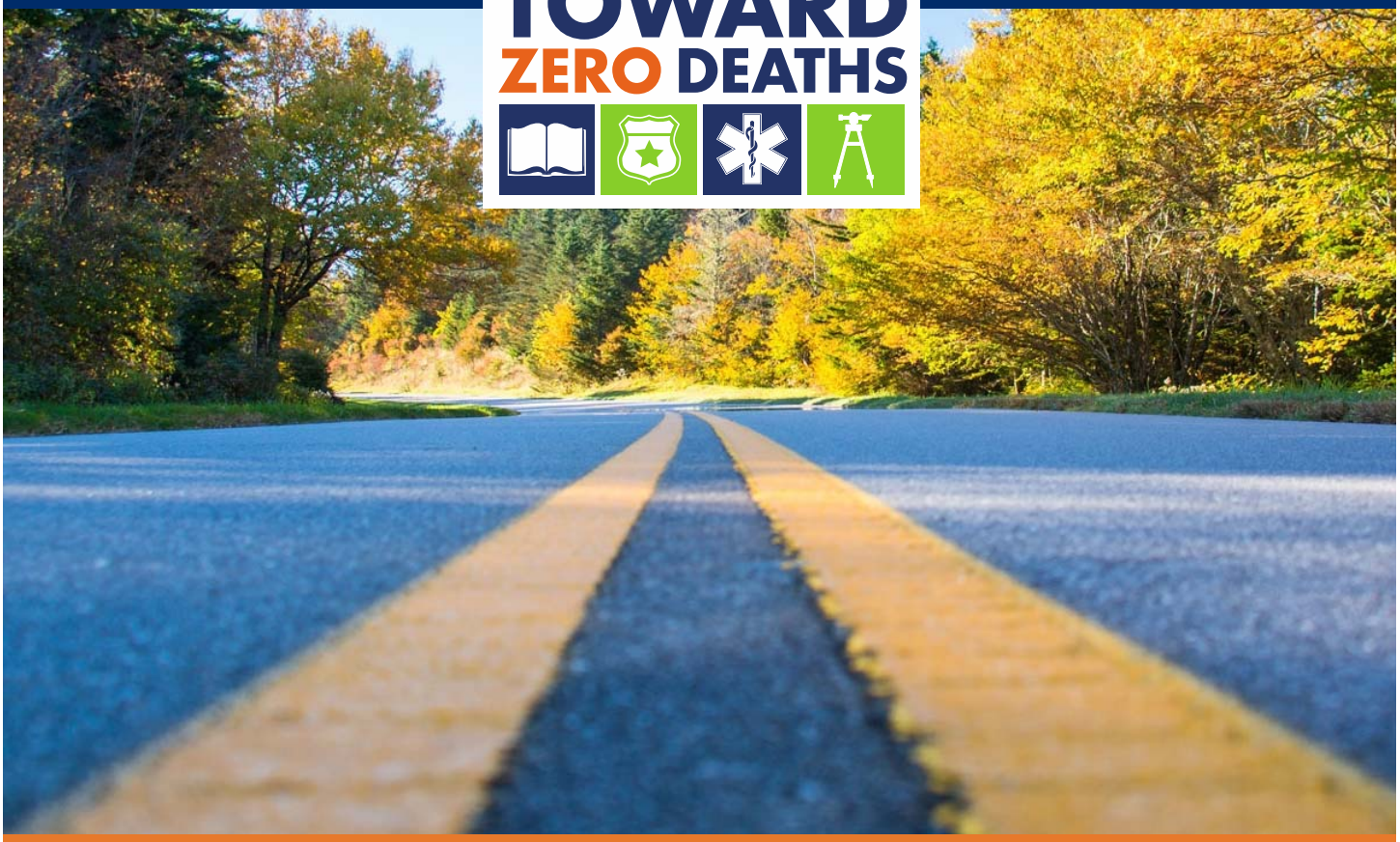
EVERY MOVE YOU MAKE

TOWARD ZERO DEATHS



TOLEDO METROPOLITIAN AREA COUNCIL OF GOVERNMENTS TRANSPORTATION SAFETY PLAN

December 2019

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1 EXECUTIVE SUMMARY

The Toledo Metropolitan Council of Governments (TMACOG) is the metropolitan planning organization (MPO) responsible for transportation planning and programming in Wood and Lucas counties. The planning area is in northwest Ohio and home to approximately 570,000 residents who are spread across 66 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 transit 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 17,734 transportation-related crashes occurred per year in the two counties (referred to as "the region" in the rest of the document). An average of 57 people lost their lives, 495 were seriously injured and 41,483 people were involved in a crash 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 2019-2023 *Toledo Metropolitan Area Council of Governments (TMACOG) 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 over-represented in the region.
- **Contributing Factors**—What types of crash contributors (i.e., alcohol impairment) are over-represented 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 region, including:

- **Vision, Goal and Objectives** providing a framework for identifying safety programs, projects and policies.
- Three emphasis areas, **Young Drivers, Intersections and Distracted Drivers**, 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.

YOUNG DRIVERS

DISTRACTED DRIVERS

INTERSECTIONS

2 TRANSPORTATION SAFETY PARTNERS

Lucas and Wood counties have 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.

- AAA of Northwest Ohio
- City of Maumee
- City of Oregon
- City of Rossford
- City of Sylvania
- City of Toledo
- CT Consultants
- DLZ
- Educational Service Center of Lake Erie West
- Lucas County
- Mannik & Smith Group
- Mercy Health—Trauma
- Ohio Department of Transportation District 2
- Perrysburg Township
- Safe Communities
- Toledo Area Regional Transit Authority
- Toledo Children's Hospital
- Toledo Metropolitan Area Council of Governments
- Toledo Police Department
- We Are Traffic
- Wood County

INTRODUCTION—

Setting the Stage

SECTION CONTENT:

Transportation Safety Planning

Lucas and Wood County Transportation Safety

Vision Goals & Objectives

3 INTRODUCTION—SETTING THE STAGE

3.1 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 (LRSP). 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 *TMACOG Transportation Safety Plan* followed a similar approach to develop multi-disciplinary 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 TMACOG 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

3.2 LUCAS AND WOOD COUNTY TRANSPORTATION SAFETY

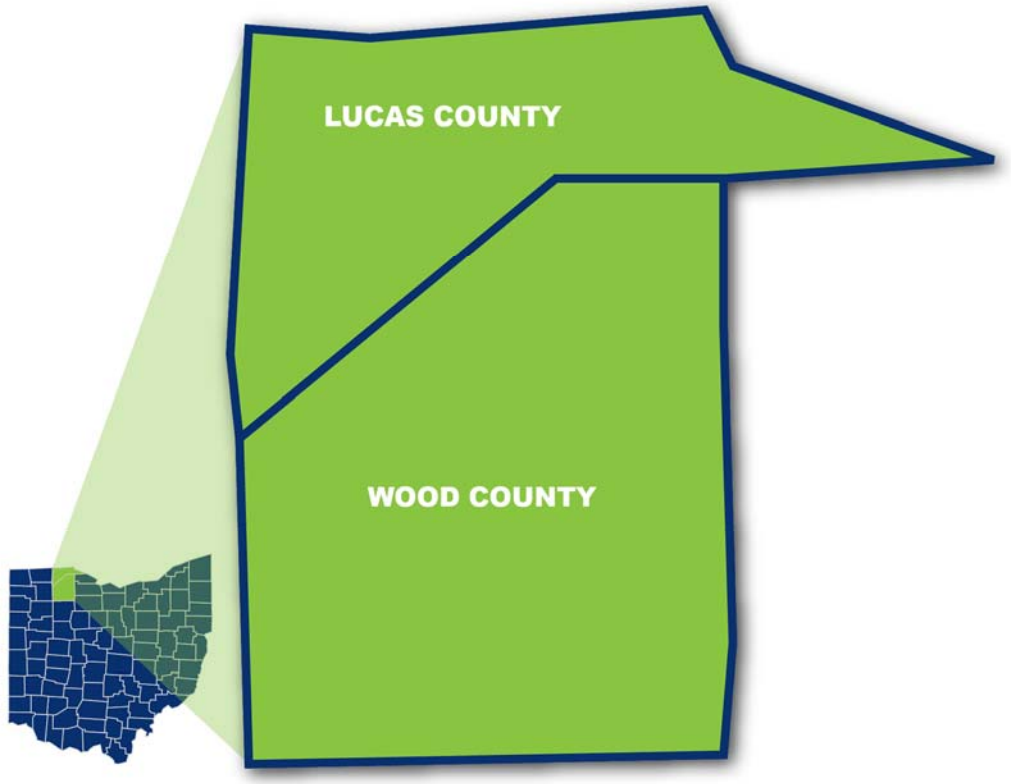
THE STUDY AREA

Wood County and Lucas County are in northwest Ohio, with the County seats being in Bowling Green and Toledo, Ohio, respectively. According to the Ohio County Profiles, the estimated 2018 population for Wood County was 130,696 people, a slight increase from the official population recorded by the 2010 United States Census of 125,488 people. The estimated population for Lucas County in 2018 was 429,899 people, a slight decline from the 2010 United States Census recorded population of 441,815.

Wood County is mostly rural and according to its Ohio County Profile, 86 percent of the County is covered in farmland or forests. Just over 13 percent of the County is developed. In addition to the County seat, the City of Bowling Green has the largest population with approximately one third of Wood County's residents living in this area. Based on the Wood County Profile, there are approximately 1,950 miles of public roadways in the County with nearly 335 miles being interstate highway, turnpike, State and U.S. routes; 790 miles of township roads; and 245 miles of County roads.

Lucas County is slightly more rural than developed. According to its Ohio County Profile, 55 percent of the County is covered in farmland or forests with 45 percent of the County being developed. In addition to being the County seat, the City Toledo is the most populated with approximately two thirds of Lucas County residents living in this area. Based on the Lucas County Profile, there are approximately 2,340 miles of public roadways in the County with nearly 250 miles being interstate highway, turnpike, State and U.S. routes; and 284 miles of county roads. The study area for this safety plan is shown in Figure 2.

Figure 2: TMACOG Planning Region Map (Ohio only)



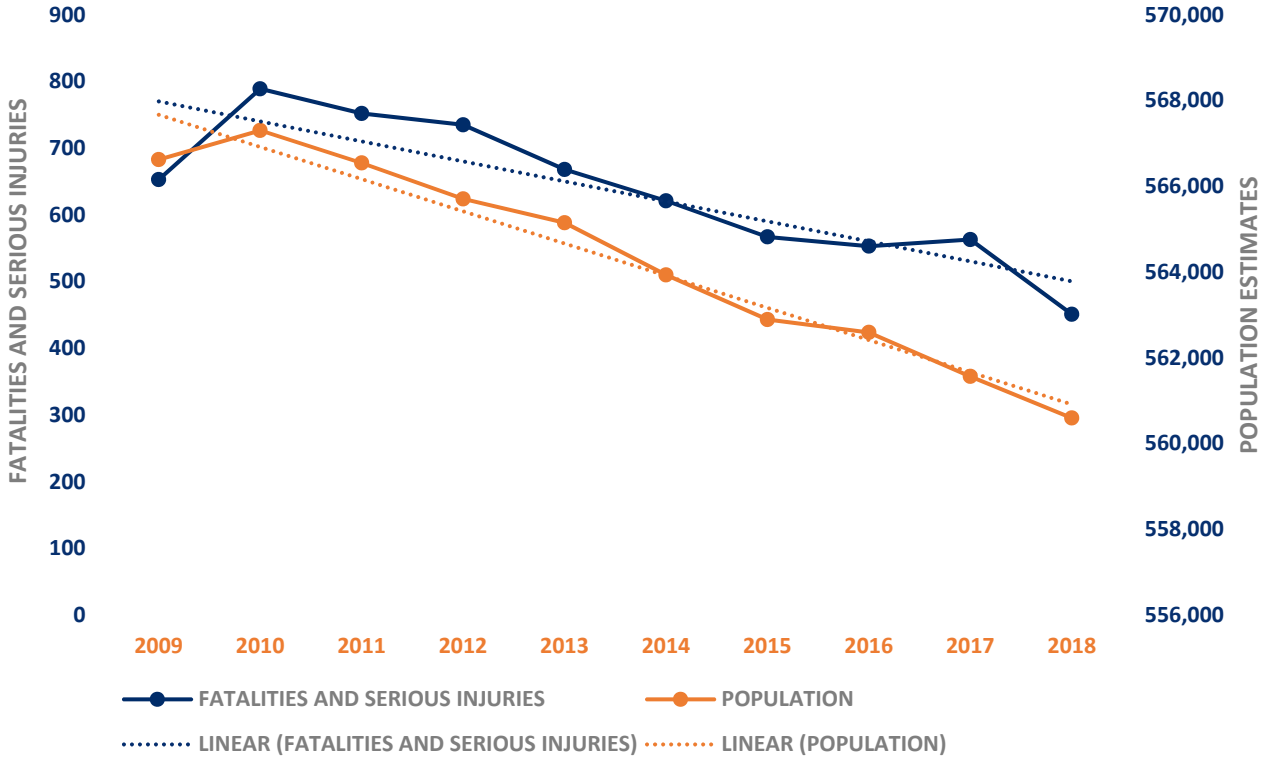
EXTERNAL FACTORS IMPACTING CRASHES

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

Based on population estimates included in the Ohio County Profile, the overall population in the region is decreasing. The frequency of fatalities and serious injuries is decreasing at a similar rate, likely due to less people traveling on the roadways.

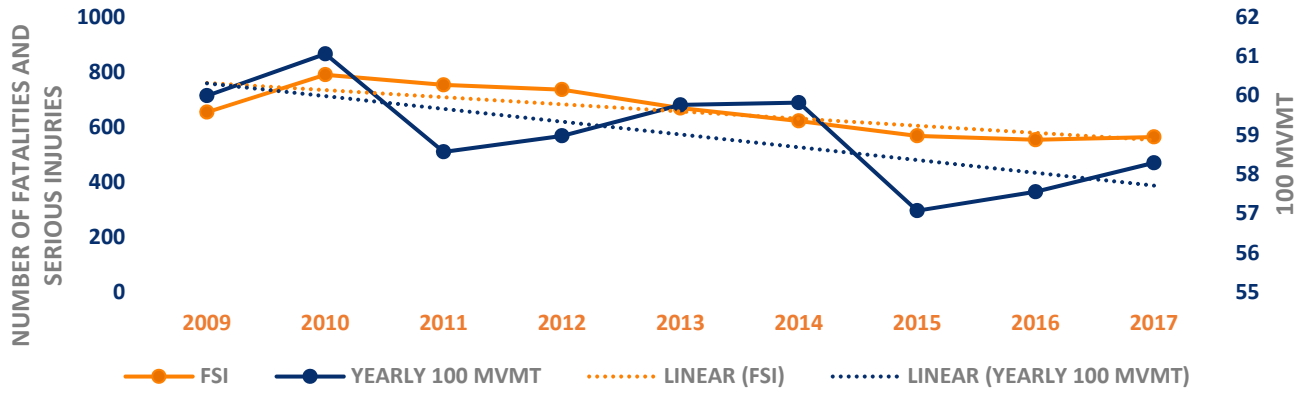
Figure 3: Fatalities and Serious Injuries and Population, 2009–2018



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 (ADT) 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 VMT in the region is decreasing at a rate similar to the frequency of the fatalities and serious injuries. This is a positive correlation; however, it does not necessarily mean fatalities and serious injuries will continue to decrease as VMT decreases.

Figure 4: Fatalities and VMT, 2008–2017



CURRENT SAFETY ACTIVITIES

Existing safety programs and projects in the region 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 the Lucas and Wood County Safe Communities groups as well as existing crash analysis completed in the region by TMACOG and ODOT District 2 were reviewed during stakeholder meetings and incorporated into this plan.

Examples of the Current Safety Activities in the Region

- *Pedestrian friendly features at signalized intersections.*
- *Striping maintenance efforts annually.*
- *Complete street policies.*
- *Roundabout construction.*
- *Do not Drive Intexticated distracted driving campaign.*
- *Parent/teen safety education.*
- *Saturation patrols.*

3.3 VISION, GOAL AND OBJECTIVES

The regional 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 region and were based on stakeholder input as well as the results of a forecasting analysis (shown in Figures 5 and 6). This will help the region 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 fatal and injury crashes involving all road users through implementation of effective countermeasures.

OBJECTIVE
Reduce fatalities and serious injuries by 2% per year.

Figure 5: Fatalities Forecast

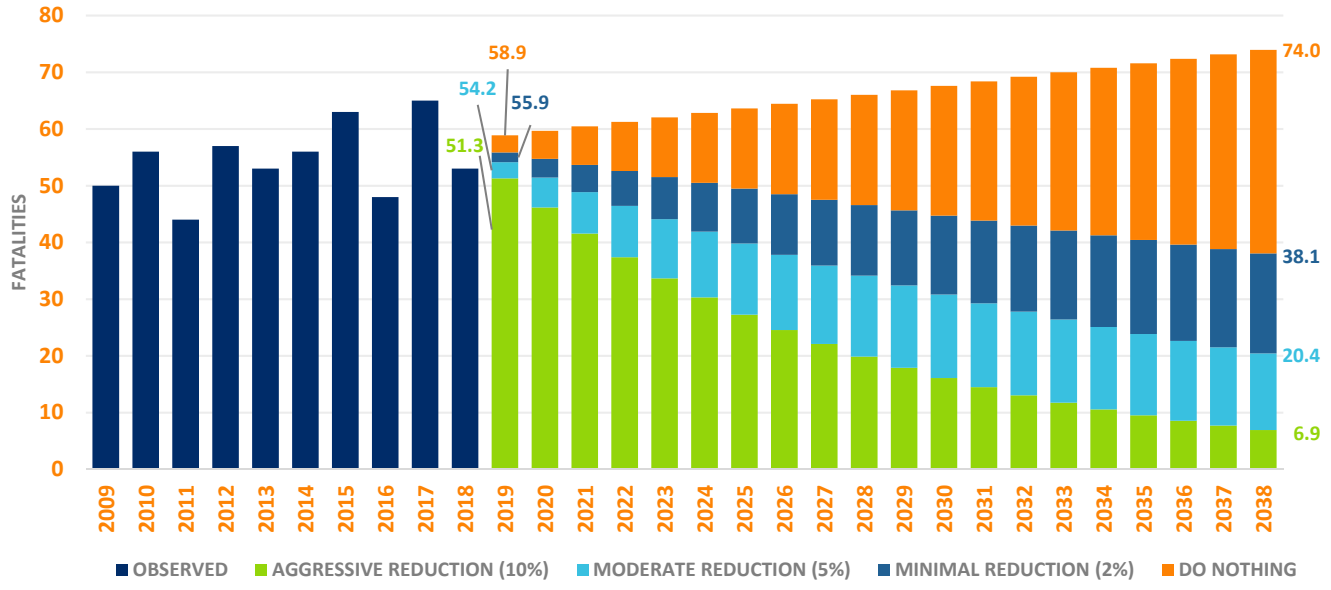
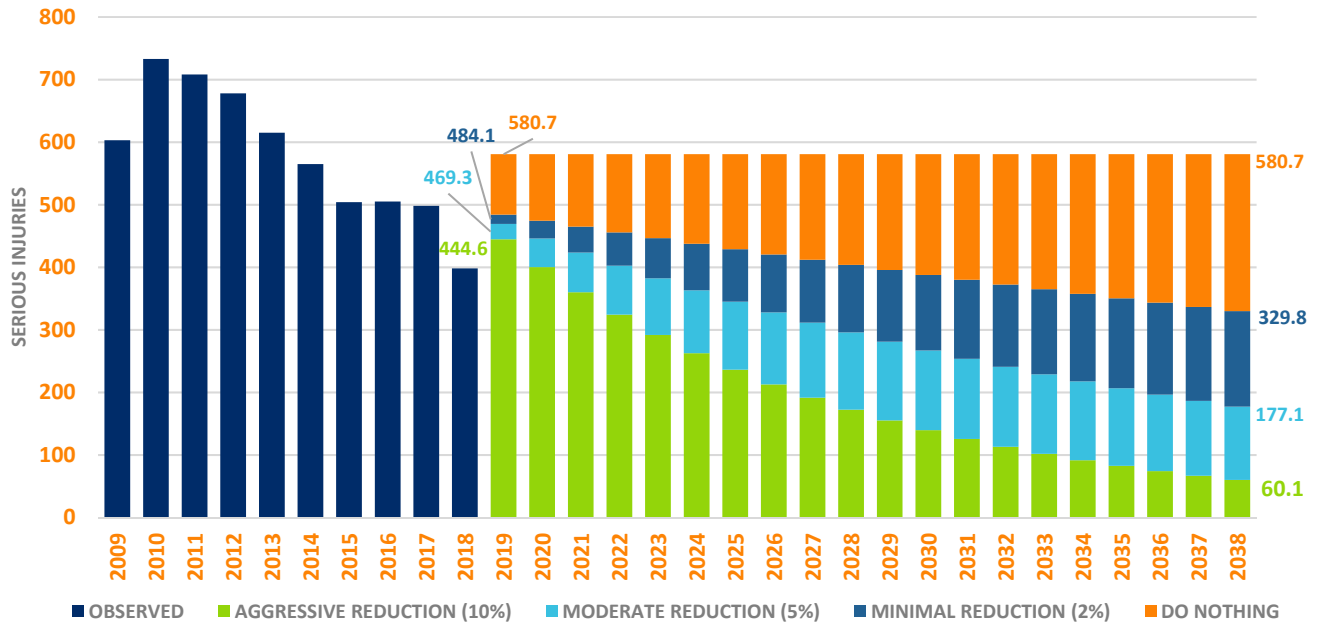


Figure 6: Serious Injuries Forecast



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Existing Conditions—

Understanding Safety Needs in the Region

SECTION CONTENT:

Big Picture Crash Trends

Crash Types

4 EXISTING CONDITIONS—UNDERSTANDING SAFETY NEEDS IN THE REGION

4.1 THE BIG PICTURE

For the development of the TMACOG Transportation Safety Plan, crash data from January 1, 2009 to December 31, 2018 for all crashes, on all public roads, were analyzed. The 10-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.

"There are, on average, 17,734 crashes per year (10 per day) in the region which includes 51 fatal crashes and 4,703 injury crashes."

CRASH STATISTICS

Between 2014 and 2018, there were 88,672 crashes in the region with 257 (0.3 percent) resulting in a fatality and 23,517 (26.5 percent) resulting in injury. There are, on average, 17,734 crashes per year (10 per day) in the region which includes 51 fatal crashes and 4,703 injury crashes.

Figure 7: Crash Statistics, 2014–2018

CRASH STATISTICS

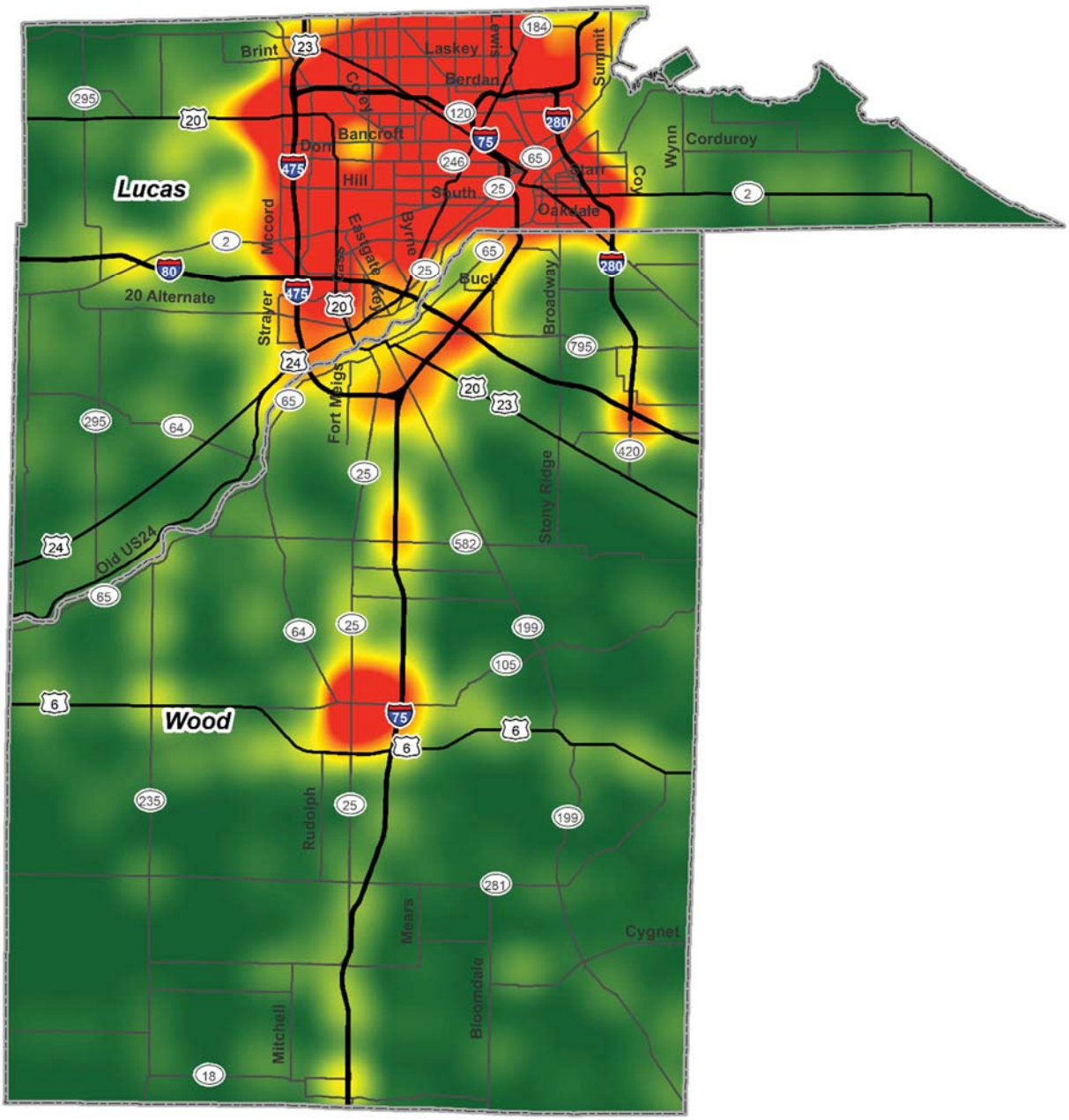
YEAR	FATAL CRASHES	INJURY CRASHES	PROPERTY DAMAGE ONLY	TOTAL CRASHES
2014	51	4,451	12,092	16,594
2015	55	4,877	13,253	18,185
2016	47	5,092	13,610	18,749
2017	57	4,613	13,111	17,781
2018	47	4,484	12,832	17,363
5-YEAR TOTAL	257	23,517	64,898	88,672
ANNUAL AVERAGE	51	4,703	12,980	17,734

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 Toledo and Bowling Green, especially along I-475, I-75 and SR 105.

Figure 8: Fatal and Serious Injury Crash Density Map, 2014–2018



OCCUPANT STATISTICS

Of the 207,416 people involved in crashes in the TMACOG region between 2014 and 2018, 285 were fatally injured and 2,474 were seriously injured. On average, crashes affect 41,483 people every year in the region with 57 of them being fatally injured and 495 seriously injured.

Figure 9: Occupant Statistics, 2014–2018

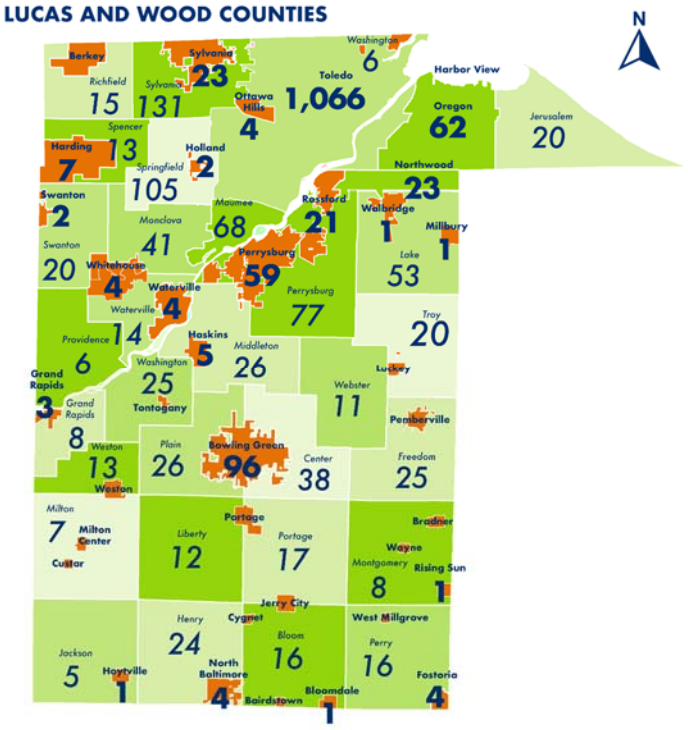
YEAR	FATALITIES	SERIOUS INJURIES	MINOR INJURIES	NO INJURIES	TOTAL PEOPLE INVOLVED
2014	56	566	6,096	31,254	37,972
2015	63	505	6,733	34,907	42,208
2016	48	505	7,256	36,310	44,119
2017	65	500	6,406	34,950	41,921
2018	53	398	6,214	34,531	41,196
5-YEAR TOTAL	285	2,474	32,705	171,952	207,416
ANNUAL AVERAGE	57	495	6,541	34,390	41,483

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 Bowling Green, City of Perrysburg, City of Toledo, Sylvania Township, and Springfield Township than in other, more rural areas of the TMACOG region. The purpose of this map is to demonstrate that crashes occur everywhere and each jurisdiction can play a role in the solutions.

Figure 10: Crashes by Jurisdiction Map



CRASHES BY MAINTAINING AUTHORITY

Nearly 74 percent of all crashes in the TMACOG region 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 Toledo, over 87 percent of crashes occur on locally maintained roadways.

Figure 11: Crashes by Jurisdiction and Maintaining Authority (Lucas County)

	ALL ROADS			NON-STATE MAINTAINED ROADS		
	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL
BERKEY	0	0	10	0	0	10
HARDING TOWNSHIP	1	6	95	1	2	44
HOLLAND	0	2	389	0	2	374
JERUSALEM TOWNSHIP	6	14	170	3	5	86
MAUMEE	7	61	3,401	6	49	2,781
MONCLOVA TOWNSHIP	6	35	1,060	2	12	565
OREGON	11	51	2,654	9	44	2,331
OTTAWA HILLS	0	4	535	0	4	514
PROVIDENCE TOWNSHIP	4	12	325	1	7	148
RICHFIELD TOWNSHIP	3	12	158	3	6	68
SPENCER TOWNSHIP	2	11	207	2	11	195
SPRINGFIELD TOWNSHIP	7	98	3,800	3	52	1,533
SWANTON	0	2	83	0	2	81
SWANTON TOWNSHIP	1	19	586	0	3	74
SYLVANIA	0	23	1,732	0	22	1,682
SYLVANIA TOWNSHIP	10	121	4,342	1	52	1,800
TOLEDO	115	951	49,402	103	848	43,029
WALBRIDGE	1	0	54	0	0	31
WASHINGTON TOWNSHIP	1	5	111	1	3	72
WATERVILLE	0	4	315	0	4	299
WATERVILLE TOWNSHIP	5	9	377	1	4	166
WHITEHOUSE	0	4	190	0	3	171
GRAND TOTAL	180	1,444	69,996	136	1,135	56,054

Figure 12: Crashes by Jurisdiction and Maintaining Authority (Wood County)

	ALL ROADS			NON-STATE MAINTAINED ROADS		
	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL	FATAL INJURY	SERIOUS INJURY	GRAND TOTAL
BAIRDSTOWN	0	1	4	0	1	4
BLOOM TOWNSHIP	3	13	338	1	7	155
BLOOMDALE	0	0	10	0	0	10
BOWLING GREEN	7	89	2,986	7	76	2,713
BRADNER	0	0	6	0	0	5
CENTER TOWNSHIP	4	34	977	1	6	215
CUSTAR	0	0	4	0	0	3
CYGNET	0	0	19	0	0	19
FOSTORIA	1	3	97	1	3	95
FREEDOM TOWNSHIP	6	19	352	1	6	82
GRAND RAPIDS	0	3	62	0	3	58
GRAND RAPIDS TOWNSHIP	4	4	128	1	3	66
HASKINS	0	5	65	0	5	63
HENRY TOWNSHIP	1	23	586	0	9	131
HOYTVILLE	0	1	11	0	1	11
JACKSON TOWNSHIP	2	3	114	0	0	22
JERRY CITY	0	0	10	0	0	10
LAKE TOWNSHIP	8	45	1,387	1	12	257
LIBERTY TOWNSHIP	1	11	217	1	6	90
LUCKEY	0	0	23	0	0	21
MIDDLETON TOWNSHIP	1	25	619	0	8	142
MILLBURY	0	1	33	0	1	33
MILTON CENTER	0	0	1	0	0	1
MILTON TOWNSHIP	1	6	95	1	2	48
MONTGOMERY TOWNSHIP	0	8	247	0	3	106
NORTH BALTIMORE	0	4	223	0	2	176
NORTHWOOD	3	20	1,126	3	14	683
PEMBERVILLE	0	0	8	0	0	8
PERRY TOWNSHIP	4	12	208	1	6	86
PERRYSBURG	5	54	3,354	2	37	2,330
PERRYSBURG TOWNSHIP	7	70	2,010	1	16	514
PLAIN TOWNSHIP	8	18	402	3	8	172
PORTAGE	0	0	23	0	0	22
PORTAGE TOWNSHIP	1	16	684	1	4	91
RISINGSUN	0	1	10	0	1	10
ROSSFORD	2	19	916	1	8	546
TONTOGANY	0	0	11	0	0	10
TROY TOWNSHIP	1	19	630	1	3	193
WASHINGTON TOWNSHIP	3	22	235	3	7	101
WAYNE	0	0	5	0	0	5
WEBSTER TOWNSHIP	2	9	228	0	1	56
WEST MILLGROVE	0	0	6	0	0	6
WESTON	0	0	41	0	0	39
WESTON TOWNSHIP	2	11	165	2	1	58
GRAND TOTAL	77	569	18,676	33	260	9,466

CRASH STATISTICS BY MAINTAINING AUTHORITY

Twenty-six percent of the total crashes in the region occur on State-maintained roadways, but they account for 30 percent of the total number of fatal and serious injury crashes. Approximately 66 percent of all crashes in the TMACOG region are occurring on city-maintained roadways, and those account for 52 percent of all fatal and serious crashes.

Figure 13: Crash Statistics by Maintaining Authority

	FATAL INJURY	SERIOUS INJURY	VISIBLE INJURY	POSSIBLE INJURY	NO INJURY	GRAND TOTAL
STATE HIGHWAY AGENCY	83	563	2,009	2,365	14,465	19,485
STATE TOLL AUTHORITY	3	21	125	75	987	1,211
COUNTY HIGHWAY AGENCY	26	191	702	610	3,389	4,918
CITY OR MUNICIPAL HIGHWAY AGENCY	132	1,130	5,081	9,720	42,117	58,180
TOWN OR TOWNSHIP HIGHWAY AGENCY	11	74	244	222	1,871	2,422
OTHER/UNCLASSIFIED	2	34	147	204	2,069	2,456
GRAND TOTAL	257	2,013	8,308	13,196	64,898	88,672

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 four most prevalent crash types were rear end, sideswipe, fixed object, and left turn crashes."

REGIONAL CRASH TYPES

Between 2009 and 2018, the four most prevalent crash types were rear end, sideswipe-passing, fixed object, and left-turn. There were 26,276 rear end crashes, but fortunately only one percent of those crashes resulted in a fatality or serious injury. Approximately 26 percent of the reported pedestrian 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 14: Regional Crash Types, 2009–2018

	GRAND TOTAL	FATAL INJURY	SERIOUS INJURY	FSI RATE
REAR END	26,276	15	356	1.4%
SIDESWIPE - PASSING	12,868	4	125	1.0%
FIXED OBJECT	11,276	74	398	4.2%
LEFT TURN	9,781	24	285	3.2%
ANGLE	8,562	41	320	4.2%
PARKED VEHICLE	4,361	3	36	0.9%
BACKING	3,689	0	9	0.2%
ANIMAL	3,682	1	14	0.4%
RIGHT TURN	2,823	1	30	1.1%
HEAD ON	1,232	25	108	10.8%
PEDESTRIAN	754	41	155	26.0%
OTHER OBJECT	736	2	6	1.1%
SIDESWIPE - MEETING	730	5	25	4.1%
PEDALCYCLES	581	7	54	10.5%
OTHER NON-COLLISION	572	1	17	3.1%
OVERTURNING	531	11	68	14.9%
UNKNOWN	167	0	4	2.4%
TRAIN	50	2	3	10.0%
OTHER NON-VEHICLE	1	0	0	0.0%
GRAND TOTAL	88,672	257	2,013	

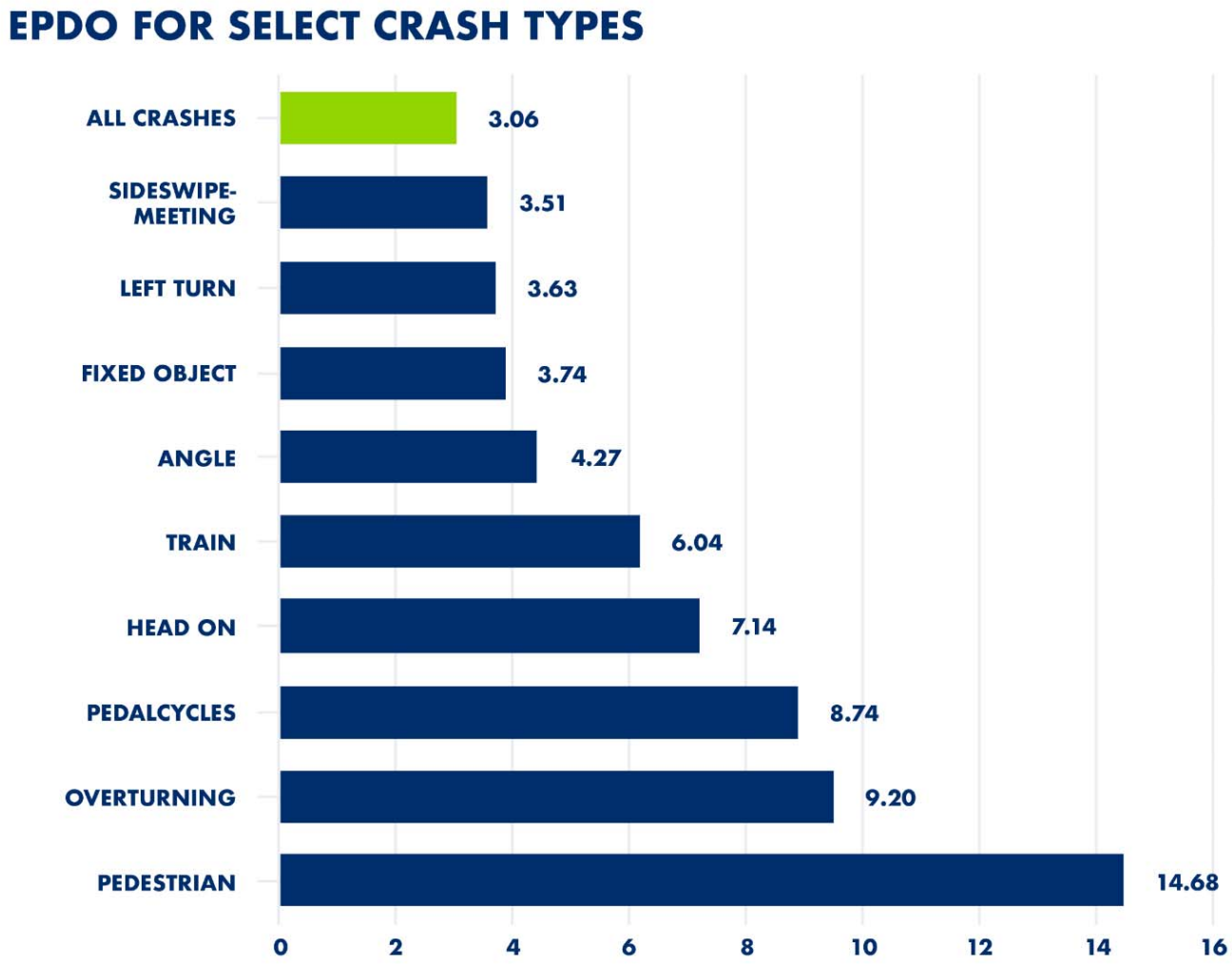
EQUIVALENT PROPERTY DAMAGE ONLY CRASHES

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 (ECAT).

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 15: EDPO for Crash Types, 2014–2018



CRASH TYPES BY JURISDICTION

Fixed object crashes are mostly over-represented in the more rural, less-developed areas of the region such as Jackson Township in Wood County. Rear end, sideswipe-passing, left turn, and angle crashes are generally over-represented in more urban areas like Ottawa Hills, Sylvania, and Perrysburg.

Figure 16: Crash Types by Jurisdiction Table, 2014–2018 (Lucas County)

	REAR END	SIDESWIPE - PASSING	FIXED OBJECT	LEFT TURN	ANGLE
BERKEY	0%	10%	20%	0%	20%
HARDING TOWNSHIP	2%	1%	44%	4%	15%
HOLLAND	38%	13%	6%	9%	16%
JERUSALEM TOWNSHIP	14%	5%	27%	5%	8%
MAUMEE	36%	15%	13%	8%	8%
MONCLOVA TOWNSHIP	27%	10%	20%	8%	10%
OREGON	31%	10%	13%	15%	9%
OTTAWA HILLS	48%	9%	6%	8%	9%
PROVIDENCE TOWNSHIP	8%	7%	27%	3%	7%
RICHFIELD TOWNSHIP	16%	8%	19%	6%	25%
SPENCER TOWNSHIP	9%	3%	29%	10%	12%
SPRINGFIELD TOWNSHIP	45%	15%	12%	7%	5%
SWANTON	34%	12%	6%	11%	11%
SWANTON TOWNSHIP	12%	9%	17%	6%	6%
SYLVANIA	39%	9%	12%	16%	7%
SYLVANIA TOWNSHIP	42%	14%	10%	14%	6%
TOLEDO	29%	16%	9%	12%	11%
WALBRIDGE	19%	13%	22%	7%	9%
WASHINGTON TOWNSHIP (LUC)	22%	10%	23%	7%	8%
WATERVILLE	32%	7%	10%	6%	9%
WATERVILLE TOWNSHIP	16%	8%	27%	3%	6%
WHITEHOUSE	25%	5%	22%	11%	7%
LUCAS COUNTY TOTAL	31%	15%	10%	12%	10%

Figure 17: Crash Types by Jurisdiction Table, 2014–2018 (Wood County)

	REAR END	SIDESWIPE - PASSING	FIXED OBJECT	LEFT TURN	ANGLE
BAIRDSTOWN	0%	0%	25%	0%	25%
BLOOM TOWNSHIP	9%	15%	34%	3%	3%
BLOOMDALE	0%	0%	30%	10%	10%
BOWLING GREEN	32%	9%	10%	16%	12%
BRADNER	0%	0%	50%	17%	17%
CENTER TOWNSHIP	15%	20%	28%	5%	8%
CUSTAR	0%	0%	50%	0%	25%
CYGNET	5%	5%	37%	0%	5%
FOSTORIA	39%	11%	4%	22%	12%
FREEDOM TOWNSHIP	10%	7%	26%	7%	10%
GRAND RAPIDS	10%	3%	31%	6%	10%
GRAND RAPIDS TOWNSHIP	5%	2%	32%	2%	4%
HASKINS	6%	2%	22%	5%	25%
HENRY TOWNSHIP	12%	21%	34%	3%	4%
HOYTVILLE	27%	9%	18%	0%	18%
JACKSON TOWNSHIP	2%	5%	54%	0%	2%
JERRY CITY	0%	10%	20%	10%	0%
LAKE TOWNSHIP	17%	15%	32%	6%	6%
LIBERTY TOWNSHIP	2%	4%	33%	5%	6%
LUCKEY	4%	4%	39%	9%	0%
MIDDLETON TOWNSHIP	17%	9%	32%	5%	8%
MILLBURY	18%	3%	36%	9%	6%
MILTON CENTER	0%	0%	0%	0%	0%
MILTON TOWNSHIP	2%	1%	49%	3%	8%
MONTGOMERY TOWNSHIP	5%	4%	26%	2%	13%
NORTH BALTIMORE	6%	9%	23%	6%	13%
NORTHWOOD	35%	14%	20%	9%	7%
PEMBERVILLE	0%	0%	25%	0%	25%
PERRY TOWNSHIP	9%	2%	36%	2%	6%
PERRYSBURG	42%	13%	13%	9%	7%
PERRYSBURG TOWNSHIP	27%	16%	23%	8%	7%
PLAIN TOWNSHIP	10%	6%	32%	6%	15%
PORTAGE	22%	4%	26%	4%	0%
PORTAGE TOWNSHIP	9%	28%	33%	0%	1%
RISINGSUN	10%	20%	20%	20%	0%
ROSSFORD	27%	12%	17%	9%	10%
TONTOGANY	9%	9%	36%	9%	9%
TROY TOWNSHIP	15%	10%	32%	3%	4%
WASHINGTON TOWNSHIP (WOOD)	4%	3%	38%	2%	6%
WAYNE	20%	0%	20%	0%	20%
WEBSTER TOWNSHIP	4%	3%	45%	4%	12%
WEST MILLGROVE	0%	0%	50%	0%	0%
WESTON	7%	5%	27%	5%	12%
WESTON TOWNSHIP	10%	5%	26%	5%	13%
WOOD COUNTY TOTAL	24%	13%	22%	8%	8%

ABOVE COUNTYWIDE AVERAGE BELOW COUNTYWIDE AVERAGE

CRASH TYPES FOR SEVERE CRASHES BY MAINTAINING AUTHORITY

Nearly 56 percent of all severe crashes in the region occur on city-maintained roadways. Another 28 percent of severe crashes occurred on State-maintained facilities. Over 83 percent of the pedestrian crashes and 85 percent of the bicycle crashes occurred on city-maintained roadways. Severe fixed object crashes and animal crashes are over-represented on the State system versus the locally maintained roadways.

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

	STATE HIGHWAY AGENCY	STATE TOLL AUTHORITY	COUNTY HIGHWAY AGENCY	CITY OR MUNICIPAL HIGHWAY AGENCY	TOWN OR TOWNSHIP HIGHWAY AGENCY	OTHER/ UNCLASSIFIED	GRAND TOTAL
FIXED OBJECT	160	9	57	199	37	10	472
REAR END	141	6	31	184	3	6	371
ANGLE	102	0	47	191	15	6	361
LEFT TURN	55	0	29	219	4	2	309
PEDESTRIAN	21	2	5	163	2	3	196
HEAD ON	35	0	17	76	3	2	133
SIDESWIPE - PASSING	68	3	5	51	1	1	129
OVERTURNING	34	3	6	26	8	2	79
PEDALCYCLES	0	0	7	52	1	1	61
PARKED VEHICLE	4	0	1	32	0	2	39
RIGHT TURN	7	1	2	20	1	0	31
SIDESWIPE - MEETING	6	0	1	21	2	0	30
OTHER NON-COLLISION	2	0	1	12	2	1	18
ANIMAL	8	0	2	3	2	0	15
BACKING	0	0	4	4	1	0	9
OTHER OBJECT	1	0	1	4	2	0	8
TRAIN	1	0	0	3	1	0	5
UNKNOWN	1	0	1	2	0	0	4
GRAND TOTAL	646	24	217	1,262	85	36	2,270

OVER-REPRESENTED CRASH TYPES

A more in-depth analysis was performed on the over-represented crash types in the region to understand more about the problem and identify solutions.

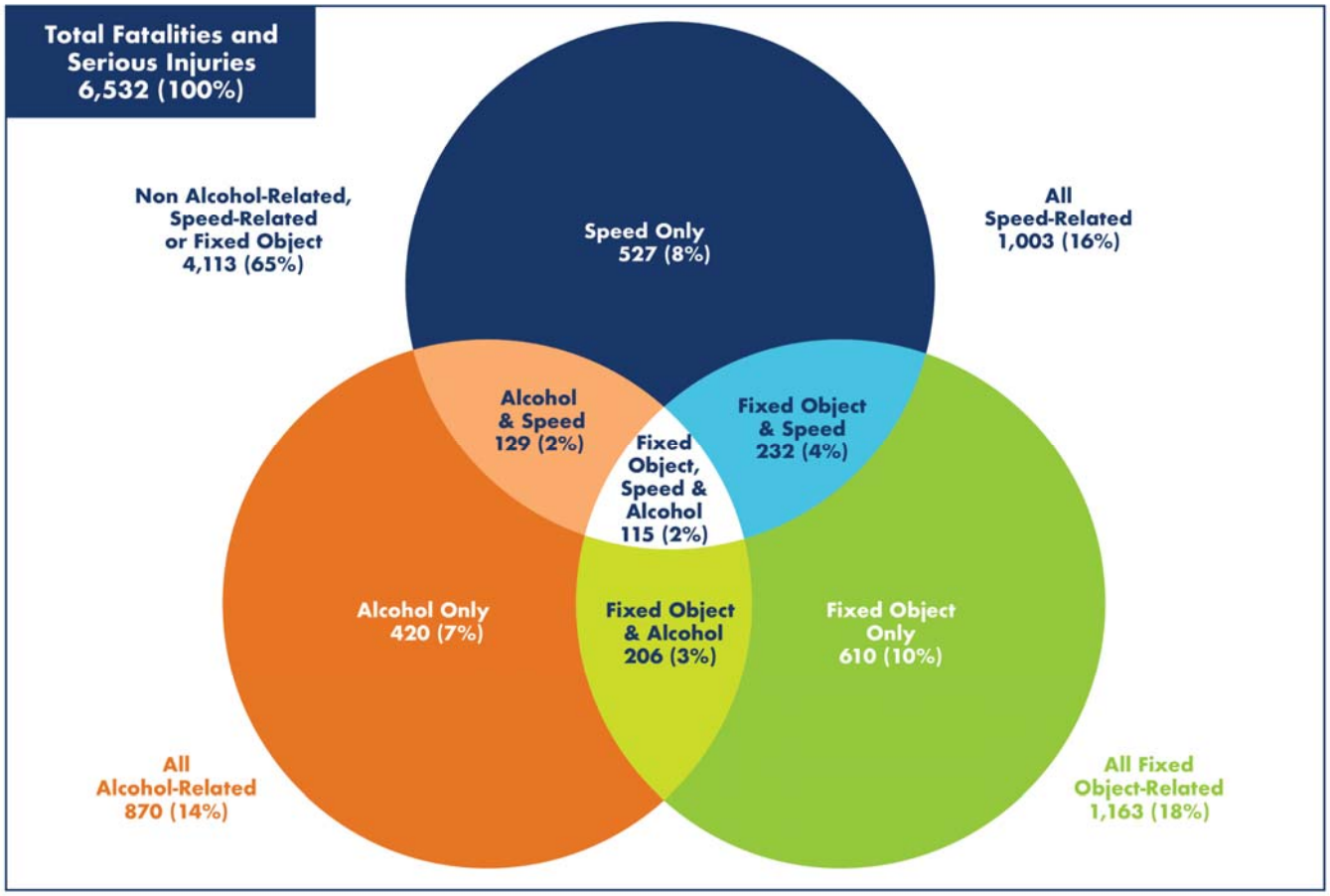
FIXED OBJECT CRASHES

There were 11,276 fixed object crashes between 2014 and 2018 with 74 crashes resulting in a fatality and 398 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 mailbox.

"Speed, alcohol, striking a fixed object or a combination of the three contributed to 35 percent of all fatalities and serious injuries in the region."

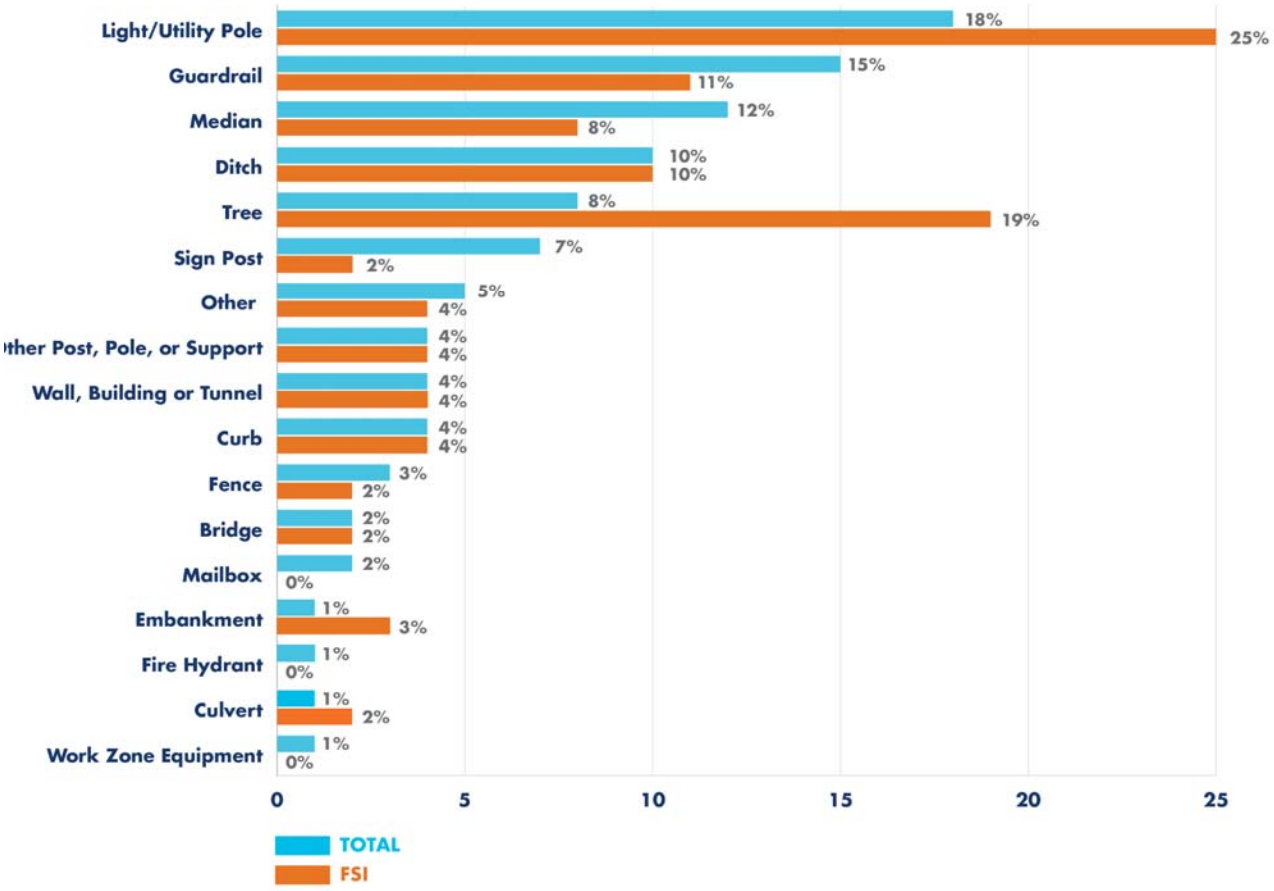
Speed, alcohol, striking a fixed object or a combination of the three contributed to 35 percent of all fatalities and serious injuries in the region. In eight percent of fatalities and serious injuries between 2009 and 2018, speed and/or alcohol were contributing factors in a fixed object collision.

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



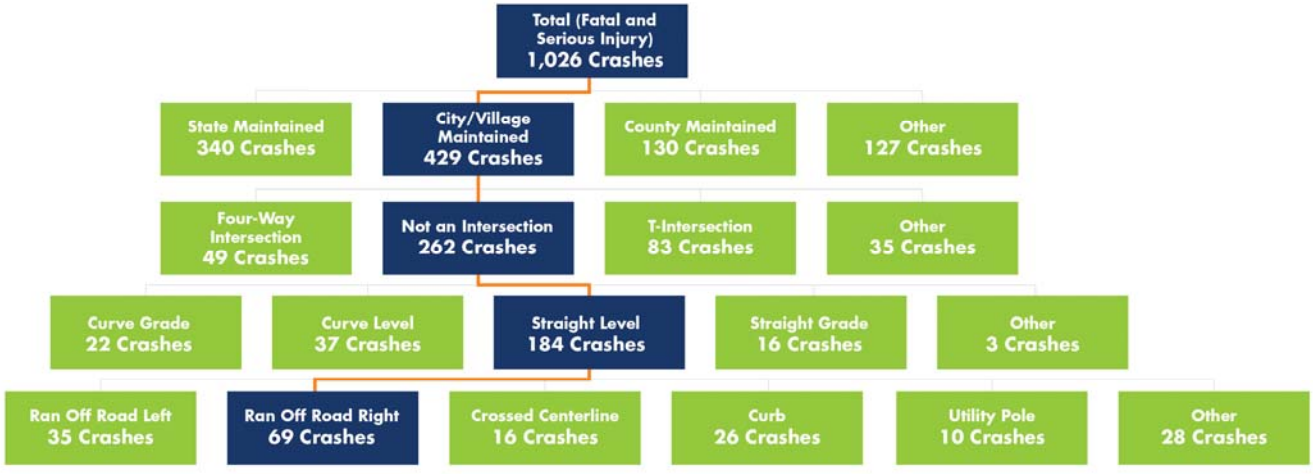
Utility poles, guardrail, median, ditches, and trees were the most commonly struck fixed objects. Trees were struck in 8 percent of all fixed object crashes but in 19 percent of fatal and serious injury crashes.

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



Of the 1,026 fixed object crashes that resulted in a fatality or serious injury, most occurred on straight, level roadway segments on city-maintained facilities.

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



FIXED OBJECT CRASH LOCATIONS

Fixed object crashes occurred throughout the TMACOG region, but there are hot spots along I-75, U.S. 23, I-475, and Woodville Road in Toledo.

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

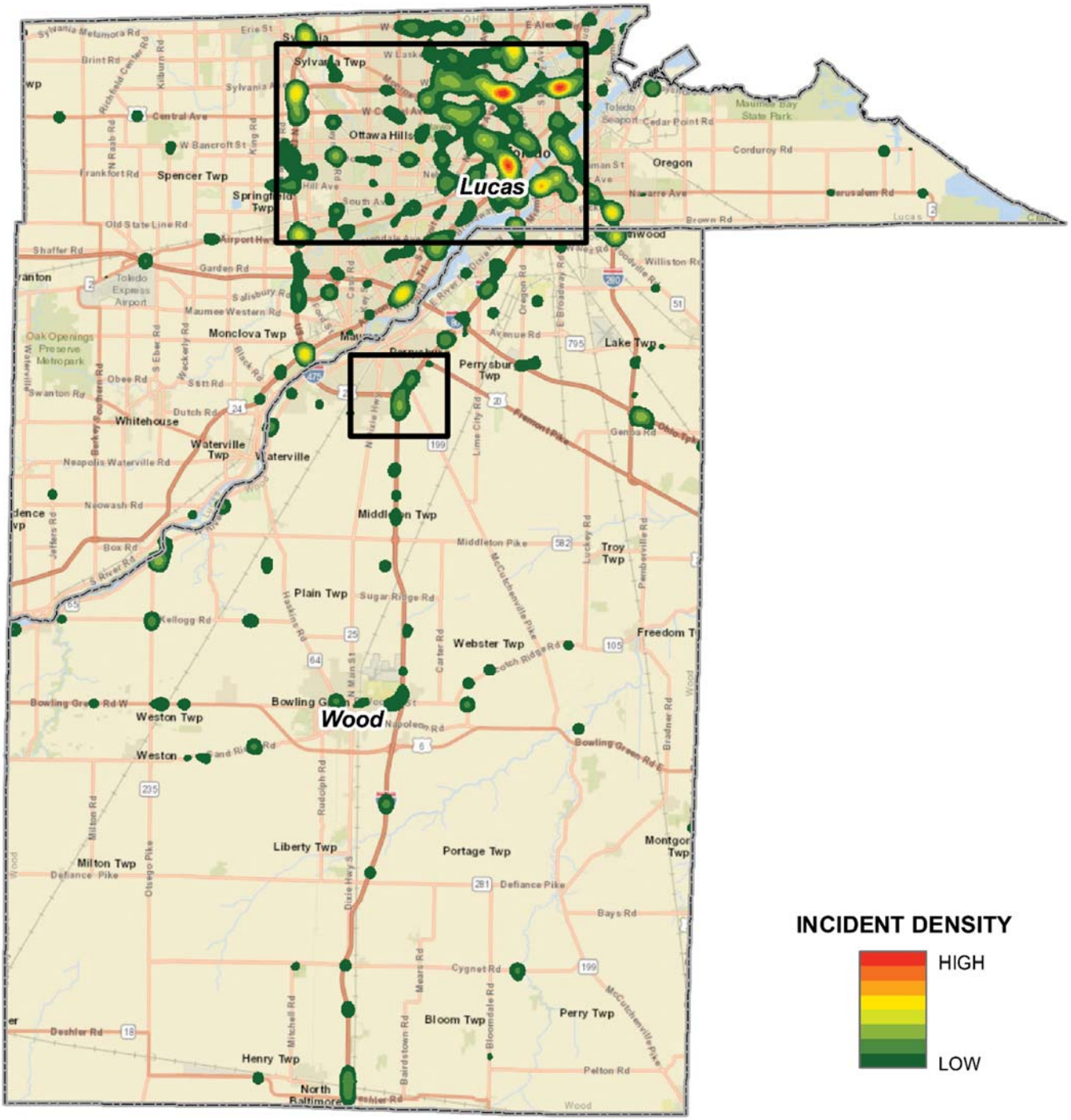
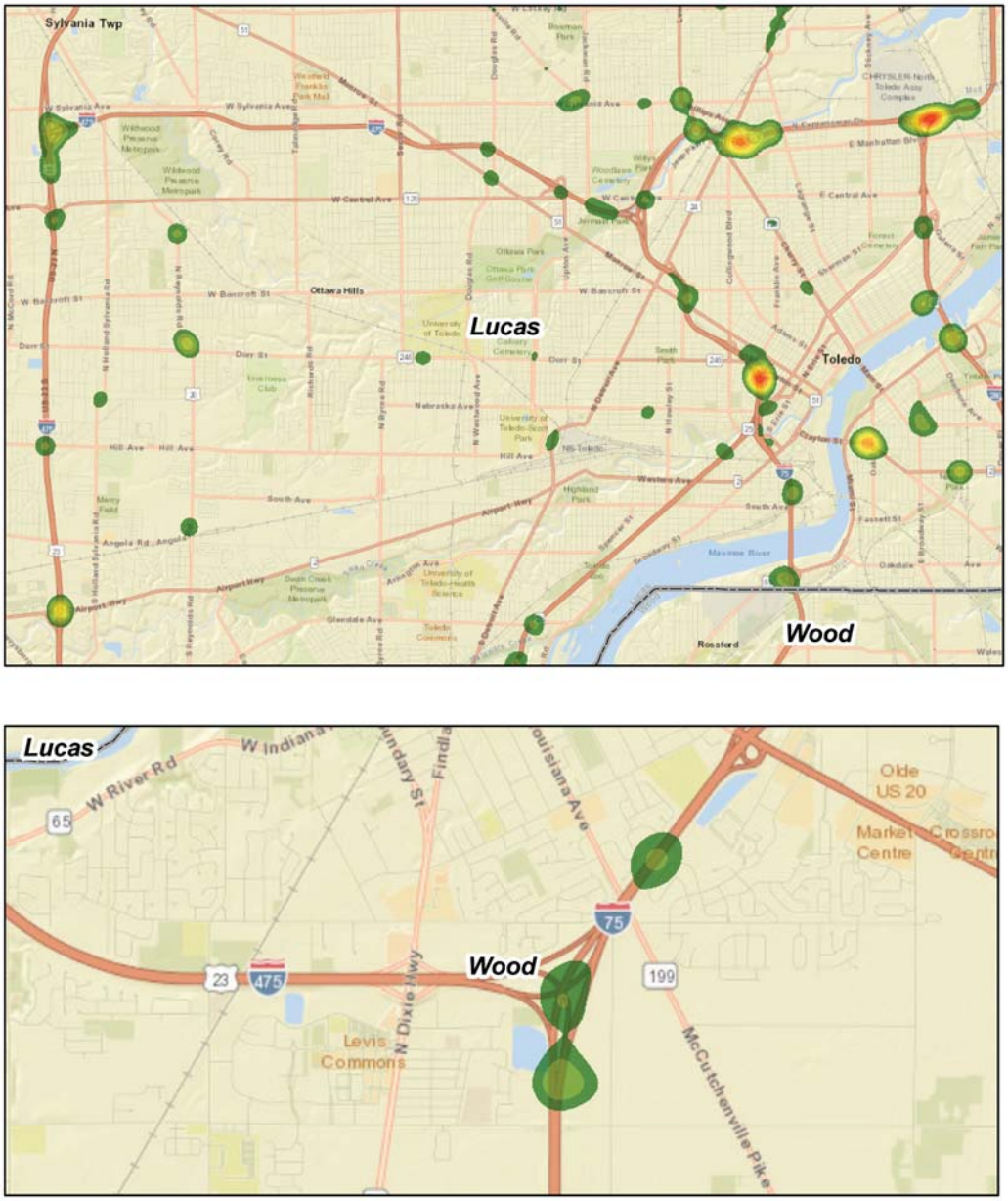


Figure 23: Fixed Object-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Focus Area

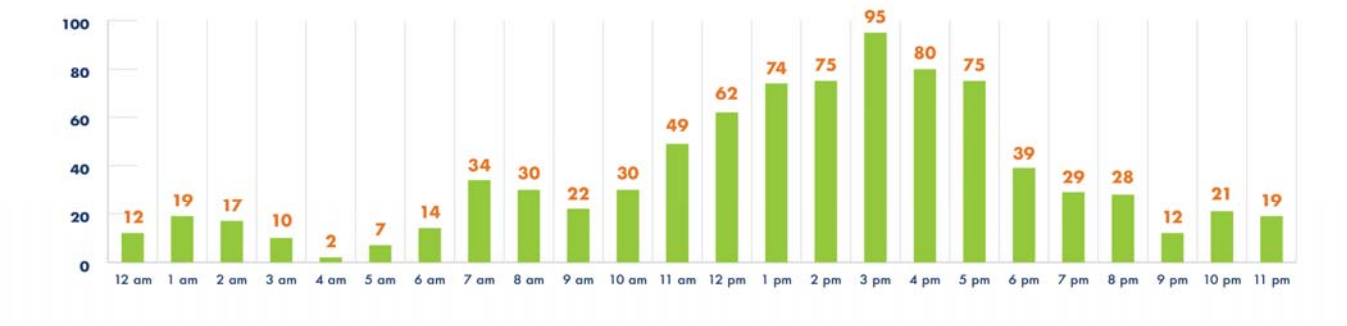


REAR END CRASHES

There were 26,276 rear end crashes between 2014 and 2018 with 15 crashes resulting in a fatality and 356 resulting in a serious injury.

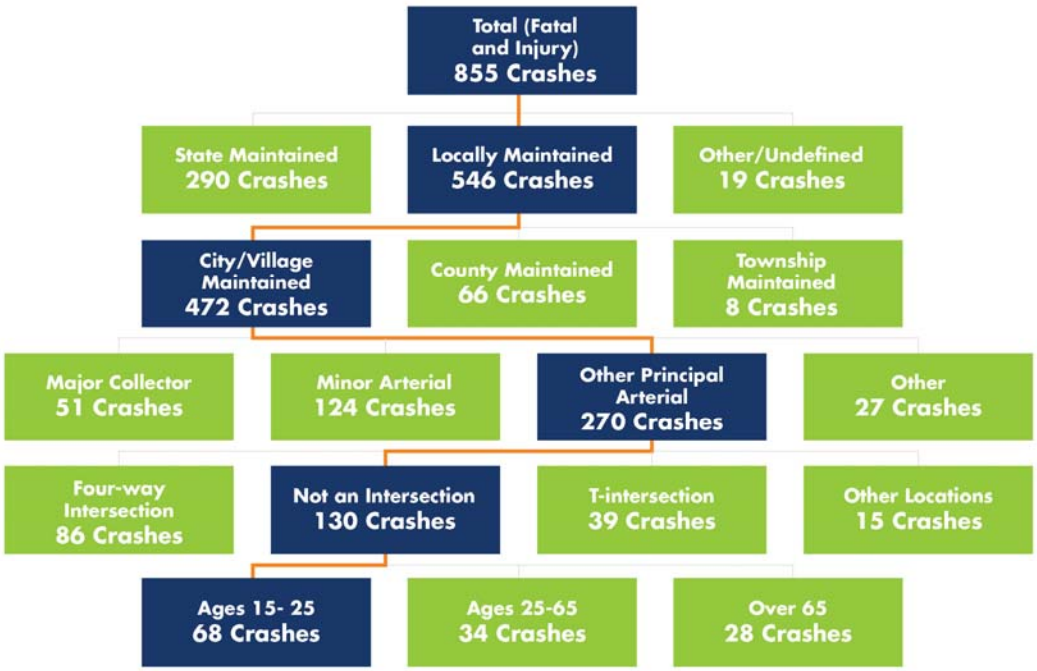
The frequency of fatal and injury rear end crashes in the TMACOG region spikes during peak periods of traffic volumes such as the AM peak period and afternoon/evening peak period. Severe rear end crashes are less likely to occur in the late night or early morning hours in the region.

Figure 24: Rear End-Related Fatal and Injury Crashes Time of Day, 2009–2018



In the TMACOG area, fatal and injury rear end crashes occur mostly on city or village maintained principal 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. Drivers aged 15 to 25 are the most at-fault in rear crashes compared to other age groups.

Figure 25: 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 Wooster Street and Main Street in Wood County and along SR 2 (Airport Highway), Reynolds Road, Central Avenue, Bancroft Street, and McCord Road in Lucas County. There were other roadways in Lucas County with isolated intersections with high frequencies of severe rear end crashes.

Figure 26: Rear End-Related Fatal and Injury Crashes Heat Map, 2009–2018—Regionwide

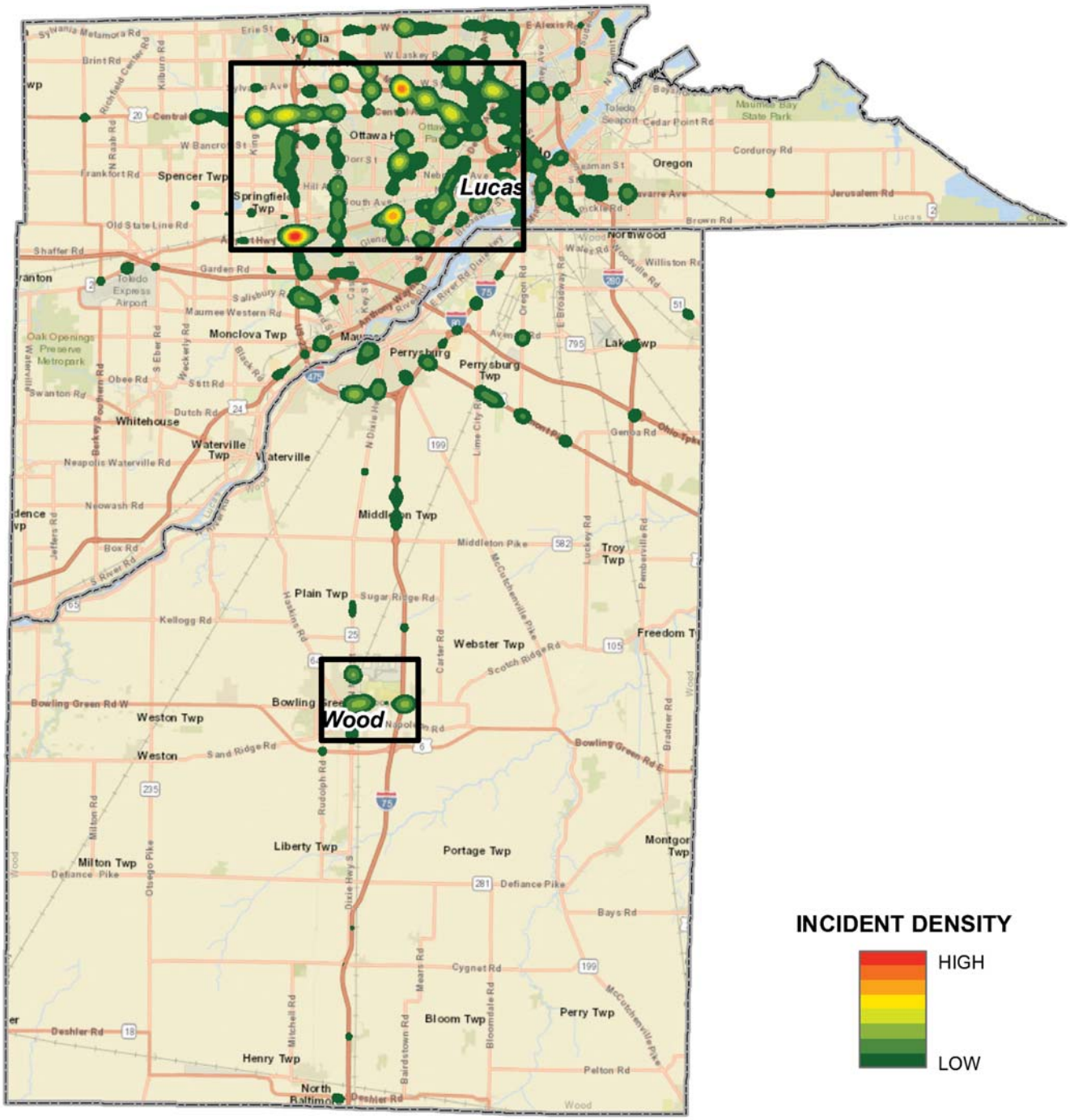
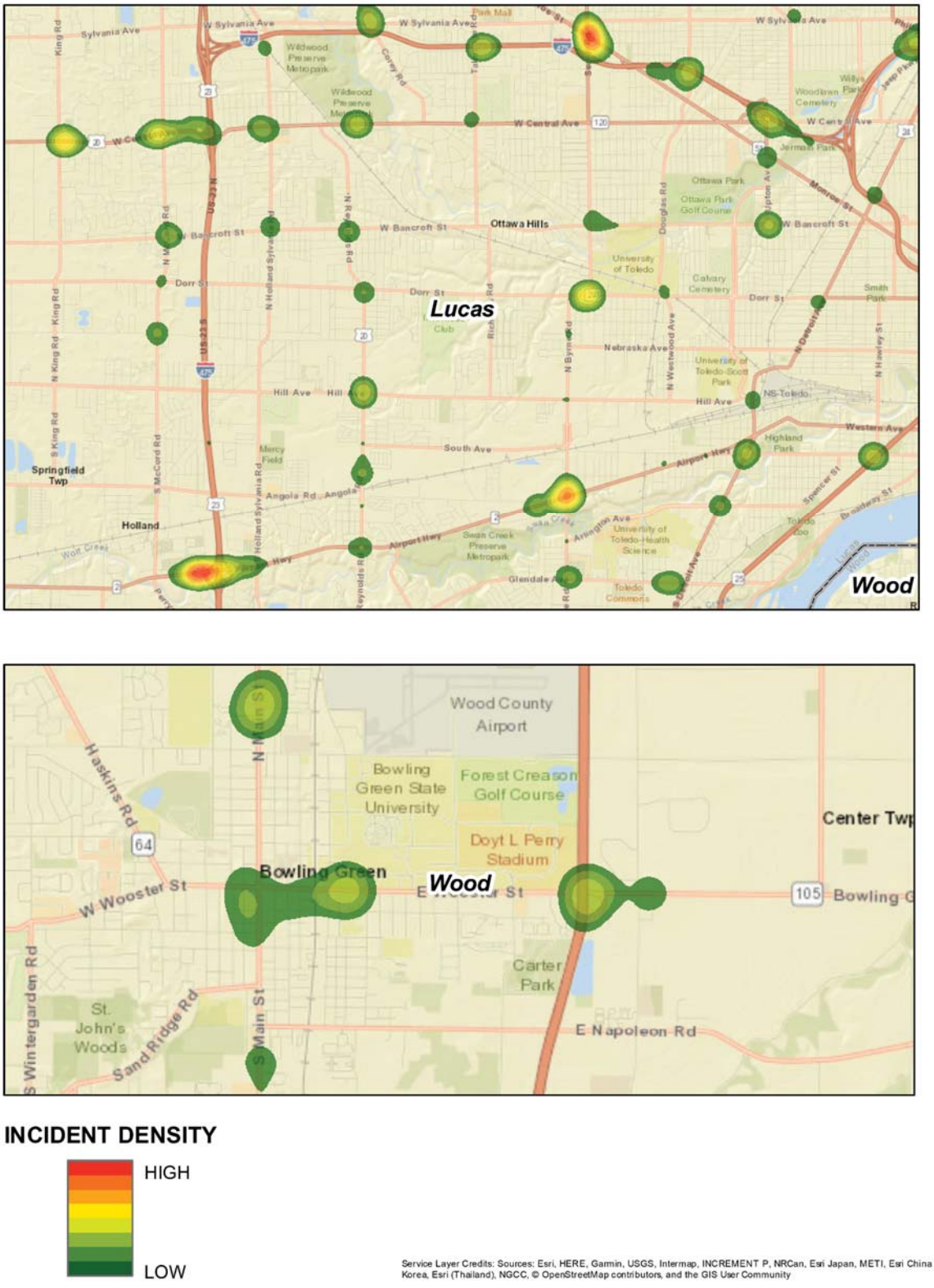


Figure 27: Rear End-Related Fatal and Injury Crashes Heat Map, 2009–2018—Focus Area

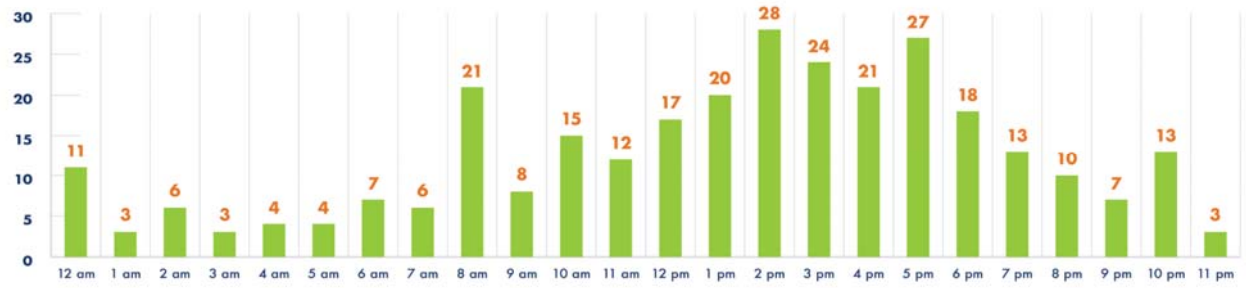


SIDESWIPE-PASSING CRASHES

There were 12,868 sideswipe-passing crashes between 2014 and 2018 with 4 crashes resulting in a fatality and 125 resulting in a serious injury.

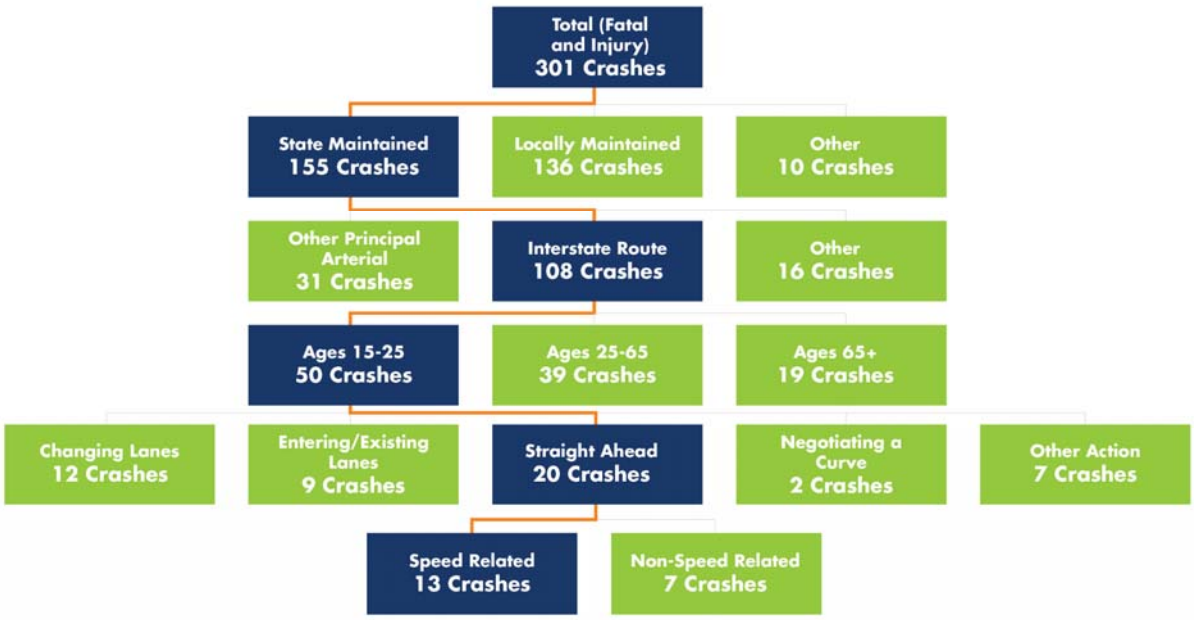
Sideswipe-passing crashes that resulted in a fatality or injury generally occur throughout the day, but the majority occur between the hours of 8:00 a.m. and 8:00 p.m. The frequency of these types of crashes spikes between the hours of 1:00 p.m. and 6:00 p.m. which correlates with hours of peak traffic volumes. There is an unusual peak of severe sideswipe-passing crashes that occur between 10:00 p.m. and 1:00 a.m. Several factors could be contributing to these crashes, including alcohol.

Figure 28: Sideswipe Passing Fatal and Injury Crashes Time of Day Chart, 2009–2018



Most of the fatal and injury sideswipe-passing crashes occurred on interstate routes. Most often, young drivers between the ages of 15 and 25 were overrepresented as at-fault drivers in sideswipe-passing crashes. When these crashes involved young drivers traveling straight ahead, they were most often speed related.

Figure 29: Sideswipe-Passing Fatal and Injury Crashes Crash Tree Diagram, 2009–2018



SIDESWIPE-PASSING CRASH LOCATIONS

Severe sideswipe-passing crashes occurred throughout the TMACOG region. Several sideswipe-passing crashes occurred at the intersection of SR 199 and Roachton Road in Wood County. This intersection was converted to a roundabout during the crash analysis period. In Lucas County, the severe sideswipe-passing crashes primarily occurred along U.S. 23, I-475, and I-75.

Figure 30: Sideswipe-Passing Fatal and Injury Crashes Heat Map, 2009–2018—Regionwide

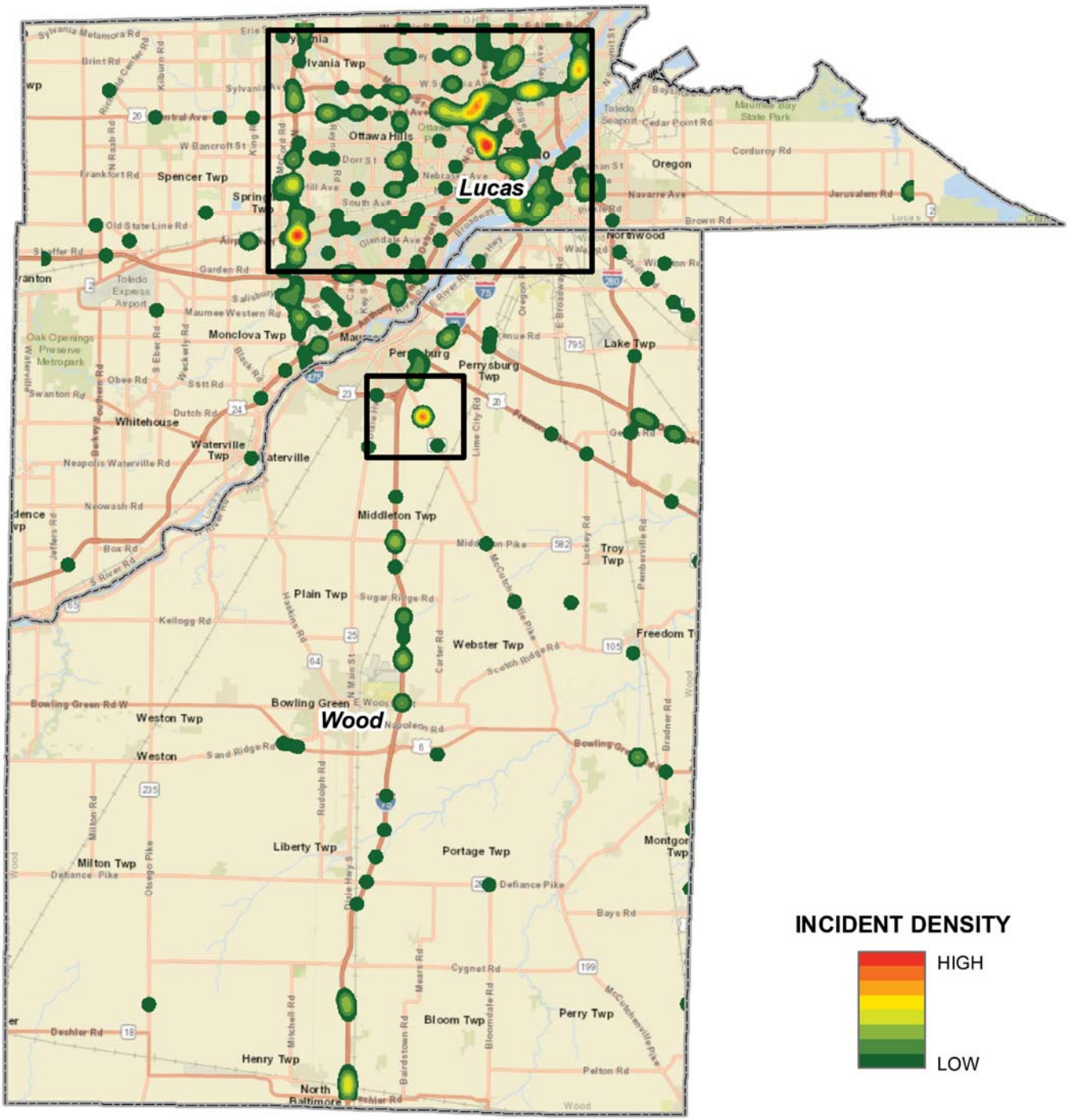
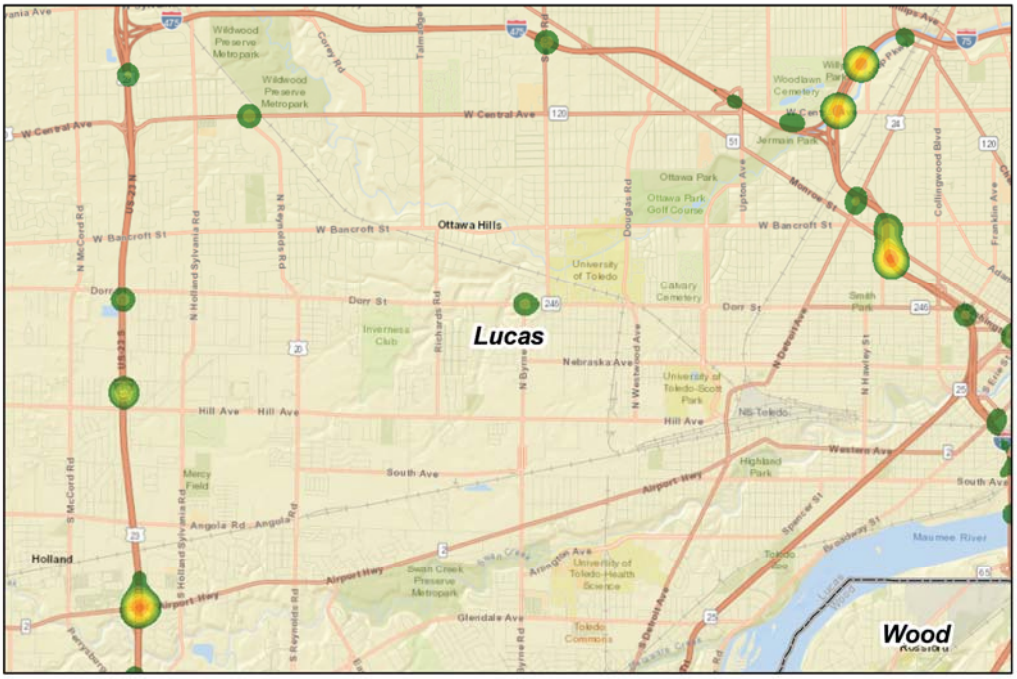
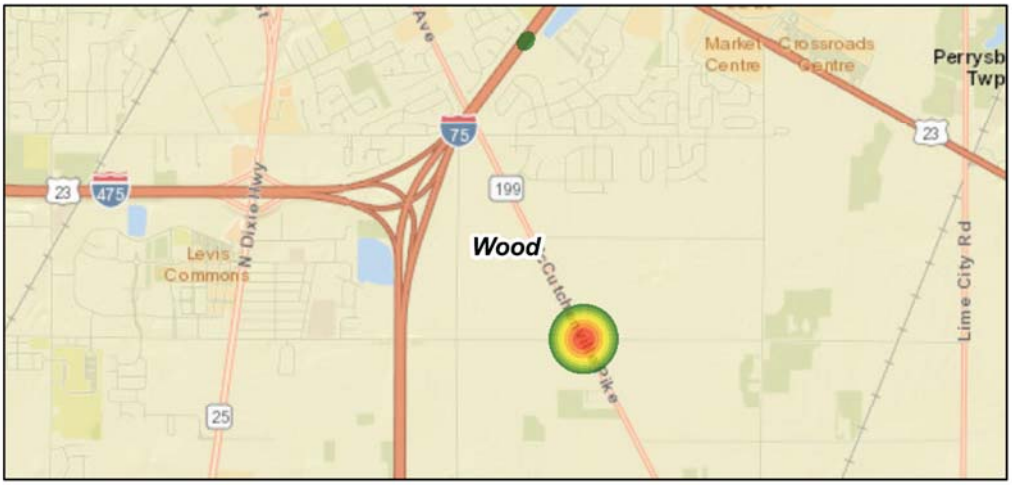


Figure 31: Sideswipe-Passing Fatal and Injury Crashes Heat Map, 2009–2018—Focus Area





INCIDENT DENSITY

HIGH

LOW

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Emphasis Areas—
Prioritized Focus Areas

SECTION CONTENT:

Young Drivers

Distracted Drivers

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.

For the TMACOG region, crash data for a six-year timeframe (2013–2018), were evaluated to determine the top contributors to crashes, or the local emphasis areas.

	STATEWIDE	TMACOG REGION	TMACOG REGION - LOCAL ROADS ONLY
ROADWAY DEPARTURE	37.6%	26.6%	23.1%
INTERSECTION	36.6%	51.5%	59.5%
RAILROAD CROSSING	0.3%	0.2%	0.3%
ALCOHOL RELATED INVOLVEMENT	17.1%	13.7%	14.3%
RESTRAINTS NOT USED DRIVER/ OCCUPANTS	19.3%	19.8%	18.4%
SPEED RELATED INVOLVEMENT	23.9%	15.8%	14.1%
YOUNG DRIVER INVOLVEMENT (15-25)	37.3%	40.7%	42.0%
OLDER DRIVER INVOLVEMENT (65+)	17.4%	18.3%	17.6%
DISTRACTED DRIVERS	2.8%	5.6%	4.8%
MOTORCYCLE DRIVER/PASSENGER	8.6%	10.4%	9.9%
PEDESTRIAN INVOLVEMENT	11.4%	6.9%	8.6%
BICYCLE INVOLVEMENT	6.4%	2.5%	3.4%
WORK ZONE RELATED	2.1%	3.6%	1.7%
DRUG RELATED INVOLVEMENT	1.6%	5.1%	4.3%
REAR END	7.4%	16.8%	14.8%

ABOVE COUNTYWIDE AVERAGE BELOW COUNTYWIDE AVERAGE

Figure 32: Contributing Factors to Crashes in the Region, 2013-2018

Of note, intersections contribute to fatalities and serious injuries in approximately 37 percent of the statewide crashes, but over 50 percent in the region. Young driver crashes in the region also are quite a bit higher than the statewide average. And while distracted driver crashes are lower in the region than some of the other contributing factors, stakeholders felt this was a major issue that is not accurately reflected in the crash data.

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.

YOUNG DRIVERS

DISTRACTED DRIVERS

INTERSECTIONS

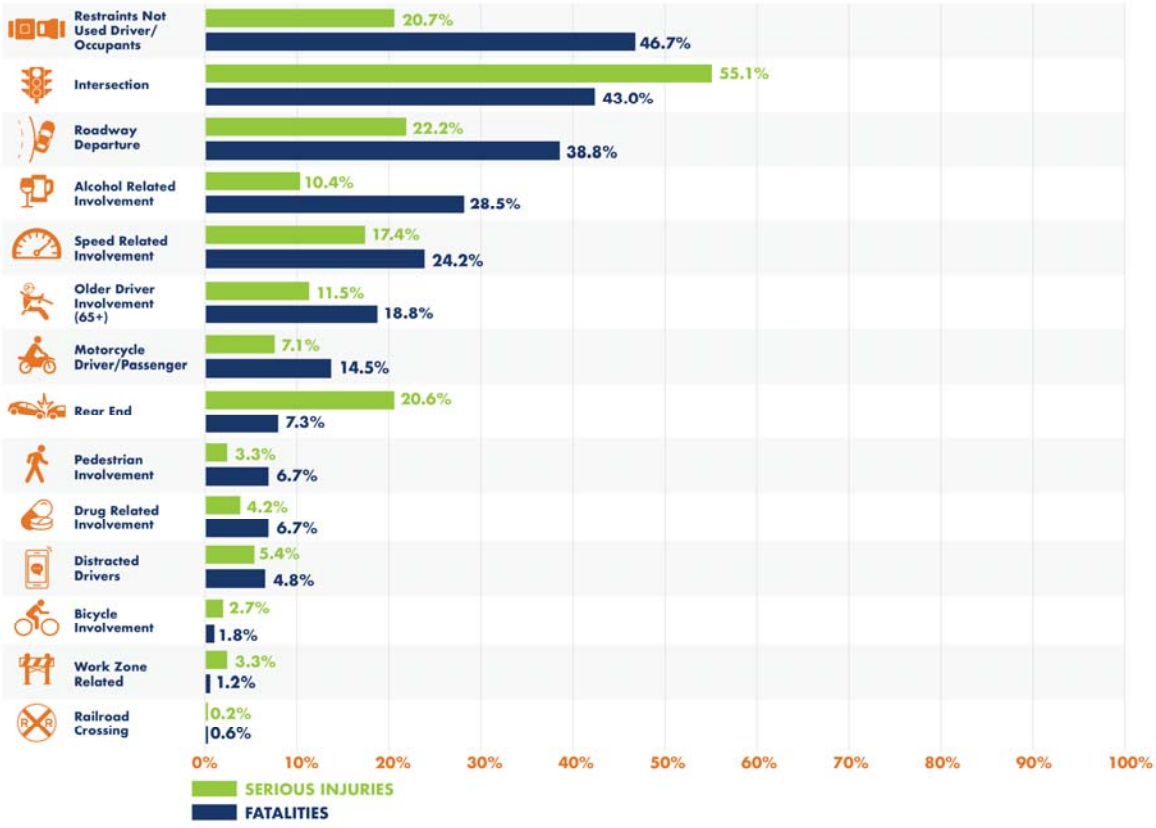
YOUNG DRIVERS

Between 2013 and 2017, crashes involving young drivers contributed to nearly 41 percent of all fatal and serious injury crashes in the region. Ohio considers young drivers to be between the ages of 15 and 25. Research shows immaturity, risk taking and inexperience as the primary factors in these crashes. On average 18 to 19 people are fatally injured and 249 to 250 people are seriously injured each year in a crash involving a young driver. Based on historical data, serious injuries involving young drivers are steadily decreasing, but fatalities involving young drivers are slightly increasing.

Figure 33: Young Driver-Related Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

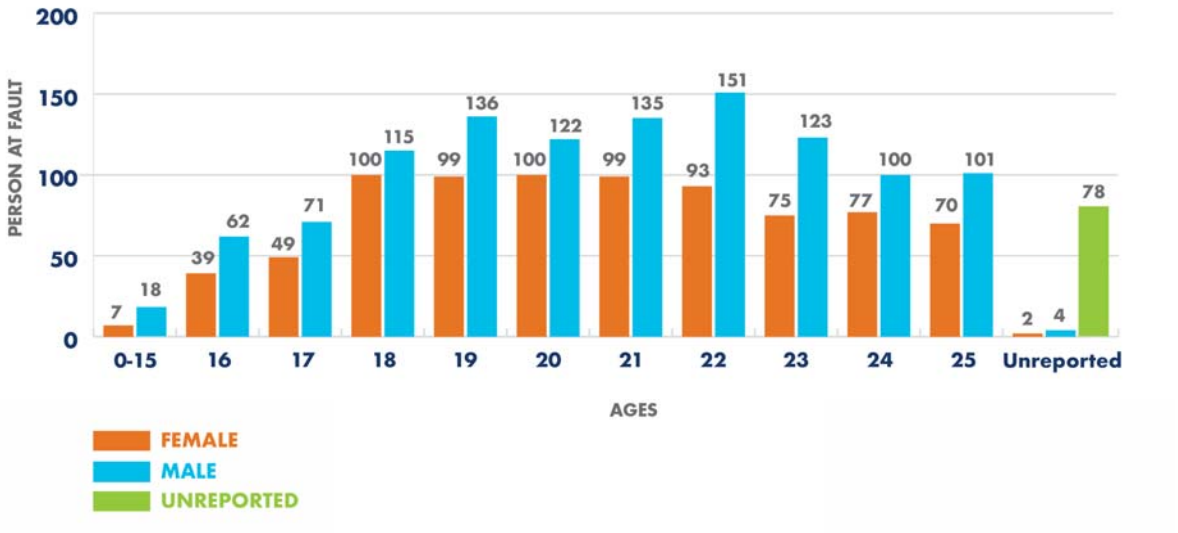
Most commonly, fatalities involving young drivers involved intersections, occupants not wearing a seat belt, roadway departure, alcohol, speed, or a combination thereof. Serious injury crashes involving young drivers most often occurred at intersections.

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



WHO? Most of the young drivers at-fault were male and between the ages of 18 and 23.

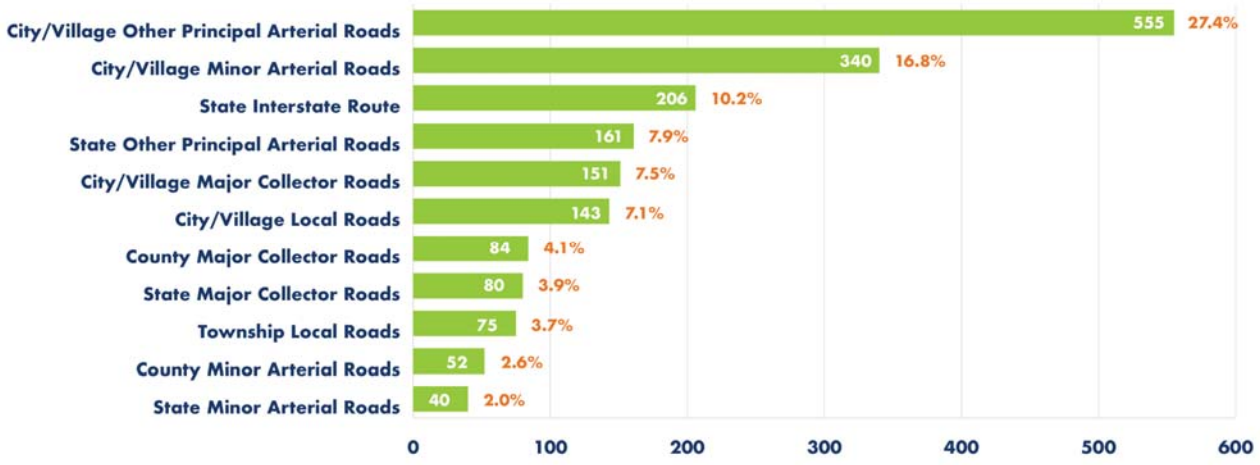
Figure 35: Young Driver-Related Fatal and Injury Crashes Age/Gender, 2009–2018



YOUNG DRIVERS

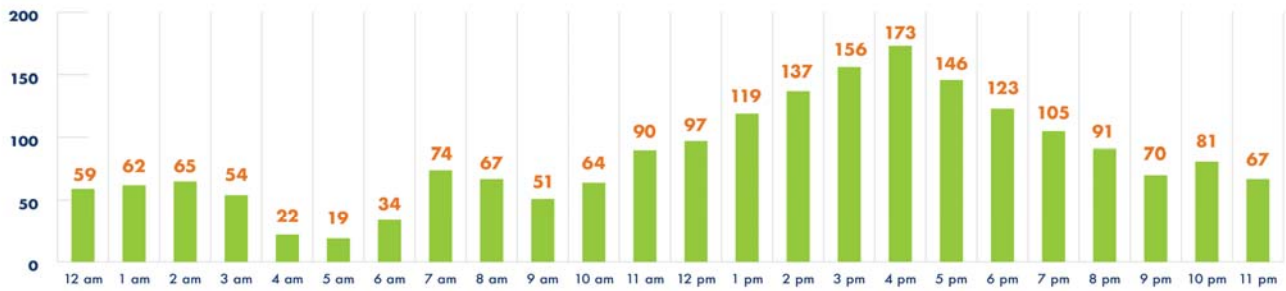
WHERE? Over 59 percent of young driver-related fatalities and injuries occurred on city and municipal maintained facilities, with over 28 percent occurring on city/village Principal Arterial roads (i.e., Airport Highway in Toledo, Alexis Road in Toledo, Byrne Road in Toledo, Central Avenue Toledo, Detroit Avenue in Toledo, Dussel Street in Maumee, Laskey Road in Toledo, Monroe Street in Toledo, Reynolds Road in Toledo, and Secor Road in Toledo). An additional 16.8 percent of fatal or injury crashes involving young drivers occurred on minor arterial roads maintained by cities or villages (i.e, Arlington Road in Toledo, Bancroft Street in Toledo, Collingwood Boulevard in Toledo, Douglas Road in Toledo, Gypsy Lane in Bowling Green, Hill Avenue in Toledo, Main Street in Bowling Green, Monroe Street in Sylvania, and Wooster Street in Bowling Green).

Figure 36: Young Driver-Related Fatal and Injury Crashes Roadway Functional Class, 2009–2018



WHEN? Many fatal and injury crashes involving young drivers occurred between the hours of 7:00 a.m. and 8:00 p.m. There is a noticeable peak in the 4:00 p.m. hour which correlates to school dismissals. There also is a spike in young driver related crashes between 10:00 p.m. and 4:00 a.m. when alcohol may also play a role. Crashes occurred throughout the week with Friday being the most common day for severe crashes involving a young driver. Over 10 percent of young driver involved fatal and injury crashes occurred in September when school starts. The fewest young driver involved fatal and injury crashes occurred in December and January.

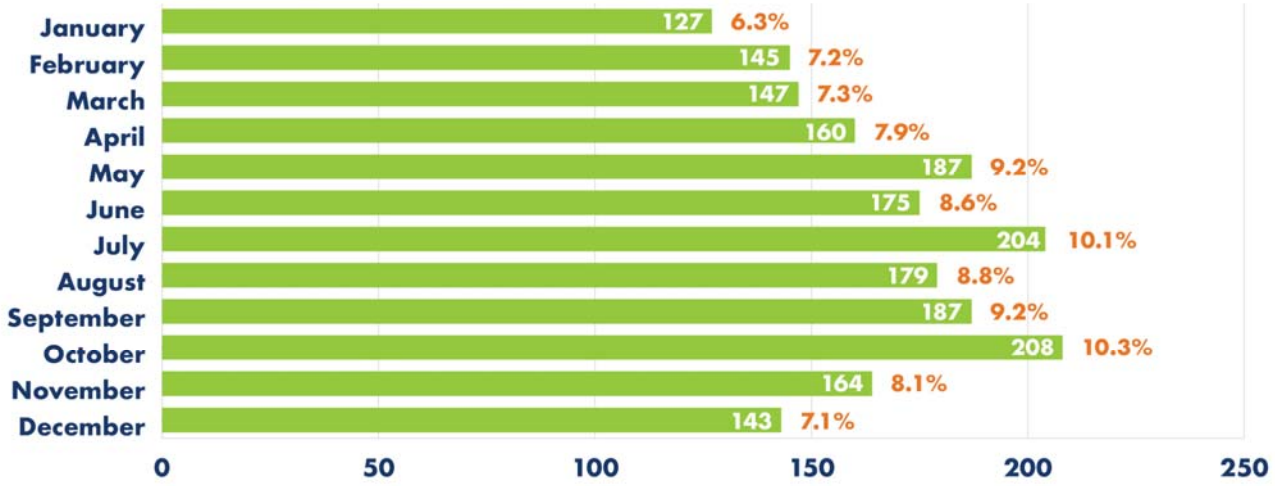
Figure 37: Young Driver-Related Fatal and Injury Crashes Time of Day, 2009–2018



YOUNG DRIVERS

Figure 38: Young Driver-Related Fatal and Injury Crashes Day of Week, 2009–2018

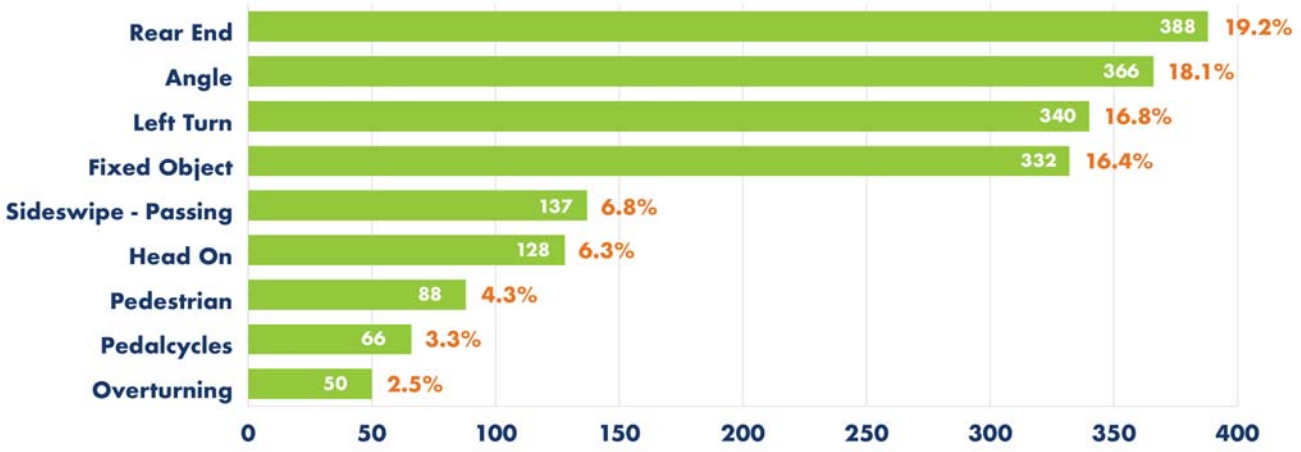
Figure 39: Young Driver-Related Fatal and Injury Crashes by Month



WHY? Over 19 percent of young driver related fatal and injury crashes involved a rear-end collision, which usually results from distracted driving or higher speeds and the inability to stop safely. Rear end along with angle, left turn, and fixed object crashes account for over 70 percent of all fatal and injury crashes involving young drivers.

YOUNG DRIVERS

Figure 40: Young Driver-Related Fatal and Injury Crashes by Type, 2008–2017



Most of the young driver involved fatal or injury crashes occurred in or surrounding Toledo and Bowling Green. There were concentrations of crashes involving young drivers along Airport Highway, Alexis Road, Byrne Road, Central Avenue, Detroit Avenue, Laskey Road, Monroe Street, Reynolds Road, and Secor Road in the Toledo area.

Figure 41: Young Driver-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Regionwide

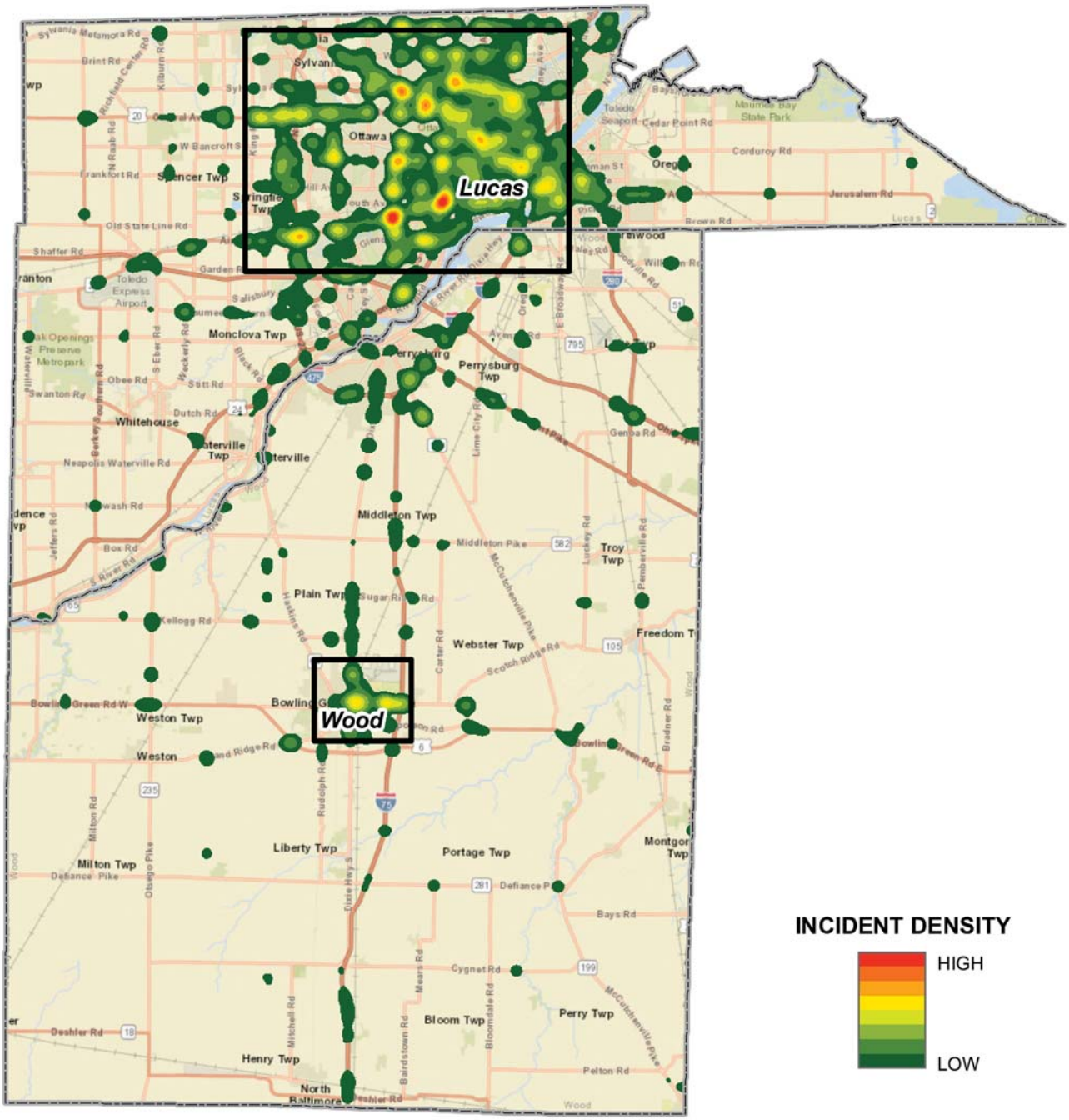
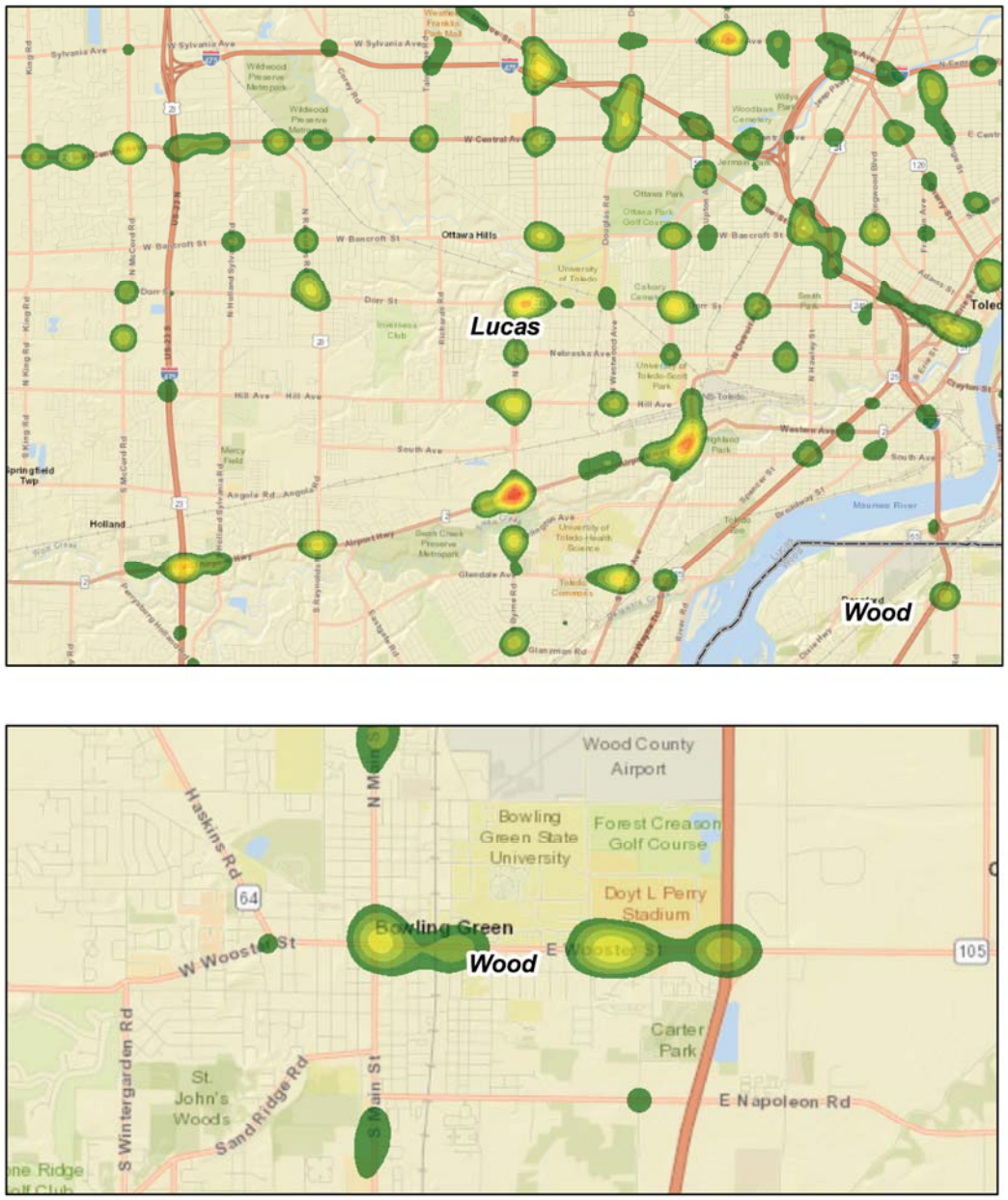


Figure 42: Young Driver-Related Fatal and Serious Injury Crashes Heat Map, 2009–2018—Focus Area



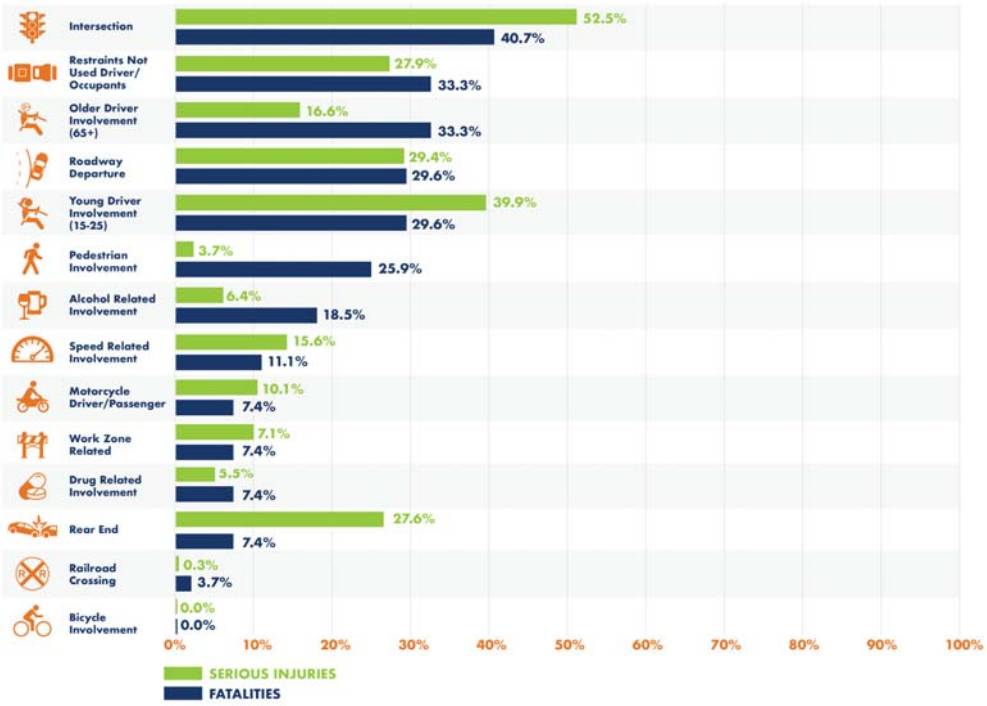
DISTRACTED DRIVERS

Between 2009 and 2018, distracted driving contributed to nearly 6 percent of all fatal and serious injury crashes in the TMACOG region. On average, 2 to 3 people are fatally injured, and 35 to 36 people are seriously injured each year in a crash involving distracted driving. Based on this historical data, serious injuries and fatalities from crashes involving distracted driving are trending upward.

Figure 43: Distraction-Related Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

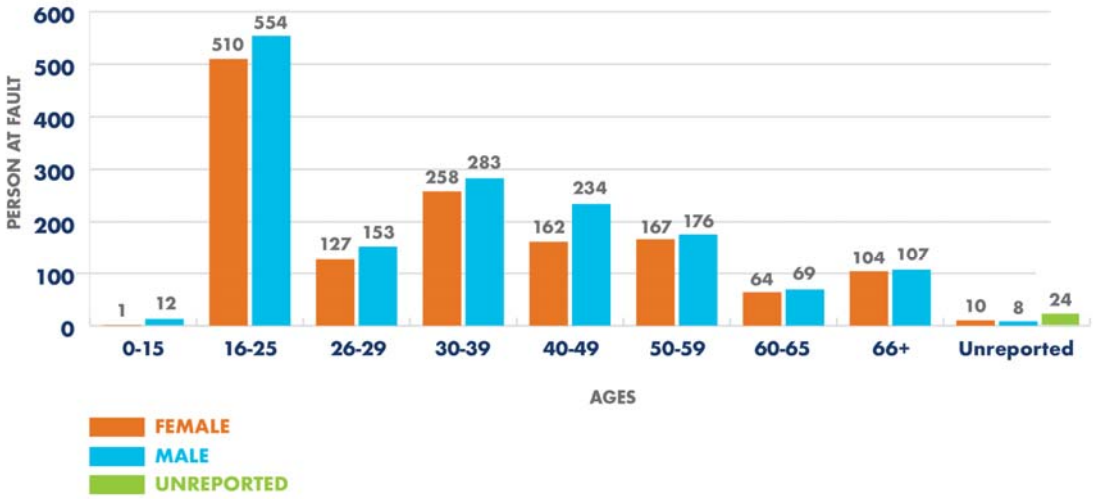
Usually multiple factors contribute to a crash. The main factor contributing to distracted driving fatalities and serious injuries was intersections. Other significant factors contributing to deaths and serious injuries in distracted driving related crashes include occupants not wearing seat belts and young drivers.

Figure 44: Distraction-Related Fatal and Serious Injury Crashes Overlaps, 2009–2018



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

Figure 45: Distraction-Related Fatal and Injury Crashes Age/Gender, 2009–2018



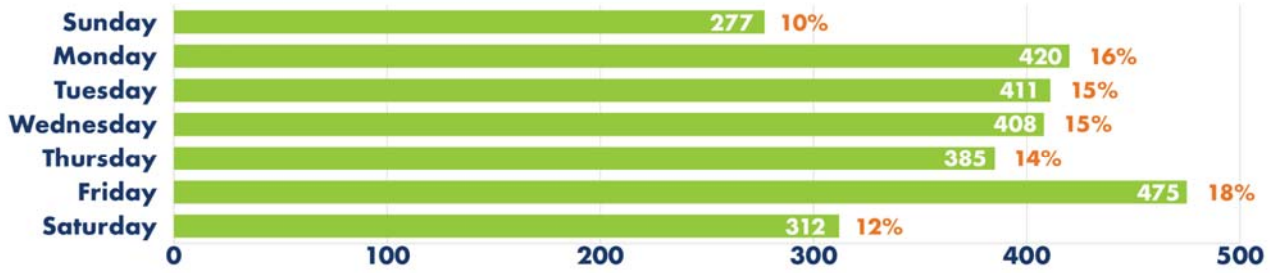
WHERE? Over 61 percent of distracted related fatalities and injuries occurred on city or municipal maintained facilities, with nearly 28 percent occurring on city/village maintained Principal Arterial roads (i.e., Airport Highway in Toledo, Monroe Street in Toledo and Sylvania, Dorr Street in Toledo, and Alexis Road in Toledo and Sylvania). An additional 17.2 percent of fatal or injury crashes involving distracted drivers occur on minor arterial roads maintained by cities or villages (i.e., Wooster Street in Bowling Green, Main Street in Bowling Green, and Bancroft Street in Toledo).

Figure 46: Distraction-Related Fatal and Injury Crashes Roadway Functional Class, 2009–2018

WHEN? The majority of fatal and injury crashes involving distracted driving occurred between the hours of 7:00 a.m. and 7:00 p.m. with a noticeable peak occurring in the 5:00 p.m. hour. Seventy-eight percent of distracted driving fatal and injury crashes occurred on a weekday, with 18 percent occurring on Friday.

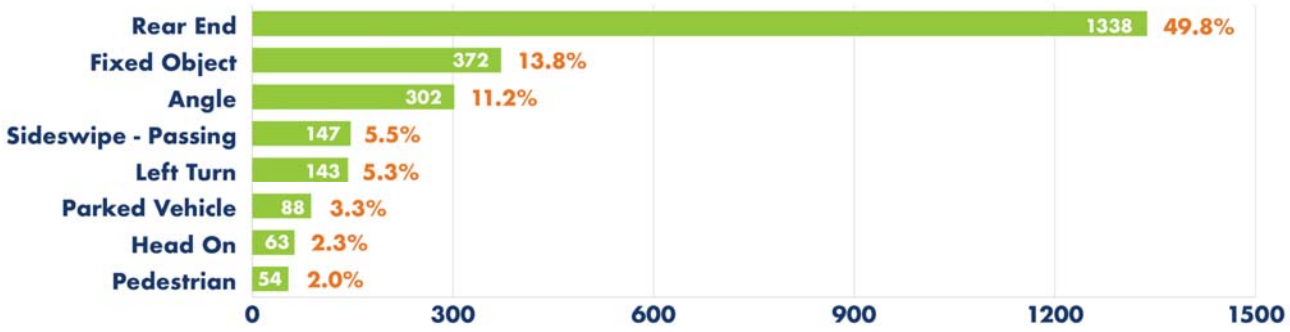
Figure 47: Distraction-Related Fatal and Injury Crashes Time Of Day, 2009–2018

Figure 48: Distraction-Related Fatal and Injury Crashes Day of Week, 2009–2018



WHY? The vast majority of distracted driving fatal and injury crashes were rear end crashes. Rear end, along with fixed object, and angle crash types account for nearly 75 percent of all distracted driving fatal and injury crashes in the TMACOG region.

Figure 49: Distraction-Related Fatal and Injury Crashes by Type, 2009–2018



Distracted driving fatal and injury crashes occurred throughout Lucas and Wood Counties. There were concentrations of crashes involving distraction along Monroe Street in Toledo and along Airport Highway between Perrysburg Holland Road and Holland Sylvania Road.

Figure 50: Distraction-Related Fatal and Injury Crashes Heat Map, 2009–2018—Regionwide

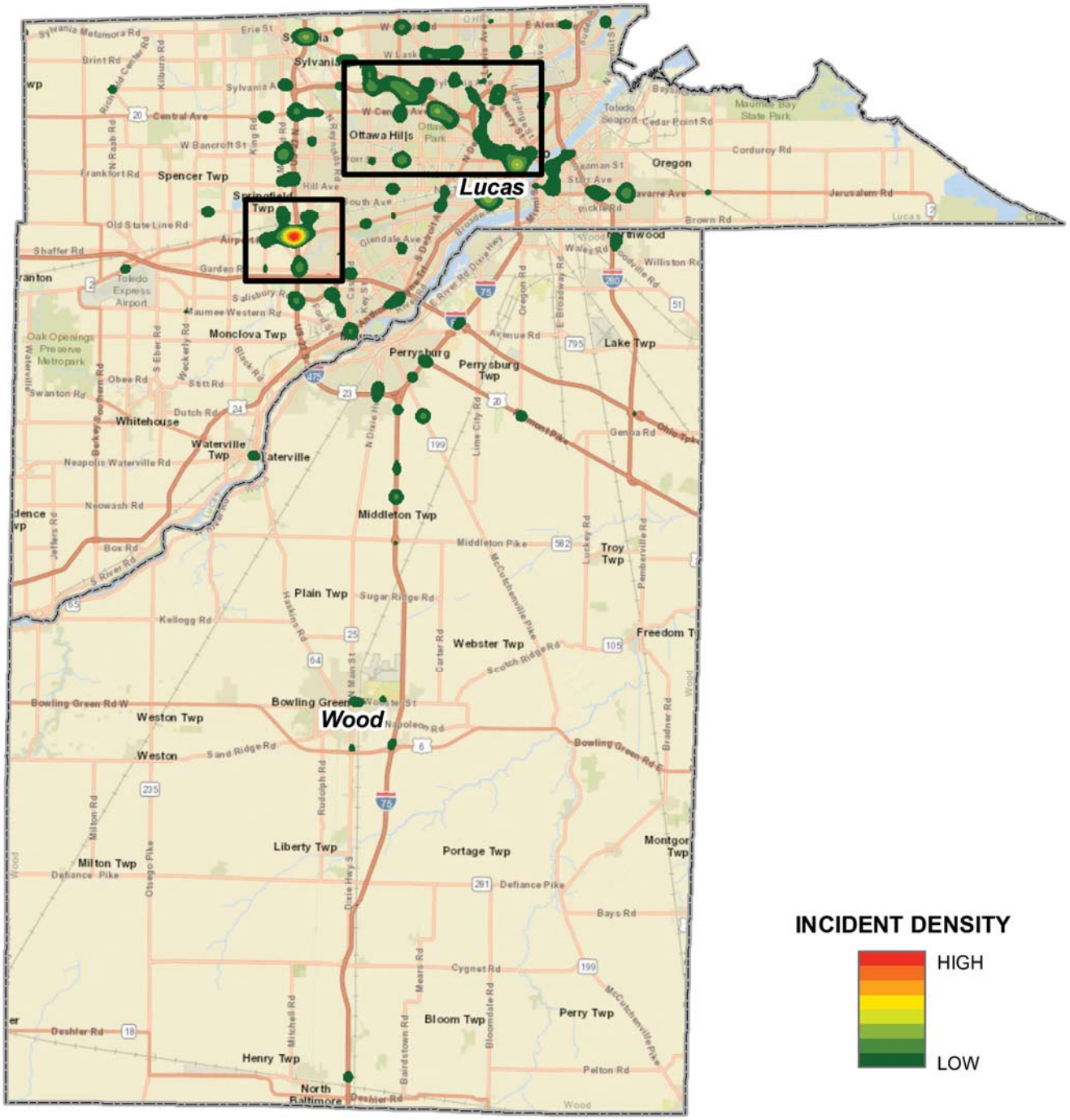
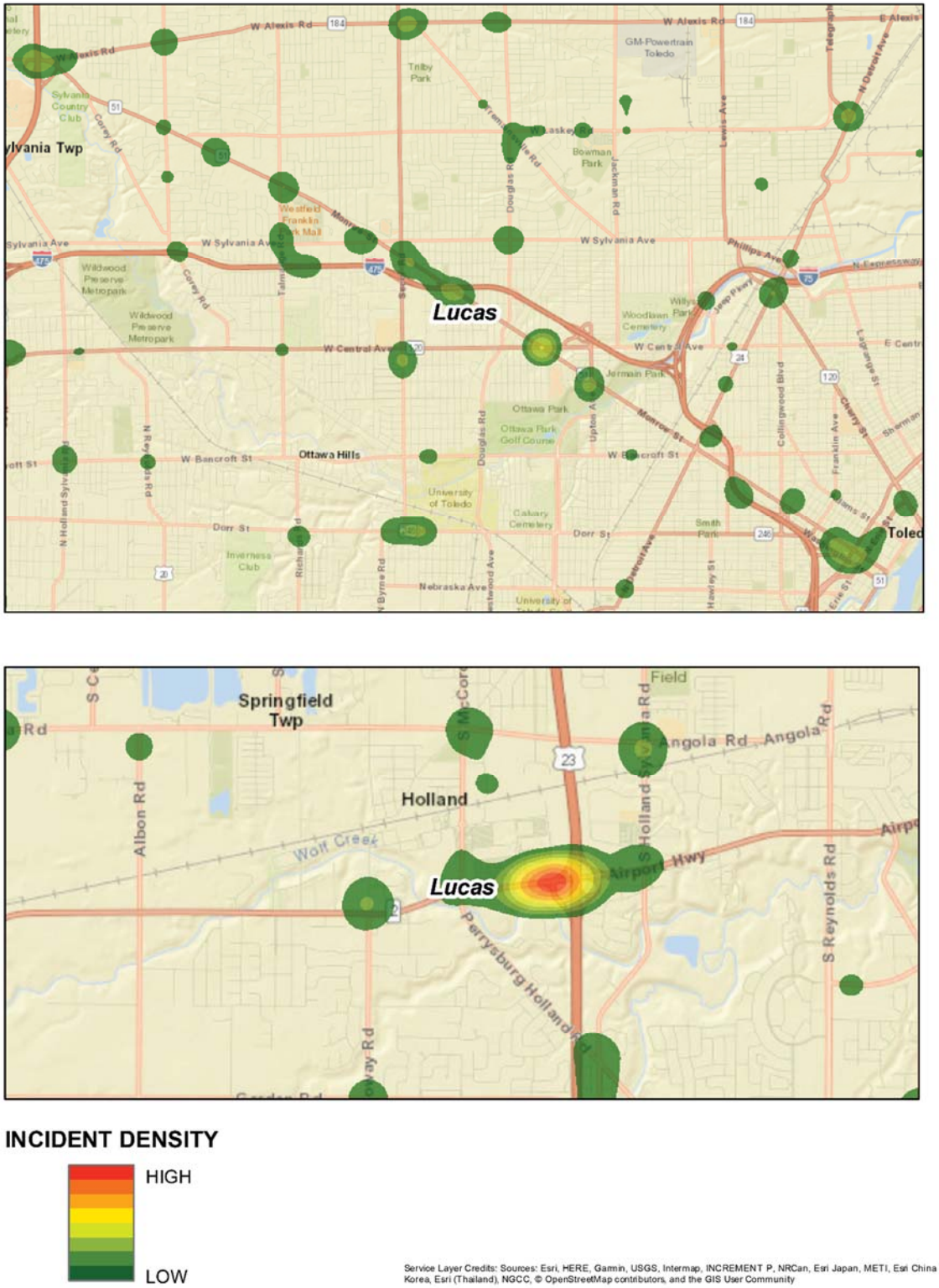


Figure 51: Distraction-Related Fatal and Injury Crashes Heat Map, 2009–2018—Focus Area



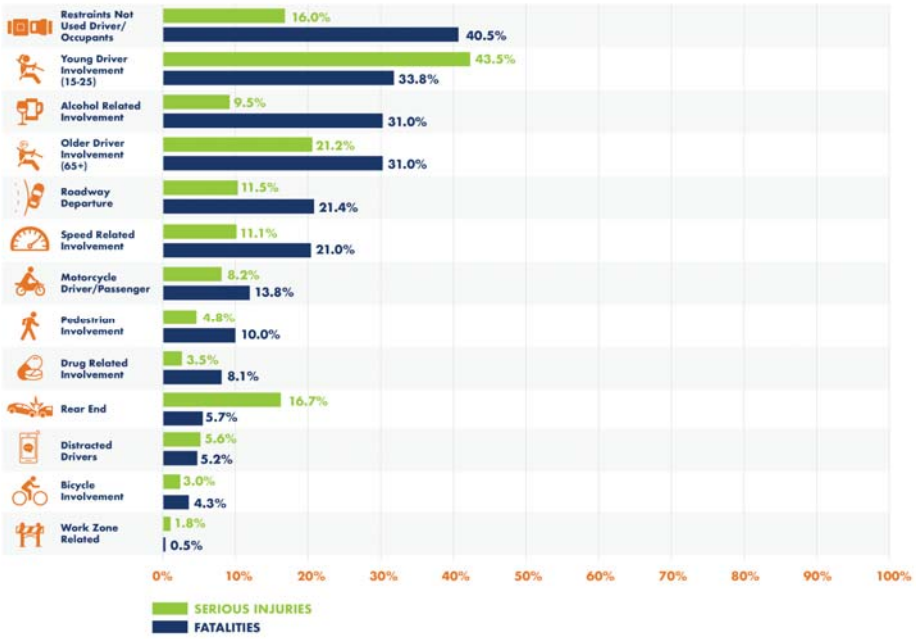
INTERSECTIONS

Between 2009 and 2018, crashes at intersections contributed to 52 percent of all fatal and serious injury crashes in the region. Sixty percent of fatal and serious injury crashes on non-State-maintained roads occur at an intersection. On average, 20 to 21 people are fatally injured, and 310 to 311 people are seriously injured each year in a crash at an intersection. Based on historical data, the frequency of fatal crashes at intersections are increasing every year in the TMACOG region while serious injuries are slowing decreasing in the region.

Figure 52: Intersection Related Fatal and Serious Injury Crashes Five-Year Rolling Average, 2009–2018

Usually multiple factors contribute to a crash. Most commonly, young and older drivers and occupants not wearing seat belts are factors in serious injury crashes at intersections. In nearly 41 percent of fatal crashes at intersections, occupants were not wearing a seat belt. Young and older drivers and alcohol also were contributing factors in fatal crashes at intersections.

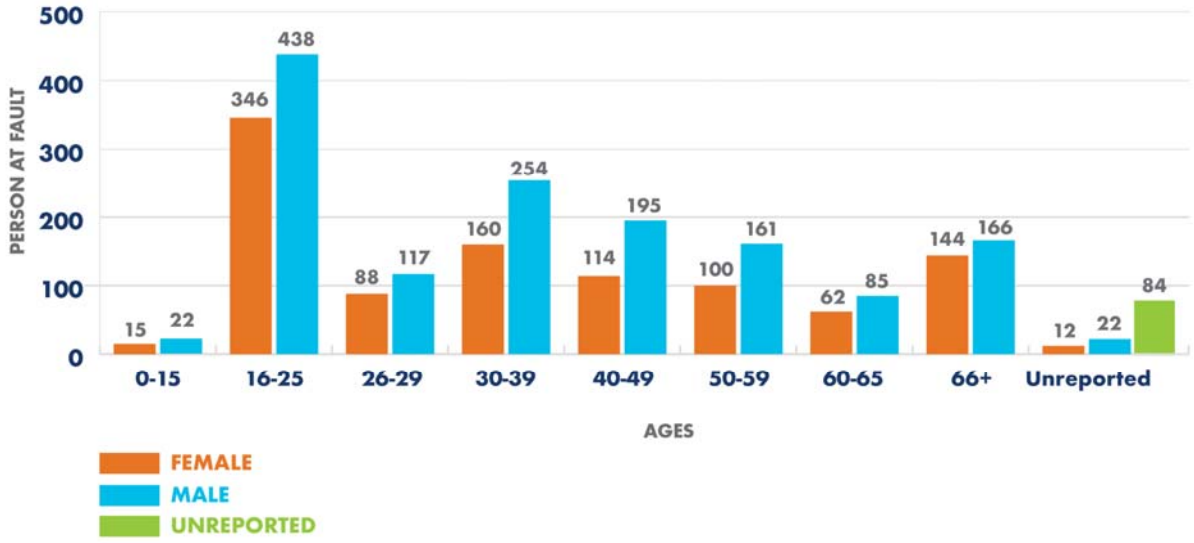
Figure 53: Intersection Related Fatal and Serious Injury Crashes Overlaps, 2009–2018



INTERSECTIONS

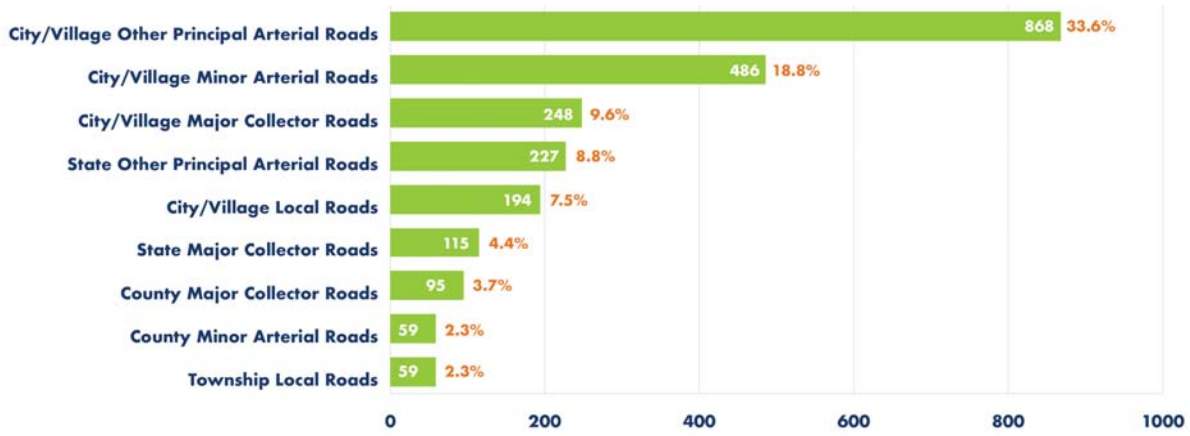
WHO? The vast majority of at-fault drivers in intersection-related crashes were young drivers between the ages of 16 and 25. In general, males were most cited for contributing to intersection crashes.

Figure 54: Intersection-Related Fatal and Injury Crashes Age/Gender, 2009–2018



WHERE? Over 70 percent of fatal and injury intersection crashes occur on city-/village-maintained facilities. Another 17 percent of these crashes happen on State-maintained roadways. Nearly 34 percent of intersection crashes resulting a fatality or injury occur on city-/village-maintained Principal Arterial roads (i.e., Airport Highway in Toledo, Alexis Road in Toledo, Byrne Road in Toledo, Central Avenue in Ottawa Hills and Toledo, Detroit Avenue in Toledo, Cherry Street in Toledo, Laskey Street in Toledo, Secor Road in Toledo, U.S. 24 in Maumee, and Monroe Street in Toledo) while another 19 percent occur on city-/village-maintained Minor Arterial roads (i.e., Arlington Avenue in Toledo, Bancroft Street in Ottawa Hills and Toledo, Detroit Avenue in Toledo, Main Street in Bowling Green, Monroe Street in Sylvania, Starr Avenue in Oregon, and Wooster Street in Bowling Green).

Figure 55: Intersection-Related Fatal and Injury Crashes Roadway Functional Class, 2009–2018



INTERSECTIONS

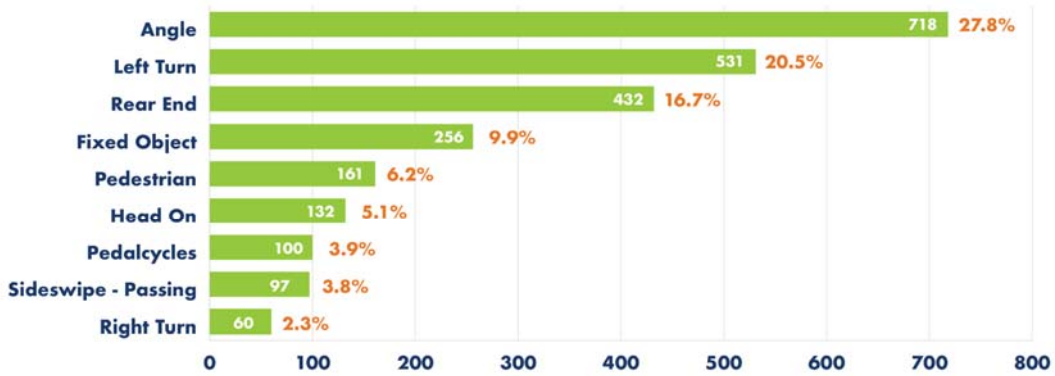
WHEN? Intersection crashes generally correlate with the hours of peak traffic volumes between 7:00 a.m. and 7:00 p.m. Eighteen percent of intersection fatal and injury crashes occur on Fridays with the fewest crashes occurring on Sundays.

Figure 56: Intersection-Related Fatal and Injury Crashes Time of Day, 2009–2018

Figure 57: Intersection-Related Fatal and Injury Crashes Day of Week, 2009–2018

WHY? Nearly 28 percent of fatal and injury crashes at intersections in TMACOG were angle collisions. Angle, rear end, and left turn crashes account for nearly 65 percent of all fatal and injury crashes at intersections in the TMACOG region. These crash types are typical at intersections nationwide.

Figure 58: Intersection-Related Fatal and Injury Crashes by Type Chart, 2009–2018



INTERSECTIONS

Fatal and serious injury crashes at intersections occurred mostly in the Toledo and Bowling Green areas. A concentration of intersection crashes occurred at Wooster Street and Main Street and Wooster and the I-75 ramps. Both locations underwent construction in 2019 – Wooster at Main was re-paved and Wooster at I-75 was enhanced with a roundabout. These improvements should lower crashes at the locations. Some of the corridors with the most intersection crashes resulting in a fatality or serious injury occurred along Airport Highway and Monroe Street in Toledo.

Figure 59: Intersection-Related Fatal and Serious Injury Crashes Heat Map, 2008–2017—Regionwide

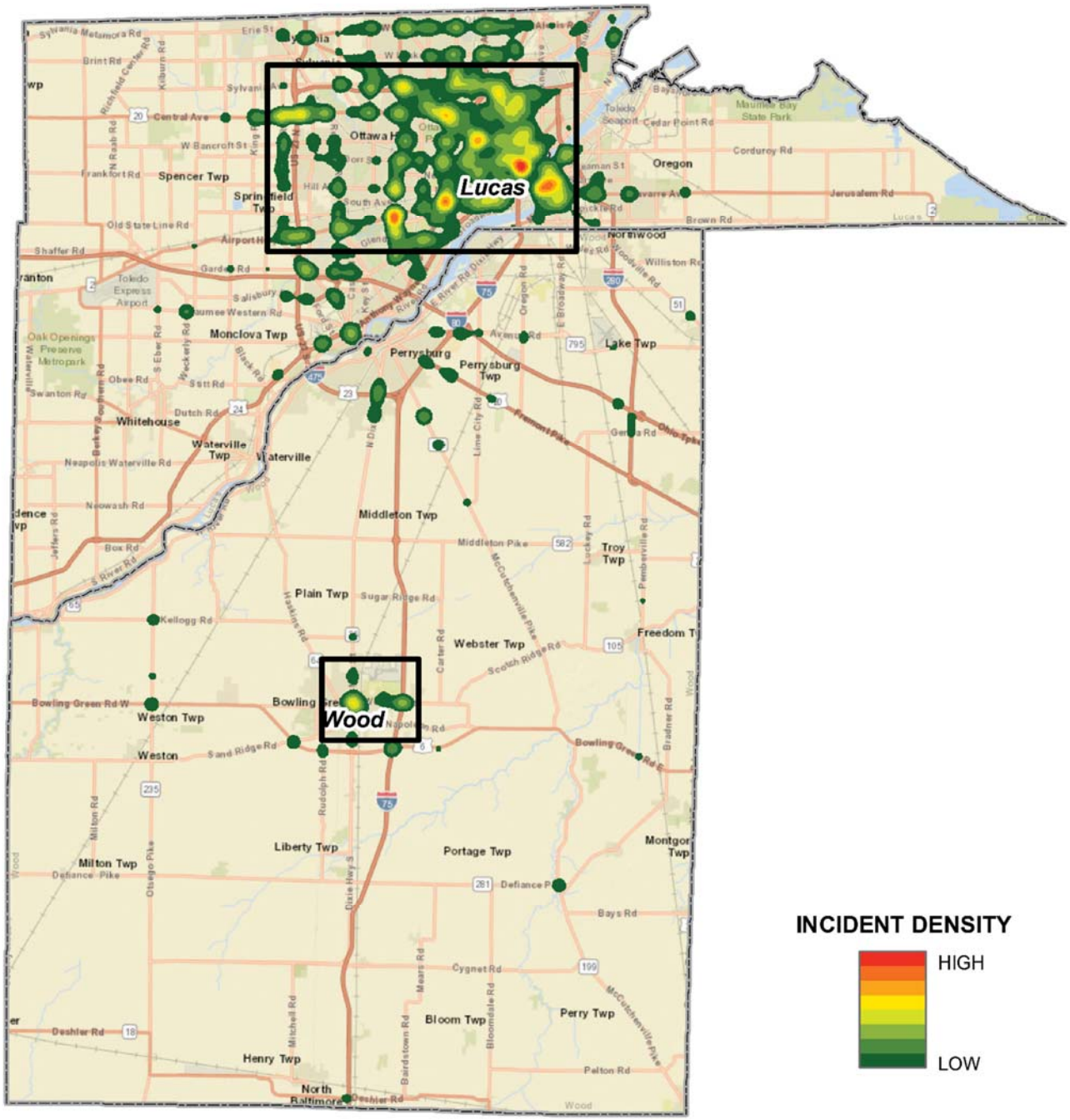
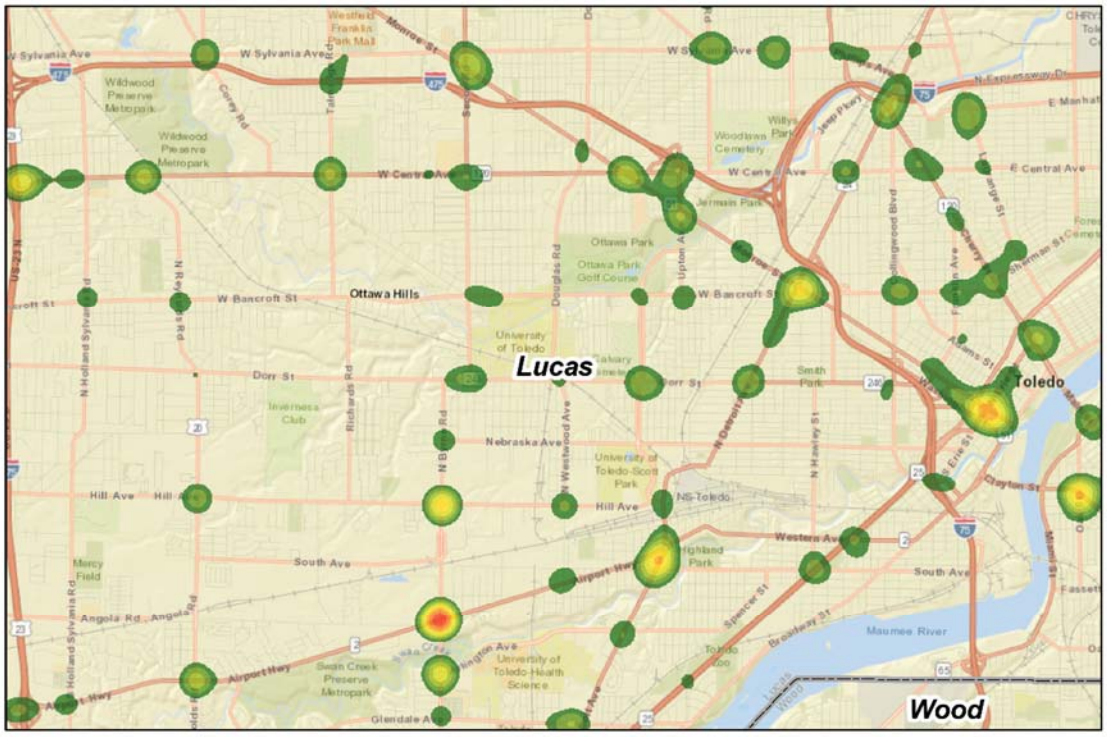
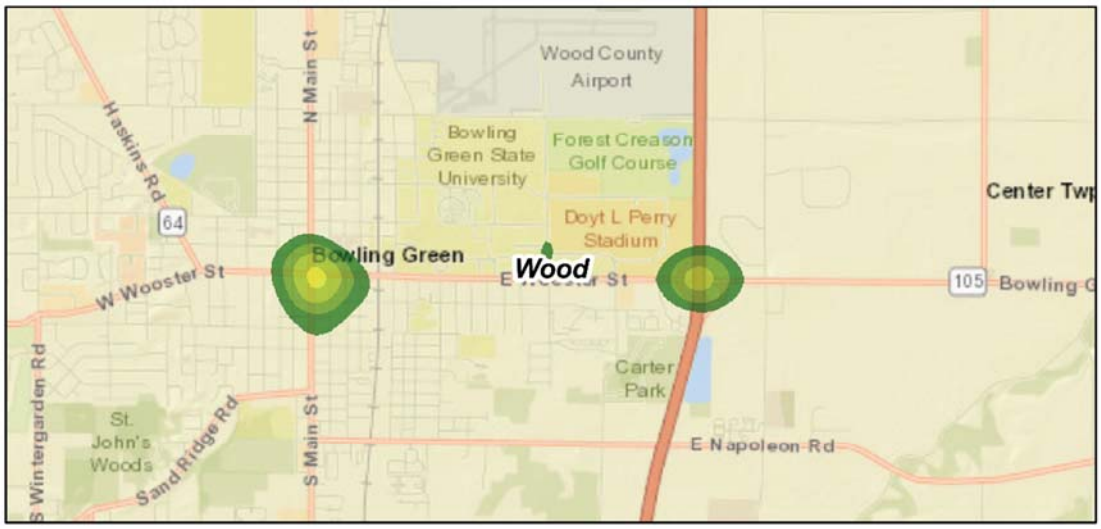


Figure 60: Intersection-Related Fatal and Serious Injury Crashes Heat Map, 2008–2017—Focus Area





INCIDENT DENSITY

HIGH

LOW

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Implementation & Action Plan—

Creating a Safer System

SECTION CONTENT:

- Intersections
- Young Driver
- Distracted Driver
- Priority Locations
- Priority Segments

6 IMPLEMENTATION and ACTION PLAN—CREATING A SAFER SYSTEM

The *TMACOG Transportation Safety Action Plan* outlines the specific strategies and actions to address the most critical safety concerns in the county—intersections, young drivers and distracted drivers. 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.

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.**
YOUNG DRIVER	**Implementation of these strategies and actions will ensure young drivers are well educated about the risks associated with driving through peer-to-peer efforts, resource materials and law enforcement engagement.**
DISTRACTED DRIVER	**Implementation of these strategies and actions will ensure the public and stakeholders are educated about the consequences of distracted driving, current laws are enforced to the extent possible, and infrastructure improvements are in place to keep drivers alert.**
LOCATIONS	**Implementation of safety projects along corridors or at specific segments and intersections will minimize the chances of fatalities or serious injuries occurring.**

INFRASTRUCTURE STRATEGIES

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

Timeline: Ongoing

Leaders	Description	Performance Measure
ODOT/Local Jurisdictions	Continue to identify locations and implement roundabouts where appropriate.	# of roundabouts installed
ODOT/ Local Jurisdictions	Implement specific countermeasures to restrict movements at intersections with a higher density of commercial driveways.	# of countermeasures implemented
ODOT/TMACOG	Review the network screening methodology and revise/update as needed to identify intersections, risk characteristics, and countermeasure solutions.	Revised network screening methodology
ODOT/TMACOG/ Local Jurisdictions	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
ODOT/ Local Jurisdictions	Systematically implement pedestrian countdown timers (and other low-cost countermeasures such as high-visibility crosswalk markings) at signalized intersections.	# of intersections that receive low-cost countermeasures
ODOT/TMACOG	Develop a list of eligible low-cost countermeasures that could be incorporated into intersection construction projects.	List created

Strategy 2: Utilize technology solutions to reduce intersection crashes.

Timeline:

Leaders	Description	Performance Measure
TMACOG/ Local Jurisdictions	Implement advanced technology at intersections, such as video detection, signal optimization, and signal coordination along high-crash corridors.	# of intersections improved with advanced technology

ENFORCEMENT STRATEGIES

Strategy 1: Enable State and local law enforcement to better enforce safety laws at intersections.

Leaders	Description	Performance Measure
TMACOG	Provide available intersection crash heat maps to State and local law enforcement and update maps annually.	Maps given to law enforcement agencies

EDUCATIONAL STRATEGIES

Strategy 1: Provide opportunities to educate the public on intersection safety.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG/LiveWell Program Administrator, Safe Communities	Utilize the safe routes to school program, LiveWell program, or other mediums, to educate kids and young drivers about intersection safety.	# of schools/students served by educational efforts
Hospitals	Provide post-accident education to patients of motor vehicle crashes.	Produce educational materials; develop process for implementation
TMACOG/ODOT	Provide education on innovative/new intersection/interchange designs (roundabouts and diverging diamond interchanges). Developing public facing resources (including PSAs) will help spread awareness/ understanding of these features will help with implementation and use.	Produce educational materials and resources

COORDINATION STRATEGIES

Strategy 1: Nurture and expand partnerships and coordinate activities to reduce intersection, and other, crashes.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG, Safe Communities, OVI	Continue to support and participate in safe communities and OVI taskforce work within the region.	Meeting to discuss safety implementation
TMACOG/ Local Jurisdictions	Seek additional technical assistance from ODOT for safety project identification and development, especially resources available to local agencies through the Local Safety Assistance Program.	Use ODOT resources

POLICY STRATEGIES

Strategy 1: Incorporate intersection safety into transportation programs and projects.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG	Review complete streets policies to understand how intersection safety could be improved.	Review policies
ODOT/ Local Jurisdictions	Ensure safety improvements are considered during the design process.	Update geometrics and design processes
ODOT/ Local Jurisdictions	Ensure applicable safety improvements are considered in coordination with maintenance activities at intersections.	Review maintenance policies
ODOT	Streamline the project delivery process for proven safety countermeasures related to intersections.	Review project delivery processes
TMACOG	Continue to include safety scoring criteria in the selection process for all transportation projects and revise, as needed.	Review safety scoring criteria
TMACOG	Review access management policies to reduce intersection crashes, especially on arterial roadways.	Review Lucas County policy for pertinent information

DISTRACTED DRIVERS

INFRASTRUCTURE STRATEGIES

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

Leaders	Description	Performance Measure
ODOT/TMACOG/ Local Jurisdictions	Review locations where distracted driving crashes are over-represented and implement applicable infrastructure solutions (i.e., rumble strips, wider shoulders) to prevent the driver from leaving the roadway.	Maps given to law enforcement agencies

EDUCATIONAL STRATEGIES

Strategy 1: Utilize existing and new education efforts to curb distracted driving.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG/Safe Communities	Inventory all existing campaigns on distracted driving in the region to identify successes as well as gaps that could be filled.	Create inventory
TMACOG/Safe Communities	Draft distracted driving materials and incorporate those into driver's education courses or provide during vehicle license renewals.	Develop and distribute materials
AAA	Continue the AAA education campaign (Don't Drive Intexticated).	Continue campaign
Safe Communities	Continue to deliver presentations in the high school on how the brain functions when distracted.	# of presentations/# of presentations/students reached/students reached
Safe Communities	Continue to educate companies/employees on the dangers of distracted driving.	# of employees participating
Safe Communities	Implement training at elementary and middle schools about the dangers of distracted driving and how to be a "good passenger."	Develop training materials and strategy for reaching out to schools
Safe Communities	Utilize the distracted driving simulator at high schools and community events.	# of students and school served
ODOT/ Local Jurisdictions	Install signs near schools encouraging students to drive distraction-free and informing students of legal and financial penalties of distracted driving.	Design signs.
Local media/TMACOG/ Safe Communities	Expand media efforts to educate the public on distracted driving, through PSA's, news spots, or radio advertisements.	Expand existing media efforts

POLICY STRATEGIES

Strategy 1: Incorporate distracted driving provisions into transportation programs and projects.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG/ Local Jurisdictions	Review complete streets policies to understand how implementation could lead to reductions in distracted driving.	Review policies
TMACOG/Law enforcement	Seek opportunities to partner with local, regional, and state partners to improve distracted driving legislation.	Review ODOT Distracted Driving Task Force recommendations

YOUNG DRIVERS

INFRASTRUCTURE STRATEGIES

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

Timeline: Ongoing

Leaders	Description	Performance Measure
ODOT/TMACOG/ Local Jurisdictions	Review intersections where young driver crashes are over-represented to determine causes and infrastructure related solutions (warning signs, lane reconfigurations, signal optimization).	Countermeasures implemented at intersections
ODOT/TMACOG/ Local Jurisdictions	Review high crash corridors, in particular those around school and universities, to implement road diets or other traffic calming measures.	Speed calming treatments implemented

EDUCATIONAL STRATEGIES

Strategy 1: Conduct safety education (distraction, impaired, unbelted, nonmotorized) in the schools.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG/Safe Communities	Create videos or other educational materials that explain how to use new infrastructure – roundabouts are particularly challenging for young drivers – and share it through social media.	Create videos and social media strategy
ODOT	Continue bike and pedestrian safety skills courses to ensure young drivers understand the nonmotorized rules of the road.	Continue skills courses
TMACOG	Continue to support the education efforts of the Lucas and Wood County's Safe Communities groups (i.e. community events, teen education).	Continue support
Insurance agency	Partner with an insurance agency to provide education to young drivers and parents on crash costs and other insurance implications.	Identify insurance partner
TARTA	Run a campaign focused on young adults, highlighting popular destinations that are an easy one-seat ride on the bus. Encourage youth to download the TARTA app.	Launch campaign

YOUNG DRIVERS

ENFORCEMENT STRATEGIES

Strategy 1: Enable state and local law enforcement to better prevent young driver-related crashes.

Leaders	Description	Performance Measure
TMACOG	Provide available young driver crash heat maps to state and local law enforcement and update maps annually.	Maps given to law enforcement agencies

POLICY STRATEGIES

Strategy 1: Incorporate young driver provisions into transportation programs and projects.

Timeline: Ongoing

Leaders	Description	Performance Measure
TMACOG	Coordinate with the Ohio Department of Public Safety on updates to the driver's education curriculum	Continue coordination
TMACOG/Safe Communities	Seek opportunities to partner with local, regional, and state partners to incorporate the Graduated Driver's Licensing (GDL) program into the student curriculum.	Incorporate GDL program into the student curriculum
Educators	Coordinate with high schools to evaluate and improve student driving policies.	Continue coordination

PRIORITY LOCATIONS

The factors contributing to crashes are over-represented 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 why as well as if any of the over-represented locations appeared to be incorrect or missing. The heat maps, shown in Figures 61 and 62 also are another tool to help regional stakeholders identify and confirm priority segments and intersections.

Figure 61: Lucas and Wood Counties Fatal and Serious Injury Crashes—Regionwide

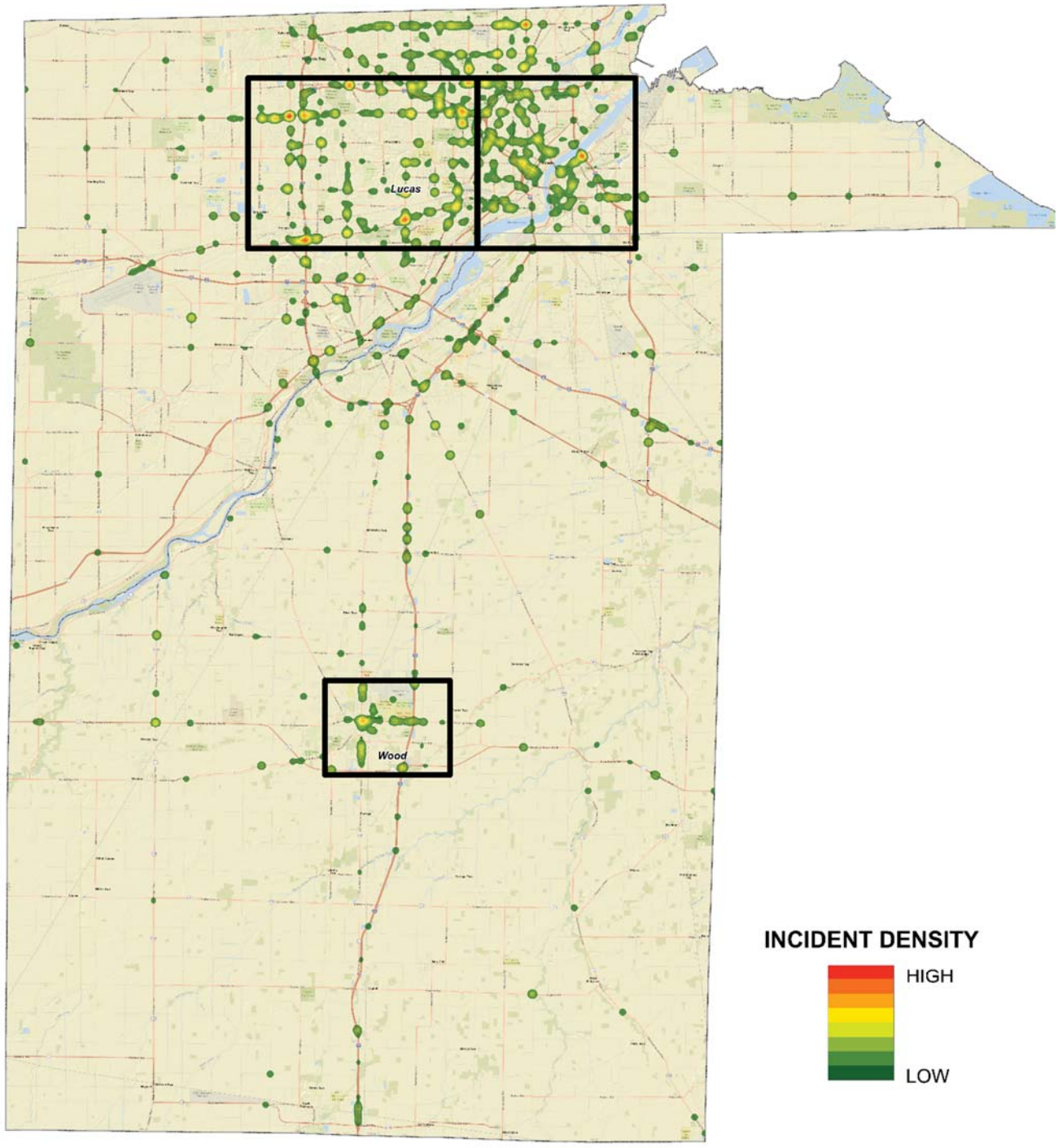
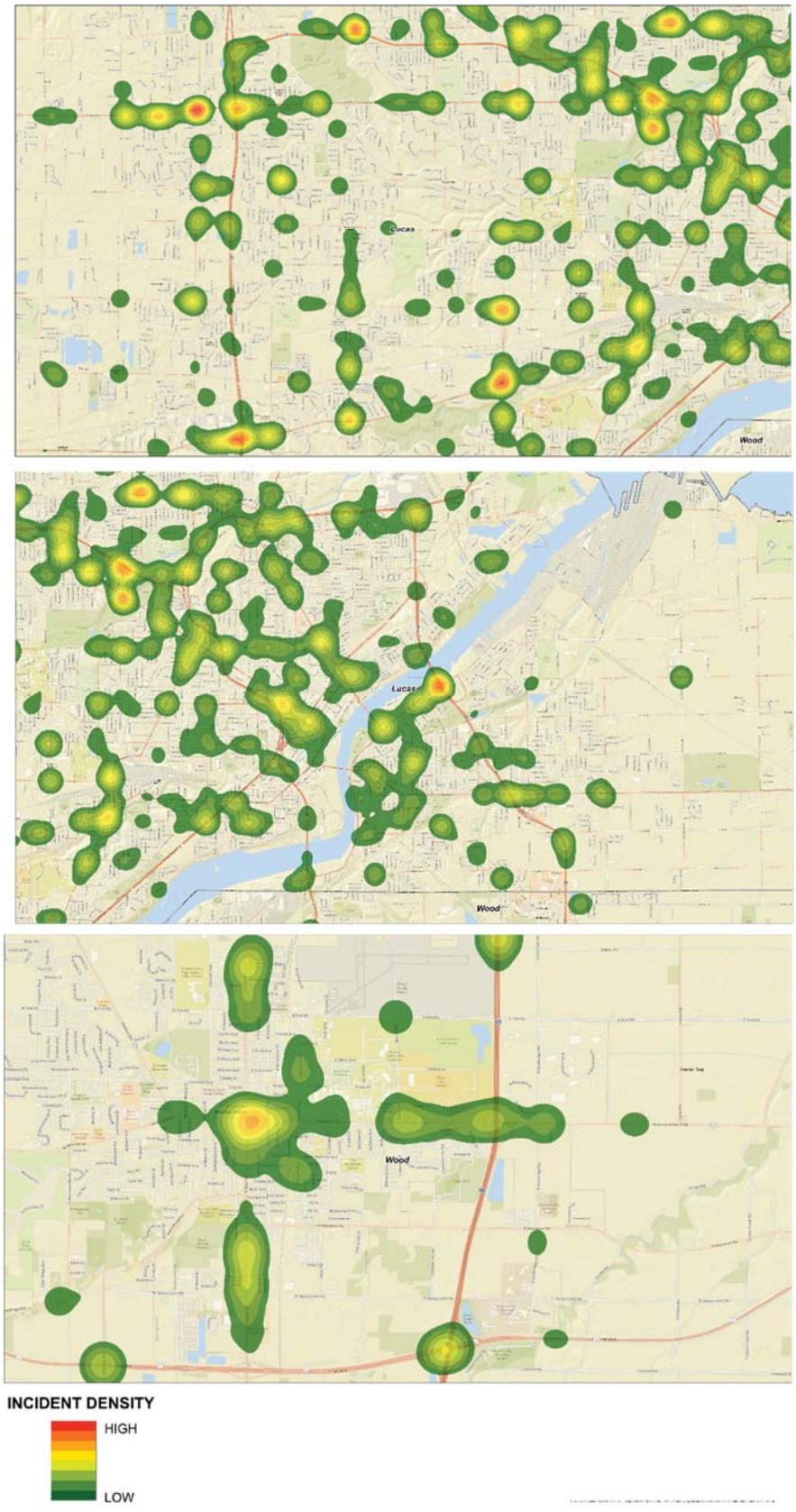


Figure 62: Lucas and Wood Counties Fatal and Serious Injury Crashes—Focus Areas



6.2 REGIONAL CRASH LOCATIONS

In addition to the heat maps, TMACOG completed a *Safety Locations Report (2014–2016 Crash Data)*. The intersections and segments identified in that study were mapped to enable stakeholders to visualize these locations and confirm whether they also viewed them as priorities. Priority locations for the region are shown in Figures 63 and 64 but are shown more clearly for both Lucas and Wood counties in the following Priority Locations section.

Figure 63: TMACOG High-Priority Locations—Wood County

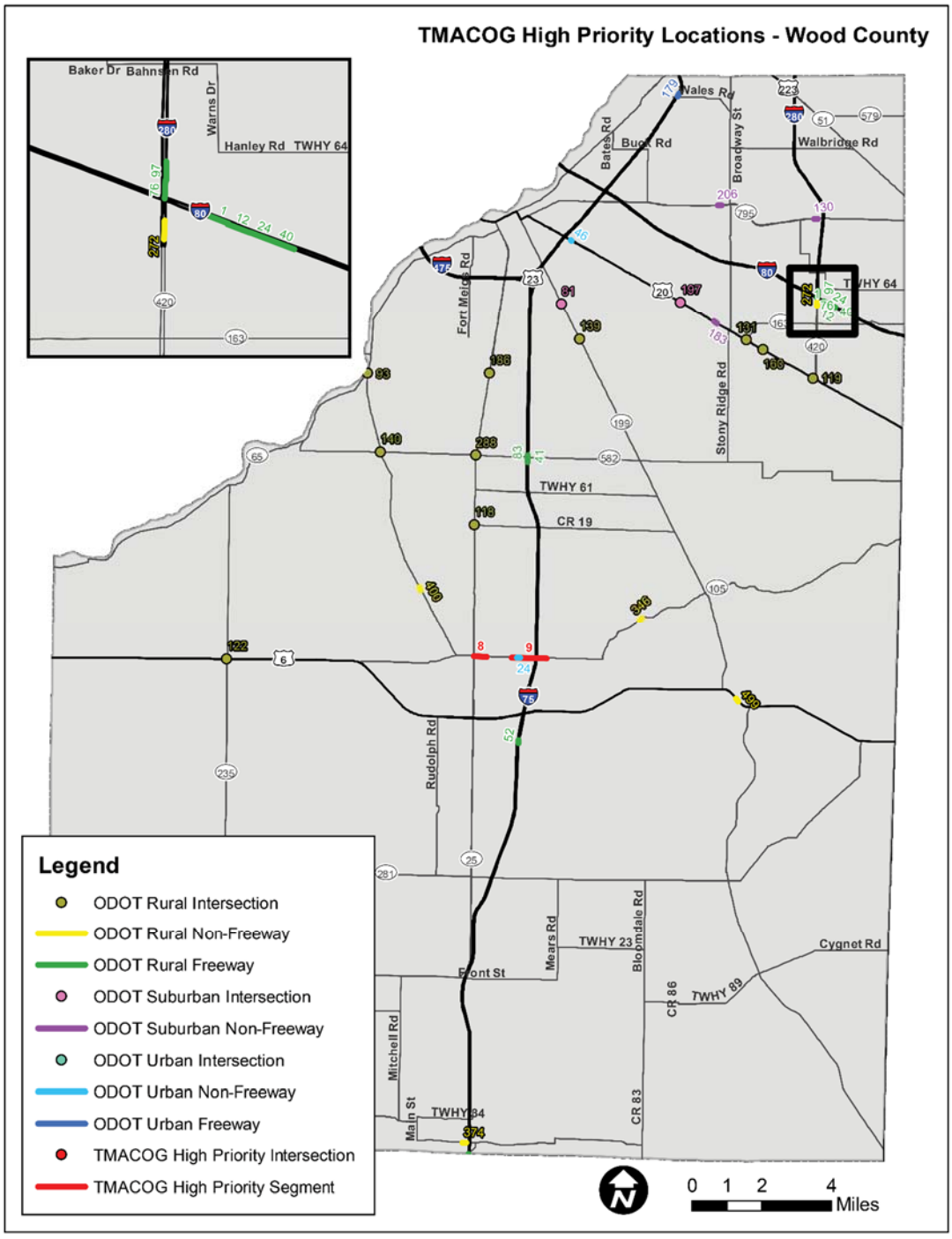
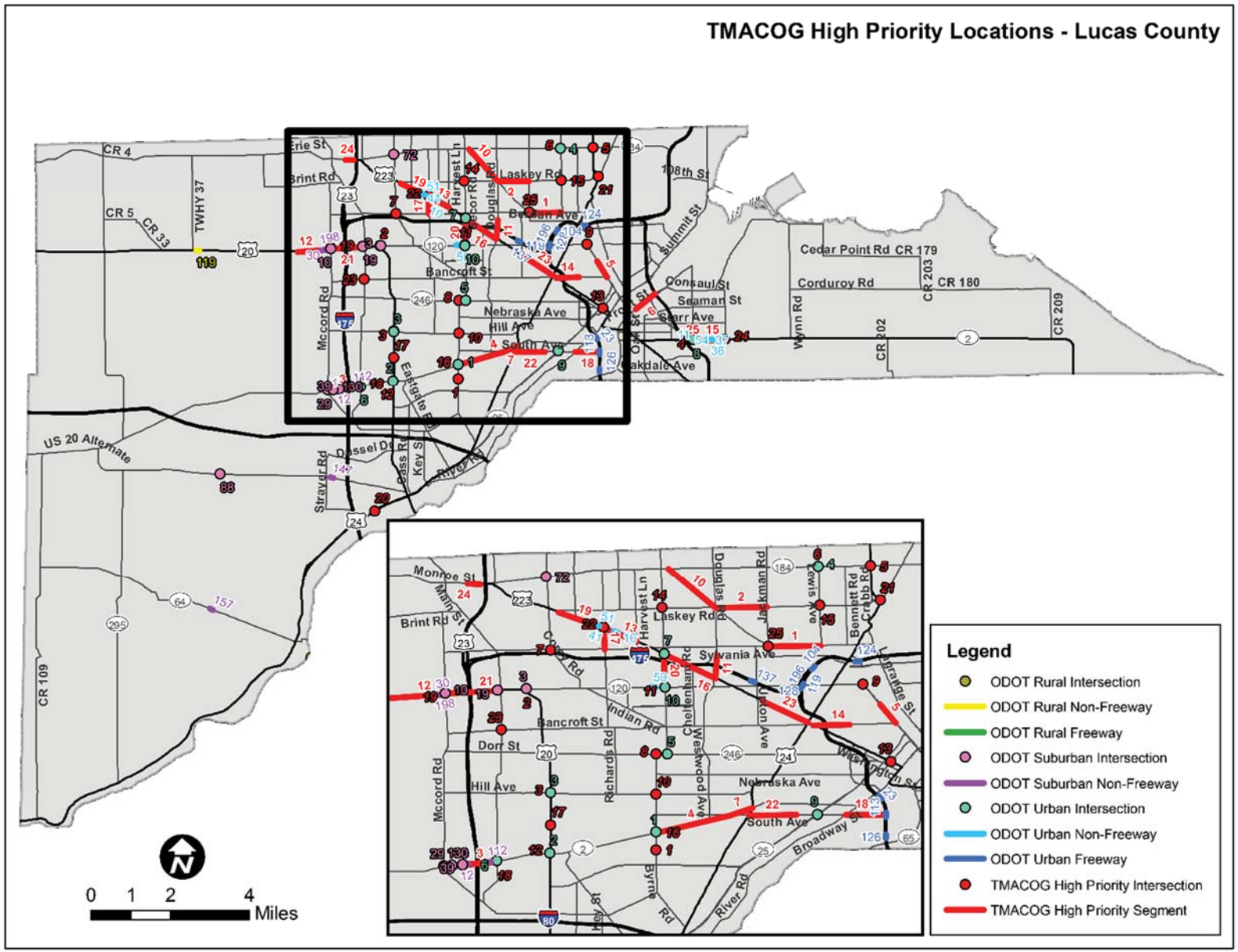


Figure 64: TMACOG High-Priority Locations—Lucas County



6.3 PRIORITY LOCATIONS

Along the corridor hot spots, a number of specific segments and intersections were identified as locations within the county that could benefit from safety improvements. These locations were identified through an analysis completed by TMACOG in their *Safety Locations Report (2014–2016 Crash Data)*. Additionally, ODOT publishes a list of locations that is prioritized by need for safety improvement. Some of the locations on the TMACOG list overlap with the ODOT list while other locations are only on the ODOT list or only on the TMACOG list. 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.

6.4 SEGMENTS

Table 1: Top Crash Segments in TMACOG Region

Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
Sylvania (Jackman to Phillips)	1	—	City of Toledo	183	YES	R, F	D, I, Y
Laskey (Douglas to Jackman)	2	—	City of Toledo	162	YES	R, F	D, I, Y
Airport (McCord to Holland-Sylvania)	3	1, 12	ODOT	281	YES	S, R, F	D, I, Y
Airport (Byrne to South)	4	186	City of Toledo	172	YES	R, F	D, I, Y
Cherry (Delaware to Bancroft)	5	—	City of Toledo	101	YES	F	D, I, Y
Front (Morrison to Craig Bridge)	6	—	City of Toledo	60	YES	R, F	D, I, Y
Airport (South to Fearing)	7	—	City of Toledo	51	YES	R	D, I, Y
Wooster (Main to Thurstin)	8	191, 371	City of Bowling Green	74	YES	R, F	D, I, Y
Wooster (Mercer to Dunbridge)	9	24	City of Bowling Green	126	YES	R, F	D, I, Y
Tremainsville (Alexis to Laskey)	10	—	City of Toledo	84	YES	R, F	D, I, Y
Douglas (Berdan to Monroe)	11	—	City of Toledo	98	YES	R, F	D, I, Y
Central (King to McCord)	12	30	ODOT	128	YES	R	D, I, Y
Monroe (Talmadge to Harvest)	13	10	City of Sylvania	129	YES	R	D, I, Y
Bancroft (Monroe to Collingwood)	14	—	City of Toledo	57	YES	S, F	D, I, Y
Navarre (Isaac to Coy)	15	36, 37, 54	City of Oregon	135	YES	R	D, I, Y
Monroe (Secor to Douglas)	16	—	City of Toledo	158	YES	R, F	D, I, Y

PRIORITY LOCATIONS

Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
Talmadge (Monroe to Sylvania)	17	—	City of Toledo	109	YES	R	D, I, Y
South (Broadway to 75)	18	—	City of Toledo	105	YES	F	D, I, Y
Monroe (Laskey to Talmadge)	19	41, 51	ODOT	158	YES	R	D, I, Y
Secor (Monroe to Central)	20	—	City of Toledo	327	YES	R, F	D, I, Y
Central (McCord to Holland-Sylvania)	21	—	ODOT	225	YES	R, F	D, I, Y
South (Detroit to Spencer)	22	—	City of Toledo	96	YES	R, F	D, I, Y
Monroe (Cove to Detroit)	23	—	City of Toledo	104	YES	F	D, I, Y
Monroe (Harroun to 23 ramp)	24	—	City of Sylvania	69	YES	R, F	D, I, Y
Navarre (Wheeling to Isaac)	25	11	City of Oregon	47	YES	R	D, I, Y
I-80 (MP 8.67–MP 8.75)	—	1	OTC	48	YES	R, F	D, Y
I-80 (MP 8.75–MP 8.85)	—	12	OTC	16	YES	F	D, Y
I-75 (MP 0.00–MP 0.01)	—	13	ODOT	4	—	F	D, I, Y
I-75 (MP 1.29–MP 1.39)	—	23	ODOT	84	—	S, F	D, I, Y
I-80 (MP 8.85–MP 8.95)	—	24	OTC	11	YES	F	D, Y
I-80 (MP 8.95–MP 9.05)	—	40	OTC	9	YES	F	D, Y
I-75 (MP 20.27–MP 20.37)	—	41	ODOT	8	YES	S, F	D, Y
U.S. 20 (MP 3.05–MP 3.09)	—	46	ODOT	4	YES	R, F	D, I, Y
SR 120 (MP 13.00–MP 13.10)	—	50	City of Toledo	8	YES	F	D, I, Y

PRIORITY LOCATIONS

Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
I-75 (MP 12.09–MP 12.19)	—	52	ODOT	9	—	—	—
SR 2 (MP 10.77–MP 10.87)	—	62	City of Toledo	14	YES	R, F	D, I, Y
SR 2 (MP 22.41–MP 22.51)	—	66	City of Oregon	17	YES	R	D, I, Y
SR 2 (MP 22.34–MP 22.44)	—	67	City of Oregon	15	YES	R	D, I, Y
SR 64 (MP 1.05–MP 1.15)	—	69	City of Bowling Green	23	YES	F	D, I, Y
I-280 (MP 0.00–MP 0.01)	—	76	ODOT	1	YES	—	D, I, Y
SR 246 (MP 1.90–MP 2.00)	—	79	City of Toledo	11	YES	S, R	D, I, Y
U.S. 20 (MP 3.09–MP 3.10)	—	83	ODOT	4	YES	R, F	D, I, Y
I-75 (MP 20.37–MP 20.47)	—	83	ODOT	7	YES	S, F	D, Y
I-280 (MP 0.10–MP 0.20)	—	97	ODOT	11	YES	—	D, I, Y

R—Rear End, **F—**Fixed Object, **S—**Sideswipe-Passing, **D**—Distraction, **I**—Intersection, **Y**—Young Driver

Figure 65: Top Crash Segments in Wood County

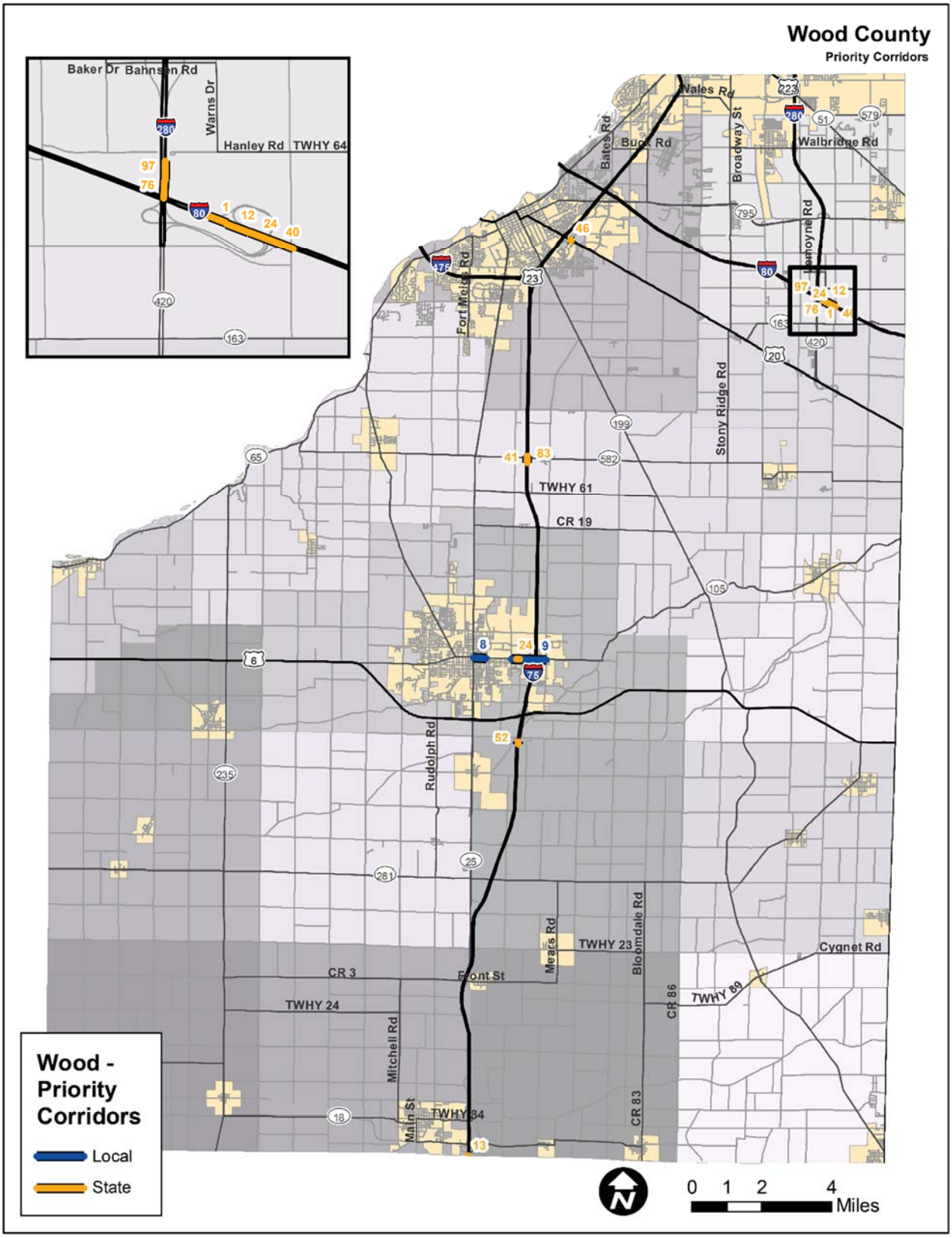
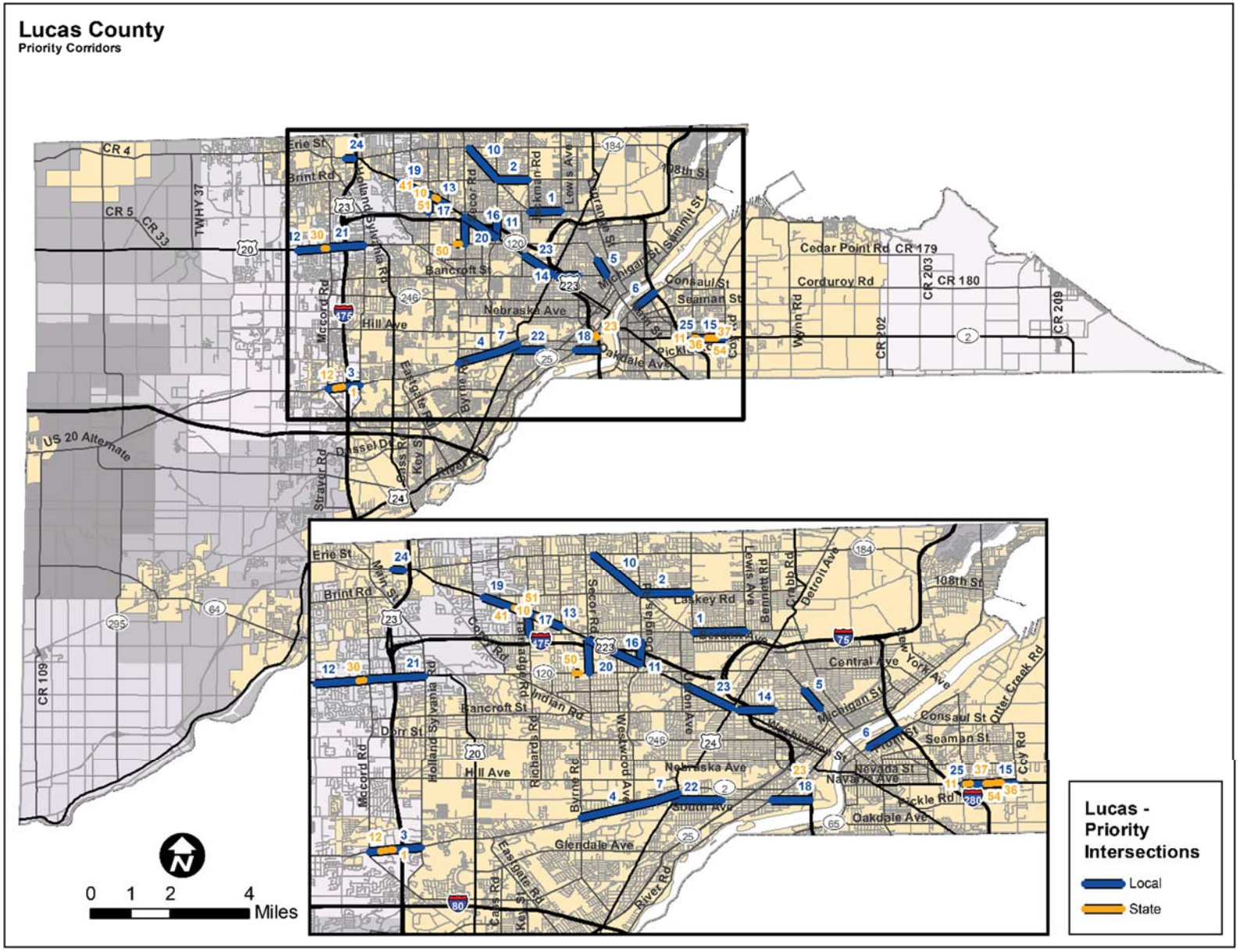


Figure 66: Top Crash Segments in Lucas County



6.5 INTERSECTIONS

Table 2: Top Crash Intersections in TMACOG Region

Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
Arlington & Byrne	1	—	City of Toledo	88	YES	R, P	D, I, Y
Central & Reynolds	2	3	ODOT	128	YES	S, R	D, I, Y
Reynolds & Hill	3	10	City of Toledo	130	YES	R, F	D, I, Y
Navarre & Wheeling	4	28	City of Oregon	107	YES	R, F	D, I, Y
Telegraph & Alexis	5	55	City of Toledo	92	YES	R	D, I, Y
Lewis & Alexis	6	11	City of Toledo	139	YES	R, F	D, I, Y
Corey & Sylvania & Whiteford	7	—	City of Toledo	110	YES	R, F	D, I, Y
Dorr & Byrne	8	49	City of Toledo	138	YES	S, R	D, I, Y
Central & Cherry	9	117	City of Toledo	81	YES	R, F	D, I, Y
Byrne & Hill	10	—	City of Toledo	125	YES	R	D, I, Y
Central & Secor	11	34	City of Toledo	152	YES	R, F	D, I, Y
Airport & Reynolds	12	7	City of Toledo	166	YES	R, F	D, I, Y
Erie & Monroe	13	—	City of Sylvania	70	—	—	D, I
Laskey & Secor	14	—	City of Toledo	133	YES	—	D, I, Y
Laskey & Lewis	15	—	City of Toledo	85	YES	R, F	D, I, Y
Airport & Byrne	16	1	City of Toledo	211	YES	R, F	D, I, Y
Reynolds & Angola N	17	276	City of Toledo	67	YES	R, F	D, I

PRIORITY LOCATIONS

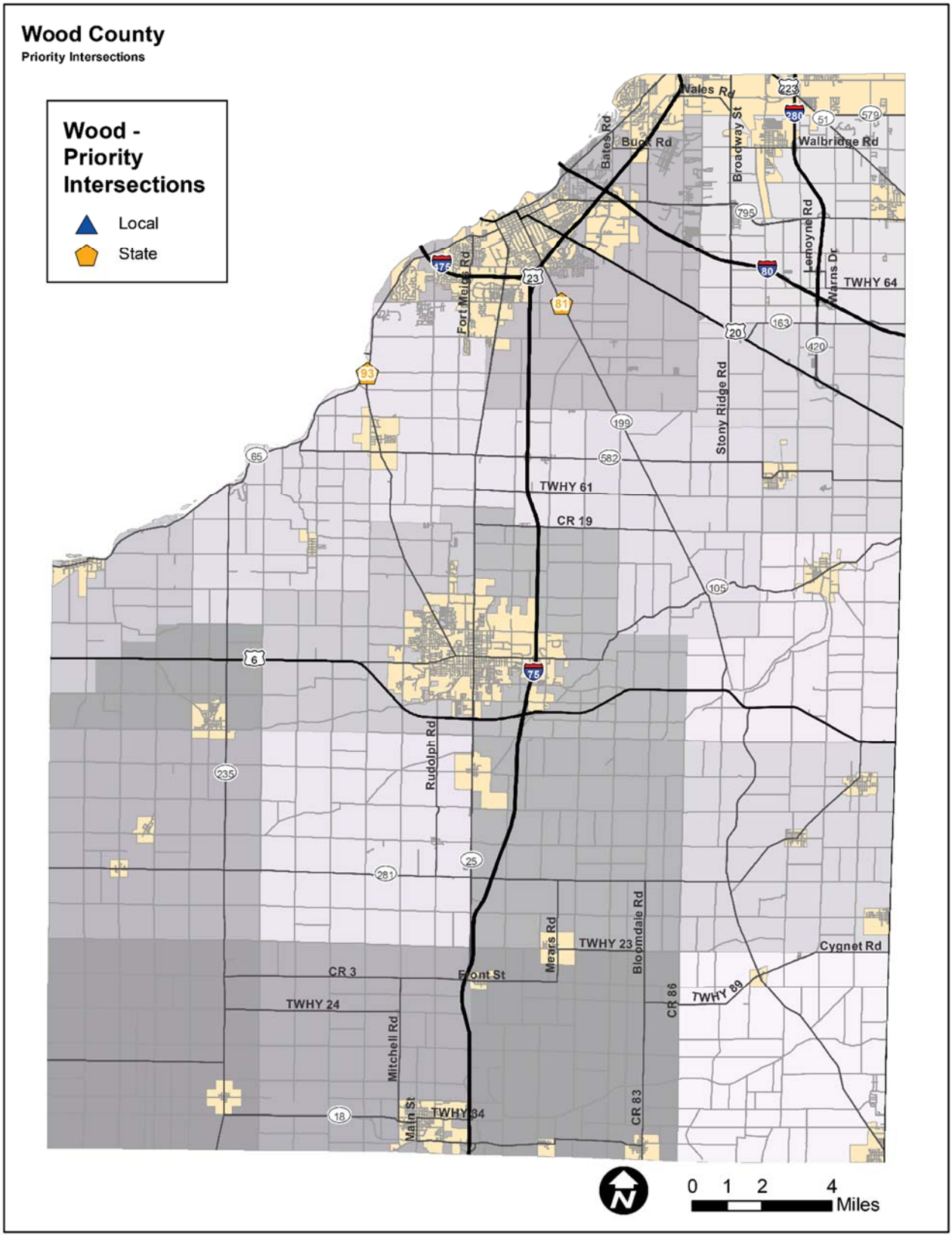
Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
Airport & Holland-Sylvania	18	20	City of Toledo	142	YES	R, F	D, I, Y
McCord & Central	19	10	ODOT	128	YES	R	D, I, Y
AW Trail & Monclova	20	156	City of Maumee	61	YES	S, R, F	D, I, Y
Laskey & Detroit & Telegraph	21	—	City of Toledo	45	YES	F	D, I, Y
Monroe & Talmadge	22	40	City of Toledo	138	YES	R	D, I, Y
Holland-Sylvania & Bancroft	23	—	City of Toledo	72	YES	R, F	D, I, Y
Navarre & Coy	24	59	City of Oregon	94	YES	R	D, I, Y
Jackman & Sylvania & Tremainsville	25	—	City of Toledo	124	YES	R, F	D, I, Y
SR 246 (Dorr St) & CR-501 (Secor Rd)	—	17	City of Toledo	149	YES	R, F	D, I, Y
U.S.-20 & CR-1572 (Holland-Sylvania Rd)	—	19	ODOT	105	YES	R, F	D, I, Y
SR 51 (Monroe St) & CR-501 (Secor Rd)	—	27	City of Toledo	151	YES	R	D, I, Y
SR 2 (Airport Hwy) & CR-73 (McCord Rd)	—	29	ODOT	62	YES	R, F	D, I, Y
SR 25 (Anthony Wayne Trl) & CR-533 (South Ave)	—	30	City of Toledo	100	YES	R	D, I, Y
SR 2 (Airport Hwy) & CR-ACCESS (Access)	—	39	Unknown	45	YES	R	D, I, Y
U.S.-20 (Reynolds Rd) & CR-84 (Heatherdowns Blvd)	—	45	City of Toledo	117	YES	R, F	D, I, Y
U.S.-24 (N Detroit Ave) & CR-500P	—	48	City of Toledo	172	YES	R, F	D, I, Y

PRIORITY LOCATIONS

Name of Location	Local Rank	State Rank	Maintaining Authority	# Total Crashes	Severe Crash Hotspot	Crash Type Hotspot	Emphasis Area Overlap
SR 184 (Alexis Rd) & CR-79 (Whiteford Rd)	—	72	ODOT	39	YES	—	D, I, Y
SR 2 (High Level Bridge St) & SR 51	—	80	City of Toledo	66	YES	F	D, I, Y
SR 199 (McCutchenville Rd) & CR-103 (Roachton Rd)	—	81	ODOT	23	YES	S	D, I, Y
U.S.-20 & CR-120 (Weckerly Rd)	—	88	ODOT	14	YES	—	D, I, Y
U.S.-24 (N Detroit Ave) & SR 120 (Central Ave)	—	92	City of Toledo	59	YES	F	D, I, Y
SR 64 (Haskins Rd) & SR 65	—	93	ODOT	12	—	—	D, I, Y

R—Rear End, **F—**Fixed Object, **S—**Sideswipe-Passing, **D**—Distraction, **I**—Intersection, **Y**—Young Driver

Figure 67: Top Crash Intersections in Wood County



PRIORITY LOCATIONS

Figure 68: Top Crash Intersections in Lucas County