

Bike and Pedestrian Safety Commission
Agenda
Monday, May 20, 2013
5:30 p.m. – Hooker Conference Room

- I. INTRODUCTIONS -
Welcome two new members - Paul Ash and Betty Rose Nagel
- II. ELECTION OF NEW OFFICERS
- III. APPROVAL OF MINUTES – March 18 and April 15, 2013
- IV. PUBLIC COMMENT
- V. COMMISSION MEMBER’S COMMENTS
- VI. DEPARTMENTAL UPDATES
 - A. City Planning
 - 1) 2012 Crash Report (draft)
 - 2) Small Needs List
 - 3) Sidewalk variance
 - B. City Engineering
 - 1) 2012 NTSP Update
 - 2) 2nd & Rogers 5/14/2013 accident
 - C. Bloomington Police Department
- VII. NEW BUSINESS
- VIII. OLD BUSINESS

NEXT WORK SESSION: Monday, June 3, 2013 in the Hooker Conference Room, City Hall

NEXT MEETING: Monday, June 17, 2013 in the Hooker Conference Room at the Showers Building

MINUTES
BIKE AND PEDESTRIAN SAFETY COMMISSION
MARCH 18, 2013

INTRODUCTIONS

Members: Present: Mike Gavin, Anne Phillips Holahon, Carl Zager, Jim Rosenbarger, Mitch Rice, Gayle Stuebe

Absent: Jacob Sinex

Ex-Officio: Vince Caristo - Planning
Roy Aten - Engineering
Officer Skelton - Bloomington Police Department
Laurel Archer - Public Works
Mallory Rickbeil - Planning Intern

Citizen: Paul Ash

APPROVAL OF MINUTES

Anne Holahan asked that the record show she made the comment that it was confusing to have two narrow strips along 3rd Street marking the bike lane, but since her statement the hash marks have been added and now is better visually and has more distinction for everybody.

Mike Gavin made a motion to approve the minutes from November 19, 2013. Mitch Rice seconded the motion. Motion passed. Minutes from November 19, 2013 approved.

PUBLIC COMMENT - None

COMMISSION MEMBER COMMENTS

Mike Gavin stated the bike box on 3rd Street always has cars in the box and sometimes vehicles even crowd out cyclists.

Roy Aten stated the bike boxes are part of learning, and are no where else in town yet. The green paint was not put in but will be added. Aten stated as for the buffered bike lanes, in the future the lines will be wider.

Officer Skelton stated people don't understand bike boxes. People that have never seen them before do not know what it means or what it represents so it a challenge.

Vince Caristo stated Planning with the help the Economic and Sustainable Development have put together a guide on how to understand bicycle and pedestrian markings.

Mitch Rice thought a somewhat amusing Youtube video is a great tool in educating. Roy Aten also stated there is one sign on 3rd Street that still needs to be installed. The sign was delayed because the intersection was suppose to be redone. It looks like that intersection is being postponed so the sign will be installed which should help. It is a yield to bikes with an arrow.

Gavin relayed a story of a woman in a vehicle pulled up into the pedestrian cross walk. He knocked on her window and told her she was in the cross walk. She was upset and said she couldn't see the cars coming, and then he pointed out she could not turn. This began discussion on right hooks and location of no turn on red signs. The locations of the signs do not seem to be consistent which causes confusion on where to look for it. The suggestion of flashing lights was suggested. Aten stated as intersections are redone, all the signs will go up next to the lights. He added signs are governed by the federal government as far as placement, color, size, etc., and is not a discretionary choice. Lights could not be added. Holahan thought there was discussion about a no turn on red at the corner of Jordan and 3rd on the NW west corner by the fountain. Aten stated it had been discussed but nothing has been done because the intersection is being re-designed. The re-design plan will be brought to the Commission for their input when it is finished.

Rice commented that he was walking south on Walnut. When he got to Dodds he crossed to a big island where cars were whizzing by. He wondered if a crosswalk would be appropriate at this location. Aten explained this particular area where College and Walnut converge is considered mid-block. Anne asked what the concrete triangle is and if Dodds and Walnut could be considered. Aten noticed there were no curb ramps and stated staff would take a look at the area.

DEPARTMENTAL UPDATES

Planning

A. 530 N. College

Vince stated this is a proposal to build a five story (on the north side) and four story (on the south end) mixed use building on the site of the current Waffle House. It will include 6000 square feet of retail on the first floor at the corner of College and 10th Street. This is the same owner as the property directly to the south which is now the German American Bank. Their proposal is to have one of two retail spots as a bank. They would like to apply for a variance for this to be a drive thru bank with a internal circulation on the first floor. This property is bounded on three sides by public right of way.

There will be 54 apartments, 79 bedrooms, more than two thirds are single bedroom units. There are some two and three bedroom units. The retail space will be spilt between two retail, one will be a bank. There will be 54 parking spaces on the 2nd level garage. First floor access will be from College with out-only onto 10th Street. There will be second floor access from the alley. There will be five stories on the north side and four stories on the south side.

Jim Rosenbarger was concerned about the curb cuts and how wide they are. Vince explained they are proposing a cut for the driveway onto College Avenue which will have a lot of in and out vehicles, and along 10th Street there will be an out only cut. There is a second floor uncovered parking deck that has an additional 20 spaces.

Roy Aten asked to verify if the alley (south side) will be platted as an alley. Vince will have to check on the status of the alley.

Traffic flow for the drive-thru bank was discussed. Vince explained the developer is proposing an in/out on College Avenue. There are three lanes proposed for the bank drive-thru and are requesting a use variance. The exit will be on 10th Street. When the site plan was submitted again last week it did not show bike racks. Planning will be working with the developer for any revisions needed. The Bike Parking Ordinance will require them to install 18 total spaces, seven (7) of which would be required to be covered, and four (4) class one secured. Vince stated his recommendation would be to have as many as possible along 10th Street where the entrance is to the bank, and have the class one secured inside the building where people are expected to enter, and covered spaces in the parking garage.

Gayle Stuebe asked how many apartments and parking spots. There will be 79 apartments and 54 parking spaces, with the requirement being 49.

There was more discussion of traffic flow around the building.

The Commission agreed with the revisions Planning will ask the developer to make reference bike parking.

B. Bike Month

Vince stated Bike Month is in May this year. He introduced Mallory Rickbeil, intern, who has been working the past few months on the City's plan for National Bike to Work Day, and the Commuter Challenge. Vince listed the different activities happening during Bike Month and hoped the members would put them on their calendar and offer to volunteer for some of the events, or let him know anything else they would like to do. The list is available on the Bloomington Bike's Week webpage which is bloomington.in.gov/bloomingtonbikesmonth2013. There will be new events this year, such as "Learn to Ride for Adults." A couple of fun rides have been added, "Midnight Mosey" which will be led by Miah Michaelson of the Economic and Sustainable Development Department. The Bike Rodeo (Thursday, May 14) will be held at Child's Elementary School. "Learn to Ride for Kids" is a two week program at Bryan Park Pool. National Bike to Work Day is Friday, May 17th. Also, "Cycle to Service" that weekend so people can bike to their place of worship. Also, new this year is "Bike to Market Day." Members suggested more bike racks would be needed for this event. Vince stated staff would work on that. Members wondered about promotion for "Bike to Market

Day." Vince explained the vendors will be asked if they would like to offer discounts to people that come on their bikes.

There was a question about calling attention to the new tunnel under the bypass. Vince stated the bypass was highlighted in January during the "Terrible/Horrible Ride" that had 100 participants.

Vince stated Mallory would give a presentation on what has been going on with the planning for National Bike to Work Day.

Mallory introduced herself, she is an intern from the School of Public Health and has been working in the Planning Department since late December on outreach. Specifically she has been coordinating with employers and the City of Bloomington to help promote bike commuting behavior. A survey was sent out to employers in February of 2013. The survey results will be made available soon. The results of the survey will help steer the program for initial outreach this month. There will be a newsletter sent out that will serve as a gear for bikes week. This will help announce Bike Month and address some of the research results. It will also provide people with an opportunity to order materials that they will need to help mitigate the barriers that they experience as a business and to help their employees. Media packets will be distributed on Earth Day 2013. Media packets will contain maps, coupons to retailers in the Bloomington area for safety equipment such as helmets and lights, a guide to biking in Bloomington, a poster, calendar of the events, bike advocacy guide, and materials to help them compete in the Corporate Challenge. More outreach is being done for the Corporate Challenge to get more businesses involved. Mallory explained the Corporate Challenge would take place between March 1st through March 15th and gave a brief description of this year's challenge. There will be follow up surveys done in June of 40 participants.

Vince stated the Survey results are in the member's packets, as well as all the comments people added.

C. Safe and Civil Streets Campaign

Vince wanted to announce there will be an opportunity for some feedback on a Safe and Civil Streets education campaign the City has been working on with Public Works and Economic and Sustainable Development. Included in the packet were the goals of the program and the target behaviors to be addressed. The background of the project is that everyone realizes that unsafe behavior on the part of bicyclists, drivers, and in some cases, pedestrians, and the perceptions of unsafe behavior are really dominating all the discussions about bicycle infrastructure, in particular. Staff wants to address the perception issue and behavior issue before more infrastructure is built. It is recognized this is something that will have to be done on an ongoing basis every year, not only because we have 10,000 new people who move into town, but also because it is an ongoing problem. There have been meetings this past month with the Police Department, Community and Family, Engineering, Parking Enforcement, and this week a meeting

with the Mayor's office. It is unanimously agreed there is a problem, and it is a good idea to address the behaviors. Vince stated the Mayor's office wanted it made clear there is no funding, but staff feels it can do a lot with very little. Draft designs are being worked on, but are not currently at a work sharing point, but maybe at the next work session, either he or Jacqui Bauer would be present to show some of the ideas being worked on. This includes stickers and maybe some sidewalk markings.

Officer Skelton thought banners and signs are good. Office Skelton stated every year there is a revolving population from Indiana University. The young freshman need to be educated.

Zager agreed there was a difference between Bloomington and many of these students' hometowns where riding on a sidewalk is the preferred method. Running stop signs or going the wrong way are laws that are pretty universal.

Holahan felt that a packet for incoming freshman in dorms might be a good way to educate. She wasn't sure what was done for incoming freshman.

Rice stated the incoming students need to be educated. He felt cards that one rider can give to another might be helpful.

Zager also felt a short youtube movie that is entertaining might help educate as well.

Engineering

A. 2013 Bloomington Bikeway Implementation Plan Update

Roy Aten stated he sent materials that have been received from the Greenways and Bikeways 2013 Plan. The plan is still in the design phase. There are no final sets to bring before the Commission at this time. Staff would like the Commission to take a look at the plans and give input before the final set it drafted. It is hoped, as far as building, to get the project bid out in April. Roy Aten stated the bike routes were brought to the Commission's work session. Many of the projects will be built in house, such as College and North Walnut already have lanes and will be re-stripped after it is paved this year. 19th Street was paved last year and will get sharrows. Twelfth, 11th, and Cottage Grove will get sharrows.

There was discussion about the Hillside-Olive-Weatherstone intersection. The Commission was very pleased with the changes that were planned for that intersection.

Aten asked the Commission members if they had ridden the path off Weatherstone. No one had any complaints about the path, but Aten noticed some trees hanging down, and overgrowth. Aten added he will ask the Street Department to get in there and clear it out.

Aten asked about the better route for connecting Bloomington's southern residential area to the IU network. A north south connection is needed that comes all the way. The

beginning would be at Short Street. Would Hawthorne or Jordan be the better route. Jim felt Hawthorne might be the better route. It would be a good place for a bike box, especially if Jordan will be under construction.

Aten stated some other plans for this year are to put sharrows on 7th Street. The sidewalk on 7th Street will be expanded into a multi-use path so it connects to the multi-use path coming down the north side down Williamsburg, and then along Longview Avenue. There will be a crossing made at Pete Ellis Drive, but there are no conceptual designs at this time.

There was discussion about what would happen at 3rd & Jordan. Aten stated the idea is to run the bike lane over the right hand side, and taking out the pull off for the busses. There would also have to be an ASA compliant crosswalk installed. This also is in the design stage.

Jim stated he saw some things he really liked, but South College Mall Road and Covenanter were a disappointment. This is a high stress intersection. It doesn't look very welcoming for someone trying to bike or walk to the Mall. While there are a no turn on red, sharrows, and a bike box, there is not much for pedestrians. The area was discussed further.

Jim Rosenbarger made a motion to adjourn. Motion seconded. Meeting adjourned.

MINUTES
BIKE AND PEDESTRIAN SAFETY COMMISSION
April 15, 2013

INTRODUCTIONS

Members: Present: Carl Zager, Jim Rosenbarger

Absent: Jacob Sinex, Anne Phillips Holahan, Mitch Rice

Ex-Officio: Vince Caristo - Planning
Roy Aten - Engineering
Laurel Archer - Public Works

Citizen: Paul Ash
Morgan Smith - Student - Journalism

APPROVAL OF MINUTES

No quorum present. Minutes could not be approved. NOTE: In an e-mail Ann Holahan asked that it be noted since her statement in the minutes from March 18, 2013 the hash marks on 3rd Street are beginning to fade.

PUBLIC COMMENT

Morgan Smith stated she loves biking in Bloomington, and was born and raised in Bloomington.

COMMISSION MEMBER COMMENTS

Carl Zager stated that Jason had asked him to take his place at the GPP. For the last couple of weeks he has been participating with the Imagine Bloomington sub-section through Planning. The talk has been about the structure of the City, particularly the neighborhoods in the downtown. Zager explained he has been looking at the transportation aspect as it relates to the overall transportation picture, but then how that relates back to pedestrian and bicycling as a part of the infrastructure of the City. The second meeting was held last week, with another meeting coming up on next week. Zager said he would share any additional information as he receives it. Currently the format is answering questions and discussion.

DEPARTMENTAL UPDATES

Planning

A) Candlewood Suites

Vince reported that Candlewood Suites proposed site is located at 2nd Street (Bloomfield Road) and SR 37, just west of the Twin Lakes Recreation Center. It is an 84 bedroom hotel. INDOT owns the land in and around Basswood Drive. I-69 will probably come close to this project but the exact location is unknown.

Carl Zager thought the dividing line looks like a swale and will be very difficult to engineer. Vince stated he believed there will be underground storm water retention.

Vince explained the City plans to build a sidepath from downtown all the way to the limits of the Twin Lakes Recreation Center property. INDOT plans to build a sidepath on the north side of this interchange, but is unclear how far east they plan to go.

Vince explained in the site plan, there are 8 bicycle parking spaces on the north side. Carl felt those were at the main entrance, and not at the service entrance where they could be accessed by employees. His main concern was for the employees. Carl added that bus access to this location was very good, and if the buses could handle bikes. Vince stated all Bloomington Transit buses are equipped for bikes.

Paul wondered about bikes and pedestrians access to Twin Lakes Park. Vince stated there is an access drive on the property between the proposed hotel site and Twin Lakes and could be a possible access point in the future.

Jim asked he would like to see in future presentations the "ped shed", in other words is this a 20 minute walk, a 15 minute walk. If it were in the middle of a circle how long would it take to arrive by foot.

Jim felt although the roads at this location are suburban there are many walkable destinations, even though it looks totally alien to pedestrians. The ground work has been laid for creating an intense urban node. Carl stated the residential areas surrounding this location are plentiful and a market for employees.

Recommendations from the Commissioners present is to have very visible bike parking that is covered and safe from vandalism for the employees. Commissioners had concerns about how employees who walk or bike would access the site safely.

B. Civil Streets

Vince discussed the Civil Streets campaign. The idea is to educate bicyclist, motorist, and pedestrians of their rights and responsibilities on the streets. The basic message is

that safety is everyone's responsibility, we all play a part in making it a civil and safe environment on the street.

Vince brought final drafts of some of the education materials, such as a brochure and bumper stickers.

Carl was a bit troubled by the wording on the brochure that stated "Same Road, Same Rules" He felt there are enough differences it could become a problem. He stated in general they are the same rules, but in specifics there are some differences. He gave sidewalks, as an example, a bicyclist in Bloomington is not allowed to be on a sidewalk, so its not the same rule. As a whole he did like the presentation, and thought it was exceptionally done. Vince stated he saw the point, and could work on better wording. Jim thought maybe just eliminating the word "rules" and just noting the road has to be shared.

Jim felt some of the stickers were a little like something that would be handed out to first graders.

There was discussion about the Ordinance regarding bikes on the sidewalk.

Vince stated he will meet with the Police Department for a soft rollout. He would have bells and lights to hand out at the Commission's work session in May. Vince thought at the May work session they could get out and hand out materials.

Vince appreciated all the feedback on the campaign.

C. Bikes Month

Vince stated Bikes Month is in May. There is a calendar of events online, and the website is live to register for Bike to Work Day and the Commuter Challenge. The website is <http://bloomington.in.gov/bike>. There has been outreach to the Chamber of Commerce and Indiana University to have bike advocates will post the calendar of events, and talk with their employees, and have employees join their corporate team. There is a whole competition set up. The new events this year are Learn to Ride for Adults, the Midnight Mosey is next in the City sponsored bike rides, also The Bike to Worship, and the Bike to Market Day. Vince added their are many volunteer opportunities for Commission members, from hanging up posters to helping with the Learn to Ride classes.

Carl wondered if there is material that could be passed out at the Market, such as bells. He also felt some of this could be passed on to the Volunteer Network.

Engineering

A. East Third Street Bikeway

Roy Aten unveiled the East 3rd Street bikeway plan. He added staff is waiting on comment from Indiana University and Bloomington Transit.

He explained the project. In the section being considered there are two pull offs for buses on the north side of 3rd Street between Jordan and Indiana. There will be an island between where bikes travel and the buses stop. This will eliminate the conflict between buses and bike lanes. With current financing, only two of the five stops could be redesigned. The lanes will be a minimum of 10 feet. Then a 3 foot buffer and a 5 foot bike lane.

Jim Rosenbarger was very pleased with the design.

Paul Ash added with this design, there hasn't been a whole lot of money spent, so if it doesn't work it can be removed pretty easily. Aten agreed, but did not think it would be a failure.

Jim didn't feel the actual dynamics were being changed, just cleaning it up. Jim doesn't bike 3rd Street so didn't know if there was a lot of bike traffic or not. Aten stated there is quite a bit on 3rd Street; however, many of the bicyclist are on the sidewalk to the north. Aten stated it is a conflicting message but IU does sort of promote riding wherever you want on campus, and then they come off of campus and there is a new set of rules.

Carl Zager stated this was very effective with streetcars in big cities many years ago. He was pleased with the design and thought it would work well.

Vince wondered if there would be an issue with bike and pedestrians yielding, and wondered about shark teeth. Roy stated if it became a problem he would first opt for a sign. Staff will monitor accident reports. Roy stated definitely the crosswalk would be marked and painted, and yield to pedestrians.

Roy stated the advertisement for bids on the project will go out the end of this month or beginning of May. It is hoped to have a notice to proceed together by late May or early June for construction can begin on all Bikeways for 2013. This is an aggressive schedule and should be a surprise to students coming back in the Fall.

Before the 3rd Street project moves forward Roy wanted to make it clear again that he was waiting for feedback from Indiana University and Bloomington Transit.

There was discussion about the cut in the sidewalk. Roy stated there are two things that guide staff on design, that is curb height and also if there are 36 inches to get a wheelchair around per ADA requirements.

NEW BUSINESS

None

OLD BUSINESS

Jim Rosenbarger stated he has had a response from the Small Project Needs List. It sounds like several of the items are either being done or show potential.

Carl Zager thought the only one item contradictory was the B-Line crossing at the Convention Center, with the current yield not being reversed. Jim stated from what he has heard over the years it is in compliance with basic engineering thinking. Zager stated, however, it is the opposite of every other crossing.

Aten asked about the 45/46 underpass signage. Vince stated it was agreed that more signage is needed and will be installed after the 7th & Longview project is finished. Aten stated the Street Department is working on a sign to install. There was more discussion on the best location for signage. Aten concluded he thought the best route is 7th to Hillsdale, 7th, and then up Overhill to get to the path that goes down to the underpass. Paul Ash wondered about a set of steps. Aten said that will have to wait until the 45/46 project is finished and is set to conclude in May.

Meeting adjourned at 6:50 p.m.

*Bloomington/Monroe County
Metropolitan Planning Organization*

Crash Report

Calendar Years 2010 through 2012

DRAFT – April, 2013



(this page intentionally left blank)

Table of Contents

Executive Summary	3
Introduction	5
Methodology and Data Considerations	6
Analysis	7
Crash Characteristics	7
Table 1. Crashes by Type and Severity, 2010-2012	7
Figure 1. Crash Type by Severity, 2010-2012.....	8
Figure 2. Crash Type by Severity, 2010-2012.....	8
Time of Crashes	9
Figure 3. Crashes per Hour by Time of Day, 2010-2012	9
Figure 4. Crashes by Day of Week, 2010-2012.....	10
Crash Locations	11
Table 2. Top 50 Crash Locations by Crash Frequency, 2010-2012	12
Table 3. Top 50 Crash Locations by Crash Rate, 2010-2012.....	13
Table 4. Top 50 Crash Locations by Crash Severity, 2010-2012.....	14
Crash Factors	16
Table 5. Top 10 Primary Crash Factors by Severity, 2010-2012	16
Fatalities	17
Table 6. Fatalities by Crash Type, 2010-2012.....	17
Table 7. Top Primary Crash Factors for Fatal Crashes, 2010-2012	17
Fatal Crash Locations	18
Table 8. Fatal Crash Locations by Type, 2010-2012.....	18
Bicycle and Pedestrian Crashes	19
Table 9. Top 15 Bicycle and Pedestrian Crash Locations, 2010-2012.....	19
Figure 5. Bicycle and Pedestrian Crashes by Month, 2010-2012.....	20
Conclusion	21
Appendix	22
Figure A1. Top Crash Locations, 2010-2012	22
Figure A2. Fatal Crashes, 2010-2012	23
Figure A3. Fatalities by Gender and Crash Type, 2010-2012	24
Figure A4. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age, 2010-2012.....	24
HSIP Eligibility List	25
Table A1. Eligible HSIP Locations, 2010 – 2012	25

(this page intentionally left blank)

Executive Summary

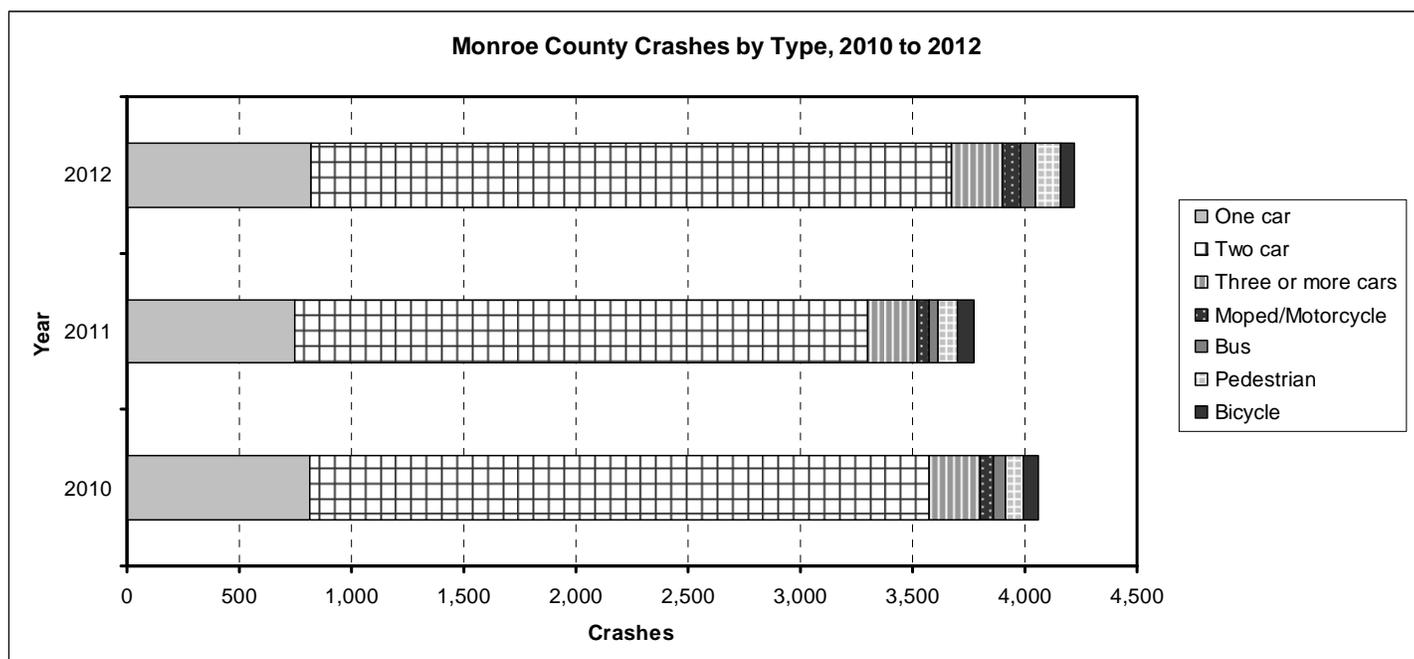
The current version of the Bloomington/Monroe County Metropolitan Planning Organization (MPO) Crash Report continues the MPO's effort to provide a thorough analysis of the causes and trends of crashes in Monroe County. This year's report includes crash data from 2010 to 2012.

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 2010 to 2012. Additionally, the appendix contains information and analysis that may be of interest to some readers.

Summary of Crash Trends from 2010 to 2012

A total of 12,056 crashes were reported between 2010 and 2012 (Table 1). This figure represents a negligible (0.5%) increase from the previous period, as reported in last year's crash report (11,988 crashes from 2009 to 2011). Total crashes for 2012 increased 11.9% compared to 2011. Just over three quarters of the total crashes reported in Monroe County involved no injuries (property damage or unknown), and the rest reported various levels of severity in injuries sustained.



A further breakdown of the total 11,988 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 31 fatalities (Table 4), somewhat more than the 29 fatalities reported from 2007 to 2009. Of the 31 fatalities, almost half (13) were from single car crashes, nine were from two-car crashes, six involved mopeds/motorcycles, and two 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 4:00 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 in terms of frequency of crashes, but the crash rate has a more even distribution through the day and early evening hours. Between the hours of 7:00 PM and 4:00 PM, 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 intersections with the highest crash frequency, or total number of crashes over the time period (Table 2). This could be attributable to several factors, but higher traffic volumes and speeds on these roads are likely factors. The intersection at State Road 37 & W Bloomfield Rd topped the list, followed by State Road 37 & W 3rd St then State Road 46 & E 3rd St. Because these intersections continue to exhibit high numbers of crashes from year to year, safety improvements should be considered. Locations that show a high number of crashes, but do not involve state managed highways, should also be considered for safety improvements through the MPO's Highway Safety Improvement Program (Table A1).

The leading cause of crashes during the study period was once again failure to yield right of way with 2,455 incidents (Table 3). Other leading causes include following too closely, reaction to other driver behaviors, and unsafe backing. These causes can be addressed 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. The intersection of E 7th St & Jordan Ave had the highest number of bicycle crashes, while the intersection of N Dunn St & E Kirkwood Ave topped the list for pedestrian crashes in the third consecutive crash report, both locations warranting further investigation.

Introduction

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 BMCMPPO receives approximately \$3.1 million per year of federal transportation funding allocated from the Indiana Department of Transportation to invest in our local transportation network. Despite this continued investment, the effectiveness of our transportation system is 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. Data for 2009 shows that unintentional accidents were the 5th leading cause of death overall, and of the 118,021 total unintentional accidents reported, 39,031 (33%) 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 BMCMPPO 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.

This report focuses on a three year period from 2010 to 2012. 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. However, results from 2012 alone are often highlighted to provide a snapshot of the most recent year.

¹ Centers for Disease Control, National Center for Health Statistics. National Vital Statistics Reports – Deaths: Final Data for 2009. Volume 59, Number 10. http://www.cdc.gov/nchs/data/nvsr/nvsr60/nvsr60_03.pdf. Accessed on August 14, 2012.

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 mis-entered 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 may 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 overall findings of this report are consistent with those of past years.

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.

Collisions were analyzed using available geographic, road inventory, and traffic count data. Individual crashes were located based on the reported geographic coordinates, which were available for more than 92% of all records. A crash frequency was determined for each intersection by tabulating the total number of crashes that occurred within a 250-ft radius of the center of the intersection. Crash rates were determined from available traffic counts conducted by the City of Bloomington, Monroe County, and the Indiana Department of Transportation, utilizing standard adjustments and engineering judgment as necessary.

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, 2010-2012”) shows how many crashes resulted in a fatal injury in 2010, but it would be incorrect to interpret this column as the number of fatalities in 2010, 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 2010-2012. These factors reflect trends in the overall safety of the transportation system.

In 2011, a total of 4,222 motor vehicle crashes were reported in Monroe County (Table 1). Of these, nine resulted in one or more fatalities, while ninety caused incapacitating injuries. For the vast majority of crashes (3,269), injuries were not reported. Two-car crashes were the most common, comprising 68% of the total. One-car crashes and those involving three or more cars were also common, accounting for 19% and 6% of total crashes reported, respectively. Crashes involving a pedestrian, cyclist, moped/motorcycle, or bus were much less frequent.

Crashes types vary widely in the likelihood resulting injury. As shown in Figure 1, crashes involving a pedestrian, cyclist, moped/motorcycle were much more likely to involve injury than other types of crashes. Figure 2 shows that these three crash types account for just 5% of all crashes, but 20% of all injuries.

Compared with 2010 and 2011, the overall number of crashes in 2012 increased slightly.

Table 1. Crashes by Type and Severity, 2010-2012

	Crash Type	Severity				Annual Total	Percent of Annual Total
		Fatal Injury	Incapacitating Injury	Non-incapacitating	No injury/unknown		
2010	One car	6	15	153	642	816	20.1%
	Two car	5	30	460	2265	2760	68.0%
	Three or more cars	0	3	93	125	221	5.4%
	Bus	0	0	5	57	62	1.5%
	Moped/Motorcycle	1	12	56	17	86	2.1%
	Bicycle	0	3	40	8	51	1.3%
	Pedestrian	1	10	46	7	64	1.6%
	Total	13	73	853	3121	4060	100.0%
	Percent of Annual Total	0.3%	1.8%	21.0%	76.9%	100.0%	
2011	One car	3	16	113	613	745	19.7%
	Two car	3	20	411	2124	2558	67.8%
	Three or more cars	0	6	69	140	215	5.7%
	Bus	0	0	2	54	56	1.5%
	Moped/Motorcycle	3	13	48	19	83	2.2%
	Bicycle	0	3	34	4	41	1.1%
	Pedestrian	0	9	63	4	76	2.0%
	Total	9	67	740	2958	3774	100.0%
	Percent of Annual Total	0.2%	1.8%	19.6%	78.4%	100.0%	
2012	One car	4	18	136	661	819	19.4%
	Two car	1	32	462	2357	2852	67.6%
	Three or more cars	1	5	91	135	232	5.5%
	Bus	0	1	4	75	80	1.9%
	Moped/Motorcycle	2	19	65	25	111	2.6%
	Bicycle	0	5	51	10	66	1.6%
	Pedestrian	1	10	45	6	62	1.5%
	Total	9	90	854	3269	4222	100.0%
	Percent of Annual Total	0.2%	2.1%	20.2%	77.4%	100.0%	
3-Year	Total	31	230	2447	9348	12056	
	Percent of 3-Year Total	0.3%	1.9%	20.3%	77.5%	100.0%	

Figure 1. Crash Type by Severity, 2010-2012

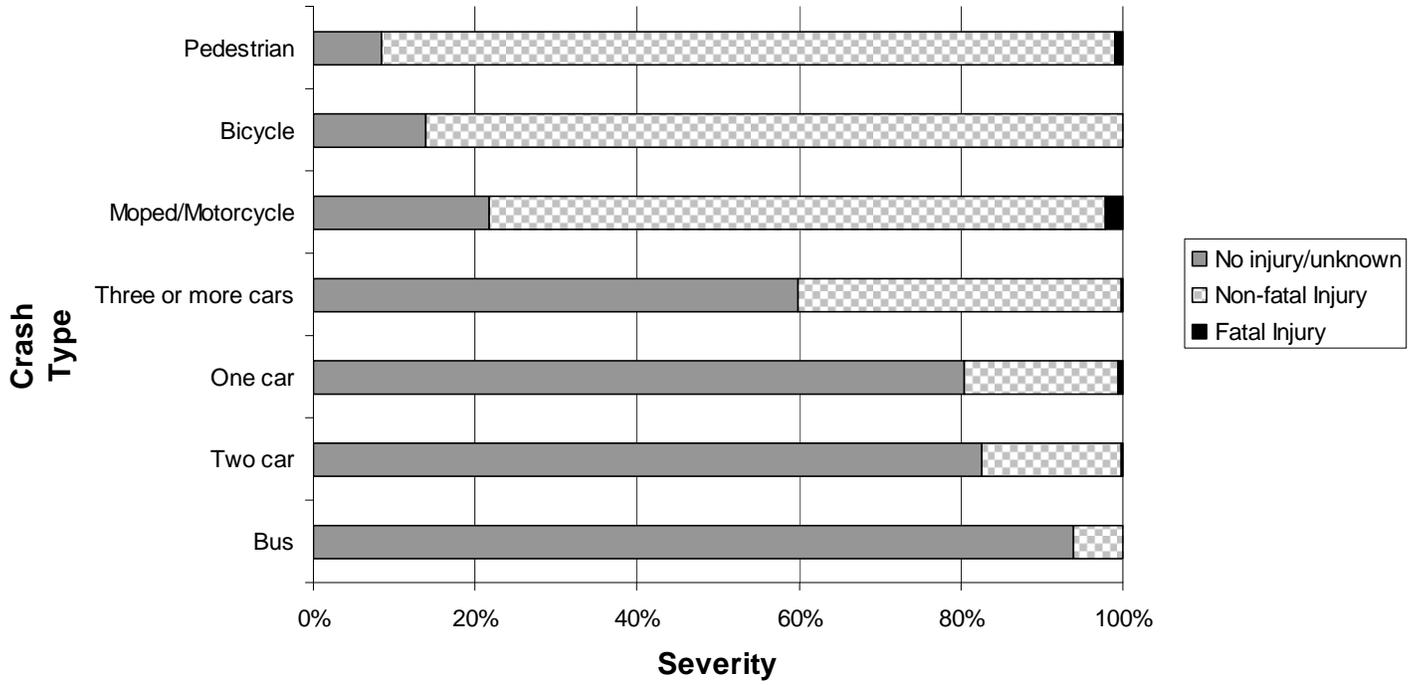
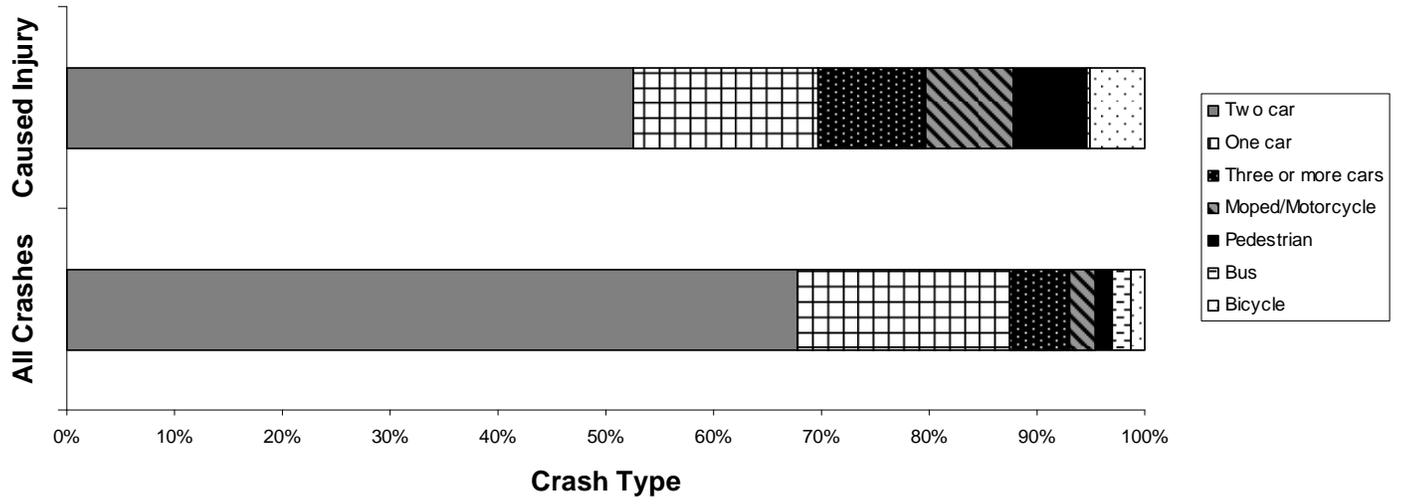


Figure 2. Crash Type by Severity, 2010-2012



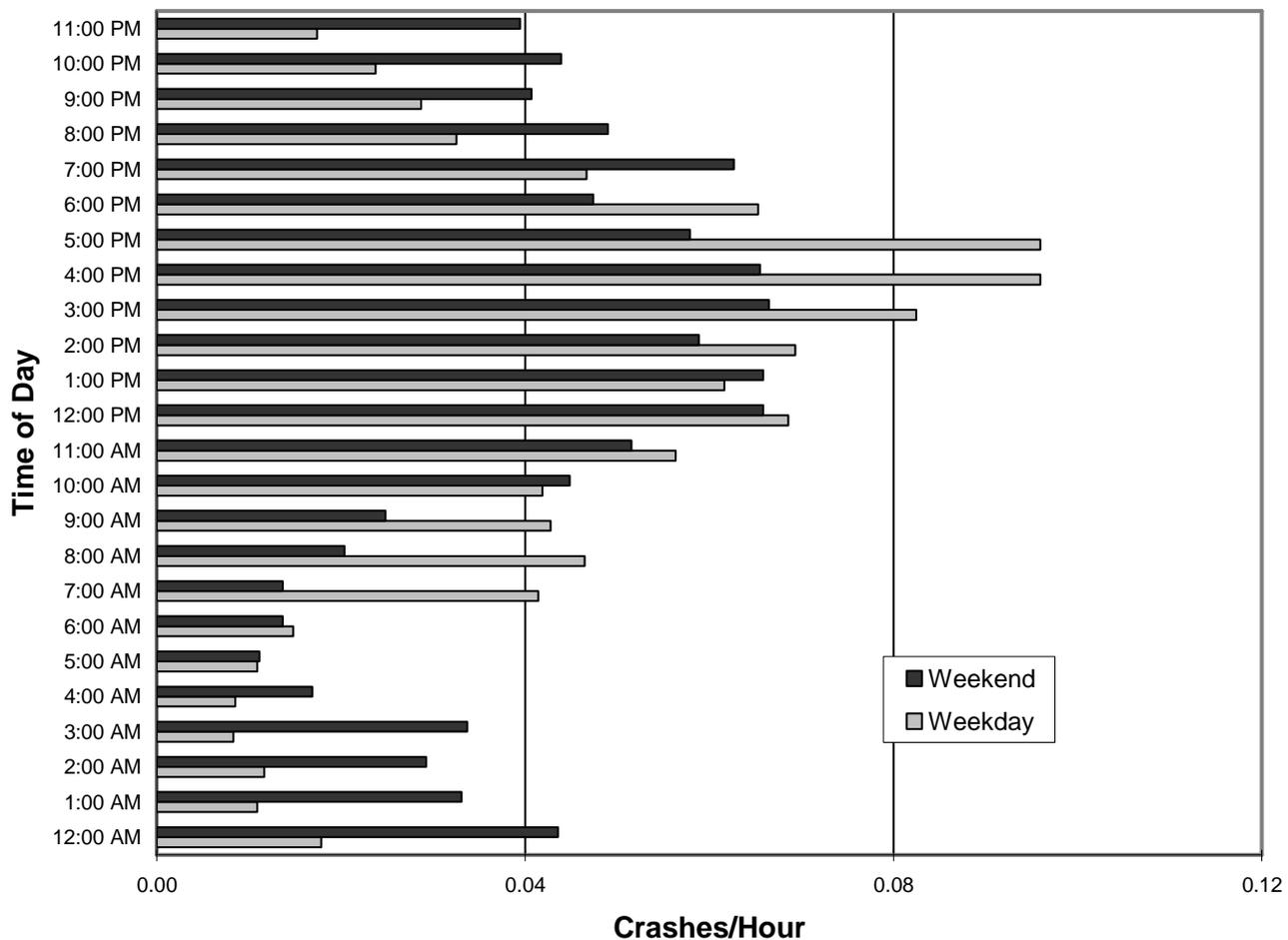
Time of Crashes

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 peaked in conjunction with the morning rush hour, 7:00 AM to 9:00 AM, and then increased gradually throughout the day until peaking again in conjunction with the evening rush hour, 5:00 PM to 7:00 PM. The late afternoon was the most likely time for a crash to occur, with more than one per hour.

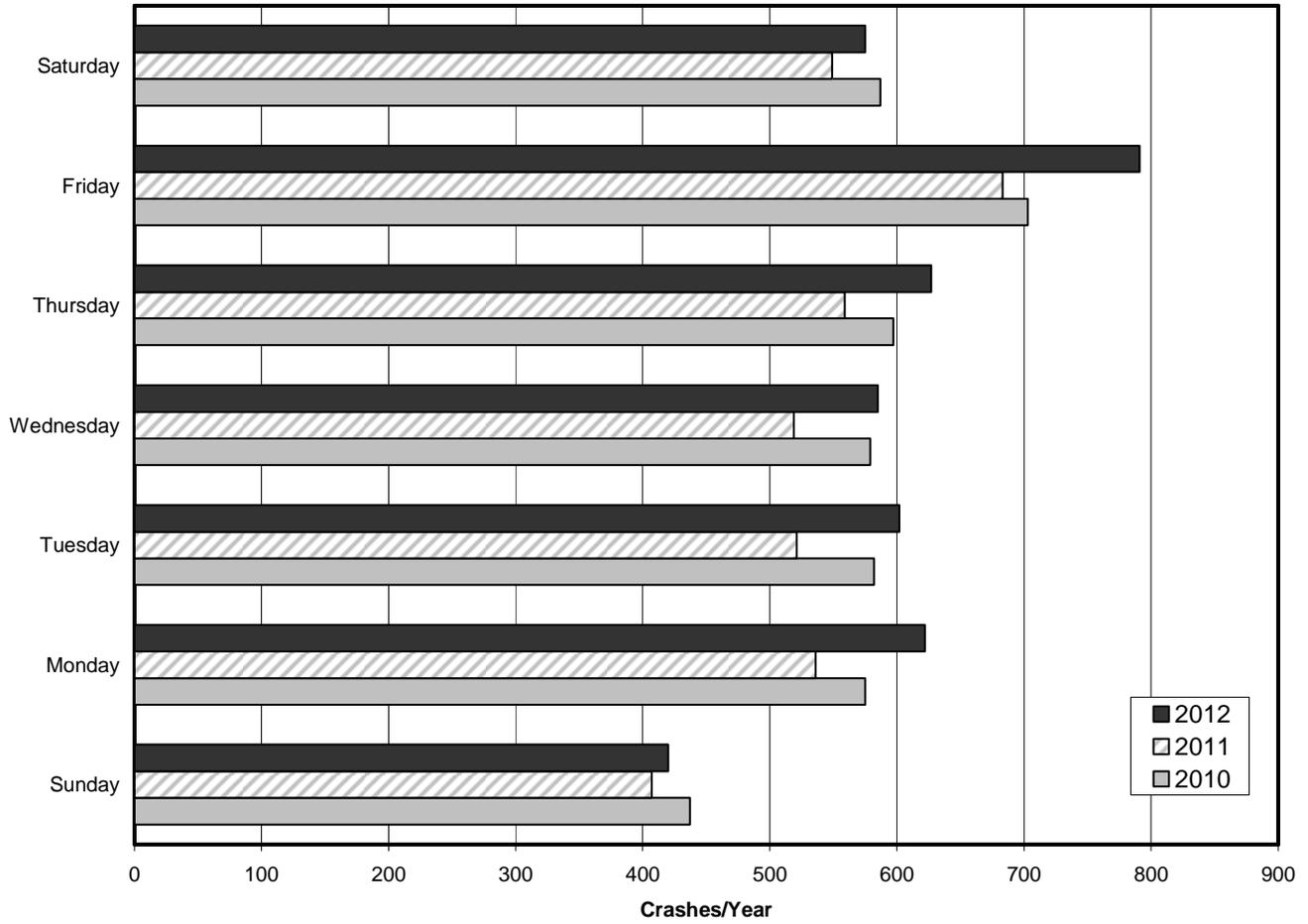
The hourly distribution of crashes for the weekend was less varied than for the work week. Crashes in the late evening and early morning were much more common during the weekend, and rush hour peaks were not as prevalent as on weekdays. During the study period, a greater number of crashes occurred on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

Figure 3. Crashes by Time of Day, 2010-2012²



² 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 4. Crashes by Day of Week, 2010-2012



Crash Locations

This section addresses the spatial distribution of crashes in Monroe County in order to highlight problematic intersections. Two methods are used. First, all of the intersections in Monroe County are ordered based on crash frequency, or the total number of crashes that occurred at each location over the 3-year period. The top 50 intersections in Monroe County with the highest crash frequency are listed in Table 2. Second, the highest frequency crash locations are ranked based on crash rate, or the total number of crashes divided by the total number of entering vehicles over the time period (Table 3). Third, the highest frequency crash locations are ranked based on the overall severity of crashes that occurred at each location. Analyzing crash frequency, crash rates, and crash severity can help transportation planners, engineers, and officials to identify locations that may have hazardous geometric or operational deficiencies.

In 2012, the intersection with greatest crash frequency was State Road 37 & W Bloomfield Rd, where 35 crashes were reported (Table 2). This intersection also had the greatest number of total crashes during the period from 2010 to 2012, with 107 reported crashes. The highest frequency crash locations have remained consistent over time, with 86% of the locations in Table 2 having appeared in the previous year's analysis, covering the period 2009 to 2011.

However, locations with a high crash frequency are not necessarily more hazardous than locations with a lower crash frequency. To account for the effect of traffic volume on the total number of crashes at a particular location, a normalized crash rate was calculated for each of the intersections in Table 2 (Table 3)³. The latest available traffic counts from INDOT, the City of Bloomington, and Monroe County were used to estimate the number of vehicles entering the intersection over the time period⁴. During the period from 2010 to 2012, the intersection with the greatest crash rate according to this analysis was State Road 45 & E Ooley Ave.

Finally, some locations may be prone to serious crashes that lead to personal injury and loss of life. To compare crash locations based on the seriousness of the crashes that occur there, fatal and personal injury crashes can be weighted relative to crashes that led to property damage only. A standard weighting scale was used to calculate a severity number for each of the intersections in Table 2 (Table 4)⁵. During the period from 2010 to 2012, the intersection with the greatest severity number was State Road 37 & W Bloomfield Rd, followed by State Road 37 & W 3rd St.

The methodology used in this report does not help identify locations which have a higher than expected crash frequency, crash rate, or severity index. Therefore, future reports should consider comparing intersections with similar operating characteristics. Additionally, a method to calculate a crash rate for every intersection in the network should be explored. These additional analyses will further aid transportation planners, engineers, and officials in effectively identifying hazardous locations, and securing funding to fix them.

³ Crash Rate = $N / ((\text{Intersection_AADT}) * 3 \text{ years} * 365 \text{ days} * 10^{-6})$,
where N = total number of crashes from 2010 to 2012, and
where Intersection_AADT = sum of average annual daily traffic entering the intersection

⁴ Traffic counts from were available for 97% of all intersection approaches. In some instances, standard estimates based on roadway classification were used.

⁵ Severity Number = (Fatal Crashes * 12) + (Personal Injury Crashes * 3) + (Property Damage Only Crashes)

Table 2. Top 50 Crash Locations by Crash Frequency, 2010-2012

Crash Frequency Rank	Previous Rank	Intersection	Jurisdiction	Year			3-Year Total
				2010	2012	2013	
1	1	State Road 37 & W Bloomfield Rd	IN	40	32	35	107
2	4	State Road 37 & W 3rd St	IN	28	31	44	103
3	2	State Road 46 & E 3rd St	IN	33	33	35	101
3	5	State Road 46 & Pete Ellis Dr	IN	47	20	34	101
5	12	State Road 46 & S Kingston Dr	IN	19	17	43	79
6	9	State Road 45 & S Liberty Dr	IN	36	15	24	75
6	3	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	29	29	17	75
8	6	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	27	25	22	74
9	10	State Road 48 & S Liberty Dr	IN	24	21	17	62
10	7	State Road 45/46 Bypass & E 10th St	IN	24	14	23	61
10	22	W 3rd St & S College Ave	COB	18	17	26	61
12	8	State Road 37 & W Vernal Pike	IN	24	19	17	60
12	18	State Road 45 & S Gillham Dr	IN	11	23	26	60
12	15	W 10th St & N College Ave	COB	22	17	21	60
15	14	W 3rd St & S Cory Ln	COB	23	24	10	57
16	13	State Road 45/46 Bypass & N Kinser Pike	IN	19	19	18	56
17	11	State Road 48 & S Gates Dr	IN	21	20	13	54
18	18	E 3rd St & S Jordan Ave	COB	18	22	12	52
19	18	State Road 46 & S Smith Rd	IN	14	17	20	51
20	26	E 10th St & N Union St	COB	13	21	15	49
21	24	State Road 37 & W Tapp Rd	IN	25	11	11	47
22	15	E 10th St & N Fee Ln	COB	24	15	7	46
22	23	E 17th St & N Jordan Ave	COB	14	24	8	46
24	30	W 3rd St & N Walnut St	COB	11	10	22	43
25	28	E 10th St & N Jordan Ave	COB	17	10	15	42
25	24	W 7th St & N Walnut St	COB	18	12	12	42
25	31	W Kirkwood Ave & N Walnut St	COB	12	12	18	42
28	17	E 3rd St & S Washington St	COB	16	12	13	41
28	26	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	12	11	18	41
28	21	W 2nd St & S College Ave	COB	15	12	14	41
31	36	E 3rd St & S Woodlawn Ave	COB	13	16	11	40
32	41	E Rhorer Rd & S Walnut Street Pike	MC	13	10	16	39
32	28	W 17th St & N Kinser Pike/N Madison St	COB	14	15	10	39
32	47	W 4th St & S Walnut St	COB	14	11	14	39
35	39	E 3rd St & S Fess Ave	COB	13	12	13	38
35	57	E 3rd St & S Highland Ave	COB	15	9	14	38
37	44	E 10th St & N Jefferson St	COB	10	11	16	37
38	31	E 10th St & N Sunrise Dr	COB	14	10	12	36
39	31	S Walnut Street Pike & E Winslow Rd	COB	12	10	13	35
39	62	State Road 37 & W Fullerton Pike	IN	12	11	12	35
39	39	W 7th St & N College Ave	COB	14	6	15	35
39	74	W Kirkwood Ave & N Rogers St	COB	8	11	16	35
43	31	E 17th St & N Dunn St	COB	6	11	17	34
43	77	State Road 45 & E Ooley Ave	IN	8	16	10	34
45	44	E 10th St & N Woodlawn Ave	COB	13	11	9	33
45	75	E 7th St & N Jordan Ave	COB	8	13	12	33
45	54	S Walnut St & W Country Club Dr/E Winslow Rd	COB	7	10	16	33
45	31	State Road 46 & E Eastgate Ln	IN	17	5	11	33
45	47	State Road 46 & N Centennial Dr	IN	14	10	9	33
50	47	E 13th St & N Indiana Ave	COB	11	11	10	32
50	59	W 9th St & N College Ave	COB	13	10	9	32

Table 3. Top 50 Crash Locations by Crash Rate, 2010-2012

Crash Rate Rank	Crash Frequency Rank	Intersection	Jurisdiction	3-Year Total	Crashes per Million Entering Vehicles
1	43	State Road 45 & E Ooley Ave	IN	34	2.47
2	12	W 10th St & N College Ave	COB	60	2.46
3	50	W 9th St & N College Ave	COB	32	2.45
4	31	E 3rd St & S Woodlawn Ave	COB	40	2.43
5	35	E 3rd St & S Fess Ave	COB	38	2.35
6	3	State Road 46 & Pete Ellis Dr	IN	101	1.97
7	5	State Road 46 & S Kingston Dr	IN	79	1.87
8	10	W 3rd St & S College Ave	COB	61	1.73
9	50	E 13th St & N Indiana Ave	COB	32	1.68
10	25	W 7th St & N Walnut St	COB	42	1.56
11	32	W 4th St & S Walnut St	COB	39	1.55
12	12	State Road 45 & S Gillham Dr	IN	60	1.54
13	45	E 7th St & N Jordan Ave	COB	33	1.46
14	25	W Kirkwood Ave & N Walnut St	COB	42	1.45
15	37	E 10th St & N Jefferson St	COB	37	1.41
16	3	State Road 46 & E 3rd St	IN	101	1.33
16	38	E 10th St & N Sunrise Dr	COB	36	1.33
16	39	W 7th St & N College Ave	COB	35	1.33
19	18	E 3rd St & S Jordan Ave	COB	52	1.32
20	32	E Rhorer Rd & S Walnut Street Pike	MC	39	1.30
21	20	E 10th St & N Union St	COB	49	1.27
22	15	W 3rd St & S Cory Ln	COB	57	1.24
23	22	E 10th St & N Fee Ln	COB	46	1.18
24	28	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	41	1.12
25	6	State Road 45 & S Liberty Dr	IN	75	1.11
26	35	E 3rd St & S Highland Ave	COB	38	1.09
27	28	E 3rd St & S Washington St	COB	41	1.07
28	8	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	74	1.05
28	19	State Road 46 & S Smith Rd	IN	51	1.05
30	39	S Walnut Street Pike & E Winslow Rd	COB	35	1.04
31	28	W 2nd St & S College Ave	COB	41	1.03
32	45	E 10th St & N Woodlawn Ave	COB	33	1.01
33	22	E 17th St & N Jordan Ave	COB	46	1.00
34	9	State Road 48 & S Liberty Dr	IN	62	0.99
35	45	State Road 46 & E Eastgate Ln	IN	33	0.98
36	43	E 17th St & N Dunn St	COB	34	0.91
37	25	E 10th St & N Jordan Ave	COB	42	0.90
38	1	State Road 37 & W Bloomfield Rd	IN	107	0.88
38	24	W 3rd St & N Walnut St	COB	43	0.88
40	10	State Road 45/46 Bypass & E 10th St	IN	61	0.87
40	32	W 17th St & N Kinser Pike/N Madison St	COB	39	0.87
42	6	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	75	0.86
43	17	State Road 48 & S Gates Dr	IN	54	0.84
44	2	State Road 37 & W 3rd St	IN	103	0.80
45	16	State Road 45/46 Bypass & N Kinser Pike	IN	56	0.79
46	39	W Kirkwood Ave & N Rogers St	COB	35	0.72
47	12	State Road 37 & W Vernal Pike	IN	60	0.70
48	21	State Road 37 & W Tapp Rd	IN	47	0.55
49	45	State Road 46 & N Centennial Dr	IN	33	0.53
50	45	S Walnut St & W Country Club Dr/E Winslow Rd	COB	33	0.50
51	39	State Road 37 & W Fullerton Pike	IN	35	0.48

Table 4. Top 50 Crash Locations by Crash Severity, 2010-2012

Crash Severity Rank	Intersection	Jurisdiction	Fatality	Personal Injury	Property Damage Only	Severity Number
1	State Road 37 & W Bloomfield Rd	IN	0	35	72	177
2	State Road 37 & W 3rd St	IN	0	28	75	159
3	State Road 46 & E 3rd St	IN	0	23	78	147
4	State Road 46 & Pete Ellis Dr	IN	0	17	84	135
5	State Road 46 & S Kingston Dr	IN	0	20	59	119
6	State Road 45 & S Liberty Dr	IN	0	19	56	113
7	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	0	18	56	110
8	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	0	17	58	109
9	State Road 48 & S Liberty Dr	IN	0	20	42	102
10	W 3rd St & S Cory Ln	COB	0	22	35	101
11	State Road 37 & W Vernal Pike	IN	0	19	41	98
12	W 3rd St & S College Ave	COB	0	17	44	95
13	State Road 45/46 Bypass & E 10th St	IN	0	15	46	91
14	State Road 45/46 Bypass & N Kinser Pike	IN	0	14	42	84
15	State Road 46 & S Smith Rd	IN	0	16	35	83
16	W 10th St & N College Ave	COB	0	11	49	82
17	E 3rd St & S Jordan Ave	COB	0	13	39	78
18	State Road 37 & W Fullerton Pike	IN	0	20	15	75
19	State Road 48 & S Gates Dr	IN	0	9	45	72
20	W 17th St & N Kinser Pike/N Madison St	COB	0	14	25	67
20	S Walnut St & W Country Club Dr/E Winslow Rd	COB	0	17	16	67
22	W Kirkwood Ave & N Walnut St	COB	0	12	30	66
23	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	0	12	29	65
24	E 10th St & N Fee Ln	COB	0	9	37	64
25	E 7th St & N Jordan Ave	COB	0	15	18	63
26	State Road 45 & S Gillham Dr	IN	0	1	59	62
27	E 10th St & N Union St	COB	0	6	43	61
27	State Road 37 & W Tapp Rd	IN	0	7	40	61
27	E 3rd St & S Washington St	COB	0	10	31	61
30	E 17th St & N Jordan Ave	COB	0	8	35	59
31	E 10th St & N Jordan Ave	COB	0	8	34	58
31	W 7th St & N Walnut St	COB	0	8	34	58
33	W 2nd St & S College Ave	COB	0	8	33	57
34	E 17th St & N Jordan Ave	COB	0	5	41	56
34	E 3rd St & S Highland Ave	COB	0	9	29	56
36	S Walnut Street Pike & E Winslow Rd	COB	0	9	26	53
36	W Kirkwood Ave & N Rogers St	COB	0	9	26	53
38	E 3rd St & S Woodlawn Ave	COB	0	6	34	52
38	E 3rd St & S Fess Ave	COB	0	7	31	52

Crash Severity Rank	Intersection	Juris-diction	Fatality	Personal Injury	Property Damage Only	Severity Number
40	E Rhorer Rd & S Walnut Street Pike	MC	0	6	33	51
41	State Road 45 & E Ooley Ave	IN	0	8	26	50
42	W 4th St & S Walnut St	COB	0	5	34	49
42	E 10th St & N Jefferson St	COB	0	6	31	49
42	W 7th St & N College Ave	COB	0	7	28	49
45	E 13th St & N Indiana Ave	COB	0	8	24	48
46	State Road 46 & E Eastgate Ln	IN	0	7	26	47
46	State Road 46 & N Centennial Dr	IN	0	7	26	47
48	E 10th St & N Sunrise Dr	COB	0	5	31	46
49	E 10th St & N Woodlawn Ave	COB	0	6	27	45
50	E 17th St & N Dunn St	COB	0	3	31	40
50	W 9th St & N College Ave	COB	0	4	28	40

Crash Factors

This section summarizes the primary crash factors from 2009 to 2011. 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 once again the most common cause of crashes, contributing to over 2,500 crashes from 2009 to 2011. Following too closely, driver errors, and unsafe backing were also significant crash factors. Table 3 shows the top 10 primary crash factors for 2010-2012, which account for over three-quarters of total crashes.

Table 5. Top 10 Primary Crash Factors by Severity, 2010-2012

Rank	Primary Factor	Severity				3-Year Total
		Fatal Injury	Incapacitating Injury	Non-Incapacitating Injury	No Injury/Unknown	
1	Failure To Yield Right Of Way	3	60	670	1783	2,516
2	Following Too Closely	1	20	479	1365	1,865
3	Unsafe Backing	0	3	29	1195	1,227
4	Other (Driver) - Explain In Narrative	2	19	165	908	1,094
5	Ran Off Road Right	8	31	200	592	831
6	Speed Too Fast For Weather Conditions	0	9	103	402	514
7	Animal/Object In Roadway	1	7	44	403	455
8	Disregard Signal/Reg Sign	0	15	168	267	450
9	Improper Turning	0	3	36	390	429
10	Driver Distracted - Explain In Narrative	0	1	102	235	338

Fatalities

This section provides a focused look at motor vehicle fatalities in Monroe County from 2010 to 2012. As with previous sections, the material presented here can be useful for enforcement, education, and decision-making.

In 2012 there were nine fatalities in Monroe County (Table 5). Of these, four resulted from single-car crashes, one from two-car crashes, and two from crashes involving a moped or motorcycle. Over the period from 2010 to 2012, 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 10.63 fatalities per 100,000 people for 2010⁶.

An investigation of the causal factors leading to fatal crashes shows that running off the road to the right and unsafe speeds are the most common cause of crashes leading to a fatality.

Table 6. Fatalities by Crash Type, 2010-2012

Year	Crash Type						Total	Fatalities per 100,000 Population
	One car	Two cars	Three cars or more	Moped and Motorcycle	Bicycle	Pedestrian		
2010	6	5	0	1	0	1	13	9.4
2011	3	3	0	3	0	0	9	6.4
2012	4	1	1	2	0	1	9	6.4
Total	13	9	1	6	0	2	31	7.8

Table 7. Top Primary Crash Factors for Fatal Crashes, 2010-2012

Rank	Primary Factor	Fatal Injury	% of Total
1	RAN OFF ROAD RIGHT	10	30.3%
2	UNSAFE SPEED	6	18.2%
3	LEFT OF CENTER	4	12.1%
4	FAILURE TO YIELD RIGHT OF WAY	3	9.1%
5	OTHER (DRIVER) - EXPLAIN IN NARRATIVE	2	6.1%
5	OVERCORRECTING/OVERSTEERING	2	6.1%
7	ACCELERATOR FAILURE OR DEFECTIVE	1	3.0%
7	ANIMAL/OBJECT IN ROADWAY	1	3.0%
7	FOLLOWING TOO CLOSELY	1	3.0%
7	IMPROPER LANE USAGE	1	3.0%
7	IMPROPER PASSING	1	3.0%
7	PEDESTRIAN ACTION	1	3.0%
	Total	33	100.0%

⁶ 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 April 12, 2013

Fatal Crash Locations

This section summarizes the locations for crashes that resulted in fatalities. From 2010 to 2012, there were 31 fatal crashes, which resulted in 31 fatalities. The locations of these fatal crashes are identified in Table 6. Location information will aid transportation planners and engineers to identify problematic locations. Fatalities are a major factor in determining HSIP funding eligibility (see the Table A1 in the appendix for more information).

Table 8. Fatal Crash Locations by Type, 2010-2012

Location	Jurisdiction	Total	Crash Type				
			One Car	Two Cars	Three or More Cars	Moped or Motorcycle	Pedestrian
State Road 37 & W Wayport Rd	IN	2	0	2	0	0	0
E Monroe Dam Rd From S Strain Ridge Rd To S Foggy Morning Rd	MC	1	1	0	0	0	0
E Moores Pike & S Olcott Blvd	COB	1	0	0	0	1	0
E North Dr & S Walnut St	COB	1	0	1	0	0	0
E Rhorer Rd & S Nimit Dr	MC	1	0	0	0	0	1
N Dunn St & N Old State Road 37	COB	1	0	0	0	1	0
N Kinser Pike & W Rosewood Dr	COB	1	1	0	0	0	0
N Old State Road 37 From W Gourley Pk To W Club House Dr	COB	1	0	0	0	1	0
Old State Road 37 & S E Rhorer Rd	MC	1	1	0	0	0	0
S Fairfax Rd & E Schacht Rd	MC	1	0	1	0	0	0
S Leonard Springs Rd & W Stapleton Ave	MC	1	0	1	0	0	0
S Victor Pike from W Fluck Mill Rd to W Tramway Rd	MC	1	1	0	0	0	0
State Road 37 & W Sample Rd	IN	1	0	1	0	0	0
State Road 37 From E Ellis Rd To E Wylie Rd	IN	1	1	0	0	0	0
State Road 37 From E Zikes Rd To E Smithville Rd	IN	1	0	0	0	1	0
State Road 37 From W Simpson Chapel Rd To S Lee Paul Rd	IN	1	1	0	0	0	0
State Road 446 & E Chandler Rd	IN	1	0	0	0	1	0
State Road 446 from E Allens Creek Rd to S Chapel Hill Rd	IN	1	0	1	0	0	0
State Road 446 From Moores Pk To Old State Road 446	IN	1	1	0	0	0	0
State Road 446 From S Chapel Hill Rd To E Allens Creek Rd	IN	1	1	0	0	0	0
State Road 446 From S Old Richardson Rd To E Merritt Drive	IN	1	0	1	0	0	0
State Road 45 & S Breeden Rd	IN	1	0	0	1	0	0
State Road 45 & W Sparks Rd	IN	1	1	0	0	0	0
State Road 45 from S Darrell Dr to S Dunlap Rd	IN	1	0	0	0	1	0
State Road 46 & E Kings Rd	IN	1	1	0	0	0	0
State Road 46 From E Kent Rd To N Brummetts Creek Rd	IN	1	0	1	0	0	0
W Arlington Rd & N Canterbury Ct	MC	1	1	0	0	0	0
W Beasley Dr & S Curry Pike	MC	1	1	0	0	0	0
W Cockrell Rd From S Rockport Rd To S Sweetwater Ln	MC	1	0	0	0	0	1
W Popcorn Rd from S Rockport Rd to S Ketcham Rd	MC	1	1	0	0	0	0

Bicycle and Pedestrian Crashes

This section reports on the number of bicycle and pedestrian crashes in Monroe County from 2010 to 2012. 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, data from the 2011 American Community Survey indicates that 5.2% of commuters in Bloomington use a bicycle as their primary mode of transportation, while 16.6% walk⁷. The combined walking and biking commute rate ranks 2nd among U.S. cities with a population of greater than 65,000 people⁸. However, as described in this report, individuals using these modes of transportation are particularly vulnerable to injury.

In 2012, there were 66 reported crashes involving a cyclist and 62 involving a pedestrian (Table 1). This included ten pedestrian and five bicycle crashes that resulted in incapacitating injuries, and one pedestrian crash that resulted in a fatality. During the period from 2010 to 2012, 360 pedestrian and bicycle crashes were reported, resulting in two pedestrian fatalities.

It is well understood that crashes involving these modes of transportation more often result in injury when compared with other crash types, therefore there is a need to reduce the frequency and severity of these crashes. Figure 5 shows that the frequency of bicycle and pedestrian crashes peaks each year in May and October. This information could be used by local agencies to help deploy enforcement and education strategies that will result in the greatest reduction in crashes.

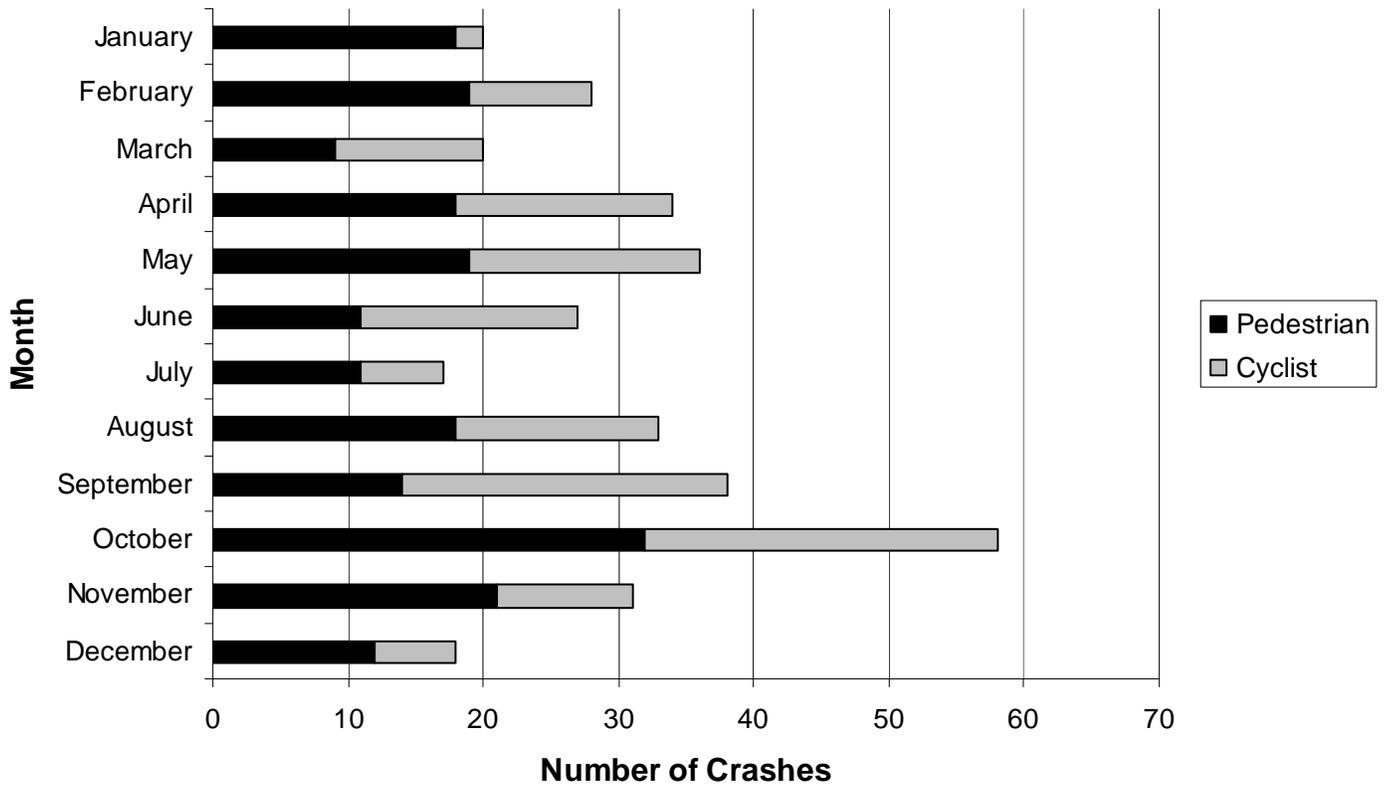
Table 9. Top Bicycle and Pedestrian Crash Locations, 2010-2012

Intersection	Jurisdiction	Crash Type		Total
		Bicycle	Pedestrian	
E 7th St & N Jordan Ave	COB	11	3	14
N Dunn St & E Kirkwood Ave	COB	2	4	6
N Jordan Ave & S Jordan Ave	COB	2	2	4
W 7th St & N Walnut St	COB	1	3	4
N Fee Ln & E Law Ln	COB	1	3	4
State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	0	3	3
E Miller Dr & S Walnut St	COB	1	2	3
S Henderson St & E Miller Dr	COB	1	2	3
E Southern Dr & W Southern Dr & S Walnut St	COB	1	2	3
W Grimes Ln & S Walnut St	COB	3	0	3
W 1st St & S College Ave	COB	2	1	3
W 3rd St & S Patterson Dr	COB	2	1	3
W 3rd St & S Cory Ln	COB	3	0	3
E 3rd St & S Washington St	COB	2	1	3
E 3rd St & S Grant St	COB	0	3	3

⁷ US Census Bureau. 2011 American Community Survey, 1-Year Estimate. <http://www.census.gov/acs/> Accessed on April 11, 2013.

⁸ Ibid.

Figure 5. Bicycle and Pedestrian Crashes by Month, 2010-2012



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 E 17th Street and N Fee Ln, and Monroe County finished improvements to the dangerous curve at E Rogers Rd and S Smith Rd. Post-construction data from this report shows a 37% reduction in the crash frequency at the intersection of 17th Street and Fee Lane following the completion of these improvements⁹. In future years, we will be able to analyze the impact of improvements at the E Atwater Ave and S Henderson St intersection which were completed in 2011. 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.

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.

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 and incapacitating crashes and the characteristics of individuals involved. In particular, age-related factors and impacts could be explored. An improved understanding of these factors would help the community to better focus its efforts on reducing serious traffic injuries and their impact on our community, which is one of the primary purposes of this report.

By identifying potentially problematic locations, this report has taken the first step to improving safety on our local roadways. It is expected that transportation planners, engineers, and local officials together will use this information to determine locations that need attention, and seek funding for necessary physical improvements or other means (enforcement, education) to improve safety.

⁹ At this location, 30 crashes occurred from 2007 to 2009, while 19 crashes occurred from 2009 to 2011.

Appendix

Figure A1. Top 50 Total Crash Locations, 2010-2012

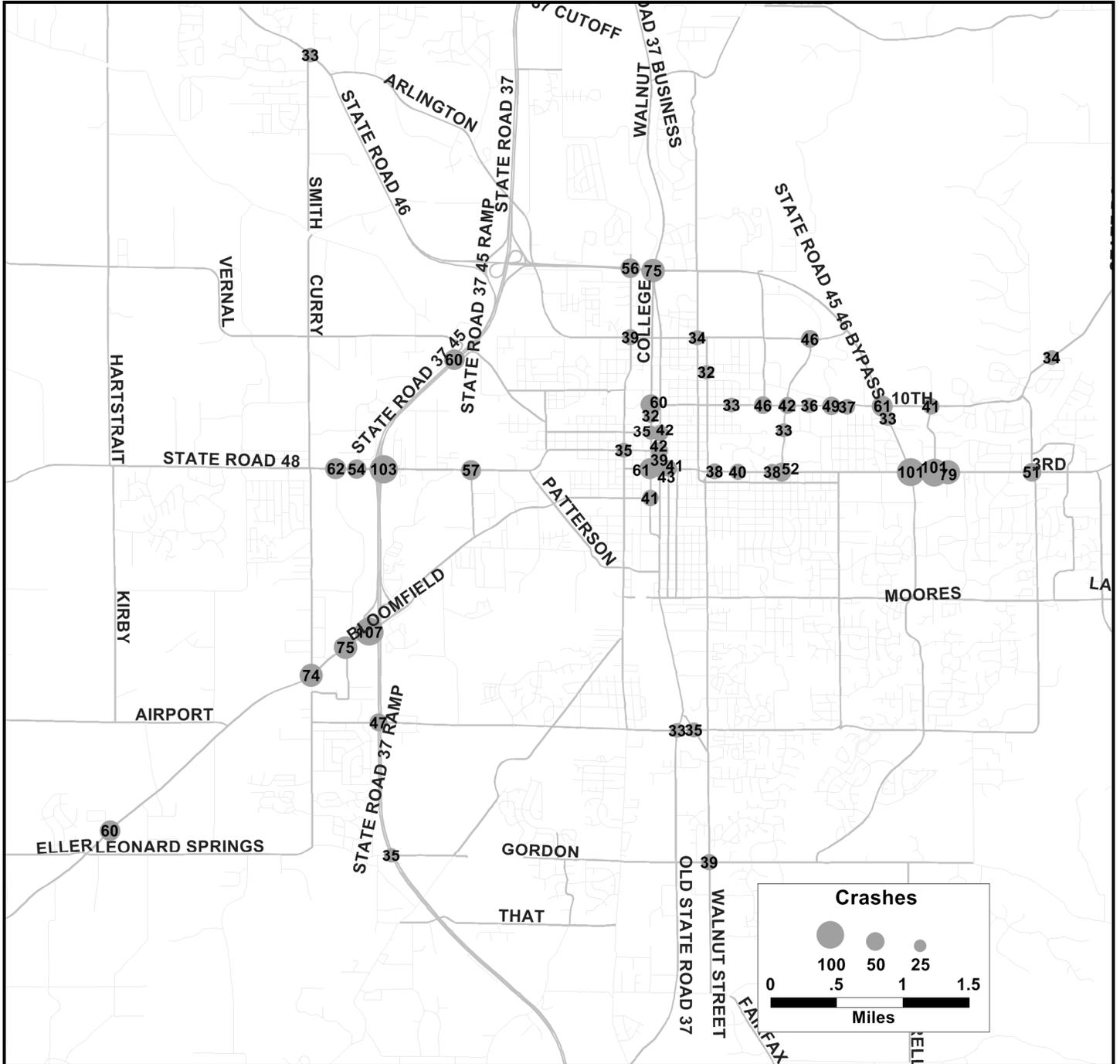


Figure A3. Fatalities by Gender and Crash Type, 2010-2012

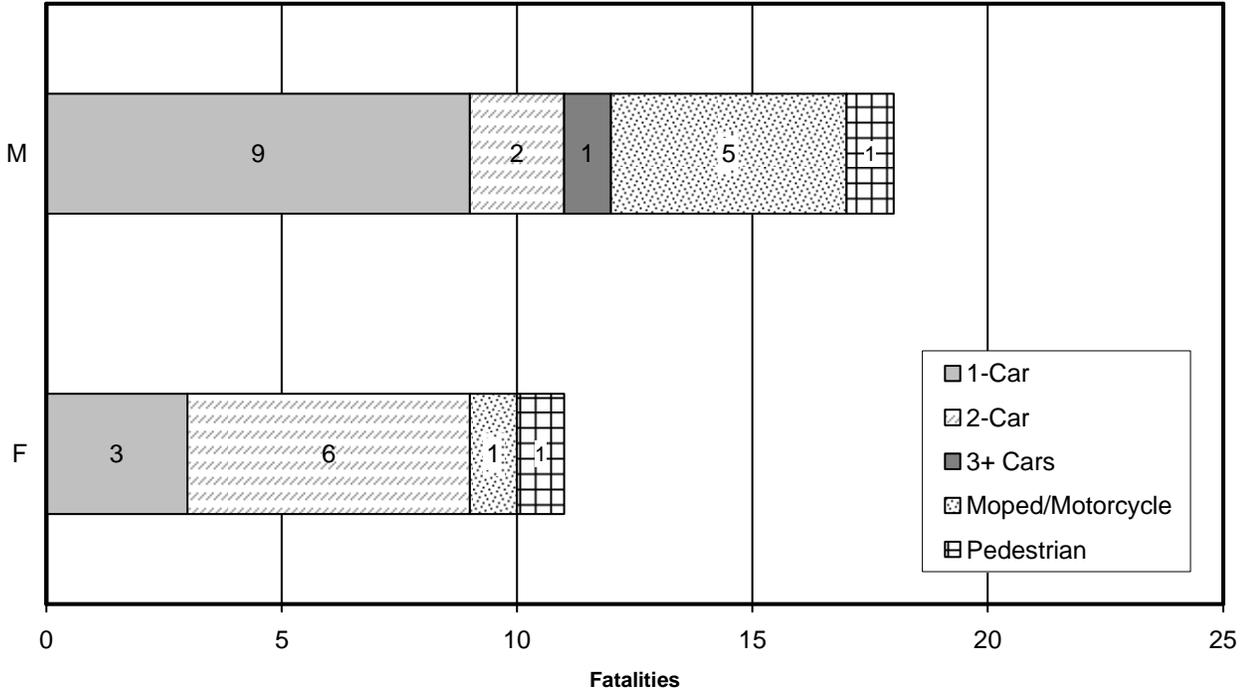
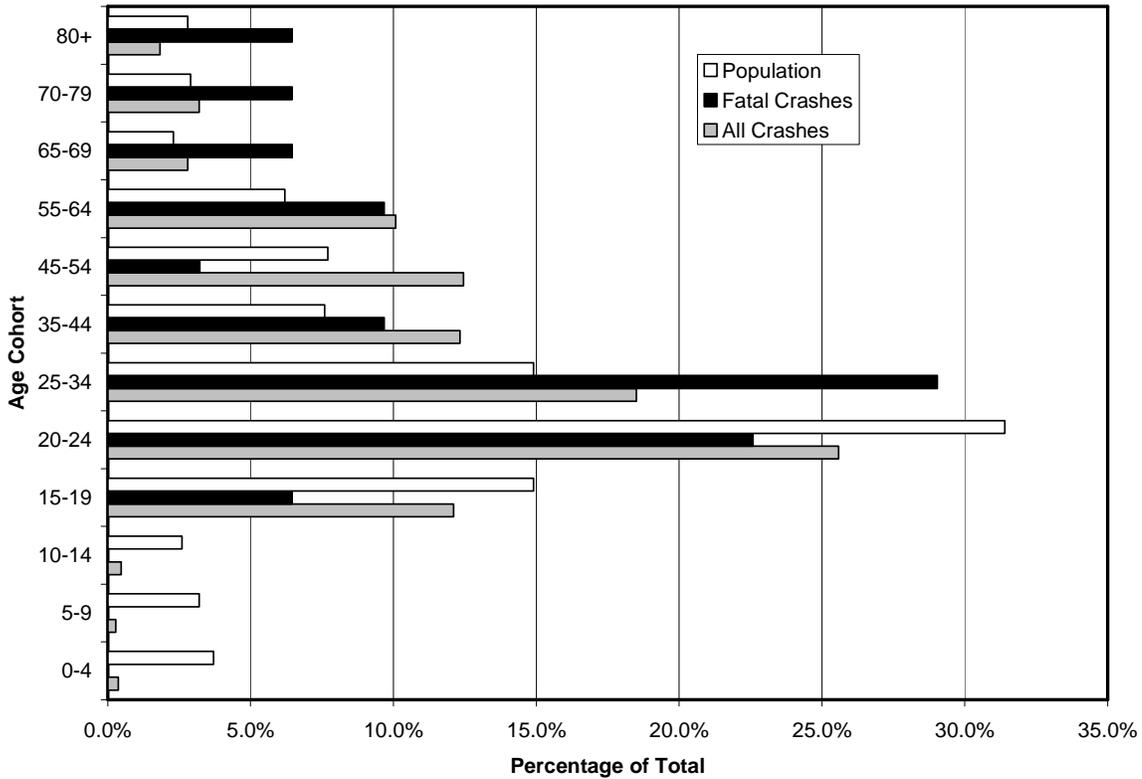


Figure A4. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age, 2010-2012^{10,11}



¹⁰ For the purposes here, individuals whose age was not reported were excluded from the total number of individuals.

¹¹ American Community Survey, 5-Year Estimate, 2007-2011

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. Emphasis is paid to locations which have a high frequency of crashes resulting in fatal or incapacitating injuries. The intent of the funding is to leverage effective safety improvements in a timely fashion to reduce the severity and frequency of crashes.

According to BMCMPPO guidelines, there are three criteria that determine eligibility for HSIP funding. In order to be eligible, a location must be: 1) within the Urban Area of the BMCMPPO, 2) exclusive of INDOT facilities, and 3) rank in the top 50 locations when locations are ordered first by the frequency of crashes resulting in fatal or incapacitating injury, and then by the frequency of crashes of any type.

A list of locations that are automatically eligible for HSIP funding will be included in the final draft of the 2012 Crash Report.

Accident Narrative

V1 was stopped facing southbound on Rogers Street at a flashing red light at the intersection with 2nd Street. D1 advised that she began to enter the intersection when she heard someone yell and she then struck a bicyclist. The bicyclist was westbound on 2nd Street entering the intersection with Rogers Street. 2nd Street traffic had a flashing yellow traffic light. He was wearing a yellow jacket, helmet, and had a light on the front of the bike. The bicyclist stated that he yelled at D1 to warn her prior to her striking him. He had a complaint of pain to his right shoulder. The Bicyclist was taken to the hospital and had a concussion, dislocated right shoulder, and was treated for lacerations.

NOTE: These are the facts as we understand them at this time.