Bloomington/Monroe County
Metropolitan Planning Organization

Crash Report

Calendar Years 2007 through 2009

September 2010

BLOOMINGTON • MONROE COUNTY
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Executive Summary

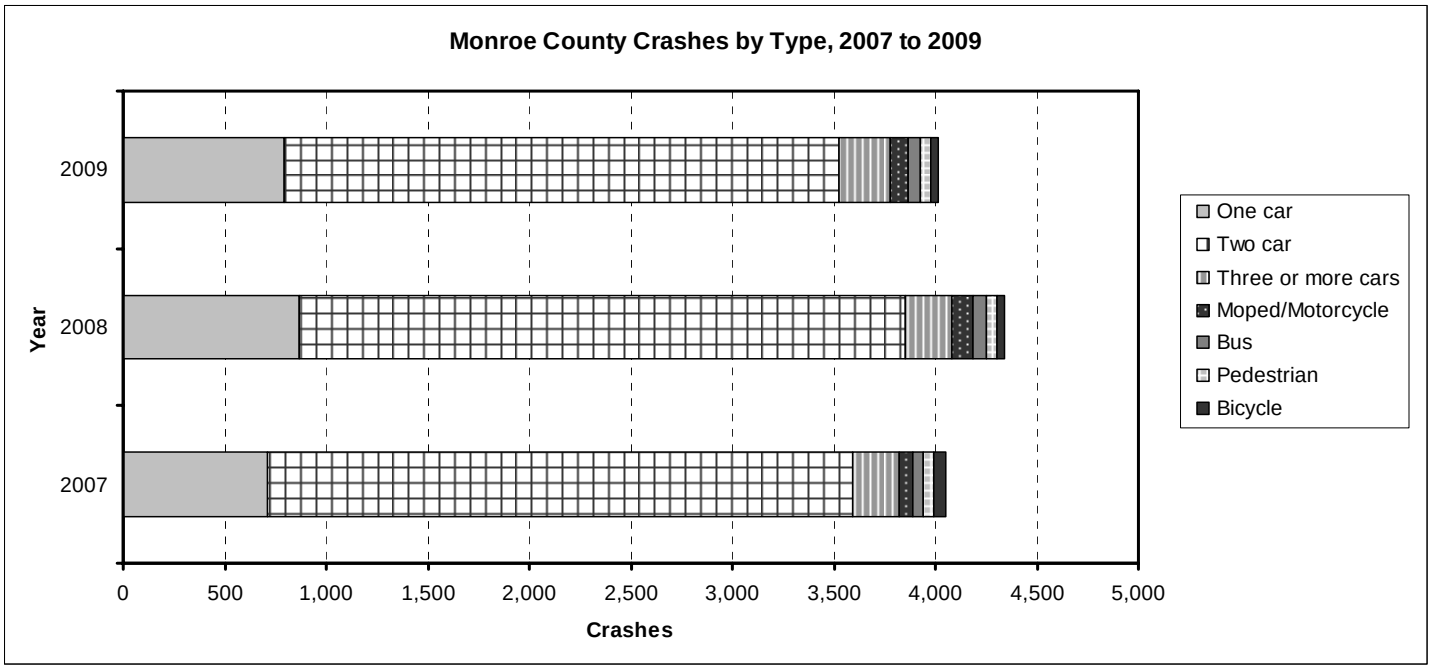
The current version of the Bloomington/Monroe County Metropolitan Planning Organization (MPO) Crash Report continues the MPO's effort to provide a thorough analysis of the causes and trends of motor vehicle crashes in Monroe County. This year's report includes crash data from 2007 to 2009.

This report has been compiled to provide information to the Citizen's Advisory Committee, Technical Advisory Committee, and Policy Committee of the MPO. Additionally, the report will be available to local government agencies, Indiana University, and the general public through the MPO website and the office of the Bloomington Planning Department.

A summary of the crash trends reported within Monroe County is provided below to highlight general information on crash data within Monroe County. In the following sections, detailed tables, charts, and summaries are provided to highlight information on the frequency, severity, and other related characteristics of crashes that occurred from 2007 to 2009. Additionally, the appendix contains information and analysis that may be of interest to some readers.

Summary of Crash Trends from 2007 to 2009

A total of 12,410 crashes were reported between 2007 and 2009 (Table 1). This figure is roughly the same as the three year total from 2006 to 2008, as reported in last year's crash report. Total crashes for 2009 were down 7.5% from 2008. Just over three quarters of the total crashes reported no injuries (property damage or unknown) and the rest reported various levels of severity in injuries sustained.



A further breakdown of the 12,410 crashes provides useful insights into trends involving pedestrians, bicyclists, buses, mopeds/motorcycles, and crashes that resulted in fatalities. Over the course of the three years analyzed, there were 22 fatalities (Table 4), somewhat less than the 30 fatalities reported from 2006 to 2008. Of the 22 fatalities, almost half (10) were from single vehicle crashes, while six involved mopeds/motorcycles, and four involved a pedestrian. There were no fatalities involving a bicycle or a bus.

The time distribution of crashes continues to follow a predictable pattern. The greatest number of crashes occurred during weekday rush hours between 3:00 P.M. and 6:00 P.M., with an average slightly greater than 1 crash per hour (Figure 1). The weekend also follows a predictable pattern, but the crash rate has a more even distribution through the day and early

evening hours. Between the hours of 7pm and 4am, the weekend experiences a higher crash frequency than during the week. Friday continued to have the highest number of crashes overall, while Sunday had the lowest number of crashes (Figure 2).

State highways are prominently featured in the list of problematic intersections (Table 2). This could be attributable to several factors, but higher traffic volumes and speeds on these roads are likely factors. The intersection at Bloomfield Rd and State Road 37 topped the list of problematic intersections followed by Vernal Pike and State Road 37 and then College Ave/Walnut St. and the Bypass. Because these intersections continue to exhibit high numbers of crashes from year to year, safety improvements should be considered. Other locations that show a high number of crashes, but do not involve state managed highways, such as 3rd St. and Washington St., should also be considered for safety improvements through the MPO's Highway Safety Improvement Program. Future reports would benefit from a reliable methodology to normalize crashes to volumes of traffic, road classification, and/or some other value so that ranking of problematic locations and intersections is not solely based on total crashes.

The leading cause of crashes during the study period was once again failure to yield right of way with 2,531 incidents (Table 3). Other leading causes include reaction to other driver behaviors, following too closely, and unsafe backing. These causes may be reduced through law enforcement and education efforts as well as through physical improvements. Running off the right side of the road and speeding in adverse weather present opportunities for physical safety improvements, such as guard rails, rumble strips, and interactive signage. These types of improvements should be explored further to reduce crashes.

Bicycle and pedestrian crashes are an important consideration due to a relatively high number of non-motorized trips in the area, and the sensitivity to injury of individuals using these modes. It is well understood that when compared to other types of crashes, those involving bicyclists and pedestrians are much more likely to result in a fatality or incapacitating injury. Therefore, reducing the frequency of these crashes is a priority. Four of the top ten locations that reported crashes with bicycles and pedestrians are along Jordan Avenue on the Indiana University Campus (Table 6 and Figure A2). Numerous locations along Jordan Avenue should therefore be considered for future safety improvements. Although none resulted in a fatality in this area (Table 5), the Jordan corridor should be given a high priority to investigate the possible causes and solutions associated with these crashes.

Introduction

Increased mobility continues to be a defining aspect of life in the United States and around the world. Investment in transportation infrastructure has led to new opportunities for trade, travel, recreation, relocation, and economic growth. The enactment of the American Recovery and Reinvestment Act of 2009 speaks to the importance that transportation infrastructure plays in our society. The BMCMPO received approximately $3.1 million through this federal legislation to invest in our local transportation network. The benefits of these investments have only recently begun to materialize, and should be evident in the years to come. However, the effectiveness of our transportation system continues to be undermined by human, economic, and financial costs attributable to motor vehicle crashes.

Motor vehicle crashes are a significant cause of death, injury, property loss and productivity loss in the United States. Preliminary data for 2007 shows that unintentional accidents were the 5th leading cause of death overall, and of the 117,075 total unintentional accidents reported, 45,832 (39.1%) are attributed to transportation.[1] While it may not be possible to completely eliminate motor vehicle crashes, gaining a better understanding of their causes can help transportation planners and engineers reduce their frequency and severity. This report attempts to characterize the motor vehicle crashes in Monroe County, Indiana, providing the basis for informed transportation policies and infrastructure investments.

The annual Crash Reports demonstrate that motor vehicle crashes contribute to a significant loss of life, property, and productivity in Monroe County. Through continued efforts in crash reporting and analysis, a better understanding of crash trends will be attained. From this information, targeted infrastructure investments should further improve safety on roads within the county. Therefore, the purpose of this report is twofold. First, the report provides a consistent and straightforward means to disseminate annual crash data which can be utilized by any interested individual or organization. Second, the report provides another tool for civil engineers, transportation planners, and local policy makers to use when considering mitigation strategies aimed to reduce the frequency and severity of transportation related crashes. Specifically, the Indiana Department of Transportation and the BMCMPO require Local Public Agencies (LPAs) to use crash data as part of the Highway Safety Improvement Program (HSIP). This program provides federal funding to target areas with high incidences of crashes. It is the overall goal of HSIP to reduce the number of fatal and incapacitating injury crashes. Through annual reporting and analysis, effective mitigation strategies can be implemented to further curtail crashes within Monroe County.

The report focuses on a three year period from 2007 to 2009. By focusing on a longer time horizon, random variations in annual crashes do not unduly influence the trends reported. For instance, annual variations in bicycle and pedestrian crashes, fatalities and incapacitating injuries, and location-specific crashes can be significant, even though there may not be an actual change in the likelihood of those crashes. By using a three-year window, identified trends are more likely to be meaningful. Results from 2009 alone are also presented in some instances to provide a snapshot of the most recent year.

[1] Centers for Disease Control, National Center for Health Statistics. National Vital Statistics Reports – Deaths: Preliminary Data for 2007. Volume 58, Number 1. http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_01.pdf. Accessed on May 6, 2010.

Methodology and Data Considerations

The data for the Bloomington/Monroe County Crash Report originates from the "Automated Report and Information Exchange System" (ARIES) of the Indiana State Police. This system contains crash data from police reports since 2003. The police report data is organized by collisions, units (vehicles), and individuals. These entities are related to one another by a field in each table (Master Record Number), but can also be analyzed independently. It is possible to retrieve information regarding collisions (e.g., where and when did the greatest number of crashes occur?), vehicles involved (e.g., how many crashes involved bicycles?), and individuals involved (e.g., how old were the crash victims?). It is also possible to perform more complex analyses using attributes from each of these entities (e.g., which location had the most elderly crash victims?).

As with any database, the validity of conclusions resulting from the data is contingent upon accurate and complete data entry. Lack of information from hit-and-run collisions, confusion surrounding alternate names of roads (e.g., Country Club Drive, Winslow Road), misspelled or misentered street names, gps errors, and incomplete data entry undoubtedly introduce some error into the results of this report. Therefore, results should not be interpreted rigidly.

A significant effort was made to correct data errors and validate results. It is important to note that the methodology was improved for this report. Consequently, some minor inconsistencies will be evident when comparing crash reports from different years. Therefore, it should be understood that the most recently issued Crash Report reflects the best and most accurate crash information. Regardless of methodological changes and slight differences between reports, the list of problematic intersections remains relatively consistent, and the overall findings of this report are consistent with those of past years.

Once the raw data was corrected, collisions were categorized for analysis based on the type and severity of the crash. If the crash included a moped, motorcycle, bus, bicyclist or pedestrian, it was classified as a "moped/motorcycle", "bus", "bicycle" or "pedestrian" crash, accordingly, regardless of the number of vehicles involved. If the crash involved only motor vehicles, the "crash type" classification was based on the number of cars: one car, two cars, or three or more cars. The "severity" classification of a collision was based on the most severe injury that resulted from the crash. For example, if a crash resulted in a fatality as well as a non-incapacitating injury, the severity of the crash was classified as "Fatal Injury." Most data methods used in the report are self-explanatory.

When reading the report, it is important to understand the distinction between "crashes" and "individuals." The term "crash" is used when the characteristics of the crash itself are under consideration, whereas the terms "individual" and "fatality" are used when the focal point is the people involved. For example, the "Fatal Injury" column of Table 1 ("Crash by Type and Severity, 2007-2009") shows how many crashes resulted in a fatal injury in 2009, but it would be incorrect to interpret this column as the number of fatalities in 2009, since more than one fatality can result from a single crash.

Analysis

Crash Characteristics

This section provides a summary of crash characteristics in Monroe County, including the type and severity of crashes from 2007-2009. These factors reflect trends in the overall safety of the transportation system.

In 2009, a total of 4,014 motor vehicle crashes were reported in Monroe County (Table 1). Of these, seven resulted in one or more fatalities, while 53 caused incapacitating injuries. For the vast majority of crashes (3,129), injuries were not reported. Two-car crashes were the most common, comprising 68.2% of the total. One-car crashes and those involving three or more cars were also common, accounting for 19.7% and 6.2% of total crashes reported, respectively. Pedestrian, cyclist, moped/motorcycle, and bus crashes were much less frequent. However, with the exception of bus crashes, these were much more likely to involve injury than vehicle crashes.

Compared with 2008, the overall number of crashes in 2009 showed a notable decrease (7.5%). The portion of crashes resulting in fatalities or incapacitating injury (1.5%) was roughly the same as in 2008 (1.4%). This figure should be monitored in future years to see if this trend continues.

Table 1. Crashes by Type and Severity, 2007-2009

	Crash Type	Severity				Annual Total	Percent of Annual Total
		Fatal Injury	Incapacitating Injury	Non-incapacitating	No injury/unknown		
2007	One car	2	10	161	539	**712**	**17.6%**
	Two car	0	28	493	2357	**2878**	**71.0%**
	Three or more cars	0	3	82	148	**233**	**5.7%**
	Moped/Motorcycle	1	11	46	11	**69**	**1.7%**
	Bus	0	0	4	43	**47**	**1.2%**
	Pedestrian	0	6	42	5	**53**	**1.3%**
	Bicycle	0	7	50	6	**63**	**1.6%**
	Total	**3**	**65**	**878**	**3109**	**4055**	**100.0%**
	Percent of Annual Total	**0.1%**	**1.6%**	**21.7%**	**76.7%**	**100.0%**	
2008	One car	4	10	170	680	**864**	**19.9%**
	Two car	1	19	447	2523	**2990**	**68.9%**
	Three or more cars	0	4	72	149	**225**	**5.2%**
	Moped/Motorcycle	3	9	64	27	**103**	**2.4%**
	Bus	0	0	6	63	**69**	**1.6%**
	Pedestrian	3	4	41	8	**56**	**1.3%**
	Bicycle	0	1	31	2	**34**	**0.8%**
	Total	**11**	**47**	**831**	**3452**	**4341**	**100.0%**
	Percent of Annual Total	**0.3%**	**1.1%**	**19.1%**	**79.5%**	**100.0%**	
2009	One car	3	12	154	620	**789**	**19.7%**
	Two car	0	18	448	2273	**2739**	**68.2%**
	Three or more cars	1	4	94	151	**250**	**6.2%**
	Moped/Motorcycle	2	11	53	19	**85**	**2.1%**
	Bus	0	1	5	57	**63**	**1.6%**
	Pedestrian	1	6	41	3	**51**	**1.3%**
	Bicycle	0	1	30	6	**37**	**0.9%**
	Total	**7**	**53**	**825**	**3129**	**4014**	**100.0%**
	Percent of Annual Total	**0.2%**	**1.3%**	**20.6%**	**78.0%**	**100.0%**	
3-Year	**Total**	**21**	**165**	**2534**	**9690**	**12410**	
	Percent of 3-Year Total	**0.2%**	**1.3%**	**20.4%**	**78.1%**	**100.0%**	

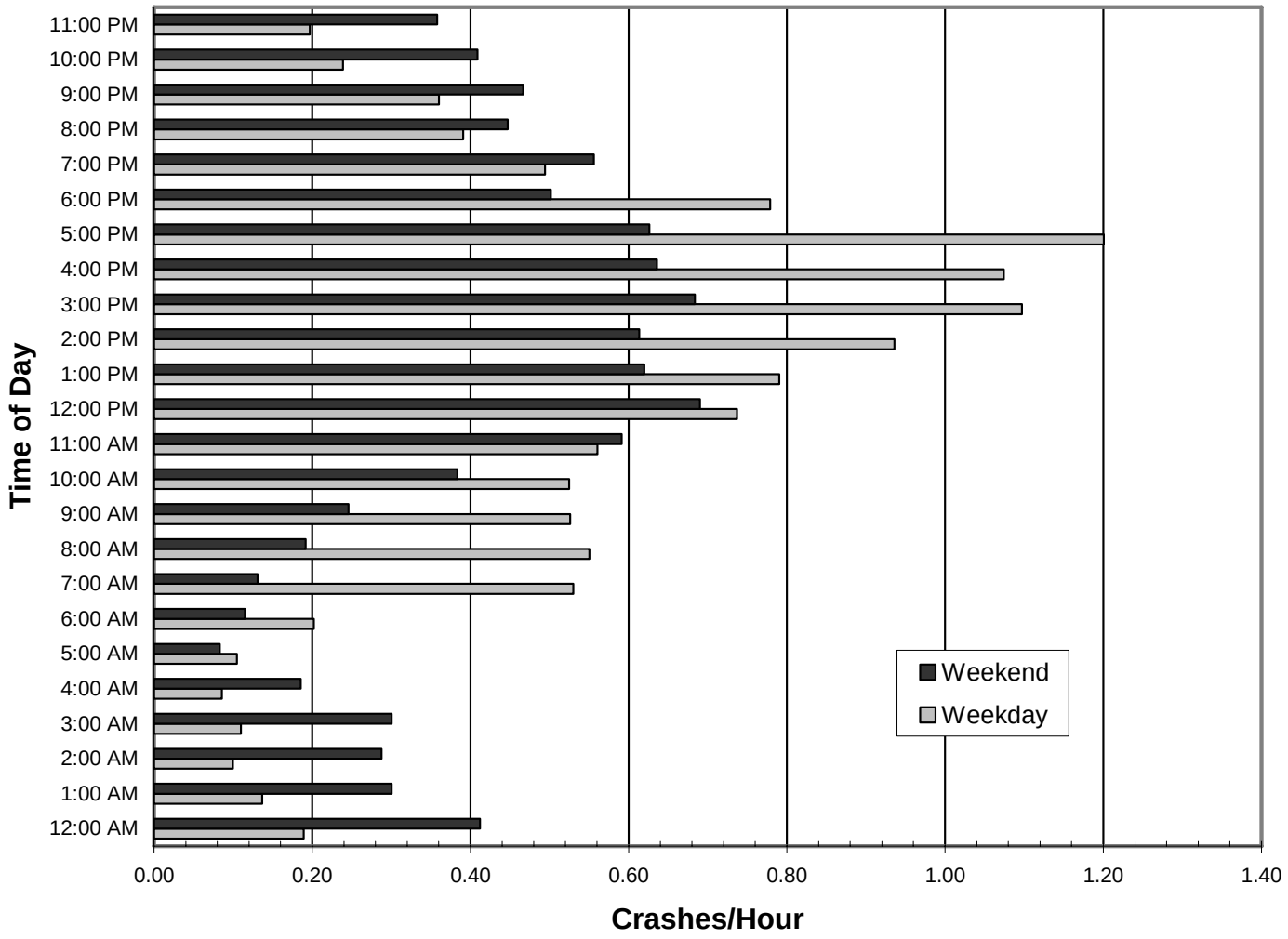
Time of Crashes

This section summarizes the number of crashes by hour and day. Information relating to the timing of crashes can be used by law enforcement agencies and emergency responders for planning purposes. Additionally, decision makers may use this information in an attempt to reduce peak crash times.

On weekdays, the number of crashes typically increased in conjunction with traffic from the morning and noon rush hours – 7:00 AM to 9:00 AM, and 12:00 PM to 1:00 PM (Figure 1).[2] Hourly crashes also increased from 1:00 PM until around 5:00 PM. The late afternoon was the most likely time for a crash to occur, with more than one per hour.

The hourly distribution of crashes for the weekend was less varied than for the work week. Crashes in the late evening and early morning were much more common during the weekend, and rush hour peaks were not as prevalent as on weekdays. During the study period, a greater number of crashes occurred on Fridays than on any other day and the fewest crashes occurred on Sundays (Figure 2).

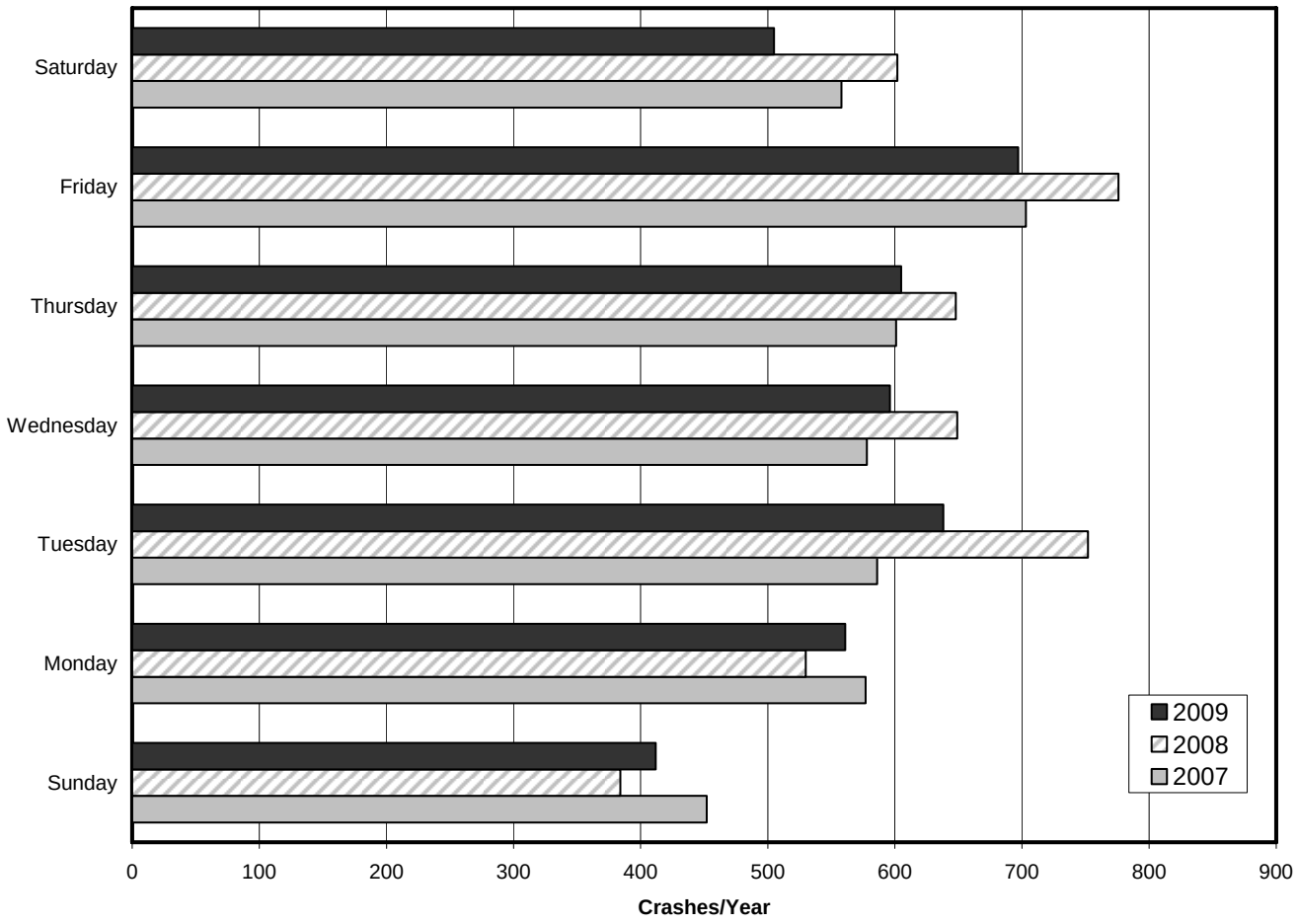
Figure 1. Crashes by Time of Day, 2007-2009 [3]



[2] For the purposes of this report, "weekdays" begin on Sunday at 7:00 PM and end on Friday at 6:59 PM. Conversely, "weekends" begin on Friday at 7:00 PM and end on Sunday at 6:59 PM.

[3] Hours shown represent the beginning of the hour. For example, "12:00 AM" represents the time period from 12:00 AM to 12:59 AM.

Figure 2. Crashes by Day of Week, 2007-2009



Crash Locations

This section addresses the spatial distribution of crashes in Monroe County, highlighting problematic intersections and corridors. The ranking method is based on the total number of crashes that occurred at each location or intersection over three years. Transportation planners and engineers can use this information to prioritize infrastructure projects for safety improvements.

In 2009, the intersection with the greatest number of total crashes was N. College Avenue/N. Walnut Street and State Road 45/46 Bypass, where 45 crashes were reported (Table 2). However, the intersection of Bloomfield Rd at State Road 37 had the most crashes between 2007 and 2009 with 153 crashes. Although traffic volume is certainly an important element, intersection design factors, such as limited visibility, topographic constraints, and awkward turning movements, may contribute to greater crash frequency at some high crash locations.

Locations and intersections that have lower traffic and/or hazardous conditions may not be identified using this ranking method because the total number of crashes is not large enough to make any reasonable sized list. However, crashes may occur at a frequent rate and increased severity level for some of these locations. Therefore, future reports should develop a methodology to normalize the data such that traffic volumes, road classifications, and/or other attributes can be used to rank problematic locations using several methods to aid transportation planners, engineers, and officials.

Table 2. Top 50 Crash Locations, 2007-2009

Rank	Intersection	Year			3-Year Total
		2007	2008	2009	
1	State Road 37 & S. Bloomfield Rd.	55	56	42	**153**
2	State Road 37 & W. 3rd St.	53	50	42	**145**
2	State Road 45/46 Bypass & N. College Ave./N. Walnut St.	38	62	45	**145**
4	State Road 37 & W. Vernal Pike	50	45	35	**130**
5	State Road 46/S. College Mall Rd. & E. 3rd St.	47	32	38	**117**
6	State Road 45 & S. Curry Pike/S. Leonard Springs Rd.	37	35	36	**108**
7	State Road 45/46 Bypass & E. 10th St.	34	39	28	**101**
8	E. 3rd St. & S. Pete Ellis Dr.	39	30	28	**97**
9	State Road 45 & S. Liberty Dr.	32	34	26	**92**
10	W. 3rd St. & S. Liberty Dr.	20	35	31	**86**
11	E. 3rd St. & S. Kingston Dr.	25	26	25	**76**
12	E. 10th St. & N. Fee Ln.	24	23	22	**69**
13	State Road 45/46 Bypass & N. Kinser Pike	25	21	21	**67**
14	W. 3rd St. & S. Gates Dr.	12	26	25	**63**
15	State Road 46 & State Road 446	22	22	17	**61**
16	W. 3rd St. & S. Curry Pike	19	21	19	**59**
17	S. Walnut St. Pike & E. Winslow Rd.	19	22	17	**58**
18	E. 3rd St. & S. Washington St.	23	8	24	**55**
19	E. 3rd St. & S. Woodscrest Dr.	15	16	21	**52**
19	E. 3rd St. & S. Smith Rd.	13	17	22	**52**
19	S. College Mall Rd. & E. Covenanter Dr.	20	19	13	**52**
22	W. 3rd St. & S. Landmark Ave.	19	12	20	**51**
23	W. 2nd St. & S. Rogers St.	11	23	16	**50**
23	E. 10th St. & N. Pete Ellis Dr./N. Range Rd.	14	14	22	**50**
25	E. 3rd St & S. Walnut St.	13	17	19	**49**
26	E. 7th St. & N. Walnut St.	17	16	15	**48**
27	E. 10th St. & N. Jordan Ave.	10	19	18	**47**
27	E. Kirkwood Ave. & S. Walnut St.	17	16	14	**47**
27	W. 10th St. & N. College Ave.	14	18	15	**47**
30	E. Grimes Ln. & S. Walnut St.	17	17	12	**46**
30	E. 3rd St. & S. Woodlawn Ave.	21	16	9	**46**
32	E. 17th St. & N. Fess Ave.	14	14	17	**45**
32	E. 3rd St. & S. Jordan Ave.	16	17	12	**45**
32	W. 2nd St. & S. College Ave.	9	13	23	**45**
35	W. 7th St. & N. College Ave.	18	11	14	**43**
35	W. 17th St./W. Arlington Rd. & N. Monroe St.	13	19	11	**43**
37	State Road 37 & W. Tapp Rd.	16	12	14	**42**
37	State Road 45/46 Bypass & N. Dunn St.	13	15	14	**42**
39	E. 10th St. & N. Union St.	16	13	12	**41**
40	E. 13th St. & N. Indiana Ave.	13	17	10	**40**
41	N. Indiana Ave. & E. Kirkwood Ave.	15	13	11	**39**
41	W. 3rd St. & S. College Ave.	13	14	12	**39**
41	State Road 45/46 Bypass & E. 17th St.	18	9	12	**39**
41	E. Rhorer Rd. & S. Walnut Street Pike	10	17	12	**39**
45	E. 2nd St. & S. College Mall Rd.	16	16	6	**38**
45	State Road 37 & S. Old State Road 37	11	11	16	**38**
47	State Road 46 & E. Eastgate Ln.	11	12	14	**37**
47	E. Atwater Ave. & S. Henderson St.	10	17	10	**37**
47	E. 3rd St. & S. Dunn St.	15	13	9	**37**
47	S. Basswood Dr. & W. Bloomfield Dr.	11	17	9	**37**
47	W. Kirkwood Ave. & N. Rogers St.	15	15	7	**37**

Crash Factors

This section summarizes the primary crash factors from 2007 to 2009. An understanding of these causes informs infrastructure investments, enforcement activities, and educational efforts. For instance, unsafe speeds can be addressed by traffic enforcement and road design, while the tendency of motorists to drive off the road can be mitigated with a guardrail or rumble strips. Similarly, enforcement and education could reduce the number of crashes attributable to alcohol.

Failure to yield right of way was the most common cause of crashes during the study period, contributing to over 2,500 crashes from 2007 to 2009. Other driver errors, following too closely, and unsafe backing were also significant crash factors. Table 3 shows the top 10 primary crash factors for 2007-2009, which account for over three-quarters of total accidents. Driving under the influence of alcohol (ranked 12th with 355 total crashes) or driving left of center (ranked 15th with 198 crashes) do not contribute to as many crashes overall, but such crashes tend to be more severe.

Table 3. Top 10 Primary Crash Factors by Severity, 2007-2009

Rank	Primary Factor	Severity				3-Year Total
		Fatal Injury	Incapacitating Injury	Non-Incapacitating Injury	No Injury/ Unknown	
1	Failure to yield right of way	1	37	611	1,882	**2,531**
2	Other driver errors	0	16	296	1,477	**1,789**
3	Following too closely	0	9	335	1,037	**1,381**
4	Unsafe backing	0	0	20	1,135	**1,155**
5	Driver distracted	1	8	157	445	**611**
6	Ran off road right	6	9	158	334	**507**
7	Disregard signal/reg sign	0	11	153	308	**472**
8	Speed too fast for weather conditions	0	2	91	369	**462**
9	Roadway surface condition	1	7	57	364	**429**
10	Animal/object in roadway	0	5	39	353	**397**

Fatalities

This section provides a focused look at motor vehicle fatalities in Monroe County from 2007 to 2009. As with previous sections, the material presented here can be useful for enforcement, education, and decision-making.

In 2009, there were seven fatalities in Monroe County (Table 4). Of these, three resulted from single-car crashes, one from a crash involving three or more cars, two from crashes involving a moped or motorcycle, and one from a crash involving a pedestrian. Over the period from 2007 to 2009, the average annual number of fatalities per 100,000 residents was 5.7 for Monroe County. This figure is well below the U.S. average of 13.4.[4]

Table 4. Fatalities by Crash Type, 2007-2009

Year	Crash Type						Total	Fatalities per 100,000 Population
	One car	Two cars	Three cars or more	Moped and Motorcycle	Bicycle	Pedestrian		
2007	3	0	0	1	0	0	**4**	**3.1**
2008	4	1	0	3	0	3	**11**	**8.5**
2009	3	0	1	2	0	1	**7**	**5.4**
Total	**10**	**1**	**1**	**6**	**0**	**4**	**22**	**5.7**

[4] U.S. Department of Transportation, National Center for Statistics & Analysis. Fatality Analysis Reporting System, Web-Based Encyclopedia. http://www-fars.nhtsa.dot.gov/ Accessed on May 7, 2010.

Fatal Crash Locations

This section summarizes the locations for crashes that resulted in fatalities. From 2007 to 2009, there were 21 fatal crashes, which resulted in 22 fatalities. The locations of these fatal crashes are identified in Table 5. Location information will aid transportation planners and engineers to identify problematic locations. Fatalities are a major factor in determining HSIP funding eligibility (see the appendix section for more information).

Table 5. Fatal Crashes by Type and Location, 2007-2009

Location	Crash Type				
	One Car	Two Cars	Three or More Cars	Moped or Motorcycle	Pedestrian
Monroe County (exact location unknown)				1	
Curry Pike & Profile Pkwy.					1
Airport Rd. from Cave Rd. to Kirby Rd.	1				
Anderson Rd. from Dora Rd. to Lydy Rd.				1	
S Johnson Ave. & Beaumont Ln.					1
E 13th St. & N. Fee Ln.					1
E Braeside Dr. & N. Pete Ellis Dr.	1				
E Ellis Rd. & N. Showers Rd.				1	
E. State Road 46 & E. Trailway Dr.	1				
N. Pioneer Ln. & W. Woodyard Rd.	1				
N. Thomas Rd. & W. Vernal Pike	1				
State Road 48 & S. Cave Rd.	1				
State Road 45 from Airport Rd. to Leonard Springs Rd.					1
State Road 46 from Flatwoods Rd. to Red Hill Rd.			1		
State Road 48 from Vernal Pike to Garrison Chapel Rd.				1	
Vernal Pike from State Road 48 to Oard Rd.	1				
W 3rd St. & S. Patterson Dr.				1	
W. Eller Rd. & S. Garrison Chapel Rd.				1	
W. Howard Rd. & N. Starnes Rd.	1				
State Road 45 & W. Old State Road 45		1			
W. Prospect St. & S. Rogers St.	1				

Bicycle and Pedestrian Crashes

This section reports on the number of bicycle and pedestrian crashes in Monroe County from 2007 to 2009. Such crashes are an important consideration in Bloomington and Monroe County due to a relatively high number of non-motorized trips in the area. For instance, the 2000 U.S. Census reported that 2.7% of commuters in Bloomington use a bicycle as their primary mode of transportation, while 14.5% walked. By comparison, 0.3% of Indiana commuters reported bicycling and 2.4% reported walking as their primary modes. Individuals using these modes of transportation are particularly vulnerable to injury.

In 2009, there were 37 reported crashes involving a cyclist and 51 involving a pedestrian (Table 1). Of these, one pedestrian was killed. There were also six pedestrian and one bicycle crash in 2009 that resulted in incapacitating injuries. Over the period from 2007 to 2009, 294 pedestrian and bicycle crashes were reported, resulting in four pedestrian fatalities. It is well understood that bicycle and pedestrian crashes more often result in injury when compared with other crash types, thus there is a need to reduce the frequency and severity of these crashes.

Over the past several years, Jordan Avenue has emerged as a high crash corridor for pedestrians and cyclists, as illustrated in Table 6. Four of the top ten ranked locations are along a 1/2 mile stretch of Jordan Avenue between 3rd Street and 10th St.

Table 6. Top 15 Bicycle and Pedestrian Crash Locations, 2007-2009

Rank	Intersection	Crash Type		Total
		Bicycle	Pedestrian	
1	E. 7th St. & N. Jordan Ave.	5	1	6
2	E. 3rd St. & S. Woodscrest Dr.	2	2	4
3	E. 3rd St. S. Walnut St.	1	3	4
4	E. 3rd St. & S. Jordan Ave.	2	2	4
5	W. 7th St. & N. College Ave.	2	2	4
6	E. 10th St. & N. Jordan Ave.	2	2	4
7	W. Kirkwood Ave. & N. Rogers St.	1	3	4
8	E. 10th St. & N. Union St.	1	2	3
9	E. 10th St. & N. Fee Ln.	2	1	3
10	E. Jones Ave. & S. Jordan Ave.	3	0	3
11	W. 6th St. & N. Rogers St.	1	2	3
12	N. Dunn St. & E. Kirkwood Ave.	0	3	3
13	N. Fee Ln. & E. Law Ln.	2	1	3
14	N. Indiana Ave. & E. Kirkwood Ave.	1	2	3
15	E. 17th St. & N. Walnut St.	2	1	3

Conclusion

This report has demonstrated a number of meaningful trends relating to motor vehicle crashes in Monroe County. The information should inform transportation decision-making and, ultimately, lead to a safer, more efficient transportation system.

Some problem areas noted in this and past reports have already been improved or are in the process of being addressed. For example, in 2009, the City of Bloomington completed improvements to the intersection of 17th Street & Fee Lane. Additionally in 2009, Monroe County finished improvements to the dangerous curve at Rogers Road and Smith Road. Safety improvements will commence in 2011 for Atwater Avenue and Henderson Street. These projects are expected to reduce the frequency and severity of crashes and it will be noteworthy to highlight crash data for these locations in future reports.

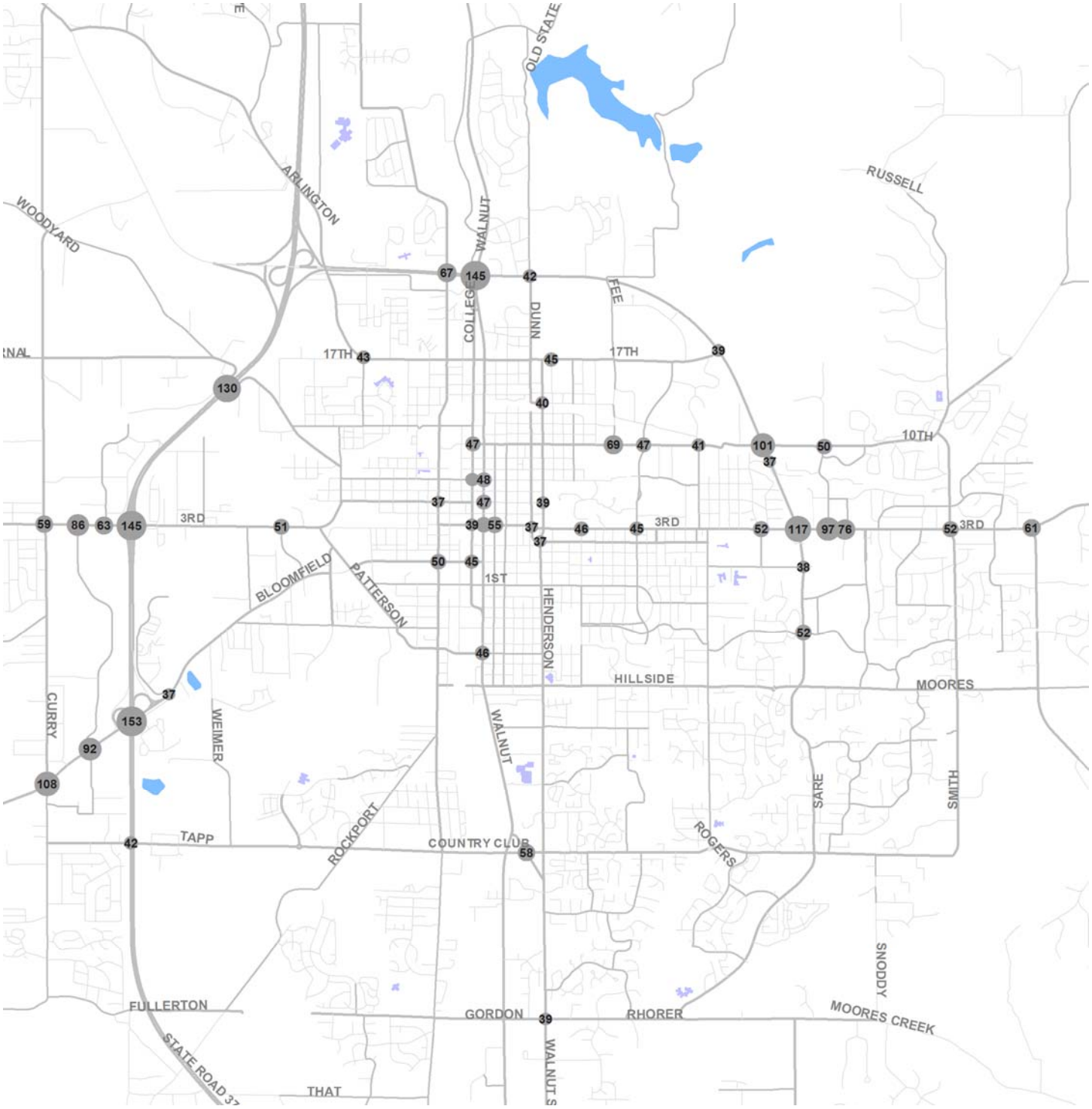
There are many additional locations that will require further study to see if physical improvements could be implemented to improve safety. Several intersections along State Roads (37, 45, 46, Bypass) continue to be problematic due to the sheer frequency of crashes. Due to jurisdictional boundaries at these locations, state and local officials, engineers, and staff will need to coordinate targeted safety improvements and reach agreements before any improvements can occur. Another area of notable concern is the Jordan Avenue corridor between 10th and 3rd Street, where high concentrations of bicycle and pedestrian crashes have been noted. This corridor presents an opportunity for targeted bicycle and pedestrian safety improvements.

Data and analysis on other attributes are included within the report (e.g. bus, moped, motorcycle, fatalities, causes, locations, severity of crashes), providing additional information to identify trends and/or areas of concern. Future versions of this report may consider a more detailed analysis of the circumstances of fatal crashes and the characteristics of individuals involved in fatal crashes. An improved understanding of these factors would help the community to better focus its efforts on reducing motor vehicle fatalities, which is one of the primary purposes of this report.

Future versions of the Crash Report should evaluate locations that implemented safety improvements. As mentioned above, this would include the 17th and Fee intersection, the Rogers Road and Smith Road curve, and the Atwater Avenue and Henderson Street intersection. Evaluation of past and future crash data at these, and other, locations will further aid in implementing appropriate and effective mitigation strategies to reduce crashes. Agencies receiving funding through the HSIP will also be required to analyze crash trends before and after road improvements. This report has taken the first step by identifying problematic locations. It is expected that transportation planners, engineers, and officials together will use this information to prioritize locations that need immediate attention, and possibly seek Highway Safety Improvement Program funding or other means (enforcement, education) to improve safety.

Appendix

Figure A1. Top 50 Total Crash Locations, 2007-2009



Issued: September, 2010

Figure A2. Intersections with Three or More Bicycle and Pedestrian Crashes, 2007-2009

Figure A3. Fatal Crashes, 2007-2009

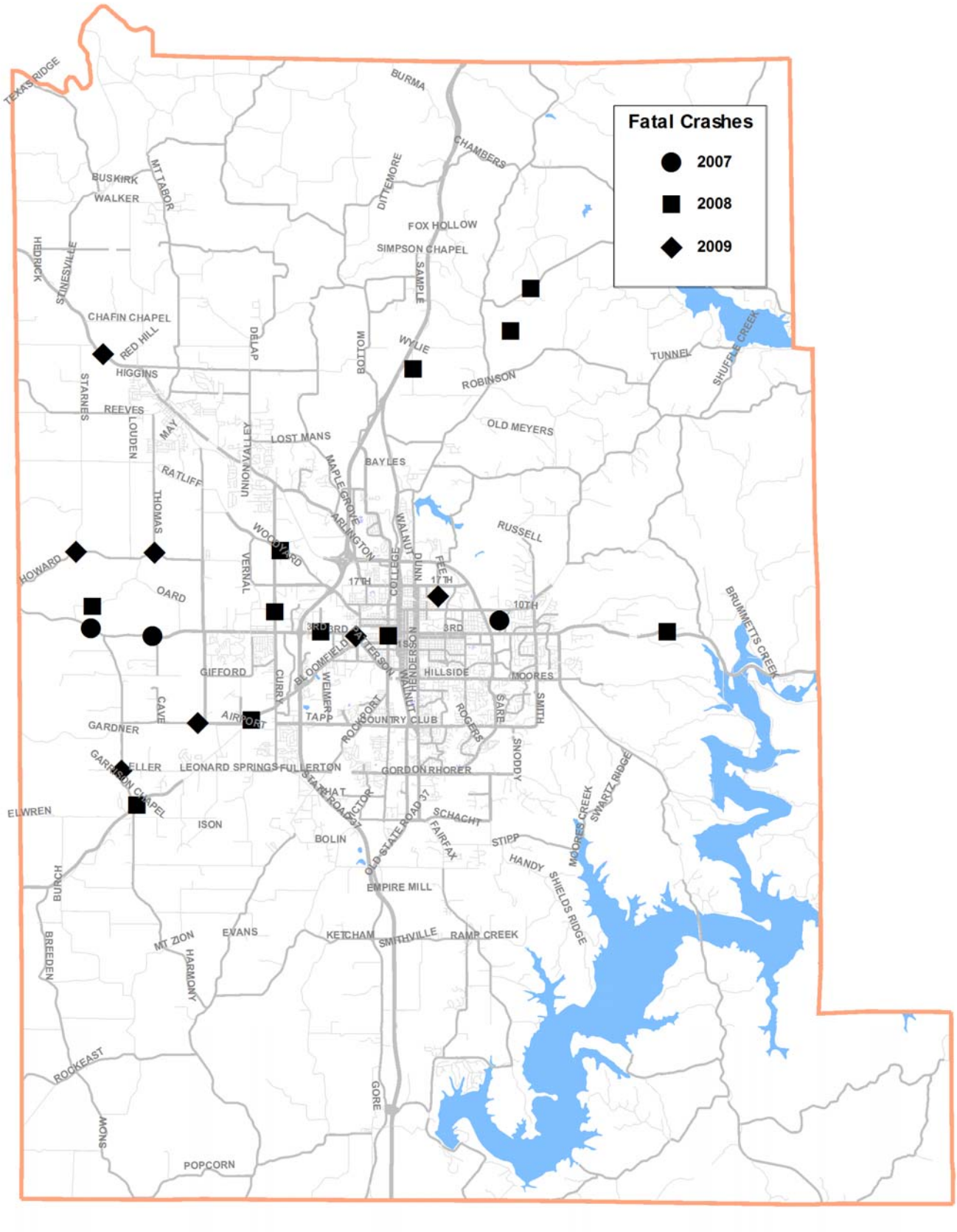


Figure A4. Fatalities by Gender and Crash Type, 2007-2009

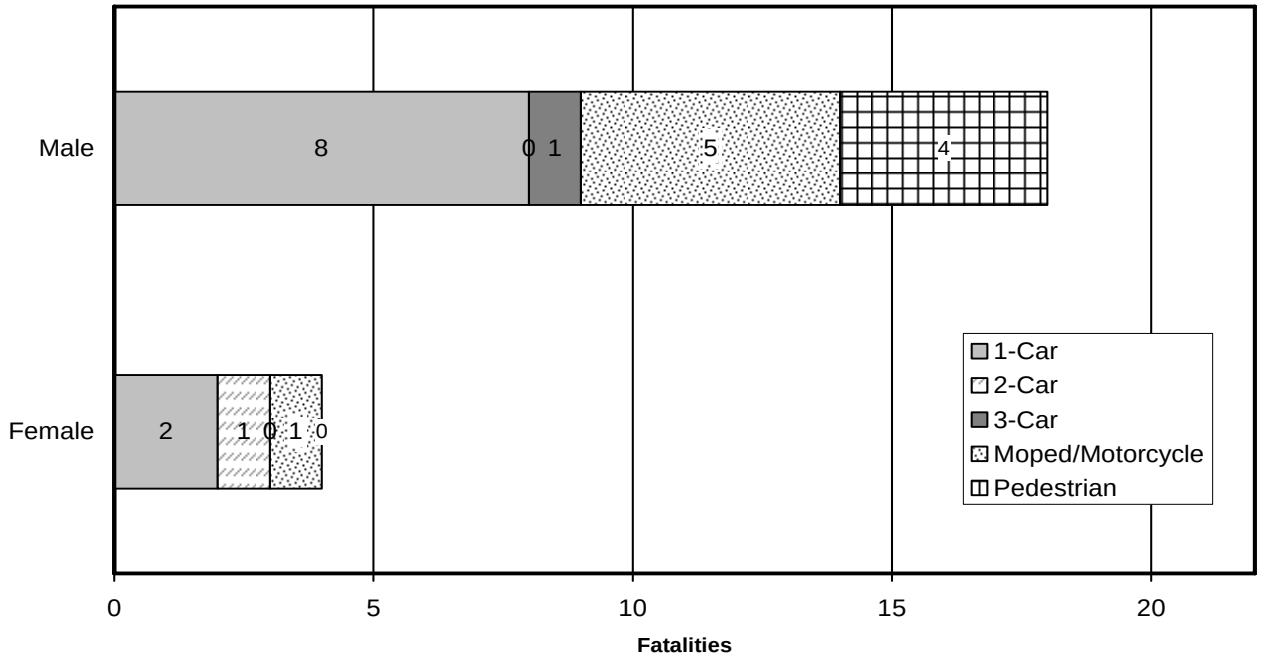
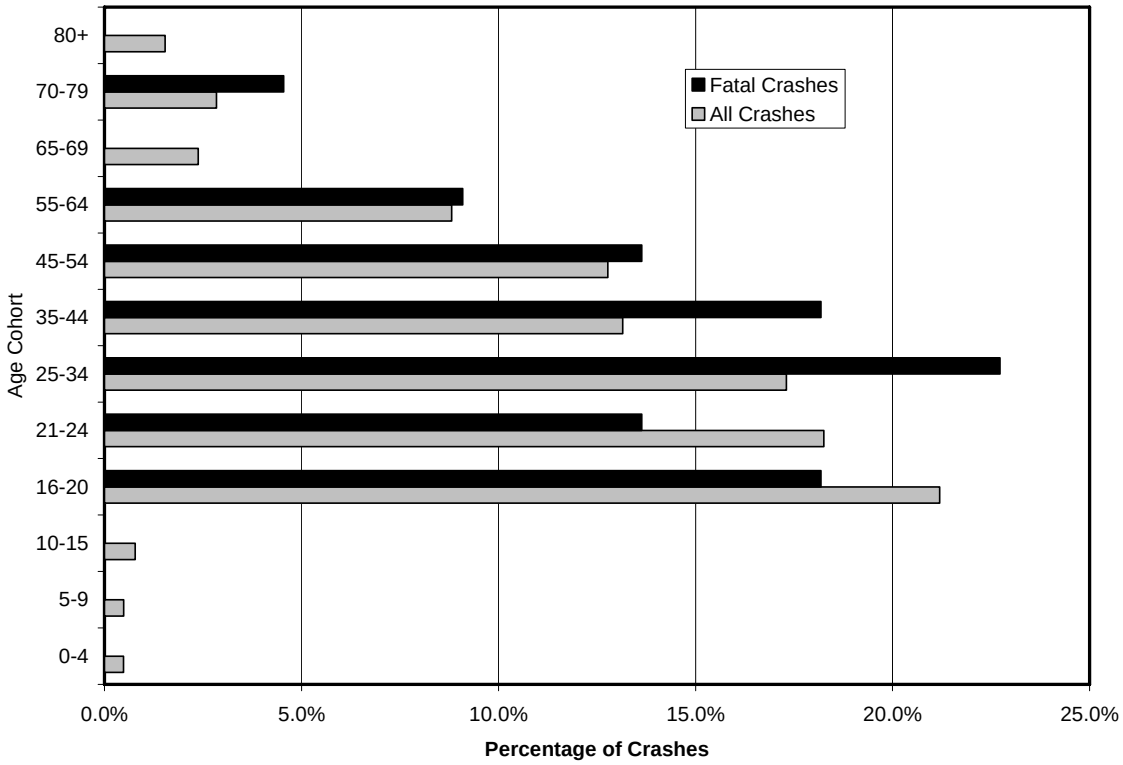


Figure A5. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age Class, 2007-2009 [5]



[5] For the purposes here, individuals whose age was not reported were excluded from the total number of individuals.

HSIP Eligibility List

The Highway Safety Improvement Program (HSIP) is a program that provides federal funding for areas with a high incidence of crashes, as identified through the annual crash reports. The intent of the funding is to leverage effective safety improvements in a timely fashion to reduce the severity and frequency of crashes. Below is the list of eligible locations for HSIP funding located along local roads. Other locations not listed below may be eligible for HSIP funding and additional information can be found within the detailed HSIP application and procedures.

Table A1. Eligible HSIP Locations, 2007 – 2009

Rank	Location	Fatal & Incapacitating Injury Crashes	Total Crashes	Fatal	Incapacitating	Non-incapacitating	Property Damage
1	S CURRY PIKE @ W GIFFORD RD	3	13	0	3	3	7
2	E 10TH ST @ N SUNRISE DR	2	30	0	2	3	25
3	E 3RD ST @ S BALLANTINE RD	2	19	0	2	4	13
4	S WALNUT ST @ S WALNUT STREET PIKE	2	18	0	2	0	16
5	W 3RD ST @ S PATTERSON DR	2	18	1	1	2	14
6	E HILLSIDE DR @ S WALNUT ST	2	12	0	2	2	8
7	N CURRY PIKE @ W JONATHAN DR	2	11	0	2	4	5
8	S FAIRFAX RD @ E SMITHVILLE RD	2	4	0	2	1	1
9	S WALNUT STREET PIKE @ E WINSLOW RD	1	58	0	1	9	48
10	E 3RD ST @ S WALNUT ST	1	49	0	1	6	42
11	E ATWATER AVE @ S HENDERSON ST	1	37	0	1	11	25
12	N COLLEGE AVE @ W KIRKWOOD AVE	1	36	0	1	3	32
13	W GORDON PIKE @ S WALNUT ST	1	36	0	1	6	29
14	W 3RD ST @ S KIMBLE DR	1	34	0	1	7	26
15	E 4TH ST @ S WALNUT ST	1	32	0	1	6	25
16	E MILLER DR @ S WALNUT ST	1	30	0	1	8	21
17	E 17TH ST @ N INDIANA AVE	1	29	0	1	7	21
18	W BLOOMFIELD RD @ S LANDMARK AVE	1	29	0	1	4	24
19	E 3RD ST @ S LINCOLN ST	1	28	0	1	4	23
20	E 13TH ST @ N FEE LN	1	27	1	0	5	21
21	E 17TH ST @ N WALNUT ST	1	24	0	1	5	18
22	W 3RD ST @ S YANCY LN	1	24	0	1	7	16
23	W 3RD ST @ S FRANKLIN RD	1	21	0	1	5	15
24	E 10TH ST @ N INDIANA AVE	1	19	0	1	6	12
25	E KIRKWOOD AVE @ N LINCOLN ST	1	19	0	1	2	16
26	E ROGERS RD @ S SARE RD	1	17	0	1	3	13
27	W GOURLEY PIKE @ N KINSER PIKE	1	16	0	1	2	13
28	E HILLSIDE DR @ S WOODLAWN AVE	1	15	0	1	1	13
29	N ADAMS ST @ W VERNAL PIKE	1	15	0	1	2	12
30	N ELM ST @ W KIRKWOOD AVE	1	14	0	1	1	12
31	E 10TH ST @ N WASHINGTON ST	1	13	0	1	3	9
32	E 17TH ST @ N LINCOLN ST	1	13	0	1	4	8
33	E 3RD ST @ S UNION ST	1	13	0	1	1	11
34	E BRAESIDE DR @ N PETE ELLIS DR	1	12	1	0	2	9
35	W 2ND ST @ S WALKER ST	1	12	0	1	6	5
36	N THOMAS RD @ W VERNAL PIKE	1	10	1	0	2	7
37	S FAIRFAX RD @ E SCHACHT RD	1	10	0	1	3	6
38	S OLD STATE ROAD 37 @ S ORCHARD LN	1	10	0	1	6	3
39	S CURRY PIKE @ W DOYLE AVE	1	9	0	1	2	6
40	S ROGERS ST @ W THAT RD	1	9	0	1	2	6
41	W 17TH ST @ N LINDBERGH DR	1	9	0	1	1	7
42	W 3RD ST @ S MADISON ST	1	9	0	1	1	7
43	N CURRY PIKE @ W PROFILE PKWY	1	7	1	0	1	5
44	E BAYLES RD @ N STATE ROAD 37 BUSINESS	1	7	0	1	0	6
45	E DILLMAN RD @ S OLD STATE ROAD 37	1	7	0	1	1	5
46	W ARLINGTON RD @ W STOUTES CREEK RD	1	7	0	1	0	6
47	W FULLERTON PIKE @ S ROCKPORT RD	1	7	0	1	1	5
48	E 11TH ST @ N INDIANA AVE	1	6	0	1	1	4
49	E DODDS ST @ S WASHINGTON ST	1	6	0	1	1	4
50	N FRITZ DR @ N WALNUT ST	1	6	0	1	1	4