
4.13 BICYCLE AND PEDESTRIAN

4.13.1 Recreational Trails

The following discusses several recreational trails in the MVPO region. During implementation of Moving Together 2040 further research will be done on all bicycle and pedestrian facilities in the area in order to expand on the information in this section.

Wabash Cannonball Trail



Wabash Cannonball North and South Fork

There is one major recreational trail in the MVPO region, the Wabash Cannonball trail, which is located in the northern part of the area and consists of two forks; the North Fork and the South Fork. The North Fork of the Wabash Cannonball Trail crosses the northern part of the region in Lucas, Fulton, and Williams counties while the South Fork is located in Lucas, Fulton, and Henry counties. Both trails begin near Jerome Road in Lucas County and both have hard surfaces in that county while in the other counties, the trails have both cinder and hard surfaces.

The North Fork has been established along an abandoned railroad bed. In Lucas County, from Jerome Road to the Fulton County line, the trail is owned and maintained by a consortium of agencies that include the Village of Whitehouse, the City of Maumee, Lucas County Commissioners, and the Lucas County Metro Parks. In Fulton County, from the Fulton / Lucas County line to County Road 11, the ownership and maintenance is through the Northwest Ohio Rails to Trails Association (NORTA). From County Road 11 to County Road 21, the trail is owned and maintained by the City of Wauseon. From County Road 21 through the remainder of Fulton County and Williams County to the terminus point near Montpelier, the trail is owned and maintained by NORTA.

The South Fork has also been established along an abandoned railroad bed. In Lucas County from Jerome Road to the Fulton / Henry County Line, the ownership and maintenance is the same as the North Fork in Lucas County. The trail cuts through the corner of Fulton County for a very short distance before it enters Henry County where it continues along the abandoned railroad bed to a terminus point in Liberty Center. The ownership and maintenance of this fork is NORTA.

The City of Wauseon owns the trail from County Road 11 to County Road 21. At County Road 11, the trail is a recreational route, following County Road 11 north to Road F, then along Road F to County Road 13, then south back to the abandoned railroad. The purpose of this jog in the trail is to have a safe crossing at the Norfolk Southern Railroad.

Wauseon, Ohio

In Wauseon, there are two recreational trails, one of which is in Rotary Park which is adjacent to the Wabash Cannonball trail. The trail is approximately 0.75 miles in length, consists of hard surface, and loops around the park.



Rotary Park



Biddle Park

The other trail in Wauseon is located in Biddle Park which is north of the trail at the intersection of Linfoot and N. Glenwood Ave. The trail parallels North Glenwood from Linfoot to the north and is approximately half a mile in length. The trail ends at an agricultural field on the north side of Biddle Park.

Bryan, Ohio

The City of Bryan has a number of recreational trails within the city. The Williams and Defiance County Joint Watershed trail is located at a storm water retention area for Lick Creek, southeast of Bryan on Road C. The retention area is located on the Northwest corner of Road C and Road 16. The area holds water for the adjacent Lick Creek before slowly releasing after a rain event. The City has a stone path around the perimeter of the pond and the length is approximately 1.3 miles. Wetlands exist near the pond and the city has installed nature observation outlook areas at locations around the pond.

Memorial Trail is located off Town Line Road on the west and Newdale Drive on the east connecting adjacent residential areas. The recreational trail is a circular trail around soccer fields and is approximately 0.9 miles in length.

Garver Park, located between Portland Ave., W. Parkview Ave., Park Lane, and Blakelees Ave. is a circular trail in a residential area that can be accessed by many residents and visitors. There are various finger trails intersecting the perimeter to provide the user easy access to a ball field, running track, picnic, and park area.

Mohr Park is a sports complex with six ball fields, four tennis courts, pavilion, and basketball court served by an asphalt trail from Center Street. The trail connects to a sidewalk on the south side of Center Street and is approximately 0.5 miles long.

Napoleon, Ohio

The City of Napoleon has a signed bike route on Bales Road and a signed bike lane extends from Glenwood Avenue to just north of Briarheath Avenue. There are sidewalks along Glenwood Avenue for pedestrian and bike travel as well as from the end of the signed bike route to Road O-1 along the south side of Road P. The length of the entire section is 0.75 miles.

Napoleon's Oakwood Park, located at 1400 Oakwood Avenue, has a walking path around the perimeter that was recently constructed by the Parks and Recreation Department. This scenic path is handicapped accessible and facilities at the park include four baseball/softball diamonds, batting cages, a



Oakwood Park

basketball court, a football field, sand volleyball court, two open air shelter houses, a fishing lake, wooded hiking trails, and year-round restroom facilities.



Ritter Park

Ritter Park, which was formerly a state park, is located along the Maumee River off of West Riverview Avenue and is home to a bike/walking path which follows the river for the length of the park. Ritter Park offers a Historic shelter house as well as a boat launch facility which is a popular spot for boating enthusiasts during the summer months.

Oberhaus Park, located on W. Maumee Street, offers a public boat dock, a structure for rental year-round and a half mile walking path.

Defiance, Ohio

The City of Defiance is currently constructing a recreational trail at the City of Defiance Reservoir. The trail will have a hard surface around the base of the reservoir and connect to the parking lot at the northwest corner. The path will also connect to existing sidewalks along Kiser Road and Jackson Street. The city is planning a trail through the adjacent woods and ultimately want the trail to continue along the old Miami Erie Canal to the downtown area. The length of the trail around the base of the reservoir is approximately 1.5 miles.



Defiance City Reservoir

Buckeye Trail

The Buckeye Trail is nearly 1400 miles long altogether and can be found throughout the state of Ohio. The trail is marked by 'blue blazes' signs, 2 feet wide by 6 feet high on trees and poles, with the "Follow the Blue Blazes" expression.

The trail was first envisioned in the late 1950's as a trail from the Ohio River to Lake Erie and eventually evolved into a large loop, branching from Cincinnati to the north and east. The separate legs of the trail join back together in the Cuyahoga Valley National Park near Cleveland.

The trail is maintained and managed by the Buckeye Trail Association which is a private 501(c)3 non-profit charitable organization dedicated to building, maintaining, protecting and promoting use of Ohio's longest scenic hiking trail for our citizens, communities and partners.

There are two sections of the Buckeye Trail which traverse through the MVPO region, namely the Defiance and Delphos Sections. The trail meanders through Paulding, Defiance, and Henry counties nearly following the route of the Miami & Erie Canal. The total length of the Defiance Section is approximately 53 miles and the Paulding County section of the Delphos Section adds approximately 15 miles to make the total length of the Buckeye Trail in the five county area 68 miles.

In the region, the Buckeye Trail begins in Paulding County near the Southeast corner of the county at the intersection with Putnam County. The Buckeye Trail generally follows the route of the Miami-Erie Canal through villages, farm fields, along county, township, and state routes. In Paulding County, the trail passes through the towns of Mandale, Melrose, and Junction. In Junction, the Miami & Erie Canal connects to the Wabash & Erie Canal which enters from Fort Wayne, Indiana. The canal then continues north toward Defiance County.

In Defiance County, the Buckeye Trail generally follows the route of the canal until it reaches the City of Defiance. Within the City of Defiance, the trail follows sidewalks until it reaches a point near the confluence of the Maumee and Auglaize Rivers. The Trail crosses the Clinton Street Bridge near downtown Defiance and then turns east along River Road (SR 424). Following SR 424, the trail enters Independence Dam State Park approximately 4 miles from Defiance where it then follows the old towpath across the Defiance – Henry County Line to Florida and on to Napoleon.

In Napoleon, the Buckeye Trail passes through or near Meyerholtz Wildlife Area, Ritter Park, and River Downs Park. The trail follows city streets and then along CR 424 near the old canal and towpath and also through fields until it crosses SR 109 and enters the Mary Jane Thurston Turkeyfoot Area. The trail continues along or near the old canal bed to Texas, Ohio and then to the Henry – Lucas County Line near Providence Dam at Grand Rapids, Ohio.

Source: Buckeye Trails Association

4.13.2 Pedestrian Facilities

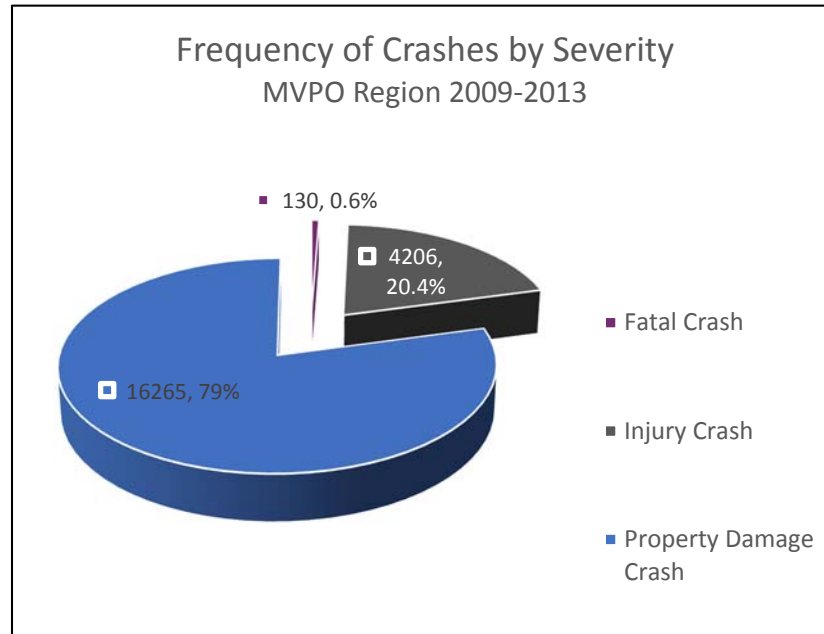
During public involvement activities in spring, 2014, which is discussed in detail in Chapter 9, “Public Participation”, many comments were received pertaining to the need for sidewalks in cities and villages, their condition, as well as a safety concern for pedestrians walking on the street where no sidewalks exist. Using 2010 aerial photography, the sidewalks in the MVPO region were identified to the extent possible to show where sidewalks exist and whether they exist on one or both sides of the roadway. The location of sidewalks was compared against crashes involving pedestrians from 2009 – 2013 to determine if the lack of sidewalks in certain areas could be contributing to the number of pedestrian crashes. From 2009 – 2013 there were 94 crashes involving pedestrians in the five county area. 8 of these crashes were fatal, 76 were injury crashes and 10 were property damage only crashes. Of the 94 pedestrian crashes, 30 occurred on roadways where no sidewalks currently exist, which represents 32% of total pedestrian crashes. As part of the implementation of this Plan, the sidewalk inventory will be updated and expanded in order to assess if additional sidewalks would be beneficial in specific locations where pedestrian crashes have occurred. For more information on the implementation of this Plan, see Chapter 7 entitled “Plan Recommendations”.

4.14 SAFETY

4.14.1 Crashes

To analyze the existing conditions related to safety in the MVPO region, data from ODOT's GIS Crash Analysis Tool (GCAT) from 2009 to 2013 was used. During that time period, the GCAT reported that a total of 20,601 crashes occurred on the MVPO transportation network with 130 (0.6%) being fatal. Injury crashes accounted for 20.4% of the total while 79% were property damage only (Figure 4-V1).

FIGURE 4-V1: PERCENTAGE OF CRASHES BY SEVERITY



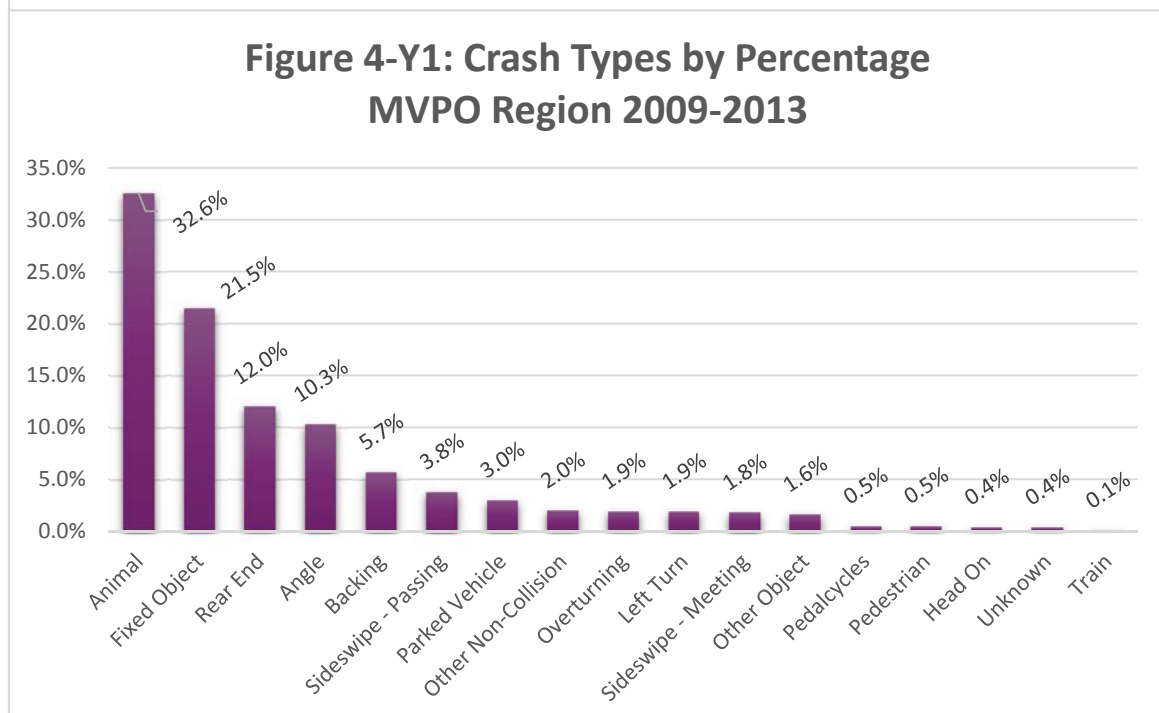
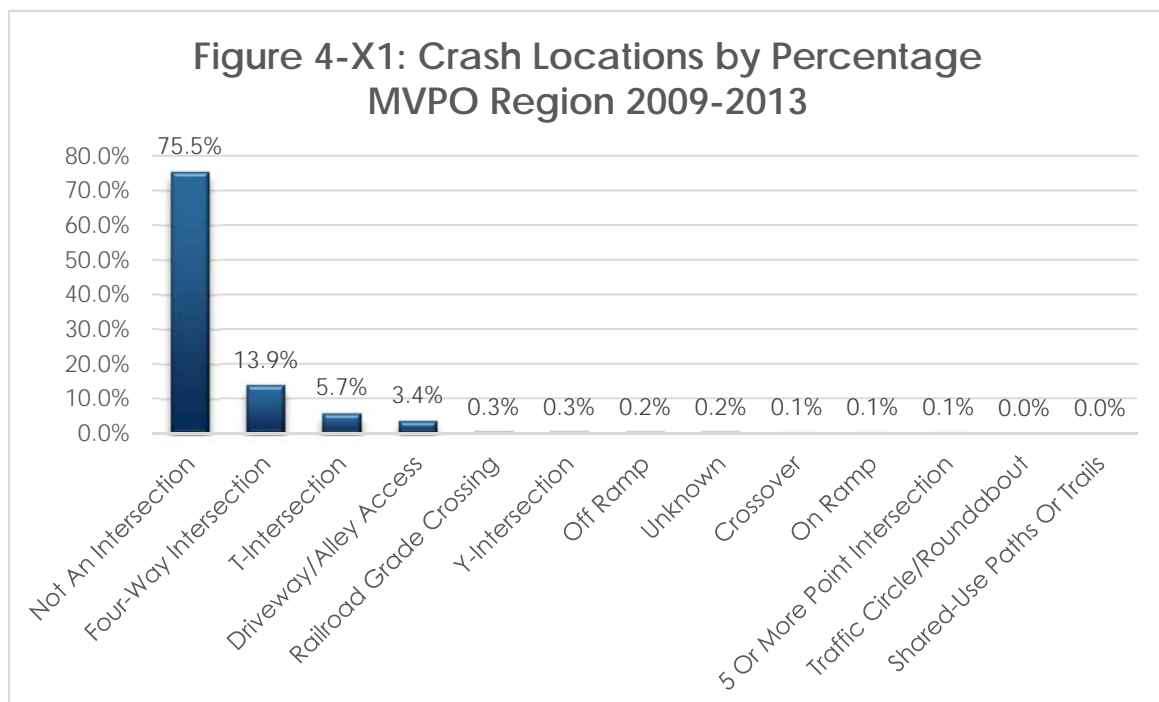
Of the total number of crashes from 2009-2013, 27% occurred in Defiance County, 22% in Fulton County, 15% in Henry County, 9% in Paulding County, and 27% in Williams County. Crash density heat maps for each county can be found in Appendix B and these maps illustrate where the high and low crash density areas are in the region. Locations with higher traffic volumes typically see a higher number of crashes and this is evident as the larger cities such as Defiance, Napoleon, Bryan, and Wauseon show higher crash densities.

From 2008-2012 there were 21,061 crashes in the MVPO region which demonstrates that the total number of crashes declined from the 2008-2012 period to the 2009-2013 period. Although some counties experienced an increase in the number of crashes from 2009 to 2013 as shown in Figure 4-W1, the total number of crashes in the five county area actually declined as a whole. Interesting to note in Figure 4-W1 is the increased number of fatal crashes that occurred in Fulton County in 2012 and 2013. When assessing these particular crashes, multiple crash types were responsible and not one specific crash type accounted for the majority. However, a common factor in 31% of these crashes was drug and/or alcohol use which could explain the increased number of fatal crashes during these two years.

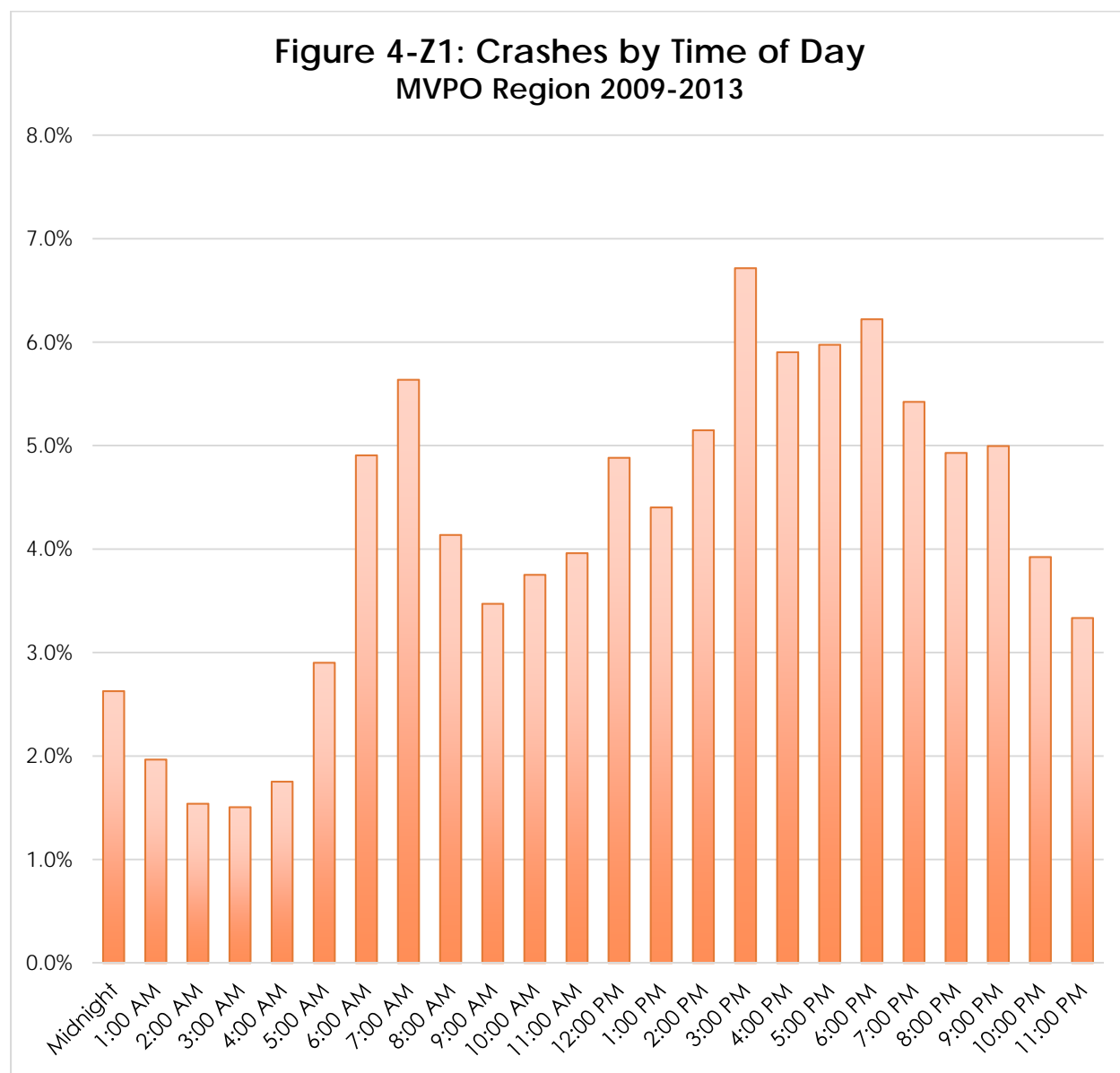
FIGURE 4-W1: OVERALL CRASHES BY COUNTY

County	Year	Fatal Crash	Injury Crash	Property Damage Crash	Total Crashes
Defiance	2009	6	207	1070	1283
	2010	5	225	970	1200
	2011	4	210	795	1009
	2012	3	185	817	1005
	2013	3	225	828	1056
<i>Total</i>	2009-2013	21	1052	4480	5553
Fulton	2009	5	177	658	840
	2010	4	223	609	836
	2011	5	249	748	1002
	2012	14	248	724	986
	2013	12	244	685	941
<i>Total</i>	2009-2013	40	1141	3424	4605
Henry	2009	5	114	467	586
	2010	4	131	441	576
	2011	6	150	506	662
	2012	7	145	451	603
	2013	2	134	519	655
<i>Total</i>	2009-2013	24	674	2384	3082
Paulding	2009	4	65	307	376
	2010	5	63	232	300
	2011	2	88	300	390
	2012	2	90	308	400
	2013	7	91	295	393
<i>Total</i>	2009-2013	20	397	1442	1859
Williams	2009	5	179	903	1087
	2010	5	173	912	1090
	2011	5	219	960	1184
	2012	6	192	848	1046
	2013	4	179	912	1095
<i>Total</i>	2009-2013	25	942	4535	5502
Grand Total	2009-2013	130	4206	16,265	20,601

Where a crash is located can provide important information about a crash such as the type and the cause. The majority of crashes from 2009-2013 did not occur at an intersection (Figure 4-X1) which is an indication of the rural nature of the region and directly relates to the most frequent crash type; animal. Animal crashes made up 32.6% of all crashes with 192 of those crashes being injury and only one fatal. As shown in Figure 4-Y1, fixed object was the second most frequent crash type in the region followed by rear end and angle crashes.

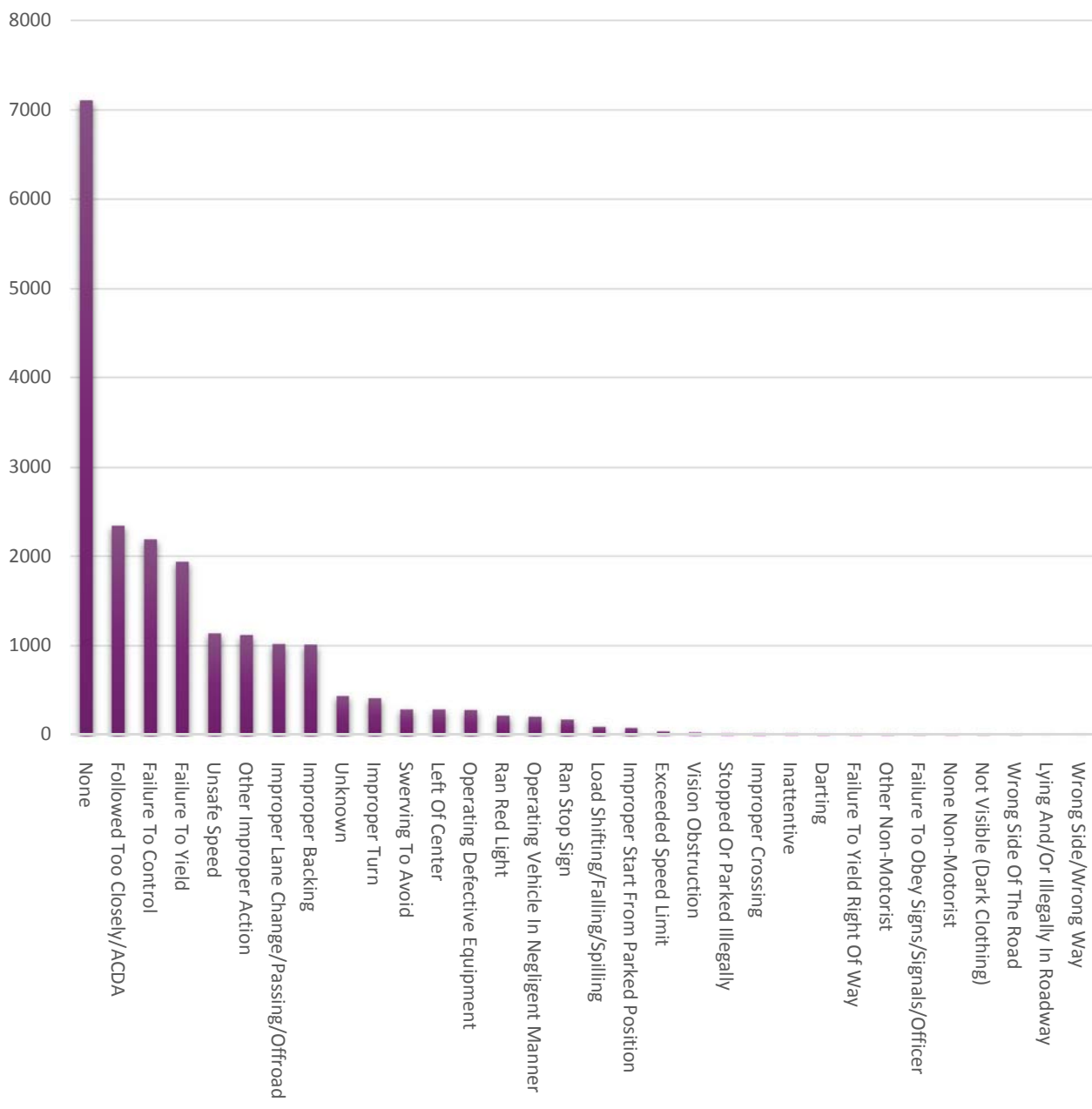


When studying crashes by the time of day they occurred, it was found that the 3 p.m. to 6 p.m. time period had the majority of crash occurrences from 2009-2013 (Figure 4-Z1). This represents the period of time in which there is typically the heaviest amount of traffic on the roadways due to the afternoon commute. A smaller peak in crashes occurred during the 6 a.m. to 8 a.m. time period which again reflects a heavier amount of traffic at that time due to the morning commute.



The contributing factor of a crash is important to study as it often reveals what the leading cause of the crash was. Figure 4-A2 shows crashes by contributing factor for the MVPO region and this graph illustrates that the top three contributing factors in crashes were none, following too closely, and failure to control. The top contributing factor, none, is a reflection of the animal crashes that make up the majority of crashes in the region; when a vehicle hits an animal, the contributing factor is considered 'none'.

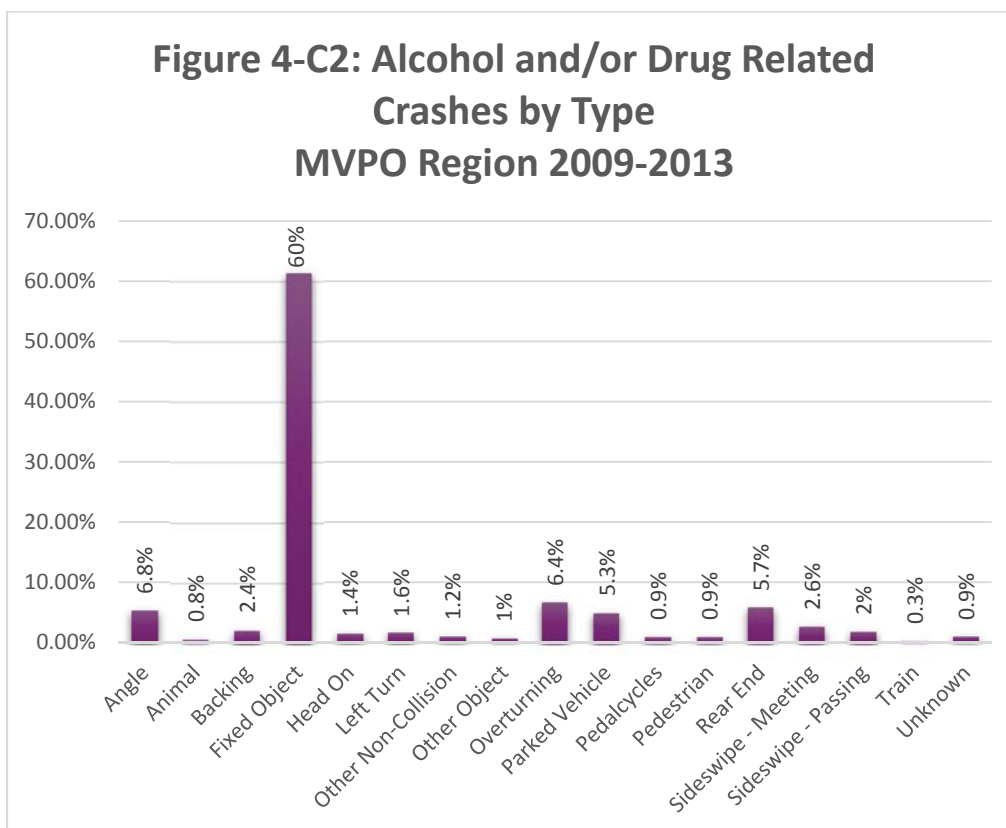
**Figure 4-A2: Crashes by Contributing Factor
MVPO Region 2009-2013**



From 2009-2013, there were a total of 933 crashes related to alcohol and/or drugs. This includes all crashes where either unit 1 or unit 2 reported they had been drinking or using drugs prior to the crash. Alcohol and drug related crashes accounted for 4.5% of the total number of crashes in the MVPO region. By percentage, Paulding County had the highest percentage of alcohol and/or drug related crashes with 5.3%, however, all of the counties had a similar percentage; Fulton County had the second highest percentage with 5.2% followed by Henry with 4.8%, Defiance with 4.3% and Williams with 3.8% (Figure 4-B2). 46 of the 933 crashes related to alcohol and/or drugs were fatal (5%) and 409 were injury crashes (43.8%). Together, fatal and injury crashes make up nearly 50% of all alcohol and/or drug related crashes from 2009-2013. Also, of the 130 total fatal crashes that occurred in the area, 35% were drug and/or alcohol related.

For these crashes, fixed object was the most frequent crash type accounting for 60%, followed by angle (6.8%) and overturning (6.4%).

Figure 4-B2: Alcohol and/or Drug Related Crashes; 2009-2013		
County	Number of Crashes	Percent of Total Crashes
Defiance	238	4.3%
Fulton	239	5.2%
Henry	147	4.8%
Paulding	98	5.3%
Williams	211	3.8%
Total:	933	



Reducing serious injury and fatality crashes on the transportation system is an objective of the Safety and Efficiency Goal of this plan and therefore it is necessary to study crashes of these severities in greater detail.

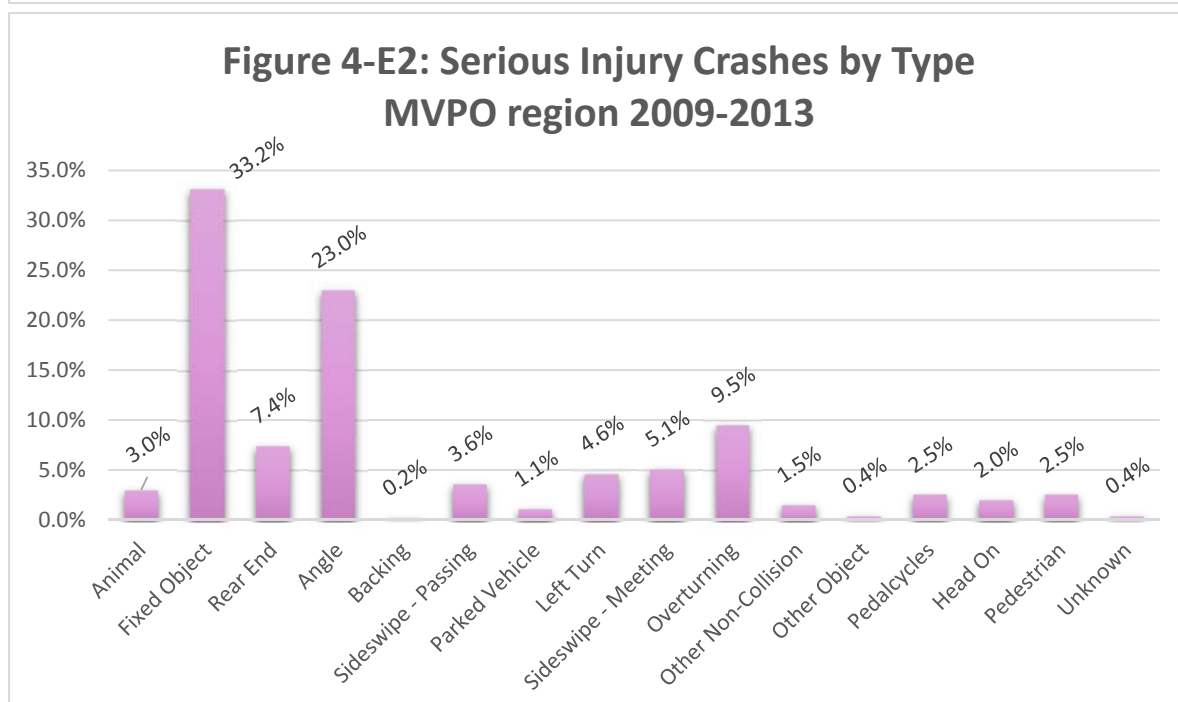
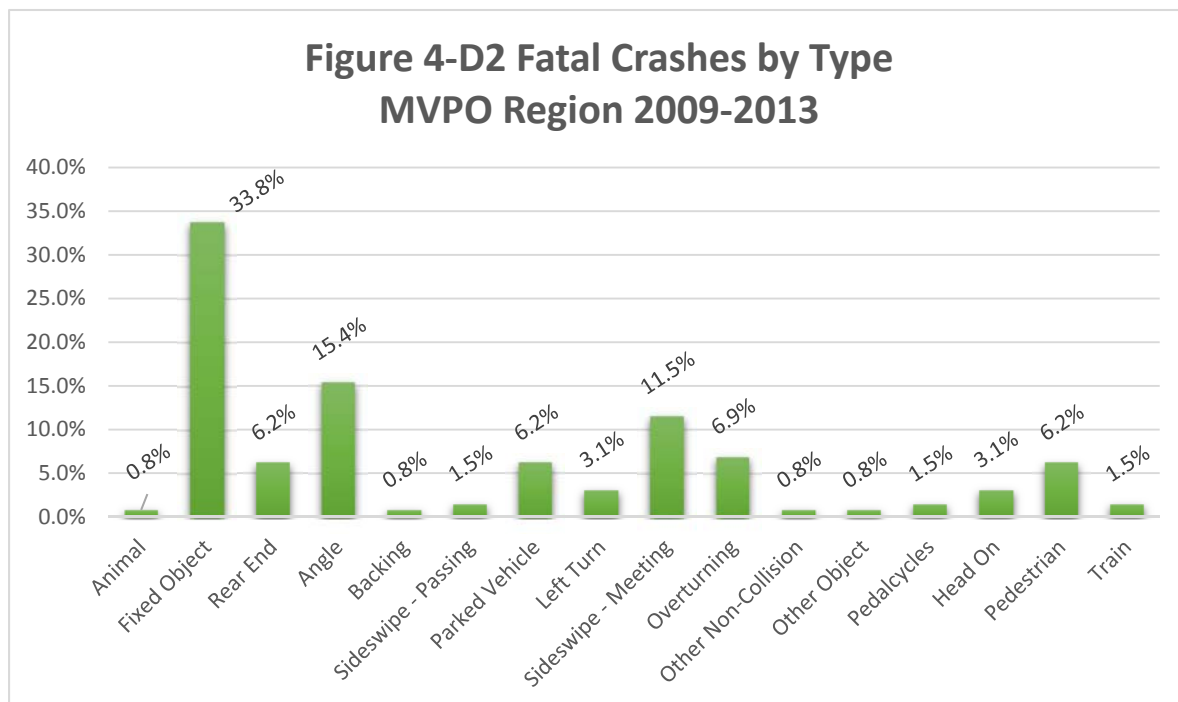


Figure 4-D2 shows fatal crashes for MVPO region by crash type, demonstrating that the top crash type for fatal crashes was fixed object, followed by angle and sideswipe meeting. Figure 4-E2 shows serious

injury crashes by type and from 2009 – 2013 there were a total of 809 serious injury crashes that occurred in the five county area. A serious injury crash is a crash in which one or more incapacitating injuries are reported. Figure 4-E2 shows that fixed object was again the top crash type, followed by angle and overturning.

The accompanying map (Figure 4-F2) shows the locations of serious injury and fatal crashes in the MVPO region from 2009-2013.

4.14.2 High Risk Rural Roads

Using data from 2009-2013 and a tool known as Safety Analyst, ODOT has identified what are known as High Risk Rural Roads for the State of Ohio. According to ODOT, Safety Analyst uses state-of-the-art statistical methodologies to identify roadway locations with the highest potential for reducing crashes. The software identifies intersections and road segments that have higher-than-predicted crash frequencies. For rural routes, roadway segments were looked at for locations that had a higher fatal and all injury crash frequency for the state, township and county systems.

All High Risk Rural Roads identified for the MVPO region are shown in Figure 4-G2 and locations in the Top 100 are listed below. High Risk Rural Roads maps by county can be found in Appendix B.

Defiance:

- SR 15 @ SR 18
 - Rank: 61st Highest State System

Fulton:

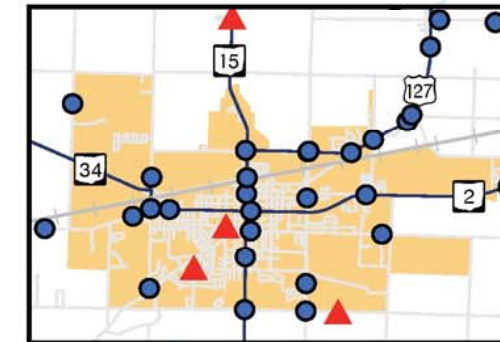
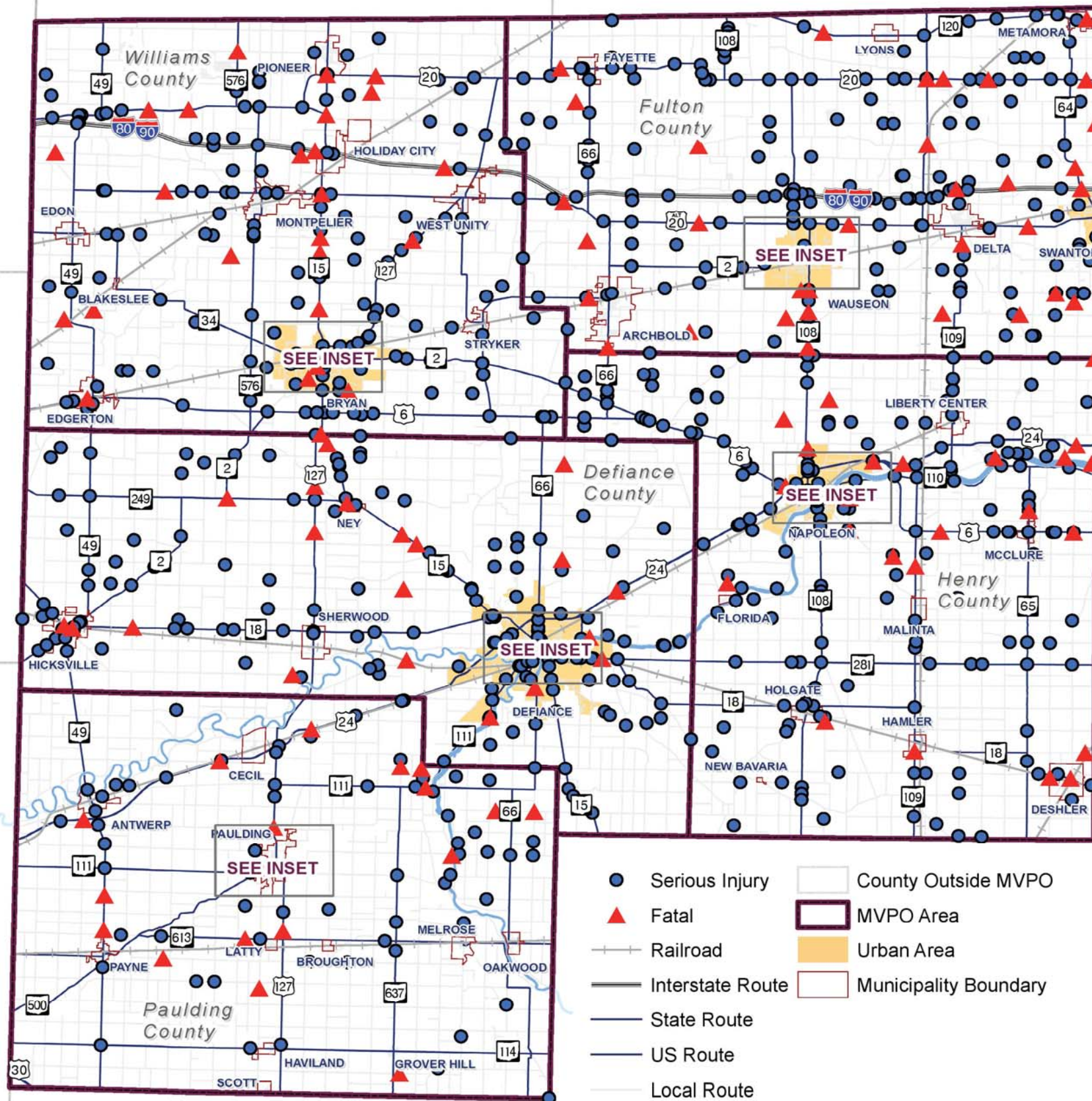
- CR D from CR 1 to Twp Rd 5-2
 - Rank: 34th-48th (multiple segments) Highest County System
- CR D from 0.25 miles east of SR 109 west to CR 13
 - Rank: 9th – 28th (multiple segments) Highest County System
- CR J from SR 109 to 0.1 miles west of CR 19
 - Rank: 49th – 80th (multiple segments), 86th and 97th Highest County System
- TR C from CR 3 to CR 6
 - Rank: 17th – 26th Highest Township System

FIGURE 4-F2: SERIOUS INJURY AND FATAL CRASHES

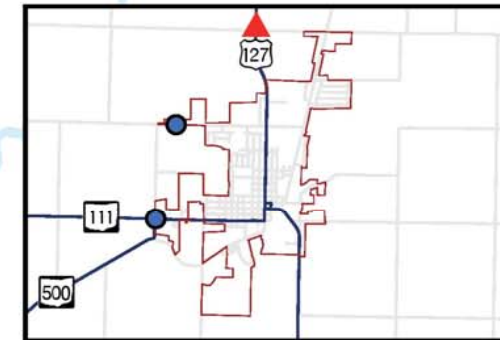


Serious Injury and Fatal Crashes, 2009-2013

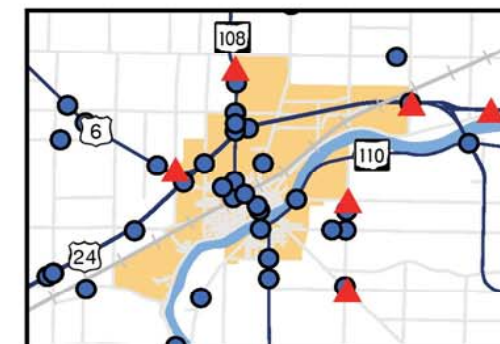
Defiance, Fulton, Henry, Paulding and Williams Counties



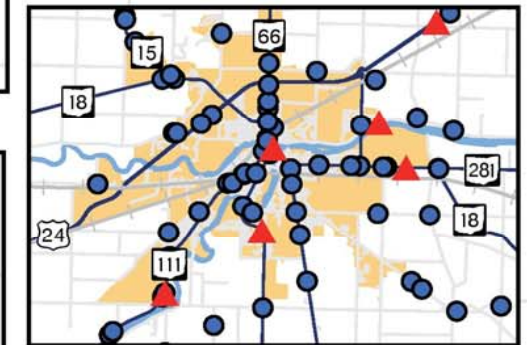
BRYAN INSET



PAULDING INSET



NAPOLEON INSET



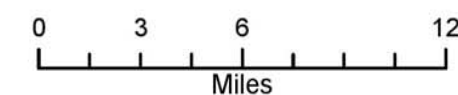
DEFIANCE INSET



WAUSEON INSET

- Serious Injury
- ▲ Fatal
- Railroad
- Interstate Route
- State Route
- US Route
- Local Route
- County Outside MVPO
- MVPO Area
- Urban Area
- Municipality Boundary

Serious Injury Crashes by County (2009-2013):	Fatal Crashes by County (2009-2013):
Defiance: 168	Defiance: 21
Fulton: 199	Fulton: 40
Henry: 206	Henry: 24
Paulding: 68	Paulding: 20
Williams: 168	Williams: 25



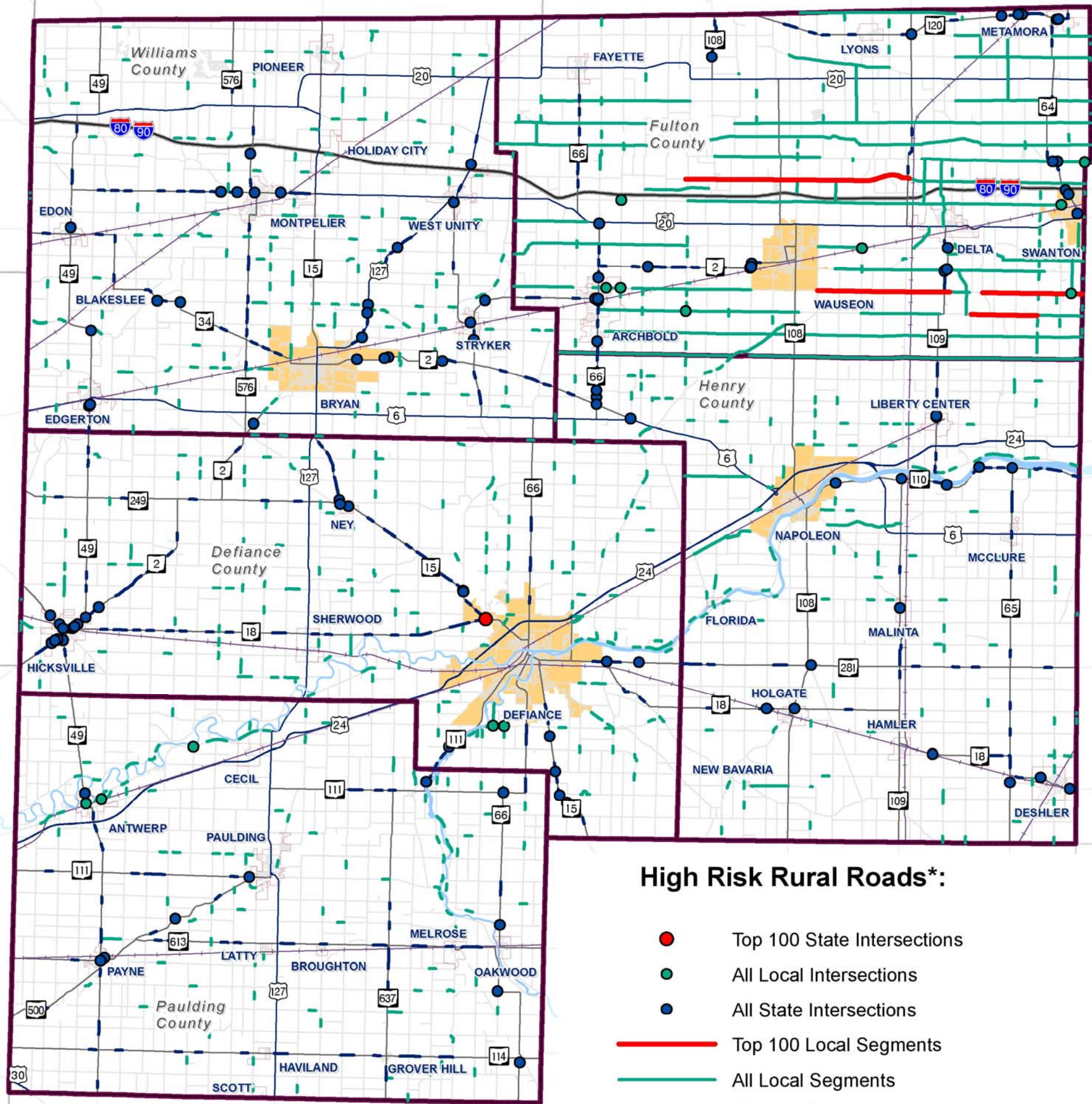
Source: Ohio Department of Transportation
US Census Bureau
NAD 1983 Ohio North
Map Date: 1/29/15

FIGURE 4-G2: HIGH RISK RURAL ROADS



High Risk Rural Roads, 2013

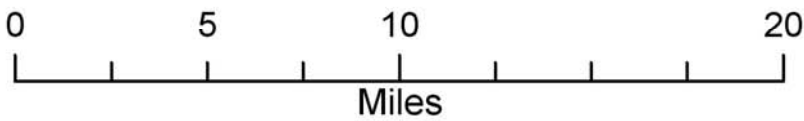
Defiance, Fulton, Henry, Paulding and Williams Counties



High Risk Rural Roads*:

- Top 100 State Intersections
- All Local Intersections
- All State Intersections
- Top 100 Local Segments
- All Local Segments
- All State Segments
- Municipality Boundary
- Interstate Route
- State Route
- US Route
- Local Route

*High Risk Rural Road: these locations were selected because they have a higher-than-predicted fatal and all-injury crash frequency for the state, county, or township system rural route segments and intersections. AASHTOWare Safety Analyst was utilized by the Ohio Department of Transportation (ODOT) to develop this list.



Source: Ohio Department of Transportation,
US Census Bureau
NAD 1983 Ohio North
Map Date: 10/24/14

4.14.3 Highway Safety Improvement Program (HSIP) Priority Locations

In addition to identifying High Risk Rural Roads as part of their safety program, ODOT also identifies safety priority locations using AASHTOWare Safety Analyst for safety study or review. Using 2011-2013 crash data, Safety Analyst noted locations and segments of roadways that have higher-than-predicted crash frequencies as well as noting locations for review based on crash severity. According to ODOT, this methodology is more efficient and cost effective and will allow the department to study fewer locations while addressing more crashes each year.

ODOT studies up to 300 locations each year throughout the state and these locations are separated by urban and rural facilities and grouped by type of roadway. The urban system covers all streets, roads, and highways located within urban boundaries designated by the U.S. Census Bureau. The Bureau defines two types of urban areas based on population. Small urban areas are urban places with a population of 5,000 or more and not located within any urbanized area. An urbanized area is an area with a population of 50,000 or more. The rural system covers all other streets, roads, and highways that are not located within the boundaries of small urban and urbanized areas. Figure 4-H2 is a map of all ODOT priority locations and Figure 4-I2 is a table with a list of location descriptions for each priority location shown on the map.

The descriptions of the emphasis areas along with their identified locations are as follows:

Rural Intersection Peak Searching Excess Locations

These locations were selected because they have a higher-than-predicted crash frequency for each intersection and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. In the MVPO region, Defiance, Fulton and Williams counties have rural intersection locations identified by Safety Analyst. Locations include:

Defiance:

- SR 2 (E High St.) at S. Maple St
 - Rank: 49
- SR-2 (W High St) at SR-18 (N Main St)
 - Rank: 134

Fulton:

- SR-2 (Stryker St) at SR-66 (Defiance St)
 - Rank: 77
- SR-66 (S Defiance St) at W Barre Rd
 - Rank: 103

-
- US-20A at CR-3 (Co Rd 3)
 - Rank: 109
 - US-20A at SR-64 (Main St)
 - Rank: 176

Williams:

- US-20A at SR-15
 - Rank: 57

Rural Non-Freeway Peak Searching Excess Segment Locations

These locations were selected because they have a higher-than-predicted crash frequency for this roadway type and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. Only crashes indicated by the officer as being non-intersection crashes were included in this analysis. In the MVPO region, Defiance, Fulton and Paulding counties have locations of this type identified by Safety Analyst. Listed below are routes where the priority segments are located.

Defiance:

- Two priority segments on SR 2, rankings 16 and 17
- One priority segment on SR 15, ranking 103

Fulton:

- Five segments on US 20A, rankings 55, 60, 107, 214, and 389

Paulding:

- One segment on USR 24, ranking 335

Rural Freeway Peak Searching Excess Locations

These locations were selected because they have a higher-than-predicted crash frequency for this roadway type or interchange location and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. In the five county region, only Fulton and Williams counties have locations of this type identified; routes are listed below and shown in Figure 4-H2.

Fulton:

- Three segments on I-80/90 (Ohio Turnpike), rankings 253, 257, and 428

Williams:

- Seven segments on I-80/90 (Ohio Turnpike), rankings 12, 16, 53, 54, 203, 275 and 461

Urban Intersection Peak Searching Excess Locations

These locations were selected because they have a higher-than-predicted fatal and injury crash frequency for each intersection and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. No locations of this type were identified in the MVPO region.

Urban Non-Freeway Peak Searching Excess Segment Locations

These locations were selected because they have a higher-than-predicted fatal and injury crash frequency for this roadway type and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. Only crashes indicated by the officer as being non-intersection crashes were included in this analysis. Fulton County was the only one in the region to have segments identified of this type. The route numbers are listed below and shown on the accompanying map (Figure 4-H2).

Fulton:

- Two segments on SR 2, rankings 103 and 361
- One segment on US 20A, ranking 439

Urban Freeway Peak Searching Excess Locations

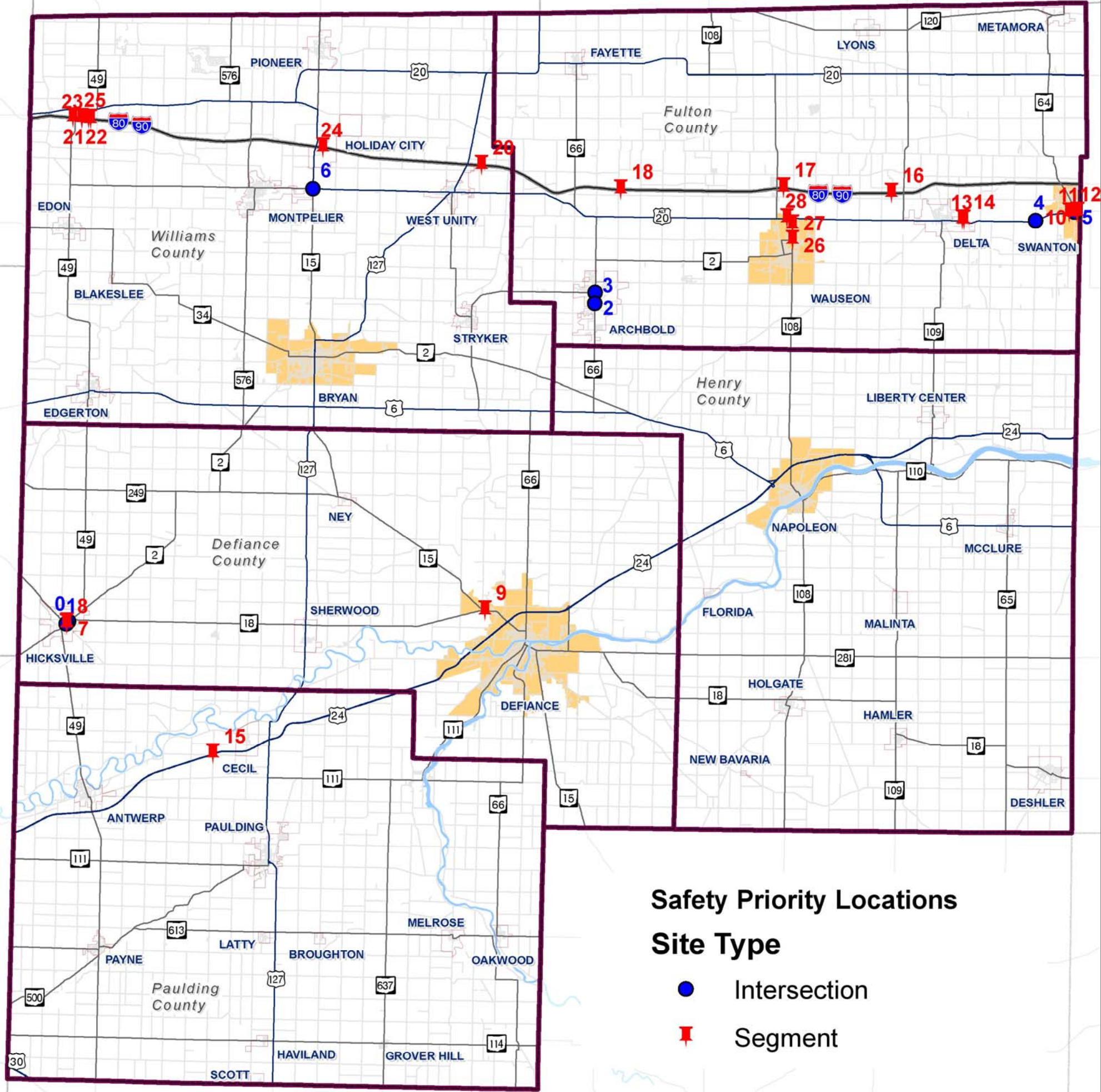
These locations were selected because they have a higher-than-predicted fatal and injury crash frequency for this roadway type or interchange location and the Top 50 locations may be studied. The remainder of the locations listed have a higher-than-predicted frequency of crashes and can be used as a reference. No locations in the MVPO region were identified for this type of priority location.

FIGURE 4-H2: PRIORITY LOCATIONS

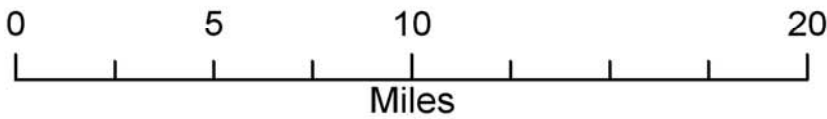


Safety Priority Locations, 2013

Defiance, Fulton, Henry, Paulding and Williams Counties



See corresponding table for list of safety priority locations and rankings.



Source: Ohio Department of Transportation,
US Census Bureau
NAD 1983 Ohio North
Map Date: 7/24/14

FIGURE 4-12: SAFETY PRIORITY LOCATION DESCRIPTIONS (FOR USE WITH FIGURE 4-H2)

Number	County	Route	Location	Rank
0	DEF	SR 2	@ Maple Street	49
1	DEF	SR 2	@ SR 18	134
2	FUL	SR 2	@ SR 66	77
3	FUL	SR 66	@ W Barre Rd	103
4	FUL	USR 20A	@ CR 3	109
5	FUL	USR 20A	@ SR 64	176
6	WIL	USR 20A	@ SR 15	57
7	DEF	SR 2	0.05 mi E of SR 18 to Maple St	16
8	DEF	SR 2	SR 18 to 0.03 mi E of Maple St	17
9	DEF	SR 15	SR 18 to 0.13 mi E of SR 18	103
10	FUL	USR 20A	0.15 mi E of SR 64 to CR 1	55
11	FUL	USR 20A	0.1 mi E of Paigelynn Pl to 0.05 mi W of Forester DR	60
12	FUL	USR 20A	0.1 mi E of SR 64 to 0.05 W of CR 1	107
13	FUL	USR 20A	0.1 mi W of Industrial Dr to 0.15 W of Industrial Dr	214
14	FUL	USR 20A	0.2 mi E of CR 6-2 to 0.3 mi E of CR 6-2	389
15	PAU	USR 24	0.1 mi segment near Rd 87	335
16	FUL	I-80/90	0.1 mi segment near CR 10	253
17	FUL	I-80/90	0.1 mi segment near SR 108	257
18	FUL	I-80/90	0.1 mi segment near CR 22	428
19	WIL	I-80/90	0.1 mi segment between SR 49 and CR 4	12
20	WIL	I-80/90	0.1 mi segment near USR 127	16
21	WIL	I-80/90	0.1 mi segment between SR 49 and CR 4	53
22	WIL	I-80/90	0.1 mi segment between SR 49 and CR 4	54
23	WIL	I-80/90	0.1 mi segment between SR 49 and CR 4	203
24	WIL	I-80/90	0.1 mi segment near USR 20A	275
25	WIL	I-80/90	0.1 mi segment near SR 49	461
26	FUL	SR 2	E Linfoot to Cole St	103
27	FUL	SR 2	Banister Dr to 0.18 mi S of USR 20A	361
28	FUL	USR 20A	0.46 mi E of SR 108 to 0.16 mi W of Shoop	439

4.15 CONGESTION

4.15.1 Level of Service (LOS)

Level of Service (LOS) is a qualitative measure of the operation of traffic flow and is based upon various measures of effectiveness for different transportation systems. Speed, travel time, freedom to maneuver, traffic interruptions, drive inconvenience, safety, and delay are all factors considered in the LOS.

There are six levels of service from A, representing the best service, to F, representing the worst, according to the Highway Capacity Manual.

In rural areas, interstates, other freeways and expressways, and arterials are generally designed for a LOS of B (or C in hilly terrain). Collectors are normally designed for a Level of Service C (or D in hilly terrain). In urban and urbanized areas, the design LOS for these functional classifications is normally C, regardless of terrain. Local roads in both rural and urban areas are normally designed for LOS D.

The LOS levels are defined as:

- **Level A:** Free flow, with low volumes and high speeds. Traffic flows at or above the posted speed limit and motorists have complete mobility between lanes. Motorists have a high level of physical and psychological comfort and incidents or point breakdowns are easily absorbed. Level of Service A typically occurs late at night in urban areas and frequently in rural areas.
- **Level B:** Reasonable free or stable flow, speeds beginning to be restricted by traffic conditions. Maneuverability within the traffic stream is slightly restricted. Motorists still have a high level of physical and psychological comfort
- **Level C:** In stable flow zone, but most drivers are restricted in freedom to select own speed. Ability to maneuver through lanes is noticeably restricted and lane changes require more driver awareness. Most drivers are comfortable, roads remain safely below but efficiently close to capacity, and posted speed is maintained. Minor incidents still have no effect but localized service will have noticeable effects and traffic delays will form behind the incident.
- **Level D:** Approaching unstable flow; drivers have little freedom to maneuver. Lower speeds and increased traffic volume. Minor incidents will create delays.
- **Level E:** Unstable flow; operating at capacity. Flow becomes irregular and speed varies, rarely reach the posted limit. Any disruption to traffic flow will create a shock wave affecting upstream traffic. Driver's level of comfort is poor.
- **Level F:** Forced or breakdown flow. Frequent slowing required. Demand exceeds capacity and the road is in a constant traffic jam.

Congestion data on the state system for 2014 was obtained from ODOT and this data was utilized when assessing congestion in the region. In the five county area, there are no roadways on the state system that have an LOS F or LOS E, as shown in Figure 4-J2. There are only a few roadways that have a LOS D in the region which are as follows:

- **Williams County:** USR 20A from the Ohio Turnpike south approximately 1.7 miles
SR 15 from Magda Drive (Montpelier) south to USR 127 in the City of Bryan
- **Fulton County:** USR 20A from the Village of Swanton to the Village of Delta
- **Defiance County:** SR 15 in the City of Defiance from SR 18 to USR 24

Roadways on the state system with a LOS C are also shown on Figure J2 along with LOS D as this level can become problematic in the future. Although a stable flow zone in the current time, level D is approaching an unstable flow and therefore LOS C roadways need to be considered for future planning purposes.

4.15.2 Volume to Capacity Ratio

The Volume to Capacity (V/C) Ratio is another measure of congestion which represents the volume of vehicles compared to the volume of vehicles that the road can support. These volumes are based on factors such as road width, speed limit and number of lanes.

Data provided by ODOT for the MVPO region includes information on the capacity as well as AADT for roadways on the state system and these numbers form the ratio.

In the MVPO region, there were no roadways on the state system with a V/C ratio of 1 or higher according to ODOT data for 2014. However, there were roadways in the region with a ratio of greater than 0.54 and these roads can become a congestion concern in the future. Roads with a V/C ratio greater than 0.54 were located in Defiance and Fulton counties. In Defiance County, SR 15 (Clinton Street) in the City of Defiance had the highest V/C Ratio (0.91) from Sessions to River. The next highest ratios were found on SR 15 (Clinton Street) from River to Second Street and on Second Street from Clinton to Jefferson. In Fulton County, USR 20A in the Village of Swanton had a ratio of 0.56 from the Lucas County line west to Main Street. Also in Fulton County, SR 2 (Shoop Avenue) in Wauseon from Linfoot approximately 0.2 miles south had a V/C Ratio of 0.55.

Maumee Valley
Planning Organization

Congestion Locations, 2014

Defiance, Fulton, Henry, Paulding and Williams Counties

Legend:

- LOS* C (Blue line)
- LOS* D (Red line)
- MVPO Area (Purple outline)
- Municipality Boundary (Thin red line)
- Interstate Route (Thick black line)
- State Route (Thin black line)
- US Route (Blue line)
- Urban Area (Yellow shaded area)

*Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream. Six levels are defined from A to F, with A representing the best operating conditions and F representing the worst operating conditions.

Source: Ohio Department of Transportation,
US Census Bureau
NAD 1983 Ohio North
Map Date: 4/15/15

*Level of Service (LOS) is a quality measure describing operational conditions within a traffic stream. Six levels are defined from A to F, with A representing the best operating conditions and F representing the worst operating conditions.



A horizontal number line representing distance in miles. It starts at 0 on the left and ends at 20 on the right. Major tick marks are labeled at 0, 5, 10, and 20. There are also unlabeled tick marks at intervals of 2 miles (2, 4, 6, 8, 12, 14, 16, 18).

Source: Ohio Department of Transportation,
US Census Bureau
NAD 1983 Ohio North
Map Date: 4/15/15