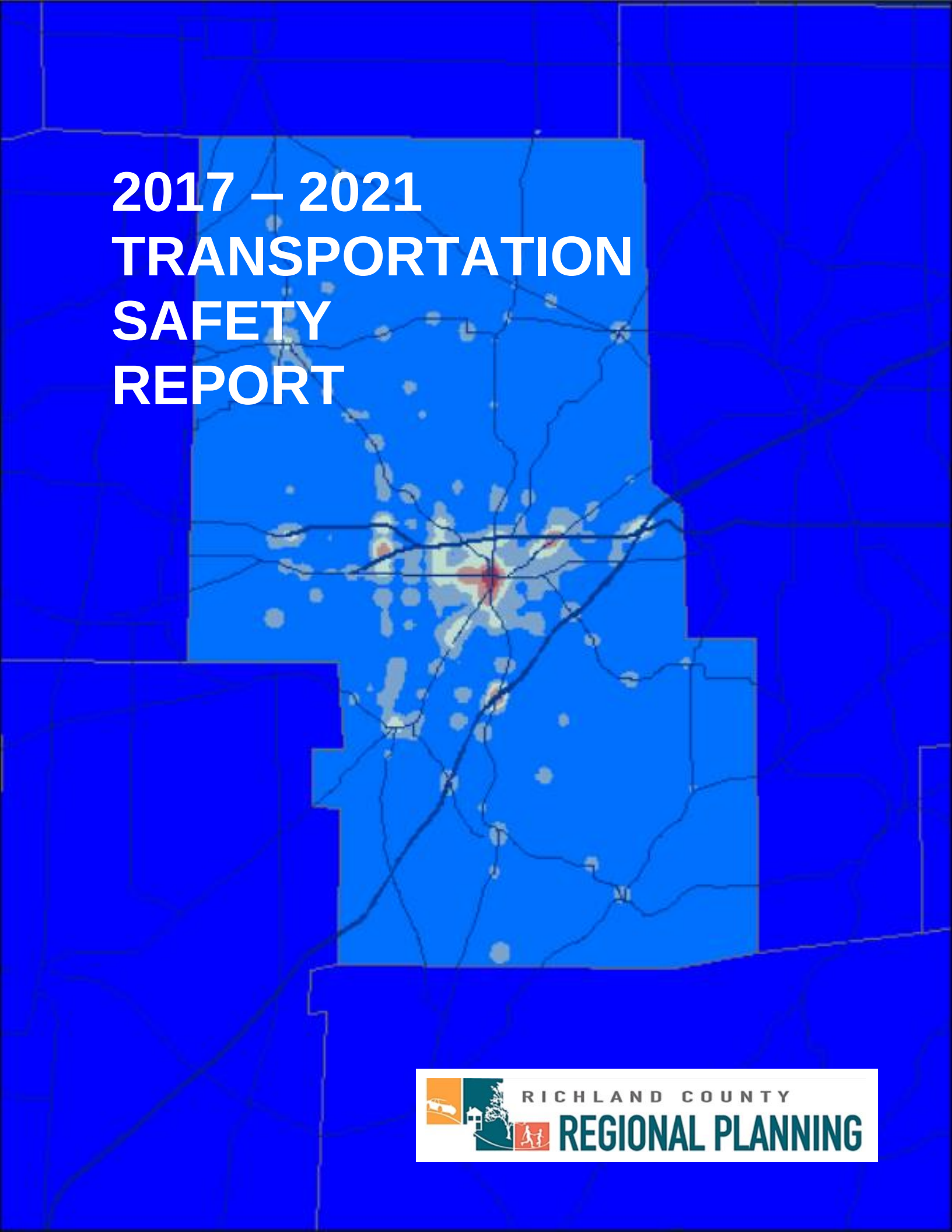
2017 – 2021 TRANSPORTATION SAFETY REPORT



RICHLAND COUNTY
REGIONAL PLANNING

OVERALL WORK PROGRAM
FYE 2022
TASK PLA - 601, 610

CY 2017-2021 Transportation Safety Report

RCRPC/MPO Regional Traffic Crash Analysis

RICHLAND COUNTY REGIONAL PLANNING COMMISION

July 2022

This report is the product of a project (study) financed in part by the Federal Highway Administration of the U.S. Department of Transportation, Federal Transit Administration, and the Ohio Department of Transportation (ODOT)

RICHLAND COUNTY REGIONAL PLANNING

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GLOSSARY

RCRPC ..... RICHLAND COUNTY REGIONAL PLANNING COMMISSION
FAST ACT ..... The Fixing America's Surface Transporation Act (expired on September 30, 2021)
IIJA ACT ..... The Infrastructure Investment and Job Act (signed into law on Novermber 15, 2021)
DUI ..... Driving under the Influence
FHE.....First Harmful Event
PDO ..... Property Damage Only
MV..... Motor Vehicle
MVM.....Million Vehicle Miles
FHWA .....Federal Highway Administration
FTA..... Federal Transit Administration
ODOT .....Ohio Department of Transportation

PART I: OVERVIEW

INTRODUCTION

One of the primary objectives of transportation planning, as required by the Fixing America's Surface Transportation (FAST) Act (expired on Sept. 30, 2021) and the Infrastructure Investment and Jobs Act (IIJA), commonly referred to as the Bipartisan Infrastructure Bill - the current five-year federal surface transportation reauthorization that adopted on November 15, 2021, is to establish a safe and efficient transportation network throughout the region. It is therefore imperative to reduce the number and severity of all motor vehicle crashes to improve safety for all modes of travel. The Richland County Regional Planning Commission (RCRPC) as the designated metropolitan planning organization, works in cooperation with the Ohio Department of Transportation's (ODOT) Highway Safety Division to identify locations with safety problems and develop appropriate recommendations to improve them. ODOT maintains a database of historical crashes that have occurred throughout the State. The RCRPC utilizes this database in identifying the priority of top-crash intersections in the region to assist in the development of RCRPC biennial Comprehensive Safety Action Plan and strategies of transportation improvement projects as part of the overall metropolitan transportation planning process and action steps to address the MPO's emphasized areas.

This RCRPC biennial comprehensive transportation safety plan and report named "CY 2017-2021 Transportation Safety Report" documents the compilation and analysis of traffic crashes for a five-year study period, utilized ODOT's traffic crash data in calendar years 2017 through 2021. The study boundary covers the area of Richland County and the overall boundary of Plymouth.

The result of crash data analysis indicates that almost half of all traffic crashes within RCRPC (45%) occurred at roadway's intersection areas in the last five-year period from 2017 through 2021. The high intersection crashes have resulted in the highest cost of property damage and large number of injured persons in the Region's Metro Area and the related Jurisdictions. RCRPC staff identified the region's top high-crash intersections through two different methodologies (ODOT Criteria method and GIS Clusters Analysis method for Frequency).

- ODOT's criteria method requires that minimum three crashes per year over a 3-to-5-year period and at least 30% of these crashes are related to the fatal and injury crashes at a location. With ODOT criteria, the rated top 27 high-crash intersections in the region were identified.
- The crash clusters analysis method was to rank the highest crash intersections according to the frequency of crashes that occurred at the location. With frequency method, the top 30 intersections (hot-spots) within region were ranked based on crash frequency from 2017 through 2021 as well.

To identify the top highest-crash Intersections among all region's intersections. Staff utilized a program to automatically assign nearby crashes to related intersections based on their distances/radii to the center of each intersection that were set in advance. The 200 feet radius was used for identifying crashes surrounding an intersection if the roadway's post speed limit is equal or great than 45 mph (>=45 mph), or a 70 feet radius was used if a street post speed limit is less than 45mph (<45 mph).

The result of crash data analysis and report can be used to pinpoint traffic crash hotspots and locations in the region with a history of safety problem. As strategies for implementation, the findings in this report will provide information to communities, members of RCRPC committees and decision makers in need of prioritizing intersection improvements and congestion mitigation projects and will be able to support ODOT for achieving safety performance targets of a significant 2% reductions in five categories including the number of fatalities, number of serious injuries, fatality rate, serious injury rate and number of non-motorized fatalities and serious injuries that have been set for measuring all public roads (Please see ***Appendix A*** for details of the ODOT safety performance targets that was set for the year 2022). The findings in this biennial report plus the Richland County Transportation Safety Plan (***Appendix B***) that was done in July 2020 will also be used as a MPO's comprehensive action plan for the application of implementation grant and/or be used for developing the goal and objectives in the next update of RCRPC's Long-Range Transportation Plan.

There are several short- and long-term improvement measures that are proven by other MPOs to enhance safety at any location with a history of safety issues. Some examples of improvement measures are shown in the following table:

Table 1: Short and Long Term Safety Improvement Measures

No.	Short Term Improvement Measures	Long Term Improvement Measures
1	Update signage	Installation of new traffic signal (if warranted)
2	Repainting Pavement Markings	Installing additional turn lanes or storage lanes
3	Maintaining and trimming vegetation to improve sight distance	Geometric changes to a roadway segment or intersection
4	Installing additional warning signs	Increasing capacity of turn lanes or storage lanes

Short term improvement measures are generally low-cost safety treatments and can be implemented immediately. Short term measures like repainting pavement markings and maintaining vegetation shall be performed regularly to have maximum effectiveness. Long term improvement measures are higher in cost and typically require an engineering study and design to implement. It is important to ensure that the improvement is warranted for the location.

TRAFFIC CRASH BY JURISDICTIONS IN RCRPC REGION (2017 – 2021)

Table 2: RCRPC Area Total Crashes

Jurisdiction	Year					Grand Total
	2017	2018	2019	2020	2021	
BELLVILLE	37	35	38	28	24	162
BLOOMINGGROVE TOWNSHIP	21	25	35	29	31	141
BUTLER	6	3	5	10	5	29
BUTLER TOWNSHIP	23	18	17	20	23	101
CASS TOWNSHIP	32	36	29	40	38	175
CRESTLINE	1	4	7	1	2	15
FRANKLIN TOWNSHIP	57	31	50	42	42	222
GALION					1	1
JACKSON TOWNSHIP	86	96	73	80	88	423
JEFFERSON TOWNSHIP	66	82	101	76	87	412
LEXINGTON	72	66	74	54	66	332
LUCAS	10	6	7	2	6	31
MADISON TOWNSHIP	288	306	275	291	302	1462
MANSFIELD	1328	1172	1230	832	1282	5844
MIFFLIN TOWNSHIP	196	195	208	178	232	1009
MONROE TOWNSHIP	63	77	59	59	65	323
ONTARIO	298	276	255	190	264	1283
PERRY TOWNSHIP	82	102	116	131	159	590
PLYMOUTH	8	4	16	20	33	81
PLYMOUTH TOWNSHIP	35	27	40	40	47	189
SANDUSKY TOWNSHIP	33	37	42	31	35	178
SHARON TOWNSHIP	40	44	35	23	41	183
SHELBY	125	128	109	90	107	559
SHILOH	2	1	4	1	4	12
SPRINGFIELD TOWNSHIP	164	155	151	152	136	758
TROY TOWNSHIP	87	72	78	103	85	425
WASHINGTON TOWNSHIP	261	275	241	207	238	1222
WELLER TOWNSHIP	62	42	62	46	49	261
WORTHINGTON TOWNSHIP	44	32	37	38	42	193
Grand Total	**3527**	**3347**	**3394**	**2814**	**3534**	**16616**

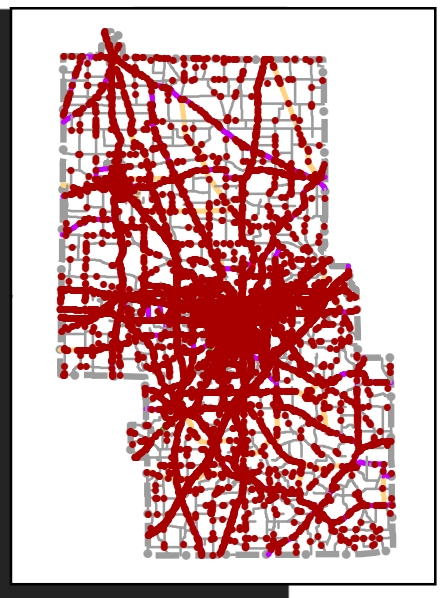
During calendar years 2017 through 2021, a total of 16,616 traffic crashes were reported in the Richland County including the whole area of Plymouth, the designated transportation planning region with RCRPC. Among these reported traffic crashes in the last five-year period, the blue bars at the right column in ***Table 2*** indicate that a large amount of crashes were occurred within the Mansfield (5,844), and followed by Madison Township (1,462), Ontario (1,283), Washington Township (1,222), Mifflin Township (1,009), and etc.. In a daily base, there are approximate 21,415 people commuting from outside boundary to Richland County for their jobs, and 23,741 people commuting for jobs from Richland County to outside communities as well (see Map 6 in Part III). Improving region's roadway safety performance and managing to reduce the number of motor vehicle crashes occurring on public roadways will create positive impact to community and regional economy.

Stratifying all five-year crashes occurred in the region by severity, ***Table 3*** - The RCRPC Area Traffic Crash by Severity indicates that in the last five-year period, a total of 51 fatal crashes, 3,948 injury crashes (*severe injury 384 + minor injury 2,017 + possible injury 1,547*), and 12,617 property damage only (PDO) crashes in the RCRPC region. Like "Bone X-ray" screening, the GIS tool screened all crashes on region's street network and identified the crash density locations. ***Map1****-Traffic Crash Locations and Crash Hot-Spots in RCRPC Area* in the next page

Table 3: RCRPC Area Traffic Crashes by Severity

Severity	Year					Grand Total
	2017	2018	2019	2020	2021	
Fatal	10	7	13	7	14	51
Severe	113	87	59	44	81	384
Minor	361	392	437	361	466	2017
Possible	367	301	324	250	305	1547
PDO	2676	2560	2561	2152	2668	12617
Grand Total	**3527**	**3347**	**3394**	**2814**	**3534**	**16616**

shows the GIS identified locations of traffic crash Hot-Spots on region's roadway network. And also, the traffic crash density by RCRPC roadway functional classification and crash severity in the region are shown in **Map 2** - *Traffic Crash Hot-Spots and Street Functional Class by Crash Severity (page 5).*



Total Traffic Crash (2017-2021) in RCRPC MPO Area by Severity and Year

Year	Fatal	Severe	Minor	Possible	PDO	Total	% of Total
2017	10	113	361	367	2676	3527	21%
2018	7	87	392	301	2560	3347	20%
2019	13	59	437	324	2561	3394	20%
2020	7	44	361	250	2152	2814	17%
2021	14	81	466	305	2668	3534	21%
Total	51	384	2017	1547	12617	16616	100%

Legend

Traffic Crash Hot-Spots

High

Low

- Reported Traffic Crash (2017-2021)

Roadway Functional Class

- Interstates
- Freeways & Expressways
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- RCRPC/MPO_Boundary_w_Plymoth

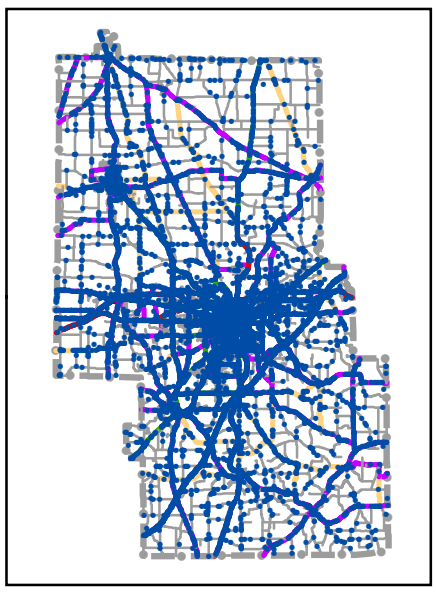
RICHLAND COUNTY REGIONAL PLANNING

N

0 1.5 3 Miles

Map 1: Traffic Crash Locations and Crash Hot-Spots
(Netwrok "Bone X-ray" Screening)

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)



Traffic Crash Severity (2017-2021) in RCRPC MPO Area by Street Functional Class

Roadway Functional Class	Fatal	Severe	Minor	Possible	PDO	Total	% of Total
Interstate Route	7	22	150	69	1070	1318	8%
Principal Arterial	7	41	241	259	1623	2171	13%
Other Freeways/Expw	4	15	98	83	811	1011	6%
Minor Arterial	11	84	509	493	2985	4082	25%
Major Collector	16	98	493	295	2831	3733	22%
Minor Collector	3	19	81	29	414	546	3%
Local Roads	3	91	354	246	2411	3105	19%
Others		14	91	73	472	650	4%
Grand Total	51	384	2017	1547	12617	16616	100%

Legend

Traffic Crash Hot-Spots

High

Low

- Reported Traffic Crash (2017-2021)

Roadway Functional Class

- Interstates
- Freeways & Expressways
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- RCRPC/MPO_Boundary_w_Plymoth

RICHLAND COUNTY REGIONAL PLANNING

N

0 1.5 3 Miles

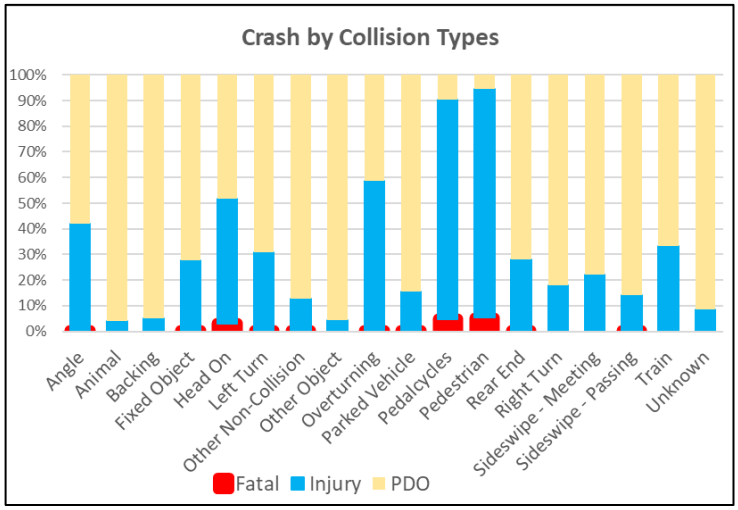
Map 2: Traffic Crash Severity by Street Functional Class and Crash Hot-Spots in the Region

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)

From 2017 to 2021, the average fatal and severe crashes in the area made up 3% of all traffic crashes, whereas minor injury, possible injury and PDO crashes accounted for 12%, 9% and 76% of total, respectively (For more and additional information, please refer to Page 15, Part II regarding the Crash Pattern in the region). The historical crash data showing on ***Map 2*** also indicates facts that comparing with some other MPOs, a large percentage of traffic crashes in the last five-year period within RCRPC region were occurred on these roadways classified as Minor Arterial, Major Collector and Local Streets.

RCRPC Crash Types by Severity

Figure 1:
Crash Type by Severity



In the five-year period from 2017 through 2021, there were total 51 fatal crashes and 3,948 injury related crashes that account for 0.3% and 24% portions of total crashes correspondingly in the RCRPC region. When looking into each of crash and connecting the crash with the database maintained collision types, the ***Figure 1*** – *Crash type by Severity* indicates that crashes related to crash types of Pedestrian, Pedal-cycles, Head-On, Angle, etc. in the region tend to have connections to higher potential of fatalities and severe injuries. Crash types, such as, Animal, Baking, Right Turn, Sideswipe-meeting, etc. make up the majority in Property damage only (PDO) crashes. ***Figure 1*** shows the percentage distribution of all crash types by severity.

Persons Involved in Crashes By The Type of Jurisdictions

Table 4:
Persons involved in Crashes by Jurisdiction Type

Year	Person Killed in Fatal Crashes			Persons Severely Injured in Crashes			Persons Minorly Injured in Crashes		
	Local Type	State Type	Total	Local Type	State Type	Total	Local Type	State Type	Total
2017	6	4	10	93	51	144	448	113	561
2018	2	5	7	84	30	114	412	81	493
2019	8	6	14	51	35	86	394	106	500
2020	4	5	9	37	19	56	295	104	399
2021	8	6	14	50	38	88	358	105	463
Total	**28**	**26**	**54**	**315**	**173**	**488**	**1907**	**509**	**2416**

Comparing number of persons who were involved in traffic crashes on roadways by the types of maintenance (Local type vs. State type), ***Table 4*** indicates that a large percentage number of people (both seriously and minorly injured) was involved in the traffic collisions on roadways that were maintained by local jurisdiction. From 2017 to 2021, 65% of total number of persons who were seriously injured in the crash occurred on local owned roadways whereas 35% in the crash on streets maintained by State. And 79% of total number of persons who

were minorly injured in the crashes occurred on locally maintained roadways, whereas 21% in the crash on roadways owned by State within RCRPC. The percentage numbers of fatalities on State owned roadway and local owned roadways does not show a big difference.

Crash Rate Per 100 Population and Comparison

Table 5:
Average Crash Rate by Population

Crash Severity	Total Crashes (2017-2021)		Population (Census 2020)		Crash Rate Per 100/Population	
	Richland	Ohio	Richland	Ohio	Richland	Ohio
Fatal + Sever Inj	435	37,143	124,936	11,799,448	**0.35**	**0.31**
Minor Injury	2,017	164,120	124,936	11,799,448	**1.61**	**1.39**
Possible Injury	1,547	160,225	124,936	11,799,448	**1.24**	**1.36**
PDO	12,617	1,051,574	124,936	11,799,448	**10.10**	**8.91**
Total	**16,616**	**1,413,062**	**124,936**	**11,799,448**	**13.30**	**11.98**

When population of Richland County and population of Ohio are factored in, to compare the number and the level of crashes per 100 population, the statistical analysis shows that the overall crash rate for Richland County is higher than the average Ohio Statewide level. Further stratifying the crash rates by crash severity, the historical crash data showing in ***Table 5- Average Crash Rate*** indicates that except for the crash rate of possible Injury that is lower than the average Statewide level, all other rates of crash severities in Richland County are higher than the average Ohio Statewide crash rates.

Five-Year Trend in Fatal Crashes

Figure 2:
Five-Year Trend in Fatal Crashes

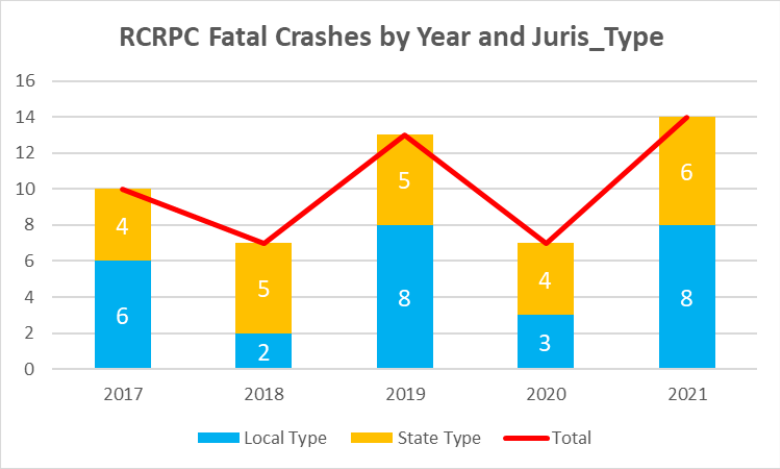


Figure 2 depicts the actual number of fatal crashes occurred in RCRPC Area over the course of the studied period from 2017 to 2021. There was total 14 fatal crashes in 2021, 7 more than recorded in 2020, and 4 more than recorded in 2017. Though, the fatal crashes in whole RCRPC region have experienced an increase comparing with each of individual year of the studied five-year period starting from 2017, The graph in ***Figure 2*** also shows that there has been a trend of downward in the years of 2018 and 2020 which indicates potentials for the region to help State DOT fulfilling safety performance targets created in the State Safety Performance Measurement Plan if taking appropriate safety improvements to the identified highest-crash locations discussed in the

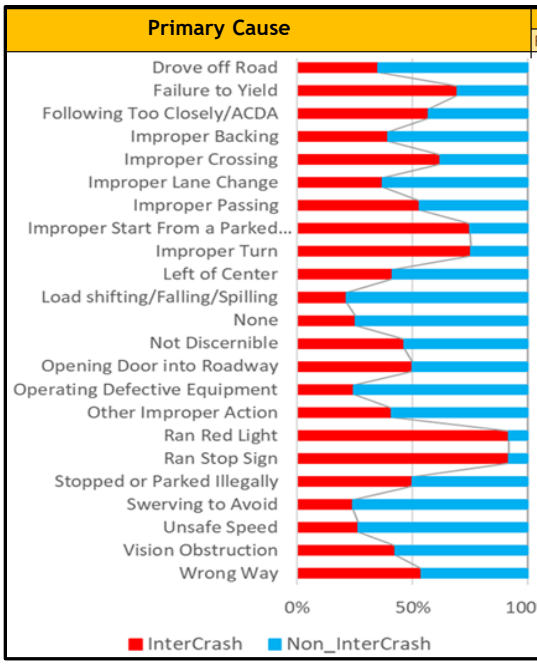
following. The top crash locations were ranked utilizing ODOT's criteria or using the GIS cluster analysis method (similar with ODOT's method) to all recorded historical crash data.

THE TOP HIGH-CRASH INTERSECTIONS IN RICHLAND REGION

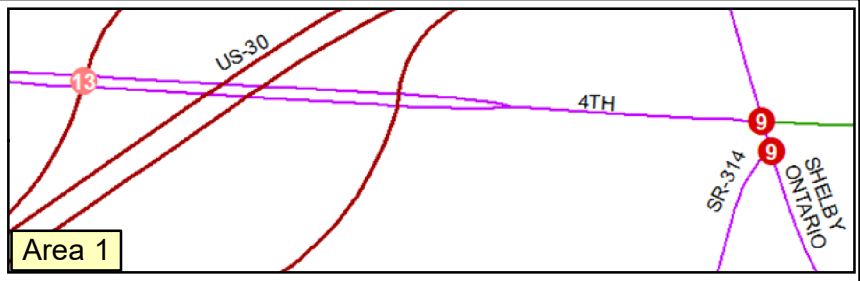
While 16,616 crashes occurred in the Richland region from 2017 to 2021, almost half of total were intersection related crashes. Some intersections have been identified to have higher average fatality and injury rates when ODOT's criteria was used in ranking, or, to have higher number of crash frequencies when GIS clusters method was used. Based on the five years of traffic crash data (2017-2021) obtained from ODOT, RCRPC staff has used GIS tool and procedures to pinpoint high crash intersections for the region's street network. Crashes attributed to each intersection were identified based on 200-foot radius surrounding the center of each intersection if the post speed limits on roadways are equal/greater than 45 mph (>=45mph), or 70-foot radius around the center of each intersection if the post speed limits on streets are less than 45 mph (< 45mph).

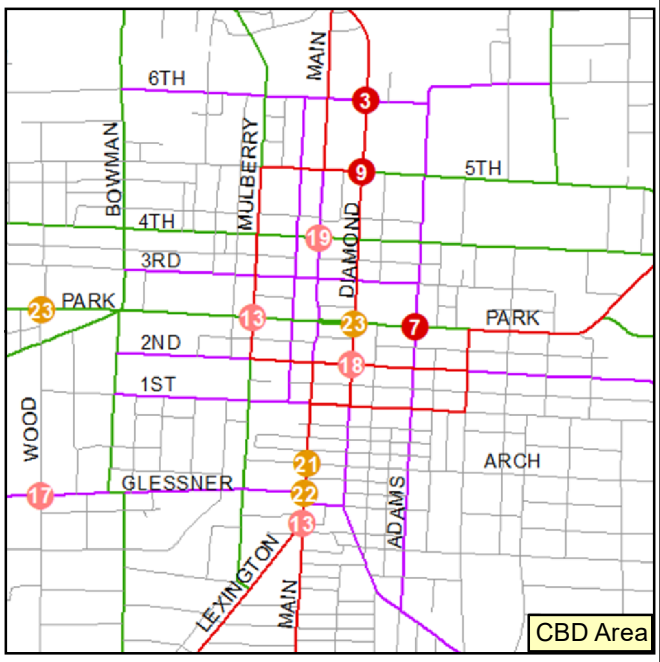
After the crashes attributed to each intersection were identified, the ODOT's criteria or the GIS clusters method, as described in page 1, were then applied for ranking the top highest crash intersections in RCRPC region. ***Map 3*** in next page shows the locations of top 27 high-crash intersections identified with ODOT's criteria, and a ranking list of these top highest-crash intersections is provided in the following tables named ***Table 6:*** *Top 27 High-Crash Intersections by Crash Rate (ODOT Criteria) in RCRPC Region.* Followed ***Map 3*** and ***Table 6***, in the same arrangement, ***Map 4*** and ***Table 7*** are top 30 highest-crash intersections identified with GIS cluster analysis method for frequency. ***Figure 3*** displays the primary contribution Circumstances and crash patterns that have caused to traffic crashes on roadway intersections in Richland County's network system versus the primary facts and

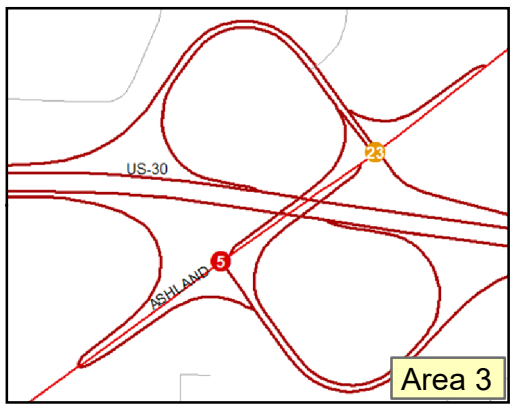
Figure 3:
Primary Contribution Circumstances on Intersection vs. Non-Intersection

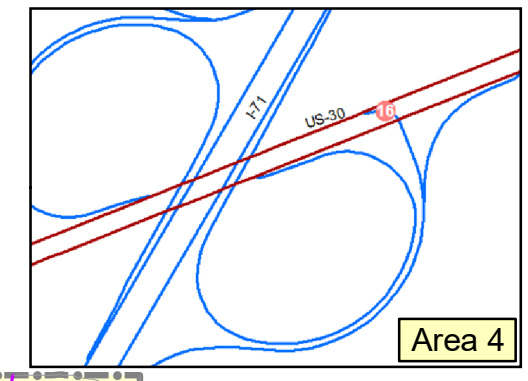


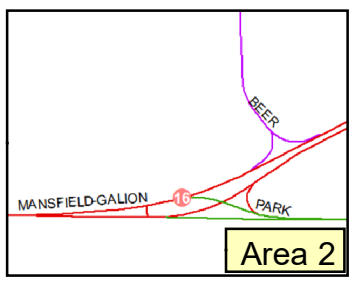
Primary Cause	Intersection Crash						Non-Intersection Crash					
	Fatal	Severe	Minor	Possible	PDO	Total	Fatal	Severe	Minor	Possible	PDO	Total
Drove off Road	1	7	39	25	219	291	1	26	92	52	372	543
Failure to Yield	4	64	326	199	911	1504	6	19	106	94	437	662
Following Too Closely/ACDA	2	13	181	264	1284	1744	6	21	176	189	927	1319
Improper Backing			4	5	196	205		1	3	7	308	319
Improper Crossing		6	1	2	4	13	2	2	2	1	1	8
Improper Lane Change	2	6	34	20	367	429	3	22	102	43	558	728
Improper Passing		2	4	8	49	63	1	4	6	4	41	56
Improper Start From a Parked...				2	13	15				1	4	5
Improper Turn		2	18	24	214	258	1	1	7	9	67	85
Left of Center	2	7	32	15	132	188	2	12	49	25	180	268
Load shifting/Falling/Spilling			2	1	15	18			2	1	63	66
None		3	32	32	721	788		13	66	49	2198	2326
Not Discernible			8	5	49	62			6	1	65	72
Opening Door into Roadway					1	1					1	1
Operating Defective Equipment		1	3	6	39	49	1	2	9	3	137	152
Other Improper Action	2	15	69	73	529	688	2	27	100	78	782	989
Ran Red Light	1	20	90	87	229	427		3	11	7	18	39
Ran Stop Sign	2	14	61	64	142	283		1	3	8	14	26
Stopped or Parked Illegally				1	4	5					5	5
Swerving to Avoid			4	3	26	33			23	10	72	105
Unsafe Speed	2	24	82	27	323	458	7	44	254	99	864	1268
Vision Obstruction					11	11		1	4		10	15
Wrong Way			3	2	9	14	1	1	3	1	6	12
	18	184	993	865	5487	7547	33	200	1024	682	7130	9069

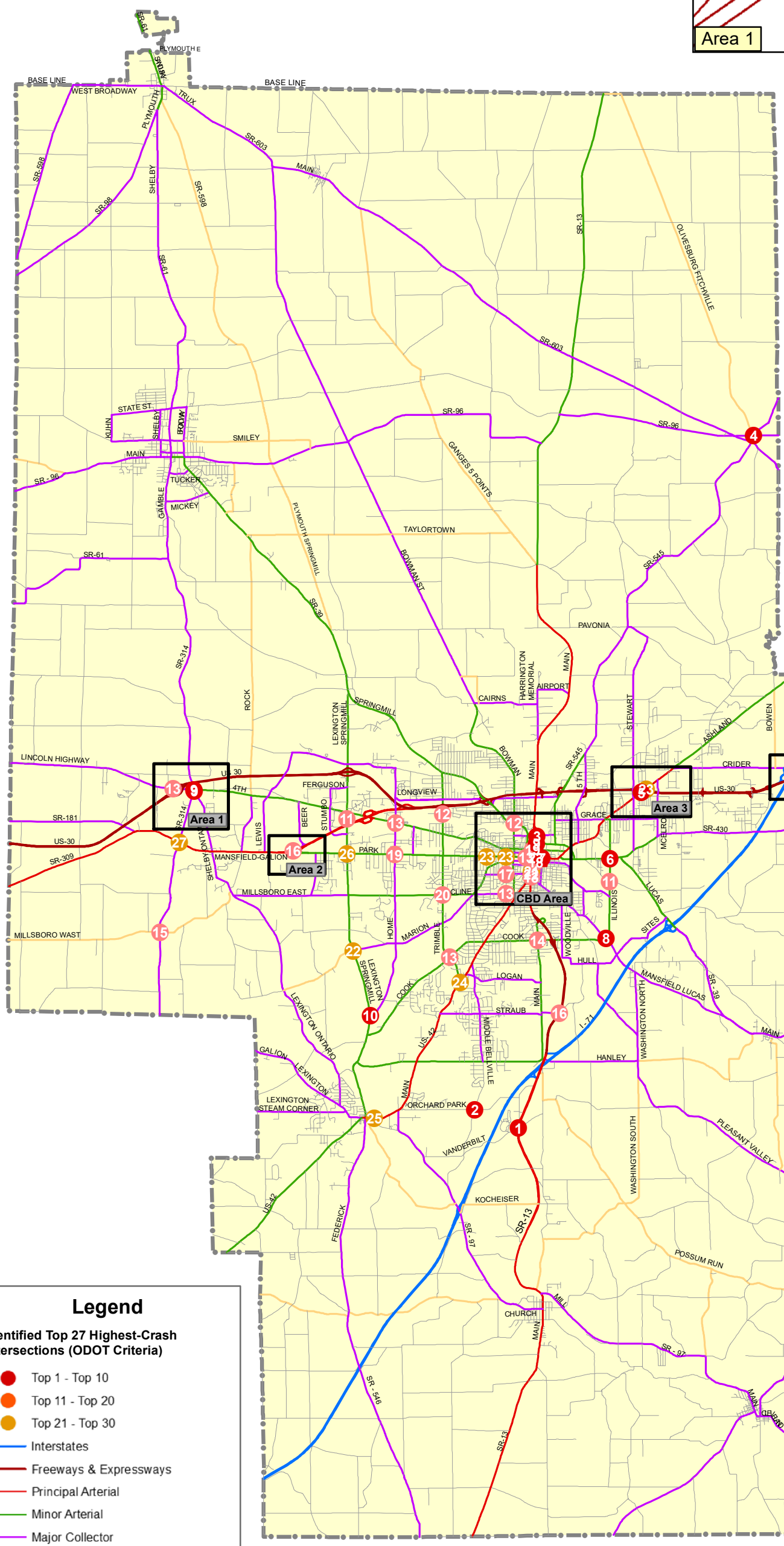












Legend

Identified Top 27 Highest-Crash Intersections (ODOT Criteria)

- Top 1 - Top 10
- Top 11 - Top 20
- Top 21 - Top 30
- Interstates
- Freeways & Expressways
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- RCRPC/MPO_Boundary_w_Plymoth

RICHLAND COUNTY REGIONAL PLANNING

N

0 1.5 3 Miles

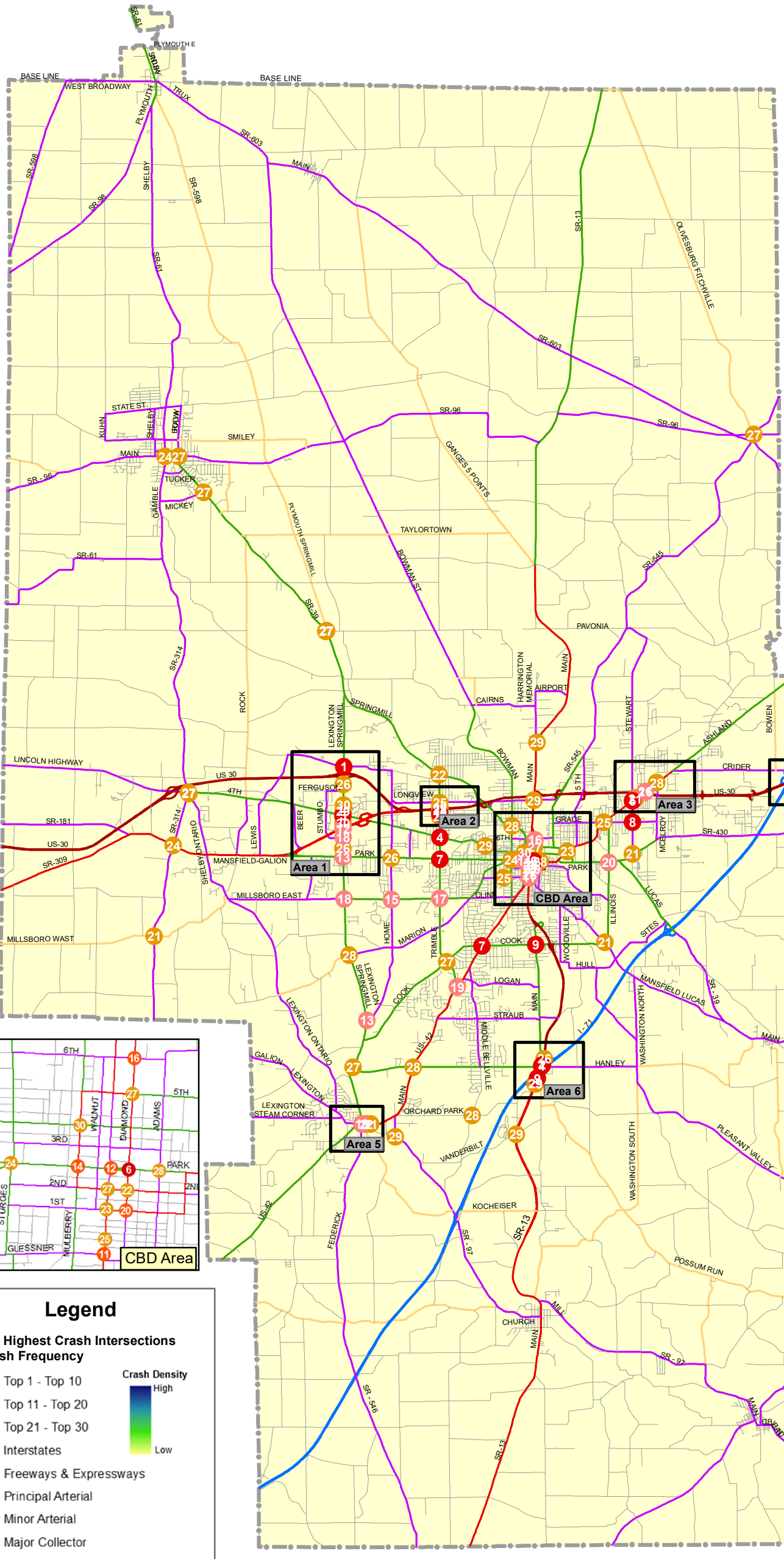
Map 3: Top 27 Highest-Crash Intersections by ODOT Criteria

(Intersection at Least 15 Crashes and Minimum 30% of Fatal & Injury Crash Rate)

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)

Table 6: Top 27 High-Crash Intersections by Crash Rate (ODOT Criteria) in RCRPC Region

ID	Intersections		Crash Severity						ODOT Method		
	StreetName_1	StreetName_2	Fatal	Severe	Minor	Possible	PDO	Total	Fatal_Inj Total	Fa_Inj >=30%	Rank
3656	Vanderbilt Rd	St Rt 13 S		1	8	4	5	18	13	0.72	1
2806	Middle Bellville Rd	Orchard Park Rd		1	7	3	8	19	11	0.58	2
4052	E 6th St	N Diamond St		1	6	11	14	32	18	0.56	3
5837	St Rt 545	St Rt 96 E/Olivesburg Fitchville		1	7	3	9	20	11	0.55	4
5187	Us Rt 42 N	Ashland Rd To Us Rt 30 E		0	7	1	8	16	8	0.50	5
4977	N Illinois Ave	Park Ave E		1	7	5	14	27	13	0.48	6
4187	Park Ave	S Adams St		1	4	4	10	19	9	0.47	7
4947	Mansfield Lucas Rd	E Cook Rd/S Illinois Ave		2	8	2	14	26	12	0.46	8
4036	N Diamond St	E 5th St		1	4	4	11	20	9	0.45	9
684	W 4th St	Shelby Ontario Rd		0	5	4	11	20	9	0.45	9
686	Shelby Ontario Rd	St Rt 314 N		0	5	4	11	20	9	0.45	9
1738	Lexington Springmill Rd S	S Home Rd		0	8	8	20	36	16	0.44	10
4969	Hickory Ln	S Illinois Ave		0	5	2	9	16	7	0.44	11
1501	Lexington Springmill Rd N	Sigrid Rd		1	1	5	9	16	7	0.44	11
3595	Bowman St	Springmill St		1	3	4	11	19	8	0.42	12
2363	National Pkwy	N Trimble Rd		0	3	5	11	19	8	0.42	12
3807	N Mulberry St	Park Ave W		2	7	5	21	35	14	0.40	13
2423	W Cook Rd	S Trimble Rd		1	3	4	12	20	8	0.40	13
520	Us Rt 30 W To Mansfield Cresline Rd	Lincoln Highway		2	4	0	9	15	6	0.40	13
3900	S Main St	Lexington Ave		0	3	3	9	15	6	0.40	13
1918	W 4th St	N Home Rd		1	0	5	9	15	6	0.40	13
3450	Cline Ave	Wood St		0	2	4	9	15	6	0.40	13
4106	S Main St	W Cook Rd		2	7	8	26	43	17	0.40	14
406	Millsboro West Rd	St Rt 314 S	1	1	6	2	16	26	10	0.38	15
4508	St Rt 13 S	Straub Rd E		2	3	1	10	16	6	0.38	16
6052	Us Rt 30	Us Rt 30 E Toi 71 N		2	2	2	10	16	6	0.38	16
6055	I 71 N To Us Rt 30	Us Rt 30		2	2	2	10	16	6	0.38	16
1088	Park Ave W	St Rt 309		0	1	5	10	16	6	0.38	16
3460	Glessner Ave	Wood St		1	1	6	14	22	8	0.36	17
4007	E 2nd St	S Diamond St		0	5	4	16	25	9	0.36	18
1894	Park Ave W	S Home Rd		2	2	3	14	21	7	0.33	19
3935	N Main St	W 4th St		1	2	2	10	15	5	0.33	19
2347	S Trimble Rd	Millsboro Rd		1	4	5	21	31	10	0.32	20
3914	S Main St	E Arch St		1	3	3	15	22	7	0.32	21
3909	Glessner Ave	S Main St		1	4	7	26	38	12	0.32	22
1583	Lexington Springmill Rd S	Marion Av Rd		0	3	3	13	19	6	0.32	22
4011	N Diamond St	Park Ave E		1	10	4	33	48	15	0.31	23
5239	Us Rt 30 W To Ashland Rd	Us Rt 42 N		1	8	1	22	32	10	0.31	23
3054	Park Ave W	Sherman Ave		1	1	3	11	16	5	0.31	23
3453	Park Ave W	Benton St		0	1	4	11	16	5	0.31	23
2544	Lexington Ave	S Trimble Rd		0	5	4	20	29	9	0.31	24
1759	E Main St	Castor Rd		0	3	5	18	26	8	0.31	25
1508	Park Ave W	Lexington Springmill Rd S		2	5	4	25	36	11	0.31	26
555	St Rt 314 S	Park Ave W		0	5	2	16	23	7	0.30	27



Legend

Top 30 Highest Crash Intersections by Crash Frequency

- Top 1 - Top 10
- Top 11 - Top 20
- Top 21 - Top 30

Crash Density: High – Low

- Interstates
- Freeways & Expressways
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- RCRPC/MPO_Boundary_w_Plymoth

RICHLAND COUNTY REGIONAL PLANNING

N

0 1.5 3 Miles

Map 4: Top 30 Highest-Crash Intersections by Crash Frequency

(GIS Clusters Analysis Method)

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)

Table 7: Top 30 High-Crash Intersections by Frequence (GIS Clusters Method) in RCRPC Region

ID	Intersections		Crash Severity						Rank
	StreetName_1	StreetName_2	Fatal	Severe	Minor	Possible	PDO	Total	
1520	Walker Lake Rd	Lexington Springmill Rd N		0	6	5	73	84	1
4248	Hanley Rd	St Rt 13 S		1	1	13	49	64	2
1506	Lexington Springmill Rd N	W 4th St		3	9	5	43	60	3
2357	W 4th St	N Trimble Rd		1	9	5	42	57	4
4242	St Rt 13 To I 71 S	St Rt 13 S		1	1	12	43	57	4
5094	Ashland Rd	Us Rt 42 N	1.00	0	6	5	40	52	5
4011	N Diamond St	Park Ave E		1	10	4	33	48	6
2355	S Trimble Rd	N Trimble Rd		2	6	5	34	47	7
3028	W Cook Rd	Lexington Ave		0	3	7	37	47	7
5102	Grace St	N Stewart Rd		0	0	5	41	46	8
4106	S Main St	W Cook Rd		2	7	8	26	43	9
4131	St Rt 13 S	Possum Run Rd		2	4	4	33	43	9
2353	N Trimble Rd	Mcpherson St		0	5	7	29	41	10
3909	Glessner Ave	S Main St		1	4	7	26	38	11
3934	N Main St	Park Ave E	1.00	0	5	4	27	37	12
1498	St Rt 309	Lexington Springmill Rd N		0	2	4	31	37	12
1738	Lexington Springmill Rd S	S Home Rd		0	8	8	20	36	13
1508	Park Ave W	Lexington Springmill Rd S		2	5	4	25	36	13
3807	N Mulberry St	Park Ave W		2	7	5	21	35	14
1896	S Home Rd	Millsboro East Rd		1	0	8	25	34	15
4052	E 6th St	N Diamond St		1	6	11	14	32	16
5239	Us Rt 30 W To Ashland Rd	Us Rt 42 N		1	8	1	22	32	16
2347	S Trimble Rd	Millsboro Rd		1	4	5	21	31	17
1541	Millsboro East Rd	Lexington Springmill Rd S		1	3	2	24	30	18
1495	Stumbo Rd	Lexington Springmill Rd N		0	2	2	26	30	18
2544	Lexington Ave	S Trimble Rd		0	5	4	20	29	19
1694	W Main St	Plymouth/Federick		1	1	2	25	29	19
4977	N Illinois Ave	Park Ave E		1	7	5	14	27	20
4001	E 1st St	S Diamond St		0	1	6	20	27	20
4947	Mansfield Lucas Rd	E Cook Rd/S Illinois Ave		2	8	2	14	26	21
406	Millsboro West Rd	St Rt 314 S	1.00	1	6	2	16	26	21
1759	E Main St	Castor Rd		0	3	5	18	26	21
5120	US30 W Off & E On Ramp near Bendix St	Us Rt 42 N		1	3	3	19	26	21
5231	US 30 Ramp to US 42	Us Rt 42 N		0	5	2	19	26	21
5100	N Stewart Rd	St Rt 430		0	4	3	19	26	21
4007	E 2nd St	S Diamond St		0	5	4	16	25	22
2325	N Trimble Rd	Springmill Rd	1.00	2	3	0	19	25	22
1729	Main St	Mill St		0	1	2	22	25	22
2352	Us Rt 30 E To Trimble Rd	Trimble Rd To Us Rt 30 E		0	3	3	18	24	23
4629	E 5th St	Ashland Rd		0	2	4	18	24	23
3920	Main St/US 42	E 1st St		0	2	3	19	24	23
555	St Rt 314 S	Park Ave W		0	5	2	16	23	24
3555	Bowman St	Park Ave./Marion Ave		1	1	3	18	23	24
513	S Gamble St	W Main St		0	1	2	20	23	24
3460	Glessner Ave	Wood St		1	1	6	14	22	25
3914	S Main St	E Arch St		1	3	3	15	22	25
2348	N Trimble Rd	W Longview Ave		1	0	5	16	22	25
4942	Connor Dr	Grace St/Terrace Dr		0	2	1	19	22	25
1894	Park Ave W	S Home Rd		2	2	3	14	21	26
4284	St Rt 13 S	I 71 S To St Rt 13		0	1	3	17	21	26
1517	Bedford Blvd	Lexington Springmill Rd N		0	1	1	19	21	26
1504	Lexington Springmill Rd N	August Dr		1	0	0	20	21	26
5837	St Rt 545	St Rt 96 E/Olivesburg Fitchville		1	7	3	9	20	27
4036	N Diamond St	E 5th St		1	4	4	11	20	27
684	W 4th St	Shelby Ontario Rd		0	5	4	11	20	27
686	Shelby Ontario Rd	St Rt 314 N		0	5	4	11	20	27
2423	W Cook Rd	S Trimble Rd		1	3	4	12	20	27
1347	St Rt 39 Nw	Plymouth Springmill Rd		0	3	1	16	20	27
1360	Plymouth Springmill Rd	Amoy West Rd		0	3	1	16	20	27
3925	W 2nd St	Main St		0	3	1	16	20	27
591	Broadway St	Main St		0	2	1	17	20	27
786	Mansfield Ave	Mickey Rd		0	2	1	17	20	27
1611	Lexington Springmill Rd S	W Hanley Rd		0	2	0	18	20	27
2806	Middle Bellville Rd	Orchard Park Rd		1	7	3	8	19	28
4187	Park Ave	S Adams St		1	4	4	10	19	28
3595	Bowman St	Springmill St		1	3	4	11	19	28
2363	National Pkwy	N Trimble Rd		0	3	5	11	19	28
1583	Lexington Springmill Rd S	Marion Av Rd		0	3	3	13	19	28
5306	Us Rt 42 N	N Mcelroy Rd		1	1	3	14	19	28
2091	Us Rt 42 S	W Hanley Rd		0	2	1	16	19	28
3656	Vanderbilt Rd	St Rt 13 S		1	8	4	5	18	29
1945	Castor Rd	St Rt 97 W		0	3	1	14	18	29
2350	N Trimble Rd	Ramp Trimble Rd To Us Rt 30 W		0	3	1	14	18	29
4009	N Main St	W Longview Ave		0	2	2	14	18	29
4046	St Rt 13 S	I 71 N To St Rt 13		0	2	2	14	18	29
4049	St Rt 13 To I 71 N	St Rt 13 S		0	2	2	14	18	29
4073	St Rt 13 S	I 71 N To St Rt 13		0	2	2	14	18	29
4078	St Rt 13 S	St Rt 13 To I 71 N		0	2	2	14	18	29
1507	Lexington Springmill Rd N	Rosewood Dr		0	1	2	15	18	29
3085	W 4th St	Rowland Ave		0	1	2	15	18	29
4130	Harrington Memorial Rd	N Main St		0	0	0	18	18	29
1499	Lexington Springmill Rd N	Richland Mall		0	2	3	12	17	30
1510	Lexington Springmill Rd N	Village Mall Dr		0	2	3	12	17	30
3818	N Mulberry St	W 4th St		1	1	1	14	17	30
6050	I 71 S To Us Rt 30	I 71		0	3	0	14	17	30

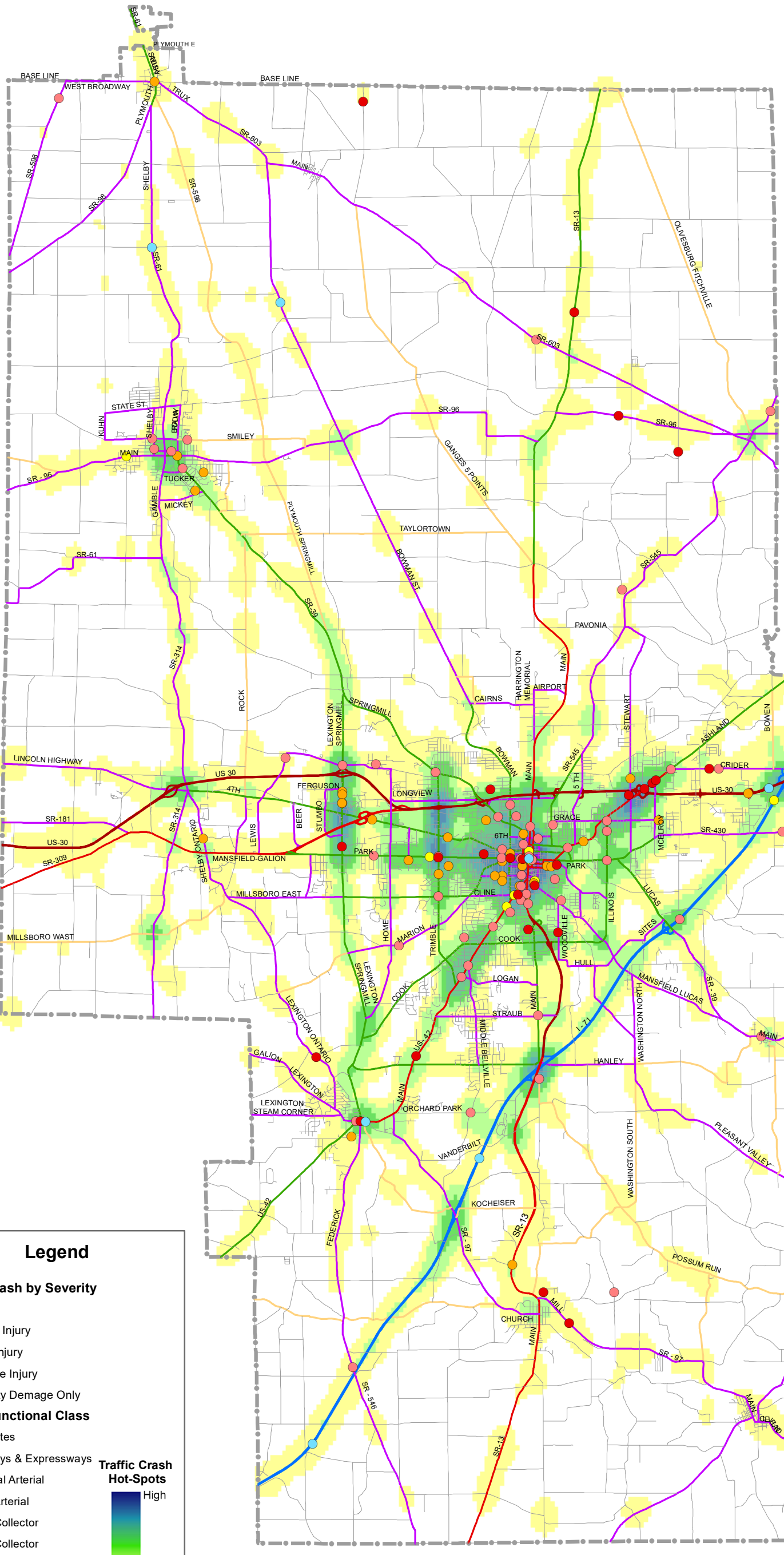
crash patterns that led to the crashes at non-intersection area as well. It is noticeable that in the ***Figure 3***, the primary causes of ran red light, ran stop sign, failure to yield, improper start from a parked position, improper turn etc. had higher number of percentages in the intersection related crashes in the Richland region.

BICYCLE AND PEDESTRIAN CRASH

The Richland County Regional Planning Commission has undertaken various projects to promote alternative modes of transportation and support sustainability and livability in the region. The transportation safety and security of non-motorists is one of the primary concerns for communities, RCRPC and policy maker alike. Crashes of motor vehicles with bicyclists, pedestrians and other non-motorists create unsafe travelling conditions for people utilizing these modes of transportation and can impact one's decision to travel using an alternate mode. To identify locations in the region, RCRPC has analyzed the bicycle and pedestrian (bike/ped) crash clusters in the region using the same five-year period crash data (2017-2021) obtained from the ODOT maintained historical database. Table 8 indicates there was total 136 ped/bike related crashes occurring in the region. The ped/bike crashes were highly related to the fatal and injury crashes. In the region's total 136 ped/bike crashes, 93% of crashes in the region contributed to crashes of fatal or injury. ***Map 5*** in the next page shows pedestrian/pedestrians crash locations by crash severity in Richland region.

Table 8:
Ped/Bike Crashes by severity and Year in Region

Year	Total	Fatal	Severe	Minor	Possible	PDO
2017	31		8	13	8	2
2018	21	1	2	8	8	2
2019	31	1	5	12	10	3
2020	25	1	4	12	6	2
2021	28	4	6	13	5	
Total	**136**	**7**	**25**	**58**	**37**	**9**



Total Pedestrian and Pedalcycles Crashes by Severity and Year

Year	Total	Fatal	Severe	Minor	Possible	PDO
2017	31		8	13	8	2
2018	21	1	2	8	8	2
2019	31	1	5	12	10	3
2020	25	1	4	12	6	2
2021	28	4	6	13	5	
Total	**136**	**7**	**25**	**58**	**37**	**9**

Legend

Ped/Bike Crash by Severity

- Fatal
- Severe Injury
- Minor Injury
- Possible Injury
- Property Demage Only

Roadway Functional Class

- Interstates
- Freeways & Expressways
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- RCRPC/MPO_Boundary_w_Plymoth

Traffic Crash Hot-Spots

High

Low

RICHLAND COUNTY REGIONAL PLANNING

N

0 1.5 3 Miles

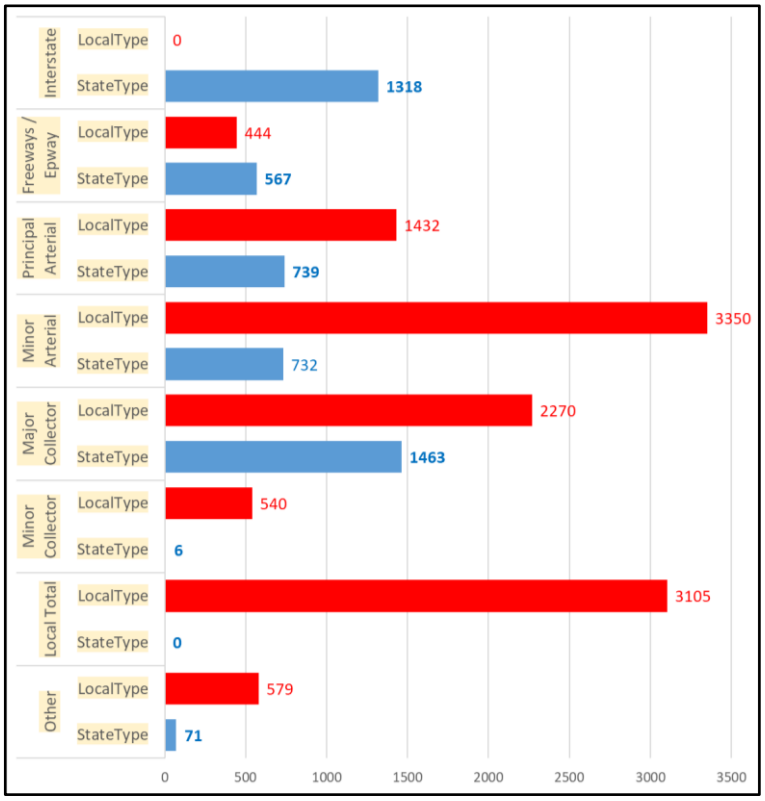
Map 5: Locations of Pedestrian/Pedalcycles Crashes by Crash Severity

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)

PART II: CRASH PATTERN ANALYSIS

CRASHES BY STREET FUNCTION CLASS AND MAINTENANCE TYPE

Figure 4:
Crashes by Functional Class and Maintenance/Juris_Type



For the purpose of comprehensively review and analysis of the traffic crash pattern in the RCRPC region, all crashes over the five-year period (2017 to 2021) are further stratified by roadway's maintenance type, jurisdiction, street function class, street number of lanes and crash severity in ***Table 9*** (*Crash Severity by Maintenance Agency and Jurisdiction*) and ***Table 10*** (*Crashes by Roadway Functional Class, Number of Lanes and Jurisdiction*) in the next pages. The historical crash data and analysis results showing in ***Figure 4 - Crashes by Roadway Function Classification and Maintenance / Juris-Type*** indicates that in the Richland area, a high and large percent of traffic crash has occurred on locally maintained roadways coded as Minor Arterial Roads, Major Collector Roads and Local Roads. The percentages of crashes occurred on these mentioned locally maintained three function class roads were 20%, 14% and 19% respectively. When adding crashes that were occurred on the type of State maintained the same roadway classes, the percentages of crashes on these three function classes change to 25%, 22% and 19% correspondingly.

Figure 5:
Crashes by Roadway's Number of lanes

Looking closely to the historical crash data and the connections to the roadway's number of lanes where crashes occurred, ***Figure 5*** shows that 62 percent of motor vehicle crashes were occurred on the region's two-land roadways, and 28 percent crashes were happened on the region's 4-lane roadways. These two portions add up to the 90 percent of total traffic crashes in Richland County area.

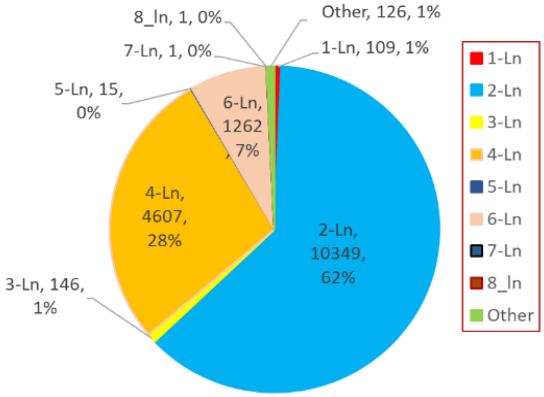


Table 9:
RCRPC Region Crash Severity by Maintenance Agency and Jurisdiction

Maintence/Jurisdiction	Total						Fatal Injury						Severe Injury						Minor Injury						Possible Injury						PDO						Persons Involved	
	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total	Killed	Injured
City or Village Highway Agenc	**1877**	**1684**	**1731**	**1215**	**1786**	**8293**	**2**	**2**	**7**	**1**	**5**	**17**	**40**	**41**	**24**	**15**	**25**	**145**	**132**	**149**	**198**	**128**	**179**	**786**	**257**	**207**	**212**	**127**	**189**	**992**	**1446**	**1285**	**1290**	**944**	**1388**	**6353**	**17**	**2816**
BELLVILLE	37	35	38	28	24	162			1			1	1	2	2	1	1	7	3	1	2	2	2	10	3	5	2		2	12	30	27	31	25	19	132	1	46
BUTLER	6	3	5	10	5	29							1				1	2	1	1		4		6			1	2		3	4	2	4	4	4	18	0	11
CRESTLINE	1	4	7	1	2	15															2			2			2			2	1	4	3	1	2	11	0	4
GALION					1	1																													1	1	0	0
LEXINGTON	72	65	74	54	66	331					1	1	2		2			4	3	5	8	3	8	27	6	7	3	2	7	25	61	53	61	49	50	274	1	72
LUCAS	10	6	7	2	6	31								1	1			2	2		2		1	5			2			2	8	5	2	2	5	22	0	12
MANSFIELD	1321	1164	1222	822	1276	5805		2	3	1	4	10	27	34	18	12	19	110	102	105	152	89	130	578	200	154	154	102	147	757	992	869	895	618	976	4350	10	2113
ONTARIO	298	276	255	190	264	1283	2		1			3	7	4	1	1	2	15	15	29	19	17	28	108	35	32	37	17	25	146	239	211	197	155	209	1011	3	415
PLYMOUTH	5	2	10	16	31	64											1	1			2	2	2	6			1	3	2	6	5	2	7	11	26	51	0	16
SHELBY	125	128	109	90	107	559			2			2	2			1	1	4	6	8	11	11	8	44	13	9	10	1	6	39	104	111	86	77	92	470	2	127
SHILOH	2	1	4	1	4	12																									2	1	4	1	4	12	0	0
WORTHINGTON TOWNSHIP				1		1																												1		1	0	0
County Highway Agency	**411**	**413**	**406**	**423**	**430**	**2083**	**2**		**1**	**2**	**3**	**8**	**24**	**12**	**7**	**13**	**11**	**67**	**68**	**71**	**59**	**68**	**76**	**342**	**23**	**27**	**21**	**34**	**27**	**132**	**294**	**303**	**318**	**306**	**313**	**1534**	**9**	**782**
BLOOMINGGROVE TOWNSHIP	7	3	10	7	9	36									1			1	1	1		2	2	6			2		1	3	6	2	7	5	6	26	0	14
BUTLER TOWNSHIP	9	6	4	6	8	33									1	1		2	2	1	1	1	1	6	1	2				3	6	3	2	4	7	22	0	14
CASS TOWNSHIP	22	25	17	27	26	117					2	2	2	1		3		6	4	8	2	2	4	20	5	2	1	5	1	14	11	14	14	17	19	75	2	56
FRANKLIN TOWNSHIP	23	16	17	17	19	92				1		1	1			1	2	4	1	2	3	1	2	9	1		1			2	20	14	13	14	15	76	2	22
JACKSON TOWNSHIP	34	39	25	28	37	163							2		1	1	2	6	8	10	3	5	7	33	2	2	1		1	6	22	27	20	22	27	118	0	66
JEFFERSON TOWNSHIP	10	15	15	11	15	66								1			1	2	3	2	3	1	3	12		3	1	1		5	7	9	11	9	11	47	0	22
MADISON TOWNSHIP	33	46	40	42	56	217					1	1	2	3			1	6	5	8	8	8	13	42	1	4	3	5	4	17	25	31	29	29	37	151	1	115
MIFFLIN TOWNSHIP	17	22	16	7	16	78							1		1	1		3	6	4		1	5	16		1	2	1	2	6	10	17	13	4	9	53	0	32
MONROE TOWNSHIP	15	34	20	27	19	115								2			1	3	3	3		3	3	12		1	1	1	2	5	12	28	19	23	13	95	0	26
PERRY TOWNSHIP	3	3	4	9	3	22																1		1					1	1	3	3	4	8	2	20	0	2
PLYMOUTH	1	1	2	1	1	6									1			1						1							1		2	1	1	5	0	1
PLYMOUTH TOWNSHIP	9	7	13	10	11	50							3					3	2		3	2	2	9	1			1	1	3	3	7	10	7	8	35	0	23
SANDUSKY TOWNSHIP	8	14	11	11	12	56													1	1	4		1	7				1	2	3	7	13	7	10	9	46	0	16
SHARON TOWNSHIP	7	7	7	3	6	30							1					1	2	2	3	2	1	10		1	1			2	4	4	3	1	5	17	0	18
SPRINGFIELD TOWNSHIP	71	71	64	77	64	347			1			1	7	2	1	2	1	13	9	10	7	11	9	46	5	3	2	6	5	21	50	56	53	58	49	266	1	124
TROY TOWNSHIP	53	38	36	47	39	213	1			1		2	2	2		1		5	10	7	7	10	10	44	1	4	3	5	2	15	39	25	26	30	27	147	2	92
WASHINGTON TOWNSHIP	76	55	81	72	65	349	1					1	2		2	3	1	8	8	8	10	13	9	48	5	4	3	6	4	22	60	43	66	50	51	270	1	102
WELLER TOWNSHIP	5	2	8	5	11	31													2		4		3	9				1		1	3	2	4	4	8	21	0	13
WORTHINGTON TOWNSHIP	8	9	16	16	13	62							1	1			2	4	1	3	1	5	1	11	1			1	1	3	5	5	15	10	9	44	0	24
Private (other than Railroad)	**7**	**7**	**9**	**7**	**6**	**36**							**1**					**1**	**1**	**1**	**2**	**2**		**6**			**1**	**1**		**2**	**5**	**6**	**6**	**4**	**6**	**27**	**0**	**16**
JEFFERSON TOWNSHIP					1	1																													1	1	0	0
LEXINGTON		1				1																										1				1	0	0
MADISON TOWNSHIP	1	2	2	2		7																						1		1	1	2	2	1		6	0	1
MANSFIELD	4	2	7	5	4	22							1					1			2	2		4			1			1	3	2	4	3	4	16	0	12
MIFFLIN TOWNSHIP		2			1	3														1				1								1		1	2	0	1
SPRINGFIELD TOWNSHIP	2					2													1					1							1				1	0	2
State Highway Agency	**961**	**971**	**1005**	**909**	**1050**	**4896**	**4**	**5**	**5**	**4**	**6**	**24**	**37**	**27**	**24**	**13**	**36**	**137**	**127**	**127**	**149**	**131**	**165**	**699**	**67**	**49**	**63**	**68**	**69**	**316**	**726**	**763**	**764**	**693**	**774**	**3720**	**26**	**1693**
BLOOMINGGROVE TOWNSHIP	11	18	21	20	18	88			1			1	1			1	2	4	3	3	4	5	4	19	1	1	4	2		8	6	14	12	12	12	56	1	47
BUTLER TOWNSHIP	10	9	9	11	12	51							3	1			1	5	1	2	1	2	6	12		1		3		4	6	5	8	6	5	30	0	31
CASS TOWNSHIP	6	6	8	11	10	41							1					1	1	1	4	3	2	11	1	1		1	1	4	3	4	4	7	7	25	0	23
FRANKLIN TOWNSHIP	29	13	31	24	18	115			1			1	3	2	1	1		7	8	2	5	7	5	27	2	1	3	2	2	10	16	8	21	14	11	70	2	87
JACKSON TOWNSHIP	43	44	38	42	42	209	1					1	3		1	1	1	6	6	8	8	3	6	31			1	2		3	33	36	28	36	35	168	1	62
JEFFERSON TOWNSHIP	36	44	74	50	49	253							4		1	2	1	8	2	2	9	9	7	29	2	1	6	5	2	16	28	41	58	34	39	200	0	78
MADISON TOWNSHIP	154	146	145	138	152	735		2				2	3	7	2	1	9	22	22	20	21	24	25	112	12	12	9	15	20	68	117	105	113	98	98	531	2	287
MANSFIELD	3	6	1	5	2	17															2		1	3							3	4	1	4	2	14	0	6
MIFFLIN TOWNSHIP	160	156	165	145	191	817		1			2	3	6	6	3	2	5	22	15	27	25	25	25	117	12	8	9	7	6	42	127	114	128	111	153	633	3	258
MONROE TOWNSHIP	38	29	26	24	30	147				1		1		1		1	1	3	8	2	3	5	2	20	4	1	1			6	26	25	22	17	27	117	1	40
PERRY TOWNSHIP	73	96	108	118	153	548		1	1	2	2	6	1		3	2	4	10	7	13	9	8	16	53	4	2	4	4	14	28	61	80	91	102	117	451	6	136
PLYMOUTH	2	1	4	3	1	11									1			1			1	1		2							2	1	2	2	1	8	0	4
PLYMOUTH TOWNSHIP	21	18	23	27	33	122	1		1			2			1		1	2	4	2	4	2	4	16		1	1	2	3	7	16	15	16	23	25	95	2	36
SANDUSKY TOWNSHIP	17	20	25	20	20	102				1		1	1		2		1	4	3	1	6	3	2	15	1	1	1	1	1	5	12	18	16	15	16	77	2	47
SHARON TOWNSHIP	32	34	23	20	32	141	1					1		3	2		1	6	2	10	5	5	10	32	3	1		3	1	8	26	20	16	12	20	94	1	63
SPRINGFIELD TOWNSHIP	71	66	70	67	57	331					1	1	5	1	2		1	9	8	6	11	5	7	37	6	4	7	7	3	27	52	55	50	55	45	257	1	94
TROY TOWNSHIP	20	17	29	27	23	116	1		1			2							3	3	5	5	6	22	1	1	1	1		4	15	13	22	21	17	88	2	31
WASHINGTON TOWNSHIP	167	197	147	114	154	779		1				1	5	2	3	2	4	16	22	17	19	14	24	96	11	12	12	10	12	57	129	165	113	88	114	609	1	258
WELLER TOWNSHIP	44	32	45	33	34	188					1	1	1	3	2		3	9	9	4	8	2	10	33	4		2	3	4	13	30	25	33	28	16	132	1	75
WORTHINGTON TOWNSHIP	24	19	13	10	19	85								1			1	2	3	2	1	2	4	12	3	1	2			6	18	15	10	8	14	65	0	30
Township Highway Agency	**271**	**272**	**243**	**260**	**262**	**1308**	**2**					**2**	**11**	**7**	**4**	**3**	**9**	**34**	**33**	**44**	**29**	**32**	**46**	**184**	**20**	**18**	**27**	**20**	**20**	**105**	**205**	**203**	**183**	**205**	**187**	**983**	**2**	**405**
BLOOMINGGROVE TOWNSHIP	3	4	4	2	4	17														1		1	1	3				1	1	2	3	3	4		2	12	0	7
BUTLER TOWNSHIP	4	3	4	3	3	17	1					1	1				1	2	2			1	1	2								3	4	3	2	12	1	7
CASS TOWNSHIP	4	5	4	2	2	17	1					1								3		1		4		1			1	1	3	1	4	1	2	11	1	5
FRANKLIN TOWNSHIP	5	2	2	1	5	15									1			1	1				1	2					1	1	4	2	1	1	3	11	0	6
JACKSON TOWNSHIP	9	13	10	10	9	51													1	2	3	1		7	1	1			3	5	7	10	7	9	6	39	0	17
JEFFERSON TOWNSHIP	20	23	12	15	22	92							1				1	2	4	4	1	1		10		2	4	2	2	10	15	17	7	12	19	70	0	26
MADISON TOWNSHIP	100	112	88	109	94	503							2	2	1		3	8	15	14	11	10	16	66	7	9	18	7	10	51	76	87	58	92	65	378	0	152
MIFFLIN TOWNSHIP	19	15	27	26	24	111							1	1				2	1	1	1	5	7	15	4		1	1		6	13	13	25	20	17	88	0	27
MONROE TOWNSHIP	10	14	13	8	16	61							1					1	1	7	1	1	5	15	2		1		2	5	6	7	11	7	9	40	0	24
PERRY TOWNSHIP	6	3	4	4	3	20														1				1	1					1	5	2	4	4	3	18	0	2
PLYMOUTH TOWNSHIP	5	2	4	3	3	17															2	1	1	4							5	2	2	2	2	13	0	9
SANDUSKY TOWNSHIP	8	3	6		3	20									1		2	3	2	1	1			4							6	2	4		1	13	0	8
SHARON TOWNSHIP	1	3	5		3	12							1		1			2			1			1								3	3		3	9	0	5
SPRINGFIELD TOWNSHIP	20	18	17	8	15	78							1	1				2		1	2		6	9	2	2	1	1		6	17	14	14	7	9	61	0	22
TROY TOWNSHIP	14	17	13	29	23	96										2	1	3	1	4	3	8	6	22	2	2	2	4		10	11	11	8	15	16	61	0	41
WASHINGTON TOWNSHIP	18	23	13	21	19	94							1	3				4	2	5	1	1	2	11		1			1	2	15	14	12	20	16	77	0	26
WELLER TOWNSHIP	13	8	9	8	4	42							2					2	2		1	1		4	1			3		4	8	8	8	4	4	32	0	14
WORTHINGTON TOWNSHIP	12	4	8	11	10	45										1	1	2	1		1	1	1	4				1		1	11	4	7	8	8	38	0	7
Grand Total	**3527**	**3347**	**3394**	**2814**	**3534**	**16616**	**10**	**7**	**13**	**7**	**14**	**51**	**113**	**87**	**59**	**44**	**81**	**384**	**361**	**392**	**437**	**361**	**466**	**2017**	**367**	**301**	**324**	**250**	**305**	**1547**	**2676**	**2560**	**2561**	**2152**	**2668**	**12617**	**54**	**5712**

Table 10:
Crash by Roadway Function Class, Number of Lanes and Juristidtion

Jurisdiction Type	Maintenanc Agency / Jurisdiction	Roadway Function Classification									Number of Lanes									
		Interstate	Other Freeways or Expressways	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Other	Total	1	2	3	4	5	6	7	8	Other	Total
Grand Total		**1318**	**1011**	**2171**	**4082**	**3733**	**546**	**3105**	**650**	**16616**	**109**	**10349**	**146**	**4607**	**15**	**1262**	**1**	**1**	**126**	**16616**
Local Type	**City or Village Highway Agency**		**444**	**1432**	**2874**	**1420**	**30**	**1605**	**488**	**8293**	**19**	**4705**	**76**	**3424**	**15**	**2**	**1**	**1**	**50**	**8293**
	BELLVILLE			37		97	2	23	3	162		162								162
	BUTLER					20		8	1	29		29								29
	CRESTLINE					14		1		15		15								15
	GALION			1						1		1								1
	LEXINGTON			113	46	79	6	74	13	331		306	3	22						331
	LUCAS					22	1	7	1	31		31								31
	MANSFIELD		347	1143	1876	723	8	1309	399	5805	15	3187	67	2496	5	2		1	32	5805
	ONTARIO		97	138	762	170	3	60	53	1283	2	436	6	811	9		1		18	1283
	PLYMOUTH				23	26	3	11	1	64		64								64
	SHELBY				167	259	7	111	15	559	1	465		92	1					559
	SHILOH					10		1	1	12	1	8		3						12
	WORTHINGTON TOWNSHIP								1	1		1								1
	County Highway Agency				**455**	**554**	**462**	**521**	**91**	**2083**	**1**	**1982**	**1**	**99**						**2083**
	BLOOMINGGROVE TOWNSHIP						3	32	1	36		36								36
	BUTLER TOWNSHIP						20	12	1	33		33								33
	CASS TOWNSHIP					34	36	40	7	117		117								117
	FRANKLIN TOWNSHIP					31	21	36	4	92		92								92
	JACKSON TOWNSHIP					37	87	32	7	163		163								163
	JEFFERSON TOWNSHIP						18	40	8	66		66								66
	MADISON TOWNSHIP				104	56		34	23	217	1	197	1	18						217
	MIFFLIN TOWNSHIP					23	12	38	5	78		78								78
	MONROE TOWNSHIP					71	21	21	2	115		115								115
	PERRY TOWNSHIP						9	12	1	22		22								22
	PLYMOUTH							5	1	6		6								6
	PLYMOUTH TOWNSHIP						23	26	1	50		50								50
	SANDUSKY TOWNSHIP					25	14	16	1	56		56								56
	SHARON TOWNSHIP					2		25	3	30		30								30
	SPRINGFIELD TOWNSHIP				128	134	52	28	5	347		266		81						347
	TROY TOWNSHIP				150	41	7	11	4	213		213								213
	WASHINGTON TOWNSHIP				73	93	107	65	11	349		349								349
	WELLER TOWNSHIP						3	27	1	31		31								31
	WORTHINGTON TOWNSHIP					7	29	21	5	62		62								62
	Private (other than Railroad)							**36**		**36**		**36**								**36**
	JEFFERSON TOWNSHIP							1		1		1								1
	LEXINGTON							1		1		1								1
	MADISON TOWNSHIP							7		7		7								7
	MANSFIELD							22		22		22								22
	MIFFLIN TOWNSHIP							3		3		3								3
	SPRINGFIELD TOWNSHIP							2		2		2								2
	Township Highway Agency				**21**	**296**	**48**	**943**		**1308**	**63**	**1237**		**8**						**1308**
	BLOOMINGGROVE TOWNSHIP							17		17	3	14								17
	BUTLER TOWNSHIP							17		17	4	13								17
	CASS TOWNSHIP							17		17		17								17
	FRANKLIN TOWNSHIP						1	14		15	1	14								15
	JACKSON TOWNSHIP						19	32		51		51								51
	JEFFERSON TOWNSHIP							92		92	21	71								92
	MADISON TOWNSHIP				21	206		276		503	10	487		6						503
	MIFFLIN TOWNSHIP					5	8	98		111	1	108		2						111
	MONROE TOWNSHIP							61		61	3	58								61
	PERRY TOWNSHIP							20		20		20								20
	PLYMOUTH TOWNSHIP							17		17		17								17
	SANDUSKY TOWNSHIP							20		20		20								20
	SHARON TOWNSHIP					1		11		12		12								12
	SPRINGFIELD TOWNSHIP					34		44		78		78								78
	TROY TOWNSHIP					31	7	58		96	2	94								96
	WASHINGTON TOWNSHIP					17	13	64		94	7	87								94
	WELLER TOWNSHIP					2		40		42	1	41								42
	WORTHINGTON TOWNSHIP							45		45	10	35								45
Local Type Total			444	1432	3350	2270	540	3105	579	**11720**	83	7960	77	3531	15	2	1	1	50	**11720**
State Type	**State Highway Agency**	**1318**	**567**	**739**	**732**	**1463**	**6**		**71**	**4896**	**26**	**2389**	**69**	**1076**		**1260**			**76**	**4896**
	BLOOMINGGROVE TOWNSHIP				58	30				88		88								88
	BUTLER TOWNSHIP				38	13				51		51								51
	CASS TOWNSHIP					41				41		41								41
	FRANKLIN TOWNSHIP			9	78	28				115		115								115
	JACKSON TOWNSHIP				156	52			1	209		52		157						209
	JEFFERSON TOWNSHIP			128		125				253		253								253
	MADISON TOWNSHIP	49	154	232	224	58			18	735	4	383	22	263		47			16	735
	MANSFIELD	17								17	1					11			5	17
	MIFFLIN TOWNSHIP	413	182	21	77	99			25	817	13	151	41	197		379			36	817
	MONROE TOWNSHIP					147				147		147								147
	PERRY TOWNSHIP	485			3	60				548		63				485				548
	PLYMOUTH				9	2				11		11								11
	PLYMOUTH TOWNSHIP					122				122		122								122
	SANDUSKY TOWNSHIP		59	14		27			2	102	1	42		59						102
	SHARON TOWNSHIP					134	6		1	141		141								141
	SPRINGFIELD TOWNSHIP		107	22	54	139			9	331	4	164		157		1			5	331
	TROY TOWNSHIP				35	78			3	116		115	1							116
	WASHINGTON TOWNSHIP	354	65	313		36			11	779	3	177	5	243		337			14	779
	WELLER TOWNSHIP					187			1	188		188								188
	WORTHINGTON TOWNSHIP					85				85		85								85
State Type Total		1318	567	739	732	1463	6		71	**4896**	26	2389	69	1076		1260			76	**4896**

CRASHES BY FIRST HARMFUL EVENT

Table 11:
Top 20 First Harmful Events Causing Traffic Crash

Top 20 First Harmfule Events (FHE)	Traffic Crash by Year						Rank
	2017	2018	2019	2020	2021	Total	
Motor Vehicle In Transport	1775	1661	1610	1204	1677	7927	1
Animal ΓÇô Deer	450	432	511	453	487	2333	2
Ran Off Road Right	461	445	423	393	430	2152	3
Cross Centerline ΓÇô Opposite direction of travel	171	177	192	181	222	943	4
Ran Off Road Left	206	193	182	161	179	921	5
Parked Motor Vehicle	161	145	158	111	175	750	6
Other Non-Collision	45	42	39	33	23	182	7
Other Movable Object Collision With Fixed Object ΓÇô STRUCK	25	33	25	22	21	126	8
Other / Unknown	3	6	35	27	31	102	9
Equipment Failure (Blown Tire, Brake Failure, Etc)	24	11	24	15	21	95	10
Animal ΓÇô Other	14	19	23	10	21	87	11
Fire/Explosion	15	11	27	15	19	87	11
Other Fixed Object	16	29	13	10	14	82	12
Tree	16	14	15	16	18	79	13
Overturn/Rollover	20	12	6	13	22	73	14
Cargo/Equipment Loss Or Shift	14	16	22	12	5	69	15
Struck By Falling, Shifting Car, or Anything Set in Motion By A Motor Vehicl	8	18	15	12	9	62	16
Pedestrian	11	9	14	7	14	55	17
Curb	16	8	8	6	10	48	18
Utility Pole	4	10	8	13	13	48	18
Guardrail Face	8	7	5	12	15	47	19
Traffic Sign Post	6	3	1	14	15	39	20
Grand Total	**3527**	**3347**	**3394**	**2814**	**3534**	**16616**	

The term "First Harmful Event" (FHE) describes the initial incident that causes the accident, injury or damage. It is sometimes referred to as "type of crash" and most often implies a collision with another object, such as another moving or parked vehicle, a train, a bicycle, etc.. FHEs which do not involve a collision can be caused by events such as losing control of the vehicle, overturning of the vehicle, a vehicle fire, etc.. ***Table 11*** on right shows the identified top 20 first harmful events that likely to have contributed to the traffic crashes in the Richland region. The analysis table indicates that collision with vehicles/"Motor Vehicle in-Transport", the road departure/"Ran off Road Right" and "Ran off Road Left", "Animal/Dear" and "Cross Centerline" crashes make up the majority of crashes in the RCRPC Region.

Figure 6:
First Harmful Events in All Injury & Fatal Crashes

First harmful events in all injury and fatal related crashes are shown in ***Figures 6*** and ***7*** respectively. In both instances, collisions caused by "Motor Vehicle in-Transport" crashes between two or more motor vehicles (Collision with vehicles) make up the majority of crashes, then it followed by the Road Departure-"Ran off road Right" and "Ran off Road Left" and "Cross Centerline" crashes.

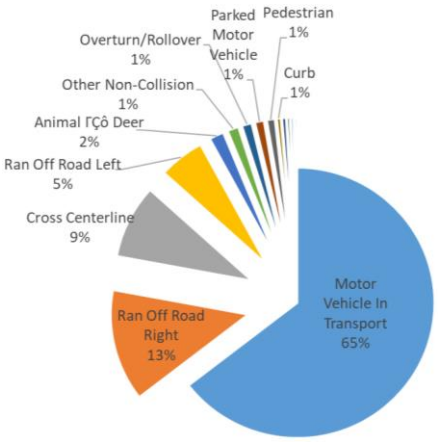
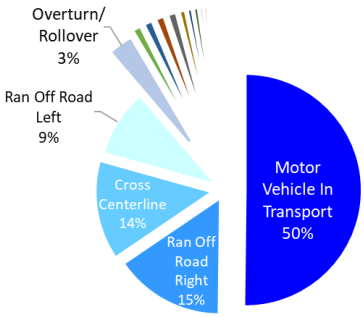


Figure 7:
First Harmful Events for Fatal+Serious Injury Crashes

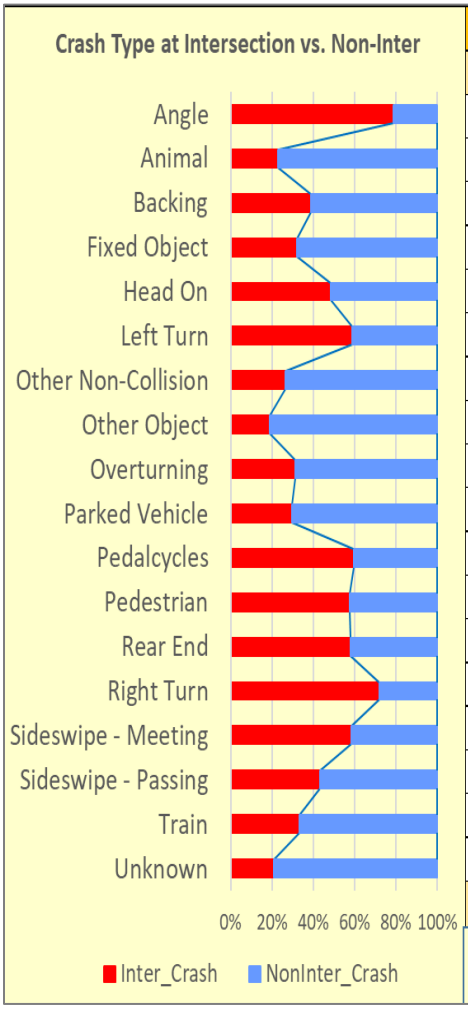


In the Richland Region, fatal and serious injury only crashes involving "Motor vehicle in transport" (collision with vehicles), "Ran off road" (Road Departure), "Pedestrians" and "Crossed Median/Centerlines" tend to be more and higher by their overrepresentation in fatal & severe injury only crashes as compared to all crashes.

CRASHES BY COLLISION TYPE

Table 12 provides the detailed number of crashes for each collision type. The traffic crashes are further divided into crashes that occurred at locations either at intersections or at non-intersection areas. The analysis helps to identify which collision types tend to result in more crashes at intersections versus non-intersection areas in the studied RCRPC region.

Table 12:
Traffic Crashe by Collision Type

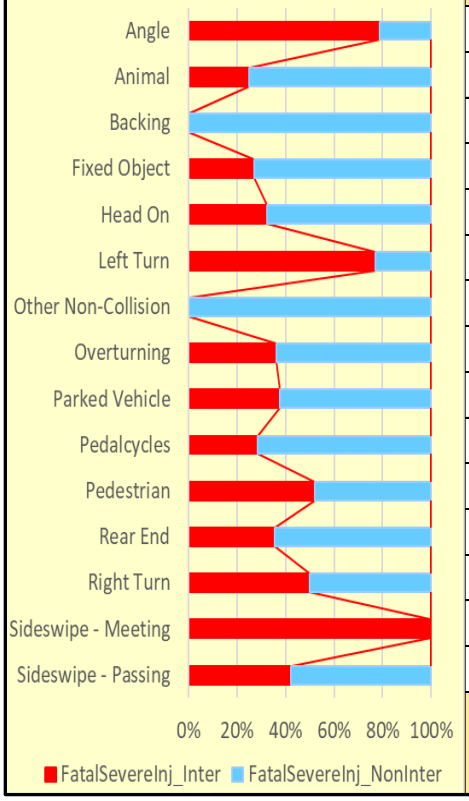


	Intersection Crash						Non_Intersection Crash					
	Fatal	Severe	Minor	Possible	PDO	Total	Fatal	Severe	Minor	Possible	PDO	Total
Angle	7	75	367	299	970	1718	3	19	79	66	299	466
Animal		2	7	11	538	558		6	42	33	1819	1900
Backing			6	7	230	243		1	7	12	365	385
Fixed Object	3	33	168	91	879	1174	9	87	425	195	1761	2477
Head On	2	9	30	21	67	129	6	17	36	17	61	137
Left Turn	1	19	75	52	339	486	1	5	65	38	234	343
Other Non-Collision			3	3	60	66	1	3	14	8	159	185
Other Object			2	1	40	43			4	3	177	184
Overturning		8	28	3	20	59	1	13	51	7	58	130
Parked Vehicle		3	7	16	130	156	2	3	29	21	316	371
Pedalcycles	1	1	13	8	2	25	1	4	8	2	2	17
Pedestrian	1	12	23	14	4	54	4	8	14	13	1	40
Rear End	2	13	190	263	1306	1774	3	24	170	191	904	1292
Right Turn		1	25	23	240	289		1	8	14	89	112
Sideswipe - Meeting		1	2	2	16	21			1	2	12	15
Sideswipe - Passing	1	7	47	50	634	739	2	9	67	59	830	967
Train					1	1				1	1	2
Unknown				1	11	12			4		42	46
	18	184	993	865	5487	7547	33	200	1024	682	7130	9069

FATAL AND SEVERE INJURY CRASHES BY COLLISION TYPE

The types of collision that result in fatal and severe Injury crashes at intersections or non-intersection areas are listed in ***Table 13***. The percentage distributions of these fatal and severe injury crashes at intersection and non-intersection areas by collision type shown the crash patterns and displayed in the right of table. The pattern of historical crash data helps to identify which collision type tends to cause more fatal crashes at intersections or non-intersection areas in the RCRPC region.

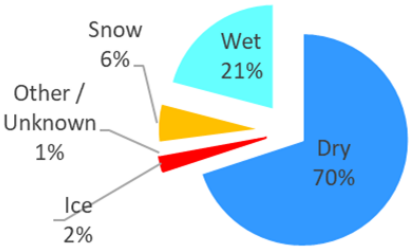
Table 13:
Fatal and Severe Injury Crashes by Collision Type



	Intersection Fatal_SevereInjury			Non_Intersection Fatal_SevereInjury			Grand Total
	Fatal	Severe	Total	Fatal	Severe	Total	
Angle	7	75	82	3	19	22	104
Animal		2	2		6	6	8
Backing			0		1	1	1
Fixed Object	3	33	36	9	87	96	132
Head On	2	9	11	6	17	23	34
Left Turn	1	19	20	1	5	6	26
Other Non-Collision			0	1	3	4	4
Overturning		8	8	1	13	14	22
Parked Vehicle		3	3	2	3	5	8
Pedalcycles	1	1	2	1	4	5	7
Pedestrian	1	12	13	4	8	12	25
Rear End	2	13	15	3	24	27	42
Right Turn		1	1		1	1	2
Sideswipe - Meeting		1	1			0	1
Sideswipe - Passing	1	7	8	2	9	11	19
	18	**184**	**202**	**33**	**200**	**233**	**435**

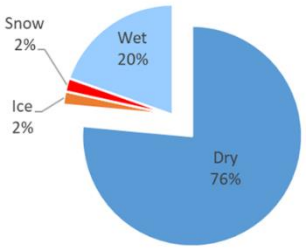
CRASHES BY ROADWAY SURFACE CONDITION

Figure 8:
Crashes by Roadway Surface Condition



The condition of the road surface plays an important role in motor vehicle crashes. Slick road conditions are generally more hazardous than dry conditions, but drivers tend to compensate for this by being more cautious. ***Figure 8*** indicates the percentage of crashes occurred by roadway surface conditions in the Richland Region.

Figure 9:
Fatal Crashes by Roadway Surface Condition



Fewer fatal crashes occurred under slick road surface conditions than under dry road conditions as shown in red colors in **Figure 9**. Under wet street surface condition, the historical crash data indicates that the high percentages of traffic crash and fatal crash in Richland area were in October, November, December, and January. Detailed statistical numbers are shown below in the ***Table 14*** and ***Table 15***.

Table 14:
Traffic Crash by Month and Roadway Surface Condition

Road Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Dry	42%	51%	67%	75%	80%	81%	87%	86%	84%	72%	69%	53%	70%
Wet	29%	20%	22%	21%	20%	18%	12%	14%	16%	27%	23%	25%	21%
Snow	19%	23%	7%	1%	0%	0%	0%	0%	0%	0%	4%	16%	6%
Ice	9%	5%	2%	2%	0%	0%	0%	0%	0%	0%	2%	5%	2%
Other / Unknown	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%
Slush	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%
Water (Standing, Moving)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Sand, Mud, Dirt, Oil, Gravel	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	####

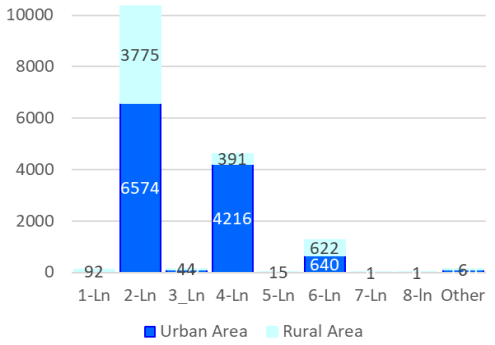
Table 15:
Fatal Crashes by Month and Roadway Surface Condition

Road Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Dry	16%	71%	69%	70%	85%	86%	92%	90%	96%	75%	68%	61%	76%
Wet	50%	19%	19%	27%	15%	14%	8%	10%	4%	25%	30%	30%	20%
Snow	16%	5%	9%	0%	0%	0%	0%	0%	0%	0%	0%	9%	3%
Ice	16%	5%	3%	3%	0%	0%	0%	0%	0%	0%	3%	0%	2%
Water (Standing, Mo	3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Grand Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Tables 14 and 15 provide a break-down of crashes by roadway surface condition as well as the months of a year. Under Snow and Ice conditions, December, January, Feb. and March tend to have more traffic crash and fatal crash in Richland.

CRASHES BY TYPE OF ROADWAY

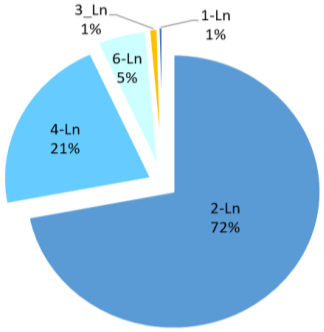
Figure 10:
RCRPC Area Crashes by Roadway Type



The distribution of traffic crashes as well as fatal crashes by roadway type, are shown in Figures 10 and 11.

The detailed number of crashes and fatalities by roadway type is listed in Table 16. Table 17 and Figure 12 details the distribution of all crashes by cause on roadway type.

Figure 11:
Fatal & Severe Crashes by Roadway Type



The percentage of total fatal and severe injury crashes that occurred on the urban and rural 2-ln roadways are significantly larger than the percentage of all crashes that occurred on other roadways in the Richland (***Figure 11***). These crashes tend to occur due to "failure to yield" and "Unsafe Speed", then followed by "Following Too Close" etc. (***Figure 12***),and accounting for increased fatal & severity of the traffic crashes in the Richland Region.

Table 16:
Crashes by Severity and Roadway Type

Rd Type	Fatal	Injury	PDO	Total
2-Ln	31	2523	7795	10349
4-Ln	13	1103	3491	4607
6-Ln	7	223	1032	1262
3_Ln		32	114	146
1-Ln		29	80	109
5-Ln		3	12	15
7-Ln		0	1	1
8-ln		1		1
Other		34	92	126
Total	51	3948	12617	16616

Figure 12:
Fatal & Severe Injury Crashes by Cause

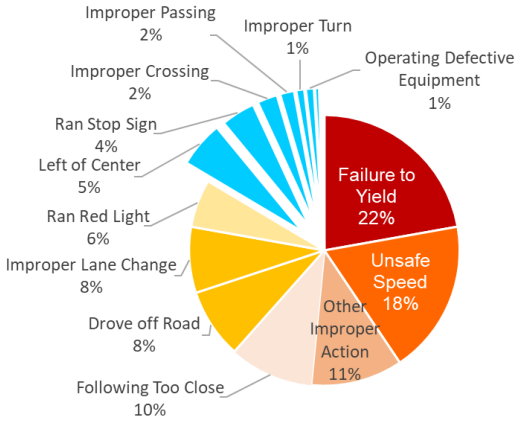


Table 17:
RCRPC Traffic Crash by Cause and Roadway Type

Cause	1-Ln	2-Ln	3_Ln	4-Ln	5-Ln	6-Ln	7-Ln	8-ln	Othe	Total
Following Too Closely/ACDA	11	1569	31	1258	7	153			34	3063
Failure to Yield	12	1386	19	723	5	12		1	8	2166
Other Improper Action	7	1161	8	437	1	43			20	1677
Unsafe Speed	27	1144	9	216		299			31	1726
Drove off Road	12	617	3	139		61			2	834
Improper Lane Change	10	498	21	413	1	201			13	1157
Operating Defective Equipme	4	79	3	40		75				201

CRASHES BY DAY OF THE WEEK

Crashes can occur any day, but they tend to be more frequent on certain days of the week and in certain time/period of a day. The Richland Area's historical crash data analysis shows that crash frequency throughout the day follows the daily activity cycle.

In the study area, the weekday with the highest traffic crash rate in the study period was Friday, when 17% of all crashes occurred. Fatal crashes occur at a higher rate on Monday, Tuesday, Sunday, and Saturday, when many alcohol-related crashes take place. Overall, Sunday has the lowest frequency of traffic crashes, whereas Sunday also shows the overrepresentation of fatal crashes meaning a 5% higher than the total crashes. A breakdown of crashes by weekday and by crash severity as well as by daytime periods are provided in Tables 18 and 19 as well as Figure 13 and 14.

Table 18:
RCRPC Area Crashes by Severity and Weekday

Day of Week	Fatal	Injury	PDO	Total
Sun	8	455	1382	1845
Mon	11	557	1871	2439
Tue	9	576	1792	2377
Wed	5	557	1886	2448
Thu	6	602	1862	2470
Fri	4	651	2173	2828
Sat	8	550	1651	2209
Grand Total	51	3948	12617	16616

Figure 13:
Total Crash vs. Fatal Crash by Weekday

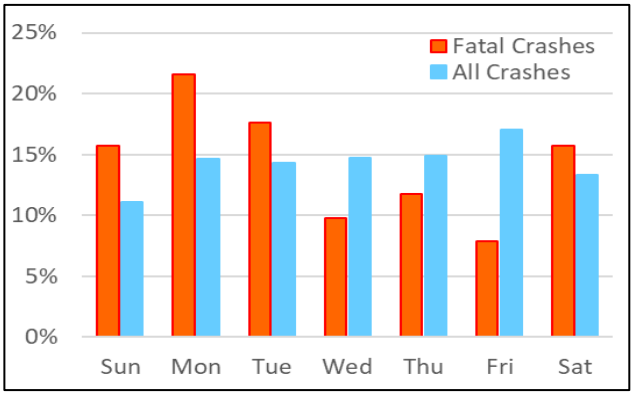


Figure 14:
the Daily Period with the Most Crashes

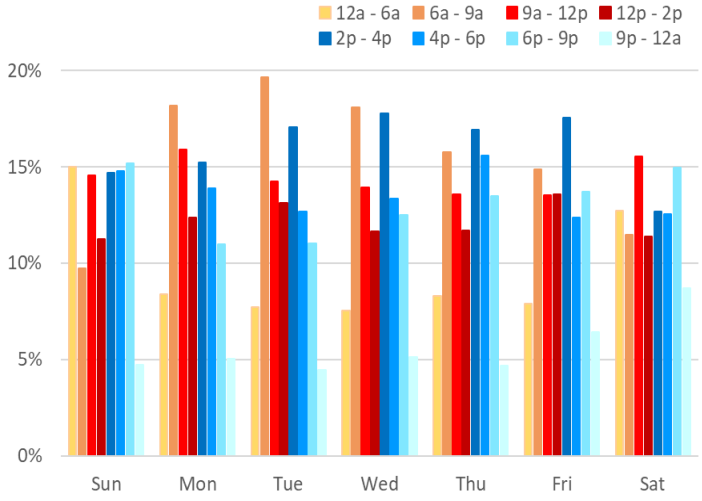
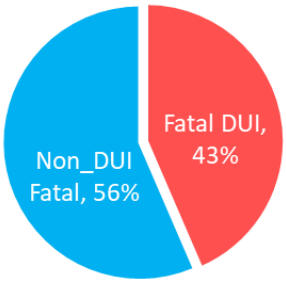


Table 19:
Crashes by Daytime Periods and Weekday

Period	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Total
12a - 6a	277	205	184	185	205	224	281	1561	15%	8%	8%	8%	8%	8%	13%	9%
6a - 9a	180	443	467	443	389	421	254	2597	10%	18%	20%	18%	16%	15%	11%	16%
9a - 12p	269	388	339	341	335	383	343	2398	15%	16%	14%	14%	14%	14%	16%	14%
12p - 2p	208	302	312	285	289	384	252	2032	11%	12%	13%	12%	12%	14%	11%	12%
2p - 4p	271	371	405	435	418	496	280	2676	15%	15%	17%	18%	17%	18%	13%	16%
4p - 6p	273	339	302	327	385	350	277	2253	15%	14%	13%	13%	16%	12%	13%	14%
6p - 9p	280	268	262	306	333	388	330	2167	15%	11%	11%	13%	13%	14%	15%	13%
9p - 12a	87	123	106	126	116	182	192	932	5%	5%	4%	5%	5%	6%	9%	6%
Total	1845	2439	2377	2448	2470	2828	2209	16616	100%	100%	100%	100%	100%	100%	100%	100%

CRASHES WITH ALCOHOL, DRUG AND MARIJUANA INVOLVEMENT

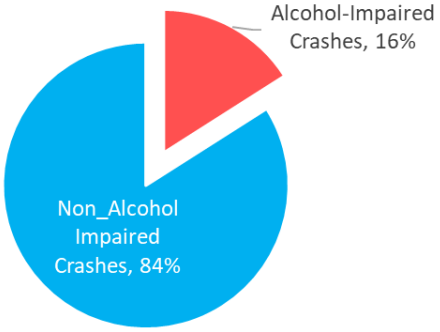
Figure 15:
RCRPC Area Fatal DUI Crashes



Figures 15, and 16 show the relationship between alcohol, drug and marijuana involvement in the fatal crashes within RCRPC region in the 5-year period. As alcohol involvement and drug use increases, so does crash severity.

Since alcohol testing is only required in traffic fatal crashes, the drug involvement and marijuana use indicated for injury and PDO crashes are probably understated.

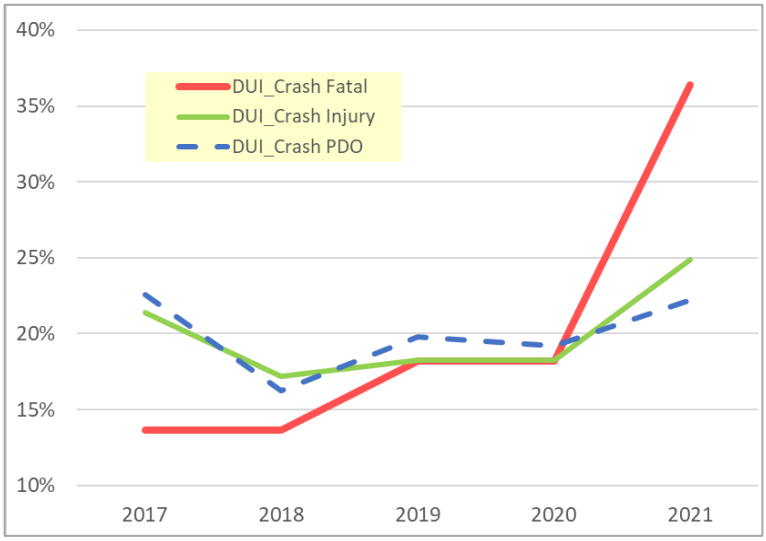
Figure 16:
RCRPC Area Alochol-Impaired Fatal Crashes



In Richland region, about 16% of total fatal crashes was related to the average alcohol-impaired fatal crashes. The percentage rate in Richland region (16%) is below the Ohio State's average of 30% alcohol-impaired crashes reported under the National Highway Traffic Safety Administration 2019's Traffic Safety Facts 2019. However, ***Figure 16*** also tells that the average DUI fatality rate in Richland area counts for 43% of overall fatal crashes.

Figure 17:
RCRPC Area Alcohol-, Drug- and Marijuana related Crashes by Severity and Year

Figure 17 on right shows the overall percentage of alcohol/drug and marijuana involvement in the types of fatal-, injury- and PDO- crashes throughout the studied period in the Richland region. While the overall percentage of DUI crashes have been increased since 2018, the percentage of DUI fatal crashes have had a steep increase in 2021 in the region.



The total number of alcohol- and drug-, marijuana-related crashes in Richland area is compared by year and severity, as listed in ***Table 20***.

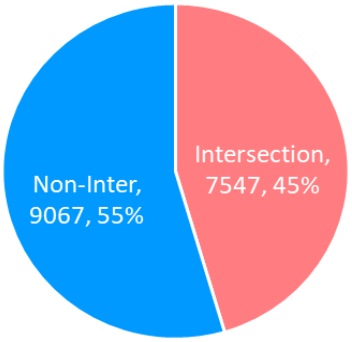
Table 20:
RCRPC MPO Area Fatal Crashes by Alcohol and Drug Involvement

Alcohol/Drug Marijuana Related Crashes							Pecentages					
DUI_Crashes	2017	2018	2019	2020	2021	Total	2017	2018	2019	2020	2021	Total
DUI_Crash Fatal	3	3	4	4	8	22	14%	14%	18%	18%	36%	100%
DUI_Crash Injury	97	78	83	83	113	454	21%	17%	18%	18%	25%	100%
DUI_Crash PDO	121	87	106	103	119	536	23%	16%	20%	19%	22%	100%
Total	221	168	193	190	240	1012	22%	17%	19%	19%	24%	100%

COSTS OF INTERSECTION CRASHES VS. NON-INTERSECTION CRASHES

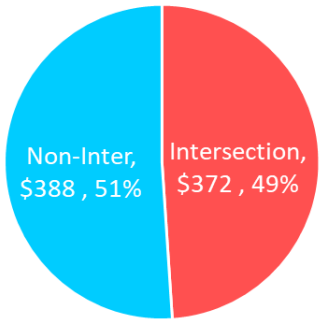
The purpose of this analysis is to compare the pattens of average economic costs of traffic crashes that occurred at intersections and non-intersection areas over the five-year study period.

Figure 18: Total Crashes



While 16,616 crashes occurred in the Richland region from 2017 to 2021, 45% of total traffic crashes were occurred on intersections in the Richland roadway system and 55% crashes were occurred at non-intersection area (***Figure 18)***. According to the crash unit cost from Ohio Guide to Calculating Costs of Motor-Vehicle Injuries, for the five-year period, the overall costs for crashes at intersections were $372 million (2019's dolor value of Ohio) which is increased to 49% of calculated total costs in the crash losses, injuries and property damages; the total cost for non-intersection crashes were $388 million (2019's dolor value of Ohio) which counts for 51% of overall crash costs (***Figure 19)***. The total cost for intersection crashes and non-intersection crashes were calculated based on the cost unit for each injury severity (not each injury crash), each death (not each fatal crash), and per-damaged vehicle and listed in **Table 21: Crash Cost at Intersection vs. Non-Intersection**

Figure 19: Total Cost (Million)



Severity	Grand Total	Intersection						Non-Intersection					
		2017	2018	2019	2020	2021	Total Cost (Intersectio	2017	2018	2019	2020	2021	Total Cost (Non-Inter)
Fatalities	$92,016,000	$8,520,000	$5,112,000	$8,520,000	$3,408,000	$6,816,000	$32,376,000	$8,520,000	$6,816,000	$15,336,000	$11,928,000	$17,040,000	$59,640,000
Serious Injuries	$48,019,200	$6,100,800	$6,592,800	$4,132,800	$2,656,800	$3,936,000	$23,419,200	$8,068,800	$4,624,800	$4,329,600	$2,853,600	$4,723,200	$24,600,000
Non-Serious	$80,028,000	$7,353,000	$7,381,500	$10,345,500	$6,583,500	$9,576,000	$41,239,500	$7,011,000	$8,037,000	$7,695,000	$7,353,000	$8,692,500	$38,788,500
Possible Injuries	$56,534,400	$7,534,800	$6,926,400	$6,552,000	$5,382,000	$6,411,600	$32,806,800	$5,592,600	$4,609,800	$5,148,000	$3,954,600	$4,422,600	$23,727,600
No_Injuries	$359,025,000	$41,350,000	$34,675,000	$38,450,000	$28,400,000	$37,512,500	$180,387,500	$37,262,500	$35,025,000	$38,062,500	$30,687,500	$37,600,000	$178,637,500
Num-of-Units	$124,591,000	$14,177,200	$12,507,400	$12,728,200	$9,715,200	$12,990,400	$62,118,400	$12,746,600	$12,668,400	$12,921,400	$10,635,200	$13,501,000	$62,472,600
Grand Total	$760,213,600	$85,035,800	$73,195,100	$80,728,500	$56,145,500	$77,242,500	$372,347,400	$79,201,500	$71,781,000	$83,492,500	$67,411,900	$85,979,300	$387,866,200

PART III: CRASH TRENDS

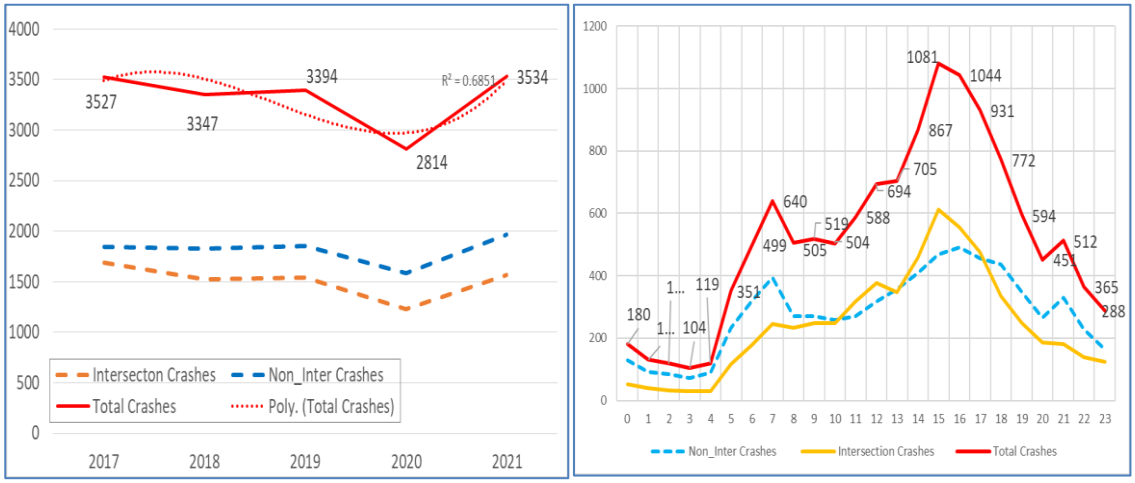
MOTOR VEHICLE TRAFFIC CRASHES

The five-year historical crash data analysis for years from 2017 to 2021 in the previous section has shown that RCRPC region's traffic crash rates (per hundred population) are higher than the statewide average crash rate. The integrated fatal and severe crash rate, minor injury crash rate and PDO crash rate in the study area are also higher than the Ohio's statewide crash rates (per 100 population) accordingly as discussed previously and shown in the ***Table 5***. The region's highest crash rates, which occurred between 6am-9am and 2pm-4pm (***Figure 14***, ***Table 19*** in page 23), are probably associated with higher number of work-trips. Richland County has the higher employment-to-population ratio (69%) than the statewide employment-to-population ratio (56.7%). According to Census Bureau's Employer-Household Job flow data (LEHD) (2016-2020), Richland County has contributed approximately 21,415 jobs to people who lives in communities outside of Richland County's boundary. The 21,415 jobs create additional work-related trips to the region from their homes almost in pattern of each day. In the meaning time, about 26,638 Richland County's residents make 26,638 work-related trips within the Richland region in the daily base and make 23,741 work-related trips to the communities outside of Richland boundary as well. Map 6 in next page showing the identified the daily home-to work (OD) trips to and from Richland County area. It is therefore the objectives to improve the safe and efficient transportation network within the RCRPC region and to reduce the number and severity of all motor vehicle crashes.

MOTOR VEHICLES IN ALL CRASHES

More passenger cars than any other body style of vehicle are involved in crashes. The total number of vehicles involved in intersection and non-intersection crashes has remained fairly steady except for drops in 2020 due to the impact of pandemic and the highest crash periods have followed the patterns of daily work-related peak time traffic over the five-year study period as can be seen in ***Figure 20***.

Figure 20:
Number of Vehicles involved in Crashes by the time of day



Inbound working trips

Number of people commuting from outside to Richland County for Jobs (2019)

21,415

Outbound working trips

Number of people commuting from Richland County to outside for Jobs (2019)

23,741

Internal-Internal working Trips

Number of People living and employed in RCRPC Region (Internal):

26,638

N

0 5 10 20 Miles

RICHLAND COUNTY REGIONAL PLANNING
19 N. Main Street
Mansfield, OH 44902

Map 6: Origin - Destination/Homebased Work-Trips in RCRPC Region

RCRPC Five-Year Traffic Crash Analysis (2017 - 2021)

CRASHES BY MONTH

The trends of seasonal cycles of all crashes and fatal crashes are illustrated in ***Figures 21*** and ***22***. The historical data and trend analysis indicates that a higher-than-average number of crashes in Richland area occur in January and November. Overall, crash frequency is at its lowest in April, followed by a slight increase in May and stabled till September. A sharp increase occurred in October, November, and steep decrease occurred in December and then decreases steadily after January to hit the overall lower level as weather conditions worsen. As it can be seen in the ***Figure 21***, the crash frequency patterns in Richland area are in the "W" shape.

Figure 21:
Crashes by Month in Richland Area

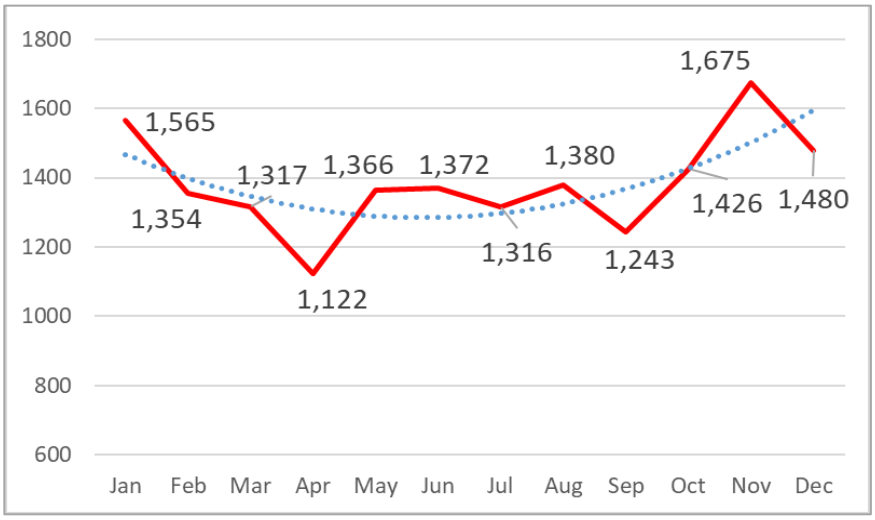
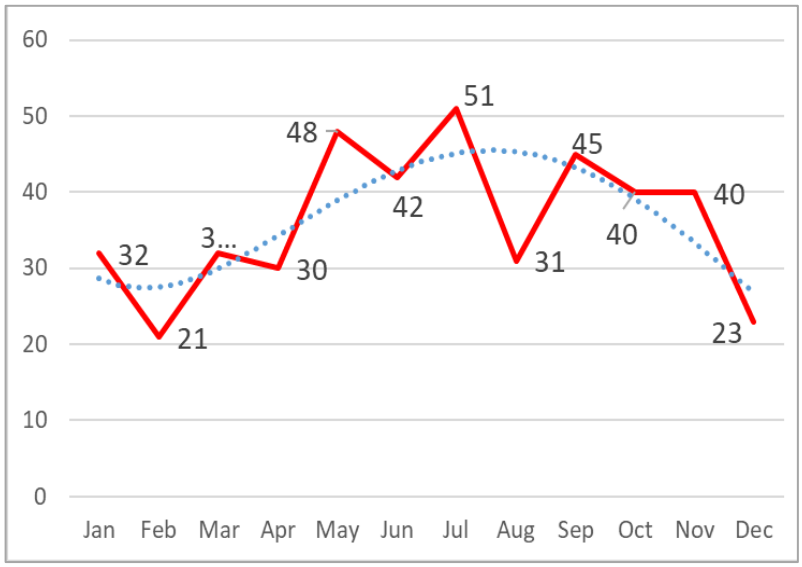


Figure 22:
Fatal and Severe Crashes by Month



As the weather gets better and better, starting from February, the fatal and severe crashes become worse in Richland Area. Fatal and severe crashes usually decrease during bad weather conditions, as motorists adjust themselves to the less than perfect driving conditions, and the months occur in Richland Area starting from September and November through February.

CRASHES INVOLVING PEDESTRIANS AND BICYCLES

Figure 23:
RCRPC Area Crashes involing Pedestrians or Bicycles

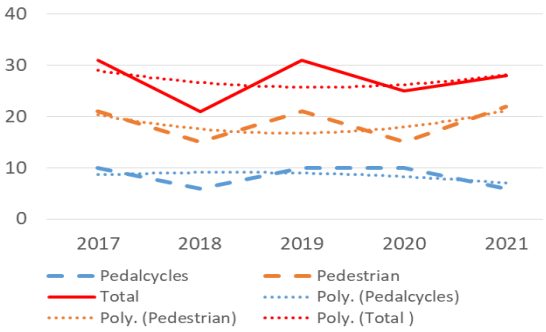
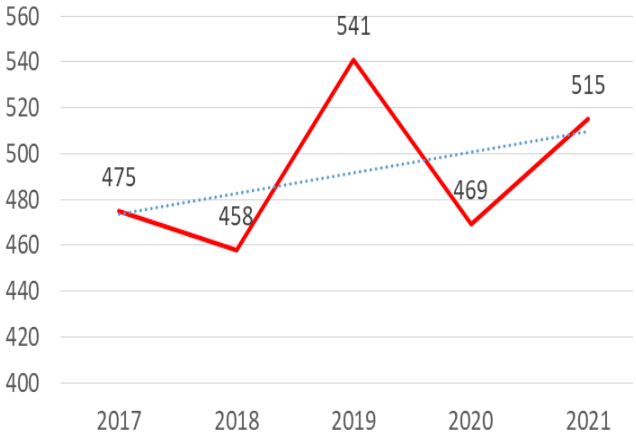


Figure 23 presents the number of crashes for the study period, where a collision with a pedestrian or bicycle was the first harmful event. The number of crashes involving bicycles showed a stable and slow change with minimal fluctuation throughout the study period. The overall pedestrian/bicycle crashes trends was majorly influenced by the crash number of pedestrian in the region.

CRASHES INVOLVING ANIMALS

In the crash type analysis, the historical crash data indicated that the crash type involving animal ranked in the top three in Richland area. The trend and number of crashes involving animals are depicted in ***Figure 24***.

Figure 24:
RCRPC Area Crashes involving Animals



PART IV: ATTACHMENTS

The following data tables and GIS maps are available on email request.

APPENDIX A - The RCRPC Adopted Resolution Supporting ODOT in Achieving the State Safety Targets.

APPENDIX B - Richland County Transportation Safety Plan (July 2020)

Appendix C - **Map 3:** Top 27 highest-Crash Intersections by Crash Rate (ODOT Criteria) in the region. And, **Table 6:** A list of 27 Highest-Crash Intersections by Crash Rate in the region in descending order. (See Report)

Map 4: Top 30 highest-Crash Intersections by Frequency (GIS Clusters Method) in the region. And, **Table 7:** A list of 30 Highest-Crash Intersections by Frequency in the region in descending order. (See Report)

APPENDIX D - Traffic Crashes by Roadway Function Class, Number of Lanes and Jurisdiction and related database. (See Report)

APPENDIX A

The RCRPC Adopted Resolution Supporting ODOT in Achieving the State Safety Targets.

RICHLAND COUNTY
REGIONAL PLANNING

RESOLUTION 22-09

OF THE COORDINATING COMMITTEE OF THE CONTINUING COMPREHENSIVE LAND-USE AND TRANSPORTATION PROGRAM FOR RICHLAND COUNTY, OHIO

A RESOLUTION SUPPORTING ODOT ESTABLISHED STATEWIDE PERFORMANCE MANAGEMENT TARGETS

WHEREAS, the Coordinating Committee of the Continuing Comprehensive Land-Use and Transportation Program of the Richland County Regional Planning Commission who is designated as the Metropolitan Planning Organization (MPO) for the Mansfield urbanized area by the Governor acting through the Ohio Department of Transportation (ODOT) in cooperation with locally elected officials of Richland County; and

WHEREAS, Federal Rule 23 CFR 490 requires states to establish five performance measures and set target for those measures to demonstrate fatal and serious accident reductions on all public roads.

WHEREAS, ODOT has established five Safety Measures and have set a target of 2% reduction in all five categories.

2022 Statewide Safety Measures

Type	Target
Number of fatalities	1,106
Number of serious injuries	7,744
Fatality rate	0.97
Serious injury rate	6.78
Number of non-motorized fatalities and serious injuries	808

WHEREAS, MPOs must establish targets for their respective areas or adopt a resolution supporting ODOT in achieving the state targets; and

WHEREAS, Richland County Regional Planning Commission agrees to plan and program projects that will contribute toward the achievement of these targets

NOW, THEREFORE, BE IT RESOLVED THAT, the Coordinating Committee of the Continuing Comprehensive Land Use and Transportation Program for Richland County:

Approves supporting ODOT's Safety Performance Measure targets as identified.

Certification:

The foregoing resolution was approved by the Coordinating Committee of the Continuing Comprehensive Land-Use and Transportation Program of the Richland County Regional Planning Commission at its regular meeting held on February 23, 2022.

By: 2-23-22

Joseph Gies — Date
President

Attest: 2.23.22

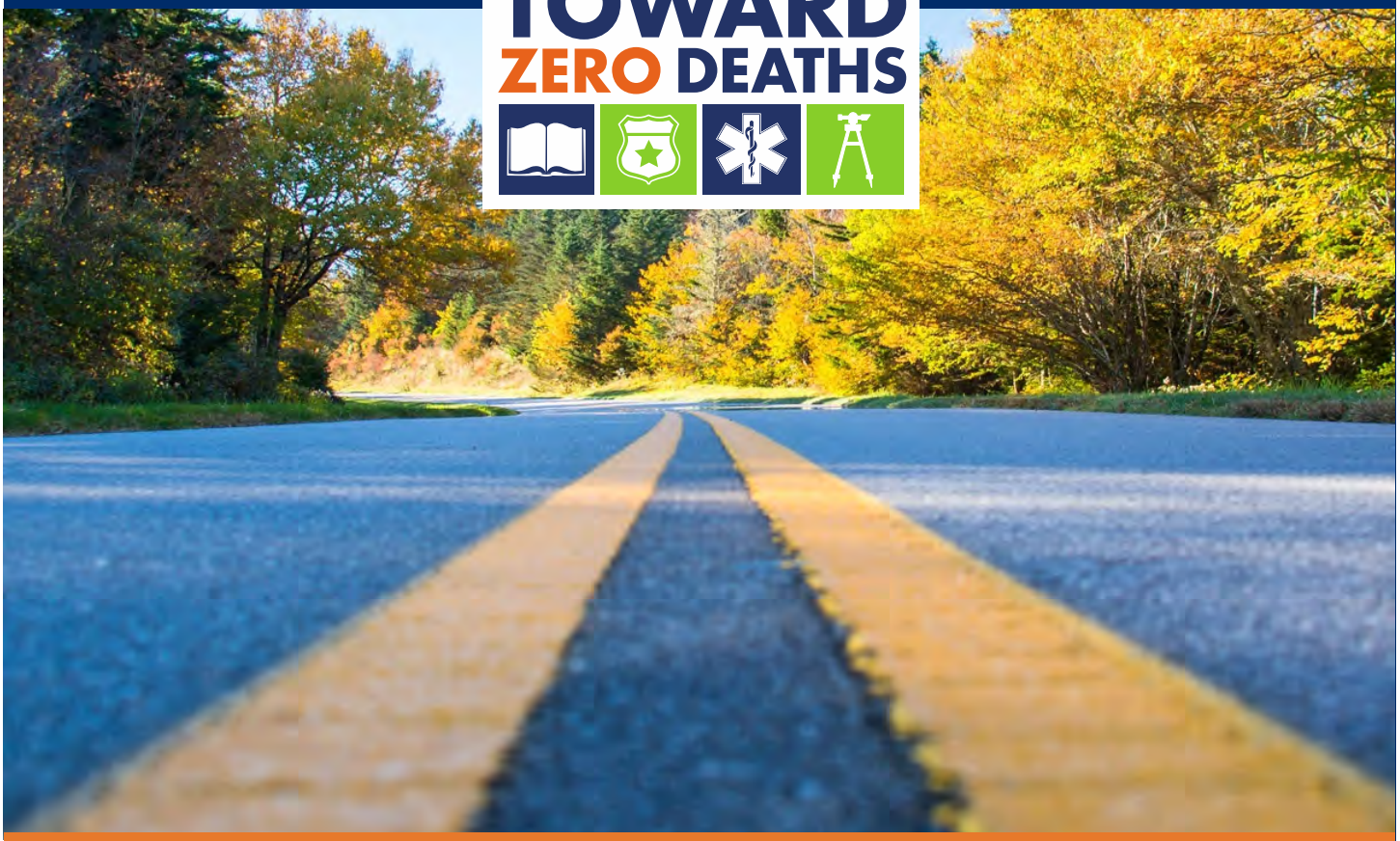
Jotika Shetty — Date
Executive Director/Secretary

APPENDIX B

Richland County Transportation Safety Plan (July 2020)

EVERY MOVE YOU MAKE

TOWARD ZERO DEATHS



RICHLAND COUNTY TRANSPORTATION SAFETY PLAN

July 2020

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1 EXECUTIVE SUMMARY

The Richland County Regional Planning Commission (RCRPC) is the metropolitan planning organization responsible for transportation planning and programming in Richland County. The planning area is in north central Ohio and home to approximately 125,000 residents who are spread across 28 cities, towns, and villages. Many residents choose this area because they appreciate the option to live in either an urban core or a rural atmosphere. In this region, it is common for residents and visitors alike to travel to and from locations in their vehicles. While bus services and bicycle and pedestrian amenities are available, the easiest and quickest route, is often in a car. With many people traveling by this mode, crashes can occur, impacting families, friendships, and the fabric of the region.

Between 2014 and 2018, approximately 3,536 transportation-related crashes occurred per year in Richland County. An average of 11 people lost their lives and 129 were seriously injured each year, during that five-year span. Severe crashes are preventable, but it takes an understanding of where and why they are occurring to diagnose the problems and present proven solutions.

The 2019 to 2023 *Richland County Transportation Safety Plan* presents solutions to the most challenging safety issues in the region, ensuring everyone can go about their daily lives, but also arrive home safely. Crash data were reviewed with stakeholders to understand:

- **Crash Trends—**How fatal and serious injury crashes have trended over the past five years. This also included a review of crashes by jurisdiction and by roadway type.
- **Safety Performance—**How fatal and serious injury crashes could be reduced and to what extent, through the implementation of proven solutions.
- **Crash Types—**What types of crashes (i.e., rear-end) are overrepresented in the region.
- **Contributing Factors—**What types of crash contributors (i.e., speed) are overrepresented in the region.
- **Locations—**The segments and intersections in the region that experience more crashes on average than other locations and could be reviewed further for safety improvements.

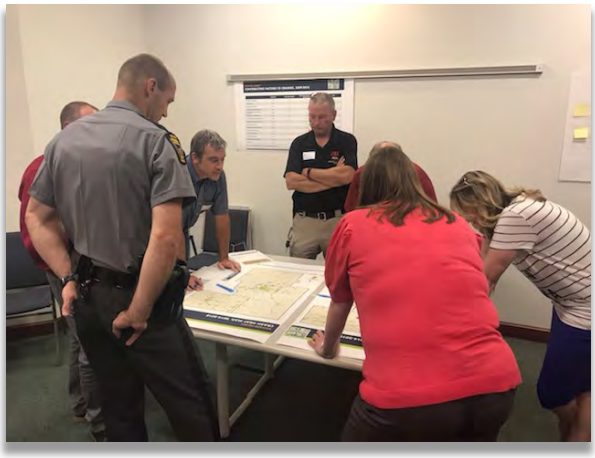
Local transportation and safety stakeholders met twice to review the crash data and provide input into what is now the foundation of this plan. This document represents the best approach to lowering fatalities and serious injuries in the County, including:

- **Vision, Goal and Objectives** providing a framework for identifying safety programs, projects and policies.
- Three emphasis areas, **Roadway Departure, Intersections, and Speed**, identifying the biggest safety challenges in the region.
- An **Action Plan,** identifying locations, outlining programmatic and project solutions and showing stakeholders where to focus their time and resources to make the most difference.

2 TRANSPORTATION SAFETY PARTNERS

Richland County has a wide range of transportation and safety stakeholders, working to reduce fatalities and serious injuries. Representatives from the following agencies and jurisdictions came together on two occasions to inform the contents of this plan. The goal will be ongoing coordination to implement the safety solutions in this plan and lower transportation-related fatalities and serious injuries.

- City of Mansfield Engineering Department.
- City of Mansfield Police Department.
- City of Ontario.
- Ohio Department of Transportation District 3.
- OhioHealth.
- Ohio State Police.
- Richland County Emergency Management.
- Richland County Engineering Department.
- Richland County Regional Planning Commission.
- Richland Public Health.
- Superior Driving Academy.
- Village of Belville.



INTRODUCTION—
Setting the Stage

SECTION CONTENT:

Transportation Safety Planning

Richland County Transportation Safety

Vision Goals and Objectives

3 INTRODUCTION—SETTING THE STAGE

TRANSPORTATION SAFETY PLANNING

Ohio has an average of 1,000 transportation-related fatalities every year. A national strategy called *Toward Zero Deaths*, driven and supported by transportation, enforcement, local Government, educators, health professionals, and emergency response associations, concludes that even if it is unclear when fatalities will reach zero, even one death on the transportation network is unacceptable. The Ohio Department of Transportation (ODOT) has adopted this strategy and is working toward solutions to ensure everyone is safe on Ohio's transportation network.

One effective solution to achieve this vision is a local road safety plan. This type of plan empowers local and regional transportation agencies to organize stakeholders; review crash data to understand the unique safety challenges in their areas; and customize solutions, or countermeasures, that will be effective based on the local context.

The *Richland County Transportation Safety Plan* followed a similar approach to develop multidisciplinary safety solutions. The planning process focused on the fact that motor vehicle-related crashes can be prevented. In some instances, roadway features can be improved to limit the severity of crashes; in others, stopping people from engaging in unsafe behaviors is key. However, in most cases, it is both. To reduce crashes related to infrastructure and driver error, State, and local stakeholders identified proven strategies, actions, programs, and projects.

A SOLUTION—ROAD SAFETY PLAN

ODOT recognizes the need to address crash statistics and is encouraging the development of Regional Safety Plans to reduce them.

The Richland County Transportation Safety Plan provides a framework for identifying, analyzing and prioritizing roadway safety improvements.

Upon completion, local stakeholders will have a prioritized list of strategies and projects that will be eligible for ODOT safety funding.

Figure 1: Regional Transportation Safety Plan Process Graphic

RICHLAND COUNTY TRANSPORTATION SAFETY

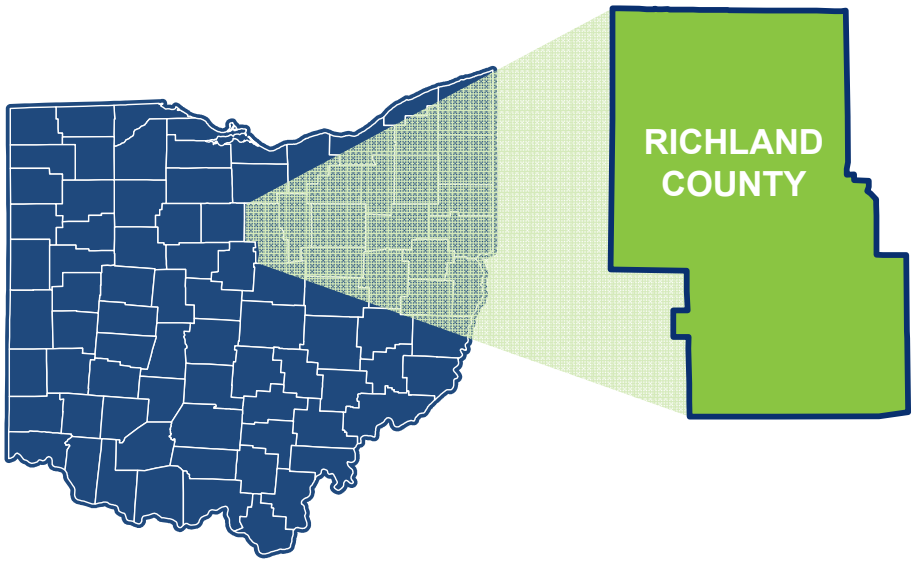
THE STUDY AREA

Richland County is located in north central Ohio with the County seat being in Mansfield. According to the Ohio County Profile on Richland County, the estimated 2018 population was 121,099 people which is a slight decline from the official population recorded by the 2010 United States Census of 124,475 people.

Richland County is largely rural and according to its Ohio County Profile, about 68 percent of the County is covered in farmland or forests. Approximately 13 percent of the County is developed. In addition to being the County seat, Mansfield is the largest place within Richland County by population with nearly 39 percent of Richland County residents living in this area.

Based on the Richland County Profile, there are approximately 1,314 miles of public roadways in the County with about 242 miles (18 percent) being State and U.S. routes. The study area for this safety plan is shown in Figure 2.

Figure 2: Richland County Planning Region Map



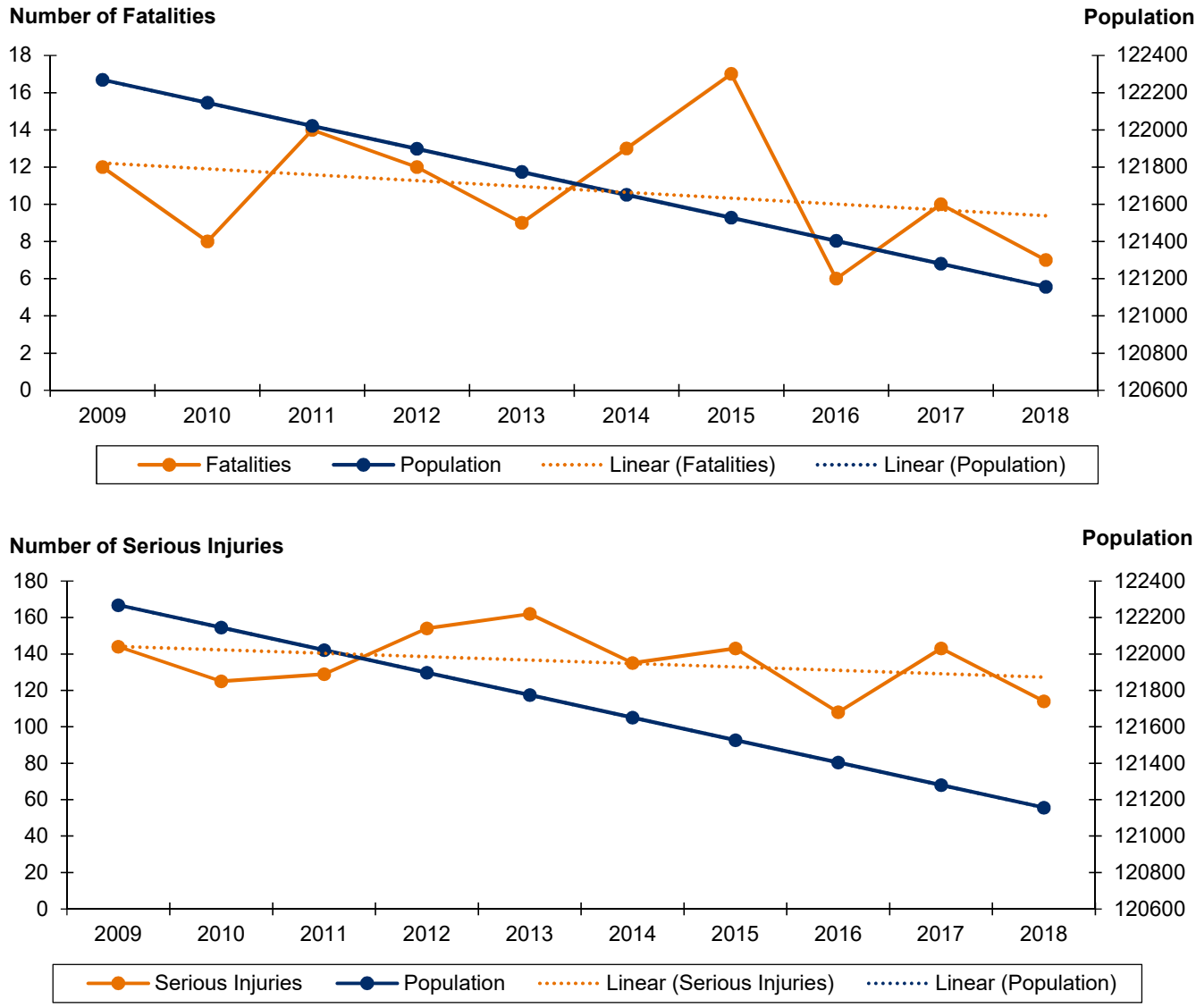
EXTERNAL FACTORS IMPACTING CRASHES

This planning effort primarily focused on crash trends to understand where and why crashes were occurring. However, additional safety insights can be gained by understanding how other factors play a role in transportation safety. Population and Vehicle Miles Traveled (VMT) trends also were reviewed to understand the impact on crash occurrences in the region.

Population

The overall population is decreasing in Richland County based on population estimates included in the Ohio County Profile. However, the rate at which the population is decreasing is faster than the decrease in fatalities and serious injuries in traffic crashes.

Figure 3: Fatalities and Serious Injuries and Population, 2009–2018



Vehicle Miles Traveled

Population is a good estimation of the number of people living in the area, but it does not capture the full traffic picture which includes residents as well as visitors to the region. VMT is a factor calculated by multiplying the number of centerline roadway miles by the Average Daily Traffic volumes. This factor is independent of the region's population. It looks at the number of vehicles traveling on a specific roadway over a given year. Based on calculations provided by ODOT, the amount of vehicle miles traveled in the county is increasing, while the frequency of the fatalities and serious injuries are both decreasing at a relatively slow rate.

Figure 4: Fatalities and VMT, 2008–2017

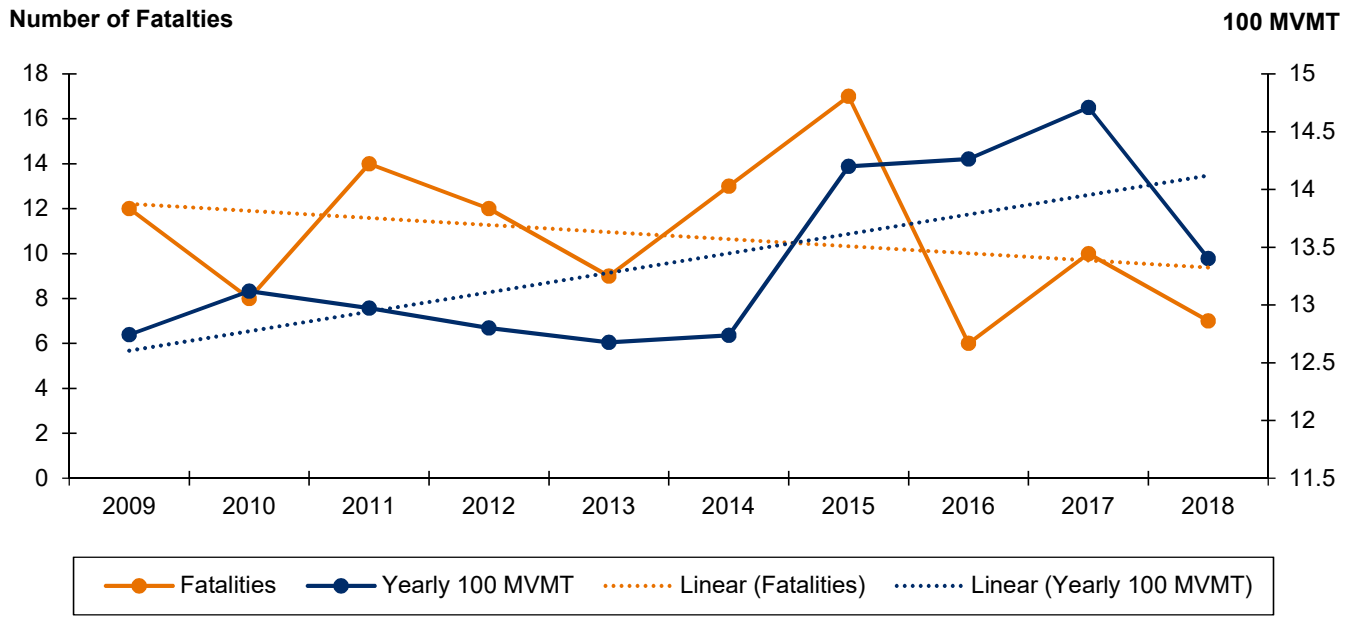
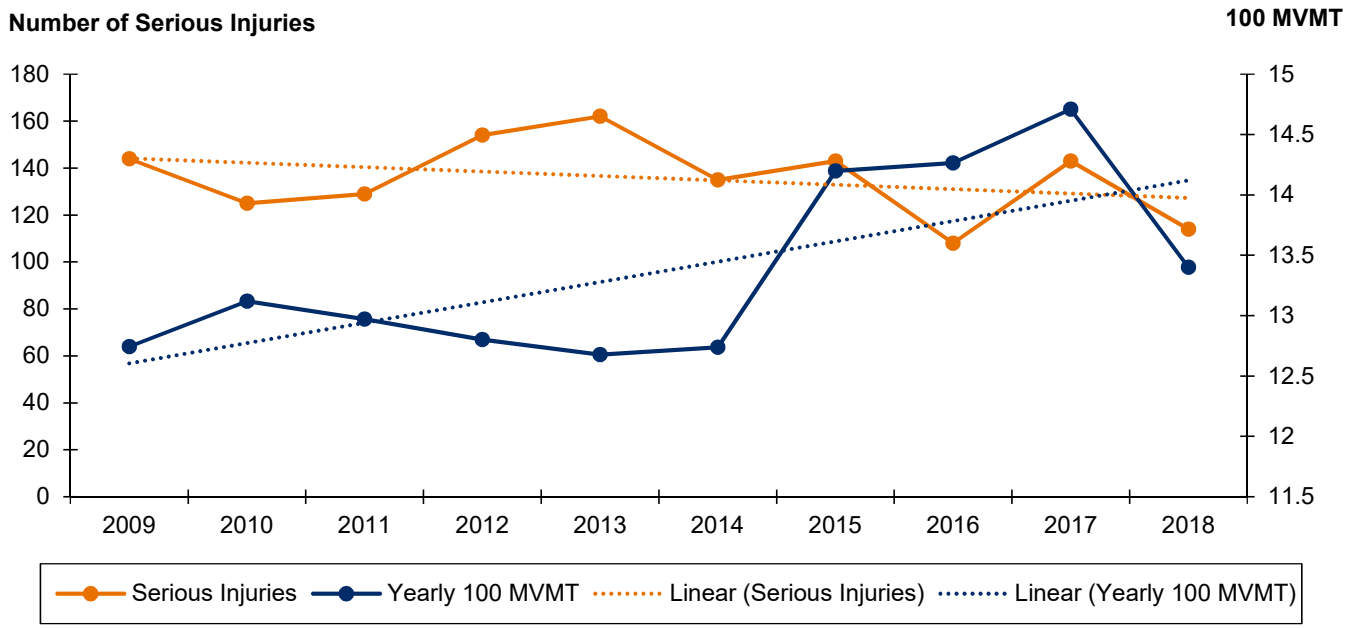


Figure 5: Serious Injuries and VMT, 2008–2017



CURRENT SAFETY ACTIVITIES

Existing safety programs and projects in the County were another consideration during this planning process. The goal of this plan is to not replace current activities, but to build upon them and implement other proven strategies to reduce fatalities and serious injuries. The work of local transportation and safety stakeholders as well as existing crash analysis completed in the County by RCRPC and ODOT District 3 were reviewed during stakeholder meetings and incorporated into this plan.

Examples of the Current Safety Activities in the County

- *Enforcement emphasis at high crash intersections*
- *Construct roundabouts*
- *Convert 4-lane to 3-lane roads to slow speeds and improve turning movements*
- *Systemwide implementation of rumble strips*

3.1 VISION, GOAL AND OBJECTIVES

The County safety vision, goal and objective describe the safety aspirations over the next 20 years and what safety success looks like in the near term. Stakeholders were presented with examples of visions, goals and objectives from ODOT and other agencies, as well as local crash data, showing historical safety performance and future forecasts. The following were selected to define safety success for the County and were based on stakeholder input as well as the results of a forecasting analysis (shown in Figure 5, Figure 6, and Figure 7). This will help the County focus funding and resources to implement safety policies, programs and projects that will best achieve the identified safety goal and objectives.

VISION
Toward Zero Deaths. All transportation users should arrive safely at their destinations.

GOAL
Reduce all crashes involving all road users by funding engineering, enforcement, education, and emergency response solutions.

OBJECTIVE
Reduce fatalities and serious injuries by 5% per year.

Figure 6: Fatalities Forecast

Figure 7: Serious Injuries Forecast

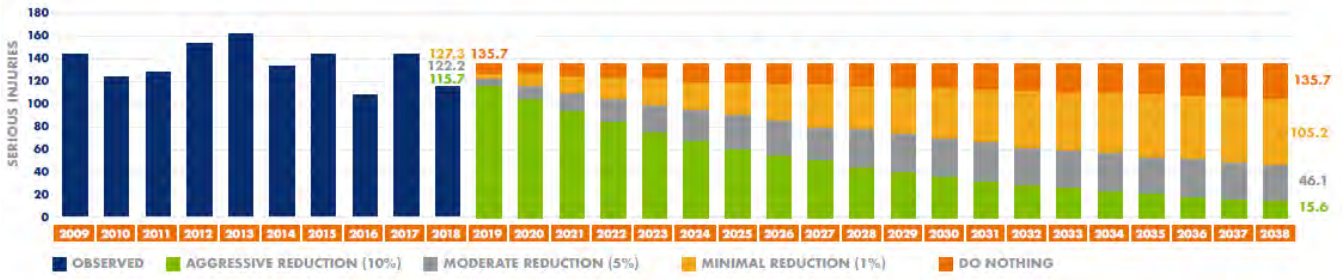


Figure 8: Nonmotorized Fatalities and Serios Injuries Forecast

Existing Conditions—

Understanding Safety Needs in the County

SECTION CONTENT:

Big Picture Crash Trends

Crash Types

4 EXISTING CONDITIONS—UNDERSTANDING SAFETY NEEDS IN THE COUNTY

THE BIG PICTURE

> *"There are, on average, 3,536 crashes per year (9 per day) in Richland County."*

For the development of the Richland County Transportation Safety Plan, crash data from January 1, 2014 to December 31, 2018 for all crashes, on all public roads, were analyzed. The 5-year timeframe provided enough information to establish reliable trends and distinguish patterns. Data was provided by ODOT and analyzed to understand overall crash trends, severe crash trends, how crashes compared across jurisdictions and the types of roads on which crashes were occurring. This analysis demonstrates existing safety conditions and helps set the stage for why safety planning in the region is critical.

CRASH STATISTICS

Between 2014 and 2018, there were 17,681 crashes in the region with 49 (0.3 percent) resulting in a fatality and 4,253 (24 percent) resulting in injury. There are, on average, 3,536 crashes per year (9 per day) in the County which results in 10 fatal crashes and 851 injury crashes per year.

Figure 9: Crash Statistics, 2014–2018

CRASH STATISTICS

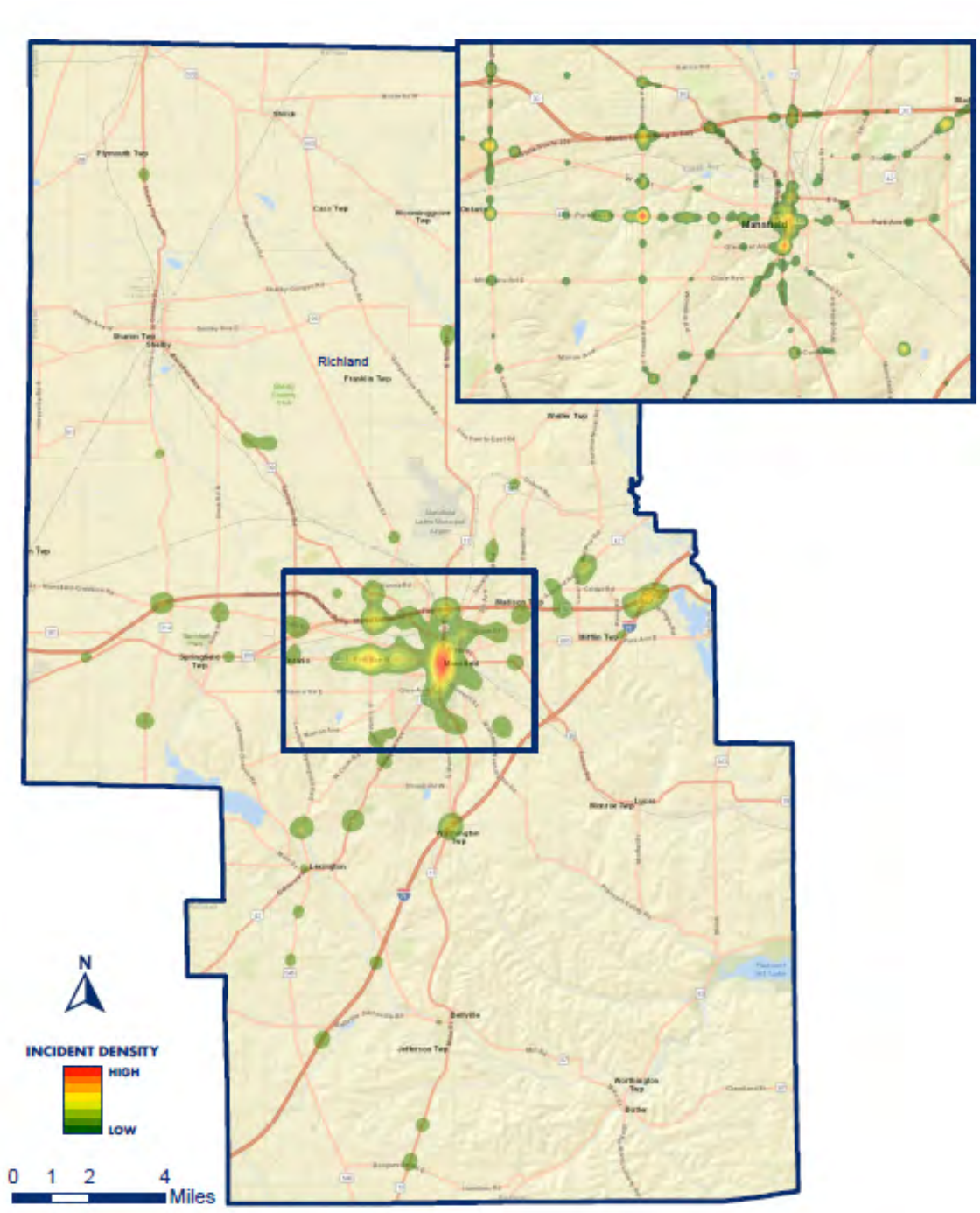
YEAR	FATAL CRASHES	INJURY CRASHES	PROPERTY DAMAGE CRASHES	TOTAL CRASHES
2014	13	895	2,808	3,716
2015	13	880	2,823	3,716
2016	6	864	2,546	3,416
2017	10	838	2,664	3,512
2018	7	776	2,538	3,321
5-YEAR TOTAL	49	4,253	13,379	17,681
ANNUAL AVERAGE	10	851	2,676	3,536

YEAR WITH THE HIGHEST VALUE FOR EACH RESPECTIVE COLUMN

FATAL AND SERIOUS INJURY CRASH LOCATIONS

The serious crash types predominantly occur on the higher volume roads near and within the City of Mansfield, especially along U.S. 30 and SR 13 and Park Avenue.

Figure 10: Fatal and Serious Injury Crash Density Map, 2014–2018



OCCUPANT STATISTICS

Of the 36,809 people involved in crashes in Richland County between 2014 and 2018, 53 were fatally injured and 643 were seriously injured. On average, crashes affect 7,363 people every year in Richland County with 11 of them being fatally injured and 129 seriously injured.

Figure 11: Occupant Statistics, 2014–2018

OCCUPANT STATISTICS

YEAR	FATALITIES	SERIOUS INJURIES	MINOR INJURIES	NO INJURIES
2014	13	135	1,185	6,213
2015	17	143	1,203	6,329
2016	6	108	1,140	6,144
2017	10	143	1,061	6,267
2018	7	114	1,030	5,541
5-YEAR TOTAL	53	643	5,619	30,494
ANNUAL AVERAGE	11	129	1,124	6,099

YEAR WITH THE HIGHEST VALUE FOR EACH RESPECTIVE COLUMN

CRASHES BY JURISDICTION

Crashes occur in the more populated areas of the county, like the City of Mansfield, City of Ontario, Madison Township, Washington Township, and Springfield Township than in other, more rural areas of the Richland County. The purpose of this map is to demonstrate that crashes occur everywhere, and each jurisdiction can play a role in the solutions.

Figure 12: Crashes by Richland County's Jurisdictions

CRASHES BY MAINTAINING AUTHORITY

Over 70 percent of all crashes in the Richland County occur on non-State-maintained roadways. Because ODOT does not own, operate or maintain these roads, it is incumbent upon local jurisdictions to determine what and where the biggest safety issues lie and apply for funding to implement improvements. In some jurisdictions, like Mansfield, almost 98 percent of crashes occur on locally maintained roadways.

Figure 13: Crashes by Jurisdiction and Maintaining Authority

	ALL ROADS			NON-STATE MAINTAINED ROADWAYS		
	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL
BELLVILLE	0	4	206	0	4	204
BLOOMINGGROVE TOWNSHIP	1	6	98	0	1	28
BUTLER	0	1	18	0	1	18
BUTLER TOWNSHIP	1	10	85	1	4	44
CASS TOWNSHIP	2	9	168	1	7	121
CRESTLINE	0	0	1	0	0	1
FRANKLIN TOWNSHIP	1	14	251	0	3	106
JACKSON TOWNSHIP	2	18	386	0	9	196
JEFFERSON TOWNSHIP	1	19	368	0	8	155
LEXINGTON	2	2	378	2	2	370
LUCAS	0	2	33	0	2	33
MADISON TOWNSHIP	7	40	1,418	1	16	624
MANSFIELD	7	171	6,642	6	168	6,505
MIFFLIN TOWNSHIP	4	38	1,016	1	7	196
MONROE TOWNSHIP	0	8	302	0	5	150
ONTARIO	2	20	1,463	2	20	1,452
PERRY TOWNSHIP	1	11	507	0	1	40
PLYMOUTH	0	0	13	0	0	12
PLYMOUTH TOWNSHIP	3	7	190	0	3	56
SANDUSKY TOWNSHIP	0	6	172	0	3	73
SHARON TOWNSHIP	3	12	188	0	5	49
SHELBY	0	6	624	0	6	615
SHILOH	0	0	11	0	0	11
SPRINGFIELD TOWNSHIP	1	36	815	0	20	481
TROY TOWNSHIP	4	14	417	2	9	286
WASHINGTON TOWNSHIP	5	34	1,407	1	16	460
WELLER TOWNSHIP	1	13	264	0	4	60
WORTHINGTON TOWNSHIP	1	11	240	1	6	110
GRAND TOTAL	49	513	17,681	18	330	12,456

CRASH STATISTICS BY MAINTAINING AUTHORITY

Twenty-nine percent of the total crashes in the region occur on State-maintained roadways, but they account for 37 percent of the total number of fatal and serious injury crashes. Approximately 51 percent of all crashes in Richland County are occurring on city-maintained roadways, but those crashes only account for 36 percent of all fatal and serious crashes in the county.

Figure 14: Crash Statistics by Maintaining Authority

	FATAL INJURY	SERIOUS INJURY	VISIBLE INJURY	POSSIBLE INJURY	PDO/NO INJURY	GRAND TOTAL
CITY OR MUNICIPAL HIGHWAY AGENCY	24	401	1,665	2,537	14,308	18,935
STATE HIGHWAY AGENCY	55	375	1,290	738	8,055	10,513
COUNTY HIGHWAY AGENCY	10	182	640	287	3,060	4,179
TOWN OR TOWNSHIP HIGHWAY AGENCY	11	99	394	192	1,949	2,645
OTHER/UNCLASSIFIED	0	14	28	64	442	548
GRAND TOTAL	100	1,071	4,017	3,818	27,814	36,820

4.2 CRASH TYPES

Crash type (i.e., head-on, rear-end) analysis is a common method to categorize crashes, understand key concerns and identify countermeasure solutions. Categorizing crashes by type is important because each crash represents a problem that may be addressed through a specific engineering, enforcement, or behavioral countermeasures. The following outlines the analysis results for the specific crash types in the region.

"Between 2008 and 2017, the most prevalent crash types were fixed-object, rear-end, animal, and angle."

REGIONAL CRASH TYPES

Between 2014 and 2018, the four most prevalent crash types were fixed-object, rear-end, animal and angle crashes. From 2014 to 2018, there were 3,949 fixed-object crashes and 4.4 percent of those crashes resulted in a fatality or serious injury. Approximately 27 percent of the reported pedestrian crashes and 18 percent of pedal-cycle crashes resulted in a fatality or serious injury. Both the total crash frequency and the percentage of fatal and serious injury crashes compared to the overall number of crashes can be used to identify applicable improvement strategies.

Figure 15: Regional Crash Types, 2014–2018

	TOTAL CRASHES	FATAL INJURY	SERIOUS INJURY	FSI RATE
FIXED OBJECT	3,949	19	155	4.4%
REAR END	3,393	3	60	1.9%
ANIMAL	2,442	0	6	0.2%
ANGLE	1,980	9	100	5.5%
SIDESWIPE - PASSING	1,766	2	33	2.0%
LEFT TURN	1,024	0	35	3.4%
BACKING	756	0	1	0.1%
PARKED VEHICLE	494	0	8	1.6%
RIGHT TURN	397	0	4	1.0%
SIDESWIPE - MEETING	333	1	15	4.8%
HEAD ON	288	10	31	14.2%
OTHER OBJECT	264	0	1	0.4%
OTHER NON-COLLISION	220	0	5	2.3%
OVERTURNING	214	1	27	13.1%
PEDESTRIAN	93	4	21	26.9%
PEDALCYCLES	57	0	10	17.5%
UNKNOWN	6	0	0	0.0%
TRAIN	5	0	0	0.0%
GRAND TOTAL	17,681	49	512	

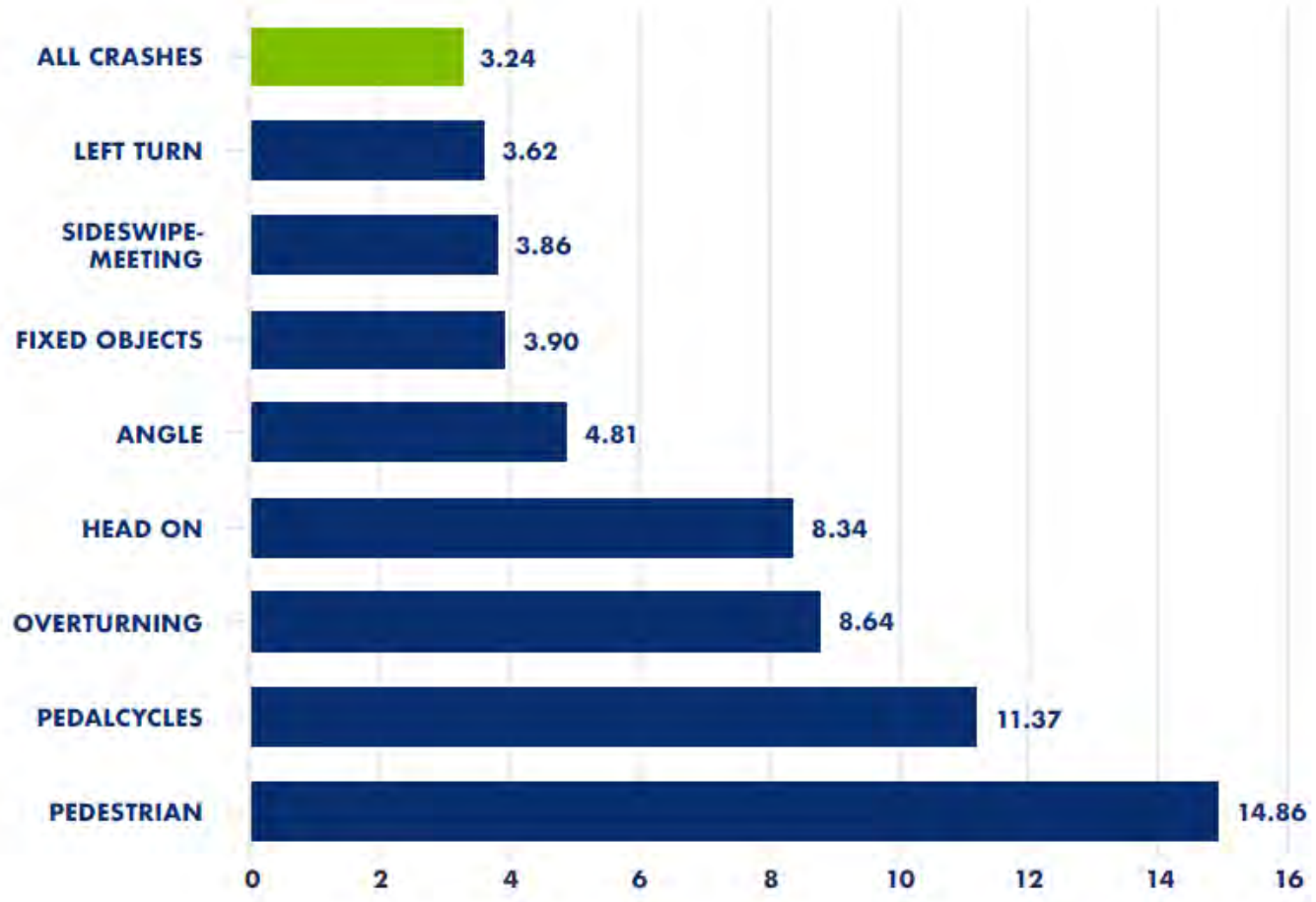
EQUIVALENT PROPERTY DAMAGE-ONLY CRASHES

The equivalent property damage-only (EPDO) crash frequency calculates the relative severity of the crashes occurring at a specific location. This EPDO crash frequency relates all crashes in terms of a property damage-only (no injury) crash. To calculate the EPDO, the following equation was used with factors based on information provided in the ODOT Economic Crash Analysis Tool.

EPDO Crash Frequency = (41.18 * Fatal and Serious Injury Crashes + 6.55 * Visible Injury Crashes + 4.44 * Possible Injury Crashes + Property Damage Only Crashes) / Total number of crashes

Pedestrian crashes have the highest EPDO value which indicates a crash type with high levels of serious injuries or fatalities.

Figure 16: EDPO for Crash Types, 2014–2018



CRASH TYPES BY JURISDICTION

Fixed object crashes are mostly overrepresented in the more rural, less-developed areas of the county, such as Butler Township and Cass Township. Similarly, animal crashes are mostly overrepresented in rural areas like Jefferson Township and Monroe Township. Rear-end and angle crashes are generally overrepresented in more urban areas like Mansfield and Shelby.

Figure 17: Crash Types by Jurisdiction Table, 2014–2018

	FIXED OBJECT	REAR END	ANIMAL	ANGLE
BELLVILLE	12%	23%	18%	8%
BLOOMINGGROVE TOWNSHIP	32%	8%	24%	8%
BUTLER	22%	6%	6%	22%
BUTLER TOWNSHIP	46%	4%	11%	9%
CASS TOWNSHIP	52%	4%	13%	9%
CRESTLINE	0%	0%	0%	0%
FRANKLIN TOWNSHIP	33%	7%	31%	9%
JACKSON TOWNSHIP	28%	10%	24%	13%
JEFFERSON TOWNSHIP	37%	4%	37%	4%
LEXINGTON	11%	30%	9%	17%
LUCAS	21%	21%	3%	0%
MADISON TOWNSHIP	24%	22%	11%	14%
MANSFIELD	14%	23%	4%	16%
MIFFLIN TOWNSHIP	39%	8%	20%	3%
MONROE TOWNSHIP	37%	3%	39%	4%
ONTARIO	9%	39%	9%	11%
PERRY TOWNSHIP	34%	9%	22%	1%
PLYMOUTH	15%	15%	54%	0%
PLYMOUTH TOWNSHIP	37%	3%	35%	7%
SANDUSKY TOWNSHIP	31%	3%	34%	3%
SHARON TOWNSHIP	51%	9%	13%	8%
SHELBY	11%	26%	3%	14%
SHILOH	9%	9%	0%	9%
SPRINGFIELD TOWNSHIP	32%	12%	25%	7%
TROY TOWNSHIP	29%	12%	32%	7%
WASHINGTON TOWNSHIP	29%	14%	26%	5%
WELLER TOWNSHIP	39%	6%	31%	7%
WORTHINGTON TOWNSHIP	41%	3%	30%	4%
COUNTYWIDE	22%	19%	14%	11%

ABOVE COUNTYWIDE AVERAGE BELOW COUNTYWIDE AVERAGE

CRASH TYPES FOR SEVERE CRASHES BY MAINTAINING AUTHORITY

Nearly 38 percent of all severe crashes in the region occur on city-maintained roadways. Another 37 percent of severe crashes occurred on State-maintained facilities. Nearly 64 percent of the pedestrian crashes and 80 percent of the bicycle crashes occurred on city-maintained roadways. Severe fixed-object crashes and animal crashes are overrepresented on the State system versus the locally maintained roadways.

Figure 18: Crash Types for Severe Crashes by Maintaining Authority, 2014–2018

	CITY OR MUNICIPAL HIGHWAY AGENCY	STATE HIGHWAY AGENCY	COUNTY HIGHWAY AGENCY	TOWN OR TOWNSHIP HIGHWAY AGENCY	OTHER/ UNCLASSIFIED	GRAND TOTAL
FIXED OBJECT	36	63	42	31	2	174
ANGLE	52	41	13	3	0	109
REAR END	30	28	3	1	1	63
HEAD ON	14	17	9	1	0	41
LEFT TURN	23	8	3	0	1	35
SIDESWIPE - PASSING	11	20	2	2	0	35
OVERTURNING	4	12	4	8	0	28
PEDESTRIAN	16	5	3	1	0	25
SIDESWIPE - MEETING	4	9	3	0	0	16
PEDALCYCLES	8	0	2	0	0	10
PARKED VEHICLE	8	0	0	0	0	8
ANIMAL	1	3	1	1	0	6
OTHER NON-COLLISION	3	1	1	0	0	5
RIGHT TURN	3	0	0	1	0	4
BACKING	0	1	0	0	0	1
OTHER OBJECT	0	1	0	0	0	1
GRAND TOTAL	213	209	86	49	4	561

OVERREPRESENTED CRASH TYPES

A more in-depth analysis was performed on the overrepresented crash types in the region to understand more about the problem and identify solutions. For this analysis 10 years of crash data were analyzed for a more detailed analysis to better determine why these crash types are overrepresented.

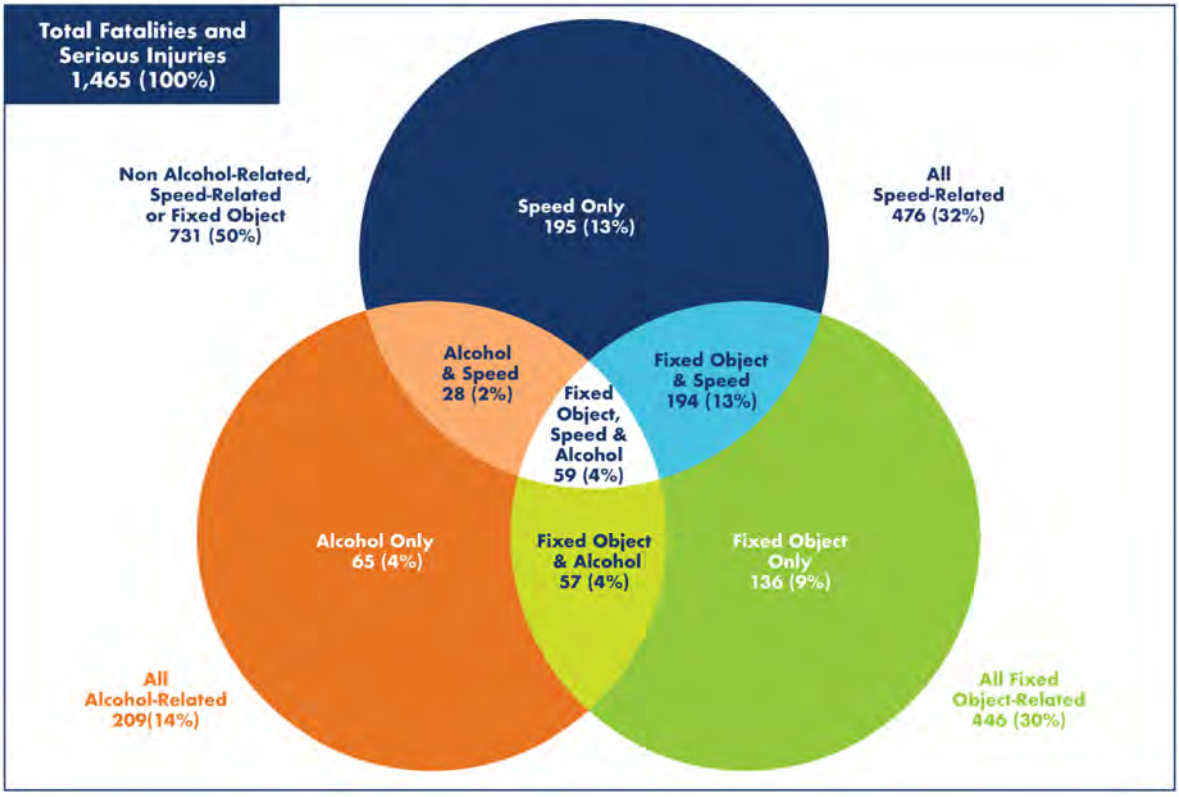
"Speed, alcohol, striking a fixed object or a combination of the three contributed to 50 percent of all fatalities and serious injuries in the region."

FIXED OBJECT CRASHES

There were 8,224 fixed-object crashes between 2009 and 2018 with 35 crashes resulting in a fatality and 352 resulting in a serious injury. Fixed-object crashes occur when a vehicle leaves the roadway and collides with a stationary object such as a tree, utility pole, or ditch.

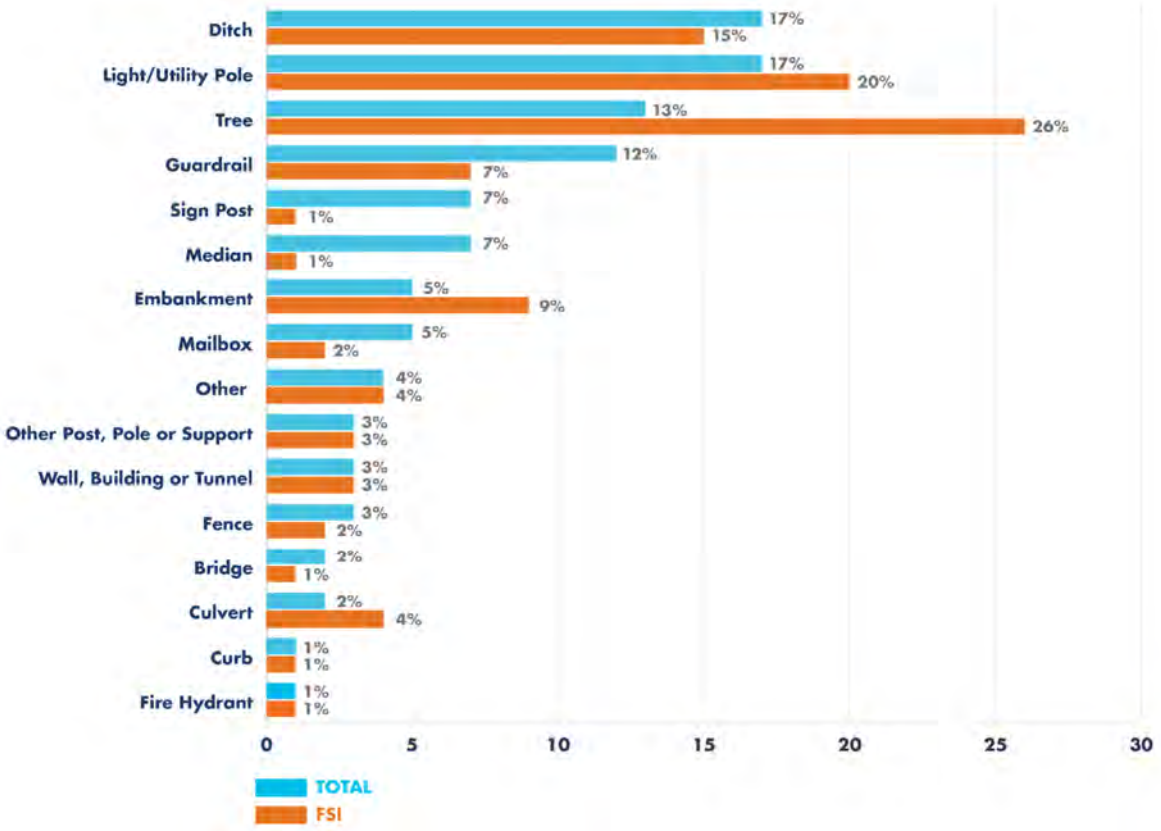
Speed, alcohol, striking a fixed-object, or a combination thereof contributed to 50 percent of all fatalities and serious injuries in Richland. In 21 percent of fatalities and serious injuries in Richland between 2009 and 2018, speed and/or alcohol were contributing factors in a fixed-object collision.

Figure 19: Fixed Object-Related Fatal and Serious Injury Crashes Primary Contributing Factors, 2009–2018



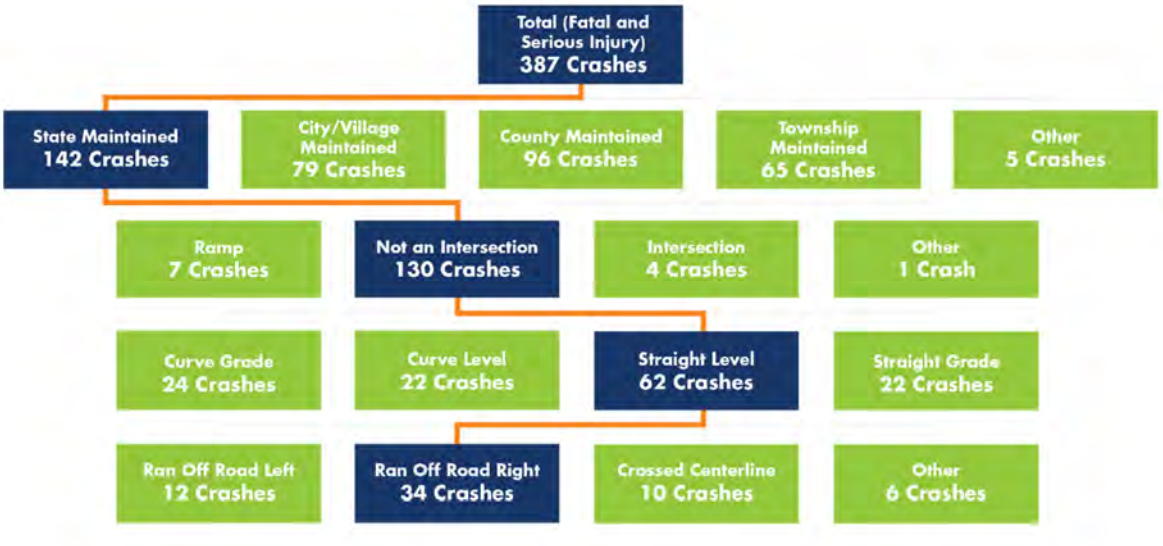
Ditches, utility poles, trees, and guardrails were the most commonly struck fixed objects. Trees were struck in 13 percent of all fixed-object crashes but in 26 percent of fatal and serious injury crashes.

Figure 20: Fixed Object-Related Fatal and Serious Injury Crashes by Object Struck, 2009–2018



Of the 1,387 fixed-object crashes that resulted in a fatality or serious injury, most occurred on State-maintained straight, level roadway segments not at intersections when the vehicle ran off the road to the right.

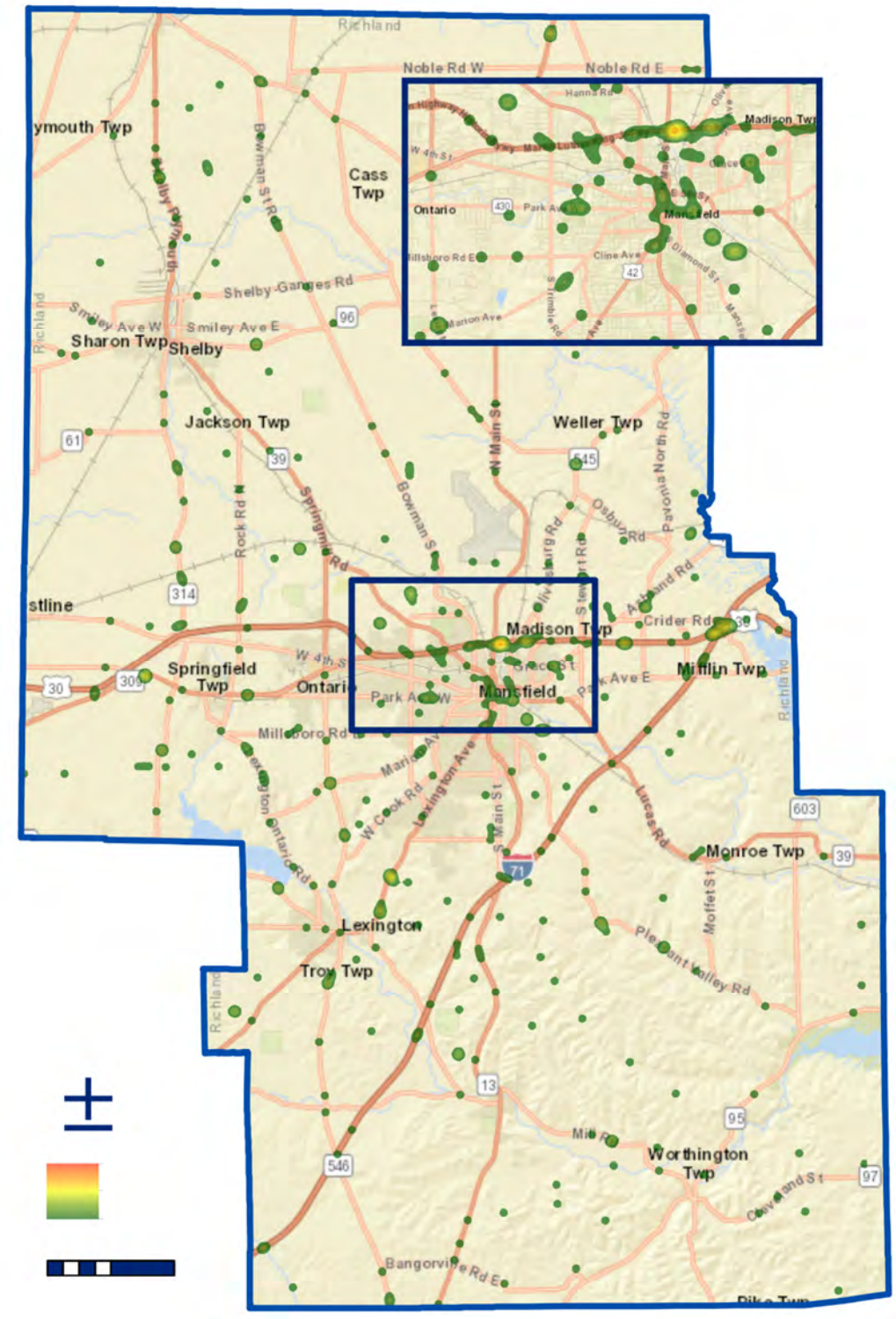
Figure 21: Fixed Object-Related Fatal and Serious Injury Crashes Crash Tree Diagram, 2009–2018



FIXED OBJECT CRASH LOCATIONS

Fixed object crashes occurred throughout Richland County, but there are hot spots along I-71, Main Street, Plymouth-Springmill Road, U.S. 30, Hanley Road, and SR 13.

Figure 22: Fixed Object-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Regionwide

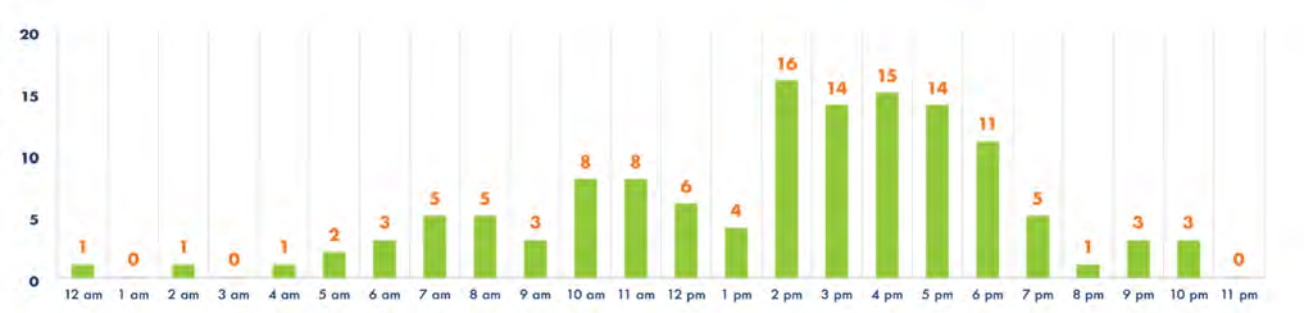


REAR-END CRASHES

There were 7,084 rear-end crashes between 2009 and 2018 with six crashes resulting in a fatality and 123 resulting in a serious injury.

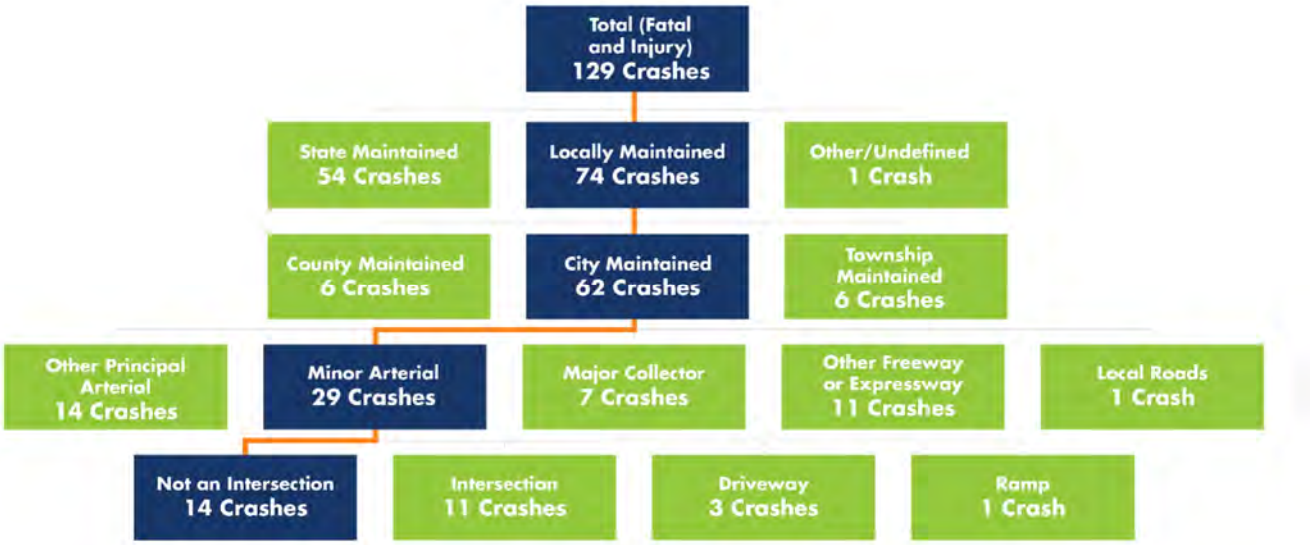
The frequency of fatal and injury rear-end crashes in Richland County spikes during peak periods of traffic volumes such as the morning peak period, lunch peak period, and afternoon/evening peak period. Severe rear-end crashes are less likely to occur in the late night or early morning hours.

Figure 23: Rear End-Related Fatal and Injury Crashes Time of Day, 2009–2018



In Richland County, fatal and injury rear-end crashes occur mostly on city maintained minor arterials. Furthermore, most of these rear-end crashes are not occurring at intersections which means they are likely happening at driveways along these routes where vehicles are slowing or stopping to turn into a driveway.

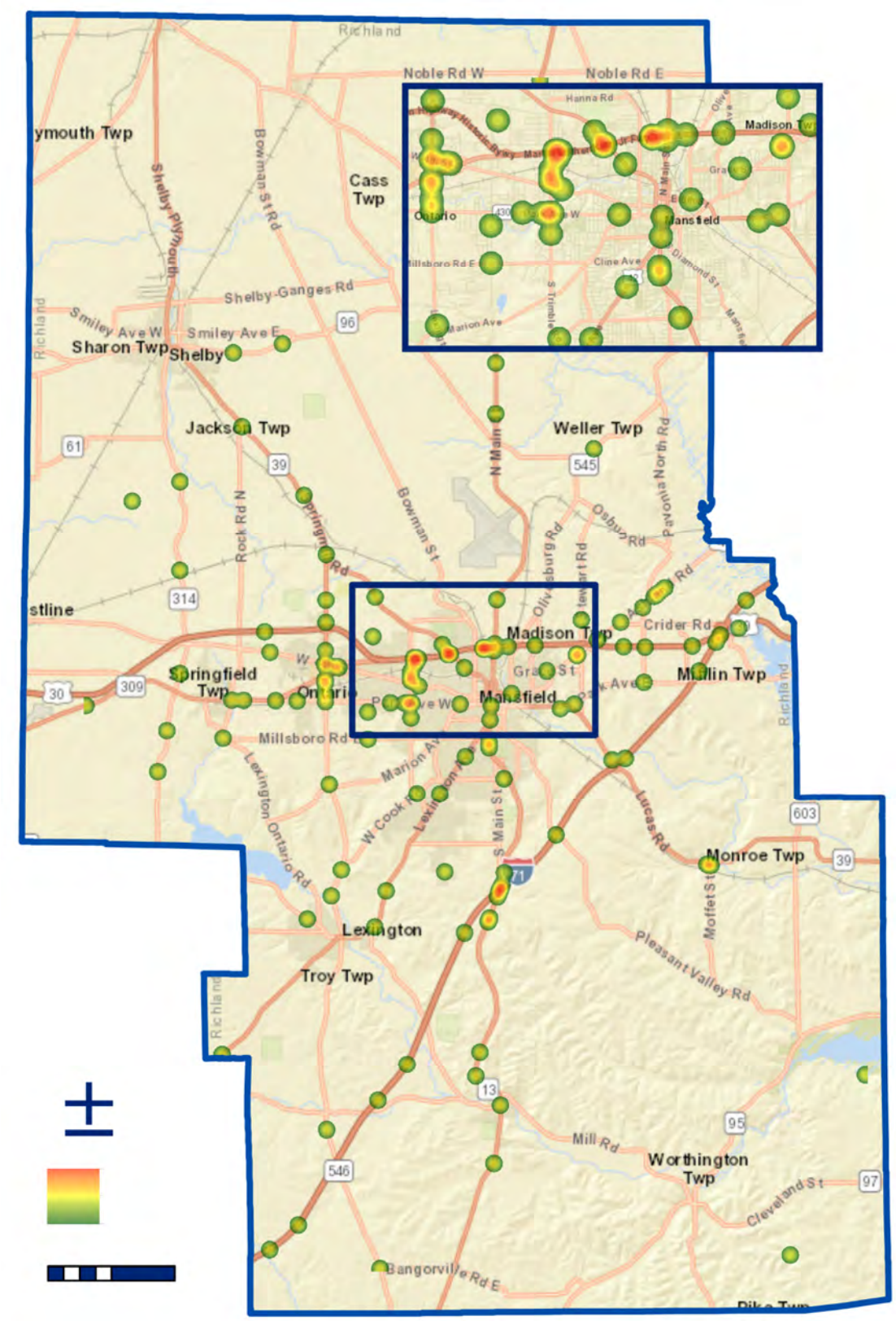
Figure 24: Rear End-Related Fatal and Injury Crashes Crash Tree Diagram, 2009–2018



REAR-END CRASH LOCATIONS

Most of the fatal and injury rear-end crashes occur along Lexington-Springmill Road, Trimble Road, Main Street, Park Avenue, and Lexington Avenue.

Figure 25: Rear End-Related Fatal and Injury Crashes Heat Map, 2009–2018—Regionwide

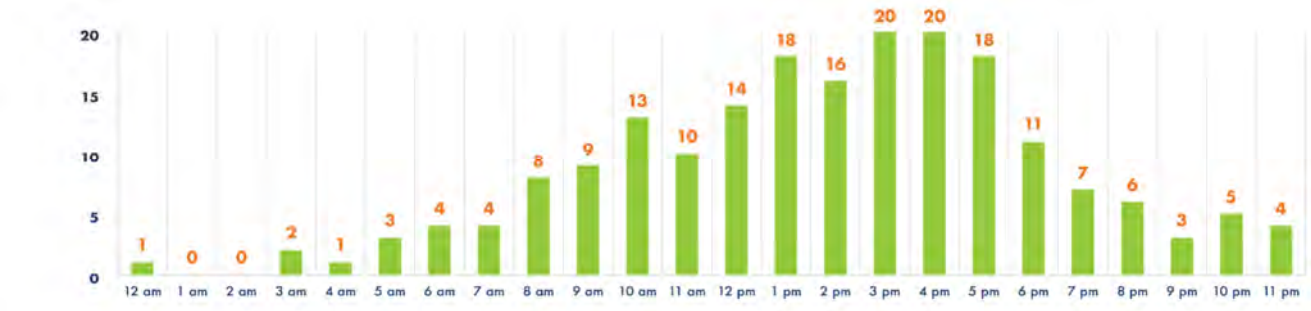


ANGLE CRASHES

There were 3,643 crashes between 2009 and 2018 with 17 crashes resulting in a fatality and 180 resulting in a serious injury.

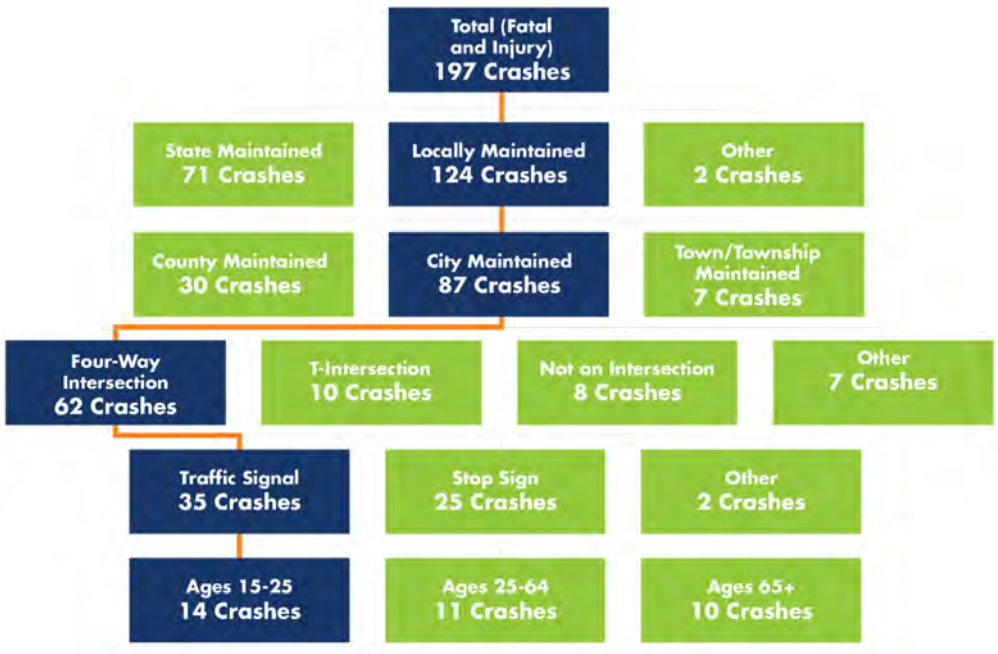
The frequency of angle crashes rises from 7:00 a.m. to 4:00 p.m. and then begins to decline in the evening and night hours. The majority of angle crashes occur between the hours of 1:00 p.m. and 5:00 p.m. This correlates with hours of peak traffic volumes in the region.

Figure 26: Angle Passing Fatal and Injury Crashes Time of Day Chart, 2009–2018



Most of the fatal and serious injury angle crashes occurred on city-maintained roadways, at four-way signalized intersections. Most often, young drivers between the ages of 15 and 25 were considered at fault in these crashes.

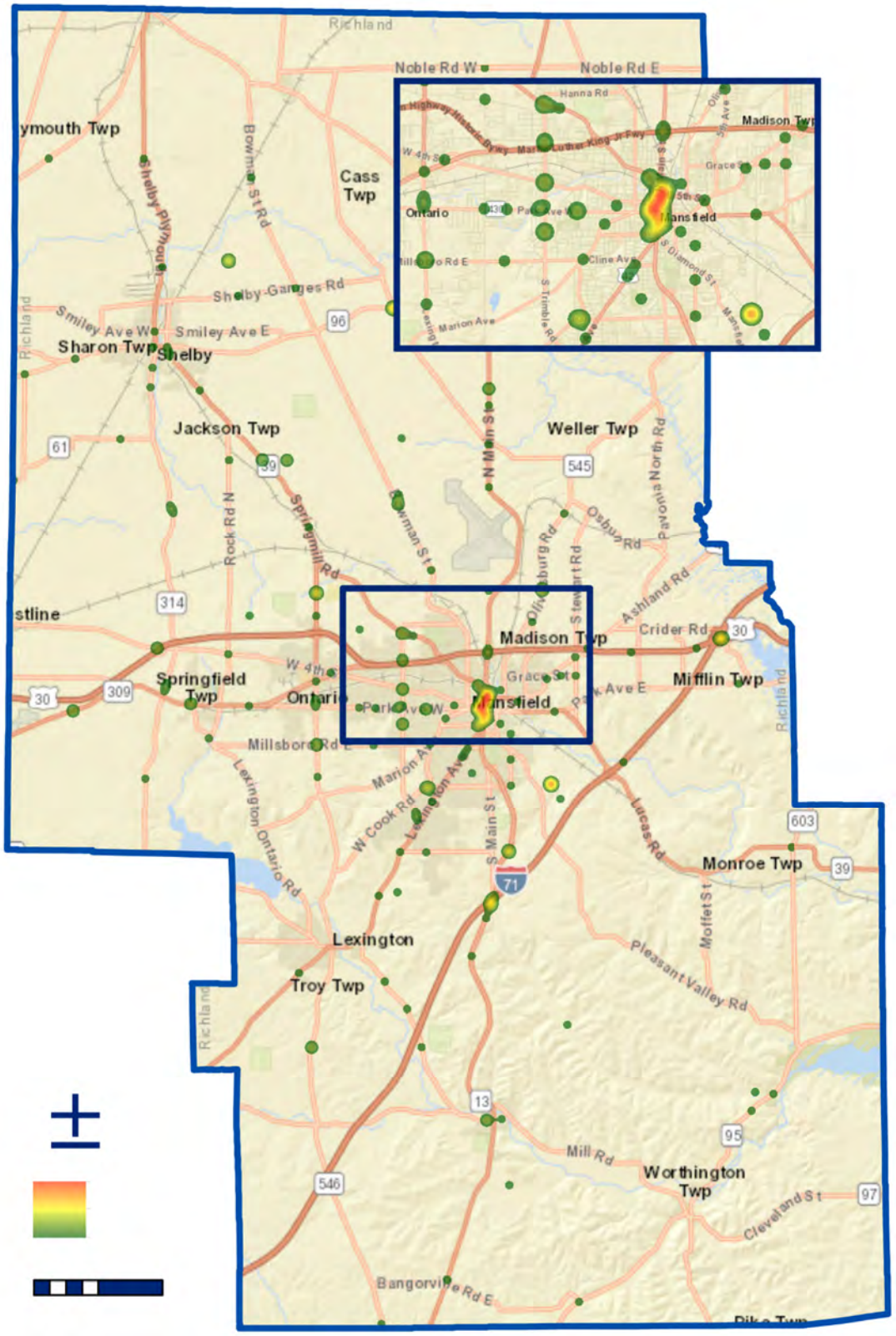
Figure 27: Angle Fatal and Injury Crashes Crash Tree Diagram, 2009–2018



ANGLE CRASH LOCATIONS

Angle crashes occurred throughout Richland County. Angle crashes resulting in fatalities and injuries occurred along Park Avenue, Main Street, Diamond Street, Trimble Road, Lexington-Springmill Road, Lexington Avenue and 4th Street.

Figure 28: Angle Fatal and Injury Crashes Heat Map, 2009–2018—Regionwide



Emphasis Areas—
Prioritized Focus Areas

SECTION CONTENT:

Roadway Departure

Speed

Intersections

5 EMPHASIS AREAS—PRIORITIZED FOCUS AREAS

Several different factors contribute to, or can cause, a crash, such as impairment, speed, distraction, etc. At the statewide level, the Ohio Strategic Highway Safety Plan (SHSP) reviews a wide range of potential factors; identifies the top issues causing fatalities and serious injuries; and develops strategies and actions to address them. Agencies often refer to these primary contributing factors as emphasis areas, which means they receive additional "emphasis," in the form of time and resources.

	STATEWIDE	RICHLAND COUNTY	RICHLAND COUNTY - LOCAL ROADS ONLY
ROADWAY DEPARTURE	37.6%	47.6%	42.6%
INTERSECTION	36.6%	37.3%	43.1%
RAILROAD CROSSING	0.3%	0.0%	0.0%
ALCOHOL RELATED INVOLVEMENT	17.1%	14.3%	15.2%
RESTRAINTS NOT USED DRIVER/ OCCUPANTS	19.3%	25.9%	24.5%
SPEED RELATED INVOLVEMENT	23.9%	32.5%	30.7%
YOUNG DRIVER INVOLVEMENT (15-25)	37.3%	41.7%	40.0%
OLDER DRIVER INVOLVEMENT (65+)	17.4%	18.2%	18.1%
DISTRACTED DRIVERS	2.8%	9.4%	9.2%
MOTORCYCLE DRIVER/PASSENGER	8.6%	11.7%	12.9%
PEDESTRIAN INVOLVEMENT	11.4%	3.7%	4.8%
BICYCLE INVOLVEMENT	6.4%	1.2%	1.8%
WORK ZONE RELATED	2.1%	0.8%	0.5%
DRUG RELATED INVOLVEMENT	1.6%	5.7%	5.4%
REAR END	7.4%	11.7%	11.2%

ABOVE STATEWIDE AVERAGE BELOW STATEWIDE AVERAGE

For Richland County, crash data for a 10-year timeframe (2009–2018), were evaluated to determine the top contributors to crashes, or the local emphasis areas. The 10 years of data provide enough information for an in-depth analysis of these contributing factors so that strategies that mitigate crashes can be accurately identified.

Intersections, roadway departures, and speed contribute significantly to the safety challenges in the County. Young driver crashes also are high, but stakeholders felt that solutions to address these crashes could be done in coordination with the other three major emphasis areas.

Based on the results of the crash analysis, stakeholder input, feasibility to address the problem in the County and alignment or relationship to the Ohio SHSP, the following were prioritized for the region to help focus implementation efforts.

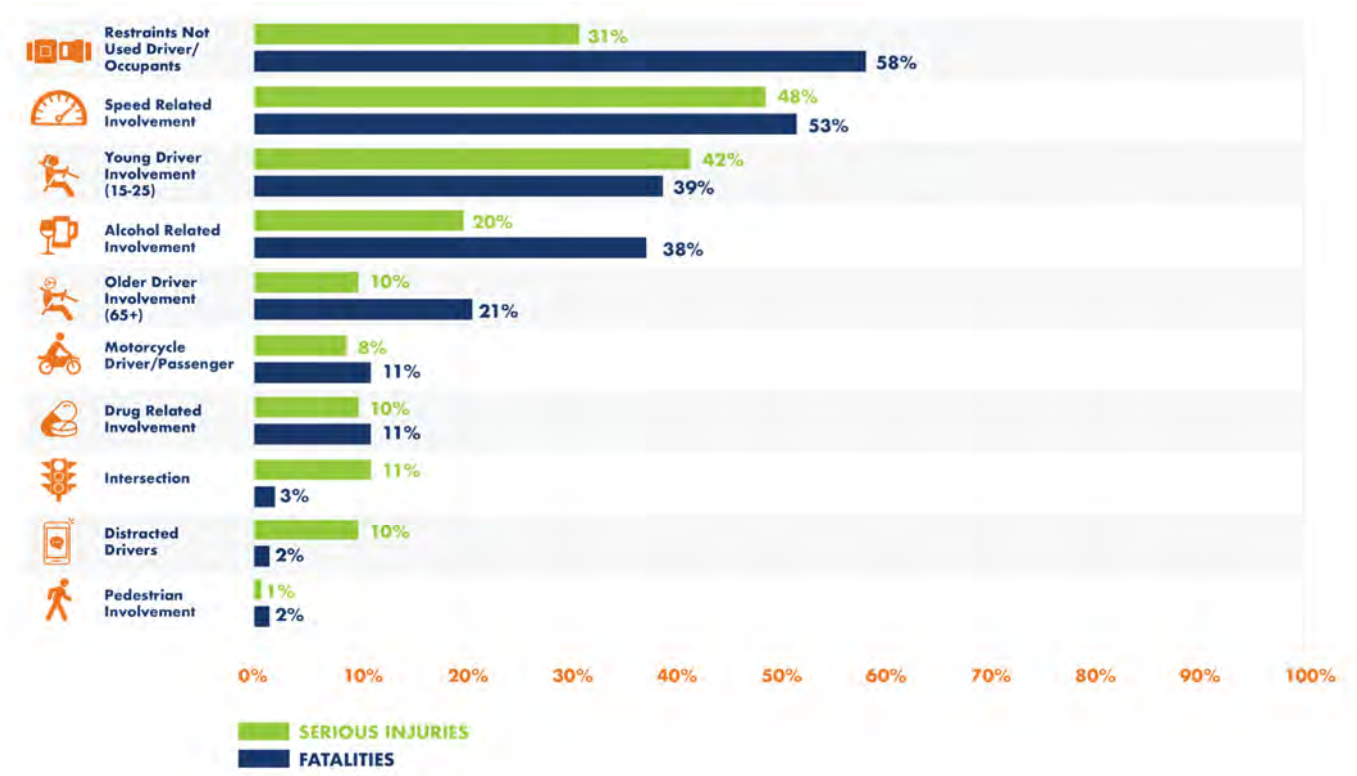
ROADWAY DEPARTURE

Between 2009 and 2018, 47 percent of the fatal and serious injury crashes in Richland County involved a vehicle exiting the roadway. On average, seven to eight people a year were fatally injured in a crash involving roadway departure and 66 to 67 people were seriously injured. Based on the historical trends, fatalities and serious injuries are slightly decreasing in Richland County.

Figure 30: Roadway Departure Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

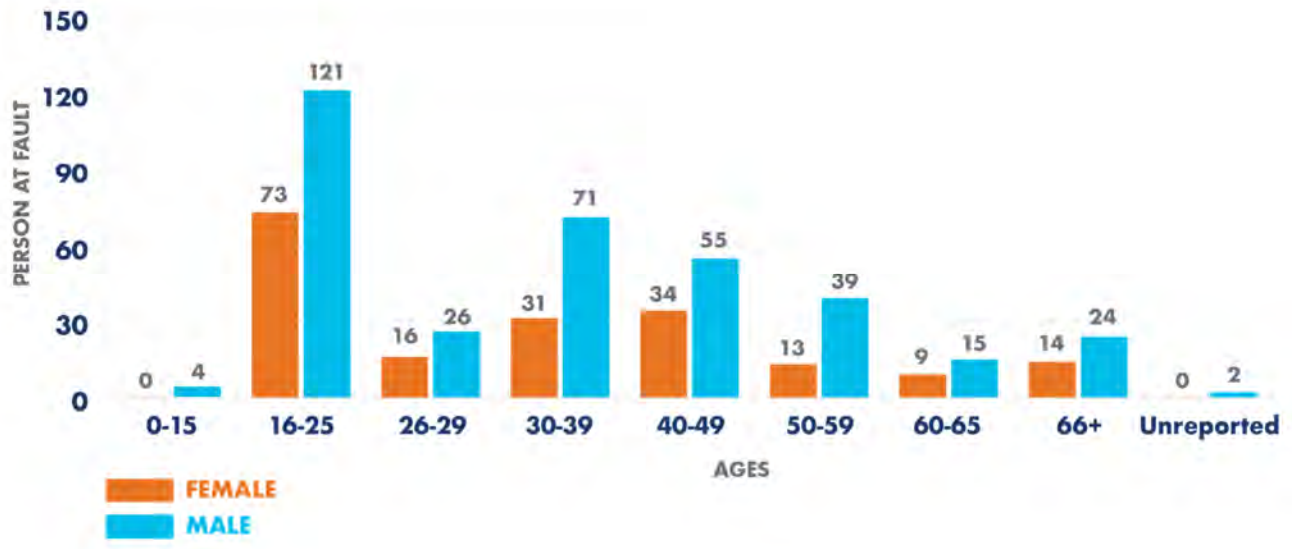
Factors contributing to fatalities and serious injuries involving roadway departure were unrestrained occupants, young driver involvement, speed, and impaired drivers. In 58 percent of fatalities involving roadway departure, the driver and/or occupants were unrestrained.

Figure 31: Roadway Departure Fatal and Serious Injury Crashes Overlaps, 2009–2018



WHO? The vast majority of at-fault drivers in roadway departure crashes resulting in a fatality or injury were between the ages of 16 and 25. Most often, at-fault drivers in roadway departure crashes were male.

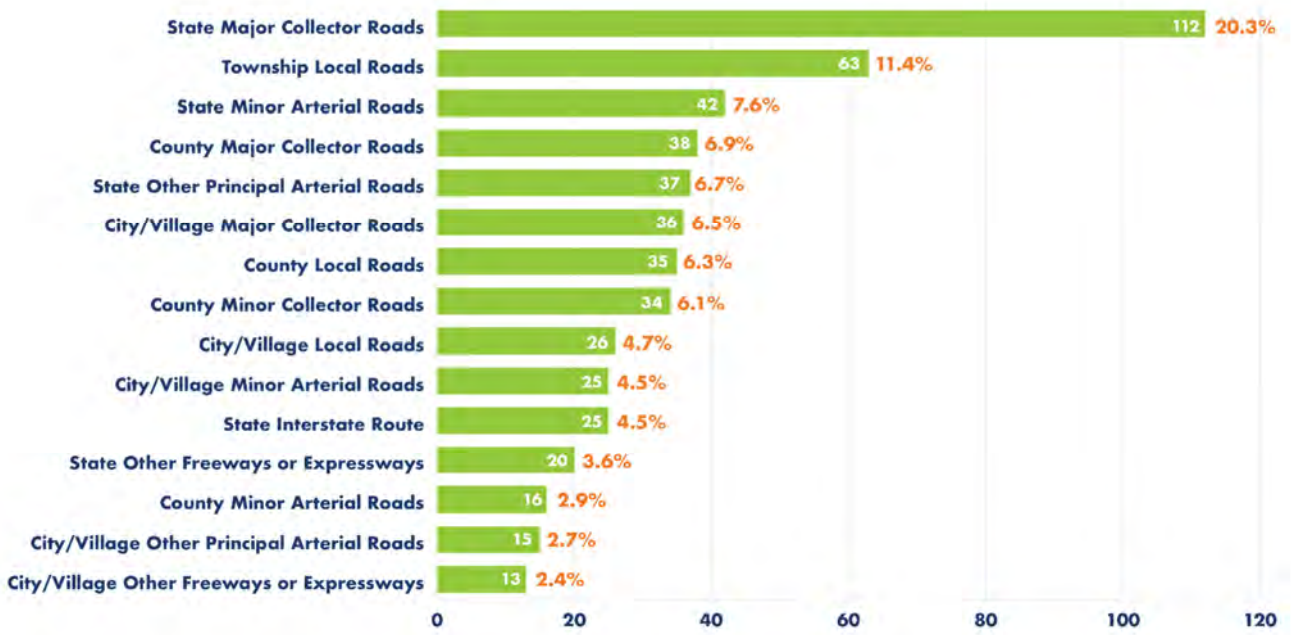
Figure 32: Roadway Departure Fatal and Serious Injury Crashes Age/Gender, 2009–2018



ROADWAY DEPARTURE

WHERE? Nearly 43 percent of roadway departure-related fatalities and serious injuries occurred on State-maintained facilities, with over 20 percent occurring on State Major Collector roads (i.e., SR 61, SR 95, SR 97, and SR 314). An additional 11.4 percent of fatal or serious injury crashes involving roadway departure occurred on local roads maintained by townships (i.e, Fleming Falls Road, Kings Corner Road, Mansfield Road, Noble Road, Peterson Road, Reed Road, Spayde Road, St. James Road, and Stoffer Road).

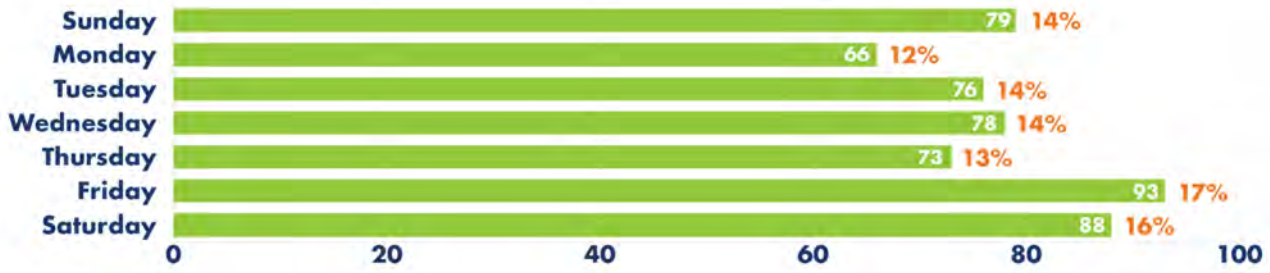
Figure 33: Roadway Departure Fatal and Serious Injury Crashes Roadway Functional Class, 2009–2018



WHEN? Fatal and serious injury crashes involving roadway departure occurred throughout the day with a peak occurring between 1:00 p.m. and 5:00 p.m. Fatal and serious injury crashes involving roadway departure occured consistently throughout the week with a peak on Friday and Saturday.

Figure 34: Young Driver-Related Fatal and Serious Injury Crashes Time of Day, 2009–2018

Figure 35: Roadway Departure Fatal and Serious Injury Crashes Day of Week, 2009–2018



WHY? Nearly 67 percent of roadway departure-related fatal and serious injury crashes were fixed-object crashes. Together with head on collisions, these two crash types account for almost 78 percent of all fatal and serious injury crashes in Richland County involving roadway departure.

Figure 36: Roadway Departure Fatal and Serious Injury Crashes by Type, 2009–2018

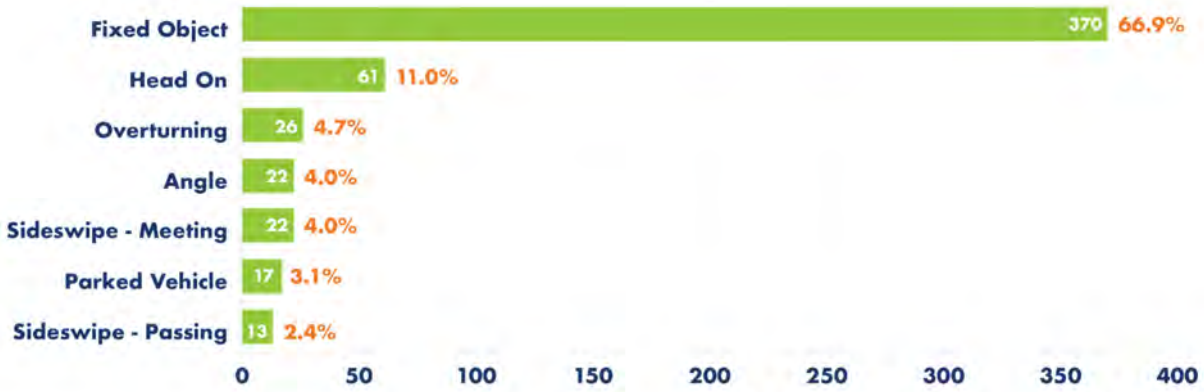


Figure 37: Roadway Departure Fatal and Serious Injury Crashes by Type, 2009–2018

CRASH TYPE	FATALITIES				SERIOUS INJURIES			
	Total Fatalities	Roadway Departure-Related	% Roadway Departure Related	% All Fatalities (Roadway Departure Related)	Total Injuries	Roadway Departure-Related	% Roadway Departure Related	% All Serious Injuries (Roadway Departure Related)
Fixed Object	39	38	97%	35%	407	391	96%	29%
Head On	23	18	78%	17%	148	98	66%	7%
Overturning	3	3	100%	3%	51	26	51%	2%
Sideswipe - Meeting	1	1	100%	1%	30	28	93%	2%
Angle	18	2	11%	2%	246	26	11%	2%
Parked Vehicle	3	3	100%	3%	21	20	95%	1%
Sideswipe - Passing	4	0	0%	0%	70	18	26%	1%
Left Turn	2	0	0%	0%	114	10	9%	1%
Pedestrian	7	1	14%	1%	47	4	9%	0%
TOTAL (All Crash Types)	108	66	61%	61%	1,357	631	46%	46%

ROADWAY DEPARTURE

Most of the roadway departure fatal and serious injury crashes occurred in or surrounding Mansfield. There were concentrations of crashes involving roadway departure crashes along U.S. 30, I-71, and Lexington Avenue.

Figure 38: Roadway Departure Fatal and Serious Injury Crashes Heat Map, 2009–2018—Regionwide

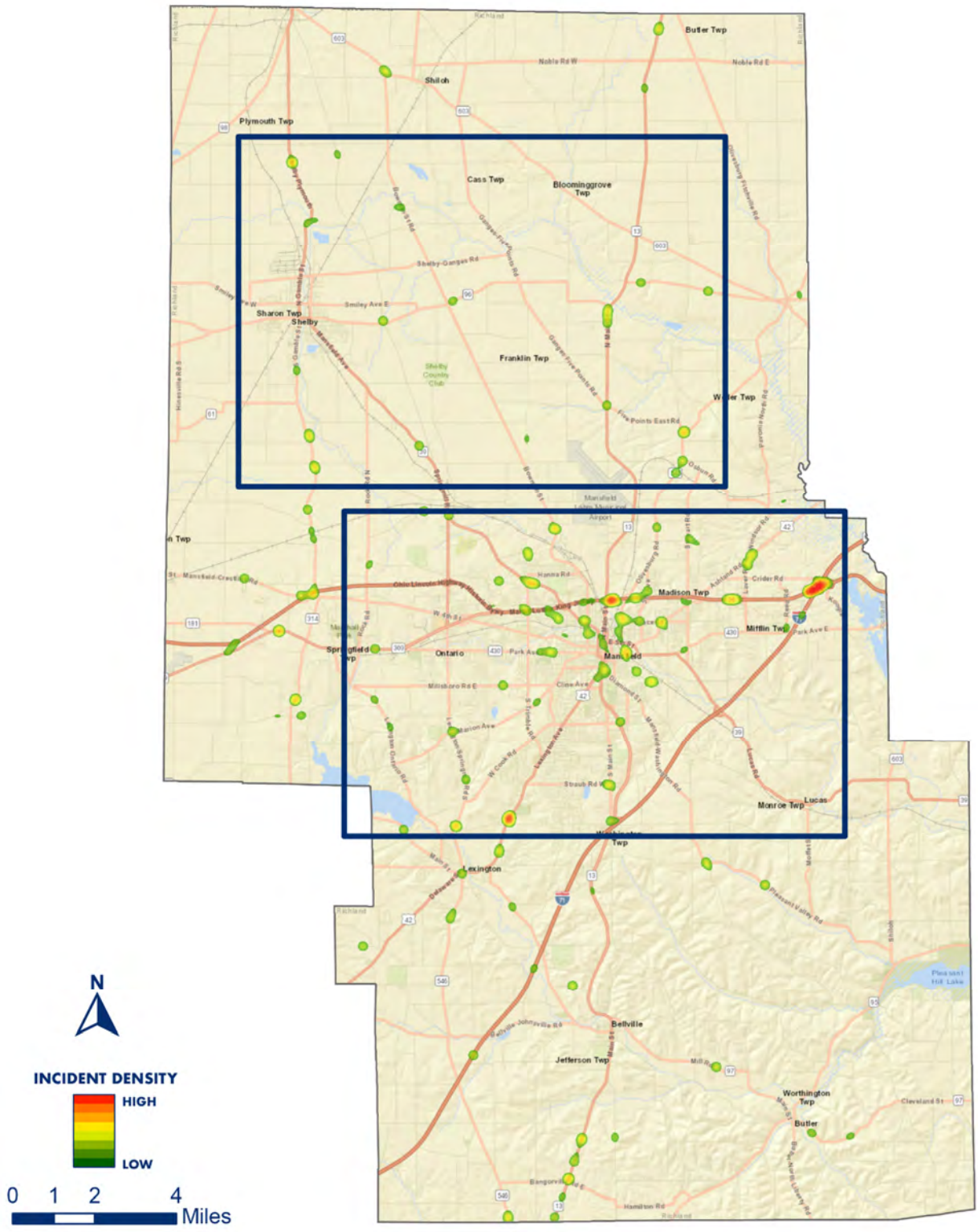
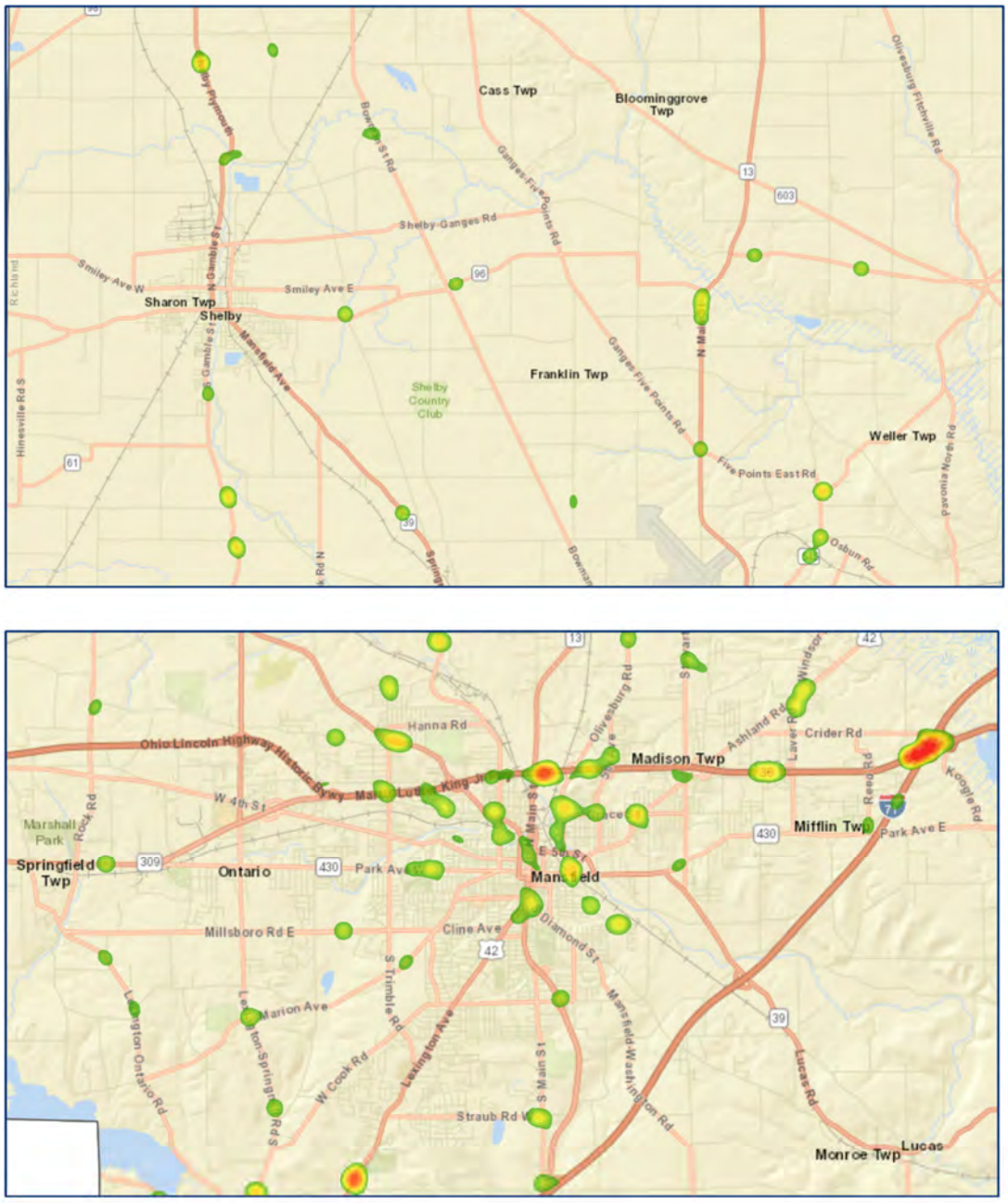


Figure 39: Roadway Departure Fatal and Serious Injury Crashes Heat Map, 2009–2018—Focus Area

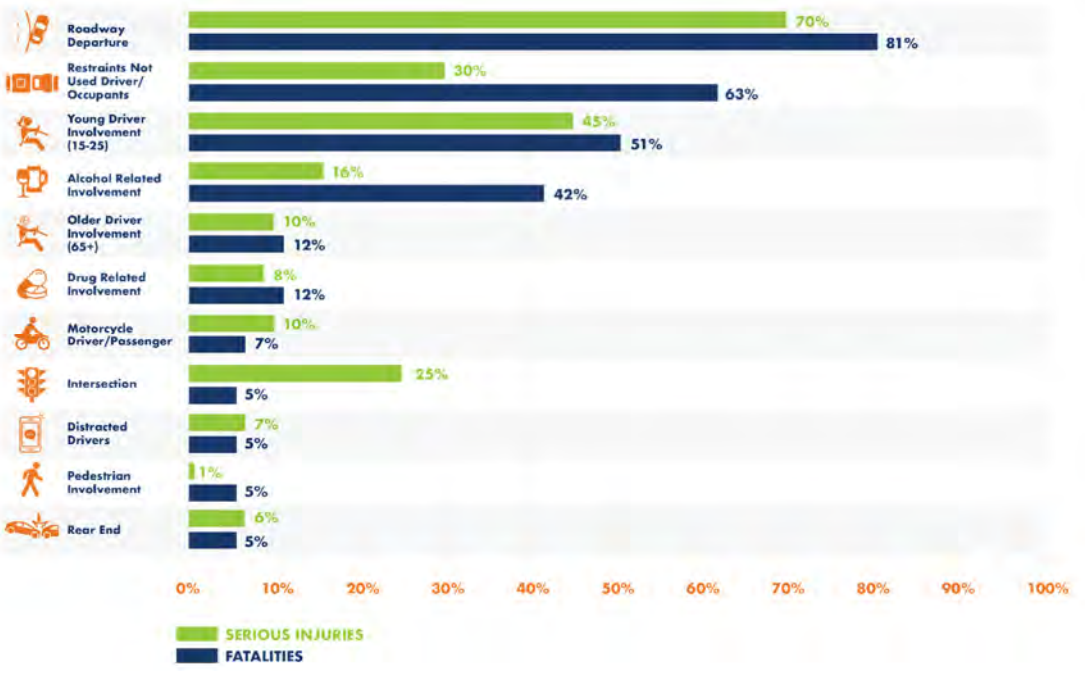


Between 2009 and 2018, crashes involving speeding contributed to nearly 33 percent of all fatal and serious injury crashes in Richland County. On average, four to five people were fatally injured, and 43 to 44 people were seriously injured each year in a crash involving speeding. Fortunately, based on historical data, both fatalities and serious injuries involving speeding are slightly decreasing.

Figure 40: Speed-Related Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

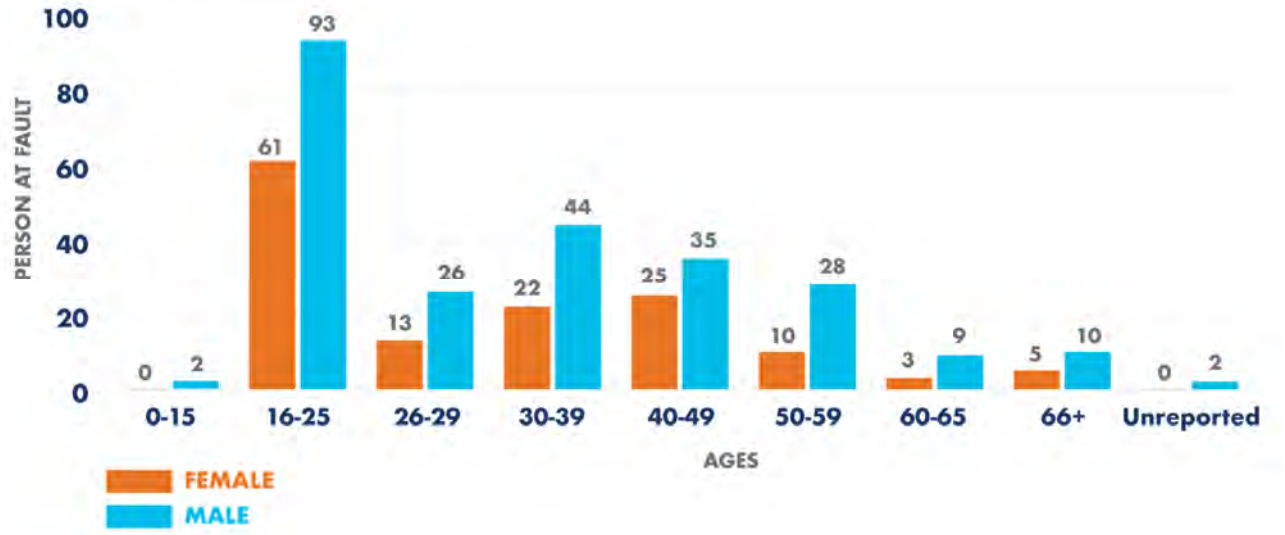
Usually multiple factors contribute to a crash. Most commonly, fatalities involving speeding involved roadway departure, occupants not wearing a seat belt, alcohol, young driver involvement, or a combination thereof. Serious injury crashes involving speeding most often occurred with roadway departure and with young drivers involved.

Figure 41: Speed-Related Fatal and Serious Injury Crashes Overlaps, 2009–2018



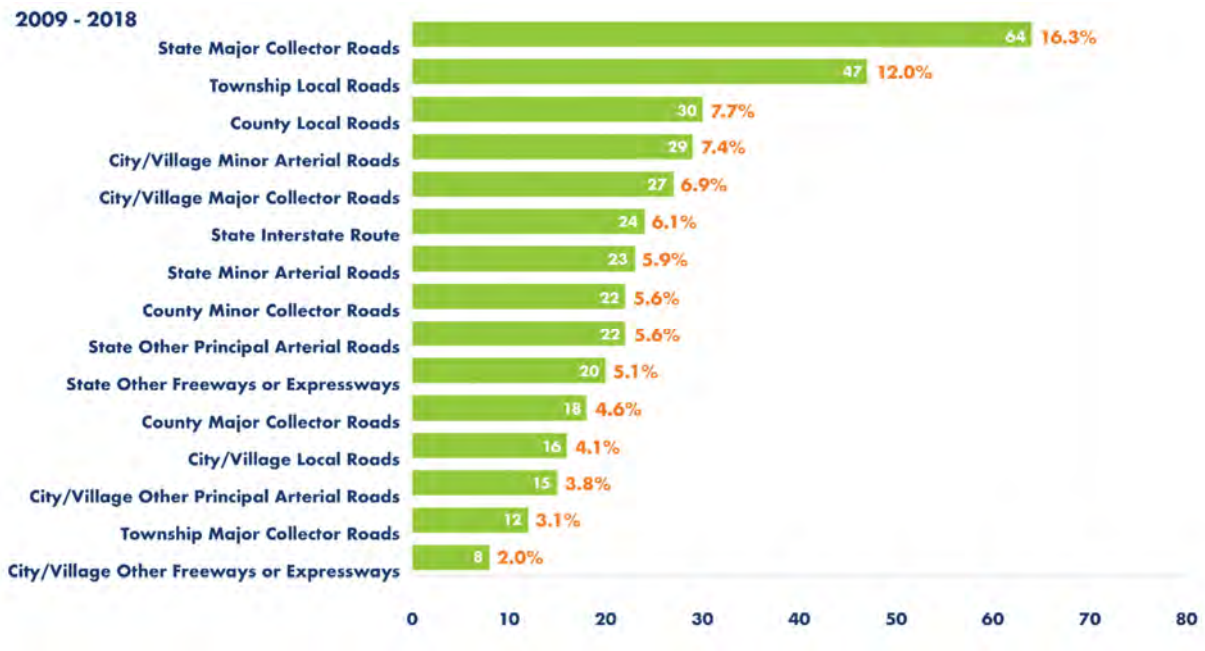
WHO? The majority of at-fault drivers in speed-related crashes resulting in a fatality or serious injury were male. Most of the drivers were between the ages of 16 and 25 years old.

Figure 42: Speed-Related Fatal and Injury Crashes Age/Gender, 2009–2018



WHERE? Over 39 percent of speed-related fatalities and serious injuries occurred on State-maintained facilities, with nearly 16 percent occurring on State-maintained Major Collector roads (i.e., SR 314, SR 61 and SR 545). An additional 12 percent of fatal or serious injury crashes involving speed occurred on local roads maintained by townships (i.e., Fleming Falls Road, Mansfield Road, Noble Road, Piper Road, and Spayde Road).

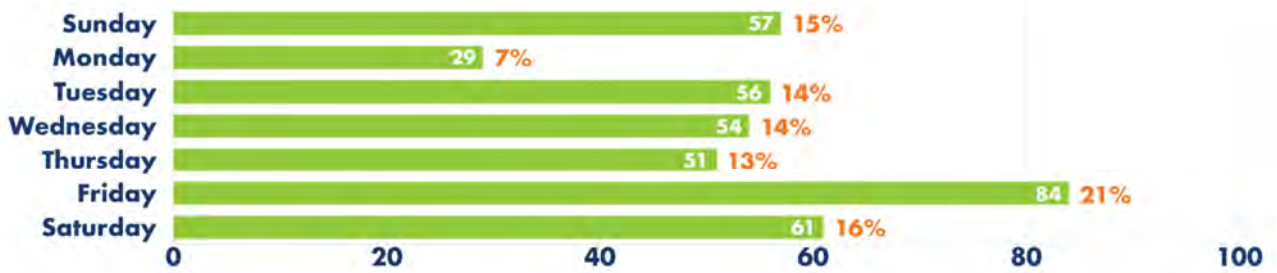
Figure 43: Speed-Related Fatal and Serious Injury Crashes Roadway Functional Class, 2009–2018



WHEN? The majority of fatal and injury crashes involving speed occurred throughout the day with a peak occurring between 2:00 p.m. and 5:00 p.m. correlating with the evening peak hour. 49 percent of speed-related fatal or injury crashes occurred on Thursday, Friday, and Saturday.

Figure 44: Speed-Related Fatal and Serious Injury Crashes Time Of Day, 2009–2018

Figure 45: Speed-Related Fatal and Serious Injury Crashes Day of Week, 2009–2018



WHY? Approximately 55 percent of speed-related fatal and injury crashes involved the vehicle leaving the roadway and striking a stationary object like a utility pole, tree, or mailbox. The next most common crash type was angle crashes, which accounted for almost 12 percent of speed-related fatal and injury crashes.

Figure 46: Speed-Related Fatal and Serious Injury Crashes by Type, 2009–2018

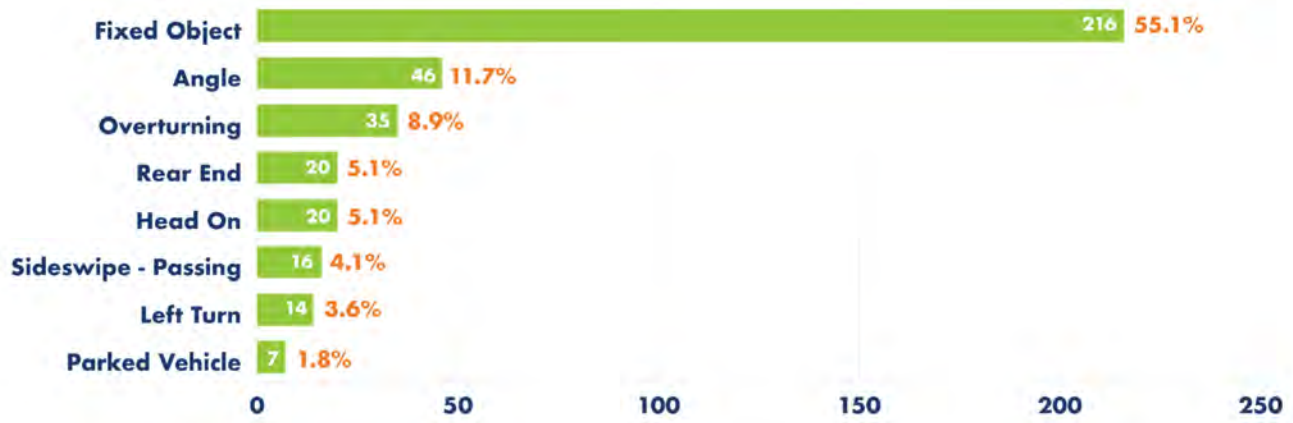


Figure 47: Speed-Related Fatal and Serious Injury Crashes by Type, 2009–2018

CRASH TYPE	FATALITIES				SERIOUS INJURIES			
	Total Fatalities	Speed-Related	% Speed Related	% All Fatalities (Speed Related)	Total Injuries	Speed-Related	% Speed Related	% All Serious Injuries (Speed Related)
Fixed Object	39	24	62%	22%	407	229	56%	17%
Angle	18	3	17%	3%	246	57	23%	4%
Overturning	3	3	100%	3%	51	37	73%	3%
Head On	23	5	22%	5%	148	27	18%	2%
Rear End	6	2	33%	2%	166	25	15%	2%
Sideswipe - Passing	4	1	25%	1%	70	19	27%	1%
Left Turn	2	1	50%	1%	114	14	12%	1%
Parked Vehicle	3	1	33%	1%	21	10	48%	1%
Pedestrian	7	2	29%	2%	47	4	9%	0%
Sideswipe - Meeting	1	1	100%	1%	30	5	17%	0%
TOTAL (All Crash Types)	108	43	40%	40%	1,357	433	32%	32%

Speed-related fatal and serious injury crashes occurred throughout Richland County. There were concentrations of crashes involving distraction along U.S. 30, Main Street, Ashland Road, and Grace Street in and surrounding Mansfield.

Figure 48: Speed-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Regionwide

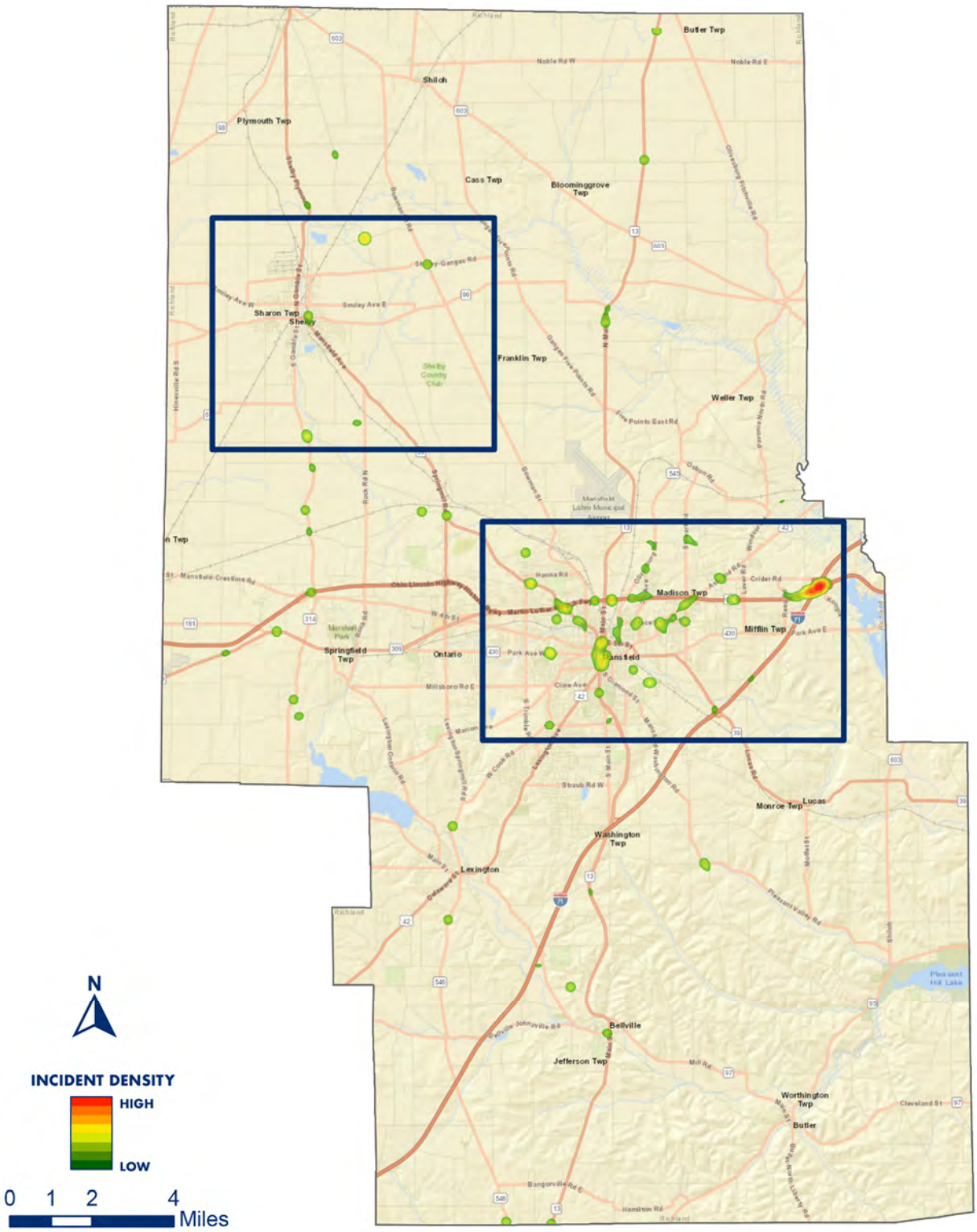
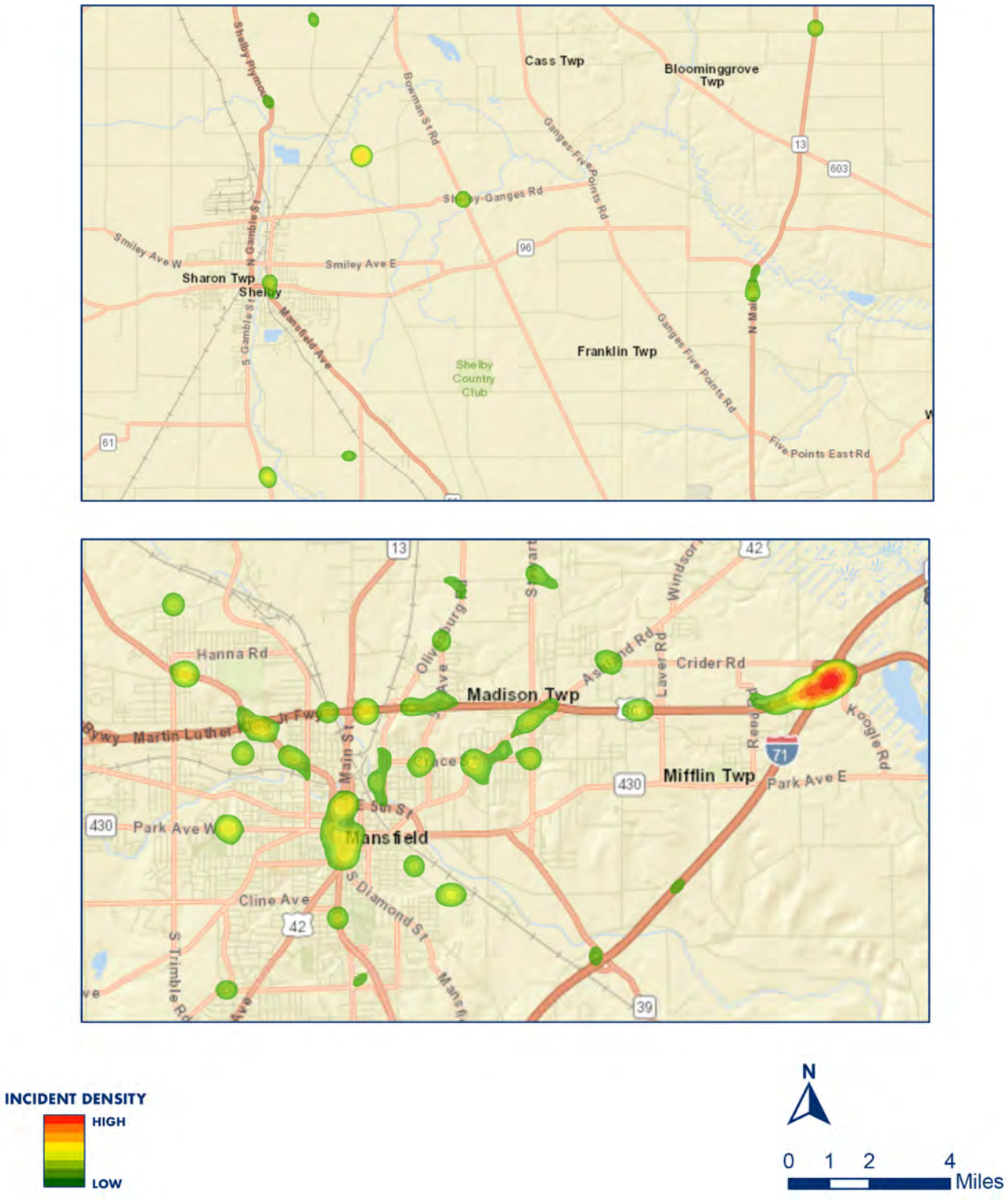


Figure 49: Speed-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Focus Area



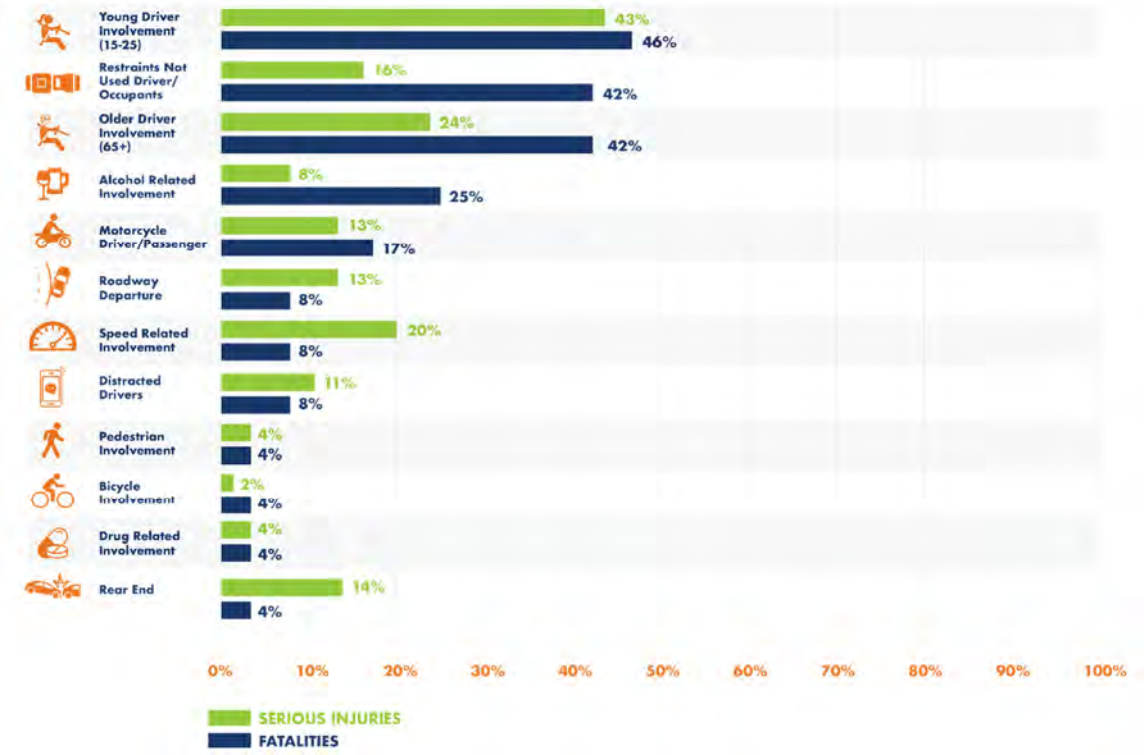
INTERSECTIONS

Between 2009 and 2018, crashes at intersections contributed to 37 percent of all fatal and serious injury crashes in Richland County. On average, two to three people were fatally injured, and 52 to 53 people were seriously injured each year in a crash at an intersection. Based on historical data, the frequency of fatal crashes is decreasing, while the serious injury crashes at intersections are increasing every year in Richland County.

Figure 50: Intersection-Related Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

Usually multiple factors contribute to a crash. Most commonly, unbelted occupants, alcohol, and young or older driver involvement contribute to fatalities at intersection crashes in Richland County. Young drivers are involved in 46 percent of fatalities and 43 percent of serious injuries at intersections.

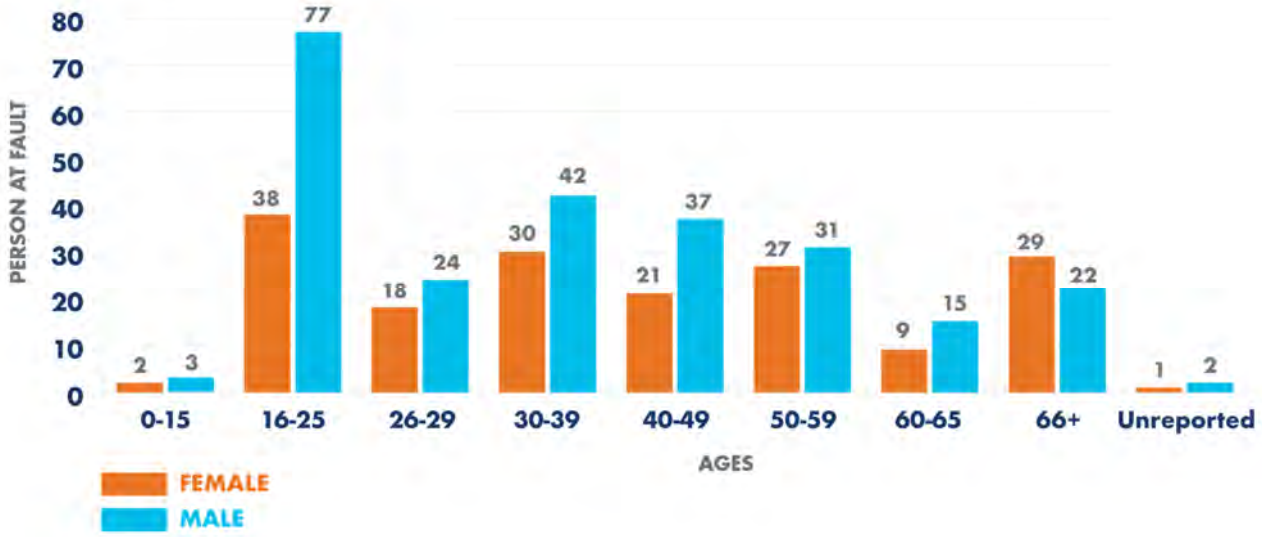
Figure 51: Intersection-Related Fatal and Serious Injury Crashes Overlaps, 2009–2018



INTERSECTIONS

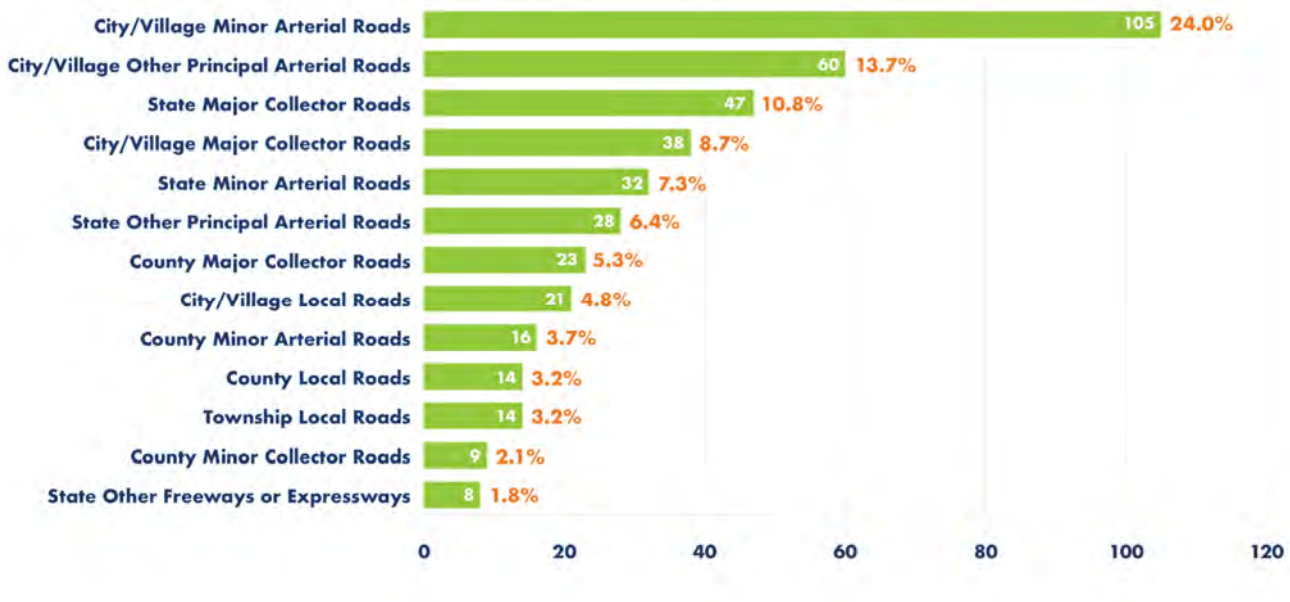
WHO? The vast majority of at-fault drivers in intersection-related crashes were young drivers between the ages of 16 and 25. In general, males were most cited for contributing to intersection crashes.

Figure 52: Intersection-Related Fatal and Serious Injury Crashes Age/Gender, 2009–2018



WHERE? Over 51 percent of fatal and injury intersection crashes occurred on city/village-maintained facilities. Another 25 percent of these crashes happened on State-maintained roadways. 24 percent of fatal and injury intersection-related crashes in Richland County occur on Minor Arterial roads maintained by cities or villages (i.e., Cook Road, Lexington Road, Park Avenue, and Trimble Road). Another nearly 14 percent of intersection-related crashes occurred on city/village-maintained Other Principal Arterials Roads (i.e., Diamond Street, Lexington Avenue, and Main Street in Mansfield).

Figure 53: Intersection-Related Fatal and Serious Injury Crashes Roadway Functional Class, 2009–2018



INTERSECTIONS

WHEN? Intersection crashes generally correlated with the hours of peak traffic volumes, starting with the peak in the morning and rising until around 4:00 p.m. Nineteen percent of intersection fatal and injury crashes occurred on Friday with the fewest crashes occurring on Sundays and Mondays.

Figure 54: Intersection-Related Fatal and Serious Injury Crashes Time of Day, 2009–2018

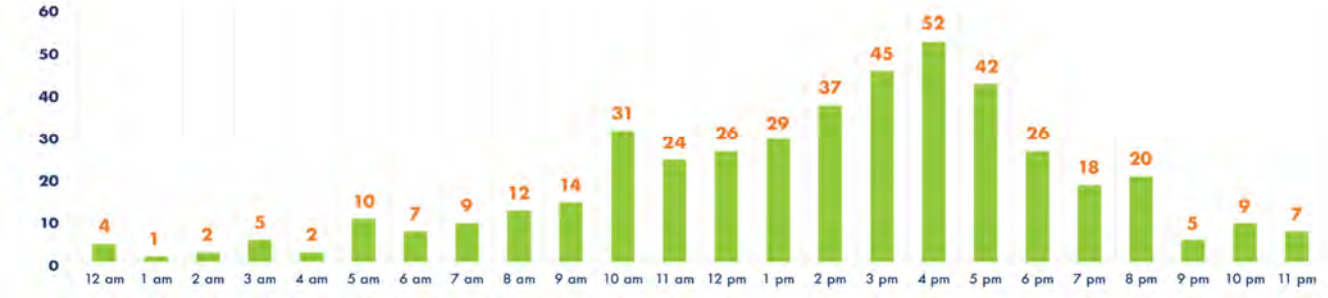
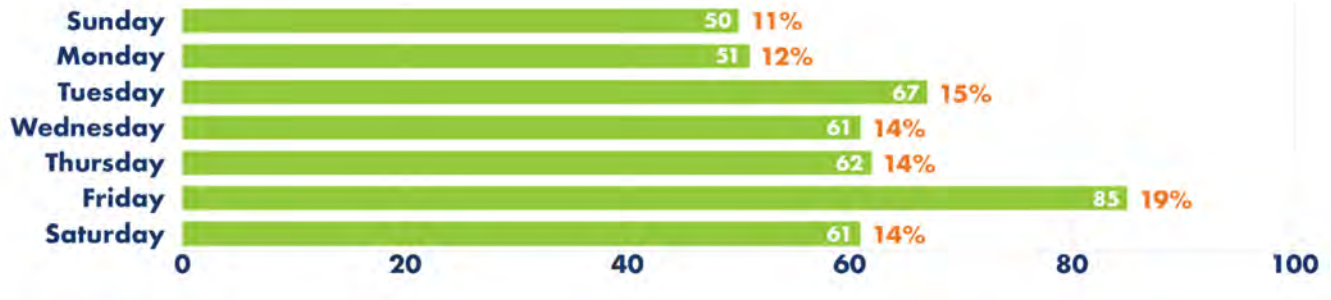


Figure 55: Intersection-Related Fatal and Serious Injury Crashes Day of Week, 2009–2018



WHY? Nearly 37 percent of fatal and injury crashes at intersections in Richland County were angle collisions. Angle crashes, left-turn crashes, and rear-end crashes accounted for nearly 68 percent of all fatal and injury crashes at intersections in Richland County. These crash types are typical at intersections nationwide.

Figure 56: Intersection-Related Fatal and Serious Injury Crashes by Type Chart, 2009–2018

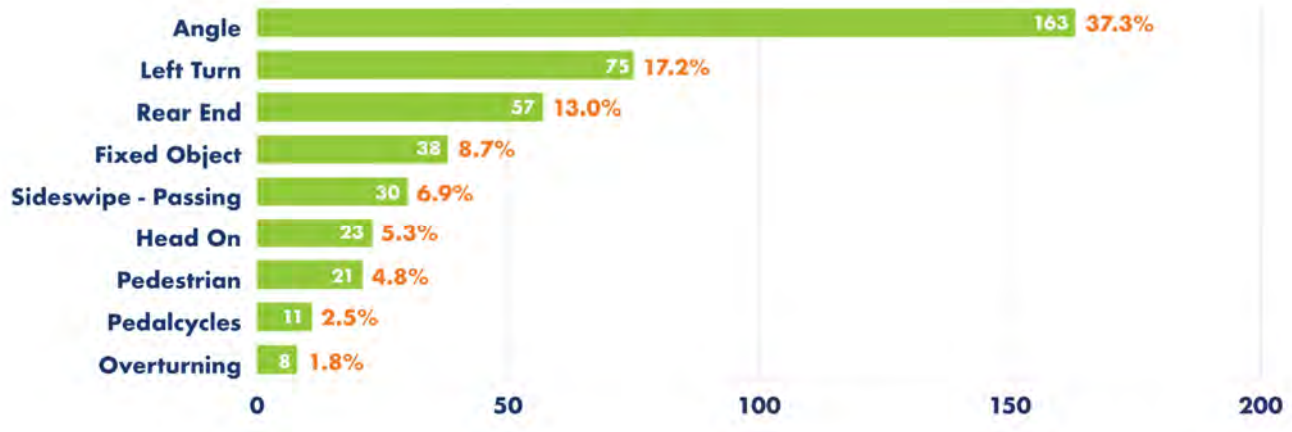


Figure 57: Intersection-Related Fatal and Serious Injury Crashes by Type Chart, 2009–2018

CRASH TYPE	FATALITIES				SERIOUS INJURIES			
	Total Fatalities	Intersection-Related	% Intersection Related	% All Fatalities (Intersection Related)	Total Injuries	Intersection-Related	% Intersection Related	% All Serious Injuries (Intersection Related)
Angle	18	14	78%	13%	246	210	85%	15%
Fixed Object	39	2	5%	2%	407	39	10%	3%
Left Turn	2	2	100%	2%	114	81	71%	6%
Sideswipe - Passing	4	2	50%	2%	70	37	53%	3%
Rear End	6	1	17%	1%	166	72	43%	5%
Pedestrian	7	1	14%	1%	47	20	43%	1%
Pedalcycles	2	1	50%	1%	15	10	67%	1%
Head On	23	1	4%	1%	148	31	21%	2%
TOTAL (All Crash Types)	108	24	22%	22%	1,357	522	38%	38%

Fatal and serious injury crashes at intersections occurred mostly in the Mansfield area. A concentration of intersection crashes occurred along Main Street, Park Avenue, Lexington-Springmill Road, Trimble Road, and Ashland Road in Mansfield. Several other intersection crashes occurred along SR 13 in Franklin Township.

Figure 58: Intersection-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Regionwide

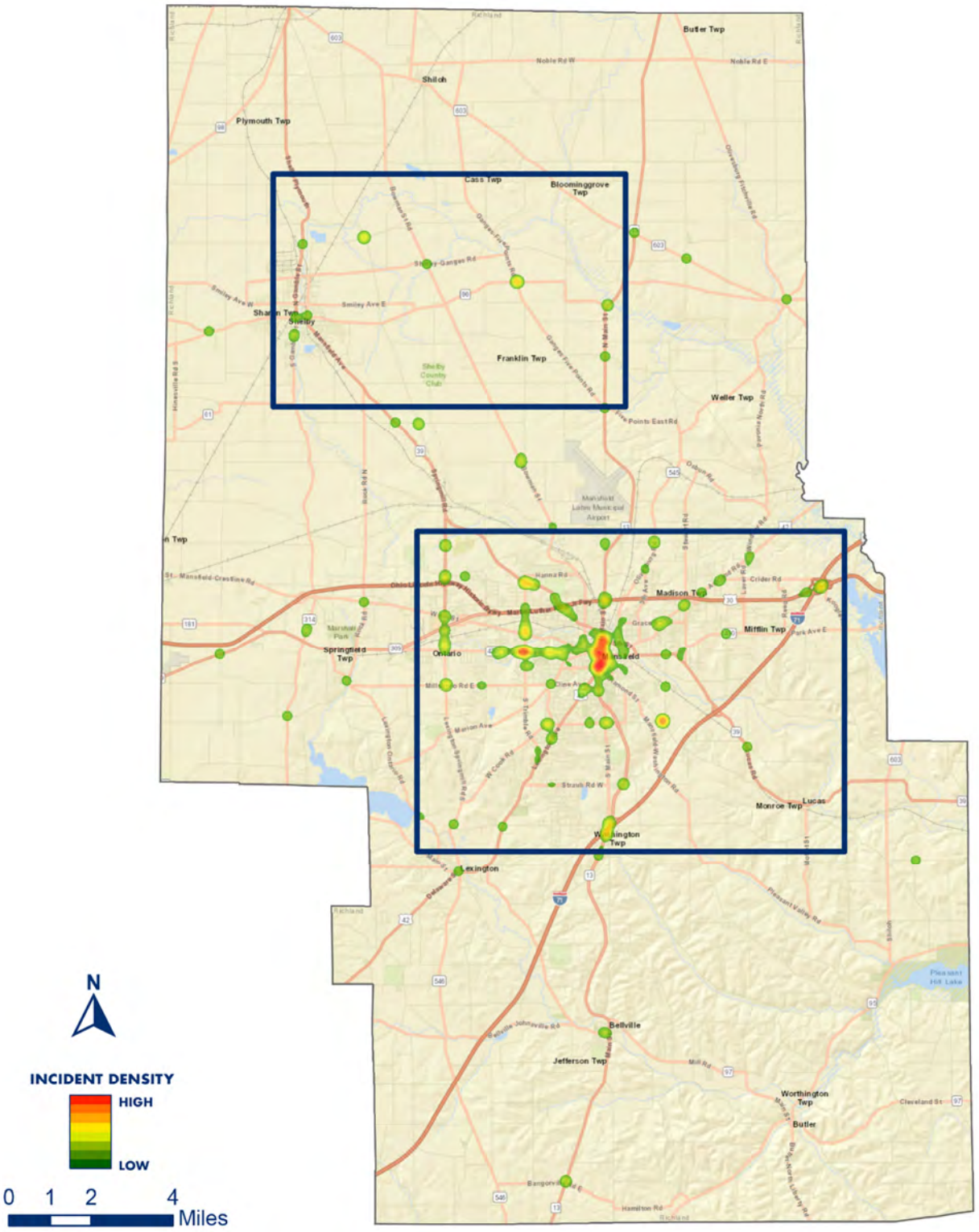
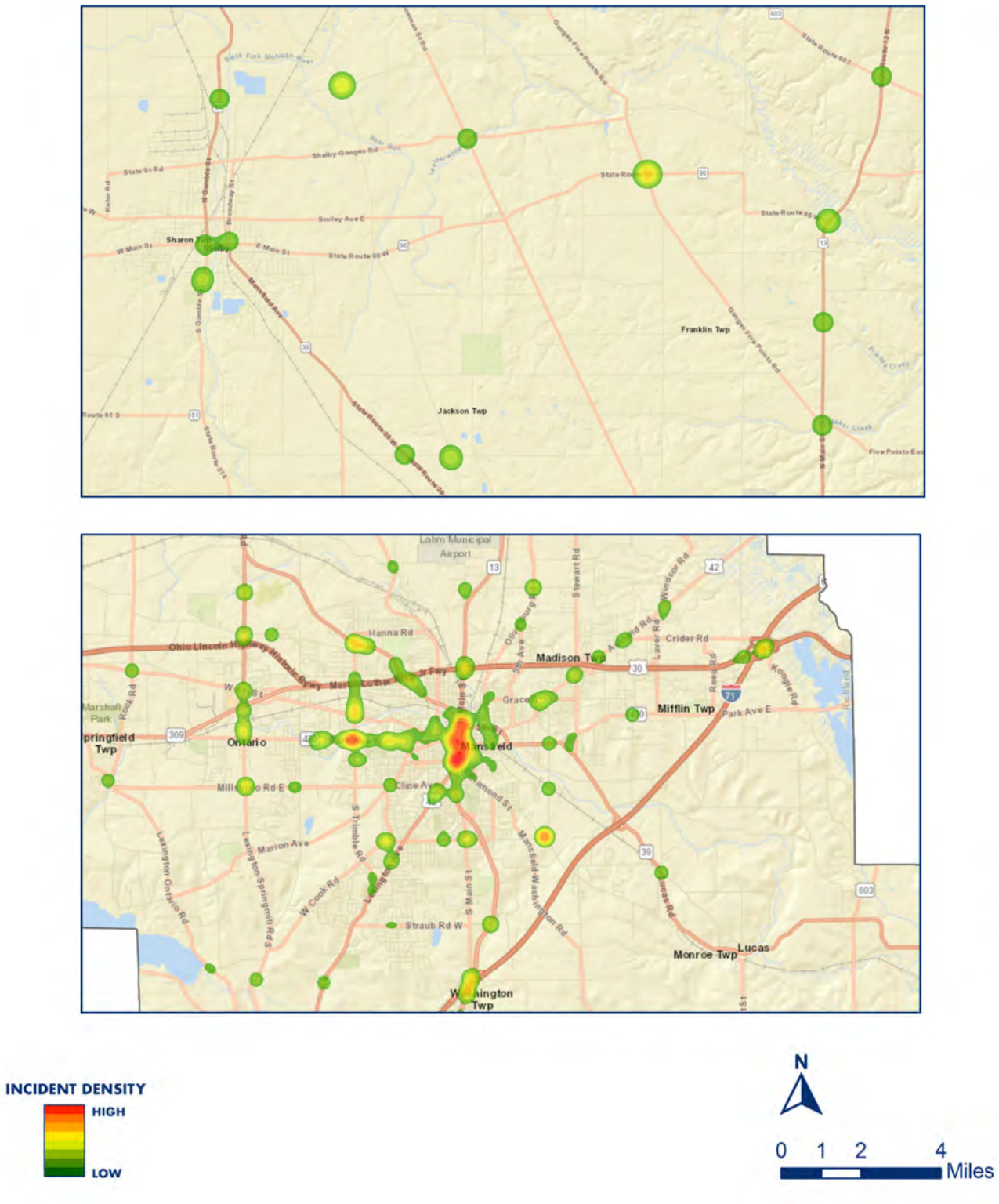


Figure 59: Intersection-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Focus Area



Implementation and Action Plan—

Creating a Safer System

SECTION CONTENT:

- Roadway Departure
- Speed
- Intersections
- Priority Locations
- Priority Segments

6 IMPLEMENTATION AND ACTION PLAN—CREATING A SAFER SYSTEM

The *Richland County Transportation Safety Action Plan* outlines the specific strategies and actions to address the most critical safety concerns in the county—roadway departures, speed, and intersections. It also identifies the corridors, intersections and road segments that could benefit from safety improvements. The *Action Plan* recognizes the most effective approaches to help transportation and safety stakeholders make progress toward the vision of "Toward Zero Deaths. All transportation users should arrive safely at their destinations." The *Action Plan* was informed by the results of data analysis, proven strategies to lower fatalities and serious injuries and stakeholder input. The goal is to implement this plan over the next five years, while evaluating annually whether the identified programs, projects and policies are helping to achieve performance goals. The *Action Plan* identifies a combination of enforcement, education, engineering, and data strategies to best address safety needs.

ROADWAY DEPARTURE	**Implementation of these strategies and actions will ensure safety projects are implemented to lower fatalities and serious injuries from vehicles departing the roadway and that the public and others are educated about the causes of run off the road crashes.**
SPEED	**Implementation of these strategies and actions will ensure the public and stakeholders are educated about the consequences of speeding, that current laws are enforced to the extent possible, and infrastructure improvements are in place to keep drivers on the road.**
INTERSECTIONS	**Implementation of these strategies and actions will ensure safety projects are implemented to lower fatalities and serious injuries at intersections and that the public and others are educated about intersection safety.**
LOCATIONS	**Implementation of safety projects along corridors or at specific segments and intersections will minimize the chances of fatalities or serious injuries occurring.**

ROADWAY DEPARTURE

INFRASTRUCTURE STRATEGIES

Strategy 1: Implement proven countermeasures to reduce roadway departure crashes in the region.

Leaders	Description	Performance Measure
ODOT/ Local Engineers	Continue to improve pavement markings to make them more visible during nighttime and adverse weather conditions.	Section/miles of roads with pavement marking enhancements
ODOT/ Local Engineers	Perform a systemic curve assessment along locally maintained roads to ensure that appropriate curve signing is installed throughout the county.	Assessment study conducted and # of new curve signing installed
ODOT/ Local Engineers	Enforcement of county-wide policy application regarding the implementation of SafetyEdge (pavement edge treatment) when roadways are resurfaced.	% of roadway sections where SafetyEdge is implemented

EDUCATIONAL STRATEGIES

Strategy 1: Utilize existing and new education efforts to curb roadway departure crashes.

Leaders	Description	Performance Measure
Safe Communities/ Law Enforcement	Provide education on the effects of speed and impaired driving (both of which contribute significantly to roadway departure crashes) to students and parents.	# of presentations made # of individuals receiving the information or materials

ENFORCEMENT STRATEGIES

Strategy 1: Enforce roadway departure safety policies.

Leaders	Description	Performance Measure
ODOT/ Law Enforcement	Utilize the heat map information on roadway departure crashes to prioritize specific locations for snow and ice removals, to mitigate the roadway departure crashes.	Heat map information shared and used

INFRASTRUCTURE STRATEGIES

Strategy 1: Implement engineering countermeasures to prevent speed related fatalities and serious injuries.

Leaders	Description	Performance Measure
ODOT/ Local Engineers	Continue to systemically install low-cost roadway improvements such rumble strips, wider shoulders, and clear zones on target speed corridors.	# of corridors with new safety features
ODOT/ Local Engineers	Perform additional review of signal timing and clearance intervals at intersections where angle crashes are overrepresented.	# of review and angle crash reduction
ODOT/ Local Engineers	Install speed display boxes or trailers at known high-speed locations to reduce speeding crash incidents.	# of new speed display boxes installed
ODOT/ Local Engineers	Place speed limit signs to roads where it lacks or if the signs are too far apart.	# of new speed limit signs placed
ODOT/ Local Engineers	Convert one lane roads (particularly coming into/ out of downtown) to two lanes.	Section/miles of one lane roads converted into two lanes
ODOT/Local Engineers	Perform speed studies at high-crash locations and reduce speed limits as necessary.	# of studies performed and # of speed limit reductions

COORDINATION STRATEGIES

Strategy 1: Nurture and expand coordination activities to reduce speed crashes.

Leaders	Description	Performance Measure
Insurance agency	Coordinate with insurance agencies to provide incentives to young drivers to drive carefully.	Insurance partners identified Incentives provided

EDUCATIONAL STRATEGIES

Strategy 1: Expand outreach related to education on speed crashes.

Leaders	Description	Performance Measure
ODOT/ Local Engineers	Educate the public at community events, through social media and in the schools on the dangers of speeding.	# of events/social media posts
ODOT	Educate high schoolers on the dangers of speeding.	Education materials developed and distribution strategy implemented

ENFORCEMENT STRATEGIES

Strategy 1: Expand enforcement of speeding laws.

Leaders	Description	Performance Measure
Law Enforcement	Emphasize enforcement around the times of day when speeding is problematic.	Enforcement efforts focused on problematic times of day # of agencies focusing their enforcement

Strategy 2: Expand enforcement of speeding laws.

Leaders	Description	Performance Measure
Law Enforcement	Continue to conduct high visibility enforcement efforts.	# of high visibility enforcement efforts # of agencies participating

INFRASTRUCTURE STRATEGIES

Strategy 1: Implement proven countermeasures to reduce intersection crashes in the region.

Leaders	Description	Performance Measure
ODOT/ Local Engineers	Continue to identify locations and implement roundabouts where appropriate.	# of roundabouts installed
ODOT/ Local Engineers	Advance access management solutions to address intersection-related crashes occurring along corridors.	# of low-cost countermeasures installed
ODOT/ Local Engineers	Systematically implement pedestrian countdown timers and other low-cost countermeasures (such as high-visibility crosswalk markings) at signalized intersections.	# of intersections with low-cost countermeasures installed
ODOT/ Local Engineers	Systematically implement signal improvements at intersections to include signal heads and backplates.	# of signal heads and backplates installed
ODOT/Richland County/Local Engineers	Perform additional evaluation on high-crash locations to identify intersections that would make good candidates for ODOT's highway safety program funding.	# of additional intersections identified

Strategy 2: Utilize technology solutions to reduce intersection crashes.

Leaders	Description	Performance Measure
Local jurisdiction	Implement advanced technology at intersections, such as video detection, signal optimization, and signal coordination along high-crash corridors, to improve intersection functionality.	# of intersections improved with advanced technology

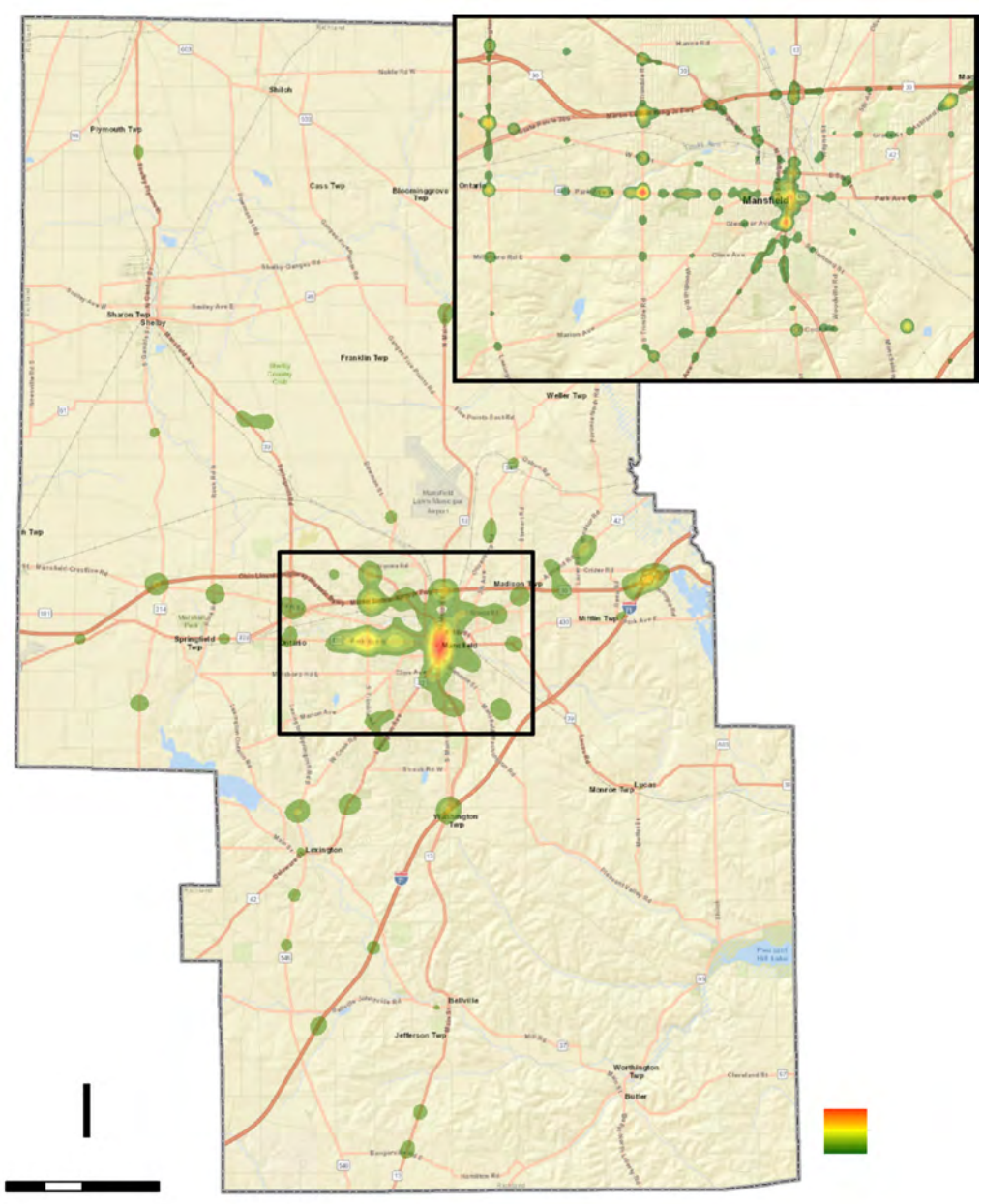
PRIORITY LOCATIONS

The factors contributing to crashes are overrepresented along certain corridors and more specifically at a number of segments and intersections. Using a combination of crash analysis and stakeholder input, the *Action Plan* identifies areas within the region that could be studied further to identify countermeasures to mitigate crashes.

6.1 CORRIDOR HEAT MAPS

Using data for crashes occurring between 2014 and 2018, the severe crashes were plotted on maps to understand the bigger picture crash story. These maps were used at stakeholder meetings to show what corridors were experiencing severe crashes related to the identified emphasis areas and most prominent crash types. The information was helpful to determine what was occurring at those locations and whether any of the overrepresented locations appeared to be incorrect or missing. The heat maps, shown in Figure 60 also are another tool to help regional stakeholders identify and confirm priority segments and intersections.

Figure 60: Richland County Fatal and Serious Injury Crashes—Regionwide



6.2 PRIORITY LOCATIONS

In addition to the heat maps, RCRPC completed a *Crash Analysis Report (2015 to 2017)*. This report identified priority intersections that may need closer analysis. The analysis process and prioritization methodology are provided in detail in the report. In general, the intersections were ranked based on crash frequencies, crash rate, potential safety application points, and the Potential for Safety Improvement (PSI). Local road segments were not prioritized as part of this report. Because re-ranking these locations with an additional year of data would not likely change the results of this list, the locations listed in the tables below include crash data between 2015 and 2017. Information regarding overrepresented crash types and emphasis area overlap based on the analysis detailed in previous chapters has been provided to supplement the information included in the original *Crash Analysis Report*.

In addition to the RCRPC ranking process, ODOT publishes a list of location that is prioritize by need for safety improvement. A table summarizing all three of these prioritization methods (local ranking by RCRPC, ranking by ODOT, and locations identified by stakeholders) is provided below.

The combined lists can help regional stakeholders pinpoint locations where additional field investigations or data analysis could be completed to understand specific site improvements, or risk factors and systemic solutions. In addition to showing the location rank, additional fields, including severe crash hotspot, crash type hotspot, and emphasis area overlap have been added. These shed further light on each location, showing stakeholders a fuller picture of what is happening at each location to further think through priorities, but also plan for infrastructure and behavioral solutions in tandem.

6.3 SEGMENTS

Table 1: Top Crash Segments in Richland County

Name of Location	Local Rank	State Rank	Stakeholder Hotspot	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
I-71 (MP 7.13–MP 7.14)	–	7	–	ODOT	5	–	–	D
I-71 (MP 6.95–MP 7.05)	–	36	–	ODOT	9	–	–	S, D
SR-61 (MP 10.09–MP 10.19)	–	64	–	ODOT	7	–	F	S, D
I-71 (MP 3.66–MP 3.76)	–	72	–	ODOT	9	–	F	D
I-71 (MP 4.06–MP 4.16)	–	90	–	ODOT	8	YES	F	S, D
Lexington Ontario Road between Rock Road and Millsboro West Road	–	–	YES	Richland County	–	YES	R, A, F	I, D
Park Avenue in front of West Park Shopping Center (Alpine Drive to Grasmere Ave)	–	–	YES	City of Mansfield	–	YES	R, A	I, S, D
Lexington-Springmill Road between U.S. 30 and Park Avenue	–	–	YES	City of Mansfield	–	YES	R, A, F	I, S, D
Curve near Main Street (SR 13) and SR 96	–	–	YES	ODOT	–	YES	A, F	S, D
Ashland Road (U.S. 42) between Stewart Road and Windsor Road	–	–	YES	ODOT	–	YES	R, A, F	I, S, D

I—Intersection, **S—**Speed, **D—**Roadway Departure, **R—**Rear-End, **A—**Angle, **F—**Fixed Object

6.4 INTERSECTIONS

Table 2: Top Crash Intersections in Richland County Region

Name of Location	Local Rank	State Rank	Stakeholder Hotspot	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
Park Ave W & Trimble Rd	1	344	YES	City of Mansfield	65	YES	R, A	I, S, D
Lexington Springmill Rd & W 4th St	2	–	–	City of Ontario	55	YES	R	I
Park Ave W & Main St	3	–	–	City of Mansfield	27	YES	R, A, F	I, S, D
Park Ave & Lexington Springmill Rd	4	440	YES	City of Ontario	41	YES	R, A	I, S
U.S. RT 42 & Stewart Rd	5	84	YES	ODOT	40	YES	R, A	I, S, D
Mansfield Lucas Rd & Cook Rd	6	–	–	Richland County	19	YES	A	I
Park Ave E & Diamond St	7	–	–	City of Mansfield	30	YES	R, A, F	I, S, D
Lexington Springmill Rd & Walker Lake Rd	8	–	–	City of Ontario	61	–	R	I
Main St & 4th St	9	–	–	City of Mansfield	26	YES	R, A, F	I, S, D
4th St & Mulberry St	10		–	City of Mansfield	15	YES	R, A, F	I, S, D
Main St & Glessner Ave	11	–	–	City of Mansfield	26	YES	R, A, F	I, S, D
4th St & Trimble Rd	12	–	YES	City of Mansfield	53	–	R, A	I, S
Trimble Rd & Millsboro Rd	13	–	–	City of Mansfield	30	–	–	–
Lexington Ave & Cook Rd	14	–	–	City of Mansfield	43	–	–	S
U.S. 30 WB Ramps & Lincoln Highway	15	–	–	Richland County	15	YES	A	S, D
Trimble Rd & U.S. RT 30 WB Ramps	16	–	–	City of Mansfield	34	YES	R, A, F	I, S, D
Park Ave W & Sherman Ave	17	–	–	City of Mansfield	19	YES	R	I, S, D

PRIORITY LOCATIONS

Name of Location	Local Rank	State Rank	Stakeholder Hotspot	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
S Main St & Straub Rd W	18	–	–	Richland County	10	–	–	D
S Main St & Cook Rd	19	–	–	City of Mansfield	39	YES	R	I, S
ST RT 309 & Lexington Springmill Rd	20	–	–	City of Ontario	25	–	R, A, F	I, D
Trimble Rd & McPherson St	21	–	–	City of Mansfield	26	YES	R, A, F	I, S, D
Main St & Castor Rd	22	172	–	City of Lexington	31	–	–	D
Stewart Rd & Grace St	23	–	YES	Madison Township	28	–	A	S
Home Rd & Millsboro Rd	24	–	YES	Richland County/ City of Mansfield	21	–	R	I, S, D
Park Ave W & Bowman St & Marion Ave	25	–	–	City of Mansfield	26	–	–	I, S
SR 314 & Millsboro West Road	–	–	YES	ODOT	–	YES	R, A, F	I, S, D
Main Street & Lexington Avenue	–	–	YES	City of Mansfield	–	–	R, A, F	–
Ganges—Five Points Road & SR 96	–	–	YES	ODOT	–	YES	A	I
Bowman Street & SR 96	–	–	YES	Richland County	–	YES	–	D
I-71 interchange with U.S. 30	–	–	YES	ODOT	–	YES		I, S, D
Park Avenue & Stewart Rd	–	–	YES	City of Mansfield	–	–	R	I, S, D
Marion Avenue & Home Road	–	–	YES	Richland County	–	–	–	S
Lexington Avenue (SR 42) & Hanley Road	–	–	YES	ODOT	–	YES	R, A, F	I, D
SR 13 & Possum Run Rd (Walmart)	–	–	YES	ODOT	–	YES	R, A	I, S, D

I—Intersection, **S**—Speed, **D**—Roadway Departure, **R**—Rear-End, **A**—Angle, **F**—Fixed Object

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