



MORRIS AVENUE & MOUNTAIN AVENUE ROAD SAFETY AUDIT

Summit, Union County, New Jersey

REPORT

>> November 2014

RSA facilitated by the Transportation Safety Resource Center (TSRC) at the Rutgers Center for Advanced Infrastructure and Transportation (CAIT) in partnership with the North Jersey Transportation Planning Authority (NJTPA) and Union County with funding provided by FHWA and NJDOT

>> cait.rutgers.edu/tsrc

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>> INTRODUCTION

WHAT IS A ROAD SAFETY AUDIT (RSA)?

The Center for Advanced Infrastructure and Transportation's (CAIT's) Transportation Safety Resource Center (TSRC) and New Jersey Local Technical Assistance Program (NJ LTAP) offer a statewide Road Safety Audit (RSA) service at no charge to New Jersey towns and counties. Interested parties can request road surveys which are conducted by a team of engineers, planners, and law-enforcement officers to help municipalities and counties make cost-effective safety improvements.

A multidisciplinary team of professionals offers assessments on roadway issues such as pedestrian and bicycle safety, intersection analyses, rural roads, human factors, speed management, and sign visibility and retroreflectivity standards.

RSAs include data-driven considerations and analysis of crashes. To determine the best safety solutions, RSA professionals perform incisive crash data evaluations on the target area using Plan4Safety, TSRC's award-winning crash database and software.

The RSA team provides a final report that includes long- and short-term countermeasure recommendations that fit within the requestor's budget. Furthermore, RSAs pay off. According to the Federal Highway Administration (FHWA), countermeasures applied after RSAs can reduce crashes by about 60 percent.

For more information, contact Andy Kaplan, senior research engineer, at andy.kaplan@rutgers.edu.

DISCLAIMER

An RSA report provided by CAIT staff does not constitute an engineering report. The agency responsible for design and construction should consult a professional engineer licensed in the state of New Jersey in preparing construction documents to implement any of the safety countermeasures in the report.

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the New Jersey Department of Transportation or CAIT. This report does not constitute a standard, specification, or regulation. Such document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. The U.S. government assumes no liability for the contents or use thereof.

EXECUTIVE SUMMARY

The Road Safety Audit (RSA) at the intersection of Morris Avenue and Mountain Avenue in the City of Summit was chosen as a result of an NJTPA network screening of crashes on county and municipal roadways. The network screening ranking was created utilizing the database in TSRC's Plan4Safety. The crashes were weighted according to severity. The list of pedestrian spots places this intersection at number one in Union County and number 13 in the entire NJTPA region. The RSA process helped to identify safety issues, evaluate risks and suggest countermeasures. This document is the final report for the RSA conducted in the City of Summit. The result, detailed in this report, is a summary of the intersection's safety history from 2010-2012 and a listing of recommended improvements that were created by the RSA team.

Morris Avenue is an urban minor arterial that is located west and south of downtown Summit. Mountain Avenue (CR 622) is a 1.2 mile north-south urban minor arterial. Both roads have one lane in each direction. Toward the west, the area is primarily residential. Overlook Medical Center is located along the north side of Morris Avenue, with an employee parking lot on the southeast corner. To the east of the intersection, there is both residential and undeveloped land. This is a signalized T-intersection with one lane in each direction, with sidewalks in all legs. There is no NJ Transit bus traffic that traverses the intersection.

Although the majority of the crashes were same-direction crashes, the six pedestrian crashes (two of which were in 2008-2009) increased the rankings of this intersection due to the severity of the injuries. Some of the pedestrian crashes were due to pedestrian behavior. Others resulted from operational issues.

Recommendations included improvements for pedestrians, facilitating improved driver behavior, improving visibility and providing education for medical center employees and the general public.

>> 1.0 CORRIDOR DESCRIPTION AND ANALYSIS

1.1 SITE SELECTION

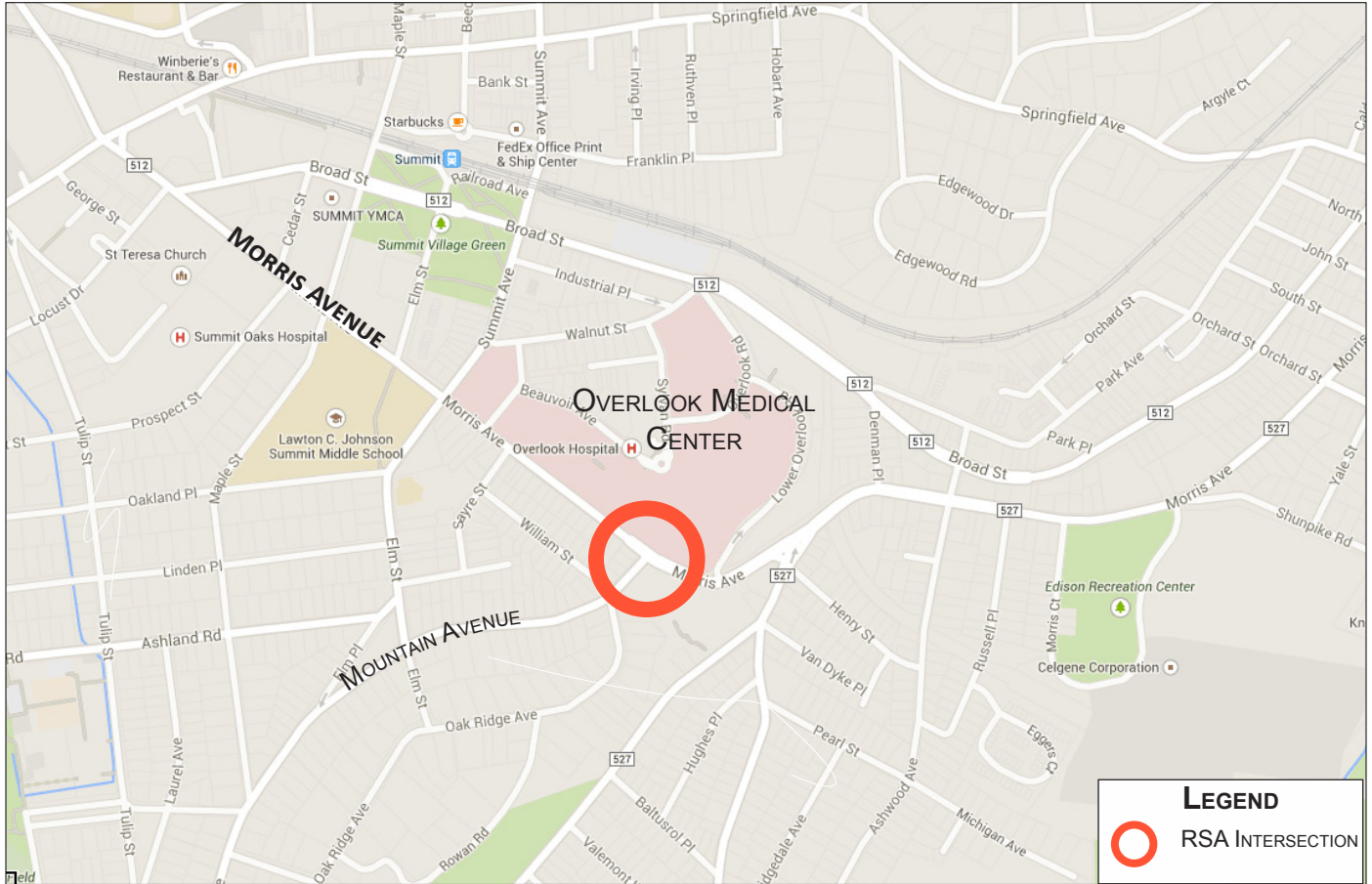


Figure 1 – Identified priority crash locations

As a result of a network screening analysis completed by TSRC for NJTPA, Union County requested that a Road Safety Audit be conducted at the intersection of Morris Avenue and Mountain Avenue. It ranked number one on the list for Union County for pedestrian spots, and number 13 on the NJTPA pedestrian spot list for all counties.

2010–2012 Crash Data		
Location	NJTPA Ranking #	Union Ranking #
Pedestrian spot ranking (Morris Avenue & Mountain Avenue)	13	1
Pedestrian corridor ranking (Morris Avenue & Mountain Avenue)	155	13

1.2 TRAFFIC VOLUMES AND USAGE

Twenty-three percent of the trips in Summit were by public transportation, as compared to 10 percent of trips in Union County (2013 data).

The traffic volume on Morris Avenue to the east of the RSA intersection was 13,468 in 2013. Mountain Avenue, 0.15 miles south of the intersection, was 4,156 annual average daily traffic.

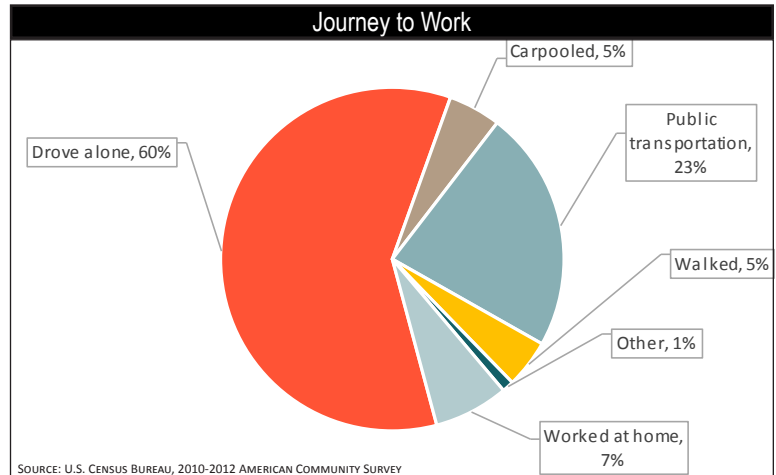


Figure 2 – Journey to work

1.3 TRANSIT SERVICE

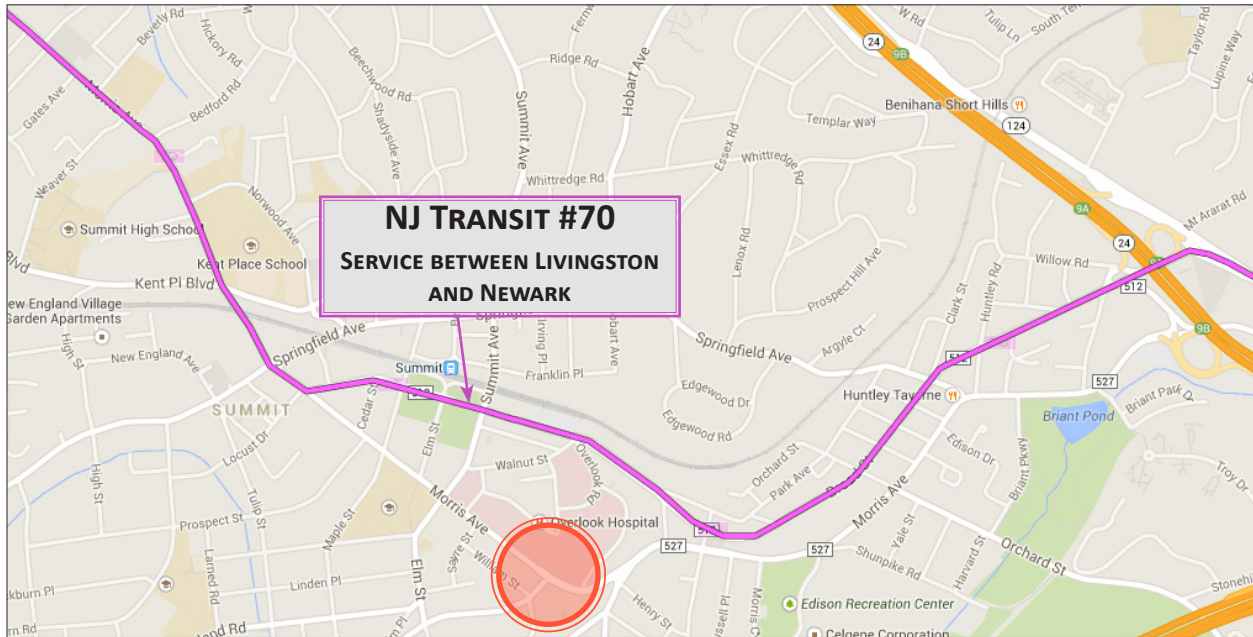


Figure 3 – Bus service

There are no buses at the intersection of Morris Avenue and Mountain Avenue. NJ Transit #70 runs east along Morris Avenue, turns onto Broad Street with access to Overlook Medical Center on the north side.

1.4 AREA CHARACTERISTICS

Morris Avenue is an urban minor arterial that is located west and south of downtown Summit. It has a few county route designations running from River Road (CR 649) in the west to Springfield Avenue (CR 527) in the east. In the RSA area, it is comprised of one lane in each direction with parking. The speed limit is 30 miles per hour. Toward the west it is primarily residential except for Overlook Medical Center on the north side of Morris Avenue. To the east of the intersection there is both residential and undeveloped land.

Mountain Avenue (CR 622) is a 1.2 mile north-south urban minor arterial that is primarily residential. It is two lanes in the RSA area with no shoulders. The speed limit is 35 miles per hour.

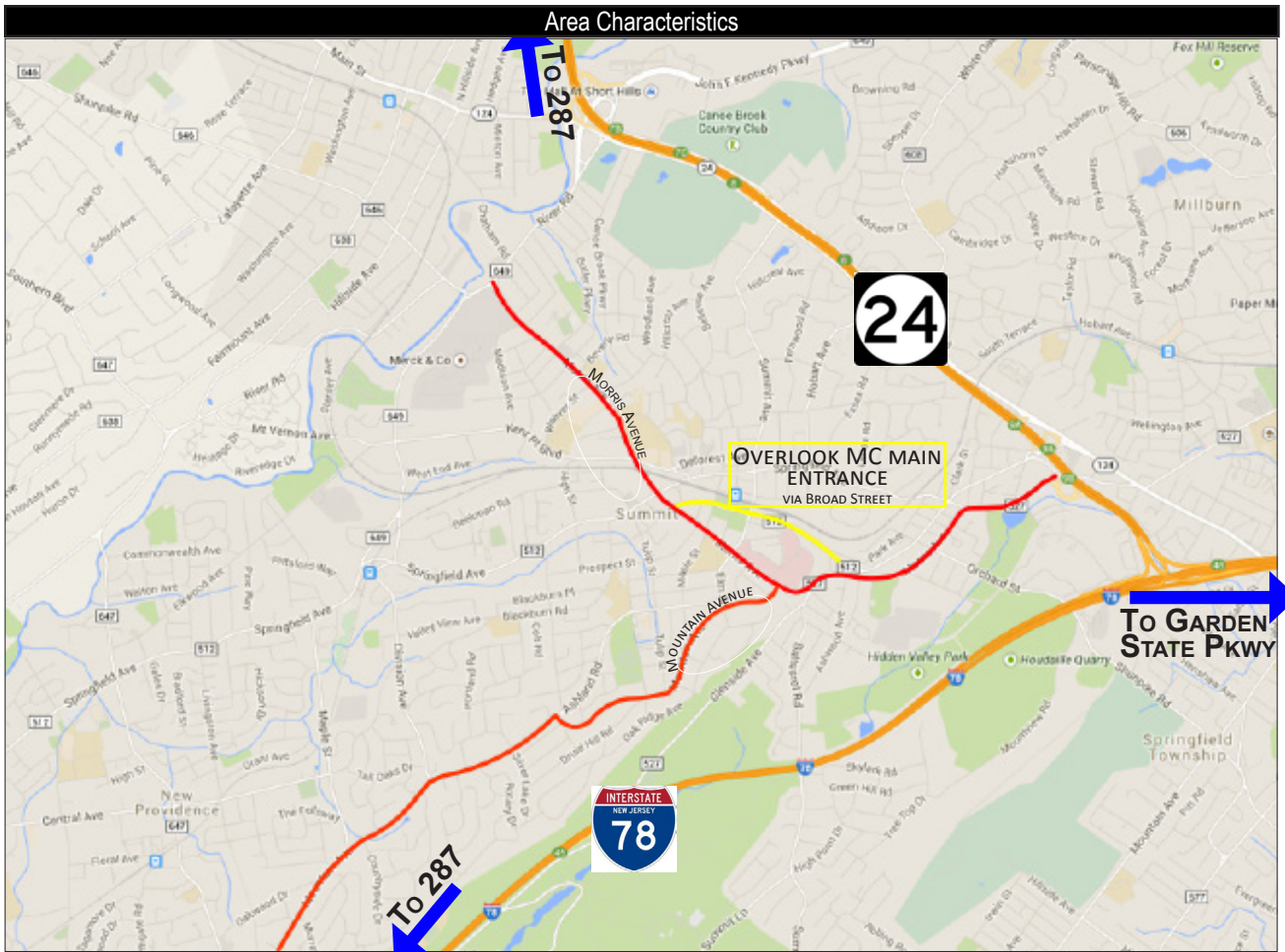


Figure 4 – RSA area location

1.5 INTERSECTION CHARACTERISTICS

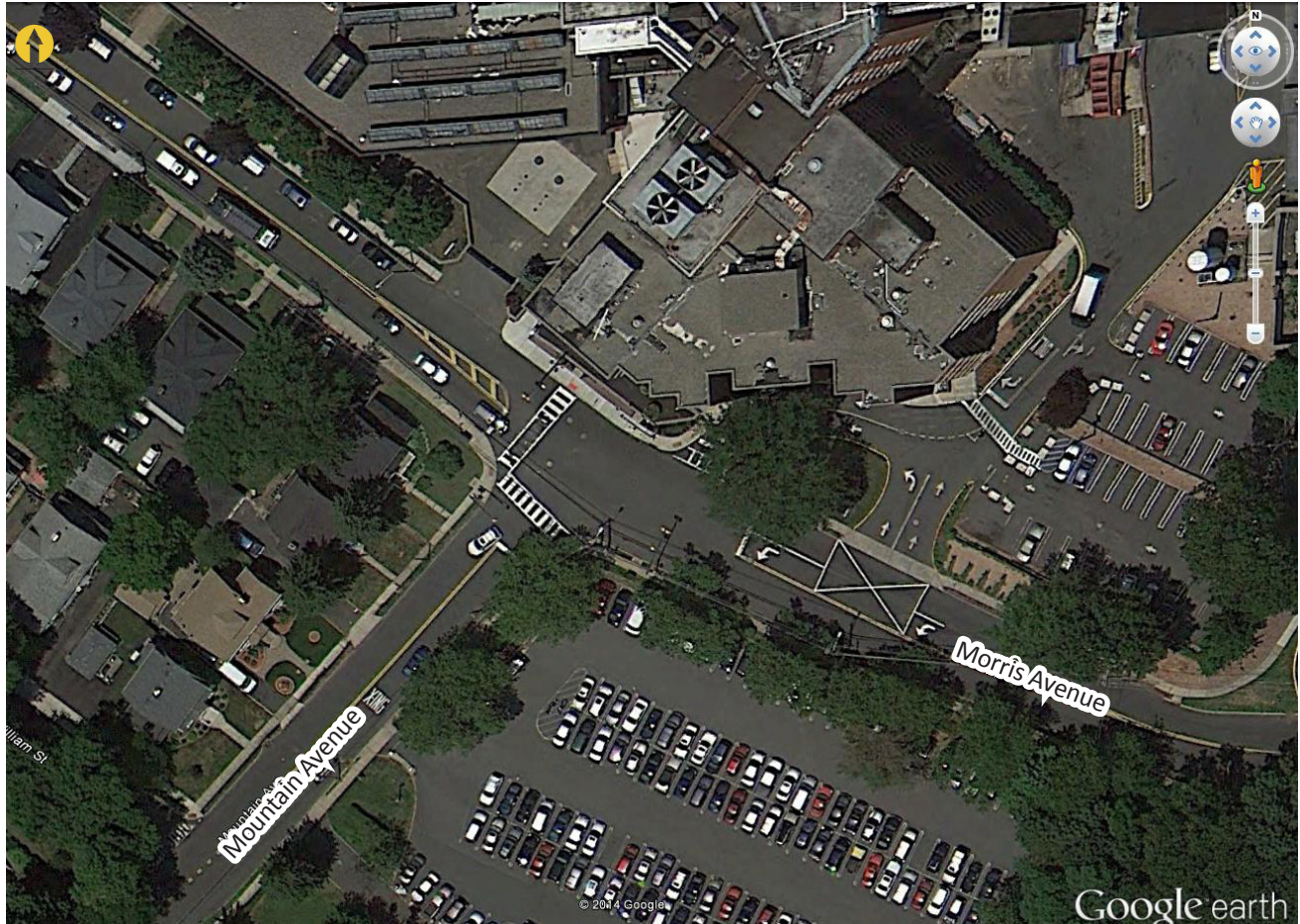


Figure 5 – Intersection of Morris Avenue and Mountain Avenue

Morris Avenue and Mountain Avenue

Signalized intersection

Morris Avenue – one lane in each direction, no shoulders

Morris Avenue westbound – dedicated left turn lane

Mountain Avenue – one lane in each direction, no shoulders

Ends at Morris Avenue as T-intersection (although the driveway exit functions as part of intersection)

Sidewalks on all sides

Residential southwest corner

Parking lot southeast corner

Overlook Medical Center on north side of Morris Avenue

Westbound stop bar is set far back

>> 2.0 CRASH FINDINGS

2.1 CHRONOLOGY

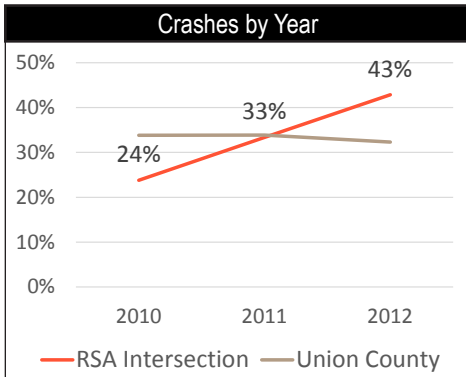


Figure 6 – Crashes by year

The number of crashes at this intersection has increased annually over the three years of crash data.

The month of July is overrepresented for crashes as compared to Union County. Tuesdays and Wednesdays have the highest percentages of crashes.

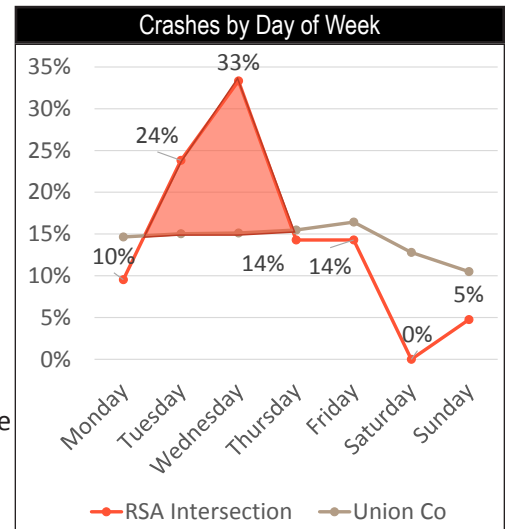


Figure 7 – Days of week

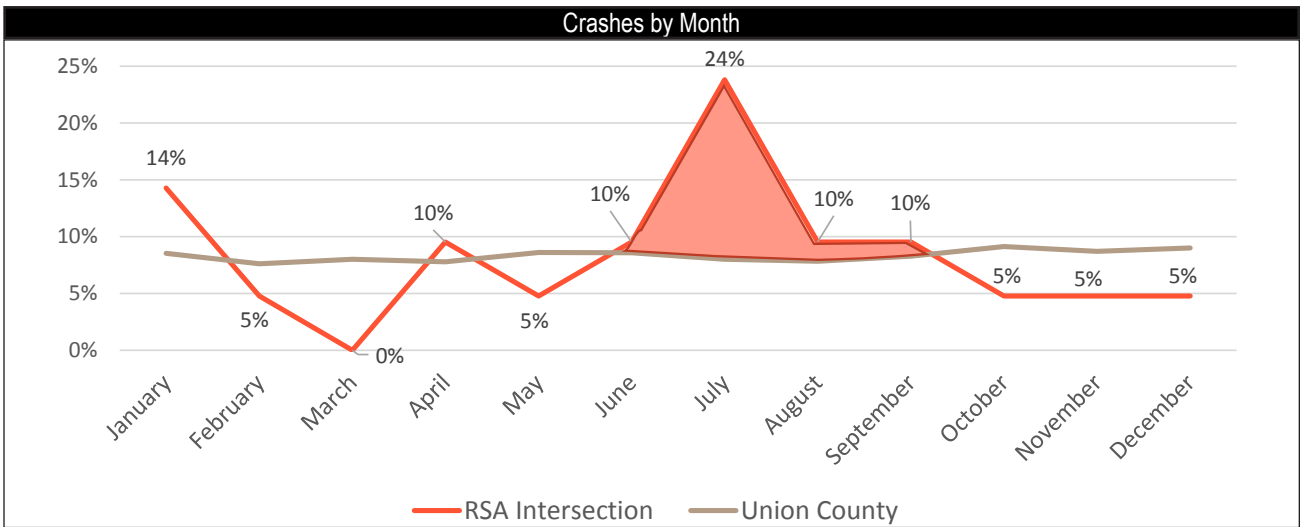


Figure 8 – Crashes by month

The most frequent crash times are from 10 AM to 12 PM and from 6 PM to 8 PM

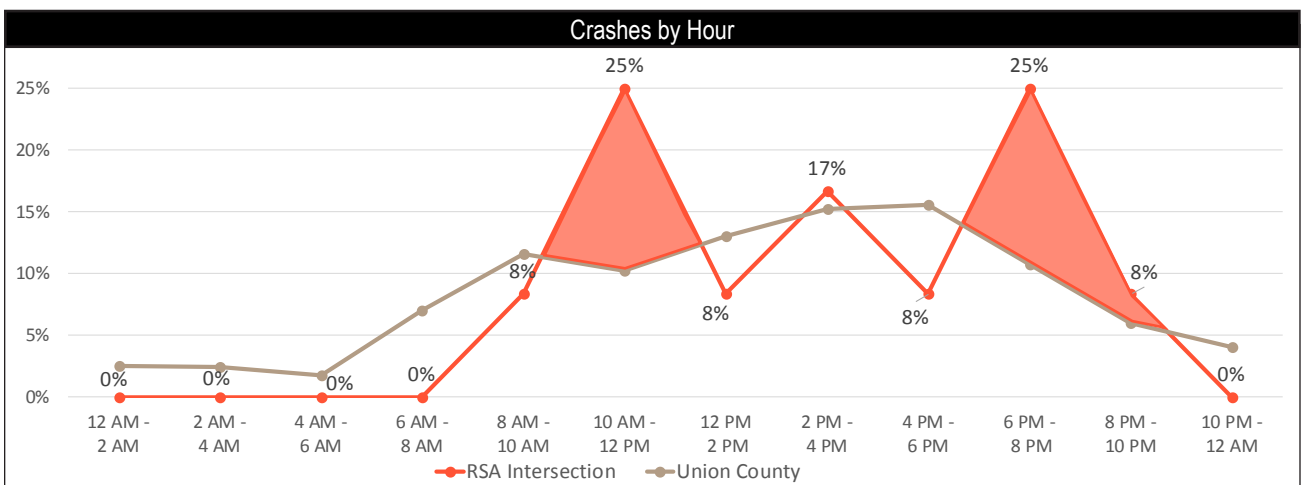


Figure 9 – Crashes by hour

2.2 SEVERITY

2010-2012		
Severity	All Crashes	Pedestrians
Fatal	-	-
Incapacitated	2	2
Moderate Injury	1	1
Complaint of Pain	3	1
Property Damage Only	15	-
TOTAL	21	4

Figure 10 – Severity

The six pedestrian crashes with injuries between 2008–2012 placed this intersection at number one for pedestrian crashes in all of Union County.

Pedestrian Crashes Only 2008-2009	
Severity	Pedestrians
Fatal	-
Incapacitated	-
Moderate Injury	2
Complaint of Pain	-
Property Damage Only	-
TOTAL	2

Figure 11 – Pedestrian crashes 2008–2009

2.3 COLLISION TYPE

Although there were a significant number of same direction crashes, it was the pedestrian crashes that increased the ranking of this intersection. Pedestrian crashes were significantly overrepresented as compared to Union County.

Crash Type	Count in RSA Area	% in RSA Area	% in Union-County
Same Direction - Rear End	10	48%	29%
Same Direction - Side Swipe	2	10%	15%
Right Angle	1	5%	14%
Struck Parked Vehicle	1	5%	13%
Backing	1	5%	8%
Fixed Object	2	10%	10%
Pedestrian	4	19%	2%
Other	-	-	8%
TOTAL	21	100%	100%

Figure 12 – Crash type RSA vs County

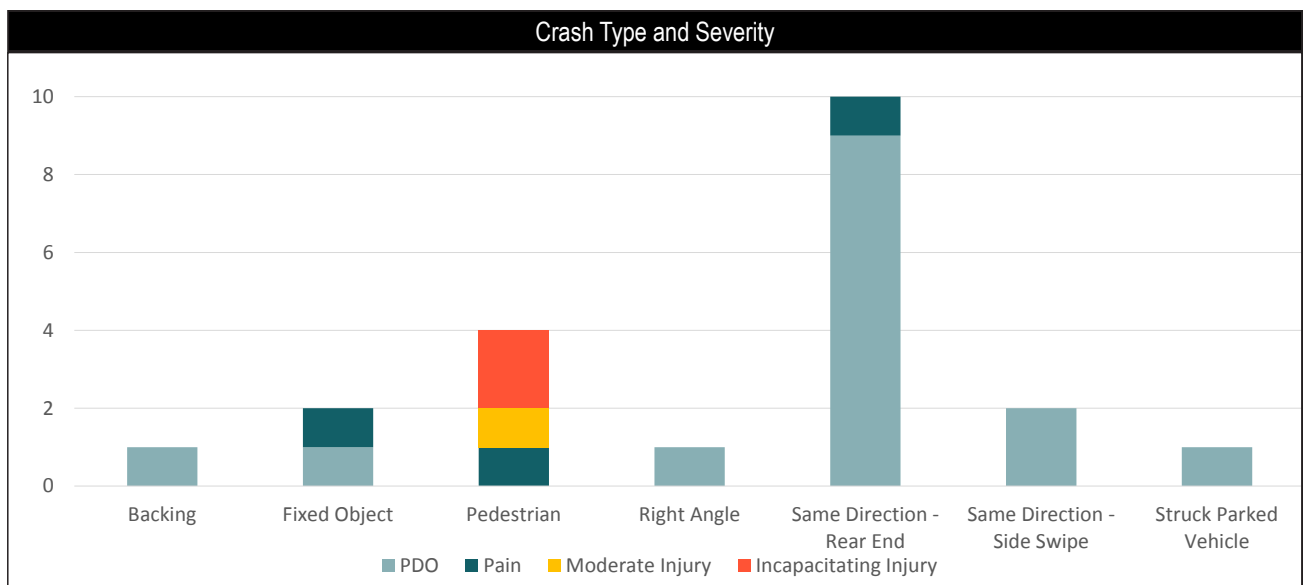
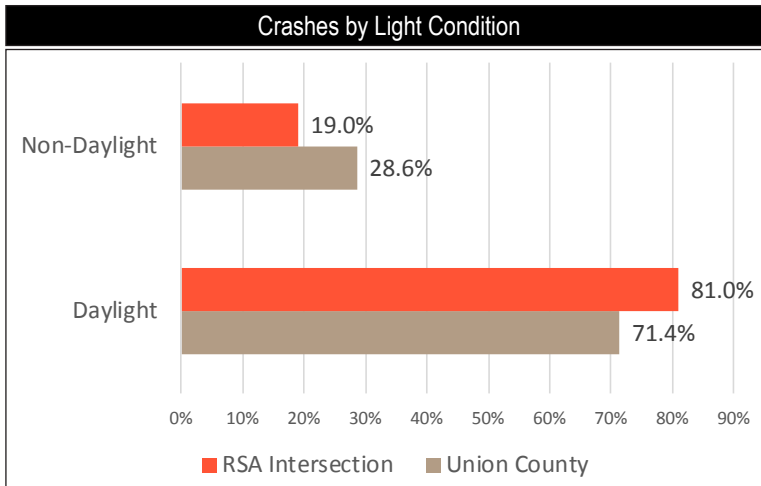


Figure 13 – Crash type and severity

2.4 ROADWAY SURFACE AND LIGHTING CONDITIONS



More of the crashes occurred during daylight hours in comparison to Union County, which may indicate that lighting was not a significant factor in the crashes.

Figure 14 – Crashes by light condition

Surface conditions do not appear to be a contributing factor in the crashes at the intersection.

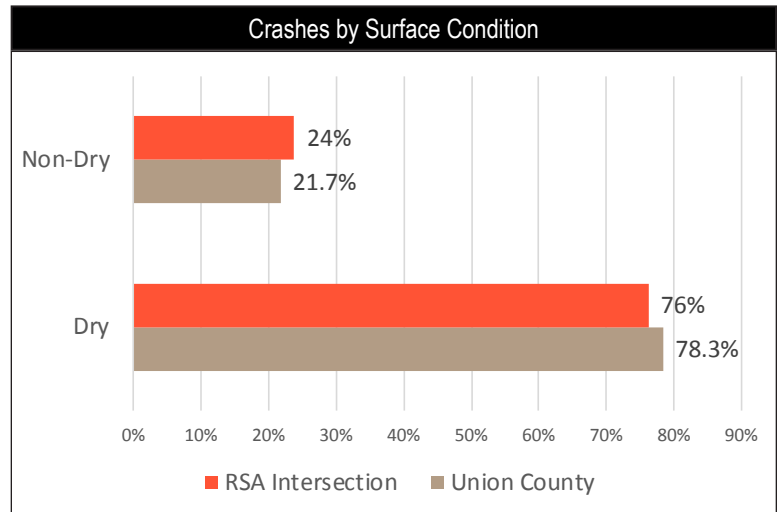


Figure 15 – Crashes by surface condition

2.5 CROSS SECTION GEOMETRY

The photographs below show the cross section view of the two roadways, Morris Avenue and Mountain Avenue, adjacent to the intersection.



Figure 17 – Morris Avenue cross section

Morris Avenue

- One lane in each direction
- Left turn lane for Morris Avenue westbound
- Very wide eastbound roadway east of the intersection
- Curbed cross section
- Sidewalks on both sides
- Parking on westbound Morris Avenue west of the intersection; no parking on either side east of the intersection



Figure 16 – Mountain Avenue cross section

Mountain Avenue

- One lane in each direction
- No shoulders
- No parking
- Curbed cross section
- Sidewalks on both sides

>> 3.0 IDENTIFIED ISSUES

#	ISSUES
Pedestrians and Bicycles	
1	Pedestrians cross Mountain Avenue midblock where the sidewalk exits the employee parking lot.
2	Many pedestrians do not utilize the push buttons.
4	The protected lead left from Morris Avenue conflicts with pedestrian expectations, even though they do not have a walk signal.
5	There is no crosswalk on Morris Avenue on the east of the intersection.
6	Pedestrian push buttons are too far away from the crosswalk landing.
7	The pedestrian signs (W11-2) could lead to a false sense of being allowed to cross.
8	Bicyclists were observed riding on the sidewalk.
Driving Behavior	
9	Many vehicles on Mountain Avenue do not come to a full stop at the stop bar before making a right turn on red.
10	Many vehicles on Mountain Avenue drive onto the crosswalk due to blocked visibility from controller box on southwest corner and tree on southeast corner.
11	With the stop bar set so far back from the intersection at Morris Avenue westbound, many vehicles turn left at higher speeds which conflicts with pedestrians.
12	Many vehicles turning left from Morris Avenue cross over the double yellow lines on Mountain Avenue.
Geometry	
14	The southern curb lines on Morris Avenue on either side of the intersection do not align.
15	The northern leg of the intersection (the exit driveway from the hospital) does not line up with the southern leg (Mountain Avenue).
16	Although it operates on the same phasing, the lack of alignment of the driveway exit to the intersection can be confusing.
17	Some large trucks accessing the loading dock from the medical center driveway are required to back into the driveway from Morris Avenue, blocking traffic.
Visibility	
18	The signal head on the southeast corner is partially blocked by tree foliage.
19	The controller box on the southwest corner blocks visibility for drivers turning from Mountain Avenue as well as blocking view of pedestrians crossing Mountain Avenue for right-turning vehicles on Morris Avenue.
20	Many vehicles making a right turn on red, stop in the crosswalk due to both the obstructed view from the tree on the southeast corner and the controller box on the southwest corner.
21	Level of lighting appears to be insufficient.
Crash History	
22	There is a history of pedestrians in the crosswalk on Mountain Avenue being struck by vehicles turning right onto Morris Avenue.
23	There is a history of pedestrians in the crosswalk on Mountain Avenue being struck by vehicles turning left from Morris Avenue westbound.

VISUALIZING ISSUES - MORRIS AVENUE AND MOUNTAIN AVENUE



Figure 20 – Controller box limits visibility



Figure 21 – Pedestrian push button far from landing

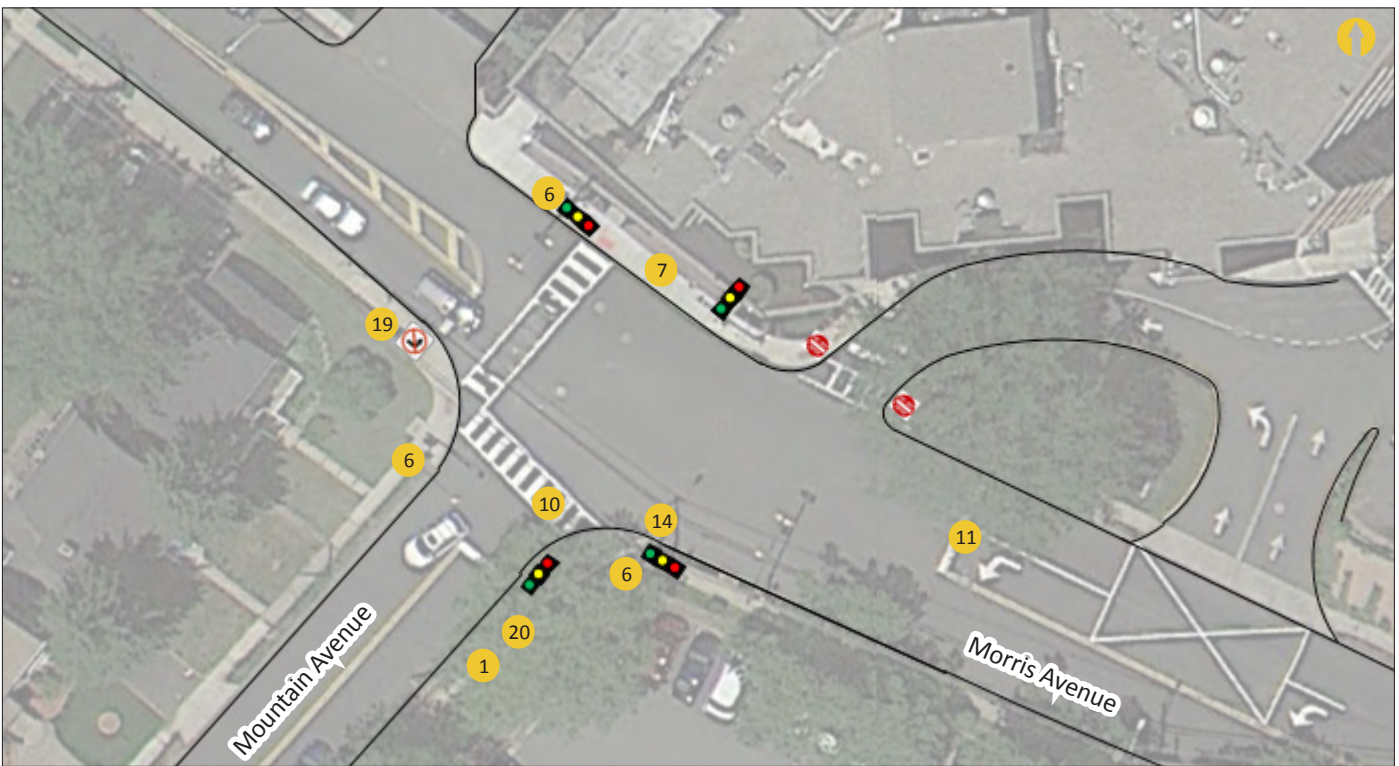


Figure 18 – Exit from employee parking lot



Figure 19 – Pulling up onto crosswalk for better visibility

VISUALIZING ISSUES - MORRIS AVENUE AND MOUNTAIN AVENUE



Figure 22 – Stop bar located back from intersection



Figure 23 – Riding a bicycle on street is difficult

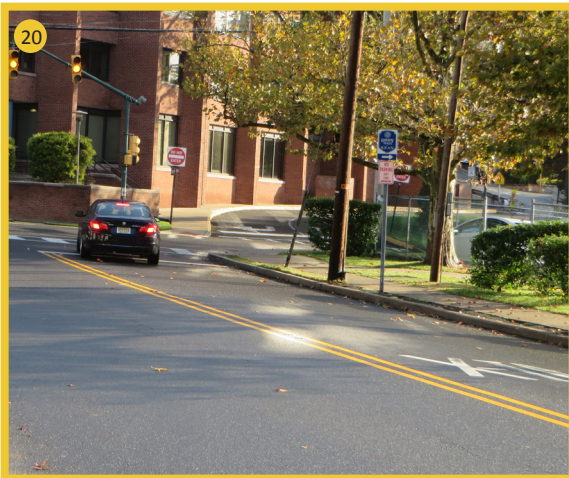


Figure 24 – Foliage blocks visibility



Figure 25 – The exit from employee parking lot walkway encourages midblock crossing



Figure 26 – The pedestrian sign could lead to a false sense of being allowed to cross



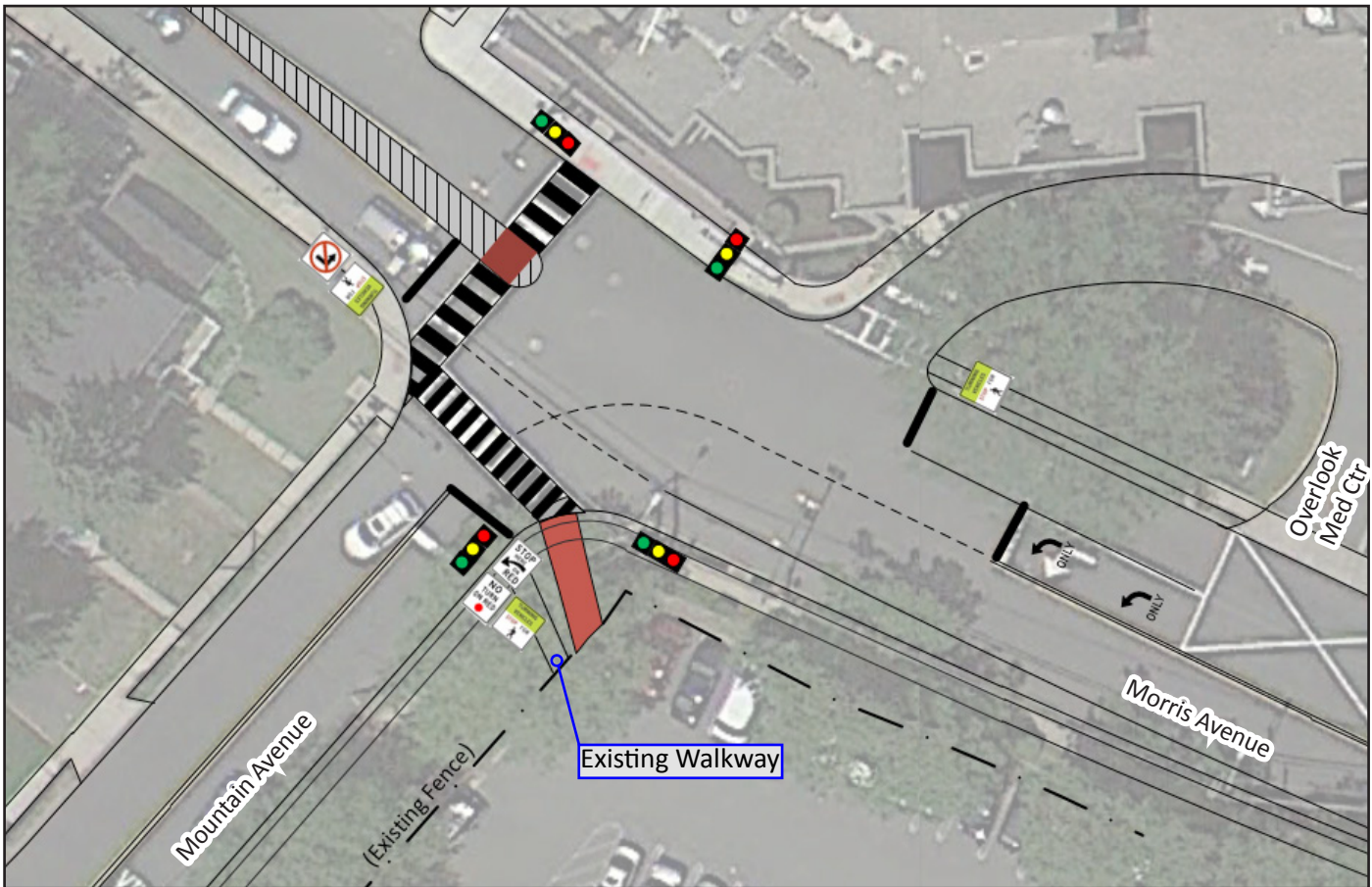
Figure 27 – The southern curb line isn't aligned

>> 4.0 RECOMMENDATIONS

Ref #	MORRIS AVENUE & MOUNTAIN AVENUE	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
A - Pedestrians and Bicycles						
1	Replace W11-2 sign with "TURNING VEHICLES MUST STOP FOR PEDESTRIANS" sign.	Low	Short	\$	Union County	9,22
2	Relocate the push buttons adjacent to the crosswalk landings.	Medium	Medium	\$\$	Union County	6
3	Realign walkway from the employee parking lot so that it exits at the marked crosswalk.	High	Medium	\$\$	Summit & Overlook Medical Center	1
4	Add a painted pedestrian refuge island (colored and/or textured) on the western crosswalk across Morris Avenue.	Medium/Low	Medium	\$	Union County	21
5	Changing the signal phasing to lag left will discourage pedestrians from crossing in conflict with existing lead arrow.	High	Short	\$	Union County	23
6	Investigate if pedestrian phasing can operate in recall such that the pedestrian push buttons can be removed.	Medium/High	Short	\$	Union County	2,6
7	Considerations should be made for bicyclists to safely navigate the roadway.	Medium/High	Long	\$	Union County	8
B - Driver Behavior						
1	Install lane line extensions for left turning movements from Morris Avenue.	Low	Short	\$	Union County	14
2	Install lane line extensions for eastbound Morris Avenue as the lanes are not aligned before and after the intersection.	Low	Short	\$	Union County	13
3	Consider the installation of a "NO TURN ON RED" sign on Mountain Avenue.	High	Short	\$	Union County	22
4	Consider the installation of a sign "STOP HERE ON RED" at the stop bar on Mountain Avenue.	Medium	Short	\$	Union County	10
5	Paint edge of lane striping (and hatch between striping and curb line) on Morris Avenue at the southeast corner, creating an aligned travel lane.	Medium	Short	\$	Union County	13
C - Visibility						
1	Remove tree foliage and bush on southeast corner that is blocking driver visibility.	Medium/High	Short	\$	Summit	20
2	Relocate the controller box to improve eastbound Morris Avenue driver's ability to see pedestrians crossing Mountain Avenue, and Mountain Avenue driver's ability to see eastbound traffic on Morris Avenue.	High	Long	\$\$\$	Union County	17, 19
3	Professional staff should conduct a formal engineering review of existing lighting conditions to evaluate where both vehicles and pedestrian level lighting can be enhanced.	Medium	Medium	\$\$	Union County	18
4	Replace existing signs with retroreflective signs.	Medium	Short	\$	Union County	20

Ref #	MORRIS AVENUE & MOUNTAIN AVENUE	Safety Benefit	Time Frame	Cost	Jurisdiction	Issue Ref #
5	Add retroreflective back plates to traffic signals.	Medium/Low	Short	\$	Union County	22, 23
D - Signal Operation (Phasing)						
1	Evaluate left turn phasing to determine if needed, determine if lag or lead is preferred, and if protected-permitted is preferred, revise to protected only or permitted only, in order to minimize conflict with pedestrians.	High	Medium	\$\$	Union County	23
2	Evaluate using split phasing with the current intersection alignment.	Medium/High	Medium	\$	Union County	14, 15
E - Education and Enforcement						
1	NJTPA's Street Smart Program will partner with Overlook Medical Center to educate employees in pedestrian safety.	Medium	Medium	\$	NJTPA & Overlook Medical Center	1,2,7
2	Ambassadors in Motion (Voorhees Transportation Center) to help educate safe pedestrian behaviors.	Medium	Medium	\$	Summit & VTC	1,2,7
F - Miscellaneous						
1	Evaluate changing the loading dock location and operation.	Medium/Low	Long	\$\$\$	Overlook Medical Center	16

>> APPENDIX A - RECOMMENDATION GRAPHICS



Summary of Recommendations

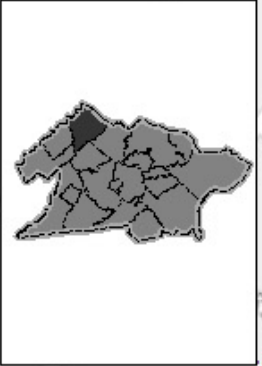
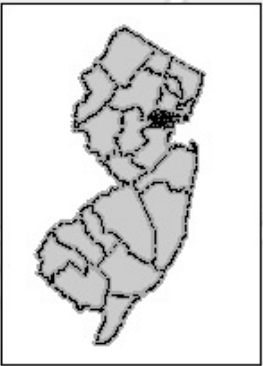
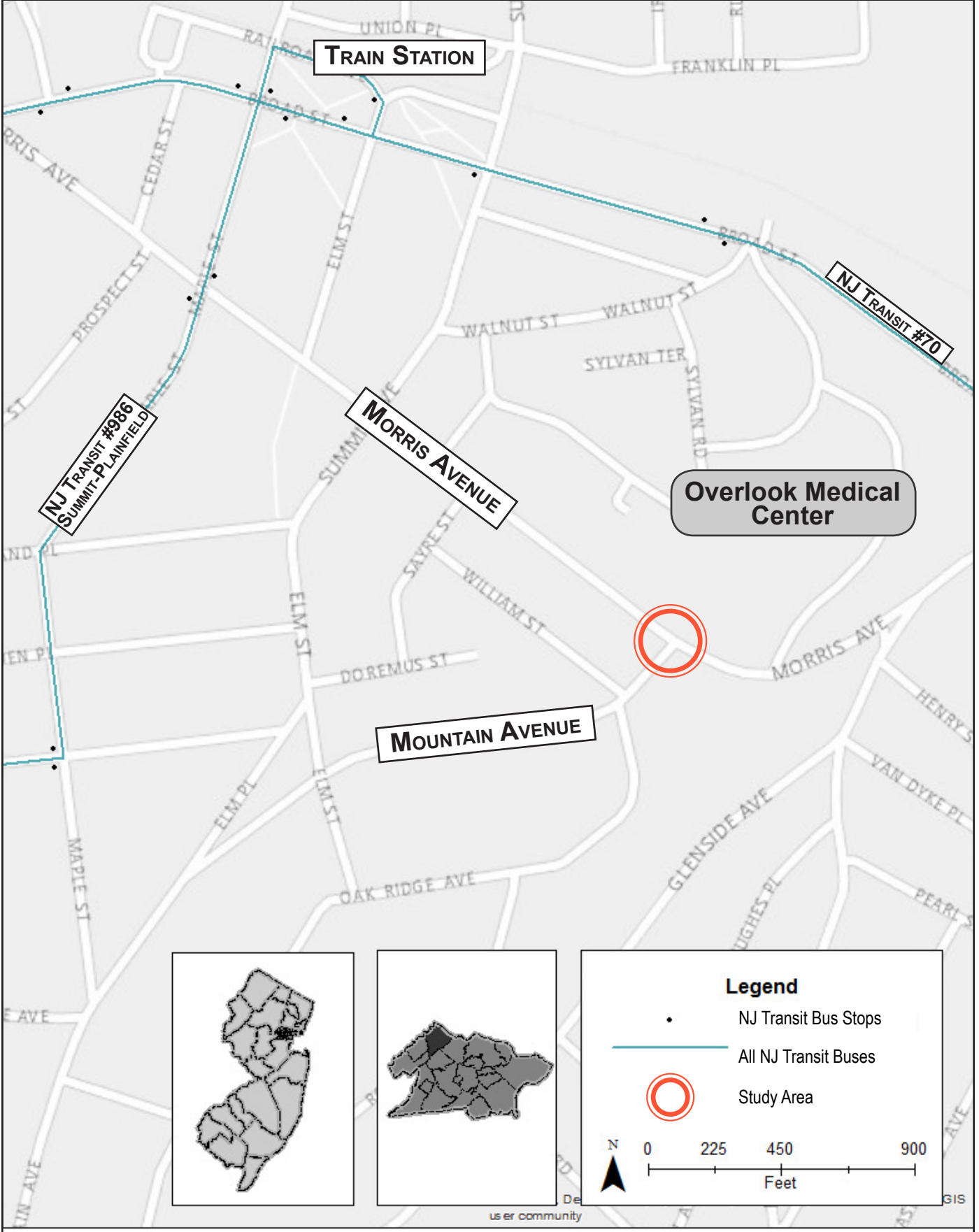
- Install lane line extensions
- Visually align southern curblines on southeast corner with edge of travelway striping
- Install improved signage
- Move stop bar forward on Morris Avenue westbound for through traffic
- Revise walkway from employee parking lot to align it with the crosswalk on Mountain Avenue
- Evaluate signal phasing to improve safety for all roadway users
- Improve visibility with improved lighting, removing obstacles, better retroreflectivity of signs
- Improve access to pedestrian push buttons
- Painted pedestrian refuge island on Morris Avenue

>>APPENDIX B- RSA TEAM

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AREA TRANSIT



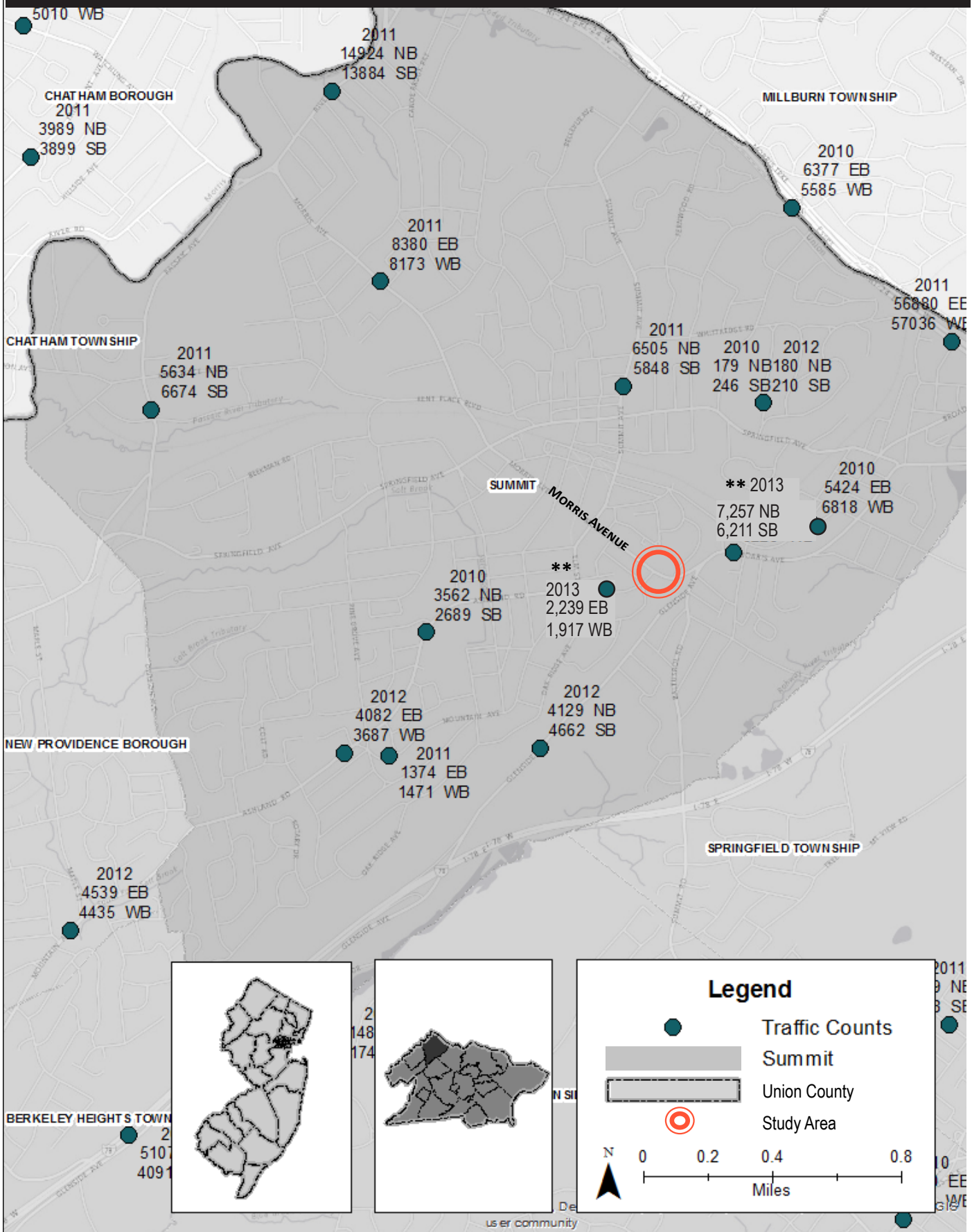
Legend

- NJ Transit Bus Stops
- All NJ Transit Buses
- Study Area

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Feet

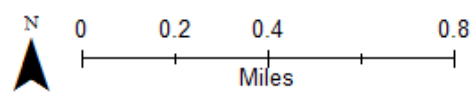
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TRAFFIC VOLUMES



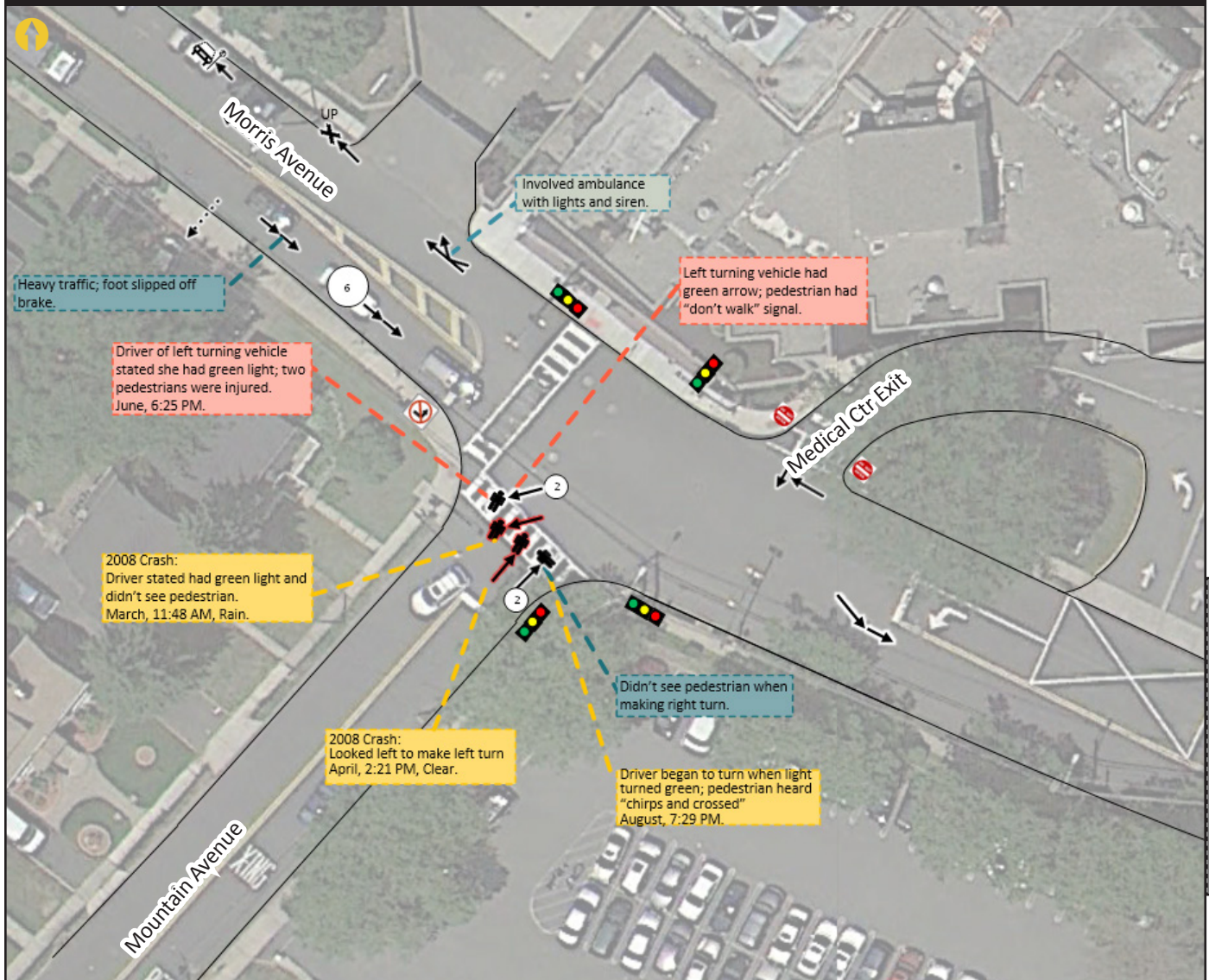
Legend

- Traffic Counts
- Summit
- Union County
- Study Area



**For more detail see Appendix F

MORRIS AVENUE & MOUNTAIN AVENUE



Continuation on next page

All pedestrian and cyclist crashes from 2008 to 2012 have a brief crash narrative included in the diagram and are color coded by severity. Additionally, any crash from 2010 to 2012 that has a severity of "moderate injury" or greater has a color-coded narrative.

- = Incapacitating injury
- = Moderate
- = Complaint of pain
- = Property damage only

CRASH DIAGRAM LEGEND

<ul style="list-style-type: none"> Right angle Pedestrian Backing Left turn 	<ul style="list-style-type: none"> Same direction – side swipe Same direction – rear end Struck parked vehicle Fixed object
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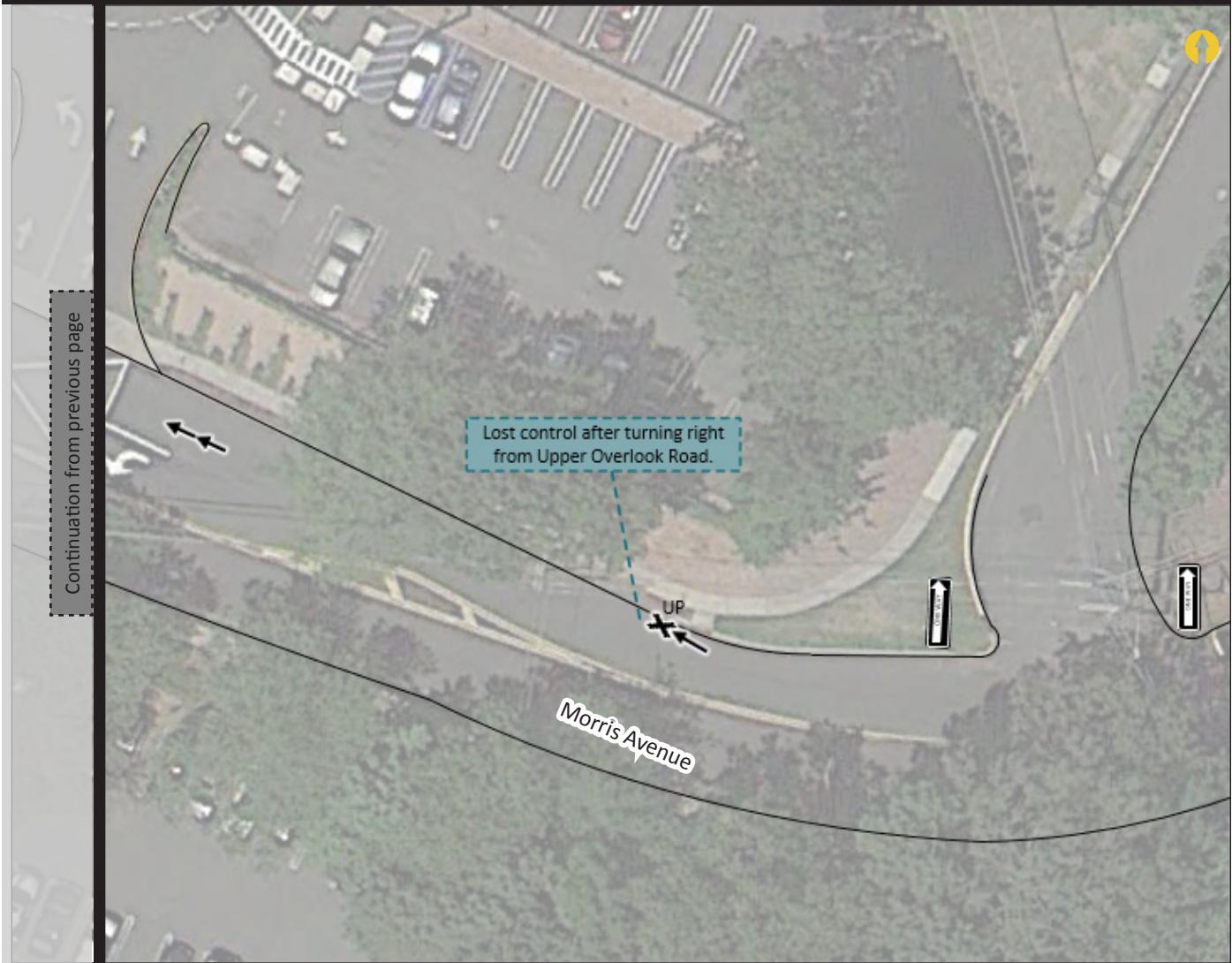
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Feet

2014 TSRC Imagery, Google Earth aerials

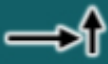

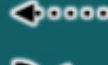


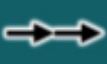

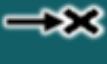
MORRIS AVENUE & MOUNTAIN AVENUE




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CRASH DIAGRAM LEGEND

<ul style="list-style-type: none">  Right angle  Pedestrian  Backing  Left turn 	<ul style="list-style-type: none">  Same direction – side swipe  Same direction – rear end  Struck parked vehicle  Fixed object
---	---



0 25 50
Feet

2014 TSRC Imagery, Google Earth aerials

RSA AREA – CRASH SUMMARY (2010 – 2012)

Crash Type	#
Same Direction – Rear End	10
Same Direction – Side Swipe	2
Right Angle	1
Opposite Direction – Head On/ Angular	-
Opposite Direction – Side Swipe	-
Struck Parked Vehicle	1
Left Turn / U-Turn	-
Backing	1
Encroachment	-
Overtaken	-
Fixed Object	2
Animal	-
Pedestrian	4
Pedalcyclist	-
Non-fixed Object	-
Railcar – Vehicle	-
Other	-
Total	21

Month	#
January	3
February	1
March	-
April	2
May	1
June	2
July	5
August	2
September	2
October	1
November	1
December	1
Total	21

Severity	#
Property Damage Only (PDO)	15
Pain	3
Moderate Injury	1
Incapacitating Injury	2
Fatal	-
Total	21

Crash Year	#
2010	5
2011	7
2012	9
Total	21

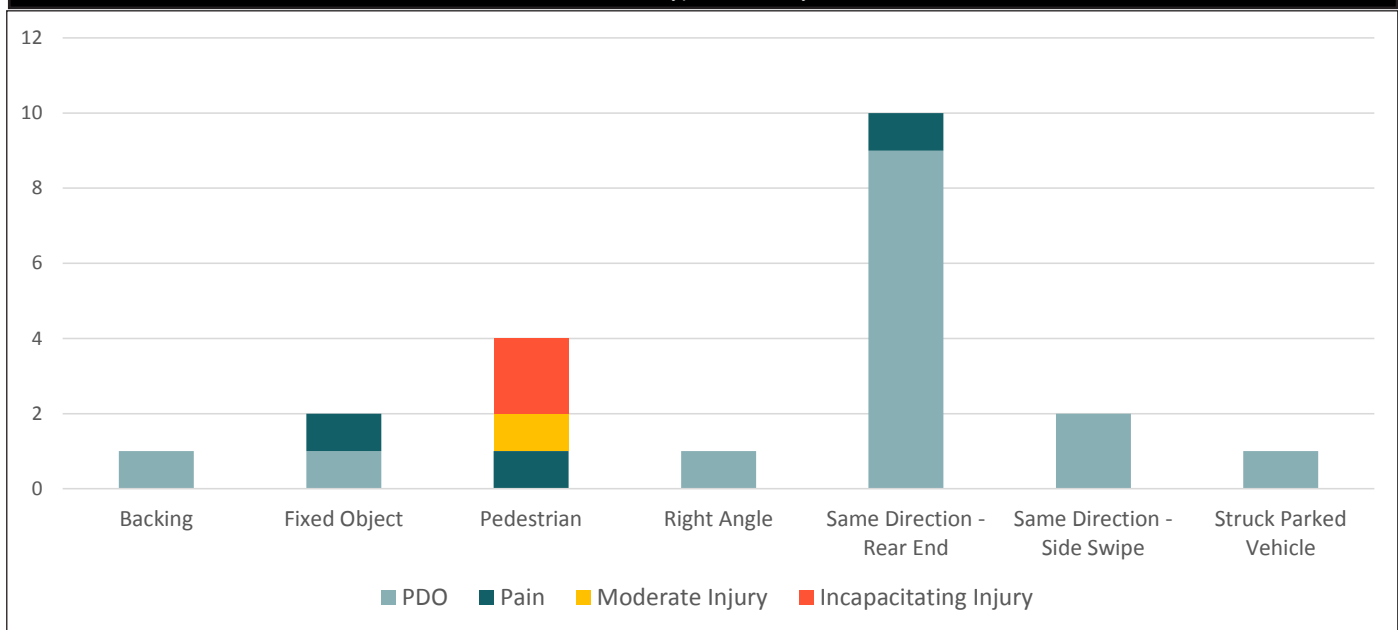
Intersection	#
At intersection	6
Not at intersection	15
Total	21

Surface Condition	#
Dry	16
Wet	4
Snowy	1
Icy	-
Slush	-
Water – Standing/ Moving	-
Sand, Mud, Dirt	-
Oil	-
Total	21

Light Condition	#
Daylight	17
Dawn	-
Dusk	1
Dark – No Street Lights	1
Dark – Street Lights On/ Continuous	2
Dark – Street Lights On/ Spot	-
Total	21

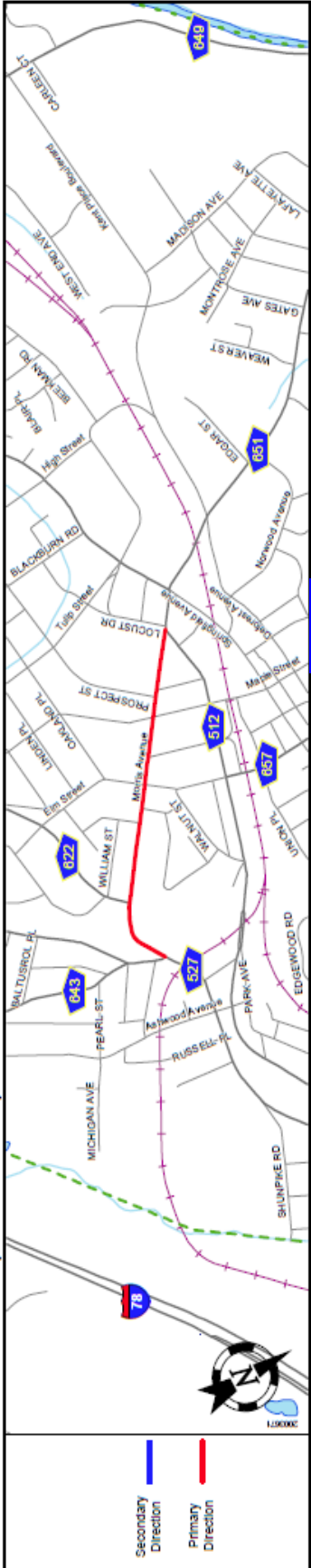
Day	#
Monday	2
Tuesday	5
Wednesday	7
Thursday	3
Friday	3
Saturday	-
Sunday	1
Total	21

Crash Type & Severity



MORRIS AVE (East to West)

Mile Posts: 0.000 - 0.700



Secondary Direction		Primary Direction	
Summit City, Union Co	(0.57) PROSPECT ST	Summit City, Union Co	(0.44) ELM ST
	(0.53) MAPLE STREET		(0.34) BEAUFORT AVE
	(0.39) SUMMIT AVENUE		(0.08) UPPER OVERLOOK RD
	SAYRE ST (0.31)		
	(0.22) MOUNTAIN AVE (0.15)		
	(0.06) GLENDALE AVE (0.06)		
Summit City, Union Co		Summit City, Union Co	
Morris Avenue		Morris Avenue	
Municipal		Municipal	
Urban Minor Arterial		Urban Minor Arterial	
STP		STP	
30		30	
2		2	
None		None	
0		0	
29		33	
0		0	
Traffic Sta. ID		Traffic Sta. ID	
Structure No.		Structure No.	
Enlarged Views		Enlarged Views	
Begin Morris Ave MP=0		End Morris Ave MP=0.7	

Date last inventoried: May 2000

SRI = 20181271

Mile Posts: 5.000 - 6.600

UNION COUNTY 622 (West to East)



Secondary Direction	Primary Direction
Pavement	
Shoulder	
Number of Lanes	
Speed Limit	
Street Name	
Interstate Route	
US Route	
NJ Route	
County Road	
Interchange Number	
Grade	
Separated Interchange	
Traffic Signal	
Traffic Monitoring Sites	
Road Underpass	
Road Overpass	

Street Name	Mountain Avenue
Jurisdiction	County
Functional Class	Urban Minor Arterial
Federal Aid - NHS Sys	STP
Control Section	
Speed Limit	35
Number of Lanes	2
Med. Type	None
Med. Width	0
Pavement	29
Shoulder	0
Traffic Volume	
Traffic Sta. ID	
Structure No.	
Enlarged Views	

Units in miles 8.0 7.0 6.0 5.0

Date last inventoried: May 2000

SRI = 20000622

New Jersey Department of Transportation

Daily Volume from 05/07/2013 through 05/14/2013

Site Names: 122005, , CO 622 Mountain Ave-6.45, 20000622__, Summit City
 County: UNION
 Funct: Urban Minor Arterial
 Location: Bet Elm Street and Oak Ridge Avenue

Seasonal Factor Group: RG1_FC16
 Daily Factor Group: RG1_FC16
 Axle Factor Group: RG1_FC16
 Growth Factor Group:

	Sun 05/05/2013		Mon 05/06/2013		Tue 05/07/2013		Wed 05/08/2013		Thu 05/09/2013		Fri 05/10/2013		Sat 05/11/2013					
	ROAD	W	ROAD	W	ROAD	W	ROAD	W	ROAD	W	ROAD	W	ROAD	W				
00:00							20	15	5	13	8	5	24	16	8	36	20	16
01:00							7	6	1	7	6	1	9	6	3	22	14	8
02:00							0	0	0	5	3	2	2	2	1	1	5	2
03:00							4	3	1	3	1	2	4	3	1	1	1	0
04:00							9	1	8	8	1	7	10	2	8	6	2	4
05:00							43	8	35	39	3	36	38	7	31	11	5	6
06:00							162	39	123	136	27	109	150	35	115	55	12	43
07:00							334	114	220	370	136	234	376	133	243	94	36	58
08:00							454	159	295	425	158	267	440	157	283	251	86	165
09:00							246	90	156	236	90	146	268	108	160	277	86	191
10:00							192	73	119	184	75	109	268	122	146	321	146	175
11:00							228	112	116	229	97	132	260	112	148	349	142	207
12:00							230	108	122	252	109	143	264	113	151	359	157	202
13:00							221	112	109	210	92	118	293	155	138	355	160	195
14:00							268	151	117	266	148	118	286	155	131	274	134	140
15:00							353	161	192	334	155	179	379	168	211	411	182	229
16:00							339	146	193	298	146	152	311	145	166	355	179	176
17:00							398	217	181	358	171	187	378	205	398	191	207	250
18:00							419	223	196	313	164	149	325	152	173	352	173	179
19:00							234	116	118	208	119	89	227	119	108	286	136	150
20:00							222	129	93	157	92	65	196	130	66	175	94	81
21:00							111	75	36	119	83	36	138	93	45	120	84	36
22:00							74	47	27	63	42	21	83	54	29	112	83	29
23:00							22	11	11	41	28	13	35	21	14	58	40	18
Volume							2,172	1,125	1,047	4,309	1,991	2,318	4,455	2,009	2,446	4,959	2,287	2,672
AM Peak Vol							454	159	295	425	158	267	440	157	283	349	146	207
AM Peak Fct							1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AM Peak Hr							8:00	8:00	8:00	8:00	8:00	8:00	8:00	8:00	8:00	8:00	11:00	10:00
PM Peak Vol							358	171	187	379	173	211	411	191	229	359	168	202
PM Peak Fct							1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PM Peak Hr							17:00	17:00	17:00	15:00	17:00	15:00	15:00	17:00	15:00	12:00	15:00	12:00
Seasonal Fct							0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955
Daily Fct							1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Axle Fct							0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
Pulse Fct							2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000

Collected NJDOT
 Created 09/11/2013 11:07:45AM
 ROAD AADT 4,156
 W AADT 1,917
 E AADT 2,239
 DV03: Page 1 of 2

New Jersey Department of Transportation

Daily Volume from 05/07/2013 through 05/14/2013

Seasonal Factor Group: RG1_FC16
 Daily Factor Group: RG1_FC16
 Axle Factor Group: RG1_FC16
 Growth Factor Group:

Site Names: 122005,, CO 622 Mountain Ave-6.45, 20000622__, Summit City
 County: UNION
 Funct: Urban Minor Arterial
 Location: Bet Elm Street and Oak Ridge Avenue

	Sun 05/12/2013		Mon 05/13/2013		Tue 05/14/2013		Wed 05/15/2013		Thu 05/16/2013		Fri 05/17/2013		Sat 05/18/2013	
	ROAD	E	ROAD	E	ROAD	E	ROAD	E	ROAD	E	ROAD	E	ROAD	E
00:00	45	31	14	14	10	4	9	5	4					
01:00	10	7	3	4	2	2	4	4	0					
02:00	10	8	2	2	1	1	3	1	2					
03:00	0	0	0	5	3	2	4	2	2					
04:00	8	5	3	12	3	9	13	5	8					
05:00	3	2	1	66	12	54	57	9	48					
06:00	30	7	23	145	32	113	168	34	134					
07:00	68	20	48	356	126	230	395	126	269					
08:00	125	51	74	415	144	271	413	150	263					
09:00	185	59	126	272	106	166	247	110	137					
10:00	240	114	126	218	83	135	210	87	123					
11:00	252	102	150	250	109	141	216	99	117					
12:00	277	127	150	240	109	131	226	89	137					
13:00	289	148	141	233	113	120	222	91	131					
14:00	269	122	147	328	181	147	304	166	138					
15:00	272	143	129	420	181	239								
16:00	260	137	123	357	161	196								
17:00	204	113	91	393	196	197								
18:00	193	104	89	383	209	174								
19:00	169	80	89	253	144	109								
20:00	129	70	59	175	107	68								
21:00	85	54	31	117	71	46								
22:00	52	40	12	63	39	24								
23:00	21	15	6	26	16	10								
Volume	3,196	1,559	1,637	4,747	2,158	2,589	2,491	978	1,513					
AM Peak Vol	252	114	150	415	144	271	413	150	269					
AM Peak Fct	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00					
AM Peak Hr	11:00	10:00	11:00	8:00	8:00	8:00	8:00	8:00	7:00					
PM Peak Vol	289	148	150	420	209	239								
PM Peak Fct	1.00	1.00	1.00	1.00	1.00	1.00								
PM Peak Hr	13:00	13:00	12:00	15:00	18:00	15:00								
Seasonal Fct	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955	0.955					
Daily Fct	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000					
Axle Fct	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500					
Pulse Fct	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000					

New Jersey Department of Transportation

Daily Volume from 11/11/2013 through 11/13/2013

Site Names: 3-9-718, RT 527 Morris Ave-68.66, 00000527 __, Summit City
 County: UNION
 Funct: Urban Minor Arterial
 Location: Bet Denman Place and Ashwood Avenue

Seasonal Factor Group: RG1_FC16
 Daily Factor Group: RG1_FC16
 Axle Factor Group: RG1_FC16
 Growth Factor Group:

	Sun 11/10/2013		Mon 11/11/2013		Tue 11/12/2013		Wed 11/13/2013		Thu 11/14/2013		Fri 11/15/2013		Sat 11/16/2013		
	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N	ROAD	S	N
00:00					41	16	25	36	16	20					
01:00					20	7	13	27	11	16					
02:00					13	4	9	14	7	7					
03:00					16	7	9	15	4	11					
04:00					45	21	24	42	21	21					
05:00					152	53	99	160	51	109					
06:00					588	243	345	573	266	307					
07:00					1,053	503	550	1,073	522	551					
08:00					1,153	527	626	1,144	543	601					
09:00					836	376	460	877	389	488					
10:00					706	330	376	712	316	396					
11:00					776	362	414	818	348	470					
12:00					830	376	454	868	408	460					
13:00					813	346	467	796	334	462					
14:00					893	457	436	877	413	464					
15:00					1,014	449	565	1,021	453	568					
16:00					1,108	511	597	1,078	490	588					
17:00					1,147	516	631	1,023	504	519					
18:00					899	460	439	911	443	468					
19:00					455	257	198	612	285	327					
20:00					308	187	121	419	190	229					
21:00					300	123	177	297	146	151					
22:00					163	66	97	206	91	115					
23:00					121	42	79	131	45	86					
Volume					7,221	3,414	3,807	13,600	6,219	7,381	6,359	2,902	3,457		
AM Peak Vol					1,191	566	631	1,208	571	644					
AM Peak Fct					0.96	0.90	0.93	0.98	0.95	0.98					
AM Peak Hr					7:30	7:30	7:45	7:30	7:45	7:30					
PM Peak Vol					1,095	513	607								
PM Peak Fct					0.97	0.93	0.94								
PM Peak Hr					16:15	17:15	16:15								
Seasonal Fct					0.995	0.995	0.995	0.995	0.995	0.995					
Daily Fct					1.000	1.000	1.000	1.000	1.000	1.000					
Axle Fct					0.498	0.498	0.498	0.498	0.498	0.498					
Pulse Fct					2.000	2.000	2.000	2.000	2.000	2.000					