Bloomington/Monroe County
Metropolitan Planning Organization

Crash Report

Calendar Years 2006 through 2008

June 2010

BLOOMINGTON • MONROE COUNTY
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Issued: June 2010

Executive Summary

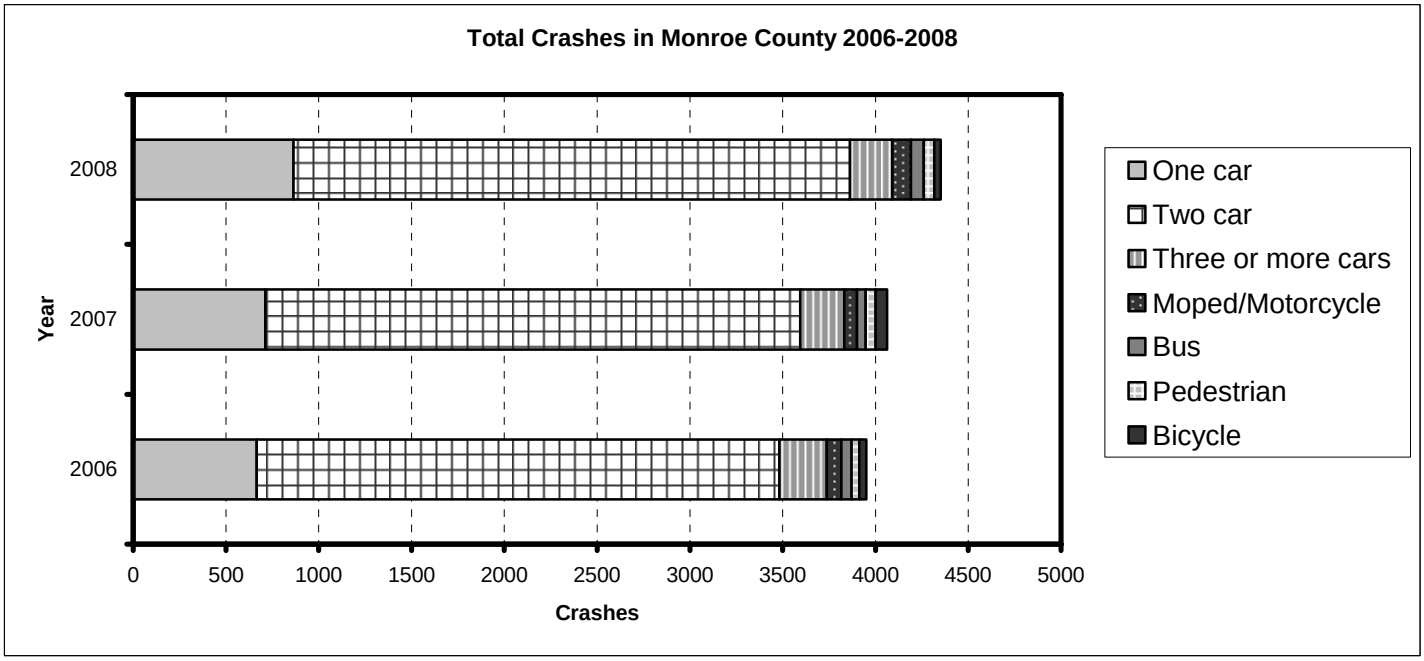
The 2008 Bloomington/Monroe County MPO Crash Report continues the series of ongoing annual reporting on the predominant causes and trends of motor vehicle crashes in Monroe County from 2006 to 2008. The Bloomington/Monroe County Metropolitan Planning Organization (MPO) issues an annual crash report that covers a three year timeframe each year such that effective time-series analyses of crashes within Monroe County are documented.

The findings of this report, and past reports, have been compiled to provide information to the Citizen's Advisory Committee, Technical Advisory Committee, and Policy Committee of the MPO. Additionally, the report(s) 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 of this report, detailed tables, charts, and summaries are provided to highlight information on the frequency, severity, and other related characteristics of crashes that occurred from 2006 to 2008. Additionally, the appendix contains information and analysis aimed to assist target user groups of this report that other users may also find beneficial.

Summary of Crash Trends 2006 to 2008

A total of 12,366 crashes were reported between 2006 and 2008 (Table 1). This is slightly higher (3.4%) than the 11,961 crashes reported between 2005 and 2007. Total crashes for 2008 marked a 7.1% increase over total crashes for 2007. However, annual crash totals may decline for calendar year 2009 with recent national trends in lower vehicle miles traveled together with higher gas prices. 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 total 12,366 crashes provides useful insights to trends involving pedestrians, bicyclists, buses, mopeds/motorcycles, and crashes that resulted in fatalities. Over the course of the three years analyzed, there were 30 fatalities (Table 4). This data is consistent with previous trends, but the total fatal crashes were slightly more than the 28 fatalities reported in the previous three year period. This is a noteworthy statistic to keep track of in future reports because typically fatality totals have ranged from 4 to 15 annually. Of the 30 fatalities, half (15) were from single vehicle crashes, seven involved mopeds/motorcycles, four involved two or more cars, and four involved pedestrians.

The peak frequency rate 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). Similarly the weekend also follows a predictable pattern where the crash rate has a more even distribution through the day and early evening hours, with the exception being the hours between 7pm and 4am in which the weekend experiences a higher crash frequency than the rest of the week. Friday continued to have the highest crash frequency, while Sunday also continued to have the lowest number of crashes (Figure 2).

State highways are predominantly featured in the list of problematic intersections (Table 2). This could be attributable to several factors, but higher traffic volumes on these roads are likely a primary factor. 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 do not involve state managed highways, such as 10th Street and Fee Lane, but show a high number of crashes should also be considered for safety improvements. The only road segment that had high crash numbers is Anderson Rd. between Dora Road and Lydy Road which had 2 fatalities. Other locations may be eligible for future safety improvements with a more in-depth analysis. Future reports need to develop a reliable methodology to normalize the total numbers of crashes for each location to volumes of traffic, road classification, and/or some other value so ranking problematic locations and intersections are 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 2,595 incidents (Table 3). This may be due to poor conditions such as intersection design, sight lines, signage, or pavement markings. Other leading causes include reaction to other driver behaviors, following too closely, and unsafe backing which together total 4,342 collisions. These causes may be reduced through law enforcement and education efforts as well as through using some physical improvements that can mitigate these causes. Running off the right side of the road and speeding in adverse weather rank in the top ten causes with a total of 898 incidents. These types of causes do present opportunities for physical safety improvements such as guard rails, rumble strips, and interactive signage and should be explored further to possibly reduce crashes of this nature.

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. Three of the top five 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 yet to materialize, but should pay benefits 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 to 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 BMCMPO requires Local Public Agencies (LPAs) to use crash data as part of the Highway Safety Improvement Program (HSIP – a detailed section is included in the appendix of this report). This program provides federal funding to target areas with high incidences of crashes. It is the overall goal of HSIP to reduce the frequency and severity of crashes at problematic locations. Through annual reporting and analysis, effective mitigation strategies can be implemented to further curtail crashes within Monroe County.

The report uses two time periods for analysis: 2008 and 2006-2008. Data from 2008 alone is used to give a "snapshot" of crash statistics in Monroe County, while data from 2006 to 2008 is used to illustrate trends and to establish baseline values. Additionally, it is often necessary to consider a longer time horizon (2006-2008) where data from a single year appears to be random. This is typically the case for bicycle and pedestrian crashes, fatalities and incapacitating injuries, and location analysis, where the number of crashes or individuals is comparatively small.

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 based on the collision, 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

[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.

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 fatalities?).

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, and incomplete data entry undoubtedly introduced some error into the results. Therefore, results should not be interpreted rigidly.

A significant effort was made to correct data errors and validate results (e.g. location, geo coding, street names, etc.). It is important to note that the methodology used to assign a crash to a location was improved for this report. This will account for fluctuations in crash assignments between the last report and this report. Even though the new methodology resulted in different rankings than in the past, the list of problematic intersections remains relatively consistent. Consequently, some minor inconsistencies exist when comparing crash reports over several years because these quality control measures change when compared from previous reports. Therefore, it is understood that the most recent Crash Report issued reflects the best and most accurate crash information.

Once the 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, 2006-2008") shows how many crashes resulted in a fatal injury in 2008, but it would be incorrect to interpret this column as the number of fatalities in 2008, 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 2006-2008. These factors reflect trends in the overall safety of the transportation system.

In 2008, a total of 4,352 motor vehicle crashes were reported in Monroe County (Table 1). Of these, 11 resulted in one or more fatalities, while 47 caused incapacitating injuries. For the vast majority of crashes (3,460), injuries were not reported. Two-car crashes were the most common, comprising 68.9% of the total. One-car crashes and those involving three or more cars were also common, accounting for 19.9% and 5.2% of total crashes reported, respectively. Pedestrian, cyclist, moped/motorcycle, and bus crashes were much less frequent..

The overall number of crashes shows a slight increase each year from 2006 to 2008 with an average of 4,122 per year. The portion of crashes resulting in fatalities or incapacitating injury has shown a roughly 17% decrease year over year from 2006 to 2008. This figure should be monitored in future years to see if this trend continues.

Table 1. Crash by Type and Severity, 2006-2008

	Crash Type	Severity				Annual Total	Percent of Annual Total
		Fatal Injury	Incapacitating Injury	Non-incapacitating	No injury/unknown		
2006	One car	8	15	197	446	**666**	**16.9%**
	Two car	1	17	584	2215	**2817**	**71.3%**
	Three or more cars	0	10	99	145	**254**	**6.4%**
	Moped/Motorcycle	2	11	51	16	**80**	**2.0%**
	Bus	0	1	10	44	**55**	**1.4%**
	Pedestrian	1	10	29	1	**41**	**1.0%**
	Bicycle	0	4	33	1	**38**	**1.0%**
	Total	**12**	**68**	**1003**	**2868**	**3951**	**100.0%**
	Percent of Annual Total	**0.3%**	**1.7%**	**25.4%**	**72.6%**	**100.0%**	
2007	One car	2	10	161	540	**713**	**17.5%**
	Two car	0	28	495	2359	**2882**	**70.9%**
	Three or more cars	0	3	83	150	**236**	**5.8%**
	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**	**881**	**3114**	**4063**	**100.0%**
	Percent of Annual Total	**0.1%**	**1.6%**	**21.7%**	**76.6%**	**100.0%**	
2008	One car	4	10	170	680	**864**	**19.9%**
	Two car	1	19	449	2530	**2999**	**68.9%**
	Three or more cars	0	4	73	149	**226**	**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	3	**35**	**0.8%**
	Total	**11**	**47**	**834**	**3460**	**4352**	**100.0%**
	Percent of Annual Total	**0.3%**	**1.1%**	**19.2%**	**79.5%**	**100.0%**	
3-Year	**Total**	**26**	**180**	**2718**	**9442**	**12366**	
	Percent of 3-Year Total	**0.2%**	**1.5%**	**22.0%**	**76.4%**	**100.0%**	

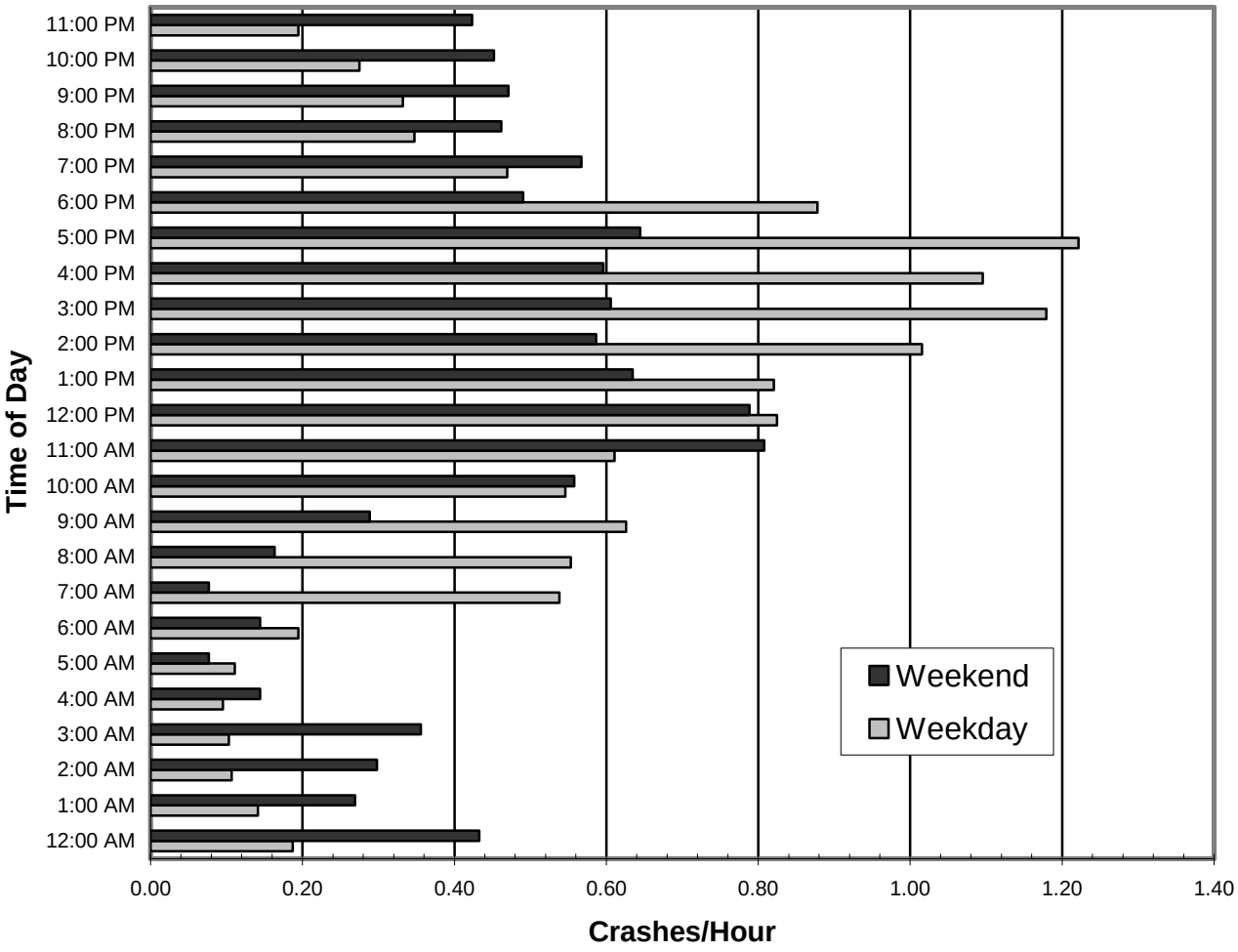
Time of Crashes

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 for preparatory measures. Additionally, decision makers may use this information in an attempt to reduce peak crash times.

On weekdays in 2008, 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 roughly 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).

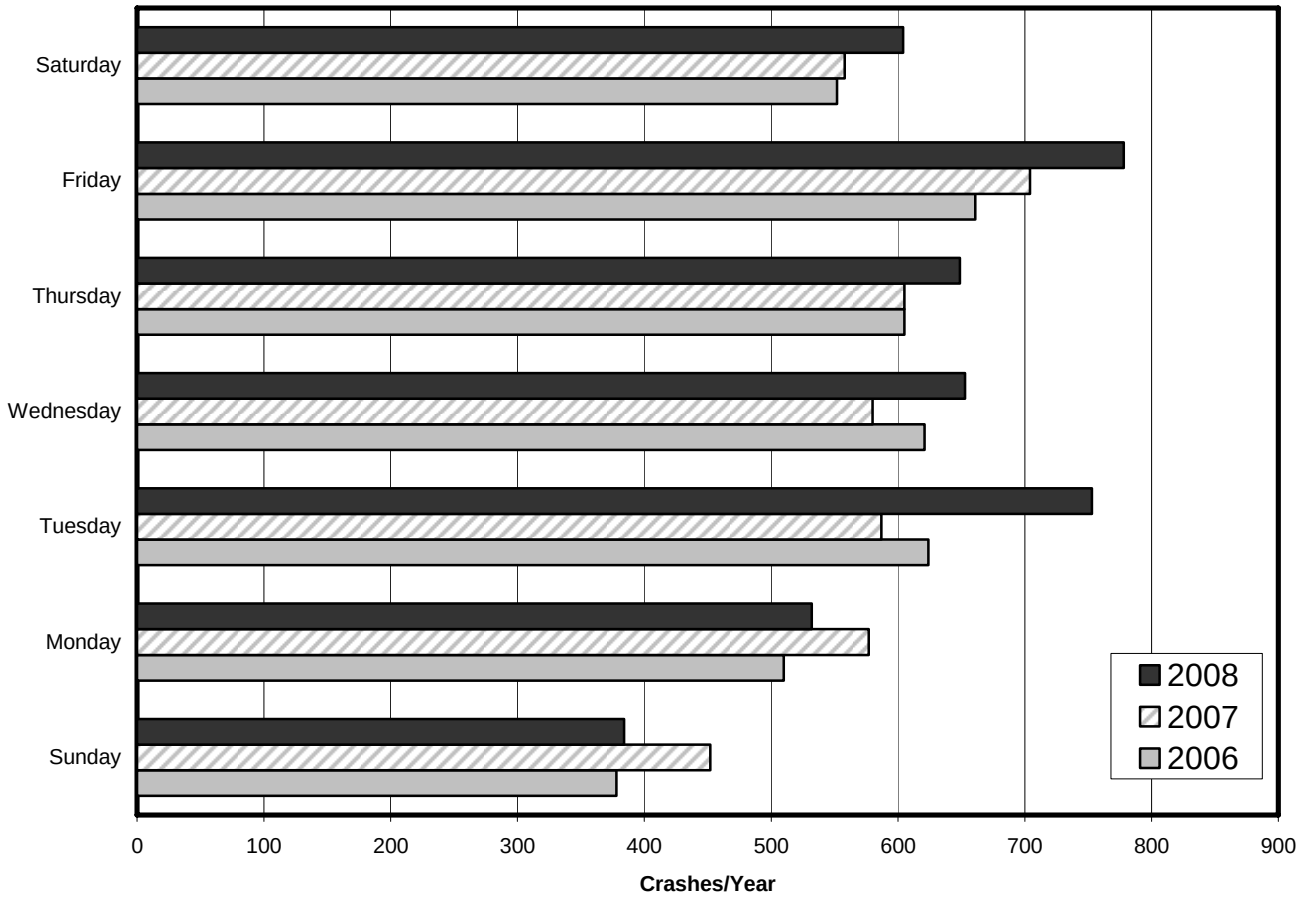
Figure 1. Crashes per Hour by Time of Day, 2008 [3]



[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, 2006-2008



Crash Locations

This section addresses the spatial distribution of crashes in Monroe County, highlighting problematic intersections and corridors by ranking locations. The ranking method used is based on the total number of crashes 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 2008, the intersection with the greatest number of total crashes was N. College Avenue/N. Walnut Street and State Road 45/46 Bypass, where 63 crashes occurred (Table 2). However, the intersection of Bloomfield Rd at State Road 37 had the most crashes between 2006 and 2008 with 147 crashes. Intersection design factors, such as limited visibility, topographic constraints, and awkward turning movements, may also contribute to greater crash frequency at some these intersections and will require further investigation.

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 comparatively 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. Total Crashes Ranked by Location from 2006-2008

Rank	Intersection	Year			3-Year Total
		2006	2007	2008	
1	W Bloomfield Rd at S SR 37 Ramp	43	50	54	**147**
2	W 3rd St at S SR 37 Ramp	44	50	46	**140**
3	N SR 37 at W Vernal Pike	44	50	45	**139**
4	N College Ave/N Walnut St at E SR 45/46 Bypass	23	38	63	**124**
5	E 3rd St/S College Mall Rd at S SR 46	34	49	33	**116**
6	E 10th St at N SR 45/46 Bypass	41	31	41	**113**
7	E 3rd St at S Pete Ellis Dr	33	39	30	**102**
8	S Liberty Dr at W SR 45	25	32	34	**91**
9	S Curry Pike / S Leonard Springs Rd at W SR 45	17	37	35	**89**
10	E 10th St at N Fee Ln	32	24	23	**79**
11	E 3rd St at S Kingston Dr	23	25	26	**74**
12	W 3rd St at S Gates Dr	34	12	26	**72**
13	S Walnut Street Pike at E Winslow Rd	28	19	22	**69**
14	W 3rd St at S Liberty Dr.	13	20	32	**65**
15	E 10th St at N Jordan Ave	34	10	19	**63**
16	N Kinser Pike at W SR 45/46 Bypass	12	25	21	**58**
17	SR 446 at SR 46	11	22	22	**55**
18	Grimes Ln at S Walnut St	20	17	17	**54**
19	E 3rd St at S Smith Rd	22	13	17	**52**
20	W 3rd St at S Landmark Ave	20	19	12	**51**
21	7th St at N Walnut St	17	17	16	**50**
22	E 3rd St at S Woodlawn Ave	12	21	16	**49**
22	W 3rd St at S Curry Pike	9	19	21	**49**
24	E Atwater Ave at S Henderson St	21	10	17	**48**
24	Kirkwood Ave at S Walnut St	15	17	16	**48**
24	W 17th St / Arlington Rd at N Monroe St	16	13	19	**48**
27	E 2nd St at S College Mall Rd	15	16	16	**47**
27	E 3rd St at S Jordan Ave	14	16	17	**47**
27	S College Mall Rd at E Covenanter Dr	8	20	19	**47**
30	E 17th St at N SR 45/46 Bypass	20	18	8	**46**
30	E 3rd St at S Washington St	15	23	8	**46**
30	E Eastgate Ln at N SR 46 Bypass	17	13	16	**46**
33	E 10th St at N Pete Ellis / Range Rd	17	14	14	**45**
33	E 13th St at N Indiana Ave	15	13	17	**45**
33	E 3rd St at S Highland Ave	16	20	9	**45**
33	W 2nd St at S Rogers St	11	11	23	**45**
33	W 3rd St at S College Ave	18	13	14	**45**
38	E 10th St at N Union St	15	16	13	**44**
38	3rd St at S Walnut St	14	13	17	**44**
38	W 7th St at N College Ave	15	18	11	**44**
41	W 10th St at N College Ave	11	14	18	**43**
42	E 17th St at N Fess Ave	11	14	14	**39**
42	N Dunn St at E SR 45/46 Bypass	11	13	15	**39**
42	Indiana Ave at E Kirkwood Ave	11	15	13	**39**
45	E 3rd St at S Dunn St	10	15	13	**38**
45	E 3rd St at S Indiana Ave	17	13	8	**38**
45	W Kirkwood Ave at Rogers St	8	15	15	**38**
48	E 17th St at N Fee Ln	12	18	7	**37**
48	E 3rd St at S Overhill Dr	13	13	11	**37**
48	E 3rd St at Woodscrest Dr	6	15	16	**37**
48	E Rhorer Rd at S Walnut Street Pike	10	10	17	**37**
48	SR 37 at S. Victor Pike	16	14	7	**37**
48	W Gordon Pike at Old SR 37 / S Walnut St	8	11	18	**37**

Crash Factors

This section summarizes the primary crash factors from 2006 to 2008. 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. Driving under the influence of alcohol (ranked 12th with 343 total crashes) or driving while fatigued (ranked 22nd with 83 crashes) do not contribute to as many crashes as the more common driver errors, but such crashes tend to be more severe.

Failure to Yield Right of Way was the most common cause of crashes during the study period, contributing to almost 2,600 crashes from 2006 to 2008. Other driver errors (such as reacting to other driver behaviors), following too closely, and unsafe backing were also significant. Table 3 shows the top 10 primary crash factors for 2006-2008, which account for over three-quarter of total accidents.

Table 3. Total Crashes Ranked by Primary Factor with Severity, 2006-2008

Rank	Primary Factor	Severity				3-Year Total
		Fatal Injury	Incapacitating Injury	Non-Incapacitating Injury	No Injury/ Unknown	
1	Failure to yield right of way	0	41	673	1881	**2595**
2	Other (driver)	2	21	350	1508	**1881**
3	Following too closely	0	10	336	1009	**1355**
4	Unsafe backing	0	1	32	1073	**1106**
5	Driver distracted	1	8	151	412	**572**
6	Disregard signal/sign	0	12	181	336	**529**
7	Ran off road to the right	11	9	147	299	**466**
8	Speed too fast for weather conditions	0	3	95	334	**432**
9	Improper turning	0	2	47	356	**405**
10	Roadway surface condition	1	5	54	312	**372**

Fatalities

This section provides a focused look at motor vehicle fatalities in Monroe County from 2006 to 2008. This information provides critical insight into the nature of fatal crashes and the victims of these crashes. As with previous sections, the material presented here can be useful for enforcement, education, and decision-making.

In 2008, there were eleven fatalities (Table 4) in Monroe County as a result of eleven different crashes with fatalities (Table 1). Of these, four resulted from single-car crashes, one from multiple car crashes, three from crashes involving a moped or motorcycle, and three from crashes involving a pedestrian. Typically the county has had 9 to 15 fatalities annually since 2003 and the data for 2008 shows a resumption of this trend after a significant decrease in 2007.

Over the period from 2006 to 2008, the average annual number of fatalities per 100,000 residents was 7.8 for Monroe County. This figure is well below the U.S. average of 13.4 for the same time period[4]. Past reports demonstrated a slight decline in this figure since 2003. This report marks a reversal of this trend or perhaps a leveling off since the fatalities per 100,000 went up slightly from 7.4 (last report) to 7.8 (this report).

[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.

Table 4. Fatalities by Crash Type, 2006-2008

Year	Crash Type					Annual Total	Fatalities per 100,000 Population
	One car	Two cars or more	Moped and Motorcycle	Bicycle	Pedestrian		
2006	8	3	3	0	1	**15**	**11.84**
2007	3	0	1	0	0	**4**	**3.13**
2008	4	1	3	0	3	**11**	**8.51**
Total	**15**	**4**	**7**	**0**	**4**	**30**	**7.82**

Fatalities by Location

This section summarizes the locations for crashes that resulted in fatalities. Reducing fatalities to zero is an attainable goal through law enforcement, education, and safety improvements. There were 25 crashes that resulted in 30 fatalities from 2006 to 2008. These locations are identified in Table 5. Location information, such as this, will aid transportation planners, engineers, and officials to identify problematic locations. This is only the second year to report crash type with fatalities by location and thus it is difficult to draw any conclusions at this time. However, fatalities are a major component in determining the funding awarded through HSIP (see the appendix section for more information) and this information may be useful to evaluate these locations for possible funding.

Table 5. Fatal Crashes by Crash Type by Location, 2006-2008

Location	Crash Type				
	One Car	Two or More Cars	Moped or Motorcycle	Bicycle	Pedestrian
Anderson Rd from Dora Rd to Lydy Rd	1		1		
N Curry Pike at Broadway Ave					1
S Johnson Ave at Beaumont Ln					1
E Braeside Dr at N Pete Ellis Dr	1				
E Ellis Rd at N Showers Rd			1		
E SR 46 at E Trailway Dr	1				
Fairfax Rd from Harbor Dr to Cleve Butcher Rd	1				
N Pioneer Ln at W Woodyard Rd	1				
S Cave Rd at W SR 48	1				
S Fox Chase Run at E Rhorer Rd	1				
S Knightridge Rd at S Leco Ln			1		
SR 37 from Burma Rd to Bryants Creek Rd	1				
SR 45 from Airport Rd to Leonard Springs Rd					1
SR 46 from Kent Rd to Brummetts Creek Rd		1			
SR 48 from Vernal Pike to Garrison			1		
Vernal Pike from SR 48 to Oard Rd	1				
W Arlington Rd at N Rajumi Dr					1
W Church Ln at S Southway Dr	1				
W Fluck Mill Rd at S Victor Pike	1				
W Gourley Pike at N Kinser Pike	1				
W Howard Rd at W Vernal Pike	1				
W Old SR 45 at W SR 45		1			
W Prospect St at S Rogers St	1				
W SR 46 at E Temprence St			1		

Bicycle and Pedestrian Crashes

This section reports on the number of bicycle and pedestrian crashes in Monroe County from 2006 to 2008. 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% walk. By comparison, 0.3% of Indiana commuters reported bicycling and 2.4% reported walking as their primary modes. In addition, individuals using these modes of transportation are particularly sensitive to injury. Anecdotal evidence suggests that more commuters in Bloomington are biking and walking as a primary mode of transportation, which further supports the need to address safety concerns and reduced crash incidents.

In 2008, there were 35 reported crashes involving a cyclist and 56 involving a pedestrian (Table 1). Of these, three pedestrians were fatally injured. There were also four pedestrian and one bicycle crashes in 2008 that resulted in incapacitating injuries. Over the period from 2006 to 2008, 286 pedestrian and bicycle crashes were reported, resulting in four pedestrian fatalities. It is well understood that bicycle and pedestrian crashes more often resulted in injury when compared with other crash types, thus the need to reduce the frequency and severity of these crashes.

Over the past several years, Jordan Avenue has emerged as a problematic corridor for pedestrians and cyclists, as illustrated in Table 6. Three of the top four ranked locations are along a .6 mile stretch of Jordan Avenue between 3rd Street and Law Lane.

Table 6. Bicycle and Pedestrian Total Crashes Ranked by Location with Crash Type, 2006-2008

Rank	Intersection	Crash Type		Total
		Bicycle	Pedestrian	
1	E 7th St @ N Jordan Ave	5	2	7
2	N Jordan Ave @ E Law Ln	5		5
3	E 17th St @ N Fee Ln		5	5
4	E 3rd St @ S Jordan Ave	2	3	5
5	W 6th St @ N Rogers St	3	2	5
6	3rd St @ S Walnut St	1	3	4
7	E 10th St @ N Fee Ln	3	1	4
8	Indiana Ave@ E Kirkwood Ave	1	3	4
9	W Kirkwood Ave @ Rogers St	1	3	4
10	N Fee Ln @ E Law Ln	2	1	3
11	Kirkwood Ave @ S Walnut St	1	2	3
12	8th St @ N Walnut St	1	2	3
13	E 10th St @ N Union St	1	2	3
14	7th St @ N Walnut St		3	3
15	W 7th St @ N College Ave	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 the report are already in the process of being addressed. For example, the City of Bloomington recently improved the intersection of 17th Street & Fee Lane in 2008. Safety improvements for two other locations will commence soon in 2010 for Atwater Avenue and Henderson Street. Additionally, Monroe County finished improvements to the dangerous curve at Rogers Road and Smith Road. All three of 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 locations and areas that highlight problematic locations for crashes. Most of these will need further study to see if there are any physical improvements that can be implemented to improve safety. This report however has initiated the first step by identifying problematic locations, like previous reports do. It is expected that transportation planners, engineers, and officials together will use this information to prioritize locations that need immediate attention and possibly seek HSIP funding or other means (enforcement, education) to improve safety.

Several intersections along State Roads (37, 45, 46, Bypass) continue to be problematic by the sheer frequency of crashes. Because of 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 Law Lane and 3rd Street for high concentrations of crashes associated with bicyclists and pedestrians. The Jordan Avenue corridor presents a case for further study for immediate safety improvements.

Data and analysis on other attributes are included within this report (e.g. bus, moped, motorcycle, fatalities, causes, locations, severity of crashes) and provide additional information to further aid users to identify trends and/or areas of concern. At this time there are no noteworthy aspects to this data to highlight. Future versions of this report should 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.

Additionally future versions of the Crash Report should develop another potentially instructive byproduct of the crash data – evaluation of locations that implemented safety improvements. Most recently this would include 17th and Fee intersection, Rogers Road and Smith Road, and Atwater Avenue and Henderson Street intersection that have implemented or will soon implement safety improvements based upon past crash data. Evaluation of future crash data at these, and other, locations will further aid in implementing appropriate and effective mitigation strategies to reduce crashes. Projects funded through the HSIP will also be required to analyze crash trends before and after road improvements. This too could help demonstrate the effectiveness of the safety improvements implemented. Since crash data is not yet available for periods after these planned improvements have been implemented, the evaluation aspect of the report will not be included, but is expected in forthcoming annual reports.

Appendix

Figure A1. Map of Top 50 Ranked Total Crashes by Location, 2006-2008

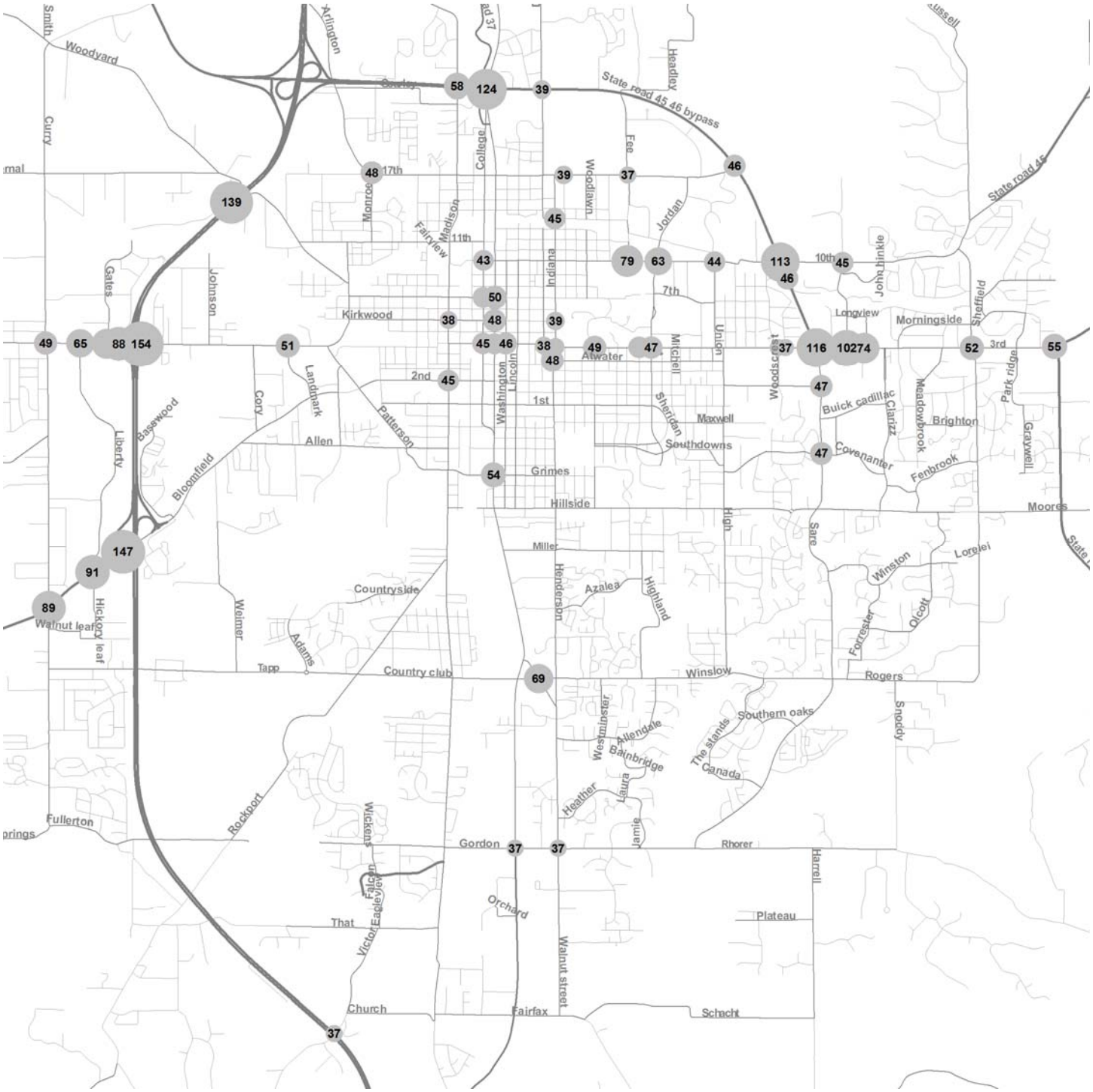


Figure A2. Map of Top 25 Ranked Total Bicycle and Pedestrian Crashes by Location, 2006-2008

Figure A3. Map of Crashes with Fatalities by Location, 2006-2008

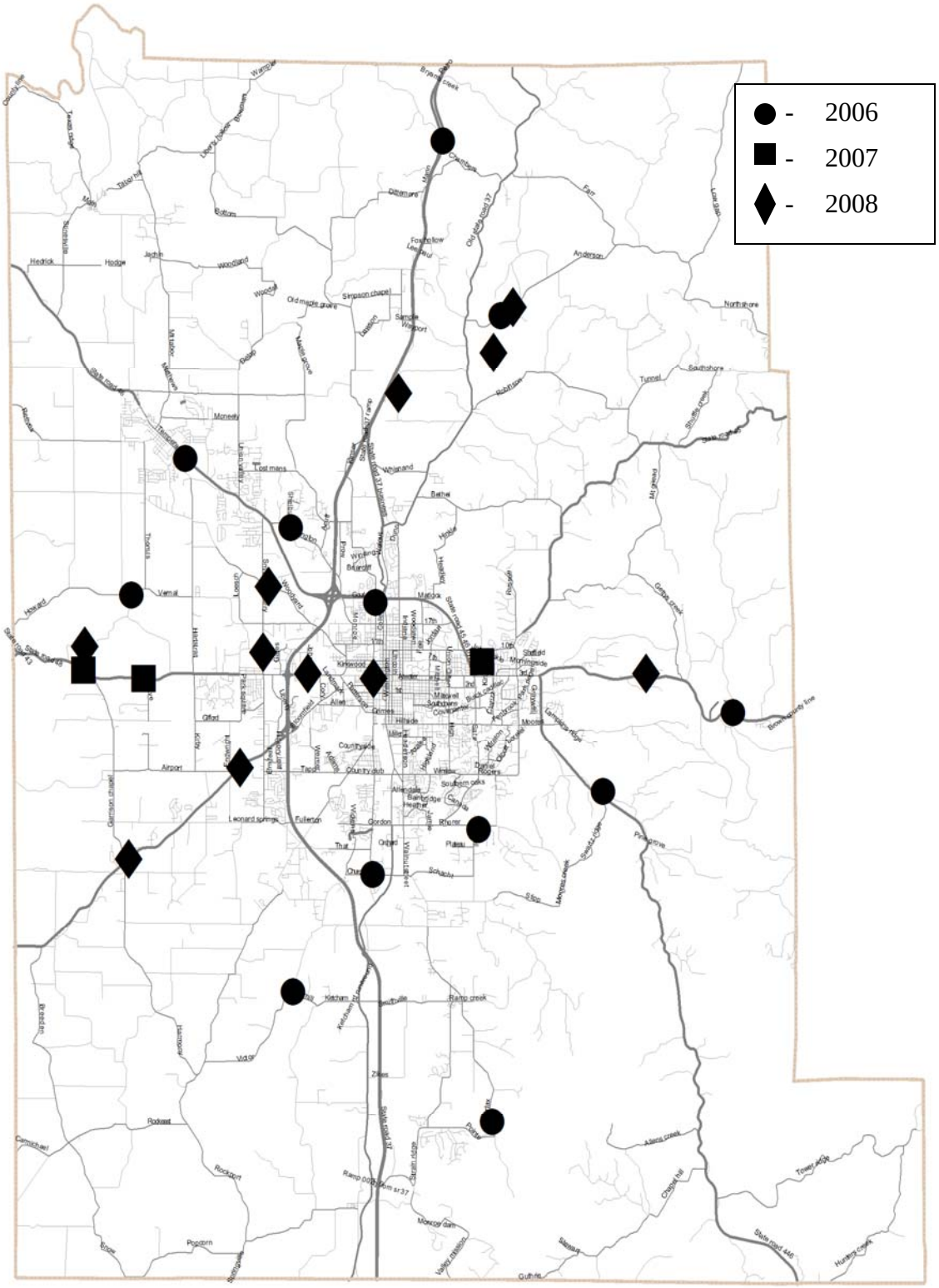


Figure A4. Fatalities by Gender and Crash Type, 2006-2008

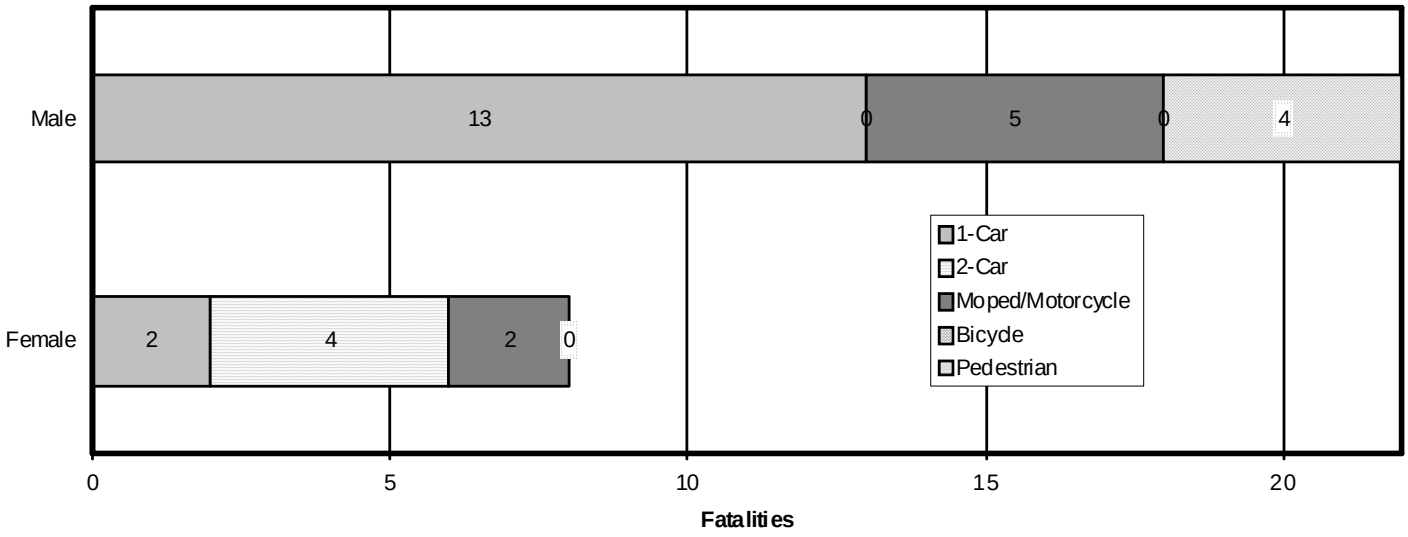
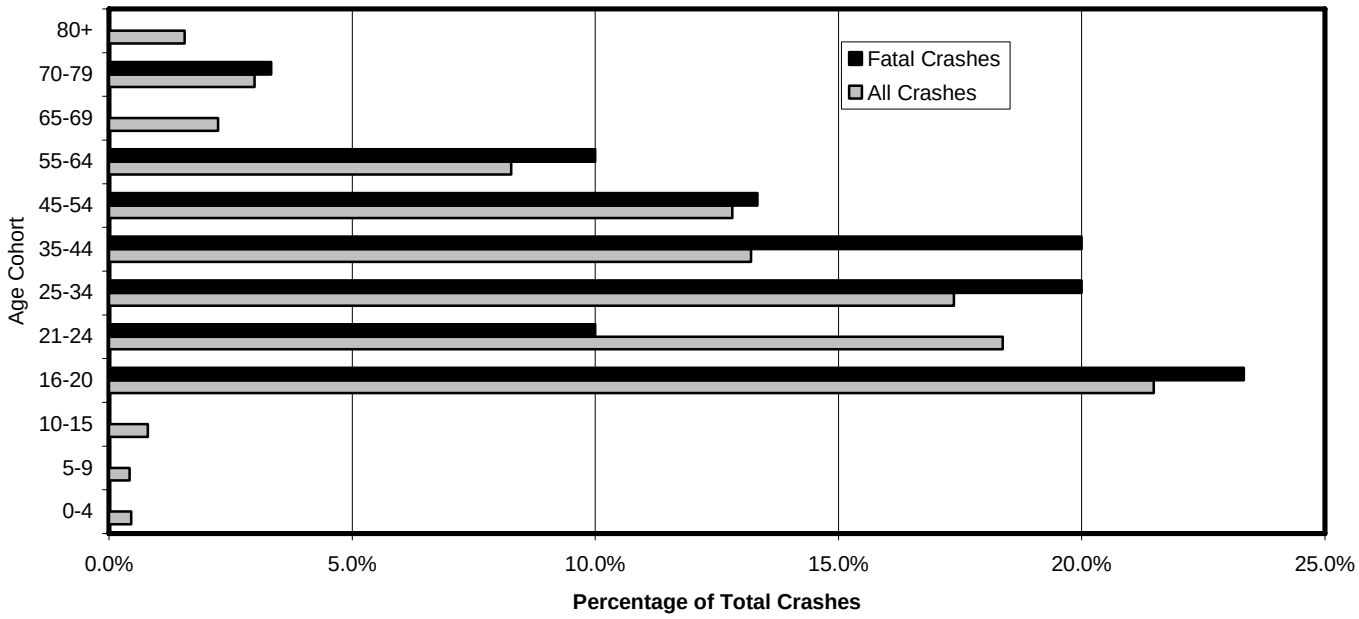


Figure A5. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age Class, 2006-2008 [5]



HSIP Eligibility List

The Highway Safety Improvement Program (HSIP) is a program that provides federal funding for areas with high incidence of crashes identified within 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.

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

Table A1. Listing of Eligible HSIP Locations, 2006 – 2008

Rank	Location	Fatal & Incapacitating Injury Crashes	Total Crashes	Fatal	Incapacitating	Non-incapacitating	Property Damage
1	S WALNUT STREET PIKE @ E WINSLOW RD	2	69		2	18	49
2	W GORDON PIKE / S WALNUT ST @ S OLD SR 37	2	37		2	7	28
3	N DUNN ST @ N OLD SR 37	2	32		2	13	17
4	W GOURLEY PIKE @ N KINSER PIKE	2	15	1	1	2	11
5	S CURRY PIKE @ W GIFFORD RD	2	13		2	3	8
6	E 3RD ST @ S BALLANTINE RD	2	13		2	3	8
7	HILLSIDE DR @ S WALNUT ST	2	10		2	3	5
8	ANDERSON RD from DORA RD to LYDY RD	2	2	2			
9	E 10TH ST @ N FEE LN	1	79		1	6	72
10	W 3RD ST @ S LANDMARK AVE	1	51		1	17	33
11	W 17TH ST @ W ARLINGTON RD @ N MONROE ST	1	48		1	14	33
12	E ATWATER AVE @ S HENDERSON ST	1	48		1	11	36
13	3RD ST @ S WALNUT ST	1	44		1	8	35
14	4TH ST @ S WALNUT ST	1	35		1	6	28
15	COLLEGE AVE @ W KIRKWOOD AVE	1	35		1	5	29
16	W 3RD ST @ S KIMBLE DR	1	31		1	6	24
17	E MILLER DR @ S WALNUT ST	1	31		1	6	24
18	E 10TH ST @ N WOODLAWN AVE	1	31		1	3	27
19	N SMITH PIKE @ W WOODYARD RD	1	29		1	10	18
20	E 10TH ST @ N INDIANA AVE	1	26		1	9	16
21	W BLOOMFIELD RD @ S LANDMARK AVE	1	26		1	6	19
22	E 3RD ST @ S LINCOLN ST	1	26		1	3	22
23	17TH ST @ N WALNUT ST	1	24		1	3	20
24	W 3RD ST @ S FRANKLIN RD @ S WYNNEDALE DR	1	23		1	5	17
25	E BUICK CADILLAC BLVD @ S COLLEGE MALL RD	1	21		1	4	16
26	E ROGERS RD @ S SARE RD	1	21		1	2	18
27	N CURRY PIKE @ W VERNAL PIKE	1	20		1	4	15
28	W 2ND ST @ S WALKER ST	1	19		1	8	10
29	E 10TH ST @ N DRIVE TO HILLTOP GARDENS	1	19		1		18
30	E 3RD ST @ S UNION ST	1	18		1	1	16
31	E KIRKWOOD AVE @ LINCOLN ST	1	18		1	3	14
32	W GORDON PIKE @ S ROGERS ST	1	17		1	2	14
33	N ADAMS ST @ W VERNAL PIKE	1	17		1	2	14
34	W 3RD ST @ S PATTERSON DR	1	17		1	2	14
35	S BANTA AVE @ W COUNTRY CLUB DR	1	15		1	2	12
36	S WALNUT ST @ S WALNUT STREET PIKE	1	15		1		14
37	W COUNTRY CLUB DR @ S MADISON ST	1	15		1	2	12
38	E 17TH ST @ N LINCOLN ST	1	15		1	3	11
39	W 11TH ST @ N ROGERS ST	1	14		1	6	7
40	E HILLSIDE DR @ S WOODLAWN AVE	1	13		1	1	11
41	ADAMS ST @ W KIRKWOOD AVE	1	13		1	1	11
42	W 8TH ST @ N ROGERS ST	1	12		1	1	10
43	S ADAMS ST @ W ALLEN ST	1	11		1	2	8
44	E BRAESIDE DR @ N PETE ELLIS DR	1	10	1		2	7
45	W 3RD ST @ S MADISON ST	1	10		1	1	8
46	W 11TH ST @ W VERNAL PIKE	1	10		1	2	7
47	E 10TH ST @ N WASHINGTON ST	1	9		1	3	5
48	S FAIRVIEW ST @ S PATTERSON DR	1	8		1	3	4
49	S WASHINGTON ST @ E WYLIE ST	1	8		1	2	5
50	S CURRY PIKE @ W DOYLE AVE	1	8		1	2	5
51	E 3RD ST @ S ROSE AVE	1	8		1	2	5
52	N CURRY PIKE @ W PROFILE PKWY	1	7	1		1	5