2 (IF INTERSECTION)	NUMBER OF K A B C CRASHES
Barkhamsted	US-44	W West Hill Road	7
Barkhamsted	CT-181	Goose Green Road	3
Barkhamsted	US-44	NA	20
Burlington	CT-179	Sand Bank Hill Road	4
Burlington	CT-4	CT-69	5
Burlington	CT-69	Sawmill Road	3
Burlington	CT-4	NA	10
Burlington	CT-69	NA	3
Burlington	CT-4	NA	8
Canaan	US-7	Beebe Hill Road	3
Canaan	US-7	NA	3
Canaan	US-7	NA	6
Goshen	CT-4	CT-63	4
Hartland	CT-20	Hogback Road	3
Harwinton	CT-4	CT-72	3
Harwinton	CT-118	NA	6
Kent	CT-341	NA	6
Litchfield	CT-118	Thomaston Road	7
Litchfield	CT-116	Fern Avenue	3
Litchfield	US-202	Brush Hill Road No 2	3
Litchfield	CT-63	West Street	5
Litchfield	CT-63	US-202	4
Litchfield	CT-63	NA	3
Morris	CT-109	Stoddard Road	3
New Hartford	CT-219	Driveway	3
New Hartford	CT-219	US-44	4
New Hartford	US-202	East Cotton Hill Road	3
New Hartford	US-44	NA	12
New Hartford	CT-219	NA	8
New Hartford	US-202	NA	20
New Hartford	US-44	NA	9

¹ Federal Highway Administration Crash Costs for Highway Safety Analysis, 2018, Washington DC. Federal Highway Administration.

Top 80 Motorized Crash Locations, 2015-2017 Continued

TOWN	ROAD 1	ROAD 2 (IF INTERSECTION)	NUMBER OF K A B C CRASHES
North Canaan	US-44	NA	10
North Canaan	US-7	NA	6
Salisbury	CT-112	NA	9
Torrington	Winsted Road	Kennedy Drive	8
Torrington	CT-4	Butler Street	4
Torrington	Oak Avenue	East Albert Street	4
Torrington	US-202	South Main Street	16
Torrington	US-202	Hartford Avenue	7
Torrington	Kennedy Drive	Alvord Park Road	7
Torrington	US-202	Shopping Plaza	8
Torrington	US-202	Torringford West St	11
Torrington	CT-272	CT-4	9
Torrington	CT-4	Prospect Street	6
Torrington	US-202	Willow Street	6
Torrington	CT-202	CT-8	9
Torrington	US-202	CT-8	8
Torrington	US-202	Harrison Rd/ Torringford E. Rd	7
Torrington	CT-4	Torringford West St	5
Torrington	Pearl Street	Prospect Street	6
Torrington	US-202	East Elm Street	7
Torrington	Church St	Migeon Avenue	7
Torrington	High St/ Albert St	Litchfield Street	3
Torrington	Main Street	CT-4	7
Torrington	CT-4	Migeon Avenue	7
Torrington	Greenwoods Road	Winsted Road	5
Torrington	US-202	Town Hill Road	5
Torrington	US-202	Tioga Street	4
Torrington	Kimley Street	Winthrop Street	4
Torrington	Main Street	Wadham's Avenue	3
Torrington	Wolcott Avenue	Migeon Avenue	3
Torrington	US-202	Charles Street	4

τοψΝ	ROAD 1	ROAD 2 (IF INTERSECTION)	NUMBER OF K A B C CRASHES
Torrington	Harwinton Avenue	Hill Street	3
Torrington	Albert Street	NA	18
Torrington	CT-4	NA	4
Torrington	Winsted Road	NA	68
Torrington	US-202	NA	130
Torrington	CT-4	NA	56
Torrington	Highland Avenue	NA	15
Torrington	Kennedy Drive	NA	25
Warren	CT-45	NA	4
Washington	CT-199	Frisbie Road	4
Washington	CT-109	Driveway	3
Washington	US-202	NA	7
Winchester	US-44	Chestnut Street	3
Winchester	CT-183/US-44	Bridge Street	6
Winchester	US-44	CT-183	5
Winchester	US-44	CT-8	6
Winchester	US-44	NA	31
Winchester	US-44	NA	5



TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY		
	New Hartford Boad	d US Route (US 44) and Local Road	Intersection I	Skewed Intersect and Steep Grade	Skewed Intersection and Steep Grade of	Enhance Intersection Warning Signs	Low- Medium	State	
Barkhamsted (US-44) and West Hill Road	(US-44) and West Hill Road			Intersection Leg /High Speeds along US-44	Roadway and Lane reconfiguration	Medium- High	State		
			Dark, not Lighted Con- ditions	Roadway Illumination	Medium	Town or State			
New Hartford Poa	New Hartford Road	4	Corridor 78	High Curve Crashes	Roadway Design Improvements at curves West of Ripley Hill Road	Low	State		
Barkhamsted	(Between Old North Road and River Road)	US Route (US-44)		Crashes during Unlight- ed Conditions	Roadway Illumination along entire corridor, Espe- cially at Intersections	Medium	Town or State		
		tford Road m and Hill		Rear End Crashes	Enhance Intersection Warning Signs	Low- Medium	State		
	New Hartford Road at Old Farm and East West Hill						Rear End Crashes	Left Turn lanes at Old Farm and East West Hill Road	Medium- High
Burlington	Spielman Highway (between Library	State Road (CT-4)	Corridor 83	Intersection Crashes at CT-4 and Savarese Lane	Enhance Warning Signs	Low- Medium	State		
burnington	Lane and Covey Road)	ne and Covey Pad)		Speeding	Dynamic Speed Feedback Signs	Low	Town		
		anton Road (.5 iles south of pielmanHighway nd just north of prd Road)	Corridor 84	Roadway Departure Crashes	Edge line Rumble Strips and stripes with bicycle gaps	Low	State		
D. diaman	Canton Road (.5 miles south of SpielmanHighway and just north of Ford Road)			Corridor 84	Head-on and Side- swipe Crashes	Centerline Rumble Strips and Stripes	Low	State	
Burlington					Bicyclist and Motorized Vehicle Conflict/Crash	Buffered Bike Lane	Low	Town	
						Crashes under Dark-not	Retroreflective Pavement Markings	Low	State
				Lighted Conditions	Roadway Illumination	Medium	Town or State		
Burlington Burlington	Milford Street (.12 miles west of East Chippens Hill Road and .11 miles east of East Chip- pens Hill Rd)	Milford Street (.12 miles west of East Chippens Hill State Road Road and .11 miles (CT-69)	Corridor 86	e Road 69) Corridor 86	Roadway Departure Crashes	Edge line Rumble Strips and stripes with bicycle gaps	Low	State	
					Speeding	Dynamic Speed Feedback Signs	Low	Town	
		pens Hill Rd)	ens Hill Rd)				No-light Crash Condi- tions	Roadway Illumination	Medium

TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY
		State Road and Local Road		Lane and Roadway Departure	Center Line Rumble Strips and stripes	Low	State
Burlington	CT-179 and Sand Bank Hill Road		Intersection AU	Horizontal Curvature at Intersection	Enhance warning signs	Low- Medium	State
				Speeding	Dynamic Speed Feedback Signs	Low	Town
	US-7 and Beebe Hill	US Route and Local		Failure to stop at Stop Sign	Add flashers to advanced stop sign ahead Sign on Beebe Hill Road	Low- Medium	Town
Canaan	Road	Road	Intersection DB		Stop Bar	Low	State
			Pedestrian Crossing	Advanced Pedestrian Warning Sign on US-7	Low	State	
	South Canaan Road (.04 miles south of Page Rd to .16 miles north of Barnes Rd)	n Road ith 1.16 US Route (US-7) f	Corridor 109	Intersection Crashes	Enhance Advanced Warn- ing Signs	Low- Medium	State
Canaan				Speeding	Dynamic Speed Feedback Signs	Low	Town
	South Canaan Road	US Route (US-7)		Dark not Lighted Crash	Roadway Retroreflective Pavement Markings	Low	State
	(between Under			Conditions	Roadway Illumination	Medium	Town or State
Canaan	Mountain Road and .24 miles south of		Corridor 72	Intersection Crashes	Enhance Warning Signs	Low- Medium	State
	Stein Lane)			Failure to Stay in Lane	Centerline Rumble Strips and Stripes	Low	State
Hartland	Riverton Road and	verton Road and (CT-20) and	Intersection AV	Advanced Warning Sign shaded by tree coverage	Add 12" Flashers to Advanced Warning Signs	Low	State
		Local Road		Single vehicle Crashes- Roadway Departures	Roadway Illumination	Medium	Town or State
	Litchfield Road			Speeding	Dynamic Speed Feedback Signs	Low	Town
Harwinton	(from the CT-8 North off-ramp to	State Road (CT-118)	Corridor 69	Roadway Departures	Edge line rumble strips and stripes with bicycle gaps	Low	State
	Orchard Hill Road			Side Swipe Crashes	Centerline rumble strips and stripes	Low	State
Harwinton	Burlington Road	on Road yville Road/ uck Lane***	Intersection DC	Intersection Crashes	Enhance warning signs	Low- Medium	State
Harwinton	Woodchuck Lane***			Speed	Dynamic Speed Feedback Signs	Low	Town

TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY
	Segar Mountain			Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State
Kent	Road (between Cobble Road and	State Road (CT-341)	Corridor 57	Speeding	Dynamic Speed Feedback Signs	Low	Town
	South Road)			Crashes at intersection with South Road	Enhance Warning Signs	Low	State
Litchfield				Speeding	Dynamic Speed Feedback Signs	Low	Town
	Goshen Road (between Norfolk Road and 13 miles	State Road	Corridor 66	Driver Fatigue and Road Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State
	south of Sarcka Lane)	(CT-63)		Intersection Crash	Enhance Warning Signs	Low- Medium	State
				Dark-not lighted Crash Conditions	Roadway Illumination	Medium	State
Litchfield	CT-118 and Fern Avenue**	State Road and Local Road	Intersection AP	Intersection Crashes	Enhance Warning Signs CT-118 at the Fern Avenue and Chestnut Hill Road	Low- Medium	State
				Speeding	Dynamic Speed Feedback Signs	Low	Town
		US Route (US-202)	Intersection CV	Roadway Geometry	Horizontal Curve Chevrons	Low	State
				Speeding	Dynamic Speed Feedback Signs	Low	
Litchfield	Bantam Road and Brush Hill Road No. 2**			Travel Lane Departure	Edge line rumble strips with bicycle gaps	Low	State
				Dark not lighted Crash	Roadway illumination	Low	State
				Conditions	Retroreflective Pavement Markings	Low	State
				Rear-end Crashes at Intersections	Enhance Intersection Warning Signs approach- ing intersections of US-202 and East Cotton Hill Road	Low- Medium	State
New Hartford	(between Cotton Hill Road and .25	US Route	Corridor 79	Speeding	Dynamic Speed Feedback Signs	Low	Town
	miles east of Town Hill Road)**	(US-202)		Pedestrian Safety	High Visibility Crosswalks at US-202 and East Cotton Hill Road	Low- Medium	State
				Distracted Driving	Edgeline rumble strips and stripes with bicycle gaps	Low	State

TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY
	Reservoir Road				Dynamic Speed Feedback Signs Entering Horizontal Curves	Low	Town
New Hartford	Bridge Road and Farmington River	State Road (CT-219)	Corridor 80	Roadway Departure	Edge line rumble strips and stripes with bicycle gaps	Low	State
	Turnpike)				High friction surface treat- ment along entire corridor	Low-High	State
				Roadway Departure	Edge Line Rumble Strips and stipes with bicycle gaps (East of CT-219 (Res- ervoir Road)	Low	State
	Main Street				Town Gateway Treatments	Low	Town
New Hartford (between Church Street North and .1 mile east of Wickett Street)**	US Route (US-44)	Corridor 81	Speed	Dynamic Speed Feedback Signs in DownTown	Low	Town	
	Wickett Street)**			Rear-End Crashes	Enhance Warning Signs Intersection at approach for US-44 and CT-219	Low- Medium	State
			Pedestrian fatality	Sidewalks along gaps in corridor	Medium- High	Town or State	
N	Main Street (Between River Run Condominiums and Wickett Street)**	Street veen River Run US Route ominiums and (US-44) ett Street)**	Corridor 82	Speeding	Dynamic Speed Feedback Signs Northbound entering Town	Low	Town
New Hartford				Head-on Crashes	Centerline Rumble Strips and stripes along Entire Corridor	Low	State
				Pedestrian	Sidewalks along entire Corridor	Medium- High	Town or State
					Enhance Rail Crossing Signs	Low	State owned railroad
North Canaan	Main Street (Between Church Street and 15 miles	US Route	Corridor 97	Front to Rear Crashes	Lane Reconfiguration -ded- icated left turn lanes on Main Street	Low-High	State
	east of Elm Street)			Speeding	Dynamic Speed Feedback Signs	Low	Town
				speeding	Traffic Calming	Low-High	State
North Canaan	High Street (.2miles north of Grace Way and .1 miles south of Lower Road)	igh Street 2miles north of race Way and miles south of ower Road)	Corridor 104	Angle crashes / Horizontal Curvature	Enhance Intersection ahead warning signs along US-7 approach to Sand Rd	Low	State
				Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State
				Speeding	Dynamic Speed Feedback Signs	Low	Town

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<u> Top 40 Mot</u>	torized Crash Loca	ations and Count	ermeasures b	y Town, 2015-2017	own, 2015-2017 (Referenced in NHCOG 2016 Regional Transportat			
TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY	
	Lime Pock Pood			Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State	
Callaba	(between Race	State Road	Cardida 51	Speeding	Dynamic Speed Feedback Signs	Low	Town	
Salisbury	miles east of Salm-	(CT-112)	Corridor 51	Rear-End Crashes	Enhance Warning Signs	Low- Medium	State	
	on Kill Road)			Crashes under dark and dark-lighted conditions	Roadway Illumination	Medium	Town or State	
		eet Ie and ast US Route (US-202)	Corridor 89	Speeding	Dynamic Speed Feedback Signs	Low	City	
Torrington	East Main Street (Between Turner Avenue and			Angle and Rear-end Crashes/Glare	Traffic Signal Retroreflec- tive Backplates at intersec- tions along corridor	Low	State	
	Street)**			Cyclist and Pedestrian Crashes	Shared-Use Paths east of CT-8	Medium- High	State	
				Pedestrian	High Visibility Crosswalk	Low- Medium	State	
			Angle and Rear-end Crashes	Restricted Left-Turn Phase	Low	City		
	Winsted Road/Main	Local Road	Corridor 90	Roadway Departure Crashes	Road Diet (narrow lane markings)			
Torrington	Street (Between Lawton Street an.03			Fixed Objects near roadway		Low	City	
-	miles north of Ken-			Pedestrian				
	nedy Drive)			Glare	Signal Retroreflective Backplates	Low	City	
				Pedestrian and Motor- ized Crashes	Sidewalks	Medium- High	City	
				Glare	Retroreflective Backplates	Low	State	
Torrington	New Harwinton	State Road (CT-4)	Corridor 91	Speed	Dynamic Speed Feedback Signs	Low	City	
	Roady Entit Street			Crashes unde r dark- ened conditions	Roadway Illumination	Medium	City or State	
				Speeding	Dynamic Speed Feedback Signs	Low	City	
	Highland Avenue				Striped Crosswalks	Low	City	
Torrington	Street and Migeon Avenue)	et and geon Avenue)	Corridor 92	Pedestrians	Sidewalks	Medium- High	City	
	wigeon Avenue)			Crashes in dark lighted conditions	Roadway Illumination	Medium	City	

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TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY			
				Glare	Traffic Signal Retroreflective Backplates	Low	City			
Torrington	Kennedy Drive (Between	Local Road	Corridor 93	Sight Distance	Advanced Warning Signs with 12" Flashers	Low- Medium	City			
	East Main Street)			Roadway Departures	Shoulder Rumble Strips	Low	City			
				Speed	Dynamic Speed Feedback Signs	Low	City			
					Stripe Edge lines	Low	City			
	Albert Street			Pedestrians and Cyclists	Pedestrian and Bicycle Warning Signs	Low	City			
Torrington	Litchfield Street and CT-8)	Local Road	Corridor 96	Pedestrian Crossings	High-Visibility Crosswalks	Low- Medium	City			
			Rear End Crashes	Road.Diet (narrow lane markings)	Low	City				
Torrington	Goshen Road (Between Pothier Rd.	Goshen Road (Between Pothier Rd.	Goshen Road (Between Pothier Rd.	Goshen Road (Between Pothier Rd.	State Poad (CT-4)	Corridor 110	Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State
and .12 miles east of Wright Rd)			Dark lighted crash conditions	Roadway Illumination	Medium	Town or State				
Greenwoods Road	Greenwoods Road and	Both Local Roads	Intersection BW	Glare	Traffic Signal Retroreflec- tive Backplates	Low	City			
	Winsted Road			Angle and Rear End Crashes	Advanced Warning Signs with 12" Flashers	Low- Medium	City			
Torrington	Kinney Street and	Both Local Roads	Intersection AB	Eastern leg is skewed/ sight distance for approaching vehicles along eastern leg	Advanced Warning Sigs with 12" Flashers along Winthrop Street Eastern leg	Low- Medium	City			
	wintinop street			Motorized and Non- motorized Conflict	Shared Lane Markings along Winthrop Street	Low	City			
Torrington	Pearl Street and	Both Local Poads	Intersection E	Tight turning Radii	Stop bars and crosswalk need repainting along the north, east, and south legs	Low	City			
lonnigton	Prospect Street	Both Local Roads	Intersection E	Glare	Traffic Signal Retroreflec- tive backplates	Low	City			
	Litchfield Turppike			Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps**	Low	State			
Washington	(.13 miles west of Mygatt Road and	Litchfield Turnpike (.13 miles west of Mygatt Road and 04 miles east of Flirtation Avenue)**	Corridor 108	Rear End Crashes	Enhance intersection ahead sign	Low- Medium	State			
-	.04 miles east of			Road deterioration	Repaving	Low-High	State			
	Flirtation Avenue)**			Speeding	Dynamic Speed Feedback Signs	Low	Town			

Local Projects in the NHCOG Regional Transportation Plan, 2016 *CT DOT Future Project

TOWN	LOCATION	ROAD CLASSIFICATION	ID	ISSUE	COUNTERMEASURE	соѕт	RESPONSIBILITY
				Speeding	Dynamic Speed Feedback Signs	Low	Town
Washington	CT-199 and	State Road and	Intersection CC	Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State
washington	Frisbie Road	Local Road	Intersection CC	Lane Departure	Centerline Rumble Strips and stripes	Low	State
				Dark-not lighted con- ditions	Roadway illumination	Medium	Town or State
Lake Road (between			Roadway Departure Crashes	Edge line rumble strips and stripes with bicycle gaps	Low	State	
Warren	.2 miles south of Town Hill Road and 03 south of Kent	State Road (CT-45)	Corridor 59	Asleep and fatigued Driving	Longitudal Centerline Rumble Strips and stripes	Low	State
Road)**	Road)**			Dark-not Lighted Con- ditions	Roadway Illumination	Medium	Town or State
US-44 South Main Street (between Union Street and Strong Terrace)			Angle and Rear-end crashes	Restricted left Turn Phase at Bridge Street Intersec- tion	Low	State	
	Street (between Union Street and Strong Terrace)	US Route	Corridor 73	Glare at Bridge Street Intersection	Retroreflective backplates on Signal at Signalized Intersections	Low	State
				Crashes at McDonald's Driveway	Lane Reconfiguration at McDonalds Driveway	Low-High	McDonalds
Winchester US-44 Main Street (between High Street and Division Street)** US-44 and Hinsdale, Division, Spencer	US-44 Main Street (between High Street and Division Street)**	US Route	Corridor 75	Pedestrian Safety	Pedestrian Median Refuge Island at select locations in corridor	Medium	State
	US-44 and Hinsdale, Division, Spencer			Turning conflicts/ Skewed Intersection/ Sight Distance	Lane reconfiguration at Hinsdale/Division/ Spencer intersection	Medium- High	State
	New Hartford Road	US Route/		Rear End Crashes	Enhanced Warning Signs	Low- Me- dium	State
Winchester	and Old Hartford Road	(US-44 and	Intersection BV	Speeding	Dynamic Speed Feedback	Low	Town
		CI-183)		Increased traffic	Restricted left-Turn Phase	Low	State
Winchester	S. Main Street and James H. Darcy Memorial Hisburgy	Main Street and Imes H. Darcy lemorial Highway amp	Intersection J	Glare	Traffic Signal Retroreflec- tive backplates on all signal heads	Low	State
	Memorial Highway Ramp		intersection y	Rear end crashes along ramp approaches	Enhanced Warning Signs for ramp approach to the intersection	Low- Medium	State

Top 80 Bike and Pedestrian Crash Location Countermeasures

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Barkhamsted	E West Hill Rd at Eddy Rd (Local Roads)	Bicyclist	Bicyclist adhered to rules of the road and was wearing reflective clothing. Driver hit bicyclist at intersection as cyclist travelled north on East West Hill Road.	Check for sight distance and vegetation from Eddy Road onto East West Hill Road	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Burlington	Rock Rd and Charlois Way (Local Roads)	Bicyclist	Bicyclist struck from behind while making a left-turn. No shoulder or edge lines. Narrow Road widths.	Stripe edge lines	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Burlington	CT-4 and CT-179 (State Routes)	Bicyclist	Same direction sideswipe crash. Pavement and pavement markings are in fair condition.	Restripe Pavment Markings MUTCD R4-11 (Bicycles May Use Full Lane) MUTCD W11-1 Sign (Bicycle Warning)	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Burlington	Strafford Rd at E Shore Boulevard (Local Roads)	Bicyclist	Driver hooked bicyclist while making right hand turn from Stafford onto East Shore Boulevard. Adequate sight distance, clear light conditions. Shoulder 4-5 feet.	Dynamic Speed Feedback Signs	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Canaan	US-7 at Beebe Hill Rd (US Route and Local Road)	Pedestrian	Pedestrian hit crossing US-7. The crosswalk across US-7 is in good condition. There are two MUTCD S1-1 (School Crossing Assembly) signs at the crosswalk. Horizontal Curvature along US-7 impedes sight distance and speed is posted at 40mph.	Add Flashers to the Crosswalk Ahead sign. Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. High Visibility Speed Enforcement. USLIMITS2
Goshen	lves Rd (Local Road) east of Crossman Road and west of Brynmoor Drive	Pedestrian	Pedestrian hit crossing Ives Road during daylight hours. Residential neighborhood with no sidewalks or edge lines.	Add edge lines or sidewalks Dynamic Speed Feedback Signs	Watch for Me CT Campaign (See and be Seen)
Hartland	Riverton Rd (State Route)	Pedestrian ATV	Roadway Departure Crash into pedestrian along Horizontal curvature.	High Friction Surface Treatment	Multimodal safety Campaign
Litchfield	West St (US Route) and North Street (State Route)	Pedestrian	Daylight Raining Crash Conditions. Motorist reversing when and hit pedestrian.	Back-in Angle Parking. Repaint Crosswalks. MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign
Morris	CT-61 (State Route) and North St (Local Road)	Bicyclist	Bicyclist had right of way, struck by car making left turn. The shoulders on North St are narrow. There are narrow shoulders on CT-61.	MUTCD R4-11 (Bicycles May Use Full Lane), MUTCD W11-1 sign (Bicycle Warning)	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
New Hartford	US-202 (US Route at E Cotton Hill Rd (Local Road)	Pedestrian	There are no sidewalks or pedestrian signals along US-202 or E Cotton Hill, narrow shoulders on US-202 and no shoulders on E Cotton Hill Rd. Crash under Dark not lighted conditions.	Dynamic Speed Feedback Signs Roadway Illumination MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign High Visibility Speed Enforcement USLIMITS2

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
New Hartford	Main Street (US Route 44) at Church St (Local Road)	Pedestrian	Day light conditions. Pedestrian on shoulder walking, driver cited as aggressive. There are no sidewalks and shoulders are narrow on US-44.	Dynamic Speed Feedback Signs. MUTCD W11-2 sign (Pedestrian Warning). MUTCD W11-14 sign (Bicycle/ Pedestrian Warning).	Watch for Me CT Campaign. High Visibility Speed Enforcement USLIMITS2
New Hartford	Main Street (US Route 44) between CT-219 and Wickett Street	Pedestrian	Driver had electronic device/lane departure crash resulting in striking two pedestrians on sidewalk. Narrow sidewalk on one side and narrow shoulders. Low curb reveal. The posted speed limit is 25mph.	No rumble strips - common bike route. Widen sidewalk if possible. Add granite curbing or flexible bollards between the sidewalk and the roadway. Dynamic Speed Feedback Signs.	Distracted Driving High Visibility Enforcement. Distracted Driving Awareness Campaign. Watch for Me CT Campaign.
New Hartford	Main Street (US Route 44) and CT-219 (State Route)	Bicyclist	Bicyclist struck at intersection. There are shoulders on both intersecting roads. Pavement and pavement markings are in good condition.	MUTCD R4-11 (Bicycles May Use Full Lane) MUTCD W11-1 sign (Bicycle Warning) Gateway treatments	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Salisbury	Main Street (US Route 44) at Salmon Kill Rd (Local Road)	Pedestrian	Pedestrian hit while crossing US-44. Pedestrian physically impaired. There are narrow shoulders on US-44. Speed transition zone.	Gateway Treatments. Dynamic Speed Feedback Signs	Watch for Me CT Campaign. High Visibility Speed Enforcement. USLIMITS2.
Salisbury	US-44 (US Route) at Salisbury School driveway (Private)	Pedestrian	Pedestrian hit crossing US-44. Dark-lighted conditions. Existing crosswalk is in good condition. There are two MUTCD S1-1 (School Crossing Assembly) signs at the crosswalk with a Rapid Rectangular Flashing Beacon.	Raised Crosswalk. Roadway Illumination. Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. Schoolwide Pedestrian Safety Campaign. High Visibility Speed Enforcement. USLIMITS2
Salisbury	Lime Rock Park (Local or Private Road)	Pedestrian	Pedestrian hit near work area of park, not on walkway.	W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign.
Salisbury	Main Street (US Route 44) and the Lock Up (Local Road)	Pedestrian (Fatal)	Pedestrian hit crossing roadway, not in crosswalk. Dark-Lighted Conditions	Rapid Rectangular Flashing Beacon or Pedestrian Hybrid Beacon at current crosswalk near crash location. Roadway illumination.	Watch for Me CT Campaign. High Visibility Speed Enforcement Campaign. USLIMITS2.
Salisbury	Hotchkiss School Service Road (Local or Private Road)	Pedestrian	Pedestrian hit crossing roadway.	School Campus Speed Limit.	School-wide Pedestrian Safety Campaign
Torrington	Dalton St and Winthrop St (Local Roads)	Pedestrian	Adjacent to park and near School Vertical Curvature limits sight distance for motorists approaching crosswalk	Pedestrian Hybrid Beacon at crosswalk	Watch for Me CT Campaign. School-wide Pedestrian Safety Campaign.
Torrington	Prospect St (Local Road) north of Daycoeton Place and South of Water Street	Pedestrian	Mid-block crash with adequate sight distance Nearest intersection has faded crosswalks, pedestrian signals	MUTCD R9-2 (Cross Only at Crosswalk) sign. Repaint Crosswalks at intersection of Water Street and Prospect St.	Watch for Me CT Campaign.

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Torrington	East Main St (US Route) and Tioga St (Local Road)	Bicyclist	Crash occurred under dark-light contions. Narrow shoulders on East Main. Motorist hit bicyclist while making left turn.	Roadway Illumination. Road Diet. Buffered Bike Lane. Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. Bike Law Enforcement. Promote Traffic Skills. 101 Bike Course.
Torrington	1935 East Main St Parking Lot (Private)	Pedestrian	Parking Lot with intermittent crosswalks and some pathways	Repaint and add pedestrian pathways for better pedestrian connectivity.	Watch for Me CT Campaign.
Torrington	E. Main St (US Route) and East Elm St (State Route)	Bicyclist	Skewed Y intersection, congested, no shoulder, faded pavement markings. Motorist failed to yield right of way to bicyclist.	Corridor Access Management Road Diet	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	CT-4 (State Route) and Winthrop St (Local Road)	Pedestrian	T-intersection, no crosswalks, one-way stop controlled. Vehicle illegally passed car and hit pedestrian.	Add Crosswalk to Winthrop Street W11-2 sign (Pedestrian Warning). Restripe pavement markings.	Watch for Me CT Campaign.
Torrington	South Main St (Local Road) north of Coe Place and South of US-202	Pedestrian	Pedestrian crossed at midblock under dark lighted conditions. Sidewalks, ped crossing at nearby intersections.	Roadway Illumination. Repaint established crosswalks.	Watch for Me CT Campaign.
Torrington	Harwinton Avenue and Hill St. (Local Roads)	Pedestrian	Dark Lighted Conditions. Skewed intersection, horizontal curvature.	Roadway Illumination. Install high visibility crosswalks at all stop-controlled intersections.	Watch for Me CT Campaign.
Torrington	Summer St (Local Road) and driveway between High Street and Prospect Street	Bicyclist	Bicyclist on wrong side of road. Vertical Curvature. No Shoulders.	Edge Lines or Bike lane	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	CT-4 (State Route) and Migeon Ave (Local Road)	Pedestrian	Pedestrian under the influence and improperly crossed roadway. Fully signalized T-intersection with pedestrian signals and crosswalks.	Restripe crosswalks	DRE and alcohol testing. Include pedestrians in under the influence outreach and education programs.
Torrington	Migeon Ave and Pearl St (Local Roads)	Bicyclist	Bicyclist failed to stop. Dark lighted Conditions.	Roadway Illumination	Watch for Me CT Campaign. (See and Be Seen) Promote Traffic Skills. 101 Bike Course.
Torrington	Willow St (Local Road) south of East Main Street (US Route)	Pedestrian	Pedestrian crossed midblock when hit by motor vehicle. Pedestrian features at the intersection of Main Street and Willow Street, one crosswalk is missing, all need to be repainted.	Paint Crosswalk along all legs of Willow Street and US-202 Intersection	Watch for Me CT Campaign.

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Torrington	Oak Ave and East Albert Street (Local Roads)	Bicyclist	Bicyclist entered roadway from sidewalk. Limited sight distance due to vertical curvature and building on corner.	Stripe Shoulders	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	US 202 (US Route) and Hartford Ave (Local road)	Pedestrian	Pedestrian hit at midblock location, mid-block vertical curvature on E Main St. There are no sidewalks, crosswalks, pedestrian signals or signage.	Extend sidewalks along the whole corridor. Add crosswalks where warranted. Road Diet. Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. High Visibility Speed Enforcement . USLIMITS2.
Torrington	Wall St (Local Road) north of Plain Street and south of East Pearl Street	Bicyclist	Bicyclist cited for infraction. No Pavement Markings on Road, Low Volume Road.	Stripe Center lines and edge lines	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	US-202 (US Route) and Hillside Avenue (Local road)	Pedestrian	Driver failed to yield to pedestrian. Dark-not lighted commercial area.	Repaint Crosswalks. Exclusive Pedestrian Phase. No Right on Red Designation for US-8. Off-ramp at US-202. Roadway Illumination.	Watch for Me CT Campaign.
Torrington	East Albert St and South Main St (Local Roads)	Pedestrian	Driver failed to yield to pedestrian. Four-way signal-controlled intersection with no right on red designation. Outdated pedestrian signals and faded crosswalks.	Repaint crosswalks / Raise Crosswalks. Update Pedestrian Signals.	Watch for Me CT Campaign.
Torrington	Winthrop St at Kinney St (Local Roads)	Bicyclist	Bicyclist riding on wrong side of road. Two way stop controlled, limited sight distance for northbound on Winthrop St.	Add Bike Lanes or Edge Lines	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	112 S Main St (Local Road)	Bicyclist	Bicyclist riding on sidewalk. Adequate width to add bike lanes.	Add Bike Lanes	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	Scoville St (Local Road) east of Park Avenue and west of River Drive	Bicyclist	Sideswipe same direction crash. Horizontal Curvature impedes sight distance. Pavement in poor condition/no markings.	Repave and stripe road	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	S Main St (Local Road) at private driveway	Pedestrian	Pedestrian struck by car where sidewalk crossed a driveway.	Improve sidewalks . MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign.
Torrington	Winsted Rd (Local Road) at W Chapel St (Local Road)	Pedestrian	Work Zone related crash. Driver at fault.	Ensure work zone traffic is protected.	Watch for Me CT Campaign. Obey the Orange campaign. Work Zone enforcement.

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Torrington	E Main St (US Route) at Cumberland Farms private driveway	Bicyclist	Motorists did not yield right of way to bicyclist. High Turning Movements along this commercial corridor.	Road Diet MUTCD W11-1 sign (Bicycle Warning)	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	Parking lot of 82 Willow St (Private)	Pedestrian	Driver reversed into pedestrian in parking lot. Pavement markings in parking lot are in fair condition.	Restripe pavement markings. Watch for Pedestrians in Parking Lot sign.	Watch for Me CT Campaign.
Torrington	Main St at Mason St (Local Roads)	Bicyclist	No shoulder on either road. Both roads have on-street parking. Pavement markings are in good condition.	Road Diet, possibly sufficient road width for bike lane.	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	E Main Street (US Route) east of Durand Street and west of Griswold Street	Pedestrian	Pedestrian struck crossing driveway. There are no sidewalks on either side of E Main St. There is a goat trail. Dark lighted crash conditions.	Complete Streets Policy Adoption. Pedestrian Amenities: Add crosswalks, sidewalks, MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign. (See and Be Seen)
Torrington	High St and Church St (Local Roads)	Pedestrian	Pedestrian failed to obey do not walk pedestrian signal and was struck by vehicle. Atypical signalized Y-Intersection. Dark-lighted crash conditions.	Install exclusive Pedestrian phase with countdown. Repaint and raise crosswalks. Roadway illumination.	Watch for Me CT Campaign. (See and Be Seen)
Torrington	Pizza Hut Delivery Parking Lot (Private) at 1 S Main St	Pedestrian	Pedestrian stuck in parking lot. The existing crosswalks and other pavement markings in the parking lot are in poor condition. Dark-lighted Crash Conditions.	Repaint crosswalks and other pavement markings in parking lot. Parking lot illumination. Watch for Pedestrians in Parking Lot sign.	Watch for Me CT Campaign.
Torrington	US-202 (US Route) and Torringford E Street (Local Road)	Pedestrian	There are no pedestrian amenities at four -way signalized intersection, no sidewalks, high volume traffic, commercial corridor	Road Safety Audit. Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. High Visibility Speed Enforcement. USLIMITS2.
Torrington	Parking lot of 695 Main St (Private)	Pedestrian	Pedestrian hit in parking lot. Dark Lighted parking lot conditions. Crosswalks and other pavement markings are in fair condition.	Watch for Pedestrians in Parking Lot sign. Illumination. Add walkways in parking lot.	Watch for Me CT Campaign.
Torrington	Workman Ave (Local Road) between Guilford Street and Riverside Avenue	Pedestrian	Pedestrian hit crossing Workman Avenue	Speed Humps MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign. High Visibility Speed Enforcement. USLIMITS2.
Torrington	Litchfield Stand 4 Story Lane (Local Roads)	Pedestrian	Sidewalk terminates at the Charlotte Hungerford Hospital entrance, no edge lines	Extend and improve sidewalk. MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign.
Torrington	Parking lot of 839 Main St (Private)	Pedestrian	Dark-Lighted Conditions	Parking lot Illumination. Watch for Pedestrians in Parking Lot sign.	Watch for Me CT Campaign.

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Torrington	Main St at Mason St (Local Roads)	Pedestrian	Lighted Conditions. Pedestrian was hit in crosswalk. Pedestrian apparently distracted.	High Visibility Crosswalks with surface treatments. Exclusive Pedestrian phase with audible tones.	Watch for Me CT Campaign. (Distracted Driving and Distracted Walking Outreach)
Torrington	Norfolk Rd (State Route) at 2 Norfolk Rd driveway	Pedestrian	Daylight and wet conditions. There are no pedestrian features along this corridor. Speed is posted at 35 mph.	MUTCD W11-2 sign (Pedestrian Warning)	Watch for Me CT Campaign. USLIMITS2.
Torrington	N Elm St and Main St (State Road and US Route)	Pedestrian	Pedestrian failed to obey pedestrian signals. Dark Lighted Crash Conditions.	Ensure pedestrian signal is functioning.	Watch for Me CT Campaign.
Torrington	Church St at Migeon Ave (Local Roads)	Bicyclist	Car and Bicyclist sideswipe same direction crash. There is no shoulder on either E Albert St or Park Ave. Pavement markings are in poor condition.	Stripe one bike lane on East Albert	Watch for Me CT Campaign.
Torrington	147 High St (Local Road)	Pedestrian	Pedestrian struck by motorists backing out of driveway. Driver cited for crash. Sidewalk is in fair condition.	Improve sidewalks	Watch for Me CT Campaign. (See and Be Seen)
Torrington	US-202 (E Main St) and Nathaniel St (US Route and Local Road)	Bicyclist	Bicyclist riding on wrong side of road when hit by vehicle. There is no shoulder or any pavement markings on Nathaniel St. There are narrow shoulders on US-202. Lighting is adequate.	MUTCD R4-11 (Bicycles May Use Full Lane) MUTCD W11-1 sign (Bicycle Warning) Road Diet	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	251 High St parking lot (Private)	Pedestrian	Pedestrian hit in lot. Limited pedestrian pathways in parking lot.	Crosswalk between JC Penny and the parking spaces. Speed Tables. Watch for Pedestrians in Parking Lot Sign.	Watch for Me CT Campaign.
Torrington	US-202 (US Route) east of Maud Street and west of CT-8	Pedestrian	Pedestrian hit while improperly in roadway. Sidewalks on either side of US-202 are in fair condition. Pedestrian was under the influence of a substance.	Midblock crosswalks. Pedestrian hybrid beacon. Remove vegetation on sidewalks. MUTCD W11-2 sign (Pedestrian Warning) Dynamic Speed Feedback Signs.	Watch for Me CT Campaign. Impaired Pedestrian Communication and Outreach. High Visibility Speed Enforcement Campaign.
Torrington	Main St at Wadham's Ave (Local Roads)	Bicyclist	Driver struck bicyclist crossing Main Street. Bicyclist cited as distracted while biking.	Stripe bike lane or edge lines	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Torrington	Parking lot at 221 Prospect St (Private)	Pedestrian	Driver cited as negligent or erratic. Faded pavement markings in parking lot.	Restripe parking lot pavement. Speed humps or tables.	Watch for Me CT Campaign.

TOWN	STREET NAMES	PERSON TYPE	ISSUES	COUNTERMEASURES INFRASTRUCTURE	COUNTERMEASURES NON-INFRASTRUCTURE
Torrington	371 S Main St (Local Road)	Pedestrian	bw curb reveal. river Speed contributed to crash. ark lighted Conditions. idewalk is in poor condition. Dynamic Speed Feedback Signs. Road Diet to narrow lanes. Improve curb reveal. Install speed humps. Roadway Illumination.		Watch for Me CT Campaign. High Visibility Speed Enforcement. USLIMITS2.
Torrington	US-202 (US Route) and Torringford East St (Local Road)	Bicyclist	Driver struck bicyclist while making left turn. Bicyclist had right of way. Pavement and bavement markings are in good condition. MUTCD R4-11 (Bicycles May May Use Full Lane) MUTCD W11-1 sign (Bicycle Warning) Road Diet 10		Watch for Me CT Campaign. Enforcement of Bicycle Laws. Promote Traffic Skills. 101 Bike Course.
Torrington	Parking lot of 990 Torringford St (Private)	Pedestrian	Pedestrian hit in parking lot. Pavement and pavement markings are in good condition. Intermittent pedestrian connectivity in lot.	Add more crosswalks and pathways within parking lot . Speed table or hump. MUTCD W11-2 sign (Pedestrian Warning) "Yield to Pedestrians in Crosswalk" signs.	Watch for Me CT Campaign. (parking lot safety)
Torrington	Main St at Lois St (Local Roads)	Pedestrian	Pedestrian crossing roadway at midblock location. Sidewalks are in good condition. Travel lanes are wide.	Road Diet. Crosswalk at Midblock Crossing. Speed Hump.	Watch for Me CT Campaign.
Torrington	S Main St at Linden St (Local Roads)	Bicyclist	Bicyclist hit crossing the road. Driver failed to yield right of way. Dark Lighted Conditions. Parked cars on street. Stop bar on Linden Street is in poor condition.	Edge lines. Repaint stop bar on Linden Street. Roadway Illumination.	Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course. High Visibility Speed Enforcement. USLIMITS2.
Torrington	Central Ave at Beechwood Ave (Local Roads)	Bicyclist	Motorists travelling wrong way down Beechwood Edge. Lines appear newer on Central Avenue.	Add wrong Way Signs and pavement markings. No turn signs on Central Ave. MUTCD W11-1 sign (Bicycle Warning)	Promote Traffic Skills. 101 Bike Course.
Winchester	Torrington Rd (Local Road) at DMV access Rd (Local Road)	Bicyclist	Motorists did not yield to bicyclist.Repaint pavement markings.I-Intersection, narrow shoulders on TorringtonMUTCD W11-1 sign (BicycleRoad. 45 mph speed limit on Torrington Rd.Warning)		Watch for Me CT Campaign. Promote Traffic Skills. 101 Bike Course.
Winchester	Hinsdale Ave and Wheeler St (Local Roads)	Pedestrian	edestrian struck crossing the road near a school. Iorizontal curve along Hinsdale westbound pproaching Wheeler St. Inadequate sight distance. Corsswalk on Hinsdale is in poor condition.		Watch for Me CT Campaign. School-wide Pedestrian Safety Campaign.
Winchester	Willow St and Rowley St (Local Roads)	Bicyclist	Bicyclist was on electronic device/distracted at time of crash.	MUTCD W11-1 sign (Bicycle Warning)	Watch for Me CT Campaign. (Distracted Biking Education and Outreach) Promote Traffic Skills. 101 Bike Course.
Winchester	US-44 (US Route) between High Street and Union Street	Pedestrian	This is a midblock crossing across 4 lanes of traffic, connecting to a pedestrian bridge	HAWK Signal. Dynamic Speed Feedback Sign. Road Diet.	Watch for Me CT Campaign.

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 distracted 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 US DOT Traffic Safety Marketing provides a Fact Sheet, Sample News Release, and an educational sheet that address drowsy driving prevention.						
Resources for Starting a Drowsy Driving Campaign:	http://drowsydriving.org/	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ drowsydriving_strate- gicplan_030316.pdf	https://www.nht- sa.gov/sites/nhtsa. dot.gov/files/docu- ments/12723-drowsy_ driving_asleep_at_the_ wheel_031917_v4b_tag. pdf	https://www.fmcsa. dot.gov/driver-safety/ sleep-apnea/drowsy-driv- ing-quiz	https://www.nhlbi.nih. gov/files/docs/resources/ sleep/dwydrv_y.pdf	https://www.cdc.gov/ niosh/docs/2014-150/ pdfs/2014-150.pdf	
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 US DOT Traffic Safety Marketing and NHTSA.						
Resources for Starting a Speed Campaign:	https://www.trafficsafet- ymarketing.gov/get-ma- terials/speed-prevention/ stop-speeding-it-stops- you	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ programs.pdf	https://www.nhtsa.gov/ risky-driving/speeding	https://www.nhtsa.gov/ risky-driving/speed- ing#issue-consequences	https://www.nhtsa.gov/ risky-driving/speeding#is- sue-what-drives-speeding	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/2011_n_survey_of_ speeding_attitudes_and_ behaviors_tt_811866.pdf	
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 US DOT 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 are high. Banner Ads, media, logos, radio ads, television ads, and web videos for drunk driving campaigns are provided by the US DOT 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 Starting a Drunk Driving Campaign:	https://www.traf- ficsafetymarketing. gov/search?key- words=drunk+driving	https://www.trafficsafet- ymarketing.gov/get-ma- terials/drunk-driving/ no-refusal-toolkit	https://www.nhtsa.gov/ risky-driving/drunk-driv- ing	https://www.nhtsa.gov/ laws-regulations/guid- ance-documents	https://www.nhtsa.gov/ laws-regulations	https://www.nhtsa.gov/ drunk-driving/alco- hol-measurement-devices	
Drugged Driving:	NHTSA and the US DOT 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 US DOT 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 US DOT 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 Starting a Drugged Driving Campaign:	https://www.nhtsa. gov/risky-driving/ drugged-driving	https://www.traf- ficsafetymarketing.gov/ search?keywords=drug	https://www.trafficsafety- marketing.gov/get-mate- rials/drug-impaired-driv- ing/campaign-toolkit	https://www.nhtsa.gov/ speeches-presentations/ drug-impaired-driving- call-action-closing-re- marks	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/documents/ander- le_ddsummit2018.pdf	https://www.nhtsa.gov/ speeches-presentations/ road-zero	

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 US DOT 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 Starting a Distracted Driving Campaign:	https://www.trafficsafet- ymarketing.gov/get-ma- terials/idea-exchange/ topic/distraction	https://www.nhtsa.gov/ distracted-driving/dis- tracted-driving-kills	http://www.nsc.org/learn/ NSC-Initiatives/Pages/ distracted-driving-aware- ness-month.aspx	https://www.trafficsafety- marketing.gov/get-mate- rials/distracted-driving/u- drive-u-text-u-pay	https://www.nhtsa.gov/ speeches-presentations/ duid-vision-future	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ documents/812407-dis- tracteddrivingreport.pdf	
Pedestrian 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 webpage 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 Starting a Pedestrian Safety Campaign:	http://www.watchformect. org/	https://safety.fhwa.dot. gov/local_rural/pedcam- paign/	https://www.trafficsafety- marketing.gov/get-mate- rials/idea-exchange/state/ connecticut	https://www.nhtsa.gov/ road-safety/pedestri- an-safety	https://www.nhtsa. gov/road-safety/ pedestrian-safe- ty#topic-did-you-know	https://www.nhtsa.gov/ road-safety/pedestri- an-safety#topic-resources	
Bicyclist 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 bicyclist crashes, bicyclist laws, and safety tips. The Watch for Me CT website also includes tips for drivers and campaign materials. NHTSA's bicyclist safety webpage provides bicyclist safety related research, tips, curriculum and programs that can be shared in any community to discuss bicyclist 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 bicyclist 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 Starting a Bicyclist Safety Campaign:	http://www.watchformect. org/	https://www.nhtsa.gov/ road-safety/bicycle-safety	https://www.nhtsa.gov/ road-safety/bicycle-safe- ty#topic-helmets	https://www.youtube. com/watch?v=hLlX- swx0VvQ&feature=youtu. be&list=PL2GIXO1j4M- 71hq7Djsuszkie2Z6rlaPXF	https://www.youtube. com/watch?v=nf5WQX- Fvrkk&list=PL2GIXO1j4M- 71hq7Djsuszkie2Z6rlaPX- F&index=3	https://www.bikeleague. org/ridesmart	
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 condi- tions 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 US DOT Traffic Safety Marketing webpage provides marketing resources for the DriveWell campaign that focuses on older driver safety and mobility.						
Resources for Starting an Older Driver Safety Campaign:	https://www.nhtsa.gov/ road-safety/older-drivers	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ documents/812228-clini- ciansguidetoolderdrivers. pdf	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ keyprovisionsolderdrivers. pdf	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ documents/2015_traf- fic_safety_fact_sheet_old- er_population.pdf	https://www.dmv.org/ safety-and-driving/elder- ly-drivers.php	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/811495.pdf	

Younger Driver Safety	Crashes are the leading cause of teen deaths, according to NHTSA. Public education campaigns that focus on younger driver safety highlight how to properly prepare younger drivers and their families for the responsibility of driving. NHTSA uses crash trends, safety messages, and various resources to discuss teen driver licensing requirements and key risk factors for younger drivers including illegal use of alcohol, seat belt use, and distracted driving. NHTSA also highlights the importance of influence that parents, educators, coaches, and other trusted adults have on younger drivers and their behaviors. The US DOT's Traffic Safety Marketing webpage provides posters that communities can share on social media that are specifically marketed towards younger driver safety					
Resources for Starting a Younger Driver Safety Campaign:	https://www.nhtsa.gov/ road-safety/teen-driving	https://www.traf- ficsafetymarketing. gov/search?key- words=younger+drivers	https://www.nhtsa.gov/ road-safety/teen-driv- ing#topic-parental-in- fluence	https://www.nhtsa.gov/ road-safety/teen-driv- ing#topic-teen-driver-re- quirements	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/811894-campaign_ for_parents_of_pre-driv- ers_to_encourage_seat_ belt_use.pdf	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ teen-board-poster_0.pdf
Motorcycle Safety	NHTSA's motorcycle safety message focuses on all road users sharing the road, motorcyclists making themselves visible, the use of DOT-compliant helmets, and riding sober. NHTSA provides information on the safest road behaviors. Banner ads, media, logos, radio ads, television ads, and web videos for motorcycle safety campaigns are provided by the US DOT 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 Starting a Motorcycle Safety Campaign:	https://www.nhtsa.gov/ road-safety/motorcy- cle-safety	https://www.traf- ficsafetymarketing.gov/ search?keywords=mo- torcycle	https://www.nhtsa.gov/ press-releases/con- sumer-advisory-safe- ly-share-road-motorcy- clists	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/807709.pdf	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/files/ unsafehelmets.pdf	https://www.nhtsa.gov/ sites/nhtsa.dot.gov/ files/811141.pdf
NHTSA Communications Calendar: https://www.trafficsafetymarketing.gov/calendars						

7 funding

General Transportation Funding Sources Available for Municipal Projects*

Local Transportation Capital Improvement Program (LOTCIP)

www.ct.gov/dot/lotcip Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit, Bridges

Provides State monies to municipalities for transportation capital improvement projects in urban areas. Regional Planning Organizations 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.

STP-Rural Major/Minor Collector Program

https://www.ct.gov/dot/lib/dot/documents/dhighwaydesign/STP-Rural_Guidelines%28September2015%29.pdf Funds: Pedestrians, transit

As part of the Governors Lets Go CT program, the Connecticut Department of Transportation is expanding and improving the existing STP Rural Major/Minor Collector Program as a way to provide additional assistance to the rural areas of the state. The modified program includes two main points:

- INCREASES the amount of STP-Rural funds available to the COG's from \$1.0 million to \$2.0 million per year.
 - DECREASES the local match from 20% to 10%.

Transportation Alternatives (TA) Set-Aside Program

http://www.ct.gov/dot/cwp/view.asp?a=2303&Q=536574 Funds: Bicycles, Pedestrians

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 requires a 20% non-federal match and minimum project cost of \$500,000.

Congestion Mitigation and Air Quality

http://crcog.org/wp-content/uploads/2016/07/CT DOTCMAQProgramGuide.pdf Funds: Bicycles, Pedestrians, Passenger Vehicles, Transit

The Congestion Mitigation and Air Quality Program is managed by the CT DOT 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, transit improvements, and pedestrian and bicycle facilities.

This Program offers Connecticut's Towns and cities assistance in conducting Road Safety Audit (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 Department of Transportation'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

http://www.ct.gov/dot/lib/dot/documents/dtrafficdesign/Local_Roads_Accident_Reduction_Program_for_2013.pdf 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.

Local Bridge Program

Funds: Bridges

Applications are accepted annually by CT DOT. The project may include bridge reconstruction, rehabilitation, modifications or improvements such as widening, complete replacement, or complete removal.

Department of Energy and Environmental Protection Recreational Trails

http://www.ct.gov/deep/cwp/view.asp?a=2707&q=513740&deepNav_GID=1650 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

http://www.ct.gov/opm/cwp/view.asp?a=2965&q=382970 Funds: Bicycles, Pedestrians, Passenger Vehicles

The Small Town Economic Assistance Program funds economic development, community conservation and quality-of-life capital projects for localities that are ineligible to receive Urban Action bonds. This program is managed by the Office of Policy and Management, and the grants are administered by various state agencies.

Local Capital Improvement Program (LoCIP)

http://www.ct.gov/opm/cwp/view.asp?q=383108 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 & repair, Sidewalk and pavement improvements, Bridges and Bikeway and Greenway Establishment.

BUILD Discretionary Grants

https://www.transportation.gov/BUILDgrants Funds: Bicycles, Pedestrians, Passenger Vehicles

The highly competitive federal grant program is for investments in surface transportation infrastructure and are to be awarded on a competitive basis for projects that will have a significant local or regional impact. BUILD funding can support roads, bridges, transit, rail, ports or intermodal transportation. This program replaces the previous TIGER grant program.

Highway Safety Programs

http://www.ct.gov/dot/cwp/view.asp?a=2094&q=432886 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

https://www.fhwa.dot.gov/federal-aidessentials/

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.

Adapted from Guide to Transportation Funding Sources for Municipalities, Capitol Region Council of Governments, July 2017. *Funding programs are continually subject to revision by regional, state, and federal agencies.

8 emphasis areas

In congruence with the Connecticut Strategic Highway Safety Plan (SHSP), researchers have identified emphasis areas within the region to help the State reduce fatal and injury crashes by 15% in 2021. These areas were selected based on comprehensive crash data analysis, the understanding of emerging trends, and a review of existing State, regional and Town safety efforts. In the CT SHSP the State identified six emphasis areas: critical roadway locations, driver behavior, young drivers, non-motorized road users, motorcyclist safety, and traffic incident management.

The prioritized data-driven emphasis areas within NHCOG are:

- **Critical roadway locations:** Includes both roadway departures and intersections crashes.
- **Driver Behavior:** Includes driving under influence, aggressive driving, distracted driving and having unrestrained occupants.
- Older Drivers: Includes drivers 65 or older.
- Young Drivers: Includes drivers ages 16-25.
- Motorcyclist Safety
- Non-Motorized Users: Includes bicyclists and pedestrians.
- Traffic Incident Management

Performance Measures: A Process for Implementing Strategies. The RTSP follows the 2017 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 region is encouraged to follow.

Priority emphasis areas are unique to NHCOG based on the region's demographic, topographic, and geographic traits.
8.1 Critical Roadway Locations

The critical roadway locations emphasis area includes both roadway departures and intersection crashes. Roadway departure crashes are described as conflicts when vehicles cross an edge line, a center line, or otherwise leave the traveled way. 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. Night-time can also play a role in lane departure crashes. Behavioral 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 strategies combined with education and enforcement.

Intersection crashes occur where two roadways meet and due to the complex travel patterns conflict happens. Congestion, limited sight distance, driver behaviors and other variables exacerbate the inherent crash potential at each intersection. Intersections vary widely from geometry, classification (urban or rural), traffic control (signalized or un-signalized), traffic volumes, and design (conventional design or unconventional 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 serious injuries is possible applying a multidisciplinary approach using strategies that focus on engineering, education, and enforcement.

3

8.1.1 Intersections

36

1

Performance Measure: From 2015-2017 there were 485 intersection crashes resulting in injuries or fatalities within NHCOG. NHCOG accounts for 1% of the 41,963 state-wide instersection and fatal injury crashes. Of those 485 reported crashes in NHCOG, 7 were fatal.

Performance Objective: Decrease Intersection fatalities and serious injuries 20%¹ over the 5-year period of the SHSP. This will result in preventing 33 combined fatalities and injuries per year.

NHCOG Regional Strategies for Intersections:

- Implement proven and low-cost systematic 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. -*Engineering*
- Conduct high visibility enforcement, media campaigns and public outreach at selected locations with a significant number of intersection crashes. -*Enforcement*
 - Advertise and promote the Safety Circuit Rider and other similar programs that provide training and outreach about intersection safety. -*Education*
- Incorporate safety elements and countermeasures into all regional roadway and intersection project designs and maintenance improvements. -Engineering
- Consider No Turn on Red restrictions at data identified crash locations. *-Engineering*

8.1.2 Roadway Departures

Performance Measure: From 2015-2017 there were 598 roadway departure crashes resulting in injuries or fatalities within NHCOG, an average of 199 crashes annually. Of those 598 reported, 16 were fatal. NHCOG accounts for 4% of the 13,704 statewide roadway departure fatal and injury crashes

Performance Objective: Decrease fatalities and serious injuries 20% over the 5-year period of the SHSP. This will result in preventing 40 combined fatalities and injuries per year.



NHCOG Regional Strategies for Roadway Departures:

- Design the roadside to include protection systems (such as cable median, crash cushions and guardrail end treatments) or manage roadside vegetation and trees and other fixed objects to minimize the severity of crashes. -Engineering
- - Incorporate the use of proven technology and roadway designs that make roadways safer. -Engineering
 - Implement proven systemic safety countermeasures to lessen roadway departure crashes. Examples include prioritized site high friction surface treatments, improved signage on curves, safety edges and center line and edge line rumble stripes. -Engineering
 - Conduct high visibility regional and local enforcement, media campaigns and public outreach on identified corridors with a high number of severe roadway departure crashes. -Enforcement
 - Utilize established regional and state programs, such as the Safety Circuit Rider, to provide education, training, and outreach about intersection safety. -Education
 - Apply for the State's systemic improvements with the State to install rumble strips along horizontal curvature based on crash data at specific locations. -Engineering
 - Following the CTSHSP the region can identify and implement spot location-based safety countermeasures on Connecticut's State, local, and Tribal roads. -Engineering

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.²⁸ This does not include road rage which is considered assault.

Performance Measure: Speeding related fatal and injury crashes totaled 316 from 2015-2017. This accounts for 7% of the 4,664 statewide aggressive driving and fatal injury crashes. There were 9 fatal crashes with an annual average of 3 from 2015-207.

Performance Objective: Exceeding the state's goal of an 8% reduction of speed related fatalities, the NHCOG objective is to lower the average of three speed related deaths per year to two per year by 2021.



Source: NHTSA: https://one.nhtsa.gov/Driving-Safety/Enforcement-&-Justice-Services/HVE%E2%80%93enforcement

NHCOG Regional Strategies for Aggressive Driving:

- 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. *-Engineering*
- 2 Regional and municipal support for High Visibility Enforcement campaigns that specifically target speed and aggressive driving. *-Enforcement*
 - Regional collaboration and resource sharing of scientifically valid speed measurement technology for enforcement. -*Enforcement*
- Coordinate with local agencies, local police and fire departments, Charlotte Hungerford Hospital, the YMCA, the United Way of Northwest CT, Auto Insurance Industry, and Torrington Area Health District to disseminate and educate the public on the hazards of aggressive driving. *-Education*
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Integrate the speed management countermeasures into roadway departure, intersection, and pedestrian safety areas. *-Engineering*

²⁸Goodwin, A., Thomas, L., Kirley, B., Hall, W., O'Brien, N., & Hill, K. (2015, November). Countermeasures that work: A highway safety countermeasure guide for State highway safety offices, Eighth edition. (Report No. DOT HS 812 202). Washington, DC: National Highway Traffic Safety Administration.

8.2.2 Unrestrained Occupants

The unrestrained occupants emphasis area involves either passengers or drivers who are not seat belted, including children not properly positioned in restraint systems. Connecticut enacted a law in October 2017, requiring that children to 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 Measue: From 2015-2017 there were 165 crashes involving unrestrained occupants that resulted in injury or fatality which is an annual average of 55. Out of these 165 reported 5 of them were fatal. This accounts for 5% of the 3,172 statewide unrestrained occupants fatal and injury crashes.

Performance Objective: To reduce the number of unrestrained occupants in fatal and injury crashes from the three-year average of 55 by 10% to an average of 49 by 2021. To increase the statewide observed seat belt use rate from 85.4% in 2015 to 88% or above in 2018. The current seat belt usage in Connecticut is 90.3%. The statewide observe seat belt use rate is to be increased to be 88% on 2018, the state has already surpassed this target. ²⁹

NHCOG Regional Strategies for Unrestrained Occupants:

Coordinate with NHTSA's calendar of high visibility enforcement of safety belts and child safety enforcement. Continue regional enforcement using checkpoints and roving and saturation patrols. *-Enforcement*

Communicate the new child safety seat laws, coordinating with multi agencies like Safe Kids CT, local police and fire departments, Charlotte Hungerford Hospital, the YMCA, the United Way of Northwest CT, and Torrington Area Health District to disseminate information and educate the public. *-Education*

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

Unrestrained Occupants"





8.2.3 Substance-Involved Driving

Substance-involved driving involves motorists who are under the influence of alcohol and/or drugs, both prescribed, over-the counter, unprescribed and/or illegal. A driver with blood alcohol concentration (BAC) of 0.08 or higher is considered alcohol impaired. Drug impairment is more challenging to detect and confirm. In addition, it is hard to determine its 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. According to National Highway Traffic Safety Administration (NHTSA), alcohol-impaired crashes accounted for 34% of Connecticut 2016 driving fatalities and 37% of Connecticut 2015 driving fatalities; both years are significantly higher than the 28% national average (Traffic Safety Facts, April 2017) so the regional approach is one method of reducing this trend.³⁰

Performance Measure: From 2015-2017 there were 90 reported substance-involved driving crashes that resulted in injury or death which is an annual average of 30. Of these 90 crashes 6 were fatal. This is 4% of the 2,107 statewide substance involved fatal and injury crashes.

NHCOG Regional Strategies for Substance-Involved Driving:

Augment regional and local support of 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 SHPS goal to increase the number of certified standardized field sobriety test practitioners and instructors. *-Enforcement and 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 segments of the targeted audience through local police and fire departments, Charlotte Hungerford Hospital, the YMCA, the United Way of Northwest CT, and Torrington Area Health District to disseminate information and educate the public. Highlight the importance of sober driving during the month of December, during 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 MADD CT chapter's outreach and education efforts, including the Victim Impact Panels that take place in Torrington. *-Education*

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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.³² -Engineering

Continue to enforce the interlock devices for all Connecticut DUI/DWI/OUI first time offenders. -*Enforcement*

Conduct regional high visibility impaired driving enforcement program. -Enforcement

Performance Objective: To increase the number of Drug Recognition Expert (DRE) practitioners in the Northwest Hills Region from 0 in 2017 to 5 in 2021. The State's goal is to increase the DREs in Connecticut from 31 in 2016 to 45 in 2018. By the end of 2017, there were 38 DREs in the entire state.³¹

³⁰USDOT and NHTSA 2016 Fatal Motor Vehicle Crashes: Overview October 2017.Retrieved on December 10, 2017 from https://www.nhtsa.gov/press-releases/usdot-releases-2016-fatal-traffic-crash-data

³¹ The International Drug Evaluation and Classification Program. . Retrieved on March 1, 2018 from http://www. decp.org/drug-recognition-experts-dre/states-and-countries-with-dres/

³²National Academy of Sciences, January 2018.Retrieved on March 26 from

https://www.nap.edu/resource/24951/011718AlcoholImpairedDrivingHighlights.pdf

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 2015-2017 there were 97 reported fatal and injury crashes related to distracted driving, an average of 32 annually. This accounts for 4% of the 2,226 statewide distracted driving and fatal injury crashes.

Performance Objective: In line with the CT SHSP the lack of useful crash data related to distracted driving has made it difficult to select a goal measuring the impacts on distraction-related crashes. The Performance Objective is to decrease both fatal and injury crashes caused by driver distraction, especially those caused by hand held mobile phone use. To that end, the quantifiable performance objective is focused on High Visibility Enforecement (HVE) activities. The goal is to maintain or increase the number of police agencies participating in HVE distracted driving enforcement from 50 in 2016 to 60 by 2021.



NHCOG Regional Strategies for Distracted Driving:

- Conduct distracted driver observational surveys, similar to those done for seat belt use. -*Enforcement*
- 2 Update to the MMUCC 5th Edition to include distraction on involved non-motorists crashes. *-Enforcement*
- Regionally conduct high visibility distracted-related enforcement, focusing on Towns 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. *-Enforcement*
 - Increase regional public outreach of distracted driving that reach specific segments of the targeted audience. Coordinate with NHTSA's calendar of outreach. *-Education*
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Coordinate distracted driver messages with multiple agencies: DMV, AAA CT Chapter, Local and State law enforcement, Emergency Management Services, Charlotte Hungerford Hospital, the 21 municipalities, public and private schools and colleges, the Northwest CT YMCA, the United Way of Northwest CT, and the Torrington Area Health District. *-Education*

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 principle 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. Since the population in NHCOG is aging this third emphasis area is of importance.



NHCOG Regional Strategies for Older Drivers:

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

- Coordinate with multi-agencies such as the United Way of Northwest CT, Western CT Area Agency on Aging, Torrington Area Health District, the Connecticut Association of Senior Center Personnel/ the Northwest CT YMCA, and Charlotte Hungerford Hospital 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, reference the 2016 Transportation Guide for Northwestern CT. *-Education, Engineering*
- Encourage older drivers to use AARP Smart Driver Course available online or in a classroom. Establish a regional site for the course, as of 2018 there were no available locations in NHCOG.³³ -*Education*

Performance Measure: From 2015-2017 there were 233 crashes involving older drivers that ended in fatal or serious injuries, an average of 77 annually. Of the 233, four were fatal. This is 4% of the 6,022 statewide older driver fatal and injury crashes.

Performance Objective: To decrease the number of drivers aged 65 or older involved in fatal and injury crashes by 10 percent, resulting in 7 fewer older driver injury and fatal annual crashes in NHCOG by 2021.

³³ AARP. AARP Smart Driver Course Locator. Retrieved on March 26.2018 from https:// secure.aarp.org/applications/VMISLocator/searchDspLocations.action?cmp=RDRCT-FN-DACRS_09_012

8.4 Young Drivers

Young drivers are motorists between the ages of 16-25. Due to their driving inexperience and "normal adolescent development that involves an increase in novelty seeking and risk-taking behaviors" (NHTSA Countermeasures that Work) this subset of drivers is at a greater risk of being involved in traffic crashes. Connecticut has a graduated driver licensing limiting passenger allowance in the first 12 months of licensing, imposing a driver curfew until 18th birthday, requiring all passengers in vehicles use seat belts, and prohibiting all cell phones and mobile electronic devices while driving. The State also requires pre-licensure driver education for driver and parents.

NHCOG Regional Strategies for Young Drivers:

- Continue regional support for statewide graduated driver licensing. -Engineering, Education, Enforcement
- 2 Regional enforcement of Young Driver laws, including Zero Tolerance law by organizing and conducting high visibility enforcement campaigns. -Enforcement
- 3 Explore the possibility of a licenses decal to identify motorists in the GDL program so that law enforcement can more readily identify them. *-Enforcement*
- 4 Coordinate bilingual young driver messages with multiple agencies in: DMV, AAA CT Chapter, State and local law enforcement, Emergency Management Services, Charlotte Hungerford Hospital, public and private schools, the YMCA, the United Way of Northwest CT, and the Torrington Area Health District. -Education
- Continue to promote !MPACT Programs to present their teen driving safety programs to high schools, hospitals religious organizations and other communities on the at no cost. *-Education*



Performance Measure: From 2015-2017 there were 388 crashes involving young drivers that ended in fatal or serious injuries, an average of 129 annually. Of the 388 total, 7 were fatal. This is 3% of the 12,576 statewide young driver and fatal i njury crashes.

Performance Objective: The goal is to decrease the three-year average of two young driver fatal injury crashes (2015-2017) to one in NHCOG by the year 2021.

8.5 Non-Motorized Users

The non-motorized emphasis area includes bicyclists and pedestrians. Bicyclists and pedestrians are more susceptible to serious injuries and fatalities when involved in a crash with a motor vehicle.

From 2015-2017 there were 73 crashes that resulted in bicyclist or pedestrian fatalities or injuries within NHCOG. Six of these 73 were fatal.



8.5.1 Pedestrians

Performance Measure: From 2015-2017 there were 47 injury and fatal pedestrian crashes in NHCOG, 4 of these were fatal. That is an average of 16 combined injury and fatal crashes per year. This makes uo 1% of the 3,199 statewide pedestrian fatal and injury crashes

Performance Objective: The NHCOG RTSP is in congruence with the SHSP's goal of reducing pedestrian fatalities and serious injuries 15% over the 5-year period of the SHSP (ending in 2021). This will result in preventing at least 2 combined pedestrian fatal and serious injuries per year in NHCOG.

8.5.2 Bicyclists

Performance Measure: From 2015-2017 there were 26 fatal and injury bicycle crashes in NHCOG, 2 were fatal. That is an average of nine crashes per year. This makes up 2% of the 1,244 statewide bicyclist and fatal injury crashes.

Performance Objective: The NHCOG RTSP is in congruence with the SHSP goal of decreasing bicyclist fatalities and serious injuries by 15% over the five-year period of the SHSP (ending in 2021). This will result in preventing at least one combined bicyclist fatal and serious injury per year.

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NHCOG Regional Strategies for Non-Motorized Users:

- Coordinate with regional and state advocacy groups and bike store owners, including Bike Walk CT, the CT DOT Bike and Pedestrian Advisory Board, Bikers Edge 2, Bicycle Tour Company, Appalachian Mountain Club-Connecticut Chapter, and other to strategize best practices for the region. *-Education*
 - Coordinate with CT DOT on the Pedestrian Signing and Pavement Marking Project which improves crosswalk visibility on local roads. *-Engineering*
- Promote the Watch for Me CT program. Watch for Me CT is a comprehensive program focusing on education and enforcement to reduce the number of bicycle and pedestrians hit and injured in vehicle crashes. They are offering law enforcement training and sponsoring Town-wide events. More information can be found at http://www.watchformect.org/ -Education, Enforcement
- Regionally promote the CT Bike Ped Plan interactive bike map, http://ctbikepedplan.org. -*Edu-cation*
- 5 Encourage municipal and regional adoption of the CT DOT'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. "http://www.ct.gov/dot/lib/dot/plng_plans/bikepedplan/cs-exo31-signed.pdf *-Engineering*
- Encourage the adoption of the MMUCC 5th Edition to better collect data on bicycle facilities at crash location.
- 2 Educate regional law enforcement personnel on the 2014 Vulnerable User Law and the 2015 Bike Bill. -*Education and Enforcement*
- 8 Promote the Connecticut Technology Transfer Center's educational outreach initiatives that promote bike and pedestrian safety.
- Coordinate bike and pedestrian safety messages with multiple agencies: DMV, AAA CT Chapter, State and local law enforcement, Emergency Management Services, Charlotte Hungerford Hospital, the 21 regional municipalities, the Northwest CT YMCA, the United Way of Northwest CT, Torrington Area Health District, and other health and safety advocates. -*Education*
- Encourage the region and State to join the road traffic safety project VISION ZERO. Vision Zero's goal is to end all traffic deaths and injuries. *-Engineering, Education, Enforcement*
- Continue to regionally support policy initiatives to increase vulnerable user safety. -Engineering, Education, Enforcement

- Regionally promote Traffic Skills 101 Bicycle Skills Classes. Offer classes through municipal parks and recreation departments, local YMCA chapters, Charlotte Hungerford Hospital, and local schools. *-Education*
- **13** Distribute the CT Bicycle and Pedestrian Board CT Bike Law Police Officer Handout to all State and Local Law Enforcement Agencies.³⁴ -*Enforcement*



³⁴ CT Bicycle and Pedestrian Board Resources. CT Bicycle Law Police Officer Handout, 2016. Retrieved from http://www.ctbikepedboard.org/uploads/7/8/7/9/78791402/ct_ bicycle_laws_handout2016.pdf on April 23,2018.

8.6 Motorcyclist Safety

Motorcyclist safety is an area of traffic concern both regionally and nationally. According to NHTSA 2015 Countermeasure 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.



Performance Measure: From 2015-2017 there were 172 motorcycle crashes that ended in fatal or serious injury to the persons involved, 13 crashes were fatal. This makes up 6% of the 2,876 statewide motorcyclist fatal and injury crashes.

NHCOG Regional Strategies for Motorcyclist Safety:

- Continue to endorse CT DMV's Connecticut Rider Education Program (CONREP) for Motorcycle Safety. Consider re-establishing a motorcycle training site within NHCOG like the former UCONN Torrington Campus site. -Education
 - Continue to support the insurance industry's rate discount for CONREP graduates. -Engineering, Education, Enforcement
- Coordinate with local motorcycle dealerships, the Winsted DMV office, Charlotte Hungerford Hospital, Torrington Area Health District, and other public and private sector agencies to promote safety campaigns, encouraging older 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. -Engineering, 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, Enforcement
- Regionally promote various motorcycle safety awareness resources, such as Helmetcheck.org, the Motorcycle Safety Foundation, Interactive Scenic Ride Map, and CT Travel Smart websites. *-Education*

Performance Objective: Decrease the number of motorcyclist fatalities from the three-year average of 13 to 12 in 2021. There were five unhelmeted motorcycle fatalities from 2015-2017, which is roughly an average of two per year. In congruence with the CT SHSP 2017-2021 the goal is to increase media outreach and encourage motorcycle riders to wear protective clothing and gear. Decrease the number of unhelmeted fatalities from the 2015-2017 average of under two per year to one per yearin NHCOG.

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 potentially cause safety issues increasing the risk to uninvolved motorists and can cause congestion delays and secondary incidents. The CT DOT recommends a statewide Traffic Incident Management (TIM) plan be implemented to coordinate the use of human, institutional, mechanical, and technology resources to reduce the duration and impact of incidents.

Traffic Incident Management "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 and improves the safety of motorists, crash victims, and emergency responders.

Performance Objectives:

- Promote the safety of motorists, crash victims, and incident responders by reducing secondary crashes and associated fatalities and serious injuries. *-Engineering, Education, Enforcement*
- Increase NHCOG regional participation of first responders in incident management training by 50% by 2021. -*Engineering, Education, Enforcement*
- NHCOG Regional Strategies for Traffic Incident Management.
- Provide ITS technology to reduce response times.
- Create a regional partnership with CT DOT and the Federal Highway Administration to continue working with the public and private sector partners to address traffic incident safety, operations, and trainings. Collaborate with CRCOG's traffic incident management coalition to learn best practices. *-Engineering, Education and Enforcement*
- Continue to support the CT Travel Smart website and to promote this resource regionally through earned media and public outreach campaigns. *-Education*
- Continue to conduct public awareness programs for effective on-scene traffic incident management by road users. *-Education*
- Regionally investigate investing in installing visual message boards along limited access highways within NHCOG. *-Engineering*
- Support regional participation in TIM training and exercises. -Education
- Augment CT DOT and NHCOG communication regarding coordination, training. -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*

• Support a statewide NIMS-based Unified Response Manual (URM). -Education

- Reduce incident duration, which is achieved through:
 - Reducing the time to detect incidents.
 - Initiating an expedient and appropriate response.
 - Clearing the incident as quickly as possible. -Engineering and Enforcement

• Promote best practices for traffic incident management and provide accessibility to ITS tools. -*Education*

- Conduct After-Action Reviews to improve response and scene management. -Enforcement
- Identify staffing needs and training resources for CT DOT staff and emergency responders. -*Education*
- Evaluate expansion of ITS infrastructure to additional regional corridors based on prioritized need. -*Engineering*
- Include Weather Responsive Traffic Management (WRTM) strategies, such as Road Weather Information Systems (RWIS). *-Engineering*
- Support the development and tracking of TIM performance metrics following national standards and definitions. *-Engineering, Education and Enforcement*
- Continue to install reference markers on highways every .2 miles to improve Emergency Response Times. -*Engineering*

9 technological advances affecting traffic safety

9.1 Connected and Autonomous Vehicles

Connected and Automated Vehicle (CAV) technologies need to be considered as they are rapidly advancing and will continue to play an integral role in traffic safety and crash reductions. According to NHTSA, of all serious motor vehicle crashes, "94% are due to human error or choices. Fully automated vehicles that can see more and act faster than human drivers could greatly reduce errors, the resulting crashes, and their toll.³⁵ "Connecticut's Fully Autonomous Vehicle Testing Pilot Program (FAVTPP) – an initiative created by legislation that the Governor signed into law in April 2018, will help bring Connecticut to the forefront of the innovative and burgeoning autonomous vehicle industry. Under the terms of the program, Towns and cities that are interested in participating and allowing the testing of fully autonomous vehicles on their roadways must submit an application to the state. Upon review, up to four municipalities will be selected for participation.

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; distraction

Communications technologies and advanced driver assistence systems

Factors involving teen or novice driving

NHCOG Regional Strategies for Connected and Autonomous Vehicles:

- Regionally support the development of CAV technology and best practices.
- 2 Regionally encourage municipal participation in the State's newly launched Autonomous Vehicle Testing Pilot Program. Applications can be found on the Office of Policy and Management website. http://www.ct.gov/opm/cwp/view.asp?a=2990&q=601204
- 3 Improve and standardize Geographic Information System (GIS) mapping and spatial capabilities in all 21 municipalities. Establish a statewide platform for GIS data.

Currently many motor vehicles have automated technology that increases their safety such as forward collision warning, automatic emergency braking, lane departure warning and lane keeping assist, safe distance maintenance, backing up and parking assist. These and other safety technologies can warn the driver to potentially avoid a crash. Connected vehicles can communicate

with other connected vehicles using wireless technology. This technology can alert drivers to dangerous conditions related to other vehicles.

Automated vehicles are vehicles that rely on various on board automated systems, many times in combination, to operate a motor vehicle. Vehicle automation is presently being advanced by many companies and by many methods. NHTSA has categorized 5 levels of automation, with the highest level being driverless operation, and has developed guidelines for vehicle automation including best practices for state agencies.

NHCOG Strategies for Improving MMUCC Data Collection:

Update to 2017 MMUCC 5th edition. The new version of the MMUCC includes:

- MMUCC no longer defines how data elements should be collected (at scene/linked or derived). States are encouraged to link or derived wherever possible to minimize the impact on law enforcement.
- Following State best practices, MMUCC now includes Fatal Crash, Large Vehicle and Hazardous Materials, and Non- Motorist crash data sections; these are only completed if applicable. The Model Minimum changes based on the circumstances instead of a one-size-fits-all approach.
- A new type of data element—contained in the Dynamic Data Elements section—is introduced for the first time to capture data on topics that are changing rapidly.

³⁵ NHTSA Automated Vehicles for Safety. Retrieved January 2018 from https://www.nhtsa. gov/technology-innovatioNAutomated-vehicles-safety#backing-parking.

10 nhcog implementation and evaluation

10.1 Implementation

The NHCOG RTSP is a supplemental document to the 2016 NHCOG Regional Transportation Plan. Collectively, these two plans will assist the region in prioritizing projects that will improve roadway safety locally. The member municipalities should be dedicated to the implementation of safety improvements and the reduction of injury and fatal crashes based on appropriate countermeasures, some of which are included in this report.

NHCOG, the NHCOG RTSP advisory committee, member municipalities, and CT DOT have provided their local and regional knowledge, input and strategies to this safety plan. Development of this plan was an iterative process with Town and regional input included from the onset. Throughout the implementation of this plan, NHCOG and the advisory committee can provide guidance and be dedicated to bringing appropriate strategies to fruition.

NHCOG should consider providing oversight of this safety effort and report progress to CT DOT and the member Towns at least once a year. Each emphasis area could be reported at a NHCOG 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.

Recommended Steps to be taken by NHCOG:

Annual reporting of RTSP strategies and performance measure progress.

Coordination with CT DOT'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.

10.2 Evaluation

The NHCOG 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 in accordance with the five-year SHSP update process. The COG should be responsible for communicating with the member municipalities and CT DOT, and in addition routinely evaluate safety data to determine the selected emphasis areas are still relevant. And 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 fatal and serious injuries in NHCOG 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 (see Section 7), what has been accomplished, the progress of performance measures, best practices and any lessons learned.

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

10.5.1 Connecticut Technology Transfer Center's Safety Circuit Rider Program

The Connecticut Technology Transfer Center's Safety Circuit Rider Program is a statewide program aimed at reducing the frequency and severity of injury and fatal crashes by assisting and supporting local road safety authorities. The initiative offers 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
- Assistance with the CT Crash Data Repository

10.5.2 Transportation Demand Management

Reduction of VMT has a naturally accompanying decrease in traffic crashes. In rural areas it is more difficult to implement tactics such as congestion pricing; however, there continue to be methods to reduce transportation demand. These include compact land use, improved transportation options such as transit, non-motorized transportation planning, ridesharing, telecommute, taxi service improvements, and bike/transit integration. Changes to the built environment can have potentially dramatic effects on transportation demand.



The following Town reports [in **Appendix A**] provide a more in-depth analysis and overview of traffic safety in each of the 21 NHCOG member municipalities.

Each Town report includes basic demographic information, data identified Data-Driven corridors, intersections and bike and pedestrian locations. In addition to the data-identified sites, locations that exhibit safety concerns for the Town staff were documented. From the data identified and Town prioritized locations systemic improvements and site-specific strategies were developed to minimize or prevent fatalities and serious injury crashes in the future. These are listed in tabular format with estimated costs.

appendices

Appendix A Town Reports

TOWN OF BARKHAMSTED

2016 US Census Population Estimate: 3,664 Area: 38.8 square miles Population Density: 94 people per square mile 2016 Vehicle Miles Traveled (VMT): 49,401,290 2016 VMT per Capita: 13,483 Setting: Rural Town Representatives: Donald Stein (First Selectman) and James Bonetti (Resident Trooper) Data Identified Data-Driven Corridors: US-44 (78) Data Identified Data-Driven Intersections: CT-US-44 and E. West Hill Road (AS) US-44 at Driveway (CU), and New Hartford Road and West Hill Road (I) Data Identified Bike and Pedestrian Crash Locations: E. West Hill Road and Eddy Road Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 65



Overview

Barkhamsted is a Town in northeastern NHCOG. It is bordered by New Hartford to the south, Winchester to the west, Hartland to the north, and Granby and Canton to the east. The primary state highways in Town are US-44, CT-20, CT-219, CT-318, and CT-181.





Table 1: Barkhamsted Total Crashes by Severity (See page 53)

Crash Severity	2015	2016	2017
Fatal Injury (K)	1	1	0
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	10	14	11
Possible Injury (C)	9	9	8
Total Injury Crashes	21	24	20

Table 2: Barkhamsted Data-Driven Intersections (See page 54)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection I***	US-44	W. West Hill Road	7
Intersection AA	CT-181	Goose Green Road	3
Intersection AS	US-44	E. West Hill Road	3
Intersection CU	US-44	Driveway	3

Table 3: Barkhamsted Data-Driven Corridor (See page 54)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 78***	New Hartford Road	Old North Road	River Road	21

Table 4: Emphasis Areas Related to Crashes in Barkhamsted

Year	2015	2016	2017
Asleep or Fatigued Related Crashes	0	3	1
Bicycle Crashes	1	0	0
Distracted Driving	2	2	3
Intersection Related Crashes	8	5	8
Motorcycle Crashes	2	4	4
Older Driver Crashes	3	7	4
Pedestrian Crashes	0	0	0
Unrestrained Occupant Crashes	0	4	1
Road Departure Crashes	7	10	8
Speeding Related Crashes	2	7	4
Substance-Involved Crashes	2	1	0
Younger Driver Crashes	6	9	9
Total Emphasis Areas	33	52	42

*** This Intersection or Corridor is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Town Comments

The Town prioritized the intersections of US-44 at W. West Hill Road, US-44 at E. West Hill Road, and US-44 at Goose Green Road. Travel speeds above the posted speed limit (50 mph) coupled with poor sightlines from the side streets due to vegetation and horizontal curvature appear to contribute to safety concerns at these locations. In addition, students from Northwestern Regional High School frequently utilize the intersection of US-44 and W. West Hill Road as an alternative route to avoid delays caused by buses queueing near the school. This alternative route puts a high number of "new motor vehicle operators" at this intersection.

Crashes on Corridor 78 along US-44 are due to speeding combined with roadway geometry. This is the commercial center of the Town. US-44 is higher in elevation in relation to local side streets. This creates a challenge for motorists turning off local roads onto US-44.

The Town also noted that the junction of CT-318 and CT-219 improvement project has received federal funding to realign intersection, by relocating a segment of CT-219 to form a T with CT-318. This project could improve conditions on a roadway that has significant vertical and horizontal curvature.

The Town is very concerned with the steep vertical grade along CT-318 east of Fenn Road, especially because Barhamsted Elementary School is located along this section of roadway. The State has examined the roadway but has not made the improvements the Town is requesting.

The four-way stop sign installed at CT-219 and CT-179 has improved safety at this intersection.

In general, the Town Representatives stated that speeding, horizontal and vertical roadway curvature, and high volume of through traffic are concerns.

Field Site Inventory

US-44 at E. West Hill Road

This is a four-way stop-controlled intersection, with the side streets of E. West Hill Road and Old Farm Road (Figure 2). There appears to be inadequate sight distance from both side streets facing west along US-44 due to horizontal curvature. The posted speed limit is 50 mph and vehicles were observed travelling at high speeds, including truck traffic.

The adjacent land is mixed-use, commercial, private, open space, and residential. Moderate traffic for off-peak hours was observed. The presence of a school bus warning sign indicates a school bus stop (Figure 1).



Figure 3: School Bus Stop Warning Sign on US-44 facing east

Figure 4: Approach to US-44 at E West Hill Road

US-44 at W. West Hill Road

This is a four-way intersection with W. West Hill Road. The side streets are stop controlled (Figure 4). The southern leg of W. West Hill Road approaches US-44 at a steep down grade of over 12 percent (Figure 4). The posted speed limit of US-44 through this intersection is 50 mph. The adjacent land is mixeduse, commercial, private, open space, and residential. Moderate traffic for off-peak hours was observed, including truck traffic.



Figure 5: US-44 at W. West Hill Road, facing west



Figure 6: Southern Leg of W. West Hill Road at US-44

Countermeasure Considerations

The Town could consider reducing lane widths along US-44 (where feasible) using center line treatments to mitigate speeding.

For intersections with limited sight distance, the Town could clear vegetation to increase sight distance where necessary. In addition, the Town could consider installing advanced warning signs or transverse rumble strips on local roads to warn drivers of potential vehicles crossing the road or merging, especially at US-44 at E. West Hill Road and W. West Hill Road. To also increase sign distance at W. West Hill Road, the stop bar could be moved at the intersection with US-44. This is included in FHWA's proven safety countermeasures at stop-controlled intersections. Vegetation could be cleared to increase sight distance where necessary.

Enhanced delineation including high curve chevron signs could be installed where warranted, exempting the sites where CT DOT Project 174-406's horizontal curve signing program is placing chevron curve signs along various local roads. High friction surface treatments (HFST) could be installed where warranted, along horizontal curves or other areas of concern.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs¹. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page[2]. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

¹Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 5: Barkhamsted Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost		
AS	NA	US-44 and E. West Hill Road	3	Intersection Sight Distance Due to Proximity of Horizontal Curvature	Add Flashing Beacons to Ad- vanced Intersection Warning Signs	Low-Medium		
					Smooth Lane Narrowing	Low		
CU	NA	US-44 and Drive- way	3		Needs Further Study			
1+++	US-44 and W. West		7	Skewed Intersection	Advanced Intersection Warning Signs with Flashing Beacons Approaching Intersections	Low-medium		
	NA	Hill Road	Hill Road	Hill Road	/	Sight Distance	Vegetation Management	Low
				Dark, Not Lighted	Roadway Illumination	Low-medium		
				Dark, Not Lighted	Roadway Illumination	Low-Medium		
NA	78***	US-44	20	20	High Curve Crashes	Enhanced Delineation	Low	
				Speeding	Dynamic Speed Feedback Signs	Low		
				Major Road/Minor Road	BUMP Sign (W8-1)	Low		
				Elevation Disparity	Level Intersecting Roads	Medium		
Townwide			Horizontal Curvature	CT DOT Systemic Horizon- tal Curve Warning Signs and Shoulder Rumble Strips Pro- gram	Low			
			Dedectrian	Repaint Crosswalks	Low			
				Pedestrian	Transverse Rumble Strips	Low		
				Speed	Gateway Treatments	Low		

*** This Intersection or Corridor is included in the Top 40 NHCOG Crash Locations, 2015-2017.

TOWN OF BURLINGTON

2016 US Census Population Estimate: 9,614 Area: 30.4 square miles Population Density: 320.5 people per square mile 2016 Vehicle Miles Traveled (VMT): 62,291,235 2016 VMT per Capita: 7,207 Setting: Rural Town Representatives: Theodore Shafer (First Selectmen), Scott Tharau (PW Director) Data Identified Data-Driven Corridors: 83 (CT-4-Spielman Highway), 84 (CT-4-Canton Road Data Identified Data-Driven Intersections: AJ (CT-4 at CT-69), AU (CT-179 at Sand Bank Road) CM (CT-4 at Savarese Lane), and DF (CT-4 at CT-179) Data Identified Bike and Pedestrian Crash Locations: Charolais Way at Rock Road, East Shore Boulevard at Stafford Road, CT-4 at CT-179



Overview

Burlington is a relatively larger Town in NHCOG, one of the few whose population is increasing steadily according to Town officials. It is in the southeast corner of the region bordered by New Hartford and Canton to the north, Harwinton to the west, Bristol to the south, and Farmington and Avon to the east. Due to its proximity to Hartford, it is a Town with rural and suburban characteristics.

General concerns are speeding, out of Town drivers, access management, sightlines due to horizontal and vertical curvature, lack of pedestrian and cyclist accommodations, high traffic volumes, and increasing traffic due to Town growth.





Table 6: Burlington Total Crashes by Severity (See page 60)

			-
Crash Severity	2015	2016	2017
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	1	0	4
Suspected Minor Injury (B)	13	16	13
Possible Injury (C)	14	14	12
Total Injury Crashes	29	30	29

Table 8: Burlington Data-Driven Corridor (See page 61)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 84***	Canton Road	0.51 mi south of Spielman Highway	0.07 mi north of Ford Road	10
Corridor 83***	Spielman Highway	Liberty Lane	Covey Road	8
Corridor 85	Spielman Highway	Mountain Spring Road	Barnes Hill Road	5
Corridor 105	Stafford Road	0.10 mi south of Deer Avenue	0.42 mi south of Burlwood Drive	4
Corridor 86***	Milford Street	0.12 mi west of E. Chippens Hill Road	0.11mi east of E. Chippens Hill Road	3

Table 9: Emphasis Areas Related to Crashes in Burlington

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	2	1
Bicycle Crashes	1	1	1
Distracted Driving	2	3	4
Intersection-Related Crashes	7	7	10
Motorcycle Crashes	2	1	2
Older Driver Crashes	7	6	9
Pedestrian Crashes	0	0	0
Unrestrained Occupant Crashes	0	4	0
Road Departure Crashes	12	15	10
Speeding-Related Crashes	7	11	4
Substance-Involved Crashes	2	3	4
Younger Driver Crashes	18	8	14
Total Emphasis Areas	59	61	59

*** This Intersection or Corridor is listed in the Top 40 Crash Sites in NHCOG, 2015-2017.

Table 7: Burlington Data-Driven Intersections See page 61)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection AJ	CT-4	CT-4 CT-69	
Intersection DF	CT-4	CT-179	4
Intersection AU***	CT-179	Sand Bank Hill Road	4
Intersection CM	CT-4	Savarese Lane	3
Intersection DF	CT-69	Sawmill Road	3

Town Comments

Town officials stated that high crash locations along Corridors 83-85 were on par with their observations. They stated that CT-4 is a concern for the Town, they are applying for a Transportation Investment Generating Economic Recovery (TIGER) grant to make improvements along this route.

Town officials also applied for a Connecticut Community Connectivity Grant to improve the Barnes Hill Road and CT-4 intersection; there are sightline issues at this intersection associated with vertical curves, vegetation, and high speeds.

Town Representatives stated that the identified corridors 83 and 85 along CT-4 are priorities, primarily due to inadequate sightlines and speeding. Corridor 83 has three concerns, including sightlines, access management, and speed. CRCOG has studied this area and compiled existing conditions and potential improvements in a documented report that can be obtained from CRCOG. Corridor 86 crashes were attributed to inclement weather combined with the roadway's horizontal curvature. Through traffic is prevalent on CT-4. Corridor 86 along CT-69 is not a priority for the Town.

The Town also noted that speeding is an issue along all roads, as there are many out-of-Town-drivers. The Town of Burlington has one contracted Resident State Trooper, five full-time constables, and four part-time constables. Law enforcement agents are often stationed along the CT-4 corridor to conduct radar speed reduction campaigns. The Town closely collaborates with local law enforcement.

The intersection of CT-4 and CT-69 is one of the few signalized intersections in Town. Recently CT DOT has installed a climbing lane and chevron signs along the CT-4 corridor. East of CT-69 on CT-4 there is an access management concern.

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Field Site Inventory

CT-4 between Savarese Lane and Liberty Lane

Burlington's Town green is bordered by CT-4 to the north, George Washington Turnpike to the south, and Savarese Lane to the east (Figure 8). This road configuration around the Town green creates a sharply skewed intersection at CT-4 and George Washington Turnpike. At this intersection, George Washington Turnpike is stop-controlled and CT-4 in under free-flow conditions.

Sightlines from the George Washington Turnpike approach are limited due to the sharp skew of the intersection. The intersection of CT-4 and Savarese Lane also presents challenging sightlines for motorists entering CT-4 due to the vertical curvature along the Savarese Lane approach. At the intersection of Savarese Lane and George Washington Turnpike, the westbound traffic on George Washington Turnpike is not stop controlled, while the other three legs of the intersection are stop controlled. The posted speed limit for this section of CT-4 is 30 mph, however much higher speeds were observed. The adjacent land is mixed-use, historical, commercial, private, open space, and residential. Moderate traffic for off-peak hours was observed, including truck traffic.



Figure 8: Burlington CT-4 and Savarese Lane

CT-4 at Punch Brook Road and Barnes Hill Road

CT-4 at Punch Brook Road and Barnes Hill Road is a four-way intersection with stop control on Punch Brook Road and Barnes Hill Road (Figure 9). In addition, there is an overhead flashing beacon reinforcing STOP control on the side streets and proceed with caution signs for the CT-4 approaches. Sight distance is impeded by vegetation for motorists looking to the east from Punch Brook Road. In addition, Punch Brook Road intersects CT-4 on a steep downgrade and Barnes Hill Road intersects CT-4 on a steep upgrade. There is an intersection ahead sign combined with an advisory posted speed limit of 35 mph.

Adjacent land use is residential. Moderate traffic for off-peak hours was observed, including truck traffic.



Figure 9: Barnes Hill Road approach to CT-4

NHCOG RTSP 2018

Countermeasure Considerations

The Town could continue to enhance pedestrian accommodations along CT-4 using available funding. "Go Slow" pavement markings could be added along certain data-driven spots on CT-4 to further alert motorists to upcoming roadway changes that warrant lower velocity.

At the intersection of Savarese Lane and George Washington Turnpike add the supplemental W4-4P and W4-4AP signs to the Savarese Lane stop signs to warn drivers to three-way stop control (Figure 10). The Town could implement recommendations per the CT Community Connectivity road safety audit report².

At CT-4 and Barnes Hill Road, a warning sign with flashers could be added to the intersection with an advisory speed sign. Vegetation management could improve sight distance.

Centerline rumble strips could be installed to mitigate head-on crashes, especially where sight distance is limited³. Their objective is to assist distracted or inattentive motorists who stray over the center line or have trouble seeing during inclement weather, alerting them of their errant trajectory. These could be installed as a low-cost systemic improvement along CT-4.

To provide for pedestrian and bicyclist accommodations, any excess travel lane widths could be reduced to 11 feet and the remaining roadway could be marked as the shoulder. A wide shoulder could be considered along roads used by bicyclists⁴.

Enhanced delineation, including high curve chevron signs, could be installed by the Town where warranted, exempting the sites where CT DOT Project 174-406's horizontal curve signing program is placing chevron curve signs along various local roads (Figure 11). High friction surface treatments (HFST) could be installed where warranted, along horizontal curves or other areas of concern, especially along CT-199 at Davenport and CT-67 at Botsford Hill Road.



Figure 10: MUTCD Supplemental Sign

Maintaining the appropriate amount of pavement friction is imperative for safe driving. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can mitigate the reduction of pavement friction assisting motorists in maintaining control of their vehicles.

The Town could collaborate with enforcement, emergency management services, and the region, to develop various safety public outreach campaigns, particularly regarding speeding. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs⁵. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page⁶. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

²Community Connectivity Program: Burlington George Washington Turnpike – Road Safety Audit. Connecticut Department of Transportation. AECOM. (April 2016). Retrieved from http://ctconnectivity.com/wp-content/uploads/2016/07/Burlington-RSA-Report-and-Appendices.pdf

³Proven Safety Countermeasures. (2017, October 13). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures

⁴Proven Safety Countermeasures: Walkways. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/walkways/

⁵NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing. ⁶Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 10: Burlington Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
				Sight Distance	T up Intersection	High
NA	83***	CT-4	8	Access Management	Corridor Access Management	Medium
				Speeding	Dynamic Speed Feedback Signs	Low
				Roadway Departures	Edge Line Rumble Strips with Bicycle Gaps	Low
				Head on and Sideswipe Crashes	Centerline Rumble Strips	Low
NA	84***	CT-4 and CT-179	10	Bicycle and Motorized Vehicle Conflicts	Buffered Bike Lane	Low
				Dark, not Lighted crashes	Retroreflective Pavement Mark- ings	Low
				Speeding	Watch for Me CT Campaign	Low
				speeding	Dynamic Speed Feedback Signs	Low
	95	СТА	5	Speeding	Watch for Me CT Campaign	Low
NA	65	C1-4	5	speeding	Dynamic Speed Feedback Signs	Low
NIA	06***	CT CO	2	Dark, not Lighted crashes	Retroreflective Pavement Mark- ings	Low
NA 60	C1-09	5	Roadway Departures	Edge Line Rumble Strips with Bicycle Gaps	Low	
NA	105	Stafford Road	4	Needs Further study		
W	NA	CT-69 and Sawmill Road	3			
СМ	NA	CT-4 and Savarese Lane	3	Sight Distance	T up intersection	High
				Roadway Departures	Edge Line Rumble Strips with Bicycle Gaps	Low
Δ1.1***	ΝΑ	CT-179 and Sand	4	Speeding	Dynamic Speed Feedback Signs	Low
	Bank Road		4	No-Light Crashes	Roadway Illumination or Retroreflective Pavement Mark- ings	Low
CT-4 and Pu	inch Brook Road	/Barnes Hill Road	0-2	Sight Distance	Add Flashing Beacons to Inter- section Ahead Sign	Low-Medium
					Manage Vegetation	Low
				Horizontal Curvature	CT DOT Horizontal Curve Warning	_
			High Traffic Volumes	Signs and Shoulder Rumble Strips Program	Low	
	-				Watch for Me CT Campaign	Low
	lo	wnwide		Bike and Pedestrian	Narrow Travel Lanes/Widen	Low
					Shoulders	Low
				Speed	Go Slow Campaign	Low
			Speed	Gateway Treatments	Low	

TOWN OF CANAAN (FALLS VILLAGE)

2016 US Census Population Estimate: 1,177

Area: 33.3 square miles

Population Density: 35.7 people per square mile

2016 Vehicle Miles Traveled (VMT): 17,136,385

2016 VMT per Capita: 14,559

Setting: Rural

Town Representatives: Patrice Mechare (First Selectman) and Tim Downs (Fire Chief/Highway Supervisor)
Data Identified Data-Driven Corridors: 72 (US-7 and South Canaan Road) and 109 (US-7 and
South Canaan Road)
Data Identified Data-Driven Intersections: CG US-7 at (Under Mountain Road) and DB (US-7 at
Beebe Hill Road)

Data Identified Bike and Pedestrian Crash Locations: US-7 at Beebe Hill Road

Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 25

Overview

The Town of Canaan is a quaint rural Town located in the northern central region of NHCOG, often referred to as the second smallest Town in Connecticut. Locally referred to as Fall's Village it is listed on the National Register of Historic Places as an historic district. The main thoroughfares are US-7, CT-63 and CT-126.

General issues are speeding, lack of enforcement, horizontal and vertical curvature, lack of driver familiarity.





Figure 11: Canaan, CT



Figure 12: Canaan Crash Map



Figure 13: Canaan High Frequency Crash Corridor and Intersection Map

Table 11: Canaan Total Crashes by Severity (See page 66)

Crash Severity	2015	2016	2017
Fatal Injury (K)	1	1	0
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	3	3	5
Possible Injury (C)	6	2	2
Total Injury Crashes	10	7	8

Table 13: Canaan Data-Driven Corridor (See page 67)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 72***	S. Canaan Road	0.06 mi south of Under Mountain Road	0.24 mi south of Stein Lane	6
Corridor 109***	S. Canaan Road	0.04 mi south of Page Road	0.16 mi north of Barnes Road	3

***This Intersection and Corridor is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Table 12: Canaan Data-Driven Intersections (See page 67)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection CG	US-7	Under Mountain Road	3
Intersection DB***	US-7	Beebe Hill Road	3

Table 14: Emphasis Areas Related to Crashes in Canaan

Year	2015	2016	2017
Distracted Driving	3	0	1
Intersection-Related Crashes	3	3	4
Motorcycle Crashes	0	2	1
Older Driver Crashes	1	3	5
Pedestrian Crashes	0	0	1
Unrestrained Occupant Crashes	0	1	0
Road Departure Crashes	4	1	4
Speeding-Related Crashes	3	0	0
Substance-Involved Crashes	2	1	0
Younger Driver Crashes	6	6	2
Total Emphasis Areas	22	17	18

Town Comments

The Town is concerned with speeding primarily by out-of-Town drivers unfamiliar with the horizontal and vertical curvature along the roadways. The Town stated that many crashes were due to a combination of speed, unfamiliarity of roadway geometry, and weather conditions. Furthermore, there is lack of regular law enforcement. Connecticut State Police Troop B is responsible for the Town's local police enforcement. This includes four police officers that cover 12 Towns in NHCOG and there is currently a high attrition rate due to retirement. The low police coverage leads to virtually no legal or financial consequences for speeding.

In addition to speeding, the Town cited issues with driver confusion, isolated geometric issues, lack of bike and pedestrian infrastructure, and heavy truck and motorcycle volume affecting roadway safety.

In an effort to improve pedestrian safety, the Town has new sidewalks in the downTown area funded by a STEAP grant though a Planning and Zoning Committee member stated that these sidewalks do not connect to the post office on Miner Street, forcing residents to walk in the street along Beebe Hill Road.

The Town specifically prioritized the intersections of US-7 and CT-63 and CT-126 and US-7. The Town had requested CT DOT investigate the US-7/CT-63 intersection. An additional stop sign was installed at the CT-63 junction with Route 7, but it was eventually removed because it did not result in sufficient improvement. Currently there is only one stop sign on US-7 North at the junction with CT-63.

Another concern is the US-7/Johnson Road area. The Town would like CT DOT to conduct a traffic study at this location.

The Town prioritized the intersections of US-7 and CT-63 and CT-126 and US-7.



Figure 14: US-7

Field Site Inventory

US-7 and CT-63

There was a fatality at the intersection of US-7 and CT-63. Municipal officials believed that this fatality was an isolated storm-related incident, rather than one caused by intersection geometry.

There is one stop sign on northbound US-7 at the junction with CT-63. This intersection has limited sight distance and inadequate turning radius. Many vehicles opt to take Barnes Road where sightlines and turning radius are optimal. From our observations, the eastbound to northbound curve of US-7 could be removed, rerouting vehicles to intersection of CT-63 and Barnes Road.



Figure 15: Intersection of US-7 and CT-63

CT-126 and US-7

This two-way skewed stop-control, flashing yellow and red intersection is a concern for the Town. US-7 has limited sight distance and motorists were observed speeding. Along CT-126 eastbound, the sight distance is also limited, Figure 3. There is a crosswalk with a pedestrian crossing sign on US-7 but it is not linked to any sidewalks, pedestrians were observed walking along the shoulder.

Figure 16: CT-126 and US-7



Figure 17: Figure 2: Aerial view of CT-63 and US-7



Countermeasure Considerations

The installation of gateway treatments could alert motorists to the Town's entry point to mitigate speeding and to visually cue drivers to change in traffic patterns.

The Town of Canaan could request the South Canaan Road segment of the US-7 and CT-63 junction be closed to through traffic. Motorists could be directed along Barnes Road to CT-63.



The Town could reduce lane widths where applicable to mitigate speeding. Any excess roadway and shoulder width increase driver margin of error which often induces speeding and driver distraction. Reduction in travel lane width to 11' per lane would require more attentive and slower driving due to motorists' necessity to increase their focus on more accurate steering behavior. Narrower lane widths may be chosen to manage or reduce speed and shorten crossing distances at locations where pedestrians and cyclists are more likely. Another measure to reduce speeds could involve the implementation of speed radar signs, placed at specific areas of concern).

Chevron curve signs and high friction surface treatments could be installed where warranted along horizontal curves or other areas of concern. Maintaining the appropriate amount of pavement friction and installing adequate signage are imperative for safe driving. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can assist motorists in maintaining control of their vehicles. These treatments are included in the FHWA's twenty proven countermeasures .

The current two-way stop configuration with limited sight distance at CT-126 and US-7 could be improved with enhanced intersection ahead warning signs. A pedestrian hybrid beacon could be considered at this crosswalk.

In addition to the infrastructure changes public outreach campaigns that encourage improved driver behaviors could be implemented on a Town and regional level.

⁷Mitigation Strategies for Design Exceptions: Lane Width. (2014, October 15). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/geometric/pubs/mitigationstrategies/chapter3/3_lanewidth.cfm ⁸Proven Safety Countermeasures. (2017, October 13). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures
Table 15: Canaan Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
NA			6	Weather-related	High Friction Surface Treat- ments	Low
	72***	US-7		Intersection Crashes	Advanced Warning Signs with Flashers at US-7 and Under Mountain Road Approaches	Low-Medium
				Failure to Stay in Lane	Centerline Rumble Strips	Low
				Dark, Not Lighted Conditions	Retroreflective Pavement Markings	Low
					Close South Canaan Road	Medium
NA	NA 109***	US-7	3	Sight Distance	Systemic Application of Low-Cost Countermeasures at Con- trolled Intersections	Low
				Speeding	See Townwide Suggestions	Varies
CG	NA	US-7 and CT-126	3	Pedestrian Crossing	Pedestrian Hybrid Beacons	Medium
				Sight Distance	Systemic Application of Low-Cost Countermeasures at Con- trolled Intersections	Low
				Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low

*** This Intersection is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost		
				Stop Sign Compliance	Add 12" Flashers to Stop Ahead Sign on Beebe Hill Road	Low-Medium		
		LIS 7 and Pacha			Adjust Stop Bar	Low		
DB***	NA	Hill Road	3	Pedestrian Crossing	Advanced Pedestrian Warning Sign on US-7	Low-Medium		
				Sight Distance	Enhanced Delineation and Friction for Horizontal Curves	Low		
			Sight Distance	Systemic Application of Low-cost Countermeasures at Controlled Intersections	Low			
					Realign Skewed Intersections	High		
					Road Diet	Low		
					Dynamic Speed Feedback Signs	Low		
				Speeding	Gateway Treatments	Low		
					High Visibility Enforcement	Low-Medium		
	Точ	wnwide			Slow Down Campaigns	Low		
					USLIMITS2	Low		
					Horizontal Curves		CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program	Low
				Turning Radii Improvements	Medium-High			
			Truck Traffic	Local Road Through Truck Prohibition	Low			
				Walkways	High			
				Bike and Pedestrian	Pedestrian Hybrid Beacons	Medium		
			Watch for me CT Campaign	Low				

*** This Intersection is included in the Top 40 NHCOG Crash Locations, 2015-2017.

TOWN OF COLEBROOK

2016 US Census Population Estimate: 1,430 Area: 32.9 square miles Population Density: 43.3 people per square mile 2016 Vehicle Miles Traveled (VMT): 10,036,640 2016 VMT per Capita: 11,214 Setting: Rural Town Representatives: Thomas McKeon (First Selectman) Data Identified Data-Driven Corridors: N/A Data Identified Data-Driven Intersections: N/A Data Identified Bike and Pedestrian Crash Locations: N/A



Overview

Colebrook is a Town of roughly 1,500 residents in the northeast corner of the region. It is bordered to the north by Massachusetts, to the west by Norfolk, to the south by Winchester, and to the east by Hartland. The Town's main thoroughfare is CT-8, colloquially designated Colebrook River Road.

The general transportation issues are speeding, out-of-Town motorists, and horizontal and vertical curvature.



Figure 18: Colebrook Town Center



Figure 20: Colebrook Crash Map

Table 16: Colebrook Total Crashes by Severity (See page 75)

			-
Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	2	3
Possible Injury (C)	0	2	1
Total Crashes	1	4	5

Table 17: Emphasis Areas Related to Crashes in Colebrook

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	0	2	0
Distracted Driving	0	0	1
Intersection-Related Crashes	0	2	0
Motorcycle Crashes	1	1	0
Older Driver Crashes	0	1	0
Unrestrained Occupant Crashes	0	0	1
Road Departure Crashes	0	2	3
Speeding-Related Crashes	1	1	1
Substance-Involved Crashes	0	0	1
Younger Driver Crashes	1	1	4
Total Emphasis Areas	3	10	11

Figure 19: CT-183



Town Comments

The Colebrook Chief-elected official did not prioritize the Identified data-driven corridor along CT-8. CT-8, north of Beech Hill Road, is a traffic concern due to speed differentials between through and local traffic. Prior to the 2015-2016 collected data, there was a fatality on CT-8 north of Beech Hill Road.

In general, the Town has low traffic volume and consistent with its rural setting there are no sidewalks in the center. The center of Town has a regulatory speed limit of 30 mph. The Town expressed concern for speeding along local and state roads. In addition, the Town mentioned that many crashes may be attributed to the high proportion of outof-Town motorists who are unfamiliar with the vertical and horizontal curvature of the roadways.

CT-183 is a prioritized corridor for the Town, especially north of the center of Town where motorists exceed the posted speed limit (Figure 21). Chevron curve signs were recently installed along CT-183 south of CT-182A to visually cue motorists of the horizontal alignment. According to the Town, this segment of CT-183 was a high road departure crash area. Motorists were reported to run off the road into the Colebrook Congregational Church parking lot.

Law enforcement is limited to Connecticut State Troopers, Troop B. Recently the assigned state trooper has conducted a radar-enforced speed limit campaign, per the Town's request. The Town stated that there have been a high number of infractions and is hoping increased enforcement deters speeding. The Town and State Trooper are collaborating to reduce speeding.

Field Site Inventory

CT-183 North of CT-182A

CT-183 runs from Torrington to Massachusetts, becoming a scenic route within Colebrook. The assessment covered the segment just north of CT-182A (Rockwell Road), a residential area which has moderate horizontal and vertical curvature with limited sight distance. Motorists travelling south on CT-183 have no forewarning that they are entering the Town center due to lack of gateway treatment, the roadway's geometry, and some vegetation overgrowth. Vehicles travelling southbound require more adequate warning when they are approaching the center of Town. Visual cues could alert drivers to decelerate and travel with more caution. A more permanent method to reinforce the need to reduce speed is to modify the road by implementing traffic calming treatments that communicate to drivers that the function of the roadway changes ahead.

Low traffic volume through this corridor was observed. The travel lanes were an adequate width with double center and edge lines; the shoulders were narrow, measuring two feet or less.

Due to the residential land use, the driveways located along CT-183 function as unmarked intersections.

Countermeasure Considerations

Continued radar speed limit enforcement campaigning in the CT-83 corridor is a common best practice for reducing speed violations.

The Town could consider working with the State to install traffic calming countermeasures where warranted. Traffic calming is the combination of mainly physical measures that alter driver behavior, increase motorist awareness to roadway changes, and improve conditions for non-motorized street users. An effective way to reinforce lowering speeds is to change the road's geometry by installing treatments that communicate to drivers when the function of the roadway is changing.

The Town could consider Slow pavement markings to alert drivers to the upcoming Town center. Gateway signage could be considered along all entry points to the rural community. This visual notification can elevate driver awareness to potential pedestrians and cyclists and increased turning movements. Vegetation management could increase the sight distance for motorists through this corridor.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's Figure 20: Vegetation Management (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community



needs¹. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page². Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

¹NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing. ²Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 18: Colebrook Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
				Vertical Curvature	Hill Blocks View Sign (W7- 6)	Low
			Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low	
	CT-183		0-2	Lack of Gateway Treatment	Gateway Treatments	Low
			Speeding	Continued High Visibility Enforcement	Low-Medium	
			speeding	Dynamic Speed Feedback Signs	Low	
				Road Departures	Safety Edge	Medium
					Dynamic Speed Feedback Signs	Low
					Gateway Treatments	Low
Townwide			Speeding	High Visibility Enforcement	Medium	
				Slow Down Campaigns	Low	
				USLIMITS2	Low	
			Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoul- der Rumble Strips Program	Low	

TOWN OF CORNWALL

2016 US Census Population Estimate: 1,380 Area: 46.3 square miles Population Density: 30.0 people per square mile 2016 Vehicle Miles Traveled (VMT): 23,545,785 2016 VMT per Capita: 17,062 Setting: Rural Town Representatives: Gordon Ridgway (First Selectman) Data Identified Data-Driven Corridors: 55 (CT-4) and 56 (US-7) Data Identified Data-Driven Intersections: N/A Data Identified Bike and Pedestrian Crash Locations: N/A





Overview

Cornwall is a Town nestled in the heart of Northwest Hills region of CT. It is bordered by Sharon to the west, Canaan to the north, Goshen to the east, and Warren and Kent to the south.

General concerns are speeding, horizontal and vertical curvature, awareness of road geometry, sight distance inadequacies, enforcement, and icy roadways during inclement weather.



Figure 22: US-7 within Corridor 56

Figure 21: Whitcomb Hill Road at US-7

NHCOG RTSP 2018



80



Figure 24: Cornwall High Frequency Crash Corridor Map

Table 19: Cornwall Total Crashes by Severity (See page 80)

			-
Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	1	1	1
Suspected Minor Injury (B)	4	4	6
Possible Injury (C)	4	3	3
Total Crashes	9	8	10

Table 20: Cornwall Data-Driven Corridor (See page 81)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 55	Furnace Brook Road	0.74 mi south of West Drive	West Road	4
Corridor 56	Kent Road S	0.22 mi north of Masonville Road	0.25mi north of Warren Hill Road	4

Table 21: Emphasis Areas Related to Crashes in Cornwall

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	3	2
Distracted Driving	1	0	1
Intersection-Related Crashes	2	3	0
Motorcycle Crashes	2	1	1
Older Driver Crashes	2	4	2
Unrestrained Occupant Crashes	2	1	4
Road Departure Crashes	5	5	8
Speeding-Related Crashes	2	3	3
Substance-Involved Crashes	0	0	2
Younger Driver Crashes	2	1	3
Total Emphasis Areas	19	21	26

Town Comments

The Town expressed concern for both data-driven Corridors 55 along CT-4 and 56 along US-7. Town officials attributed traffic incidents to roadway geometry and speeding.

Corridor 55 along CT-4 is commonly used by motorists travelling between Sharon and Goshen. This segment was realigned by the State and the Town reported this has improved the corridor. The Town reported that there is segment of US-4 that freezes in the winter, which contributes to crashes. Corridor 56 along US-7, south of CT-45, has horizontal curvature (Figure 24). The Town would like chevron curve signs to be installed along this section of roadway. US-7 at Whitcomb Hill Road has steep vertical curvature and limited sight distance (Figure 25). There is an advanced advisory intersection sign posted along both approaches.

The Town is concerned with the road geometry along the entire segment of CT-4. Town officials are concerned about the "S" shaped curve between CT-125 and Jewell Street. CT-4 is the primary corridor for east and west bound travel in NHCOG. Cornwall prioritized the segment locally designated as Cemetery Hill Road between Todd Hill Road and Town Street South. This segment of CT-4 has moderate to severe vertical and horizontal curvature.

The passing lane along US-7 south of the Cornwall Bridge is a concern for the Town and residents have requested it be eliminated for safety reasons. Enforcement is relegated to Connecticut State Troopers, Troop B, which provides a trooper for Cornwall, Sharon, and Goshen. As a speed controlling effort, Cornwall has installed speed feedback signs and stated that it has reduced speeding (Figure 28). The Appalachian Trail bisects US-4. Hikers from the trail, walk into Town shops from the trail heads. Emergency Medical Responders from Cornwall are responsible for incident management in eastern side of Sharon.

Field Site Inventory

US -7 (Kent Road South) at Whitcomb Hill Road

US-7 at Whitcomb Hill Road is within the identified crash Corridor 56. This is a rural two-lane road with agricultural and residential adjacent land use. Traffic is moderate, and vehicles include trucks and motorcycles. Due to the curvature of the roadway, sight distance is moderate to inadequate. Sight distance from Whitcomb Hill Road is inadequate due to the ledge and tree blocking driver's line of sight. There are advanced intersection advisory signs for Whitcomb Hill Road along both approaches.

US -4 at Todd Hill Road

US-4 (Cemetery Hill Road) at Todd Hill Road is not within a data identified crash corridor (Figure 29). US-4 has significant horizontal and vertical curvature with limited sight distance. Low traffic volume was observed, including trucks and motorcycles; speeding was also observed. Curve ahead and intersection ahead warning signs are posted to alert motorists to the changing roadway dimensions.

Countermeasure Considerations

A high friction surface treatment (HFST) spot application could be installed along the section of CT-4 that ices over. This a highly cost-effective countermeasure when the pavement friction is not sufficient. The addition of an ice warning sign could advise drivers of possible slippery roadway conditions (MUTCD sign W8-5aP). This surface treatment could also be added to CT-4 at Todd Hill Road to compensate for the need for high friction along the horizontal curves.

Due to the limited sight distance along US-7 at Whitcomb Hill Road, Go Slow pavement markings could be added. Flashing beacons could be considered to enhancing the current intersection warning signs. The Town could locate the speed feedback sign along the inventoried segments of US-7 and CT-4 for speed mitigation.

Slow pavement markings and chevron curve signs could be added along certain data-driven spots on US-4 and US-7 to further alert motorists to upcoming roadway changes. Any excess roadway and shoulder width increases driver margin of error, which often induces speeding and driver distraction. Reduction in travel lane width to 11-feet per lane would require more attentive and slower driving due to motorists' necessity to increase their focus on more accurate steering behavior.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs¹. The NHTSA campaign calendar high-

lights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page². Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.



Figure 25: Cornwall Speed Feedback Sign



Figure 26: Cemetery Hill Road

¹NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing. ²Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Administration. Traffic Safety Marketing.

Table 22: Cornwall Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost	
					Dynamic Speed Feedback Signs	Low	
				Speed	Slow Down Campaign	Low	
NΔ	55	CT-4	Д		Speed Pavement Markings	Low	
	55	CIT	-		Speed Tables	Low	
					Icy Roadway	High Friction Surface Treatment	Low
					MUTCD Sign W8-5aP	Low	
		56 US-7	4	Speed	See above		
NA	56			4 Sight Distance	Removal of Sight Obstructing Vegetation	Low	
				Enhanced Delineation	Low		
Townwide		Speed See above		/e			
		Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoul- der Rumble Strips Program	Low			

TOWN OF GOSHEN

2016 US Census Population Estimate: 2,891 Area: 45.2 square miles Population Density: 176 people per square mile 2016 Vehicle Miles Traveled (VMT): 31,881,655 2016 VMT per Capita: 11,028 Setting: Rural/Suburban Town Representatives: Bob Valentine (First Selectman) Data Identified Data-Driven Corridors: None Data Identified Data-Driven Intersections: CT-4/CT-63 (BE) Data Identified Bike and Pedestrian Crash Locations: Ives Road Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 31



Overview

The Town of Goshen is in central Northwest Hills Council of Governments region (NHCOG) with a population just under 3,000 inhabitants. Traditionally an agriculturally based community, it is transitioning into a bedroom community for residents working in various Towns primarily to the east. The Town is bordered by Litchfield to the south, Cornwall to the west, Norfolk to the north and Winchester and Torrington to the east. The Town's most highly travelled corridors are along CT-4 and CT-63.



Figure 27: Goshen, CT



86



Figure 29: Goshen High Frequency Crash Intersection Map

Table 23: Goshen Total Crashes by Severity (See page 86)

Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	2	5	6
Possible Injury (C)	4	4	9
Total Crashes	6	10	15

Table 24: Goshen Data-Driven Intersections (See page 87)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection BE	CT-4	CT-63	4

Town Comments

The Town expressed concern for lack of enforcement. Connecticut State Police Troop B provides an officer who is responsible for Goshen,

Table 25: Emphasis Areas Related to Crashes in Goshen

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	1	1
Distracted Driving	0	3	0
Heavy Truck Crashes	0	0	1
Intersection-Related Crashes	1	0	2
Motorcycle Crashes	1	0	2
Older Driver Crashes	1	0	4
Pedestrian Crashes	0	0	1
Unrestrained Occupant Crashes	1	2	1
Road Departure Crashes	3	4	11
Speeding-Related Crashes	1	2	3
Substance-Involved Crashes	0	0	2
Younger Driver Crashes	1	8	6
Total Emphasis Areas	10	20	34

Sharon, and Cornwall limiting the Town's ability to effectively control traffic violations. In addition, the Town officials stated there is a systemic issue in NHCOG of underreporting injuries on Connecticut's Uniform Police Crash Reports, PR-1 forms, due to delayed documentation of injury. There is no mechanism in place to amend the crash report after its original submittal.

The Town stated that the high commuter traffic heading east on CT-4 is due to the Town becoming less agrarian, transitioning to a bedroom community. The Town prioritized the rotary junction of CT-4 and CT-63 because of traffic incidents as a result of confusing road geometry. CT DOT proposed a design but the Town rejected this standardized version, preferring a hybrid, tailored design option that accommodates low load trailers with a mountable center. State snow plow drivers remove the Go Right signs to clean the rotary area and fail to return them promptly.

Town officials mentioned the horizontal and vertical curvature throughout the Town is a concern combined with speeding.

The Town stated that CT-63 and Holmes Road has significant horizontal and vertical curvature. They also reported that a section of this road freezes in the winter and has been the site of several crashes.



Figure 30: Traffic Circle at CT-63 and CT-4

Field Site Inventory

CT-63 and CT-4 Intersection:

CT-4 is an east-west corridor that intersects with CT-63 in the center of Goshen. There is a nonstandard rotary controlled junction. The traffic circle is flush with the roadway, but the Town would like it to be more defined and visible. The current signage is not MUTCD compliant, directing motorists with non-standardized small and removable Go Right signs. In addition to the unconventional traffic circle there are non-MUTCD pavement markings on CT-63 to the south of the rotary.

CT-4 and East Street North

East Street North forms a "y" intersection with two stop-controlled legs that intersect with CT-4. The sight distance along the western leg is limited and the stop bar is not aligned with the stop sign. There is significant vertical and horizontal curvature limiting the sight distance for motor-ists travelling from East Street North onto CT-4.

Figure 31: Rotary in Goshen

Countermeasure Considerations

The Town could consider upgrading the rotary at CT-4 and CT-63 by adding keep right and directional arrow pavement markings. Large pavement markings at the approach could warn "Keep Right Ahead" and "Yield." There seems to be some confusion about the yield teeth, so the additional warning could enhance the existing pavement marking plan.

The Town could consider working with the State to install traffic calming countermeasures to reduce speeds within the Town. According to the FHWA "the importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle. The slower the speed of the motor vehicle, the greater the chances are for survival for the pedestrian. If struck by a motor vehicle travelling at a speed of 20 miles per hour or less, a pedestrian is typically not permanently injured. "(FHWA Traffic Calming ePrimer-Module 2).

Gateway treatments could be considered along all entry points to the rural community. This visual notification can elevate driver awareness to the change from the higher speed rural roadway to the approach to a rural Town or village, with the goal of decreasing speed.





Speed humps are another low-cost recommendation that could be strategically located. These elongated mounds can also discourage speeding, FHWA website. Installing raised crosswalks at all current locations with in Town could also decrease speeds of motorists, increase pedestrians' visibility and improve the pedestrians' line of sight, all strategies to promote the safety of non-motorized users, (SHSP 2017).

⁹NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Countermeasure Considerations Continued...

And the Town could collaborate with enforcement, emergency management services and the region to develop various motorist and non-motorist safety awareness campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts.

At the Intersection of CT-4 and East Street North the Town could convert each lane of the legs to one-way traffic flow and relocate the right turn stop bar closer to the stop sign. The Town could consider squaring up the intersection.



Figure 33: Aerial View of CT-4 and East Street North



Figure 34: Potential Countermeasures for Intersection of CT-4 at East Street North

Table 26: Goshen Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
					Keep Right Pavement Markings	Low
BE	ΝΔ	CT-4 and CT-63	Δ	Rotary Design	Hash Lines	Low
DL					Redesign Rotary	Medium-High
				Speed	Gateway Treatments	Low
				Sight Distance	Relocate Right Stop Bar	Low
CT-4 and East Street North			Roadway Geometry	Convert Each Lane to One- Way	Low-Medium	
Ives Road 1			Pedestrian	Stripe Edge Lines	Low	
				Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoul- der Rumble Strips Program	Low
	Точ	wnwide		Crash Reporting	Officer Training	Medium-High
				Pedestrian	Repaint Crosswalks	Low
					Gateway Treatments	Low
				Speed	Dynamic Speed Feedback Signs	Low

TOWN OF HARTLAND

2016 US Census Population Estimate: 2,117 Area: 34.6 square miles Population Density: 61 people per square mile 2016 Vehicle Miles Traveled (VMT): 10,735,380 2016 VMT per Capita: 5,071 Setting: Rural Town Representatives: Wade Cole (First Selectman) Magi Winslow (Second Selectman), Jennifer Abalan (Emergency Medical Services), Ted Jansen (Emergency Medical Director) Data Identified Data-Driven Corridors: N/A Data Identified Data-Driven Intersections: AV (CT-20 at Hogback Road) Data Identified Bike and Pedestrian Crash Locations: CT-20 Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 18

Overview

Hartland is a Town of just over 2,000 inhabitants in the northeast corner of the Northwest Hills Region. Massachusetts borders it to the north, Barkhamsted to the south, Colebrook to the west and Granby to the east. The Towns major arterials are CT-20, CT-181 and CT-179, CT-488, CT-539 and CT-819.

The general transportation issues are speeding, horizontal and vertical curvature, and lack of effective Town and State Trooper collaboration. Hartland is divided into East and West Hartland by the Barkhamsted Reservoir which physically separates the two regions of the Town. The Town center is at the junction of CT-20 and CT-179.





Figure 35: Hartland

Massachusetts



Figure 36: Hartland Crash Map

Massachusetts



Table 27: Hartland Total Crashes by Severity (See page 93)

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

Table 28: Hartland Data-Driven Intersections (See page 94)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection AV***	CT-20	Hogback Road	3

*** This Intersection is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Table 29: Emphasis Areas Related to Crashes in Hartland

Year	2015	2016	2017
Distracted Driving	0	0	1
Intersection-Related Crashes	1	2	3
Motorcycle Crashes	2	3	1
Older Driver Crashes	0	0	3
Pedestrian Crashes	1	0	0
Unrestrained Occupant Crashes	0	1	0
Road Departure Crashes	0	5	8
Speeding-Related Crashes	1	3	3
Substance-Involved Crashes	0	1	1
Younger Driver Crashes	1	5	4
Total Emphasis Areas	6	20	24



Figure 38: CT-20 at The Overlook

Figure 39: CT-20 west of Pedersen Road

Town Comments

Hartland stakeholders prioritized CT-20. CT-20 is a two-lane state highway with moderate horizontal and vertical curvature. The segment of CT-20, locally referred to as The Overlook, is a priority for the Town due to the horizontal and vertical curvature of the roadway and speeding. CT DOT has recently applied high friction surface treatment (HFST) along the Overlook segment. The State has installed chevron curve signs along this corridor which has improved motorist awareness of the horizontal curvature. According to the Town Representatives these upgrades have improved the corridor and lessened roadway incidents.

The intersection of CT-20 at CT-181 is a concern for the Town. This is three-way intersection is stop controlled along two roads. Traffic travelling southbound on CT-181 is not controlled by any regulatory sign. Town officials stated that motorists don't always adhere to stop controlled signage. In addition, the Town stated concern that motorists are not provided sufficient information in the form of signs or markings to identify or navigate the intersection.

The Town is concerned with sight distance at the intersection of CT-20 at Pederson Road, Figure 2. Pederson Road is a skewed junction and despite the lack of recent crashes the Town indicated it is a priority for mitigation.

The Town did not prioritize the data identified data-driven Corridor 88 along CT-20 between mile markers 2.6-3.01.

Town officials expressed concern with speeding along CT-179 in front of the Hartland School. There is a school crossing sign and a marked crosswalk connecting the Hartland School and post office. There are no school zone pavement markings or reduced school zone speed limit signage. The Town is concerned with speeding and road geometry along the following local roads: Sunset Road, Mountain Road, Old Summer Road, Old Forge Road at West Road. Old Forge Road at Pond Hill Road. They also expressed concern for a lack of consistent Town and Connecticut State Trooper collaboration. Town officials would like more transparency with assigned State Troopers, so they can collaborate with them on roadway safety issues.

Peck Orchard Road was also listed as a concern for the Town. This local road connects the Towns of Granby and Hartland to Massachusetts. Though the speed limit is 30 mph, Town officials reported that motorists do not adhere to the posted limits. Though Peck Orchard Road is closed as part of a bridge replacement project, Town Representatives will request that the state trooper conduct a speed enforcement campaign to mitigate speeding once it reopens. There was a fatality along this road in 2016. Guard rails have been installed and Town officials noted that this has contributed to a reduction of the severity of roadway departure crashes.

Field Site Inventory

CT-20 at Pederson Road.

This is a one way stop controlled intersection with limited sight distance due to horizontal and vertical curvature (Figure 72). The proximity of the curve to the intersecting street results in insufficient sight distance for motorists travelling from Pederson Road to CT-20 (Figure 73). Speed limit is posted at 40 mph.



Figure 40: CT-20 at Pedersen Road looking west



Figure 41: CT-20 at Pedersen Road looking east

Countermeasure Considerations

The Town could coordinate with CT DOT and Public Works to enhance delineation and implement high friction surface treatments for horizontal curvature. These delineation visual cues emphasize the change in horizontal alignment which could decrease crashes along selected segments of CT-20 and other roadway segments with varying horizontal curvature. Chevron signs aid in preventing excessive speed and keeping motorists in more proper lane positions.

The Town could consider reducing lane widths to 11' during the next Vendor in Place cycle where feasible. Reduction in travel lane width to 11' per lane would require more attentive and slower driving due to motorists' necessity to increase their focus on more accurate steering behavior. The Town could also use a Speed Feedback Sign to aid with speeding in strategically identified locations, along the CT-179 approach to the Hartland School.

In addition, increased collaboration between the assigned state troopers and Town officials, through monthly or bimonthly meetings could result in innovative strategies to reduce speeding through the sharing of data and countermeasures.

The Town could also collaborate with enforcement, emergency management services, and the region to develop various safety public outreach cam-

paigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors ¹¹. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page¹². Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.



¹⁰ Proven Safety Countermeasures: Enhanced Delineation and Friction for Horizontal Curves. (2017, October 18). Retrieved December 11, 2017, from

Figure 42: Chevron sign implementation

https://safety.fhwa.dot.gov/provencountermeasures/enhanced_delineation/ ¹¹ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

¹²Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 30: Hartland Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
		CT-20 and	3		Roadway Illumination	Low-Medium
AV***	NA			Roadway Departure	Dynamic Speed Feedback Signs	Low
				Vegetation Covering Inter- section Ahead Sign	Add Flashers to Advanced Intersection Ahead Sign	Low-Medium
					High Visibility Enforcement	Medium
NA	NA	CT-20 and CT-181	0-2	Stop Control Not Obeyed	Multiple Low-Cost Countermeasures at Stop-Con- trolled Intersections	Low
					Dynamic Speed Feedback Signs	Low
NA	NA	CT-179 and Hartland School	0-2	Speeding	School Zone Pavement Markings	Low
					High Visibility Enforcement	Medium
NA	NA	Peck Orchard Road	0-2	Speeding	High Visibility Enforcement	Medium
					Smooth Lane Narrowing	Low
NA	NA NA Pe		0-2	Sight Distance/ Horizontal Curvature	Add Flashers to Combination Horizontal Alignment/ Intersection Sign	Low-Medium
	NA	NA CT-20 (the Overlook Section)	0-2		High Visibility Enforcement	Medium
NA				Speeding	Dynamic Speed Feedback Signs	Low
				Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low
				Community Coordination	Monthly Meetings	Low
Townwide				Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program	Low
					Reduce Travel Lanes to 11'	Low
				Speed	Dynamic Speed Feedback Signs	Low
				Gateway Treatments	Low	

TOWN OF HARWINTON

2016 US Census Population Estimate: 5,466 Area: 31.1 square miles Population Density: 176 people per square mile 2016 Vehicle Miles Traveled (VMT): 78,369,150 2016 VMT per Capita: 14,338 Setting: Rural Town Representatives: Michael Criss Data Identified Data-Driven Corridors: CT-118 (Corridor 69), CT-4 (Corridor 70), CT-72 (Corridor 71), Plymouth Road (Corridor 98), CT-4 (Corridor 106) Data Identified Data-Driven Intersections: CT-4/CT-118 at Bridge Park Road (CF), CT-4 at Harwinton Heights Road (CO), and CT-4 at CT-72 (DC) Data Identified Bike and Pedestrian Crash Locations: N/A Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 72



Overview

Harwinton is a rural Town with an estimated population of 5,466 people in the Northwest Hills Region of Connecticut. It is bordered to the north by Torrington and New Hartford, to the west by Litchfield, to the south by Plymouth, and to the east by Burlington. The Town's main thoroughfares are CT-4, CT-72, CT-118, and CT-222. CT-4 links Harwinton to Torrington and Hartford, CT-72 to Bristol, CT-118 to Litchfield and CT-8, and CT-222 connects Harwinton to Thomaston. Harwinton retains its history of agriculture with many working farms. The Town attracts visitors with the two historic districts within its borders.

General transportation safety concerns for Harwinton are sight distance issues that result from frequent horizontal curvature throughout the Town and speeding.



Figure 43: Harwinton Crash Map



Figure 44: Harwinton High Frequency Crash Corridor and Intersection Map

Table 31: Harwinton Total Crashes by Severity (See page 101)

Crash Severity	2015	2016	2017
Fatal Injury (K)	1	2	0
Suspected Serious Injury (A)	1	1	1
Suspected Minor Injury (B)	12	17	12
Possible Injury (C)	8	7	10
Total Crashes	22	27	23

Table 32: Harwinton Data-Driven Corridor (See page 102)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 70	Burlington Road	Harwinton Heights Road	0.09 mi west of Brick Kiln Road	7
Corridor 71	Terryville Road	East Church Road	Blueberry Hill Road	7
Corridor 106	Birge Park Road	Highview Drive	Spring Hill Road	7
Corridor 69***	Litchfield Road	0.05 mi west of CT-8N Off-Ramp	0.09 mi west of Orchard Hill Road	6
Corridor 98	Plymouth Road	Rocky Road West	Wake Robin Lane	3

*** This location is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Town Comments

The Town reviewed the crash data and representative confirmed that Corridor 69 is a priority for safety improvements; however, they requested that it be extended to where CT-118 intersects with Clearview Avenue. Vehicles speed past school buses along this segment with the use of a passing lane.

A mirror has been placed along Corridor 70 to mitigate crashes caused by vertical curvature and sight distance issues. The mirror has since been taken down as it did not improve the current conditions as intended. Corridor 71 was designated as low priority in comparison to the suggested corridors as the Town attributed the crashes to speeding.

Plymouth Road from Wake Robin Lane to Rocky Road West was designated as a priority due to horizontal curvature, sight distance issues, and speeding. There are current plans to install advisory signage along this segment. Bicycle design is needed to support the comfort and safety of bicyclists along CT-118 and CT-4. There is a lack of crosswalks on Bentley Drive and along CT-118 near the Harwinton Consolidated School that should be addressed for pedestrians. The Town has considered crosswalks in this area but need for funding has hindered implementation. Overgrown vegetation and the removal of animal carcasses are also issues.

There are currently two Connecticut State troopers assigned to Harwinton, but the continuation of speeding proves that additional enforcement and public outreach campaigns could be considered.

Table 33: Harwinton Data-Driven Intersections (See page 102)

Intersection ID	ntersection ID Road 1 Road 2		Number of Crashes
Intersection CF	CT-4/CT-118	Bridge Park Road	3
Intersection CO	CT-4	Harwinton Heights Road	3
Intersection DC***	CT-4	CT-72	3

Table 34: Emphasis Areas Related to Crashes in Harwinton

Year	2015	2016	2017
Asleep or Fatigued Related Crashes	1	0	2
Distracted Driving	3	1	3
Heavy Truck Crashes	0	1	0
Intersection Related Crashes	6	3	6
Motorcycle Crashes	5	4	2
Older Driver Crashes	3	1	3
Unrestrained Occupant Crashes	1	3	0
Road Departure Crashes	8	16	13
Speeding Related Crashes	8	15	8
Substance-Involved Crashes	1	2	3
Younger Driver Crashes	13	11	5
Total Emphasis Areas	49	57	45

Field Site Inventory

Corridor 98: Plymouth Road

Plymouth Road is classified as a local road south of CT-4. Horizontal and vertical curvature limit the sight distance along this road. Vehicles frequently travel at speeds higher than the posted limit of 30 mph. The current chain and post guiderails along this segment are not up to current standards. The pavement and centerline marking are in new condition. There are no edge lines, paved or unpaved shoulders present.



Figure 45: Horizontal and Vertical Curvature on Plymouth Road

Figure 46: Horizontal Curvature on Plymouth Road

Data-Driven Corridor 69: CT-118

Drivers on CT-118 were observed speeding near CT-8. There is horizontal and vertical curvature along the corridor. Traffic volume was moderate at the time of study. Pavement and pavement markings are in fair condition. Sight distance was adequate due to no significant curvature or overgrown vegetation. There are three points where Corridor 69 meets local roads with no signage in place to warn vehicles of approaching intersections. This segment also intersects with CT-8 onand-off ramps. There is no lighting in place for any of these intersections.



Figure 47: CT-118 Aerial View





Figure 48: CT-118 (Litchfield Road)

Figure 49: CT-118 (Litchfield Road)

Data-Driven Corridor 70: CT-4

Corridor 70 has continual vertical curvature along the entire segment. There are driveways along this corridor with some being obscured from view due to vegetation. Two local roads and one neighborhood intersect with **Corridor 70**. Vehicles were observed speeding higher than the posted limit of 40 mph. The pavement and pavement markings are in fair condition.



Figure 50: CT-4

Countermeasure Considerations

Slowing vehicle speeds on data-driven Corridors 69 (CT-118) and 70 (CT-4) and other Town-identified roadways could reduce conflicts with oncoming traffic and vehicles entering or exiting the driveways that are along these corridors. Speed Feedback signs could be installed to encourage motorists to travel at lower, safer speeds by displaying their current speed. These interactive signs can be effective at reducing speeds by 5 mph.

Optical speed bars could be used to slow down vehicles as they can give the perception of moving at higher speeds. Speeding is also a general concern for data-driven Corridor 71 and the suggested corridors on Plymouth Road (Corridor 98). The southern end of this corridor has future improvements planned as it is included in the Connecticut Department of Transportation's Horizontal Curve Signing Program, but placement of signage could be considered for curvature on other parts of Plymouth Road.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

A common access management best practice in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and highway corridors can assist in a community's mutual goal to promote both livability and mobility. Furthermore, additional oversight and coordination from Harwinton Zoning and Transportation Officials could require driveways for new developments be located at designated areas with better sightlines, whether along CT-118, CT-4, or similar rural highways. Table 1 shows the specific issues that Harwinton officials wanted to address and potential countermeasures. Additional steps can be taken from a comprehensive planning standpoint, such as a Town or regionwide public outreach campaign to encourage safer speeds on roads with horizontal or vertical curvature.

Center for Transportation Research and Education. Iowa State University.

¹³Speed Management Toolbox for Rural Communities. (2013, April). Retrieved December 11, 2017, from

http://www.intrans.iastate.edu/research/documents/research-reports/rural_traffic_calming_toolbox_w_cvr.pdf. Midwest Transportation Consortium.

¹⁴NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

¹⁵Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention.

National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 34: Harwinton Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost														
DC	N/A	A CT-4 and CT-72	3	Intersection Crashes	Add Flashers to the Ad- vanced Intersection Ahead Warning Sign	Low														
				Speeding	Dynamic Speed Feedback Signs	Low														
				Sight Distance	Increased Pavement Fric- tion	Low														
					Enhanced Delineation	Low														
					Road Diet	Medium														
N/A	98	Plymouth Road	3		Dynamic Speed Feedback Sign	Low														
				Speeding	Automated Speed Enforcement	Low-High														
																			Longitudinal Rumble Strips	Low
					Slow Down Campaign	Low														
	69	69 CT-118	6	Speeding	Dynamic Speed Feedback Signs	Low														
N/A				Roadway Departures	Shoulder Rumble Strips and Stripes	Low														
				Sideswipe Crashes	Centerline Rumble Strips	Low														
				Hidden Driveways	Vegetation control	Low														
	70	CT_4	7	Hidden Driveways																
IN/A	70	C1-4	1	Speeding	See Above															
	71	CT_72	7	Sight Distance																
IN/A	/ 1	/I CI-/2	/	Speeding	ļ															
TOWN OF KENT

2016 US Census Population Estimate: 2,819 Area: 49.6 square miles Population Density: 56 people per square mile 2016 Vehicle Miles Traveled (VMT): 29,149,265 2016 VMT per Capita: 10,340 Setting: Rural Town Representatives: Bruce Adams (First Selectman), Rick Osborne (Kent Public Works) Data Identified Data-Driven Corridors: CT-341 (Data-Driven Corridor 57) and US-7 (Data-Driven Corridor 58) Data Identified Data-Driven Intersections: N/A Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 40



Kent is a rural Town of 2,819 people and is an attractive tourist destination in Connecticut. Kent has plans to improve their already thriving downTown environment with a pedestrian-focused streetscape plan and has been awarded, but not officially granted, funds for its implementation.

The general transportation safety concerns for Kent are horizontal curvature and outdated guiderails used as a protection on many road segments throughout the Town. Pedestrian infrastructure improvements for the downTown are also a general concern for residents and for the many tourists who visit Kent year-round.





Figure 51: Kent Town Center

108





110

Table 35: Kent Total Crashes by Severity (See page 109)

Crash Severity	2015	2016	2017
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	6	11	11
Possible Injury (C)	4	1	4
Total Injury Crashes	11	13	16

Table 36: Kent Data-Driven Intersections (See page 110)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection BA	US-7	CT-341	3

Table 37: Kent Data-Driven Corridor (See page 110)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 57***	Segar Mountain Road	0.31 mi east of Cobble Road	South Road	6
Corridor 58	Cornwall Road	0.16 mi north of Cobble Lane	Studio Hill Road	4

Table 38: Emphasis Areas Related to Crashes in Kent

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	0	1	3
Distracted Driving	1	1	1
Intersection-Related Crashes	2	2	1
Motorcycle Crashes	2	1	1
Older Driver Crashes	2	3	5
Unrestrained Occupant Crashes	1	2	2
Road Departure Crashes	7	8	9
Speeding-Related Crashes	5	5	5
Substance-Involved Crashes	1	1	1
Younger Driver Crashes	3	5	7
Total Emphasis Areas	24	29	35

Town Comments

The representatives for Kent confirmed that Corridor 57 on CT-341 is a high priority for safety improvements. This segment became a concern of the Town after a two-vehicle motorcycle crash occurred over five years ago. The crash data from 2015-2017 identified one fatal and three suspected minor injury crashes along this segment. Corridor 58 on US-7 was categorized as a lower priority for safety improvements because it requires previously identified low-cost countermeasures. The Town suggested replacing the current guiderail and ensuring the installation reduces the gap between the guiderail and the road.

The Town was concerned with the intersection of CT-341 and US-7 in the Town center. It is a four-way specialized intersection with a monument in the center which causes driver confusion.

A second location of concern was mile marker 49.62 on US-7 due to horizontal curvature.

*** This Intersection is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Field Site Inventory

Corridor 57 on CT-341

Corridor 57 is along an extended horizontal curved roadway on CT-341. There are reflective chevron signs along this segment, but motorists continue to negotiate the turn at dangerous speeds despite the signage. The posted speed limit for the segment is 30 mph, but motorists

observed were driving above this speed. The current protection system is in poor condition. Pavement markings include center and edge lines that are in good condition. The adjacent land use is residential.

Corridor 58 on US-7

US-7, similarly to CT-341, has sight distance issues due to horizontal curvature. The posted speed limit is 45 mph on this segment of US-7, but many vehicles were observed exceeding the posted speed. There is overgrown vegetation along this corridor that encroaches into the 3-foot shoulders. There are reflective, high emphasis chevron curve signs positioned along the roadway. However, the current cable guiderail protection system is in poor condition. The center and edge line pavement markings are in good condition. The traffic volume was moderate at the time of field study and included heavy trucks.

US-7 and CT-341

This is four-way signalized intersection. The major issue with this intersection is the large monument in the center of the intersection. Southbound US-7 is divided by the monument into a through lane and an exclusive right, a highly unconventional configuration. There are Do Not Enter signs and directional pavement markings to guide motorists through the intersection, but the Town Officials reported there is a propensity for frequent motorist confusion over roadway

geometry. The traffic volume was moderate at the off-peak hour of the field study, which is inconclusive as to peak hour traffic volume. Vehicles that were observed traveling through the intersection were cars, trucks, and oversized trucks.

This intersection is located at the southern end of downTown. Pedestrians were seen crossing this intersection going to and from the main commercial area. The Town has been awarded grant funds to improve sidewalks at this location, but they have not yet received them.



Figure 55: Horizontal Curvature on CT-341



Figure 56: US-7 and CT-341



Figure 57: Horizontal Curvature on CT-341



Figure 58: Aerial View of Intersection of US-7 and CT-341

Countermeasure Considerations

The Town-prioritized corridor identified on CT-341 generally has horizontal curvature issues that are undesirable when considering the outdated roadside safety protection on this segment and the high-speed flow of traffic. Possible solutions to be considered are installing dynamic speed feedback signs, installing centerline and shoulder rumble strips, and replacing the older guiderail systems.

The horizontal curvature on US-7 has similar issues as the CT-341 corridor. There is a severe horizontal curvature, a speeding issue, and overgrown vegetation along this segment. Possible countermeasures are dynamic speed feedback signs, center line rumble strips, management of vegetation for sightline and shoulder improvements, and replacement of dated guiderail systems. A catch basin could be installed where there are drainage issues, such as the intersection of US-7 and CT-341.

The Town suggested that the intersection of US-7 and CT-341's road geometry due to a poorly placed monument, speeding, and poor pedestrian infrastructure in a highly pedestrianized location are of concern. Countermeasures to be considered for the directional issues at this location are the addition of directional pavement markings, modifying the road geometry, and improving directional signage. The pedestrian environment could be improved by adding crosswalks and ADA compliant ramps, widening and replacing sidewalks where deficient and adding pedestrian signage to alert motorists.

An option to mitigate excessive speeding are creating converging chevron marking patterns along each travel lane. These are a type of transverse pavement markings that create the illusion of traveling faster through the impression of a narrow lane which can visually cue motorists to decelerate.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

Additional steps can be taken from a comprehensive planning standpoint such as a Town or regionwide public outreach campaign to encourage safer speeds on roads with horizontal curvature and through the downTown to accommodate more vulnerable users. A common access management best practice in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and highway corridors can assist in a community's mutual goals for livability and mobility. Furthermore, additional oversight and coordination from Kent Zoning and Transportation Officials could require driveways be located at designated sites with better sight lines, whether along US-7, CT-341 or similar rural highways. The table below shows the specific issues that Kent Officials wanted to address and potential countermeasures.

¹⁶Longitudinal Rumble Strips and Stripes. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/long_rumble_strip/

¹⁷NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

¹⁸Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 39: Kent Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	lssues	Countermeasures	Estimated Cost						
					Dynamic Speed Feedback Signs	Low						
				Speed	Slow Down Campaign	Low						
N/A	N/A	US-7 and	2		Directional Pavement Markings	Low						
		US-341	<u> </u>	Road Geometry	Geometry Modifications	High						
				Dedestrien Design	Ramp and Sidewalk Improvements	Medium-High						
			Pedestrian Design	Pedestrian Warning Sign, W11-2	Low							
				Speed	See Above							
			6	Roadway Departure Crashes	Shoulder Rumble Strips	Low						
		CT-341									Horizontal Curves	Increased Pavement Fric- tion
NA	57***			6	Enhanced Delineation	Low						
				Crashes at Intersection with South Road	Enhance Warning Signs	Low-Medium						
				Overgrown Vegetation	Vegetation Control	Low						
			Protection System	Install Up-to-date Guiderail	Medium							
				Speed								
NA	58	US-7	4	Sight Distance	t Distance See Above							
				Protection System								

*** This location is included in the Top 40 NHCOG Crash Locations, 2015-2017.

TOWN OF LITCHFIELD

2016 US Census Population Estimate: 8,175

Area: 56.8 square miles

Population Density: 144 people per square mile

2016 Vehicle Miles Traveled (VMT): 115,643,315

2016 VMT per Capita: 14,146

Setting: Rural/Suburban

Town Representatives: Leo Paul, Jr. (First Selectman), Raz Alexe Director (Public Works & Town Engineer)

Data Identified Data-Driven Corridors: US-202 (Crash Corridors 65 and 67), CT-63 (Crash Corridor

66), US-202 (Crash Corridor 107)

Data Identified Data-Driven Intersections: US-202/CT-63 (AH), CT-118/Fern Avenue (AP), US-202/

Cathole Road (AT), CT-118 at Thomaston Road (BU), CT-63 at West Street (BZ), US-202 at Brush Hill

Road No. 2 (CV), US-118 at CT-254 (CW)

Data Identified Bike and Pedestrian Crash Locations: West Street at North Street

Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 140

Overview

Litchfield is a Town of just over 8,000 residents situated in the southern end of the Northwest Hills Region in Connecticut. It is bordered by Warren to the west, Goshen and Torrington to the north, Harwinton to the east, and Washington, Morris, and Thomaston to the south. The Town's main thoroughfares are US-202, CT-63, and CT-8.

The general safety concerns for Litchfield are speed, line of sight distances and high traffic volumes. The high volume of car and truck traffic has led the Town to discuss the reclassification of local arterials. Despite the relatively low Town population and rural environment, Litchfield is used as "cut through" Town for connecting state roads, which affects the number of vehicles travelling within Town limits. Speeding is an issue that can be attributed to lack of enforcement.





Figure 59: DownTown Litchfield



NHCOG RTSP 2018



Table 40: Litchfield Total Crashes by Severity (See page 117)

Crash Severity	2015	2016	2017
Fatal Injury (K)	0	2	0
Suspected Serious Injury (A)	3	3	2
Suspected Minor Injury (B)	10	25	26
Possible Injury (C)	23	20	26
Total Crashes	36	50	54

Table 42: Litchfield Data-Driven Intersections (See page 118)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection BU	CT-118	Thomaston Road	7
Intersection BZ	CT-63	West Street	5
Intersection AH	CT-63	US-202	4
Intersection AP***	CT-118	Fern Avenue	3
Intersection AT	US-202	Cathole Road	3
Intersection CV***	US-202	Brush Hill Road No 2	3
Intersection CW	US-118	CT-254	3

Table 41: Litchfield Data-Driven Corridor (See page 118)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 65	Bantam Road	0.01 mi east of Vanderpoel Avenue	Wamogo Road	10
Corridor 107	West Street	0.10 mi west of Baldwin Hill Road	South Lake Street	7
Corridor 67	Torrington Road	0.20 mi south of Bertoli Drive	Fern Avenue	4
Corridor 66***	Goshen Road	Norfolk Road	0.13 mi south of Sarcka Lane	3

*** This location is included in the Top 40 NHCOG Crash Locations, 2015-2017.

Town Comments

The Town prioritized Corridor 67 on US-202. Guiderails along the corridor should be investigated and updated to impact control standards due to the horizontal and vertical curvature on corridor 66, CT-63. The Town considered corridor 66 on CT-63 a lower priority for safety improvements.

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	2	2	5
Bicycle Crashes	0	0	0
Distracted Driving	2	3	5
Intersection-Related Crashes	14	14	16
Motorcycle Crashes	4	11	7
Older Driver Crashes	12	11	16
Pedestrian Crashes	0	0	1
Unrestrained Occupant Crashes	0	2	4
Road Departure Crashes	18	18	20
Speeding-Related Crashes	7	12	11
Substance-Involved Crashes	3	4	4
Younger Driver Crashes	14	20	22
Total Emphasis Areas	76	97	111

The Town decided that data-driven Data-Driven Intersection AH at US-202 and CT-63 and Intersection AP at CT-118 and Fern Avenue are safety concerns. As a result of high speed concerns at Intersection AH, requests have been made to the State to implement measures to decrease speeds on CT-63, but this recommendation has not been implemented. The high speeds are a concern for pedestrians who may be crossing Intersection AH to access the downTown. The Town recognizes that this intersection is a challenge when considering safety countermeasures, but Representatives do not wish to change the road geometry.

Intersections US-202 at the Litchfield Hills Nursery, US-202 and Baldwin Hills Road, and US-202 and Old Turnpike Road have deficient sight distance and speed issues.

Field Site Inventory

US-202 from Litchfield Hills Nursery to Fern Avenue

This corridor's steep vertical curvature results in limited sightlines. There is a climbing lane exclusively in the eastbound travel lane that ends west of the nursery. This roadway design presents hazards associated with the limited sight distance, coupled with vehicles accelerating for positioning prior to the termination of the extra lane. The moderate traffic volume, with high heavy truck volume was observed to exceed the posted speed limit of 45 mph along this corridor. The existing stop control consists of one stop sign in fair condition for vehicles approaching US-202 from Fern Avenue and one for vehicles approaching from Town Farm Road. There are centerline rumble strips along this corridor.



Figure 63: Fern Avenue and US-202



Figure 64: Rumble Strips on US-202 near Litchfield Hills Nursery



Figure 62: Aerial View of US-202 from Litchfield Hills Nursery to Fern Avenue



Figure 65: Intersection at US-202 and Baldwin Hill Road (Looking East)



Figure 66: Intersection at US-202 and Baldwin Hill Road (Looking West)

US-202 and Baldwin Hill Road

Limited sight distance, vegetation, speeding and curvature on US-202 are a challenge for motorists exiting Baldwin Hill Road. The turning radius is inadequate for vehicles turning left onto US-202 or right onto Baldwin Hill Road. From visible roadway damage, it is apparent that trucks require a wider turning radius than exists currently. Traffic and truck volume is heavy in this area. Edge lines are in poor condition. The stop bar for vehicles approaching US-202 from Baldwin Hill Road has weathered away and needs to be replaced. Although the traffic data within this report's study period does not highlight this location, the Town is concerned about this intersection.



Figure 67: Aerial View of US-202 and Baldwin Hill Road

US-202 and Old Turnpike Road

Vegetation near the stop sign of the intersection impedes visibility. Vehicles were observed traveling at high speeds along this section of US-202. Wood post bollards adjacent to the roadway should be considered for removal. The turning radius for motorists heading west onto US-202 is undesirable. Old Turnpike Road has a steep side slope leading into a four-foot-deep ditch.



Figure 68: Aerial View of US-202 and Old Turnpike Road



Figure 69: US-202 and Old Turnpike Road



Figure 70: US-202 and Old Turnpike Road

Countermeasure Considerations

The prioritized segments and intersections on US-202 have poor sightlines and high speeds. Lane diets could be conducted to slow motorists and encourage more cautious driver behavior on the corridors where sightlines are broken due to roadway geometry. Adding a pavement marking median would serve to narrow the lanes and remove the high-speed lane. Although further study would be necessary, corridors with high speeds could be reduced to 11-foot lane widths to encourage safe speeds while still supporting truck traffic. Any climbing lane with poor sightlines due to curvature could be removed to eliminate the resulting aggressive driving and high speeds.

Slowing vehicle speeds on the highlighted corridors could reduce conflicts with oncoming traffic. Speed Feedback signs could be installed to encourage motorists to travel at lower, safer speeds by displaying their current speed if it exceeds the posted limit. These interactive signs can be effective at reducing speeds by 5 mph.

Turning radii or the intersection geometry could be improved where there is roadway evidence that trucks require more space than is allotted by existing pavement. The physical evidence of eroded edges and damaged stop signs at US-202 at Baldwin Hill Road and at US-202 at Old Turnpike Road provide visual cues that these junctions are not wide enough to accommodate truck turning. Prohibiting truck traffic can be considered on roads under the jurisdiction of the Town for safety purposes after requests have been made through OSTA.

Additional steps can be taken from a comprehensive planning standpoint, such as zoning that guides development into suitable locations near the Town center rather than along the highway; strategies for regional access management that promote designated development areas and discourages excessive rural development. A common best practice in access management in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and highway corridors can assist in a community's mutual goals for livability and mobility. Furthermore, additional oversight and coordination from Litchfield zoning and transportation officials could require driveways be located at designated sites with better sightlines, whether along US-202 or similar rural highways. The table below shows the specific issues that Litchfield officials wanted to address and potential countermeasures.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

¹⁹ Pedestrian Safety Guide and Countermeasure Selection System: Lane Narrowing. (n.d.). Retrieved December 11, 2017, from http://www.pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=18. Federal Highway Administration

²⁰NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing. ²¹Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 44: Litchfield Countermeasure Considerations

Intersection ID	Corridor ID	Road Names	Number of Crashes	Issues	Countermeasures	Estimated Cost					
				Dark and Dark Not Lighted Crash Conditions	Roadway Illumination	Low-Medium					
NA 66***	CT-63 between Norfolk Road and	3	Speeding	Dynamic Speed Feedback Signs	Low						
		of Sarcka Lane)		Driver Fatigue and Roadway Departure Crashes	Shoulder Rumble Strips with Stripes	Low					
				Intersection Crash	Enhance Warning Signs	Low-Medium					
	NA	CT-118 and Fern Avenue	3	Intersection Crashes	Enhance Warning Signs Along CT-118 at the Fern Avenue and Chestnut Hill Road Approach	Low-Medium					
				Speeding	Dynamic Speed Feedback Signs	Low					
		US-202 and Brush Hill Road No. 2			Horizontal Curves	Enhanced Delineation and Friction for Horizontal Curves	Low				
			-	Travel Lane Departure	Shoulder Rumble Strips with Stripes	Low					
				Dark and Dark Not Lighted Crash Conditions	Retroreflective Pavement Markings	Low					
CV***	NA US-202 and Brush Hill Road No. 2		US-202 and Brush Hill Road No. 2	US-202 and Brush Hill Road No. 2	US-202 and Brush Hill Road No. 2	3	Brush 3 p. 2 3	3	Sight Distance	Elimination of Climbing Lane	Medium
				-							
					Speed Feedback Signs	Low					
						Speeding	Optical Speed Bars	Low			
					Slow Down Campaign	Low					
NIA	NIA			Sight Distance	See abov	/e					
INA	NA	Baldwin Hill Rd	vip Hill Rd 0-2 Speeding		See abov	/e					
				Wide Truck Turns	Consider Wider Turn Radii	Medium					
				Sight Distance	See Above						
					Vegetation control	Low					
NA	NA	Turnpike Rd	0-2	Speeding	See above						
		- 1		Stop Sign Condition	Replace stop sign	Low					
				Wood Bollards	Potential removal	Low					

*** This location is included in the Top 40 NHCOG Crash Locations, 2015-2017.

TOWN OF MORRIS

2016 US Census Population Estimate: 2,279 Area: 18.7 square miles Population Density: 120 people per square mile 2016 Vehicle Miles Traveled (VMT): 22,241,640 2016 VMT per Capita: 9,759 Setting: Rural Town Representatives: Tom Weik (First Selectman) Data Identified Data-Driven Corridors: CT-109 (Crash Corridors 61 and 62) Data Identified Data-Driven Intersections: CT-109 / Stoddard Road (Z) Data Identified Bike and Pedestrian Crash Locations: CT-61 at Alan White Road Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 29



Overview

Morris is a Town of just over 2,000 residents, situated in the southern end of the Northwest Hills Region in Connecticut. It is bordered by Washington to the west, Litchfield to the north and east, and Bethlehem and WaterTown to the south. Four state highways cross through the Town: CT-209, CT-61, and CT-63, all running north-south, and CT-109, moving east-west through Morris. The general safety concerns for Morris are speed, sight distance, and failure to stop.



Figure 73: Morris Center





Figure 75: Morris Data-Driven Corridor and Intersection Map

Table 45 Morris Total Crashes by Severity (See page 126)

Crash Severity	2015	2016	2017
Suspected Minor Injury (B)	4	7	5
Possible Injury (C)	5	6	2
Total Crashes	9	13	7

Table 46: Morris Data-Driven Intersections (See page 127)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection Z	CT-109	Stoddard Road	3

Table 47: Morris Data-Driven Corridors (See page 127)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 61	West Street	0.05 mi west of East Shore Road	North Street	4
Corridor 62	East Street	Eldridge Street	0.07 mi west of Slab Meadow Road	4

Table 48: Emphasis Areas Related to Crashes in Morris

Year	2015	2016	2017
Bicycle Crashes	1	0	0
Heavy Truck Crashes	0	0	0
Intersection-Related Crashes	1	5	0
Motorcycle Crashes	1	2	1
Unrestrained Occupant Crashes	1	0	1
Road Departure Crashes	3	8	4
Speeding Related Crashes	3	6	4
Substance-Involved Crashes	2	2	0
Younger Driver Crashes	3	5	5
Total Emphasis Areas	15	28	15

Town Comments

The Town representative noted that the primary concerns are the intersection of CT-109 and CT-61, as well as the curve along CT-109. The data-identified intersection of CT-109 and Stoddard Road (Intersection Z) was less of a priority for the Town.

The Town discussed that a series of chevron signs could be used to replace the singular large hazard arrow sign crash Corridor 61 (US-109) from East Shore Road to CT-61. The intersection of CT-109 and CT-61 is problematic, due to the offset alignment and driver failure to adhere to stop control. The Town representative noted that failure to stop is a common problem at this intersection. Adding crosswalks, reducing the turn radius, realigning the intersection, and considering a new traffic circle were all discussed to improve the intersection.

Speeding is an issue along all roads, along with many out-of-Town drivers being unfamiliar with roadway geometry. Law enforcement is limited to Connecticut State Troopers, Troop L, which is responsible for several other Towns. Limited resources impede local speed enforcement.

Data-Driven Corridor 62 and the intersection of CT-109 and CT-63 were less of a concern as CT DOT has added four-way stop-control with a flashing red signal. However, the roadway is very straight, and motorists use the additional width of the roadway to pass at the intersection.



Figure 76: CT-109

Field Site Inventory

CT-109 and CT-61

Fieldwork was conducted with the assistance of the First Selectman. The intersection of CT-109 and CT- 61 is at the edge of data-drivenCorridor 61. This is a four-way stop controlled intersection with a flashing red signal (Figure 77). Observed traffic included heavy trucks, pedestrians, cyclists, and automobiles. Pedestrian volumes were low at the time of the visit; however, conflicts with vehicles were observed, primarily due to disregard of stop-control devices. Vehicles running stops were observed during fieldwork and reported as a common occurrence. In addition, CT-61 is offset so vehicles must turn while crossing oncoming traffic. Furthermore, as opposed to current practices that narrow the roadway at intersections, the northeast and southwest corners flare at these intersections to accommodate truck traffic (Figure 78).



Figure 78: Intersection of CT-109 and CT-61



Figure 77: Aerial View of CT-109 and CT-61

Corridor 61: CT-109 West of CT-61

The field investigation found guide arrow sign and guiderails in poor condition. Physical elements include heavy tree canopy, horizontal curvature, and steep vertical curvature (at roughly 9% grade), all of which contributed to the inadequacy of the sight distance (Figure 80). Moderate traffic with heavy trucks and cyclists were present during the field visit.



Figure 79: CT-109 Curvature Combination



Figure 80: Aerial View of CT-109

Countermeasure Considerations

The intersection of CT-61 and CT-109 could be improved with a variety of corrective treatments. Enforcement of the existing stop control is one method, in addition to public outreach to inform the public of the effects of non-compliance of traffic regulations. The lane widths at the intersection could be reduced below the general width for both traffic calming and pedestrian safety considerations. A more ambitious, and costlier, geometry modification would be the implementation of a roundabout at this location. Roundabouts are reported to result in lower speed and fewer conflict points, according to the FHWA Proven Safety Countermeasures²².

Enhanced delineation along the CT-109 curve could include a series of chevron signs with retro-reflectivity and advance curve warning signs. The Connecticut DOT is systemically installing chevron curve signs along prioritized spots within the Town. If an engineering study confirms an advisory speed is warranted, the Town and State could coordinate to install the determined speed limit through the identified high curve areas. If further measures are needed, high friction surface treatment (HFST) could be considered. Maintaining the appropriate amount of pavement friction is imperative for safe driving. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can mitigate the reduction of pavement friction assisting motorists in maintaining control of their vehicles. Additionally, vegetation management could improve sight distance. Guiderails could be replaced systemically.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs²³. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page²⁴. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives. The table below shows the specific issues that Morris Officials wanted to address and potential countermeasures.

Intersection ID	Corridor ID	Roadway Numbers	Number of Crashes	Issues	Countermeasures	Estimated Cost			
NA	61	CT-109	4	Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program	Low			
NA	62	CT 100	4	Speeding	Slow Down Campaign	Low			
INA	02	C1-109	4	speeding	Dynamic Speed Feedback Sign	Low			
					High Visibility Enforcement Campaign	Medium			
NA	NA	CT-109 and CT-61	0-2	0-2	0-2	0-2	Failure to Stop	Systemic Application of Multiple Low-Cost Countermeasures at Stop-Controlled Intersections	Low
					Public Outreach Campaign	Low			
				Speeding	See Above				
Townwide		Lock of Enforcement	HVE Campaigns	Low					
		Lack of Enforcement	Increased State Enforcement	Low-Medium					
		Bicyclist Safety	Watch for Me CT Campaign	Low					
			Dicyclist Salety	Narrow Travel Lanes Along Common Bike Routes to 11'	Low				

Table 49: Morris Countermeasure Considerations

²²Proven Safety Countermeasures: Roundabouts. (2017, October 17). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/roundabouts/
 ²³NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

²⁴Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

TOWN OF NEW HARTFORD

2016 US Census Population Estimate: 6,970 Area: 38 square miles Population Density: 176 people per square mile 2016 Vehicle Miles Traveled (VMT): 74,864,420 2016 VMT per Capita: 10,741 Setting: Rural/Suburban Town Representatives: Daniel Jerram (First Selectman) and Christine Hayward (Town Representative) Data Identified Data-Driven Corridors: CT-219 (Crash Corridor ID 80), US-44 (Crash Corridor 81 and 82), and US-202 (Crash Corridor79) Data Identified Data-Driven Intersections: US-202/East Cotton Hill Road (Intersection NH-BB), CT-219/US-44 (CH), CT-219/Driveway (CN), US-202 at Steele Road (CY) Data Identified Bike and Pedestrian Crash Locations: US-44, US-44 at CT-219, and US-202 at East Cotton Hill Road (Four fatalities) (Figure 85) Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 116

Overview

New Hartford is a Town of just under 7,000 residents situated along the eastern edge of the Northwest Hills Region in Connecticut. It is bordered by Torrington to the west, Barkhamsted to the north, Canton to the east, and Burlington and Harwinton to the south. The Town's main thoroughfares are US-202 and US-44.

The general transportation issues are speeding, inadequate sight distance due to horizontal and vertical curvature, lack of bike and pedestrian infrastructure, lack of speed enforcement, heavy truck volume, lack of signalization along US-202, and recently reported bike and pedestrian crashes and fatalities along US-44 and US-202.





Figure 82: Downtown New Hartford



NHCOG RTSP 2018



Figure 84: New Hartford High Frequency Crash Corridor and Intersection Map

Table 50: New Hartford Total Crashes by Severity (See page 133)

Crash Severity	2015	2016	2017
Fatal Injury (K)	0	2	3
Suspected Serious Injury (A)	5	1	1
Suspected Minor Injury (B)	18	23	24
Possible Injury (C)	14	14	11
Total Crashes	37	40	39

Table 51: New Hartford Data-Driven Corridors (See page 134)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 79***	Litchfield Turnpike	Cotton Hill Road	0.25 mi east of Town Hill Road	20
Corridor 81***	Main Street	0.04 mi northwest of Church Street North	0.09 mi east of Wickett Street	12
Corridor 82***	Main Street	River Run Condominiums	Wickett Street	9
Corridor 80***	Reservoir Road	Black Bridge Road	Farmington River Turnpike	8

Table 52: Emphasis Areas Related to Crashes in New Hartford

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	1	2
Bicycle Crashes	0	0	1
Distracted Driving	5	4	7
Intersection-Related Crashes	6	11	10
Motorcycle Crashes	5	0	4
Older Driver Crashes	8	9	9
Pedestrian Crashes	0	3	1
Unrestrained Occupant Crashes	1	2	3
Road Departure Crashes	18	17	17
Speeding Related Crashes	9	10	4
Substance-Involved Crashes	2	1	0
Younger Driver Crashes	17	16	15
Total Emphasis Areas	72	74	73

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Table 53: New Hartford Data-Driven Intersections (See page 134)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection CH	CT-219	US-44	4
Intersection BB	US-202	E. Cotton Hill Road	3
Intersection CN	CT-219	Driveway	3
Intersection CY	US-202	Steele Road	3

Town Comments

New Hartford Government Gfficials did not prioritize the data-identified Corridors 80-82, as these traffic incidents were attributed predominantly to weather conditions, not roadway geometry. However, improvements could be made on Crash Corridor 79, Figure 85: Bike Fatality at US-44 and CT-219

along US-202. Emphasis was placed at the



intersections of US-202 at CT-219, Cotton Hill Road, Cedar Lane, and East Cotton Road. Town Officials stated that aggressive driving along US-202 is commonplace, due to frequent speeding and illegal passing on the shoulders.

There are concerns with numerous segments along US-202, which included the data-identified Corridor 79, as well as several problematic intersections east of the junction with CT-219, many of which had signalization deficiencies. West to east along US-202, the first identified segment was at Cotton Hill Road where the flashing traffic signal is ignored by drivers. Their recommendation was that the flashing light could be converted into a traditional traffic signal, which would integrate the offset intersection of Cedar Lane.

The intersection of US-202 and CT-219 was prioritized by the Town due to numerous concerns. The horizontal curvature on CT-219 creates sight distance issues. Furthermore, New Hartford Officials stated that the signal needed repair and they would like to see a protected left-turn phase added to the signal cycle to avoid conflicts. East of the intersection, there is consensus that the eastbound climbing lane encouraged speeding and should be eliminated. Further east along US-202, Town Officials detailed their desire for added signalization at the intersections of both South Road and Stedman Road.

Additionally, there was concern that the current guiderail system has resulted in vehicles being redirected into oncoming traffic. As a result, guiderails with impact attenuation have been requested from the Connecticut DOT.

The identified corridors along US-44 were not a priority for Town Officials, though traffic characteristics, including heavy truck and oversized vehicle volumes, conflict with the presence of cyclists.

Field Site Inventory

US-202

Excessive lane widths and shoulders were observed along US-202, resulting in illegal passing maneuvers. US-202 had heavy traffic during the midday field visit. Morning and evening peak periods experience even greater traffic volume, as the Town has high commuter traffic due to its position between the two major population centers in the region, Hartford and Torrington. US-202 is the principal highway for eastbound and westbound traffic in the Northwest Hills Region (Figure 86).

Limited signalization, vertical and horizontal curvature, climbing lanes, and traffic enforcement contribute to vehicles travelling at high speeds (Figure 87). The dangers associated with these speeds are exacerbated by high number of curb cuts, numerous unmarked driveways, and limited warning at intersections.

NHCOG's 2016 Regional Transportation Plan (RTP) prioritized the US-202 intersection with Cotton Hill Road and Cedar Lane for safety and operations improvements. Driveways located along US-202 function as unmarked intersections (Figure 88). The ingress and egress of vehicles from driveways with limited sight distance are a challenge for the existing flow and speed of traffic.

The US-202 climbing lane west of CT-219 promotes speeding and the related vehicular positioning. Although climbing lanes are auxiliary lanes to accommodate the passage of single-directional traffic, the vertical curvature at this location contributes to the existing trend of speeding and aggressive driving.



Figure 86: US-202 West of CT-219



Figure 87: US-202 West of CT-219 Climbing Lane

Countermeasure Considerations

The excess travel lane width could be reduced to 11'. A centerline road treatment, such as a pavement marking median, could serve to both minimize lane width to 10-11-feet and shoulder width to 5-6-feet, maintaining the space for pedestrians and cyclists, without cars using it as a high speed passing lane.

Additional steps can be taken from a comprehensive planning standpoint, such as zoning that guides development into suitable locations near the Town center, rather than along the highway, as well as strategies for regional access management that promote designated development areas and discourage excessive rural development. A common best practice in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and interstate corridors can assist in a community's mutual goals for livability and mobility. Furthermore, additional oversight from New Hartford zoning and transportation officials could require driveways be located at designated sites with better sight lines, whether along US-202 or similar rural highways. The table below shows the specific issues that New Hartford Officials wanted to address and potential countermeasures.



Figure 88: Driveways along US-202

The Town could consider working with the State to install traffic calming countermeasures to reduce speeds within the Town. According to the FHWA: The importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle. The slower the speed of the motor vehicle, the greater the chances are for survival for the pedestrian. If struck by a motor vehicle travelling at a speed of 20 miles per hour or less, a pedestrian is typically not permanently injured.

Gateway treatments could be considered along all entry points to the rural community. This visual notification can elevate driver awareness to the change from the higher speed rural roadway to the approach of a rural Town or village, with the goal of decreasing speed. The Town could also strategically place dynamic speed feedback signs to help make drivers more cognizant of their travelling speeds. Speed humps are another low-cost recommendation that could be strategically located to discourage speeding. Installing raised crosswalks at all current locations within Town could also decrease speeds of motorists, increase pedestrians' visibility, and improve the pedestrians' line of sight, to promote the safety of non-motorized users (SHSP 2017).

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Table 54: New Hartford Countermeasure Considerations

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
					High Friction Treatments	Low
NA	80***	CT-219	8	Roadway Departures	Shoulder Rumble Strips	Low
					Dynamic Speed Feedback Signs	Low
				Roadway Departures	Edge Line Rumble Strips with Bicycle Gaps	Low
				Pedestrian Safety	Sidewalks Along Gaps	Medium-High
NA	81***	US-44	12	Rear-End Crashes	Enhance Warning Signs at Intersection Approach for US-44 and CT-219	Low-Medium
				Speeding	Gateway Treatments	Low
				speeding	Dynamic Speed Feedback Signs	Low
				Speeding	See Above	
NA	82***	US-44	9	Pedestrian	Pedestrian Hybrid Beacon at South Intersection with Church Street	Medium
					Sidewalks	High
				Head on Crashes	Centerline Rumble Strips	Low
				Vertical and Horizontal Curvature	Rumble Strips	Low
	79*** US-	79*** US-202			Road Diet	Low-Medium
			US-202	20	speeding	Dynamic Speed Feedback Signs
				Signal Deficiencies	Evaluate Signal	Low
				High Curb Cuts	Corridor Access Management	Medium
СН		CT-219 and US-44	4	Road Sa	afety Audit	Low
CY	NA	US-202 and East Cotton Hill Road	3	Non-Compliance with Flashing Signal		Medium-High
CN	NA	CT-219 and Drive- way	3	Road Saf	fety Audit	Low
					Flashing Beacon on Intersection Sign	Low-Medium
BB	NA	US-202 and East Cotton Hill Road	3	Sight Distance	Systemic Application of Multiple Low-Cost Countermea- sures at Stop-Controlled Intersections	Low
				Pedestrian	Full Signalized Intersection	Medium-High
NA	NA	US-44	3	Bike and Pedestrian Safety	Watch for Me CT Campaign	Low
NA	NA	US-44 and CT-219	1	Bicyclist	Watch for Me CT Campaign	Low
U	S-202 and CT2	219	0-2	Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low
				Angle Crashes	Protected left-Turn Phase	Medium
			Speedina	Dynamic Speed Feedback Signs	Low	
				Gateway Treatments	Low	
	Tow	nwide		Run off the Road	Guiderail Improvements	Low
					Rumble Strips	Low
				Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program	Low

TOWN OF NORFOLK

2016 US Census Population Estimate: 1,632 Area: 46 square miles Population Density: 36 people per square mile 2016 Vehicle Miles Traveled (VMT): 21,505,070 2016 VMT per Capita: 13,177 Setting: Rural with Village Center Town Representatives: Susan Dyer (First Selectman) and Richard Byrne (Emergency Management Director) Data Identified Data-Driven Corridors: 76 (US-44) and 111 (US-44) Data Identified Data-Driven Intersections: Intersection 60 (US-44 at CT-182) Data Identified Bike and Pedestrian Crash Locations: NA Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 28



Overview

Norfolk is a rural Town in the foothills of the Berkshires. It is bordered by Massachusetts to the north, North Canaan and Canaan to the west, Goshen to the south, and Winchester and Colebrook to the east. The Infinity Music Hall and Bistro, as well as the Yale Summer School of Music and Art attract many visitors and program participants (Figure 89).



Figure 89: Norfolk Town Center





Figure 91: Norfolk Data-Driven Corridor and Intersection Map

Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	6	2	9
Possible Injury (C)	7	2	0
Total Crashes	14	5	9

Table 56: Norfolk Data-Driven Intersections (See page 141)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection BI	US-44	CT-182	3

Table 57: Norfolk Data-Driven Corridors (See page 141)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 76	Greenwoods Road East	Beckley Road	Loon Meadow Road	6
Corridor 111	Greenwoods Road East	0.14mi east of Old Colony Road	Maple Avenue	5

Table 58: Emphasis Areas Related to Crashes in Norfolk

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	2	0	1
Distracted Driving	2	2	0
Intersection-Related Crashes	3	1	1
Motorcycle Crashes	1	1	1
Older Driver Crashes	4	1	2
Unrestrained Occupant Crashes	0	0	1
Road Departure Crashes	9	2	4
Speeding-Related Crashes	2	1	1
Younger Driver Crashes	5	2	2
Total Emphasis Areas	28	10	13

Town Comments

The Town stated that the identified data-driven Corridor 76 along US-44 should be extended west to the intersection of US-44, Colebrook Road, and Loon Meadow Drive. Town officials indicated there was a fatal crash prior to last three years of data reviewed. The Town is concerned with the intersection Of US-44 and CT-272, north of the village center (Figure 92). According to Town officials, US-44 is a highly travelled corridor, commonly used by motorists driving between Rhode Island, Connecticut and New York State. US-44 is also a heavily travelled truck route.

There is a stone retaining wall and a narrow bridge along US-44 approaching the intersection with US-272. Town Officials reported that the bridge over Buttermilk Falls and the retaining wall were often hit by vehicles. Vehicles traveling east on US-44 are directed to proceed north onto US-272 via Memorial Green Road. US-272 South (North Street) merges with US-44 East at the next intersection; there is no signage prohibiting a left turn despite the inadequate turning radius. In addition, there is limited sight distance for eastbound travel leading into a marked crosswalk.

An additional prioritized section of US-44 is a segment west of Ashpontag Road, colloquially called Greenwoods Road West. The Town reported there was a fatal crash here prior to 2015. The Town stated that the State is currently installing guiderails along US-44 with impact control.

Town Officials prioritized the area of US-44 near Botelle Elementary school located at 128 Greenwoods Road East (US-44). This segment is a concern due to the conflict between high vehicle speeds and school-related pedestrian activity. US-44 has a regulatory speed limit posted at 40 mph and an advisory 25 mph speed limit with flashing beacons activated during arrival and dismissal times. The Town has endorsed the addition of a designated school zone with a 25 mph posted speed limit during school hours, not just arrival and dismissal, and installation of school zone pavement markings. This visual emphasis and reduction in speed are to ensure drivers are acutely aware of school zone locations.

In addition, the Town mentioned that they had participated in the Connecticut DOT's CT Community Connectivity Program to address the crosswalk locations across US-44 near the school (Figure 93). The road safety audit, another FHWA proven safety countermeasure, recommended removing the two existing crosswalks on Greenwoods Road East (US-44) at the Botelle School and replacing them with one new crosswalk located further south at the intersection with Beacon Lane. Additionally, the Town reported a lack of enforcement because they do not have a resident Connecticut State Trooper. The Town also reported that many crashes are speed- and weather-related. Despite the center of Town speed limit being 25 mph, motorists are not compliant.



Figure 92: US-272 at US-44 Aerial View

Field Site Inventory

US-44 at Village Green along Corridor 111



Figure 93: US-44 at Village Green

The US-44 eastbound approach to the library has horizontal curvature, which limits the sight distance prior to the crosswalk that connects the Village Green and the Norfolk Public Library (Figure 94). There is an MUTCD compliant regulatory In-Street Pedestrian Crossing sign and a non-compliant pedestrian crossing advisory sign with the supplemental down arrow (Figure 95). In addition, there are yield teeth pavement markings on both crosswalk necessitates further measures to improve pedestrian safety.

Figure 94: Horizontal Curvature Along US-44 Looking West Prior to Crosswalk



Figure 95: US-44 Looking East


Countermeasure Considerations

The Town could consider working with the State to install traffic calming countermeasures where warranted. The Town could consider installing neck downs (bulb-outs) at the crosswalk along US-44 at Village Green. Neck downs are curb extensions that act as traffic calming measure that slow traffic by narrowing lane widths, increasing pedestrian visibility, and reducing the crossing distance. The implementation of this treatment would be optimal at this location, making it safer for pedestrians, particularly children and the elderly, as it is in proximity of the library. In addition, the Town could consider installing pavement markings along the US-44 entries into Town. The addition of gateway treatments could be considered along all Town entry points. This visual notification could elevate driver awareness to potential pedestrians and cyclists and increased turning maneuvers. The Town could consider pavement markings with Pedestrian Crossing Ahead prior to all crosswalks (Figure 96).

The Town could work with the Connecticut DOT to establish an official school zone around the Botelle Elementary School. School zone signs and pavement markings provide important information to drivers to improve safety. In the 2009 Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Part 7 sets forth principles and standards for controlling traffic in school areas. However, the Town would need to coordinate with State jurisdiction. Signs should be used judiciously, as overuse may lead to driver noncompliance and excessive signs may create visual clutter.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs²⁵. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page²⁶. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.



²⁵ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

²⁶ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 59: Norfolk Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
					High Visibility Enforcement	Low-High
				Speeding	Dynamic Speed Feedback Signs	Low
BL	NA	US-44 amd CT-182	3		Slow Down Campaigns	Low
				Sight Distance	Systemic Application of Multiple Low-Cost Counter- measures at Stop-Controlled Intersections	Low
NA	76	US-44	6	Speeding	See Above	
				Speeding	Gateway Treatments	Low
NA	111	US-44	3	Pedestrian	Bulb-outs	Medium
					Pedestrian Hybrid Beacons	Medium
		US-44 and		School Zone	School Zone Pavement Markings	Low
NA		Botelle Elementary School	NA	Speeding	See Above	
					See Above	
				Bike and Pedestrian	Watch for Me CT Campaign	Low
Townwide				Horizontal Curva- ture	CT DOT Horizontal Curve Warning Signs and Shoul- der Rumble Strips Program	Low
			Speeding and Adverse Weather Conditions	Enhanced High Friction Treatments at Identified Locations	Low-Medium	

TOWN OF NORTH CANAAN

2016 US Census Population Estimate: 3,186 Area: 19.5 square miles Population Density: 167.7 people per square mile 2016 Vehicle Miles Traveled (VMT): 27,267.325 2016 VMT per Capita: 8,558 Setting: Rural Town Representatives: Charles Perotti (Selectman), William Minacce (EMS Chief), Bryon Carlson (Town of North Canaan), Duane Lopriore (Resident State Trooper), Brian Allyn (Fire Chief) Data Identified Data-Driven Corridors: Corridors 97 (US-44) and 104 (US-7) Data Identified Data-Driven Intersections: Intersection NH-U (US-44 at US-7) Data Identified Bike and Pedestrian Crash Locations: None Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 41



Overview

North Canaan is located at the junctions of US-44 and US-7 in the northwest corner of Connecticut within the NHCOG Region. It is bordered by Massachusetts to the north, Salisbury to the west, Canaan (Falls Village) to the south and Norfolk to the east. North Canaan is a rural Town, but home to significant industry, which has led to a higher volume of truck traffic than typical NHCOG Towns. Within the Town there is a division of Becton Dickinson, as well as other firms such as Bicron, a maker of electronic components used in the automobile and aircraft industries.





Figure 97: North Canaan High Frequency Crash Corridor and Intersection Map

Table 60: North Canaan Total Crashes by Severity (See page 147)

		· · · · ·	
Crash Severity	2015	2016	2017
Fatal Injury (K)	2	1	0
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	8	8	7
Possible Injury (C)	4	5	5
Total Crashes	14	15	12

Table 60: North Canaan Data-Driven Intersections (See page 148)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection U	US-44	US-7	4

Table 61: North Canaan Data-Driven Corridors (See page 148)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 97***	Main Street	Church Street	0.15 mi East of Elm Street	10
Corridor 97***	High Street	0.17 mi North of Grace Way	0.06 mi South of Lower Road	6

Table 62: Emphasis Areas Related to Crashes in North Canaan

2015	2016	2017
1	0	1
0	0	2
0	2	3
1	4	2
3	4	2
2	0	0
8	6	6
3	5	4
8	6	4
26	27	24
	2015 1 0 1 3 2 8 3 8 26	2015 2016 1 0 0 0 0 2 1 4 3 4 2 0 8 6 3 5 8 6 26 27

***This corridor is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Town Comments

The Town Officials did not prioritize the data-identified Corridor 97 along US-44 between Granite Avenue and Lime Kiln Road, which had 10 crashes from 2015-2017. They stated that there were more traffic concerns along other segments of US-44. They prioritized US-44 from Deely Road to Browns Lane because of two fatalities along this section of roadway outside of our period of study. They attributed crashes along this corridor to speeding combined with the horizontal and vertical curvature (Figure 99). The speed limit is currently regulated to 50 mph. The Town does retain a resident Connecticut State Trooper. In addition to the limited sight distance and challenges associated with maintaining lane position with severe curvature, the Town Officials reported that debris from a dilapidated retaining wall located along this section litters the roadway resulting in hazardous conditions.

The other priority for the Town is the western section of US-44 from Raymond Avenue to the Salisbury Town line. This segment has horizontal curvature and the road is at a slope according to Town Representatives. Another roadway hazard is oil spills, which is common along this route due to the high-volume of heavy truck traffic. Two major companies, Rebar Transportation and Specialty Minerals, contribute to the high volume of freight traffic generated within the Town.



Figure 98: Horizontal alignment sign with Advisory Speed sign

The Town reported heavy motorcycle and cyclist volumes. Along the approach to the Housatonic River crossing, the State recently installed a series of chevron signs and flashing beacons to alert motorists to horizontal curvature. The Town stated this has reduced crash frequency, but this corridor remains an area of concern.

The US-44 section west of US-7 has undergone high friction surface treatment (HFST), which has helped prevent vehicles from running off the road. The Town stated that US-7 is a commonly travelled route for tourists heading to Vermont. There is an issue regarding non-motorized users along the US-7 South corridor from Mountainside Drug Facility into the Town Center. Despite the frequency of pedestrians, walking accommodations are not adequate along this segment, there are narrow shoulders and a 45 mph posted speed limit. The Town requested field visits occur at US-44 and Trescott Hill Road and US -44 west of US-7 to the Town line.

The Town has installed No Through Trucks signs on North Elm Street to deter trucks from using this local road as a cut through from CT-7 south of US-44.



Figure 99: US-44 East of Trescott Hill Road

Field Site Inventory

US-44 between Deely Road and Browns Lane

US-44 between Deely Road and Browns Lane is a segment of roadway with moderate vertical and horizontal curvature. The roadway, centerline, and shoulder pavement markings are in fair condition. There is a deer warning sign indicating the potential conflict with wildlife in this area. The speed is posted at 50 mph. Sight distance is limited due to roadway geometry and adjacent topography. Guiderails are in place along the eastbound travel lane. The ingress and egress of vehicles from driveways are combined with limited sight distance and high speeds.

This segment of US-44 between New High Street and Honey Hill Road has moderate to severe horizontal curvature. This section is located along the Housatonic River. The current protection system is a cable guiderail structure (Figure 101). The Town noted there had been a fatality along this stretch and stated that under wet conditions it is quite hazardous.



Figure 100: US-44 at Lawrence Avenue

US-44 East of the Housatonic River

The section of US-44 prior to the Housatonic River and the Salisbury Town line has limited sight distance due to severe horizontal curvature (Figure 102). The State has installed high curve chevron signs and an advisory speed of 25 mph with flashing beacons to alert motorists to reduce speed prior to the curve. The Town stated that these countermeasures have mitigated crash frequency.



Figure 101: US-44 along Housatonic River approach

Countermeasure Considerations

Enhanced delineation and friction for horizontal curves could be implemented, especially along noted areas of US-44. These highly-effective countermeasures include pavement markings, post-mounted delineation, chevron curve signs with retro reflectivity. Maintaining the appropriate amount of pavement friction along curves or polished roadway surfaces could reduce crashes. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can assist motorists in maintaining control of their vehicles. Centerline rumble strips could be installed to mitigate head on crashes, especially where sight distance is limited (Figure 104). The objective of rumble strips is to assist distracted or inattentive motorists who stray over the center line or have trouble seeing during inclement weather. These could be installed as a low-cost systemic improvement along US-44 and US-7. Slow Pavement Markings could also be added along certain Data-Driven spots on US-44 to further alert drivers to upcoming roadway changes that warrant lower velocity.

The Town could consider working with the State to install traffic calming countermeasures to reduce speeds within the Town. According to the FHWA:

The importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle. The slower the speed of the motor vehicle, the greater the chances are for survival for the pedestrian. If struck by a motor vehicle travelling at a speed of 20 miles per hour or less, a pedestrian is typically not permanently injured.

Gateway treatments could be considered along all entry points to the rural community. This visual notification can elevate driver awareness to the change from the higher speed rural roadway to the approach of a rural Town or village, with the goal of decreasing speed. Speed humps are another low-cost recommendation that could be strategically located. These elongated mounds can also discourage speeding. Installing raised crosswalks at all current locations within North Canaan could also decrease speeds of motorists, increase pedestrians' visibility, and improve the pedestrians' line of sight.

The Town could consider reducing lane width to 11-12-feet, where applicable, and widen shoulder widths to accommodate pedestrians and cyclists.

The Town could coordinate with the region to develop and conduct a public outreach campaign to reduce speeding and distracted driving. The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts based on community needs²⁷. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page²⁸. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

²⁷ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

²⁸ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing. gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.



Figure 102: Speed Campaign Sample

Table 63: North Canaan Countermeasure Considerations



Figure 103: Centerline Rumble Strips Example

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
				Front to Poor Crachos	Replace Warning Sign for Approaching Rail Grade	Low
				FIGHT TO Real Clashes	Add Flashers to Rail Crossing Sign	Low
NA 97***		US-44	10	Disregarded Traffic Sign	Add flashers to Stop sign at E. Elm Street	Low
				Spooding	Traffic Calming	Low-High
				speeding	Dynamic Speed Feedback Signs	Low
				Angle Crashes/Hori- zontal Curvature	Enhance Intersection Ahead Warning Signs Along US-7 Approach to Sand Road	Low-Medium
NA	NA 104*** US		6	Roadway Departure Crashes	Edge Line Rumble Strips with Bicycle Gaps	Low
				Speeding	See Above	
				Pedestrian	Narrow Travel Lanes and Widen Shoulder	Low
				recestrian	Watch for Me CT Campaign	Low
U	NA	US-44 and US-7	4	Needs Further Study		
US-44 from	Deelv Road to E	Brown's Lane	0-2	Horizontal and Verti- cal Curvature and Wet Conditions	Shoulder Rumble Strips, Enhanced Delineation and Fric- tion for Horizontal Curves	Low-Medium
	,			Road Debris Fix Retaining Wall		Low
				Speeding	Dynamic Speed Feedback Signs	Low
US-44 from La	wrence Ave to t	the Housatonic	0.2	Horizontal Curvature	High Surface Friction	Low-Medium
	River		0-2	Roadway Friction	High Surface Friction	Low-Medium
					Watch for Me CT Campaign	Low
US-7			0-2	Pedestrian	Pedestrian Warning Signs	Low
				Narrow Travel Lanes and Widen shoulder	Low	
				Horizontal and Verti- cal Curvature	CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program	Low
	Iowr	nwide		Distracted Driving	Public Awareness Campaign	Low
					High Visibility Enforcement	Low-Medium

TOWN OF ROXBURY

2016 US Census Population Estimate: 2,176 Area: 26.4 square miles Population Density: 82 people per square mile 2016 Vehicle Miles Traveled (VMT): 23,005,950 2016 VMT per Capita: 10,573 Setting: Rural Town Representatives: Barbara Henry (First Selectman) Data Identified Data-Driven Corridors: Corridors 63 (CT-67, Southbury Road) and 64 (CT-67, Southbury Road) Data Identified Data-Driven Intersections: NA Data Identified Bike and Pedestrian Crash Locations: NA

Overview

Roxbury is a rural Town situated in the southern central region of NHCOG. It is bordered by Woodbury to the east, Southbury to the south, Bridgewater to the west, and Washington to the north. The main thoroughfares are CT-67, CT-199, and CT-317.

General concerns are speeding, distracted driving, pedestrian safety within the Town center, horizontal and vertical curvature, and the high volume of truck traffic in conflict with cyclists and motorcyclists.







Figure 105: S Curve along CT-67

Figure 104: Roxbury Town Hall

NHCOG RTSP 2018





Figure 107: Roxbury High Frequency Crash Corridor and Intersection Map

Table 64: Roxbury Total Crashes by Severity (See page 154)

Crash Severity	2015	2016	2017
Suspected Minor Injury (B)	7	6	8
Possible Injury (C)	1	5	3
Total Crashes	8	11	11

Table 65: Roxbury Data-Driven Corridors (See page 155)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 63	Southbury Road	Church Street	Bernhardt Meadow Lane	6
Corridor 64	Southbury Road	0.60 mi South of Highmeadow Lane	0.20 mi South of Bacon Road	4

Table 66: Emphasis Areas Related to Crashes in Roxbury

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	2	1
Distracted Driving	2	1	1
Intersection-Related Crashes	0	1	1
Motorcycle Crashes	2	2	0
Older Driver Crashes	2	2	0
Unrestrained Occupant Crashes	1	1	0
Road Departure Crashes	7	8	7
Speeding-Related Crashes	1	6	4
Substance-Involved Crashes	0	2	2
Younger Driver Crashes	2	4	4
Total Emphasis Areas	18	29	20

Town Comments

The Town did not prioritize the data-identified Corridors 63 and 64 along CT-67. They attributed these traffic incidents to high speeds and distracted driving.

The Town did prioritize the segment of CT-67 at Botsford Hill Road near the Bridgewater Town line. This section of CT-67 has had a high rate of crashes outside of our scope of study. The Town attributed these crashes to speeding. The Town reported an "S" curve that motorists misjudge which led to crashes. CT DOT investigated this segment 15 years ago to realign road but the project was not actualized.

Wellers Bridge Road is a local road that allows drivers to bypass the convoluted segment of CT-67 and connect to CT-199, CT-317, or to continue travelling on CT-67. The Town stated that the frequent use of mapping applications direct drivers through residential neighborhoods which further exacerbates the use of this cut through. This shortcut is a concern for the Town due to the high volume of through traffic and the limited capacity of this local road, so the Town has requested no thru truck signage on CT-67 be installed. The Town also wants centerline rumble strips installed along Wellers Bridge Road.

The junction of CT-199 at Davenport Road and Battle Swamp Road is a concern for the Town. This intersection has very limited sight distance due to vertical and horizontal curvature. This route is frequented by Shepaug Valley High School students on their commute. The Town is concerned with the inexperience of these motorists along this corridor. There was a fatality prior to this study's dataset. The Town has requested the State install Dangerous Intersection Ahead signs, but this is not a MUTCD compliant sign and therefore the State will not approve this. The Town would like a crosswalk installed along CT-67 to connect the Town Hall and commercial center.



Figure 108: CT-199 at Davenport Road

There is a residential trooper that divides patrol time with the Town of Bridgewater.

Field Site Inventory

CT-67 at Botsford Hill Road

This section of CT-67 is a two-lane road with narrow shoulders. Horizontal curvature limits sight distance in both directions of travel. Traffic volume was lowmoderate. Town selectman said road departure crashes are common here. A resident on southern side of CT-67 has installed a makeshift barrier to protect their home from roadway departure crashes. There are chevron curve signs along the curves in both directions.



Figure 109: Barrier in front of residence on CT-67



Figure 110: Chevrons along CT-67

CT-199 at Davenport Road and Battle Swamp Road

This segment of CT-199 has steep vertical and horizontal curvature which impedes sight distance in both directions. Motorists turning from Davenport Road or Battle Swamp Road do not have adequate sight distance to turn onto CT-199. There is significant elevation disparity between Davenport Road and CT-199 which further exacerbates the inadequate sight distance. The road has centerline and edge pavement markings. There are no curve warning signs. The guiderail protection system is composed of wood beams and cables. Drivers were noted travelling at high speeds.



Figure 111: CT-199 North of Davenport



Figure 112: CT-199 South of Davenport

Countermeasure Considerations

Enhanced delineation including high curve chevron signs could be installed along the CT-199 curves at Davenport Road. The Town could also update the guiderail system to the standardized impact control guiderail. High friction surface treatments could be installed where warranted along horizontal curves or other areas of concern, especially along CT-199 at Davenport and CT-67 at Botsford Hill Road. Maintaining the appropriate amount of pavement friction is imperative for safe driving. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can mitigate the reduction of pavement friction assisting motorists in maintaining control of their vehicles²⁹.

Any excess travel lane widths could be reduced to 11-12' and the remaining roadway could be marked as the shoulder. A wider shoulder could be considered along roads used by bicyclists³⁰.

Rumble strips could be installed on the center line to mitigate head-on crashes, especially where sight distance is limited along both inventoried areas of CT-199 and CT-67. Their objective is to assist distracted or inattentive motorists who stray over the center line or have trouble seeing during inclement weather, alerting them to their trajectory³¹. Edge line rumble strips and safety edges could be installed to mitigate run off the road crashes, if the route is not a highly travelled bicyclist corridor. The Towns and State can use Strava Data to identify most popular cyclist routes in, the area and exclude these roads from edge line treatments.





Figure 114: High Friction Surface Treatment

Slow Pavement Markings could be added along CT-199 at Davenport Road to further alert drivers to upcoming roadway changes that warrant lower velocity. The Town could work with CT DOT to install a mid-block crosswalk to connect Town Hall to the commercial center. The FHWA recommends Pedestrian Hybrid Beacons at midblock crossings as a proven safety countermeasure reducing pedestrian crashes by almost 70%³².

Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns, especially with distracted driving and speeding. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs³³. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page³⁴. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives. For a more detailed countermeasure list please reference the following table.

Figure 113: HAWK Signal

- ²⁹ Proven Safety Countermeasures. (2017, October 13). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures
- ³⁰ Proven Safety Countermeasures: Walkways. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/walkways/
- ³¹ Proven Safety Countermeasures: Longitudinal Rumble Strips and Stripes. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/long_ rumble_strip/.
- ³² Proven Safety Countermeasures: Pedestrian Hybrid Beacons. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/ ³³ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.
- ³⁴ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 67: Roxbury Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
NA	63	CT-67	6	Speeding	Dynamic Speed Feedback Signs	Low
NA	64	CT-67	4	Speeding	Dynamic Speed Feedback Signs	Low
				Poad Dopaturo	Safety Edge	Low-Medium
					Shoulder Rumble Strips	Low
CT-67 ai	CT-67 and Botsford Hill Road		0-2	Horizontal Curvature	Increased Pavement Friction	Low
CT-199 and Daveport Road		0-2	Vertica and Horizontal	Enhanced Delineation and Friction for Horizontal Curves	Low	
				Curvature	Guiderail Improvements	Low-Medium
				Dedetrian	Watch for Me CT Campaign	Low
				Pedethan	Crosswalks	Low
Townwide				Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoul- der Rumble Strips Program	Low
				Distracted	Public Awareness Campaign	Low
			Driving	High Visibility Enforcement	Low-Medium	

TOWN OF SALISBURY

2016 US Census Population Estimate: 3,618 Area: 60.1 square miles Population Density: 60.3 people per square mile 2016 Vehicle Miles Traveled (VMT): 38,421,360 2016 VMT per Capita: 10,620 Setting: Rural Town Representatives: Curtis Rand (First Selectman), Christopher Sorrell (Resident Trooper) Data Identified Data-Driven Corridors: Corridors 51 (CT-112-Lime Rock Road), 52 (US-44-Millerton Road), 53 (CT-41-Sharon Road), 54 (US-44-Main Street) Data Identified Data-Driven Intersections: NA Data Identified Bike and Pedestrian Crash Locations: US-44, Private Drive Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 69

Overview

Salisbury is rural Town with a vibrant village center situated in the northwest corner of the region and state. It is bordered by New York to the west, Massachusetts to the north, North Canaan and Canaan to the east and Sharon to the south. The Town's main routes are US-44, CT-41, CT-112 and US-7.

Based on meetings with the Town Representatives, general concerns include speeding, pedestrian safety, the reduction of posted speed limits along identified roads, horizontal and vertical curvature, high volume of truck traffic in conflict with cyclists and motorcyclists, and a lack of driver awareness of road geometry.



Figure 115: Salisbury Town Hall







New York

Legend Salisbury High Crash Corridor 2015-2017

162



Figure 117: Salisbury High Frequency Crash Corridor and Intersection Map

Table 68: Salisbury Total Crashes by Severity (See page 161)

			-
Crash Severity	2015	2016	2017
Fatal Injury (K)	0	2	0
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	12	12	13
Possible Injury (C)	10	10	8
Total Crashes	23	24	22

Table 69: Salisbury Data-Driven Corridors (See page 162)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 54	Main Street	0.04 mi south of Brook Street	Academy Street	10
Corridor 51***	Lime Rock Road	Race Track Road	0.02 mi east of Salmon Kill Road	9
Corridor 52	Millerton Road	0.14 mi west of One Hill Road	0.28 mi east of One Hill Road	4
Corridor 53	Sharon Road	0.04 mi south of Brook Street	Academy Street	4

Table 70: Emphasis Areas Related to Crashes in Salisbury

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	3	2	1
Distracted Driving	6	2	2
Intersection-Related Crashes	1	0	1
Bicycle Crashes	0	0	0
Older Driver Crashes	9	8	6
Pedestrian Crashes	1	0	3
Unrestrained Occupant Crashes	1	1	5
Road Departure Crashes	16	16	12
Speeding-Related Crashes	7	7	12
Substance-Involved Crashes	1	2	0
Younger Driver Crashes	8	9	8
Total Emphasis Areas	53	47	52

***This corridor is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Town Comments

The primary traffic issue according to Town Officials is speeding. The Town is currently coordinating with CT DOT to reduce current speed limits along US-44 (Corridor 54) within the village center and in front of the Salisbury School. The segment of US-44 outside of the village center does not coincide with any identified Data-Driven corridors. The Town is requesting the reduction of current legal speed limits from 30 mph in the village center and 40 mph at the Salisbury School to 20 mph at both locations. The main impetus is to provide vulnerable street users with a safer environment as there is a direct correlation between higher speeds, crash risk, and the severity of injuries. The Town stated that a cyclist was recently hit on this corridor.

In the Spring of 2018 the Town hired a planning agency to address the flow of traffic and connectivity along Main Street, Academy Street and Library Street. The Town would like to make the intersection of Main Street and Library Street more pedestrian friendly with bump outs, crosswalks, and a roundabout as a potential long-term solution.

The Town Representatives would also like the State to expand US-44 and stripe a wider shoulder between Lakeville and Millerton, CT during the next repaying process. This is to accommodate the cyclists who frequent this route.

At the Salisbury School there are 200 plus students who travel across US-44 to access both sides of the campus. There is a crosswalk, a pedestrian rapid flashing beacon and advanced pedestrian warning sign with flashing beacons. The Town, however, does not believe these pedestrian amenities are sufficient because of limited sightlines and high speeds along the corridor. US-44 is a major east-west route. The Town commented that CT DOT wants the Town to install speed feedback signs to mitigate speeding, but the Town does not endorse this recommendation.



Figure 118: Salisbury Village Center along US-44

Corridor 52, which is located along US-44, locally designated as Millerton Road, was identified as a Data-Driven corridor. The Town attributes the crashes along this segment of US-44 to horizontal curvature. According to the Town the majority of traffic incidents reported along this corridor were attributable to wet and dark conditions and roadway geometry.

The Town Representatives did not prioritize data identified Data-Driven Corridor 53, a segment is along CT-41. Town attributes most of the traffic incidents are a result of excessive speeds given the existing horizontal and vertical curvature. The representatives also stated that there was a crash involving a pedestrian along CT-41, but this area is not as critical for the Town to address as other sections of roadway. The Town did not prioritize Corridor 51 along CT-112.

The Town's pedestrian advocacy group, PATHWAYS, is advocating for the extension of sidewalks from Lakeville to Salisbury Village Center. The Town wants to also accommodate hikers from the Appalachian Trail which intersects US-44 north of the Town Center and reconnects at Cobbler Road. Many hikers visit the village's commercial area before returning to the trail. The prevalence of hikers unfamiliar with the Town is another factor in the Town's campaign to lower vehicular speeds.

The study team referred the Town to UCONN Transfer Center's Safety Circuit Rider Program for immediate safety concern assistance.

Field Site Inventory

US-44 and the Salisbury School

The Salisbury School campus located at 251 Canaan Road is bisected by US-44 (Canaan Road) with a crosswalk connecting the facilities. The pedestrian crossing has limited sight distance from both approaches along US-44. The speed is posted at 40 mph, but vehicles including moderate truck traffic, were noted exceeding this designation. There are advanced pedestrian crosswalk warning signs with flashing beacons along both approaches and a rectangular rapid flashing beacon (RRFB) at the actual crosswalk.

RRFBs are user-actuated amber LEDs that supplement warning signs at unsignalized intersections or mid-block crosswalks. They can be activated by pedestrians manually by a push button or passively by a pedestrian detection system (FHWA website). Although these pedestrian features alert drivers to the possibility of pedestrians, the high speed and limited sight distance places pedestrians at higher risk of conflict with drivers at this location.



Figure 119: US-44 (Corridor 54)





Figure 120: US-44 at Salisbury School

Figure 121: RRFB at Salisbury School Crossing



Figure 122: Main Street

Countermeasure Considerations

US-44 Along Corridor 54

The data-identified corridor 54 is along the historic main street segment of US-44, in the center of Town. This segment of road-way has no significant curvature, but sight distance is impeded by parked cars. There are sidewalks on both sides of the road, on-street parallel parking, intermittent crosswalks, and pedes-trian crossing signs. Pedestrian safety is a concern despite these current amenities due to the volume of traffic at off-peak hours, including trucks, and the high speeds. The speed limit is posted at 30 mph.



Figure 123: Main Street

The Town should consider working with the State to install traffic calming countermeasures to reduce speeds within the Town, in congruence with the Strategic Highway Safety Plan (SHSP) and the Federal Highway Association (FHWA). According to the FHWA, the importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle (FHWA Traffic Calming ePrimer-Module 2).

PHBs and HAWK signals could help mitigate the current concerns the Town has for the Salisbury School area. The PHB signal is listed among the FHWA's top 20 proven safety countermeasures³⁵. The Town could make the intersection of Main Street and Library Street more pedestrian friendly with bump outs, crosswalks, and a roundabout as a potential long-term solution.

The Town could coordinate with the State to widen US-44 and stripe a wider shoulder between Lakeville, CT and Millerton, NY during the next repaving process. This is to accommodate the cyclists who frequent this route.

The Town could continue to work with CT DOT to reduce the posted speed limits in the Village Center and the Salisbury School US-44 corridor. And the Town could collaborate with enforcement, emergency management services and the region to develop a pedestrian awareness public outreach campaign. Coordinating with the National Highway Traffic Safety Administration's (NHTSA) national campaign schedule could further boost the effectiveness of local efforts³⁶.

High friction surface treatments or shoulder rumble strips could be installed where warranted along horizontal curves or other areas of concern, especially along US-44 at spot locations.

Reduction in travel lane width to 11' per lane could also allow for wider shoulder widths for cyclists and pedestrians. Centerline rumble strips could be installed to mitigate head on crashes, especially where sight distance is limited. According to the FHWA they are a proven countermeasure to keep motorists in their lanes of travel, SOURCE: https://safety.fhwa.dot.gov/provencountermeasures.

³⁵Proven Safety Countermeasures. (2017, October 13). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/proven countermeasures

³⁶NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/ calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.



Figure 124: HAWK Signal

NHCOG RTSP 2018

Their objective is to assist distracted or inattentive motorists who stray over the center line or have trouble seeing during inclement weather, alerting them of their errant trajectory. These could be installed as a low cost systemic improvement along US-44 and US-7.

Go Slow Pavement Markings could be added along certain data-driven spots on US-44 to further alert motorists to upcoming roadway changes that warrant lower velocity.

Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs [1]. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page³⁷. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

Table 71: Salisbury Countermeasure Considerations



Figure 125: High Friction Surface Treatment

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost				
				Dark/Dark Lighted Crashes	Roadway Illumination	Medium				
NA	51***	CT_112	9	Roadway Departures	Edge Line Rumble Strips with Stripes	Low				
NA INA	51	C1-112	5	Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low				
				Speed	Dynamic Speed Feedback Signs	Low				
				Wet and Dark Conditions	High Friction Surface Treatment	Low				
NA	52	US-44	4	Speed	See Above	TBD				
				Horizontal Curvature	Shoulder Rumble Strips, Enhanced Delineation and Friction for Horizontal Curves	Low				
NIA	ED	CT 41	4	Speed	Speed See Above					
INA	22	C1-41	4	Horizontal Curvature	Horizontal Curvature See Above					
		54 US-44			USLIMITS2	Low				
					High Visibility Crosswalks	Low				
NA	54		US-44	US-44	US-44	10	10	0 Pedestrian	Gateway Treatments	Low
									Bump Outs	Medium
					Roundabout	High				
NA	NA	US-44	1		Needs Further Study					
NA	NA	Driveway	1	Needs Further Study						
				Pedestrian	HAWK Signal	Medium				
US 44 and Salichum School				Roadway Departures	Safety Edge	low-Medium				
					Horizontal Curve Warning Signs and Shoulder Rumble Strips	Low				
					Watch for Me CT Campaign	Low				
				Pedestrian and Bicyclist	Add Bike Lanes or Widen Shoulders	Low-Medium				
					Raised Crosswalks	Low				

³⁷ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www. trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing. ***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

TOWN OF SHARON

2016 US Census Population Estimate: 2,714 Area: 59.6 square miles Population Density: 45 people per square mile 2016 Vehicle Miles Traveled (VMT): 33,716,510 2016 VMT per Capita: 12,423 Setting: Rural Town Representatives: Brent Colley (First Selectman), Jamie Casey Data Identified Data-Driven Corridors: Corridor 87 (CT-41) Data Identified Data-Driven Intersections: NA Data Identified Bike and Pedestrian Crash Locations: NA Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 41

Overview

Sharon is a rural Town of 2,714 people. Sharon is bordered by New York to the west, Salisbury to the north, Cornwall to the east and Kent to the south. The main thoroughfares in Sharon are CT-4, CT-41, and CT-343. Speeding is a general safety concern due to lack of enforcement. Sight distance is a safety concern primarily associated with horizontal curvature due to the physical geography of the region. The Town has scenic road ordinances that may limit improvement considerations based on unclear alteration guidelines. Most local roads do not have any pavement markings or edge lines.





Figure 126: Sharon



0.5



Table 72: Sharon Total Crashes by Severity (See page 168)

Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	11	9	5
Possible Injury (C)	4	4	6
Total Crashes	15	13	12

Table 73: Sharon Data-Driven Corridors (See page 169)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 87	Main Street	Great Elm Road	0.02 mi north of Cemetery Road	5

Year Asleep or Fatigued-Related Crashes **Bicycle Crashes Distracted Driving** Intersection-Related Crashes Motorcycle Crashes Older Driver Crashes Pedestrian Crashes **Unrestrained Occupant Crashes Road Departure Crashes** Speeding-Related Crashes Substance-Involved Crashes Younger Driver Crashes Total Emphasis Areas

Table 74: Emphasis Areas Related to Crashes in Sharon

Town Comments

Sharon's Town Representatives considered the data-driven Corridor 87 on CT-41 to be of low priority. There was a total of five crashes along this segment from 2015-2017.

The Town requested that the segment on CT-41 along the Sharon Shopping Center be evaluated for access management issues and the lack of compliant stop signs for exiting the shopping center onto CT-41. The Town recognized that the shopping center property is privately owned, and this could lead to issues for stop sign replacement policy.

The Town stated that the corridor along CT-4 between Butler Road and Joray Road is a high priority as Town Officials were troubled by a gap in-between the road and the guiderail.

Sharon Representatives stated that Westwood Road between Bog Meadow Road and Keeler Road has severely limited sightlines. The Town noted that this segment is one of few that has cellphone service, so motorist behavior may involve distracted driving as their phones suddenly regain a connection and notifications are received.

The Town requested the prioritization of intersection CT-41 and CT-361 due to failure to stop at stop signs. The reflective strips on the stop signs have not ameliorated traffic compliance.

Speeding is a problem throughout the Town due to lack of traffic enforcement. The Town does not have the \$200,000 per year funding for a resident trooper. Therefore, with shared police services throughout numerous neighboring Towns, there are generally long response times to traffic incidents. White Hollow Road is an exceptional problem for speeding. The lack of illumination on roads outside of the downTown was a significant issue, often contributing to collisions with animals in the roadway. Furthermore, carcass pickup is frequently delayed by the district's lack of resources. The Town recognizes that more frequent vegetation management along roads could potentially abate animal-related crashes.

Field Site Inventory

CT-41 from Low Road to Murtagh Road

Adjacent to Corridor 100 is the Sharon Shopping Center. The speed limit along this segment is 30 mph, motorists were speeding and traffic volume was relatively high. Although crosswalks lconnect to stores and restaurants on the other side of the street, there are no sidewalks on the shopping center side of CT-41. Large driveways for the shopping center and the gas station interrupt pedestrian connectivity. Stop signs are not MUTCD compliant.



Figure 129: CT-41

CT-41 and CT-361

The speed limit on CT-41 and CT-361 is 35 mph. The pavement markings, pavement, and stop signs are all in good condition. The stop signs have reflective strips to draw attention. However, motorists were observed not stopping. The adjacent land uses are commercial, municipal, and the Green.



Figure 130: Aerial View of CT-41 from Low Road to Murtagh Road



Figure 131: CT-41 and CT-361

Countermeasure Considerations

The addition of high friction surface treatments on roads with horizontal curvature could alert drivers and reduce speeds. Edge line and center line pavement markings could be added to any local roads that do not have them. Centerline rumble strips could be implemented to promote motorist attentiveness, particularly when vertical or horizontal curvature impairs sight distance.

The corridor of CT-41 along the Sharon Shopping Center can become a safer setting for pedestrians by adding sidewalks for convenient pedestrian access to the shops and restaurants. All stop signs should be updated to the correct size and reflectivity per the MUTCD guidelines. The table below shows the specific issues that Sharon officials want to address and potential countermeasures.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs³⁸. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors. The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page³⁹. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

Table 75: Sharon Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
					Centerline Rumble Strips	Low
					Optical Speed Bars	Low
NA	NA	CT 41 and CT 261	0	Speeding	Dynamic Speed Feedback Signs	Low
	NA		0	speeding	USLIMITS2	Low
					Slow Down Campaign	Low
					MUTCD W3-1 (Stop Ahead) Sign	Low
	NA 87	CT-41		Speeding	See Above	
NA			5	5 Sight Distance –	Increased Pavement Friction	Low
					Enhanced Delineation	Low
				Speeding	See Above	
		CT-41	1	Stop Sign Condition	Replace Stop Signs	Low
NA	NA				Sidewalk Repairs	Low-High
					Pedestrian Design	Pedestrian Design
					MUTCD W11-2 (Pedestrian) Sign	Low
NIA	NIA	Westwood Road 1	2	Speeding	See Above	
NA	NA	A Westwood Road I	2	Sight Distance	See Above	
NIA	NA	CT 4	2	Guiderail Condition	Replace and Reposition Guiderail	Medium
	INA	C1-4	2	Sight Distance	See Above	
Townwide			Speeding	See Above		
		Horizontal Curvature	CT DOT Horizontal Curve Warning Signs and Shoulder Rumble Strips Program			

³⁸ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

³⁹ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

TOWN OF TORRINGTON

2016 US Census Population Estimate: 34,646

Area: 40.3 square miles

Population Density: 866 people per square mile

2016 Vehicle Miles Traveled (VMT): 201,146,755

2016 VMT per Capita: 5,806

Setting: Urban

Town Representatives:

- Elinor Carbone, Mayor of Torrington
- Rista Malanca, City of Torrington
- Michael Maniato, Torrington Police Department
- Kerry Rollett, Torrington Department of Public Works
- Ed Fabbri, Torrington Engineering
- Gary Brunoli, Torrington Fire Department
- Tim Waldron, Torrington Mayors Office

Total Number of Crashes Involving Injuries or Fatalities, 2015-2017: 569

Overview

Torrington is a city with an estimated population of 34,646 people in the Northwest Hills Region of Connecticut. It is bordered to the north by Winchester, to the west by Goshen, to the south by Litchfield and Harwinton, and to the east by New Hartford. The Town's main thoroughfares are US-202, CT-272, CT-183, CT-8, and CT-4. US-202 connects Torrington to New Hartford and Litchfield, CT-272 to Norfolk, CT-183 to Winchester, CT-8 to Winchester and Harwinton, and CT-4 to Harwinton and Goshen. Torrington serves as the major urban center for the Northwest Hills region of Connecticut.

General safety concerns for Torrington are the access management of plazas, congestion on arterial roads, and speeding.











Figure 135: Torrington High Crash Frequency Corridor Map

Table 76: Torrington Total Crashes by Severity (See page 174)

_			-
Crash Severity	2015	2016	2017
Fatal Injury (K)	3	1	2
Suspected Serious Injury (A)	9	12	15
Suspected Minor Injury (B)	85	93	88
Possible Injury (C)	81	96	84
Total Crashes	178	202	189

Table 77: Torrington Data-Driven Intersections (See page 176)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection A	US-202	South Main Street	16
Intersection K	US-202	Torringford West Street	11
Intersection F	CT-202	CT-8	9
Intersection H	CT-272	CT-4	9
Intersection C	US-202	Torrington Fair Shopping Plaza	8
Intersection D	Winsted Road	Kennedy Drive	8
Intersection BR	US-202	CT-8	8
Intersection B	US-202	Hartford Avenue	7
Intersection G	US-202	Harrison Rd/Torringford East Rd	7
Intersection L	US-202	CT-183	7
Intersection N	CT-4	Migeon Avenue	7
Intersection P	Church St	Migeon Avenue	7
Intersection Q	Kennedy Drive	Alvord Park Road	7
Intersection AI	Main Street	CT-4	7
Intersection BN	US-202	East Elm Street	7
Intersection E***	Pearl Street	Prospect Street	6
Intersection M	US-202	Willow Street	6
Intersection AC	US-202	Dibble Street	6
Intersection BP	CT-4	Prospect Street	6
Intersection BQ	US-202	Pfeffer Lane	6
Intersection Y	CT-4	US-202	5
Intersection BS	US-202	Town Hill Road	5
Intersection BT	CT-4	Torringford West St	5
Intersection BW	Greenwoods Road	Winsted Road	5
Intersection O	US-202	Tioga Street	4

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection T	US-202	Charles Street	4
Intersection AB***	Kimley Street	Winthrop Street	4
Intersection AN	US-202	Prospect Street	4
Intersection BY	Main Street	Farley Place	4
Intersection CA	CT-4	Butler Street	4
Intersection CB	Oak Avenue	East Albert Street	4
Intersection CD	South Main Street	Linden Street	4
Intersection S	Main Street	Wadham's Avenue	3
Intersection V	Harwinton Avenue	Hill Street	3
Intersection AE	Wolcott Avenue	Migeon Avenue	3
Intersection AK	US-202	Whitewood Road	3
Intersection AM	Hartford Avenue	Boston Street	3
Intersection AO	US-202	Orchard Road	3
Intersection BM	CT-4	US-202	3
Intersection CI	CT-4	Brook Street	3
Intersection CJ	US-202	Pineridge Road	3
Intersection CK	High Street	Hoffman Street	3
Intersection CP	CT-4	Borough Street	3
Intersection CS	High Street	Summer Street	3
Intersection CT	Main Street	East Pearl Street	3
Intersection CZ	CT-4	CT-8	3
Intersection DB	Migeon Avenue	Pulaski Street	3
Intersection DE	High St/Albert St	Litchfield Street	3
Intersection DG	South Main Street	East Albert Street	3

Table 78: Torrington Data-Driven Corridors (See page 177)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 89***	East Main Street	Turner Avenue	Torringford East Street	130
Corridor 90***	Main St/ Winsted Road	Lawton Street	0.03 mi north of Kennedy Drive	68
Corridor 91***	New Harwinton Road	CT-272 0.07 mi north of CT-4	Breezy Hill Road	56
Corridor 92***	Highland Ave	Horace Street	Migeon Ave	25

Corridor ID	Road	Start	End	Number of Crashes
Corridor 93***	Kennedy Drive	Winsted Road	East Main St	18
Corridor 94	Torringford St	East Main Street	0.12 mi north of West Hill Rd	18
Corridor 95	Goshen Road	Town Farm Road	0.18 mi east of Lovers Lane	15
Corridor 96***	Albert Street	Litchfield Street	CT-8	6
Corridor 110***	Goshen Road	0.14 mi west of Pothier Road	0.12 mi east of Wright Road	4

Table 78: Torrington Data-Driven Corridors Continued (See page 177)

Person Type	Most Severe Injury	Road 1	Road 2 (If at an Intersection)	On High Crash Intersection?	On High Crash Corridor?
Pedestrian	Suspected Minor Injury (B)	Winthrop Street	Dalton Street	No	No
Pedestrian	Suspected Minor Injury (B)	Prospect Street	NA	No	No
Bicyclist	Suspected Minor Injury (B)	US-202 (E Main Street)	Tioga Street	Intersection O	Corridor 89
Pedestrian	Suspected Minor Injury (B)	US-202 (E Main Street)	NA	No	Corridor 89
Pedestrian	Suspected Minor Injury (B)	US-202 (E Main Street)	NA	No	Corridor 89
Bicyclist	Possible Injury (C)	US-202 (E Main Street)	CT-4 (East Elm Street)	Intersection BN	Corridors 89 and 91
Pedestrian	Possible Injury (C)	CT-4 (E Elm Street)	Winthrop Street	No	Corridor 91
Pedestrian	Suspected Minor Injury (B)	US-202 (E Main Street)	Torringford East Street	Intersection G	Corridor 89
Pedestrian	Fatal Injury (K)	S Main Street	NA	No	Corridor 90
Pedestrian	Suspected Minor Injury (B)	Harwinton Avenue	Hill Street	Intersection V	No
Bicyclist	Suspected Minor Injury (B)	Summer Street	Summer Street	No	No
Pedestrian	Suspected Minor Injury (B)	CT-4	Migeon Avenue	Intersection N	Corridor 91
Bicyclist	Suspected Minor Injury (B)	Migeon Avenue	Pearl Street	No	No
Pedestrian	Suspected Serious Injury (A)	US-202 (E Main Street)	Willow Street	Intersection M	Corridor 89
Bicyclist	Fatal Injury (K)	Oak Avenue	E Albert Street	Intersection CB	Corridor 96
Pedestrian	Suspected Minor Injury (B)	US-202 (E Main Street)	Hartford Avenue	Intersection B	Corridor 89
Bicyclist	Suspected Minor Injury (B)	Wall Street	NA	No	No
Pedestrian	Possible Injury (C)	E Albert Street	S Main Street	Intersection DG	Corridors 90 and 96
Bicyclist	Suspected Minor Injury (B)	Kimley Street	Winthrop Street	Intersection AB	No
Bicyclist	Possible Injury (C)	S Main Street	NA	No	Corridor 90
Bicyclist	Possible Injury (C)	Scoville Street	NA	No	No
Pedestrian	Suspected Minor Injury (B)	S Main Street	NA	No	Corridor 90
Pedestrian	Possible Injury (C)	Winsted Road	NA	No	Corridor 90
Bicyclist	Suspected Minor Injury (B)	US-202	NA	No	Corridor 89

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017
Person Type	Most Severe Injury	Road 1	Road 2 (If at an Intersection)	On High Crash Intersection?	On High Crash Corridor?
Pedestrian	Suspected Minor Injury (B)	US-202 (E Main Street)	Willow Street	Intersection M	Corridor 89
Bicyclist	Possible Injury (C)	Main Street	Mason Street	No	Corridor 90
Pedestrian	Possible Injury (C)	US-202	NA	No	Corridor 89
Pedestrian	Suspected Minor Injury (B)	Church Street	High Street	No	Corridor 92
Pedestrian	Suspected Serious Injury (A)	US-202 (Litchfield Street)	S Main Street	Intersection A	Corridors 89 and 90
Pedestrian	Possible Injury (C)	US-202 (E Main Street)	Torringford East Street	Intersection G	Corridor 89
Pedestrian	Suspected Minor Injury (B)	Unknown	NA	No	No
Pedestrian	Suspected Minor Injury (B)	Workman Avenue	NA	No	No
Pedestrian	Suspected Minor Injury (B)	Litchfield Street	Four Story Lane	No	No
Pedestrian	Possible Injury (C)	Main Street	NA	No	Corridor 90
Pedestrian	Possible Injury (C)	Main Street	Mason Street	No	No
Pedestrian	Suspected Minor Injury (B)	CT-272 (Norfolk Road)	NA	No	Corridor 91
Pedestrian	Suspected Minor Injury (B)	CT-4	Main Street	Intersection AI	Corridors 90 and 91
Bicyclist	Possible Injury (C)	Church Street	Migeon Avenue	Intersection P	Corridor 92
Bicyclist	Possible Injury (C)	E Albert Street	NA	No	Corridor 96
Pedestrian	Suspected Minor Injury (B)	High Street	NA	No	No
Bicyclist	Suspected Minor Injury (B)	US-202 (E Main Street)	Nathaniel Street	No	Corridor 89
Pedestrian	Suspected Minor Injury (B)	High Street	NA	No	No
Pedestrian	Possible Injury (C)	US-202 (E Main Street)	NA	No	No
Pedestrian	Suspected Minor Injury (B)	S Main Street	Elton Street	No	Corridor 90
Bicyclist	Suspected Minor Injury (B)	Main Street	Wadhams Avenue	Intersection S	Corridor 90
Pedestrian	Suspected Minor Injury (B)	Prospect Street	Private Drive	No	No
Pedestrian	Suspected Minor Injury (B)	S Main Street	Linden Street	Intersection CD	Corridor 90
Bicyclist	Suspected Minor Injury (B)	US-202 (E Main Street)	Torringford East Street	Intersection G	Corridor 89
Pedestrian	Suspected Minor Injury (B)	Parking lot	NA	No	No
Pedestrian	Fatal Injury (K)	Main Street	Lois Street	No	Corridor 90
Bicyclist	Suspected Minor Injury (B)	S Main Street	Linden Street	Intersection CD	Corridor 90
Bicyclist	Suspected Minor Injury (B)	Beechwood Avenue	Central Avenue	No	No

Table 79: Emphasis Areas Related to Crashes in Torrington

Year	2015	2016	2017
Asleep or Fatigued Related-Crashes	3	6	6
Bicycle Crashes	8	4	6
Distracted Driving	20	30	19
Intersection-Related Crashes	69	93	84
Motorcycle Crashes	21	11	18
Older Driver Crashes	40	46	48
Pedestrian Crashes	13	13	7

Year	2015	2016	2017
Unrestrained Occupant Crashes	33	33	24
Road Departure Crashes	26	35	40
Speeding Relted Crashes	12	17	20
Substance-Involved Crashes	10	18	11
Younger Driver Crashes	69	84	56
Total Emphasis Areas	324	390	339

180

Town Comments

The Town confirmed that Intersection US-202 and CT-4 is a high priority for future safety improvements.

The Town prioritized the intersections of CT-183 (Torringford Street) and CT-4, US-202 and Peck Road, and the entrance to Stop and Shop from Water Street. Dibble Street and Kennedy Street have heavy congestion due to traffic overflow from US-202 (East Main Street). East Main Street has many pedestrians even though vehicular traffic is high. There is an issue with developers complying to the Americans with Disabilities Act (ADA) standards for sidewalks. The Town suggests directing pedestrians to an alternative corridor from East Main Street for their safety.

The Charlotte Hungerford Hospital is recognized as a major contributor towards traffic congestion in Torrington. Heavy traffic volume can also be attributed to large amounts of local and out of Town traffic that results from Torrington being a major micropolitan area in NHCOG. A micropolitan area is a city with more than 10,000 but less than 50,00 residents⁴⁰. They plan on using this classification for future funding opportunities.

Congestion is an anticipated issue due to the Courthouse that opened in September of 2017. A Road Safety Assessment (RSA) was sponsored by the State Courthouse to determine the potential impact the opening would have on Torrington traffic. The offset intersection of East Pearl Street and Pearl Street and future congestion on Field Street are concerns driven by the new Courthouse.

Highland Avenue has many cross streets and vehicles frequently speed along this road. Speeding is an issue along Newfield Road. The growing number of older drivers in Torrington is a general concern for the Town as it is an aging community. The Town reports that weather drastically increases crash potential even though the district responds efficiently to ice and snow along roadways. The Susan Grossman Trailhead will extend along Winstead Road into Torrington's downTown. The Town is seeking solutions to the current roadway configuration to best accommodate potential cyclists. The Town applied for an RSA and Community Connectivity Grant.



Figure 136: Data-Driven Intersection Y: US-202 and CT-4 (New Harwinton Road) Looking West



Figure 137: Data-Driven Intersection Y: US-202 and CT-4 Looking South at CT-4 (New Harwinton Road) Entrance/ Exit

Field Site Inventory

Data-Driven Intersection Y: US-202 (East Main Street) and CT-4 (New Harwinton Road)

The three-way signalized intersection of US-202 and CT-4 has heavy traffic volume. Vehicles travel at unsafe speeds well above the posted speed limit of 25 mph. Vehicles speeding through Intersection Y included average and large sized trucks. Vehicles were also traveling at unsafe speeds when entering and exiting CT-4. Although sight distance is adequate for vehicles approaching the intersection from either direction on US-202, there is minor vertical curvature along this segment. Vegetation and horizontal curvature contribute to poor sight lines for vehicles approaching the intersection from CT-4. The guiderail protecting a residential building along the Northwest side of US-202 is in good condition.



Figure 138: Data-Driven Intersection Y: US-202 and CT-4 (new Harwinton Road) Aerial View

⁴⁰ Micropolitan. (n.d.). Retrieved December 11, 2017, from https://www.merriam-webster.com/dictionary/micropolitan

Field Site Inventory

Intersection of US-202 (East Main Street) and CT-4 (East Elm Street)

The three-way signalized intersection of US-202 (East Main Street) and CT-4 (East Elm Street) is an offset intersection with Elsie Street. There are six curb cuts within 120 feet of the intersection. The sidewalk here is narrow and in very poor condition. The guiderail is not adequate protection for pedestrians using the sidewalk. Crosswalks are in place but are in poor condition, the sidewalk on the west side of US-202 needs improvement.

Vehicles were traveling well above the posted speed limit of 25 mph along US-202. Traffic was especially congested on CT-4 (East Elm Street) due to the CT-8 ramps. The traffic queue on CT-4 approaching the intersection was backed up at every cycle. Lane widths on CT-4 (East Elm Street) and US-202 are adequate but shoulders are narrow. Sight distance for vehicles merging onto CT-4 to turn right or to access US-202 is very minimal. Pavement markings at this intersection include edge lines, center lines, and stop bars which are all in poor condition.



Figure 139: US-202 and CT-4 (East Elm Street)

Data-Driven Intersection L: US-202 (East Main Street) and CT-183 (Torringford Street)

This four-way signalized intersection has heavy traffic volume. There are four curb cuts located within 150 feet of the intersection. There are protected left turn lanes from each direction and No Turn on Red signs. Turn radius is excessive from every side of Intersection L. Crosswalks are along the north, east, and south legs of the intersection. There is a broken pedestrian signal. Cyclists were present at the time of field study. Shoulder widths were narrow and measured to be two feet.



Figure 140: US-202 and CT-4 (East Elm Street) Aerial View



Figure 141: US-202 (East Main Street) and CT-183 (Torringford Street)





Figure 142: US-202 (East Main Street) and CT-183 (Torringford Street)

Figure 143: US-202 (East Main St) and CT-183 (Torringford St)

Data-Driven Intersection D: Winsted Road and Kennedy Drive

This is a three-way signalized intersection that meets at a commercial curb cut near CT-8 entry and exit ramps. Traffic volume and speeds are high. There is a residential driveway located less than 90 feet away from the intersections. Pavement and pavement markings on Winstead Road and Kennedy Drive are in good condition. Shoulder and lane widths are adequate.



Figure 144: Intersection D: Winsted Road and Kennedy Drive

Countermeasure Considerations

Access management along various congested corridors especially US-202 could be adopted by the City. These could include driveway closure, consolidation, or relocation, limited-movement designs for driveways (such as right-in/right-out only) or raised medians that preclude across-roadway movements.

Consider installing bike lanes along various routes along roadways with a high percentage of cyclists during the next Vendor in Place cycle.

Install medians or pedestrian crossing islands at intersections for areas with a significant mix of pedestrians, vehicles and higher speeds. The Town could review the crash data and prioritize intersections for improvements.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs⁴¹. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page⁴². Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

For additional countermeasures please see the following table.

⁴¹ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www. trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

⁴² Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafet ymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 80: Torrington Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
				Angle and Rear-end Crashes/Glare	Traffic Signal Retroreflective Backplates at Intersections Along Corridor	Low
NA	89***	US-202	130	Cyclist and Pedestrian Crashes	Shared-Use Paths east of CT-8	Medium-High
				Pedestrian	High Visibility Crosswalk	Low-Medium
				Speeding	Dynamic Speed Feedback Signs	Low
				Angle and Rear-end Crash- es/Glare	Restricted Left-Turn Phase	Low
NA	90***	Winsted Road/ Main Street	68	Cyclist and Pedestrian Crashes	Road Diet	Low
				Pedestrian		
				Glare	Signal Retroreflective Backplates	Low
				Crashes Under Darkened Conditions	Roadway Illumination	Low
NA	91***	CI-4	56	Glare	Signal Retroreflective Backplates	Low
				Speeding	Dynamic Speed Feedback Signs	Low
			nd Ave- Je 15	Crashes Under Darkened Conditions	Roadway Illumination	Low-Medium
NA 92***	92***	Highland Ave-		Dedectrianc	Striped Crosswalks	Low
		nue		recestitans	Sidewalks	Medium-High
				Speeding	Dynamic Speed Feedback Signs	Low
				Glare	Traffic Signal Retroreflective Backplates	Low
NA	Q2***	Kannady Driva	25	Sight Distance	Enhance Advanced Warning Signs	Low-Medium
		Kennedy Drive	25	Roadway Departures	Shoulder Rumble Strips	Low
				Speed	See Above	Low
NA	96***	Albert Street	18	Pedestria Safety	High Visibility Crosswalk	Low
	50	Abert Street	10	Rear End Crashes	Road Diet	Low
NA	110***	CT-4	4	Roadway Departure	Edge Line Rumble Strips with Bicycle Gaps	Low
	110			Dark Lighted Conditions	Roadway Illumination	Low-Medium
		Greenwoods		Glare	Traffic Signal Retroreflective Backplates	Low
BW	NA	Road and Win- sted Road	5	Angle and Rear-end Crashes	Enhance Advanced Warning Signs	Low-Medium
AB***	NA	Kinney Street and Winthrop	4	Eastern Leg is Skewed/ Sight Distance for Approaching Vehicles Along Eastern Leg	Enhance Advanced Warning Signs	Low-Medium
		Street		Motorized and Non- motorized Conflict	Watch for Me CT	Low
E***	NA	Pearl Street and	6	Tight Turning Radii	Stop Bars and Crosswalk Need Repainting Along the north, east, and south Legs	Low
		Prospect Street		Glare	Traffic Signal retroreflective Backplates	Low

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Torrington Countermeasure Considerations Continued

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
				Access Management	Policy to Limit Driveway Openings	Low
					Road Diet	Low-Medium
V				Speeding	Dynamic Speed Feedback Signs	Low
	ΝΔ	US-202 and	5		Slow Down Campaign	Low
		winton Rd)	5		Repair Crossing Signal Button	Low
				Padastrian Dasian	Improve Sidewalk Ramps	Low
				redestriari Desigri	MUTCD W11-2 (Pedestrian Warning) Sign	Low
					Watch for Me CT Campaign	Low
NA	NA	US-202 and CT-4	4	Pavement Marking Co- nition	Repaint Pavement Markings	Low
				Speeding	See Above	
				Pedetrian Design	See Above	
	NIA	US-202 and CT-183	7	Access Management	See Above	
				Bicycle Design	Road Diet	
					MUTCD R4-11 (bicycles may use full lane) Sign	Low
					MUTCD W11-15 (bicycle/pedestrian warning) Sign	Low
					Watch for me CT Campaign	Low
				Pedestrian Design	See Above	
_		Winsted Rd		Access Management	See Above	
D	NA	and Kennedy Ave	8	Speeding	See Above	
				Access Management	See Above	
	Townw	ide		Speeding	See Above	
				Congestion	Road Diet	Low-Medium

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

TOWN OF WARREN

2016 US Census Population Estimate: 1,408 Area: 27.6 square miles Population Density: 51 people per square mile 2016 Vehicle Miles Traveled (VMT): 13,652,025 2016 VMT per Capita: 9,717 Setting: Rural Mayor: Elinor Carbone Town Manager: Craig Nelson Data Identified Data-Driven Corridors: 59 (CT-45), 99 (Sacket Hill Road), 103 (North Shore Road) Data Identified Data-Driven Intersections: NA Bike and Pedestrian Crash Locations: NA



Overview

Warren is a rural Town with an estimated population of 1,408 people in the Northwest Hills Region of Connecticut. It is bordered to the north by Cornwall, to the west by Kent, to the south by Washington, and to the east by Litchfield. The Town's main thoroughfares are CT-45 and CT-341.

General concerns for Warren include the lack of bike-friendly road design to support its many visiting cyclists. Additional general safety concerns include poor sight distance due to horizontal and vertical curvature on local and state roads.





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Table 81: Warren Total Crashes by Severity (See page 187)

Crash Severity	2015	2016	2017
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	5	1	3
Possible Injury (C)	1	1	2
Total Crashes	7	2	6

Table 82: Warren Data-Driven Corridors (See page 188)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 59***	Lake Road	0.19 mi south of Town Hill Road	0.03 mi south of Kent Road	4

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Town Comments

The Town representatives stated that the highest priority for traffic safety is the segment of CT-341 from Carter Road east to the center of Town. They believe that tenforcement is the only mitigating strategy but the enforcement is limited. Speed is posted at 45 MPH on the western section of the corridr and then reduces to 35 MPH east of Reed Road. However, motorists do not slow down and the subsequent speed differentials between thru motorists and turning motorists is dangerous. There have been fatal crashes in this location prior to the study period.

The Town is also concerned with CT-45 (Cornwall Road). This state road intersects CT-341 twice, at Kent Road and at Lake Road. Lake Road is used to bypass the formal signalized intersection of Kent Road and CT-45 (Cornwall Road). There is a drainage issue along the west side in front of the spirits store that the Town confirmed is in the state right of way.

CT-45 and North Shore Road around Lake Waramaug are part of a popular recreational bicycle route. This road was evaluated in a 2017 Road Safety Audit and was described as a poor location for bicyclists. The Town concurs with the removal of this bicycle route designation since the current conditions do not support the comfort and safety of bicyclists.

Table 83: Emphasis Areas Related to Crashes in Warren

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	0	3
Intersection-Related Crashes	0	0	1
Motorcycle Crashes	0	0	1
Older Driver Crashes	1	1	1
Unrestrained Occupant Crashes	0	0	1
Road Departure Crashes	6	1	5
Speeding-Related Crashes	3	1	1
Substance-Involved Crashes	1	0	0
Younger Driver Crashes	3	0	1
Total Emphasis Areas	15	3	14



Figure 147: Lake Waramaug

A segment of Sackett Hill Road has both vertical and horizontal curvature that results in poor sight distance. The Town states that the guiderail is in poor condition. This has already been prioritized by the State to be evaluated and improved. The major curvature along this segment is part of the Connecticut Department of Transportation Horizontal Curve Signing Program.

Field Site Inventory

Intersection of CT-45 and CT-341

CT-45 runs between the Towns Washington and Cornwall. CT-341 runs from the Washington to Kent. The two thoroughfares join in the center of Warren as a road locally known as Lake Road. A segment of Lake Road (CT-341/CT-45) is frequently used as a bypass of the traffic signal. The driveway of Warren Spirit Shop is located on the west side of Cornwall Road where it intersects with Lake Road. Trees on the median interrupt the sight distance for vehicles merging onto Cornwall Road from Lake Road.

There is vertical curvature on Kent Road (CT-341) that results in limited sight distance to the east and west. There is moderate traffic volume on both intersecting roads. Travel lanes and shoulders are adequate. The stop bar, edge lines, and center striping pavement markings are in fair condition. Pedestrian amenities are limited. There was an actuated button installed without a corresponding pedestrian signal, crosswalk, or ramps compliant with American with Disabilities Act standards.



Figure 148: CT-45 and CT-341, Aerial View

North Shore Road

North Shore Road is a scenic drive along the northern side of Lake Waramaug. Horizontal and vertical curvature limit the sight distance along this road. The roadway was recently repaved; however, no modifications were made to the geometry. The pavement markings are double yellow centerlines which are in new condition. The current protection system consists of chain and post guiderails.

Traffic volume is moderate. Vehicles speed along the newly paved segments with limited sight distance. The adjacent land use is residential with many driveways. Most of the vehicles observed were trucks and heavy trucks because of current construction in the area.

It was agreed that although North Shore Road is part of a favorite bike route; the road design and traffic volume does not support the safety and wellbeing of bicyclists and should not be recommended as a recreational route.



Figure 149: CT-45 and CT-341, Aerial View



Figure 150: Horizontal Curvature on N. Shore Road



Figure 151: Guiderail on Lake Road

Corridor 59: CT-45 & CT-341 (Lake Road)

Corridor 59 is locally designated as Lake Road (CT-45/CT-341). This segment is south of the Lake Road bypass to the intersection of Kent Road and Cornwall Road. Corridor 59 is about a half mile long segment of rural road without any significant horizontal or vertical curvature. The linear nature and lack of driveways encourages speeding. There are very few interruptions to the roadway which may further encourage speeding. The western half of the corridor has horizontal curvature.



Figure 152: Corridor 59: Lake Road Aerial View

Countermeasure Considerations

The intersection of CT-45 and CT-341 could be improved by closing the segment of Lake Road between Kent Road and Cornwall Road directing vehicles towards the signalized intersection. This countermeasure would calm traffic traveling north on Cornwall Road and improve sight distance as drivers would not need to merge from Lake Road. There is no congestion to necessitate the additional roadway segment, particularly with the increased hazards that it presents. In addition, adjusting the grading and improving the drainage along the west side of CT-45 and the liquor store entrance point would prevent water from pooling here.

Slowing vehicle speeds on North Shore Road and the segment of CT-45 that is along Lake Waramaug could reduce conflicts with oncoming traffic, vehicles entering or exiting driveways, and bicyclists. Speed Feedback Signs could be installed to encourage motorists to drive slower by displaying their current speed. These interactive signs can be effective at reducing speeds by 5 mph. High emphasis curve signs could be installed on segments that are not being considered for the CT DOT Horizontal Curve Signing Program.

Signage that communicates to drivers that cyclists are using the road could encourage them to drive at a safer speed and to be more aware of other road users. A "Bicycles May Use Full Lane" sign could be installed to inform motorists that cyclists are present, increasing awareness of vulnerable street users. The Federal Highway Administration explains that this type of sign is especially helpful on roads that are too narrow for bicyclists and vehicles to operate side by side⁴³, which pertains to these highlighted segments. A CT DOT sponsored Road Safety Audit (RSA) for this location was conducted in 2017, which resulted in short, medium, and long-term recommendations. These vary from installing bike-friendly catch basin grates to coordinating with homeowners for potential road widening. Please see the RSA document for more details regarding these recommendations⁴⁴.

Optical speed bars could be used to slow down vehicles as they can give the perception of moving at higher speeds. Optical speed bars are especially useful for rural roads⁴⁵, such as Corridor 59. Additional steps can be taken from a comprehensive planning standpoint, such as a Town or Region-Wide public outreach campaign to encourage safer speeds on roads with horizontal curvature and through the downTown to protect vulnerable street users.

⁴³ Manual on Uniform Control Devices. 2009 Edition Chapter 9B. Signs. (2017, February 5). Retrieved December 11, 2017, from https://mutcd.fhwa.dot.gov/htm/2009/part9/part9b.htm. Federal Highway Administration

⁴⁴ Warren State Highway 45 and 478 - Road Safety Audit. Community Connectivity Program. (2017, April 26). Retrieved December 11, 2017, from http://ctconnectivity.com/wp-content/uploads/2017/06/2017
 -06-19-Warren-RSA-Report.pdf. Connecticut Department of Transportation. AECOM.

⁴⁵ Speed Management Toolbox for Rural Communities. (2013, April). Retrieved December 11, 2017, from http://www.intrans.iastate.edu/research/documents/research-reports/rural_traffic_calming_toolbox _w_cvr.pdf. Midwest Transportation Consortium. Center for Transportation Research and Education. lowa State University. The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs⁴⁶. The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page⁴⁷. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

A common access management best practice in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and highway corridors can assist in a community's mutual goal to promote both livability and mobility. Furthermore, additional oversight and coordination from Warren Zoning and Transportation Officials could require driveways for new developments be located at designated areas with better sightlines, whether along CT-45, CT-341, or similar rural highways. The table below shows the specific issues that Warren Officials wanted to address and potential countermeasures.

Table 84: Warren Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost
				Drainage Issues	Adjust the Grading and Drainage Issue Along the West Side at the Liquor Store Entrance	Low-Medium
				Sight Distance	Closure of Lake Road Segment	Low
				Signt Distance	Stop Ahead Pavement Marking	Low
		CT-45 &	0.0		Crosswalk	Low
NA	NA	CT-341	0-2		Pedestrian Crossing Signal	Low
				Pedestrian Safety	MUTCD W11-2 (pedestrian warning) Sign	Low
					MUTCD W11-15 (bicycle/pedestrian warning) Sign	Low
					Watch for Me CT Campaign	Low
					Pedestrian Safety Campaign	Low
					High Visibility Enforcement	Low-Medium
				Constaliate	Dynamic Speed Feedback Signs	Low
				speeding	Optical Speed Bars	Low
NIA	NA	N. Shora Pd	0.2		Speed Kills Outreach Campaign	Low-Medium
NA	NA	N. SHOLE KU	0-2		MUTCD W11-15 (bicycle/pedestrian warning) Sign	Low
				Bicyclist Safety	MUTCD R4-11 (bicycles may use full lane) Sign	Low
					Watch for Me CT Campaign	Low
					Bicyclist Safety Campaign	Low

⁴⁶ NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

⁴⁷ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Warren Countermeasure Considerations Continued

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
				Speeding	See Above	See Above
CT-341 (from	CT-341 (from North Spectacle Pond to Reed Road)			speeding	Gateway Treatment	Low
				Sight Distance	IntersectionAhead with Flashing Beacon	Low
				Roadway Departures	Shoulder Rumble Strips with Stripes	Low
		CT-45	4	Asleep and Fatigued Driving	Longitudinal Centerline Rumble Strips	Low
NA	59^^^			Dark Not-Lighted	Roadway Illumination	Low-Medium
				Speeding	See Above	
				Offset Alignment	One Lane Roundabout	High
					See Above	
Townwide		Speeding	Speed Table	Low		
			Road Diet	Low-Medium		

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

TOWN OF WASHINGTON

2016 US Census Population Estimate: 3,452 Area: 38.7 square miles Population Density: 88.5 people per square mile 2016 Vehicle Miles Traveled (VMT): 43,777,735 2016 VMT per Capita: 12,682 Setting: Rural Town Representative: Mark Lyon (First Selectman) Data Identified Data-Driven Corridors: CT-109 (Crash Corridors 60) and US-202 (Corridor 108) Data Identified Data-Driven Intersections: CT-109/Farm Driveway (AG), CT-199 at Frisbie Road (CC), US-202 at CT-47 (DA) Bike and Pedestrian Crash Locations: NA



Overview

Washington is a Town of 3,452 residents situated in the southern end of the Northwest Hills Region in Connecticut. Washington is bordered by New Milford to the west, Warren to the north, Morris to the east, and Roxbury to the south. State operated highways cross through the Town: US-202, CT-45, CT-47 CT-109, and CT-199, and CT-478 around Lake Waramaug.



Figure 153: Washington Crash Map

NHCOG RTSP 2018



Figure 154: Washington High Frequency Crash Corridor and Intersection Map

Table 85: Washington Total Crashes by Severity (See page 195)

_		-	
Crash Severity	2015	2016	2017
Fatal Injury (K)	0	0	3
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	11	14	10
Possible Injury (C)	4	8	6
Total Crashes	16	23	19

Table 86: Washington Data-Driven Intersections (See page 196)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection CC***	CT-199	Frisbie Road	4
Intersection AG	CT-109	Driveway	3
Intersection DA	US-202	CT-47	3

Table 87: Washington Data-Driven Corridors (See page 196)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 60	Old Litchfield Road	Nettleton Hollow Road	Shearer Road	4
Corridor 108***	Litchfield Turnpike	0.31 mi west of Mygatt Road	0.04 east of Flirtation Ave	7

Table 88: Emphasis Areas Related to Crashes in Washington

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	0	1	2
Distracted Driving	0	4	0
Intersection-Related Crashes	5	3	4
Motorcycle Crashes	8	2	3
Older Driver Crashes	5	3	5
Unrestrained Occupant Crashes	1	0	2
Road Departure Crashes	9	13	10
Speeding-Related Crashes	5	7	4
Substance-Involved Crashes	1	1	1
Younger Driver Crashes	7	5	11
Total Emphasis Areas	41	39	42

***This data-driven corridor/intersection is identified in the Top 40 NHCOG Crash Locations, 2015-2017

Town Comments

The Town's representative noted that the primary concern was speeding on all roads. Washington has a resident trooper. There are high cycling volumes on CT-478 in warm months; however, there is insufficient roadway width for cars to overtake cyclists. vehicles and bicycles move at roughly the same speed.

Popple Swamp Road at Upper Church Hill Road

There is horizontal and vertical curvature with heavy tree canopy. Motorcyclists have been reported to be thrown off their bikes, sometimes into traffic on Churchill Road. The grade was measured at roughly 9%.



Figure 155: Aerial View of Popple Swamp Road at Church Hill Road



Field Site Inventory

US-202 by Wheaton Road

US-202 at the site of an active small village center. There is an unsignalized crosswalk, with moderate automobile traffic, heavy truck traffic, cyclists, and pedestrians. Failure to yield and speeding through the crosswalk were observed multiple times. The crosswalk was not sufficiently visible to vehicles traveling at high speeds along US-202.



Figure 157: Aerial View of US-202

Figure 156: US-202

Countermeasure Considerations

The Town could consider working with the State to install traffic calming countermeasures to reduce speeds within the Town. According to the FHWA, the importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle. The slower the speed of the motor vehicle, the greater the chances are for survival for the pedestrian. If struck by a motor vehicle travelling at a speed of 20 miles per hour or less, a pedestrian is typically not permanently injured. (FHWA Traffic Calming ePrimer-Module 2).

At US-202 near Wheaton Road, a pavement making centerline treatment could narrow travel lanes along US-202 near the crosswalk and minimalize shoulder widths to 4-6 feet for bikes and pedestrians to travel smoothly without the risk of illegal passing maneuvers on shoulders. A Pedestrian Hybrid Beacon (PHB) could also be considered at this crosswalk. The PHB signal is listed among the FHWA's top 20 proven safety countermeasures⁴⁸.

Chevron curve signs, vertical grade signs, and high friction surface treatments could be installed where warranted along horizontal curves or other areas of concern, including along Popple Swamp Road. Maintaining the appropriate amount of pavement friction and installing adequate signage are imperative for safe driving. Spot location treatments at sharp horizontal curves and where vehicles may brake excessively can assist motorists in maintaining control of their vehicles. These treatments are included in the FHWA's twenty proven countermeasures⁴⁹.

Centerline rumble strips could be installed to mitigate head on crashes, especially where sight distance is limited. According to the FHWA they are a proven countermeasure to keep motorists in their lanes of travel. Their objective is to assist distracted or inattentive motorists who stray over the center line or have trouble seeing during inclement weather, alerting them of their errant trajectory. These could be installed as a low cost systemic improvement.

Dynamic Speed Feedback Signs are an engineering treatment that mitigate speeding by displaying the speed of passing vehicles, encouraging motorists to travel more slowly⁵⁰.

The Town could collaborate with enforcement, emergency management services and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts⁵¹.

⁴⁸ Proven Safety Countermeasures: Pedestrian Hybrid Beacons. (2017, October 18). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/

⁴⁹ Proven Safety Countermeasures. (2017, October 13). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/provencountermeasures/

⁵⁰ Engineering Countermeasures for Reducing Speeds. (2014, October 15). Retrieved December 11, 2017, from https://safety.fhwa.dot.gov/speedmgt/ref_mats/eng_count/

⁵¹ NHSTSA Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.nhtsa.gov/links/NHTSA-2018-CommsCalendar.pd

Table 89: Washington Countermeasure Considerations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	lssues	Countermeasures	Estimated Cost											
				Coording	Dynamic Speed Feedback Signs	Low											
AG	ΝΔ	CT-109 and	З	speeding	Slow Down Campaign	Low											
		Driveway	5	Horizontal Curvature	Enhanced Delineation and Friction for Horizontal Curves	Low											
				Roadway Departures	Shoulder Rumble Strips	Low											
		CT 100 and		Speeding	Dynamic Speed Feedback Signs	Low											
CC***	NA	Frisbie Road	4	Lane Departure	Centerline Rumble Strips	Low											
				Dark, Not Lighted Conditions	Roadway Illumination	Low-Medium											
				Roadway Doparturas	Shoulder Rumble Strips	Low											
NA 60		CT-109	4	Roduway Departures	Safety Edge	Low-Meium											
				Speeding	See Above												
									Roadway Departures	Shoulder Rumble Strips	Low						
NIA	100***	100***	100***	100***	100***	100***	100***	100***	100***	100***	100***	100***		7	Rear-end Crashes	Add 12" Flashers to Intersection Ahead Sign	Low-Medium
NA NA	100			Speeding	Dynamic Speed Feedback Signs	Low											
						Road Deterioration	Repaving	Low									
		US-202 by		Padactrian Safaty	Centerline Treatment	Low											
NA	NA	Wheaton	0-2	recescital Salety	Pedestrian Hybrid Beacons	Medium											
		Road		Speeding	See Above												
		Popple		Vertical Curvature	Vertical Grade Signs	Medium-High											
NA NA		NA Swamp Road and Church Hill Road	d 0-2	Horizontal Curvature	See Above												
				Sight Distance	Remove Sight Obstructing Vegetation	Low											
Townwide			Horizontal Curvature	CT DOT Horizontal Curve warning Signs and Shoulder Rumble Strips	Low												

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

TOWN OF WINCHESTER

2016 US Census Population Estimate: 10,754 Area: 33.8 square miles Population Density: 316 people per square mile 2016 Vehicle Miles Traveled (VMT): 66,249,690 2016 VMT per Capita: 6,160 Setting: Rural Town Manager: Robert Geiger Data Identified High Crash Corridors: US-44 (High Crash Corridors 73, 75) Data Identified Intersections: US-44 and CT-8 (J), US-44 and Bridge Street (AF), US-44 and CT-183 (BV), US-44/CT-183 and CT-8 (CE), US-44 and Case Avenue (CL), US-44 and CT-8 (CQ), US-44 and Chestnut Street (CR) Bike and Pedestrian Crash Locations: : Hinsdale Avenue at Wheeler Street, US-44, Torringford Road at private drive, Willow Street at Rowley Street



Overview

Winchester is a Town of 10,754 people in the Northwest Hills Region of Connecticut. The City of Winsted is located within the borders of Winchester and contains 68% of Winchester's total population. Winchester is considered a rural Town with the Town of Winsted serving as the commercial center for Winchester and Barkhamsted.

All high crash corridors in Winchester were identified on US-44. These corridors are located within the downTown area of Winsted.

High crash Intersections J, AF, BV, CE, CL, CQ, and CR are all along US-44. The general transportation safety concerns for the Town are traffic flow with associated congestion and access management.







Figure 159: Winchester High Frequency Crash Corridor and Intersection Map

Table 90: Winchester Total Crashes by Severity (See page 201)

Crash Severity	2015	2016	2017
Suspected Serious Injury (A)	3	1	5
Suspected Minor Injury (B)	17	9	16
Possible Injury (C)	22	8	14
Total Crashes	42	18	35

Table 91: Winchester Data-Driven Intersections (See page 202)

Intersection ID	Road 1	Road 2	Number of Crashes
Intersection J***	US-44	CT-8	6
Intersection AF	CT-183/US-44	Bridge Street	6
Intersection BV***	US-44	CT-183	5
Intersection CE	US-44/CT-183	CT-8	4
Intersection CL	US-44	Case Avenue	3
Intersection CQ	US-44	CT-8	3
Intersection CR	US-44	Chestnut Street	3

Town Comments

All issues regarding the identified corridors were attributed to speeding and congestion. Corridors 73 and 75 were previously identified in the road safety audit (RSA) that was performed for the downTown area. Corridor 75 also had a pedestrian involved crash. The expanded median and speed feedback signs on the Main Street segment of US-44 have helped to mitigate speeding. A road diet on the downTown segment of US-44 and signal timing updates are in deliberation for future safety countermeasures.

An old mill is being turned into a workspace building at the off-set intersection of Bridge Street and Prospect Street. Countermeasures were requested to improve sightlines for turning vehicles. The Town in concerned with an increase in traffic volume at this intersection due to the future traffic generation from a new apartment complex.

The Town was primarily concerned with the junction of US-44 and CT-8 Southbound. The lack of a left-turn lane onto CT-8 southbound from US-44 leads to increased queue lengths which impede traffic flow. This intersection was included as part of the RSA for downTown Winchester, but no countermeasures were suggested for safety improvements due to the complexity of the intersection. It is categorized as high priority.

Table 92: Winchester Data-Driven Corridors (See page 202)

Corridor ID	Road	Start	End	Number of Crashes
Corridor 73***	South Main Street	0.03 mi East of Union Street	0.07 southeast of Strong Terrace	31
Corridor 75***	Main Street	0.05 mi south of High Street	Division Street	5

Table 93: Emphasis Areas Related to Crashes in Winchester

Year	2015	2016	2017
Asleep or Fatigued-Related Crashes	1	0	1
Bicycle Crashes	0	1	1
Distracted Driving	5	2	6
Intersection-Related Crashes	15	9	15
Motorcycle Crashes	3	2	0
Older Driver Crashes	4	3	14
Pedestrian Crashes	2	0	0
Unrestrained Occupant Crashes	0	4	5
Road Departure Crashes	9	4	7
Speeding-Related Crashes	6	3	2
Substance-Involved Crashes	2	0	2
Younger Driver Crashes	20	9	13
Total Emphasis Areas	67	37	66

***This data-driven corridor/intersection is identified in the Top 40 NHCOG Crash Locations, 2015-2017



Figure 160: Winchester Town Center



Figure 161: Intersection of Bridge St and Prospect St, View from Mill Driveway



Figure 162: Intersection of Bridge St and Prospect St West View from Depot St

Field Site Inventory

Bridge Street and Prospect Street

Bridge Street, Prospect Street, Depot Street, and Willow Street meet at this offset intersection. There is a stop sign for traffic approaching from Depot Street and from Prospect Street to the west of Bridge Street; there is no stop control on Bridge Street. An old mill is currently being converted into workspace offices with the only access point being a driveway that meets at this intersection. There is limited sight distance from this driveway. There is heavy traffic coming from Willow Street as it is used as a bypass for US-44. This direction has no stop control. Furthermore, there are no ADA or MUTCD compliant pedestrian facilities at this intersection.



Figure 163: Intersection of Bridge St and Prospect St North-West View



Figure 164: Aerial View of Bridge Street and Prospect Street

Intersection J: US-44 at CT-8 Northboun nd Exit Ramp

Traffic volume is high on US-44 from the CT-8 Northbound exit ramp to the southbound on-ramp. There are many driveways along this segment. The Joyner Learning Center's driveway was recently built and is located about 95 feet from the CT-8 southbound on-ramp. An additional driveway is located 95 feet from the CT-8 northbound exit ramp. Drivers travelling along US-44 westbound were observed bypassing a queue of vehicles waiting to turn left onto the CT-8 southbound ramp. This was the primary behavioral observation during the fieldwork and couldbe attributed to the lack of a left turn bay onto the CT-8 southbound ramp. However, it was determined that the bridge would not be wide enough to add a left turn lane for those entering CT-8 southbound. Eastbound US-44 travel is limited to one lane prior to the segment approaching the CT-8 southbound ramp, where it widens to two lanes.



Figure 165: US-44 and CT-8, View from Joyner Learning Center Driveway



Figure 166: US-44 and CT-8



Figure 167: Aerial View of US-44 and CT-8

Countermeasure Considerations

A potential solution for the intersection of Bridge Street and Prospect Street would be to implement a roundabout to organize and ease traffic flow. This could be especially helpful if traffic volume increases after the workspace in the mill is occupied. The driveway design could be changed to face directly onto Prospect Street to improve sight distance. A temporary, low-cost adjustment to the driveway could be implemented by using concrete barriers to evaluate the countermeasure's level of success before actual alterations are made.

The installation of 12-14 ft. long speed humps, particularly where pedestrians are more likely to be present, could slow down traffic speeds and reduce traffic volume. This countermeasure could be especially helpful on Corridor 73 which has the highest amount of crashes identified. A Speed Table would be an alternative for mitigating speed on US-44.

The Town could collaborate with enforcement, emergency management services, and the region to develop various safety public outreach campaigns. Coordinating with NHTSA's national campaign schedule could further boost the effectiveness of local efforts based on community needs⁵². The NHTSA campaign calendar highlights different behavioral focus areas throughout the year that the region could jointly participate in to improve driver behaviors.



Figure 168: Aerial View of Bridge Street and Prospect Street

The collaborating region could use materials that are provided by the United States Department of Transportation on the Transportation Safety Marketing for Speed Prevention web page⁵³. Enforcement and social norming campaign materials that are available to any community include banners, posters, television ads, radio ads, infographics, and other forms of media for behavioral initiatives.

Additional steps can be taken from a comprehensive planning standpoint such as a Town or Regionwide public outreach campaign to encourage safer speeds on roads with horizontal curvature and through the downTown to accommodate more vulnerable users. A common access management best practice in comparable rural communities is to require that adjacent properties consolidate driveway entrance points. Reducing turning movements along major arterials and highway corridors can assist in a community's mutual goal to promote both livability and mobility. Furthermore, additional oversight and coordination from Winchester Zoning and Transportation Officials could require driveways for new developments be located at designated sites with better sight lines, whether along US-44 or similar rural highways. The table below shows the specific issues that Winchester Officials wanted to address and potential countermeasures.

⁵² NHTSTA 2018 Communications Calendar. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/calendars. National Highway Traffic Safety Administration. Traffic Safety Marketing.

⁵³ Campaigns under Speed Prevention. (n.d.). Retrieved December 11, 2017, from https://www.trafficsafetymarketing.gov/get-materials/speed-prevention. National Highway Traffic Safety Administration. Traffic Safety Marketing.

Table 94: Winchester Countermeasure Recommendations

Intersection ID	Corridor ID	Roadway Names	Number of Crashes	Issues	Countermeasures	Estimated Cost
		US-44 & CT-8	6	Speeding	Dynamic Speed Feedback Sign	Low
J	N/A	NB	6	Turning Movements	Corridor Access Management	Low-Medium
	72444		24	Angle and Rear-end Crashes	Restricted Left Turn Phase at Bridge Street Intersection	Low
IN/A	73***	05-44	31	Glare at Bridge Street Intersection	Retroreflective backplates on Signal at Signalized Intersections	Low
		US-44		Pedestrian Safety	Pedestrian Median Refuge Island Along Whole Corridor	Medium
N/A	75*** US-44 and 5 Hinsdale, 5 Division and Spencer		Turning Conflict/Skewed Intersection/Sight Distance	Lane Reconfiguration at Hinsdale/Division/ Spencer Intersection	Low-Medium	
				Speeding	Dynamic Speed Feedback Sign	Low
BV*** N/A		US-44 and CT-183	5	Increased Traffic	Restricted left Turn Phase	Low
				Rear End Crashes	Enhance Warning Sign	Low-Medium
***	J*** N/A US-44 and CT-		6	Glare	Traffic Signal Retroreflective Backplates on all Signal Heads	Low
			0	Rear End Crashes Along Ramp Approaches	Enhance Warning Sign for Ramp Approach to the Intersection	Low-Medium
NI/A	N/A	US-44 and CT-8	0-2	Speeding	See Above	
		SB	02	Lack of Left Turn Lane	Install Turn Lane	Low
N1/A		Bridge St. and	0.0	Sightlines from Driveway	Driveway Access Point Adjustment	Low
N/A	N/A	Prospect Street	0-2	Traffic Flow	Roundabout	High
					Speed Table	Low
	τ.			Speeding	Speed Hump	Low
	Iownv	vide			Road Diet	Low-Medium
				Congestion	Signal Timing Adjustment	Low-Medium

***This location is identified in the Top 40 NHCOG Crash Locations, 2015-2017

NHCOG RTSP GLOSSARY

5 year rolling average means the average of five individual, consecutive annual points of data (e.g. annual fatality rate).

Emphasis area means a highway safety priority in a State's SHSP, identified through a data-driven, collaborative process.

Highway safety improvement project means strategies, activities and projects on a public road that are consistent with a State strategic highway safety plan and corrects or improves a hazardous road location or feature or addresses a highway safety problem.

HMVMT means hundred million vehicle miles traveled.

Non-infrastructure projects are projects that do not result in construction. Examples of non-infrastructure projects include road safety audits, transportation safety planning activities, improvements in the collection and analysis of data, education and outreach, and enforcement activities.

Older driver special rule applies if traffic fatalities and serious injuries per capita for drivers and pedestrians over the age of 65 in a State increases during the most recent 2-year period for which data are available, as defined in the Older Driver and Pedestrian Special Rule Interim Guidance dated February 13, 2013.

Performance measure means indicators that enable decision-makers and other stakeholders to monitor changes in system condition and performance against established visions, goals, and objectives.

Programmed funds mean those funds that have been programmed in the Statewide Transportation Improvement Program (STIP) to be expended on highway safety improvement projects.

Roadway Functional Classification means the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide.

Strategic Highway Safety Plan (SHSP) means a comprehensive, multi-disciplinary plan, based on safety data developed by a State Department of Transportation in accordance with 23 U.S.C. 148.

Systematic refers to an approach where an agency deploys countermeasures at all locations across a system.

Systemic safety improvement means an improvement that is widely implemented based on high risk roadway features that are correlated with specific severe crash types.

Transfer means, in accordance with provisions of 23 U.S.C. 126, a State may transfer from an apportionment under section 104(b) not to exceed 50 percent of the amount apportioned for the fiscal year to any other apportionment of the State under that section.

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Intersections	2015	2016	2017
Barkhamsted			
Suspected Minor Injury (B)	6	4	3
Possible Injury (C)	2	1	5
Total	8	5	8
Burlington			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	2	3	7
Possible Injury (C)	5	4	2
Total	7	7	10
Canaan			
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	1	1	3
Possible Injury (C)	2	1	0
Total	3	3	4
Colebrook			
Suspected Minor Injury (B)	0	1	0
Possible Injury (C)	0	1	0
Total	0	2	0
Cornwall			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	1	2	0
Possible Injury (C)	1	0	0
Total	2	3	0
Goshen			
Suspected Minor Injury (B)	1	0	0
Possible Injury (C)	0	0	2
Total	1	0	2
Hartland			
Suspected Minor Injury (B)	1	1	2
Possible Injury (C)	0	1	1
Total	1	2	3
Harwinton			
Suspected Minor Injury (B)	3	2	4
Possible Injury (C)	3	1	2
Total	6	3	6

Intersections	2015	2016	2017
Kent			
Suspected Minor Injury (B)	1	2	0
Possible Injury (C)	1	0	1
Total	2	2	1
Litchfield			
Fatal Injury (K)	0	1	0
Suspected Minor Injury (B)	4	6	4
Possible Injury (C)	10	7	12
Total	14	14	16
Morris			
Suspected Minor Injury (B)	0	2	0
Possible Injury (C)	1	3	0
Total	1	5	0
New Hartford			
Fatal Injury (K)	0	0	2
Suspected Minor Injury (B)	4	5	4
Possible Injury (C)	2	6	4
Total	6	11	10
Norfolk			
Suspected Minor Injury (B)	1	1	1
Possible Injury (C)	2	0	0
Total	3	1	1
North Canaan			
Suspected Minor Injury (B)	0	2	1
Possible Injury (C)	0	0	2
Total	0	2	3
Roxbury			
Possible Injury (C)	0	1	1
Total	0	1	1
Salisbury			
Possible Injury (C)	1	0	1
Total	1	0	1

Intersections	2015	2016	2017
Sharon			
Suspected Minor Injury (B)	1	2	1
Possible Injury (C)	0	1	0
Total	1	3	1
Torrington			
Fatal Injury (K)	1	1	2
Suspected Serious Injury (A)	4	3	5
Suspected Minor Injury (B)	32	38	38
Possible Injury (C)	32	51	39
Total	69	93	84
Warren			
Possible Injury (C)	0	0	1
Total	0	0	1
Washington			
Suspected Minor Injury (B)	3	2	2
Possible Injury (C)	2	1	2
Total	5	3	4
Winchester			
Suspected Serious Injury (A)	1	1	2
Suspected Minor Injury (B)	7	2	6
Possible Injury (C)	7	6	7
Total	15	9	15
NHCOG Totals	145	169	171

Appendix B Emphasis Area Tables

Roadway Depar	tures		
	2015	2016	2017
Barkhamsted			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	1	0	0
Suspected Minor Injury (B)	3	7	5
Possible Injury (C)	2	3	3
Total	7	10	8
Burlington			
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	5	8	5
Possible Injury (C)	6	7	4
Total	12	15	10
Canaan			
Suspected Minor Injury (B)	1	1	2
Possible Injury (C)	3	0	2
Total	4	1	4
Colebrook			
Suspected Minor Injury (B)	0	1	3
Possible Injury (C)	0	1	0
Total	0	2	3
Cornwall			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	2	2	1
Possible Injury (C)	3	3	3
Total	5	5	8
Goshen			
Suspected Minor Injury (B)	1	1	5
Possible Injury (C)	2	3	6
Total	3	4	11
Hartland			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	0	0	2
Suspected Minor Injury (R)	0	2	4
Possible Injury (C)	0	2	2
Total	n	5	8
	U	3	0
Harwinton	0	2	0
Fatal Injury (K)	U	2	U
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	/	11	8
Possible Injury (C)	1	3	4
IOTAI	8	16	13

Roadway Departures				
	2015	2016	2017	
Kent				
Fatal Injury (K)	1	0	0	
Suspected Serious Injury (A)	0	1	1	
Suspected Minor Injury (B)	4	6	6	
Possible Injury (C)	2	1	2	
Total	7	8	9	
Litchfield				
Fatal Injury (K)	0	1	0	
Suspected Serious Injury (A)	3	1	1	
Suspected Minor Injury (B)	5	10	11	
Possible Injury (C)	10	6	8	
Total	18	18	20	
Morris				
Suspected Minor Injury (B)	0	5	4	
Possible Injury (C)	3	3	0	
Total	3	8	4	
New Hartford				
Fatal Injury (K)	0	1	1	
Suspected Serious Injury (A)	3	1	0	
Suspected Minor Injury (B)	9	8	14	
Possible Injury (C)	6	7	2	
Total	18	17	17	
Norfolk				
Suspected Minor Injury (B)	6	1	4	
Possible Injury (C)	3	1	0	
Total	9	2	4	
North Canaan				
Fatal Injury (K)	1	0	0	
Suspected Minor Injury (B)	5	3	4	
Possible Injury (C)	2	3	2	
Total	8	6	6	
Roxbury				
Suspected Minor Injury (B)	6	3	6	
Possible Injury (C)	1	5	1	
Total	7	8	7	

Roadway Depart	ures	2016	2017
Salichury	2015	2010	2017
Sallsbuly	0	2	0
Suspected Serious Injury (A)	1	2	1
Suspected Minor Injury (B)	10	10	6
Possible Injury (C)	5	4	5
Total	16	16	12
Sharon			
	0	0	1
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	5	5	5
Possible Injury (C)	1	1	4
Total	6	6	11
Torrington			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	3	5	6
Suspected Minor Injury (B)	15	20	24
Possible Injury (C)	7	10	10
Total	26	35	40
Warren			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	4	1	3
Possible Injury (C)	1	0	1
Total	6	1	5
Washington			
Fatal Injury (K)	0	0	3
Suspected Minor Injury (B)	6	9	5
Possible Injury (C)	3	4	2
Total	9	13	10
Winchester			
Suspected Serious Injury (A)	2	0	3
Suspected Minor Injury (B)	5	4	2
Possible Injury (C)	2	0	2
Total	9	4	7
NHCOG Totals	181	L 200	217

Speeding	2015	2016	2017	
Barkhamsted				
Fatal Injury (K)	1	0	0	
Suspected Minor Injury (B)	0	4	2	
Possible Injury (C)	1	3	2	
Total	2	7	4	
Burlington				
Suspected Serious Injury (A)	0	0	2	
Suspected Minor Injury (B)	4	5	1	
Possible Injury (C)	3	6	1	
Total	7	11	4	
Canaan				
Possible Injury (C)	3	0	0	
Total	3	0	0	
Colebrook				
Suspected Minor Injury (B)	1	1	1	
Total	1	1	1	
Cornwall				
Suspected Minor Injury (B)	0	0	2	
Possible Injury (C)	2	3	1	
Total	2	3	3	
Goshen				
Suspected Minor Injury (B)	0	1	2	
Possible Injury (C)	1	1	1	
Total	1	2	3	
Hartland				
Suspected Minor Injury (B)	1	1	2	
Possible Injury (C)	0	2	1	
Total	1	3	3	
Harwinton				
Fatal Injury (K)	1	2	0	
Suspected Minor Injury (B)	4	11	6	
Possible Injury (C)	3	2	2	
Total	8	15	8	
Kent				
Fatal Injury (K)	1	0	0	
Suspected Minor Injury (B)	3	5	4	
Possible Injury (C)	1	0	1	
Total	5	5	5	

Speeding	2015	2016	2017
Litchfield			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	2	7	9
Possible Injury (C)	5	3	1
Total	7	12	11
Morris			
Suspected Minor Injury (B)	0	3	3
Possible Injury (C)	3	3	1
Total	3	6	4
New Hartford			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	5	5	3
Possible Injury (C)	4	4	1
Total	9	10	4
Norfolk			
Suspected Minor Injury (B)	1	1	1
Possible Injury (C)	1	0	0
Total	2	1	1
North Canaan			
Suspected Minor Injury (B)	2	4	3
Possible Injury (C)	1	1	1
Total	3	5	4
Roxbury			
Suspected Minor Injury (B)	1	5	3
Possible Injury (C)	0	1	1
Total	1	6	4
Salisbury			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	5	3	6
Possible Injury (C)	2	4	5
Total	7	7	12
Sharon			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	4	1	1
Possible Injury (C)	0	0	1
Total	4	1	3

Speeding	2015	2016	2017
Torrington			
Fatal Injury (K)	0	1	1
Suspected Serious Injury (A)	2	4	2
Suspected Minor Injury (B)	7	5	10
Possible Injury (C)	3	7	7
Total	12	17	20
Warren			
Suspected Minor Injury (B)	2	1	1
Possible Injury (C)	1	0	0
Total	3	1	1
Washington			
Fatal Injury (K)	0	0	1
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	4	4	2
Possible Injury (C)	1	2	1
Total	5	7	4
Winchester			
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	4	2	1
Possible Injury (C)	1	0	1
Total	6	3	2
NHCOG Totals	92	123	101

Unrestrained Occupant				
	2015	2016	2017	
Barkhamsted				
Suspected Minor Injury (B)	0	2	0	
Possible Injury (C)	0	2	1	
Total	0	4	1	
Burlington				
Suspected Minor Injury (B)	0	1	0	
Possible Injury (C)	0	3	0	
Total	0	4	0	
Canaan				
Suspected Minor Injury (B)	0	1	0	
Total	0	1	0	
Colebrook				
Suspected Minor Injury (B)	0	0	1	
Total	0	0	1	
Cornwall				
Suspected Serious Injury (A)	1	1	1	
Suspected Minor Injury (B)	1	0	2	
Possible Injury (C)	0	0	1	
Total	2	1	4	
Goshen				
Suspected Minor Injury (B)	0	1	0	
Possible Injury (C)	1	1	1	
Total	1	2	1	
Hartland				
Suspected Minor Injury (B)	0	1	0	
Total	0	1	0	
Harwinton				
Fatal Injury (K)	0	1	0	
Suspected Serious Injury (A)	1	0	0	
Suspected Minor Injury (B)	0	1	0	
Possible Injury (C)	0	1	0	
Total	1	3	0	

Unrestrained Occupant					
	2015	2016	2017	i	
Kent					
Suspected Serious Injury (A)	0	0	1		
Suspected Minor Injury (B)	0	2	0		
Possible Injury (C)	1	0	1		
Total	1	2	2		
Litchfield					
Fatal Injury (K)	0	1	0		
Suspected Minor Injury (B)	0	0	3		
Possible Injury (C)	0	1	1		
Total	0	2	4		
Morris					
Suspected Minor Injury (B)	1	0	1		
Total	1	0	1		
New Hartford					
Suspected Minor Injury (B)	1	2	3		
Total	1	2	3		
Norfolk					
Suspected Minor Injury (B)	0	0	1		
Total	0	0	1		
North Concern					
	1	0	0		
Fatal Injury (K)	1	0	0		
Total	2	0	0		
	-	•	•		
Roxbury					
Suspected Minor Injury (B)	1	0	0		
Possible Injury (C)	0	1	0		
lotal	1	1	U		
Salisbury					
Suspected Serious Injury (A)	1	0	0		
Suspected Minor Injury (B)	0	0	3		
Possible Injury (C)	0	1	2		
Total	1	1	5		

Unrestrained Oco	cupan	it	
	2015	2016	2017
Sharon			
Suspected Minor Injury (B)	0	2	1
Possible Injury (C)	1	0	0
fotal	1	2	1
Forrington			
Suspected Serious Injury (A)	1	3	2
Suspected Minor Injury (B)	13	14	14
Possible Injury (C)	19	16	8
lotal 🛛	33	33	24
Warren			
Suspected Serious Injury (A)	0	0	1
fotal	0	0	1
Washington			
atal Injury (K)	0	0	2
Suspected Minor Injury (B)	1	0	0
otal	1	0	2
Ninchester			
suspected Serious Injury (A)	0	0	1
uspected Minor Injury (B)	0	0	1
Possible Injury (C)	0	4	3
otal	0	4	5
NHCOG Totals	46	63	56

Substance Involved Driving 2015 2016 2017						
Barkhamsted						
Fatal Injury (K)	1	1	0			
Suspected Minor Injury (B)	1	0	0			
Total	2	1	0			
Burlington						
Suspected Serious Injury (A)	0	0	1			
Suspected Minor Injury (B)	0	2	2			
Possible Injury (C)	2	1	1			
Total	2	3	4			
Canaan						
Suspected Serious Injury (A)	0	1	0			
Suspected Minor Injury (B)	2	0	0			
Total	2	1	0			
Cornwall						
Suspected Minor Injury (B)	0	0	1			
Total	0	0	1			
Goshen						
Suspected Minor Injury (B)	0	0	1			
Possible Injury (C)	0	0	1			
Total	0	0	2			
Hartland				-		
Suspected Serious Injury (A)	0	0	1			
Suspected Minor Injury (B)	0	1	0			
Total	0	1	1			
Harwinton				-		
Fatal Injury (K)	1	0	0			
Suspected Minor Injury (B)	0	2	2			
Possible Injury (C)	0	0	1			
Total	1	2	3			
Kent						
Suspected Minor Injury (B)	1	1	0			
Possible Injury (C)	0	0	1			
Total	1	1	1			

Substance Involv	ved Di	riving	;
	2015	2016	2017
Litchfield			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	2	1
Possible Injury (C)	1	1	1
Total	2	3	3
Morris			
Possible Iniury (C)	2	2	0
Total	2	2	0
New Hartford			
Fatal Iniury (K)	0	1	0
Suspected Minor Injury (B)	1	0	0
Possible Injury (C)	1	0	0
Total	2	1	0
Roxburv			
Suspected Minor Injury (B)	0	1	1
Possible Injury (C)	0	1	1
Total	0	2	2
Salisbury			
Fatal Injury (K)	0	1	0
Suspected Minor Injury (B)	0	1	0
Possible Injury (C)	1	0	0
Total	1	2	0
Torrington			
Suspected Serious Injury (A)	2	2	2
Suspected Minor Injury (B)	4	7	4
Possible Injury (C)	3	4	4
Total	9	13	10
Warren			
Suspected Minor Injury (B)	1	0	0
Total	1	0	0

Substance Invol	ved Dr	riving	5
	2015	2016	2017
Washington			
Fatal Injury (K)	0	0	1
Suspected Minor Injury (B)	1	1	0
Total	1	1	1
Winchester			
Suspected Minor Injury (B)	1	0	0
Possible Injury (C)	1	0	1
Total	2	0	1
NHCOG Totals	28	33	29

Distracted	2015	2016	2017
Barkhamsted			
Suspected Minor Injury (B)	0	1	2
Total	0	1	2
Burlington			
Suspected Minor Injury (B)	0	1	1
Possible Injury (C)	1	1	0
Total	1	2	1
Canaan			
Suspected Minor Injury (B)	1	0	1
Possible Injury (C)	1	0	0
Total	2	0	1
Cornwall			
Suspected Minor Injury (B)	1	0	0
Total	1	0	0
Goshen			
Suspected Minor Injury (B)	0	1	0
Total	0	1	0
Hartland			
Suspected Minor Injury (B)	0	0	1
Total	0	0	1
Harwinton			
Suspected Minor Injury (B)	0	1	2
Possible Injury (C)	2	0	1
Total	2	1	3
Kent			
Suspected Minor Injury (B)	1	1	0
Total	1	1	0
Litchfield			
Suspected Minor Injury (B)	0	1	2
Possible Injury (C)	1	2	1
Total	1	3	3
New Hartford			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	1	0	0
Suspected Minor Injury (B)	1	2	4
Possible Injury (C)	1	0	1
Total	3	3	5

Distracted	2015	2016	2017
Norfolk			
Suspected Minor Injury (B)	1	1	0
Possible Injury (C)	1	1	0
Total	2	2	0
North Canaan			
Suspected Minor Injury (B)	0	0	1
Total	0	0	1
Roxburv			
Suspected Minor Injury (B)	2	1	1
Total	2	1	1
Salisbury			
Suspected Minor Injury (B)	2	2	0
Possible Injury (C)	2	0	1
Total	4	2	1
Sharon			
Suspected Minor Injury (B)	1	2	0
Total	1	2	0
Torrington			
Suspected Serious Injury (A)	0	1	1
Suspected Minor Injury (B)	7	9	3
Possible Injury (C)	3	3	3
Total	10	13	7
Washington			
Suspected Minor Injury (B)	0	4	0
Total	0	4	0
Winchester			
Suspected Minor Injury (B)	2	0	1
Possible Injury (C)	1	0	1
Total	3	0	2
NHCOG Totals	33	36	28
Older Drivers	2015	2016	2017
------------------------------	------	------	------
Barkhamsted			
Suspected Minor Injury (B)	1	4	3
Possible Injury (C)	1	2	0
Total	2	6	3
Burlington			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	1	3
Possible Injury (C)	2	4	4
Total	3	5	8
Canaan			
Fatal Injury (K)	1	0	0
Suspected Minor Injury (B)	0	1	3
Total	1	1	3
Cornwall			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	0	1	1
Possible Injury (C)	0	1	1
Total	0	3	2
Goshen			
Possible Injury (C)	0	0	2
Total	0	0	2
Hartland			
Suspected Minor Injury (B)	0	0	2
Possible Injury (C)	0	0	1
Total	0	0	3
Harwinton			
Suspected Serious Injury (A)	1	1	1
Suspected Minor Injury (B)	1	0	1
Total	2	1	2
Kent			
Suspected Minor Injury (B)	1	2	3
Possible Injury (C)	1	0	0
Total	2	2	3
Litchfield			
Suspected Serious Injury (A)	2	0	0
Suspected Minor Injury (B)	2	3	6
Possible Injury (C)	4	4	6
Total	8	7	12

Older Drivers	2015	2016	2017
New Hartford			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	1	0	0
Suspected Minor Injury (B)	2	4	4
Possible Injury (C)	0	0	1
Total	3	5	5
Norfolk			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	1	0	2
Possible Injury (C)	1	0	0
Total	2	1	2
North Canaan			
Fatal Injury (K)	0	1	0
Suspected Minor Injury (B)	2	1	1
Possible Injury (C)	1	1	0
Total	3	3	1
Roxbury			
Suspected Minor Injury (B)	2	2	0
Total	2	2	0
Salisbury			
Suspected Minor Injury (B)	3	4	2
Possible Injury (C)	2	1	1
Total	5	5	3
Sharon			
Suspected Minor Injury (B)	2	2	1
Possible Injury (C)	2	0	2
Total	4	2	3
Torrington			
Suspected Serious Injury (A)	1	1	5
Suspected Minor Injury (B)	14	11	12
Possible Injury (C)	5	12	12
Total	20	24	29
Warren			
Fatal Injury (K)	1	0	0
Suspected Minor Injury (B)	0	1	1
Total	1	1	1

Older Drivers	2015	2016	2017
Washington			
Suspected Minor Injury (B)	3	2	3
Possible Injury (C)	2	0	1
Total	5	2	4
Winchester			
Suspected Serious Injury (A)	0	0	3
Suspected Minor Injury (B)	2	2	4
Possible Injury (C)	0	0	3
Total	2	2	10
NHCOG Totals	65	72	96

Young Drivers (2	5 and 2015	Und 2016	er) 2017
Barkhamsted			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	0	0	2
Suspected Minor Injury (B)	2	3	2
Possible Injury (C)	2	2	4
Total	4	6	8
Burlington			
Suspected Serious Injury (A)	0	0	2
Suspected Minor Injury (B)	5	4	3
Possible Injury (C)	5	1	3
Total	10	5	8
Canaan			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (R)	1	2	1
Possible Injury (C)	3	1	1
Total	4	4	2
Calabraak			
	0	0	4
Suspected Serious Injury (A)	0	0	1
Total	0	0	1
	•	0	2
Cornwall			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	1	1
Possible Injury (C)	1	0	0
Total	2	1	2
Goshen			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	0	3	3
Possible Injury (C)	1	0	2
Total	1	4	5
Hartland			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	1	2
Possible Injury (C)	0	2	1
Total	1	3	4

Young Drivers (25	and 2015	Unde 2016	er) 2017
Harwinton			
Suspected Minor Injury (B)	5	5	2
Possible Injury (C)	3	2	1
Total	8	7	3
Kent			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	2	5	2
Possible Injury (C)	1	0	2
Total	3	5	5
Litchfield			
Suspected Serious Injury (A)	0	0	2
Suspected Minor Injury (B)	3	7	10
Possible Injury (C)	6	4	3
Total	9	11	15
Morris			
Suspected Minor Injury (B)	1	3	4
Possible Injury (C)	2	2	1
Total	3	5	5
New Hartford			
Fatal Injury (K)	0	1	0
Suspected Serious Injury (A)	1	0	1
Suspected Minor Injury (B)	8	7	7
Possible Injury (C)	4	3	3
Total	13	11	11
Norfolk			
Suspected Minor Injury (B)	2	0	1
Possible Injury (C)	1	1	0
Total	3	1	1
North Canaan			
Fatal Injury (K)	1	1	0
Suspected Minor Injury (B)	3	4	2
Possible Injury (C)	2	1	1
Total	6	6	3

Young Drivers (2	5 and l 2015_2	Jnde 2016_2	r) 2017_
Roxbury			
Suspected Minor Injury (B)	2	2	3
Possible Injury (C)	0	2	0
Total	2	4	3
Salisburv			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	5	4	3
Possible Injury (C)	1	3	2
Total	6	7	6
Sharon			
Suspected Minor Injury (B)	0	2	2
Possible Injury (C)	0	1	1
Total	0	3	3
Possible Injury (C) Total	9 27	13 44	11 29
Total	27	44	29
Warren			
Suspected Minor Injury (B)	3	0	0
Possible Injury (C)	0	0	1
rotal	3	U	1
Washington			
Fatal Injury (K)	0	0	3
Suspected Minor Injury (B)	5	1	5
Possible Injury (C)	1	3	2
Total	6	4	10
Winchester			
Suspected Minor Injury (B)	5	2	3
Possible Injury (C)	6	1	3
Total	11	3	6
NHCOG Totals	122	134	132

Bicycle Crashes	2015	2016	2017	
Barkhamsted				
Suspected Minor Injury (B)	1	0	0	
Total	1	0	0	
Burlington				
Suspected Minor Injury (B)	1	1	1	
Total	1	1	1	
Morris				
Suspected Minor Injury (B)	1	0	0	
Total	1	0	0	
New Hartford				
Fatal Injury (K)	0	0	1	
Total	0	0	1	
Torrington				
Fatal Injury (K)	1	0	0	
Suspected Minor Injury (B)	5	2	4	
Possible Injury (C)	2	2	2	
Total	8	4	6	
Winchester				
Suspected Minor Injury (B)	0	1	1	
Total	0	1	1	
NHCOG Total	11	6	9	

Pedestrians	2015	2016	2017
Canaan			
Suspected Serious Injury (A)	0	0	1
Total	0	0	1
Goshen			
Suspected Minor Injury (B)	0	0	1
Total	0	0	1
Hartland			
Suspected Minor Injury (B)	1	0	0
Total	1	0	0
Litchfield			
Possible Iniury (C)	0	0	1
Total	0	0	1
New Hartford			
Fatal Injury (K)	0	1	1
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	0	1	0
Total	0	3	1
Salisbury			
Suspected Minor Injury (B)	0	0	3
Possible Injury (C)	1	0	0
Total	1	0	3
Torrington			
Fatal Injury (K)	1	0	1
Suspected Serious Injury (A)	1	1	0
Suspected Minor Injury (B)	8	8	5
Possible Injury (C)	3	4	1
Total	13	13	7
Winchester			
Suspected Serious Injury (A)	1	0	0
Possible Injury (C)	1	0	0
Total	2	0	0
NHCOG Totals	17	16	14

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Motorcycle	2015	2016	2017
Barkhamsted			
Fatal Injury (K)	0	1	0
Suspected Minor Injury (B)	2	3	4
Total	2	4	4
Burlington			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	1	1	1
Possible Injury (C)	1	0	0
Total	2	1	2
Canaan			
Fatal Injury (K)	0	1	0
Suspected Minor Injury (B)	0	1	1
Total	0	2	1
Colebrook			
Suspected Minor Injury (B)	1	0	0
Possible Injury (C)	0	1	0
Total	1	1	0
Cornwall			
Suspected Minor Injury (B)	1	1	1
Possible Injury (C)	1	0	0
Total	2	1	1
Goshen			
Suspected Minor Injury (B)	1	0	2
Total	1	0	2
Hartland			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	2	3	0
Total	2	3	1
Harwinton			
Fatal Injury (K)	1	0	0
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	3	4	1
Possible Injury (C)	1	0	0
Total	5	4	2

Motorcycle	2015	2016	2017
Kent			
Fatal Injury (K)	1	0	0
Suspected Minor Injury (B)	1	1	1
Total	2	1	1
Litchfield			
Fatal Injury (K)	0	4	0
Suspected Serious Injury (A)	1	2	0
Suspected Minor Injury (B)	2	5	5
Possible Injury (C)	1	0	2
Total	4	11	7
Morris			
Suspected Minor Injury (B)	0	2	0
Possible Injury (C)	1	0	1
Total	1	2	1
New Hartford			
Fatal Injury (K)	0	0	1
Suspected Serious Injury (A)	1	0	0
Suspected Minor Injury (B)	4	0	3
Total	5	0	4
Norfolk			
Suspected Minor Injury (B)	1	1	1
Total	1	1	1
North Canaan			
Suspected Serious Injury (A)	0	1	0
Suspected Minor Injury (B)	1	2	2
Possible Injury (C)	0	1	0
Total	1	4	2
Roxbury			
Suspected Minor Injury (B)	2	2	0
Total	2	2	0
Salisbury			
Suspected Minor Injury (B)	0	0	2
Total	0	0	2

Motorcycle	2015	2016	2017
Sharon			
Suspected Serious Injury (A)	0	0	1
Suspected Minor Injury (B)	2	0	0
Possible Injury (C)	0	1	0
Total	2	1	1
Torrington			
Fatal Injury (K)	1	0	1
Suspected Serious Injury (A)	4	4	5
Suspected Minor Injury (B)	16	7	10
Possible Injury (C)	0	0	2
Total	21	11	18
Warren			
Possible Injury (C)	0	0	1
Total	0	0	1
Washington			
Fatal Injury (K)	0	0	2
Suspected Minor Injury (B)	6	2	1
Possible Injury (C)	2	0	0
Гotal	8	2	3
Winchester			
Suspected Minor Injury (B)	3	1	0
Possible Injury (C)	0	1	0
Гotal	3	2	0
	65		

Appendix C Infrastructure Countermeasure Tables

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 Safety Countermeasures and NHTSA's Countermeasures that Work, 8th edition.

Countermeasures

	Measure	Description	Application [^]	
	Speed Feedback Signs ²³			
	Cost			
Signage	Low	A changeable message sign that displays the speed of approaching vehicles.	To be used where motorized vehicle speed is a concern.	
	CMF**			
	0.544			
	Retroreflective Signal Backplates			
	Cost	Improved visibility of a signal head with a backplate is made	Signal heads that have backplates equipped with	
Signage	Low	even more conspicuous by framing it with a retroreflective border.	retroreflective borders are more visible and conspicuous	
	CMF**		in both daytime and highttime conditions.	
	.85 (U) ⁵			
	Change Left-Turn Phase to Protected Phasing		"Protected-only" phasing consists of providing a separate phase for left-turning traffic and allowing left turns to be made only	
<i>c</i> :	Cost		on a green left arrow signal indication, with no pedestrian	
Signage	Low	Modify existing phasing to a protected phase.	movement or vehicular traffic conflicting with the left turn. As a result left-turn movements with "protected-only" phasing have	
	CMF**		a higher capacity than those with "permissive-only"	
	0.78 ⁷		phasing due to fewer conflicts. ⁶	
	Flashing Advanced Warning Beacons			
Cianana	Cost	A beacon that provides a warning to motorists about an	To be used to add as an effective section.	
Signage	Low to Medium	intersection ahead.	IO DE USED IN ADVANCE OT AN INTERSECTION.	
	CMF**			
	0.64 ⁸			

² Federal Highway Administration. (2009). Engineering Countermeasures for Reducing Speeds: A Desktop Reference of Potential Effectiveness. Washington, D.C.: Federal Highway Administration.

³ Overuse of signs and pavement markings may reduce their effectiveness. These devices should be used in locations where the needs are greatest.

⁴ Elvik, R. and Vaa, T., "Handbook of Road Safety Measures." Oxford, United Kingdom, Elsevier, (2004).

⁵ Federal Highway Administration. (2017). Backplates with Retroreflective Borders. https://safety.fhwa.dot.gov/provencountermeasures/blackplate/

⁶ Federal Highway Administration. (2004). Signalized Intersections: Informational Guide. https://www.fhwa.dot.gov/publications/research/safety/04091/04.cfm

⁷ De Pauw, E., S. Daniels, T. Brijs, E. Hermans, and G. Wets. "Safety effects of an extensive black spot treatment programme in Flanders-Belgium". Accident Analysis and Prevention, Vol. 66, (2014).

⁸ Morena, D. A., Wainwright, W. S., and Ranck, F., "Older Drivers at a Crossroads." Public Roads, Vol. 70, No. 4, Washington, D.C., FHWA, (2007).

	Measure	Description	Application [^]	
Signage	Pedestrian Hybrid Beacon	The pedestrian hybrid beacon (PHB) is a traffic control device designed to help pedestrians safely cross busy or higher-speed roadways at midblock 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.	
	Cost			
	High			
	CMF**			
	0.71 ⁹			
	Roadway (or Transverse) Rumble Strips	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	
Pavement	Cost			
Markings	Low			
	CMF**			
	0.76 ¹⁰ (R)		citizens concerns over noise from vehicles driving over.	
Pavement	Shoulder Rumble Strips	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.	
	Cost			
	Low			
linaningo	CMF**			
	0.84 ¹¹ (R)			
	Centerline Rumble Strips	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.	
Devement	Cost			
Markings	Low			
l	CMF**			
	0.55 ¹² (R)			
	Lane Narrowing	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	For use in areas with wide travel lanes and where speed is a concern (MUTCD Chapter 31).	
Designed	Cost			
Pavement Markings	Low			
	CMF**			
	Varies ¹⁴	widths for traffic calming purposes. ¹³		
Pavement Markings	Regulatory Pavement Markings ¹⁵	Pavement markings, such as "25 mph", that emphasize regulatory signage (MUTCD Section 3B.20).	To be used at intersections or midblock crossings. Crosswalks may be used in areas with lower traffic volumes, low- er 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.	
	Cost			
	Low			
	CMF**			
	(UNK)			

⁹ Federal Highway Administration. (2017). Pedestrian Hybrid Beacons. https://safety.fhwa.dot.gov/provencountermeasures/ped_hybrid_beacon/

¹⁰ Liu, P., Huang, J., Wang, W., Xu, C., "Effects of Transverse Rumble Strips on Safety of Pedestrian Crosswalks on Rural Low-Volume Roads in China."

¹¹ Torbic, D.J., et al. NCHRP Report 641: Guidance for the Design and Application of Shoulder and Centerline Rumble Strips

¹³ Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration.

¹⁴ Hauer, E., "Lane Width and Safety." (2000).

¹⁵ Federal Highway Administration. (2009). Manual on Uniform Traffic Control Devices. Washington, D.C.: Federal Highway Administration.

	Measure	Description	Application [^]	
Pavement Markings	Crosswalks	_	To be used at intersections or midblock 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.	
	Cost			
	Varies, Low markings only Moderate 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).		
	CMF**			
	0.4-0.75 ¹⁶¹⁷ (V)(P)(R)			
	Road Reconfigurations	Roadway retrofit techniques designed to produce a wide	For use in areas where speed and pedestrian and bicycle ac- cessibility are a concern.	
	Cost	crashes, improved access management, improved accessibility		
Pavement	Low to High	for pedestrians or bicyclists, improved parking utilization, as well as improved economic vitality for businesses along those		
Markings	CMF**			
	Varies	and lane narrowing to include bike lanes.		
	Buffered Shoulders	 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 buff- ered space along the roadway.	
	Cost			
Physical Environment	Low for restriping existing paved shoulder; high for constructing new paved shoulder			
	CMF**			
	0.29 ¹⁸ (V)(P)			
	Bike Lanes ¹⁹	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)	
Dhuning	Cost			
Environment	*Varies			
	CMF**			
	0.65 (V)(B)			
Physical Environment	Roadway Surface Improvements	Roadway surface improvements include maintenance and paving activities to provide a smooth and slip-resistant	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.	
	Cost			
	Maintenance: low; Paving/ repaving: high CMF**			
	Varies greatly based on conditions present	traveling surface for pedestrians and cyclists.		

¹⁹ 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.

 ¹⁶ ITE Committee 5A-5. (1998). Design and Safety of Pedestrian Facilities. Washington, D.C.: Institute of Transportation Engineers.
 ¹⁷ 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.
 ¹⁸ Gan, A., Shen, J., and Rodriguez, A., "Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects." Florida Department of Transportation, (2005).

	Measure	Description	Application [^]	
Physical Environment	Median Crossing Islands	A reject island in the center of the ready pursities refuge area	To be used when pedestrians and cyclists have to cross high-volume, multilane roadways (MUTCD Chapter 3I). (RV)	
	Cost	that is accessible for pedestrians of all abilities. Can also provide		
	Medium	a refuge area for cyclists, especially at locations where a shared use path crosses a roadway. The island allows pedestrians and		
	CMF**			
	0.54-0.61 ²⁰ (V)(P)			
	Rectangular Rapid Flash LED Beacons ²¹	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 midblock crossings and intersections that do not warrant a signal.	
Physical	Cost			
Environment	Medium			
	CMF**			
	(UNK)			
	Roadway Illumination ²²		To be used on sections of roadway with high volumes of nighttime non-motorized activity.	
	Cost	Lighting directed to illuminate the roadway.		
Physical	Medium			
Linvironment	CMF**			
	0.27-0.8 (R)			
	Road Diets	A redistribution of space in the roadway leading to a reduction	For use in areas with pedestrian crossings, multiple lanes of traffic, and high vehicle speeds.	
Dhuning	Cost	in the number of travel lanes for motor vehicles on a roadway. The road diet is one of FHWA's Proven Safety Countermeasures		
Environment	Low to Medium			
	CMF**	and may provide space for bike lanes, sidewalk, or medians,		
	0.47-0.71 ²³ (S)(U)	and carrier to reduce motor venicle speed.		
	Gateways	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.	
Dhuminal	Cost			
Environment	Low to High			
	CMF**			
	0.98 ²⁴			
Physical Environment	Left Turn Lanes at Two-Way Stop Controlled Intersections	Auxiliary turn lanes provide physical separation between turning traffic that is slowing or stopped and adjacent through traffic at approaches to intersections.	Auxiliary turn lanes provide physical separation between turning traffic that is slowing or stopped and adjacent through traffic at approaches to intersections.	
	Cost			
	Low to High			
	CMF**			
	0.52-0.72 ²⁵			

²⁰ Zegeer, C. V., Stewart, R., Huang, H., and Lagerwey, P., "Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines." FHWA-RD-01-075, McLean, Va., Federal Highway Administration, (2002).

²¹ 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.

²²Hall, J. W., Brogan, J. D., & Kondreddi, M. (2004). Pedestrian Safety on Rural Highways. FHWA-SA-04-008. Washington, D.C.: Federal Highway Administration.

 ²³Harkey, D.L., R. Srinivasan, J. Baek, B. Persaud, C. Lyon, F.M. Council, K. Eccles, N. Lefler, F. Gross, E. Hauer, J. Bonneson, "Crash Reduction Factors for Traffic Engineering and ITS Improvements", NCHRP Project 17-25 Final Report, Washington, D.C., National Cooperative Highway Research Program, Transportation Research Board, (2008).

²⁴Ye, Z. and D. Veneziano. "Safety Impact of Gateway Monuments." TRB 89th Annual Meeting Compendium of Papers CD-ROM. Washington, D.C. 2010.

²⁵Srinivasan, R., B. Lan, and D. Carter. "Safety Evaluation of Signal Installation With and Without Left Turn Lanes on Two Lane Roads in Rural and Suburban Areas." Report No. FHWA/NC/2013-11. North Carolina Department of Transportation. Raleigh, North Carolina. (2014).

	Measure	Description	Application [^]	
Physical Environment	Shared Use Paths	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 bicy- clists and high motor vehicle speeds or volumes.	
	Cost			
	Medium to High			
	CMF**			
	0.11-0.35 ²⁶ (V)(P)			
Physical Environment	Sidewalks and Walkways	Pedestrian facilities that are separated from the roadway. Can be made of asphalt, concrete, or crushed stone. Sidewalks are usually paved and separated from the street by curbing. Pedestrian walkways may be separated from the roadway with a physical barrier or a landscaped strip.		
	Cost		To be used in areas with a high volume of pedestrians and high motor vehicle speeds or in areas where on-road bicycle/pedestrian travel is prohibited. (RV)	
	Medium to High			
	CMF**			
	0.11-0.35 ²⁷ (V)(P)			

^Legend: (RV) = Rural Village

* Measures may vary greatly in cost. For example, some measures may be achieved through redistribution of space on the current roadway or it may require expansion of the roadway. CMF's are based upon all crash types unless otherwise noted. Notations for other crash types may include: (V)=motorized vehicles, (B)=bicycles, (P)=pedestrians, or location information (R)=rural, (S)=suburban, (U)=urban. For those CMF's that are unknown, (UNK) = Unknown. Unless otherwise noted, CMFs can be found in the CMF clearinghouse (http://www.cmfclearinghouse.org). However, users should consult the original publication to determine applicability to their scenario.

²⁶ Gan, A., Shen, J., and Rodriguez, A., "Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects." Florida Department of Transportation, (2005).

²⁷ Gan, A., Shen, J., and Rodriguez, A., "Update of Florida Crash Reduction Factors and Countermeasures to Improve the Development of District Safety Improvement Projects." Florida Department of Transportation, (2005).

PHOTO SOURCES

M.A.D.D. Logo	. Page 37	Source: Mothers Against Drunk Driving, www.madd.org/Connecticut
Older Driver Example	Page 39	Source: NHTSA Older Drivers, https://www.nhtsa.gov/road-safety/older-drivers
Obey the Sign or Pay the Fine	. Page 35	Source: NHTSA
Motorcycle	Page 43	. Source: NHTSA

