



**TECHNICAL ADVISORY COMMITTEE**

September 23, 2015

10:00 – 11:30 a.m.

McCloskey Room (#135)

- I. Call to Order and Introductions
- II. Approval of Minutes
  - a. August 26, 2015
- III. Communications from the Chair
- IV. Reports from Officers and/or Committees
  - a. Project Updates
- V. Reports from MPO Staff
  - a. Annual List of Obligated Projects
  - b. Crash Reports (2011-2013 and 2012-2014)
- VI. Old Business
  - a. MTP Material
  - b. Complete Streets Policy Review
- VII. New Business
- VIII. Communications from Committee Members (*non-agenda items*)
  - a. Topic suggestions for future agendas
- IX. Upcoming Meetings
  - a. Technical Advisory Committee – October 28, 2015 at 10:00 a.m. (McCloskey Room)
  - b. Citizens Advisory Committee – October 28, 2015 at 6:30 p.m. (McCloskey Room)
  - c. Policy Committee – October 16, 2015 at 1:30 p.m. (Council Chambers)
- X. Topic Suggestions Under Consideration for Future Discussion

Adjournment

*(\*Recommendations Requested / \*Public comment prior to vote – limited to five minutes per speaker)*



## Bloomington/Monroe County Metropolitan Planning Organization

Technical Advisory Committee Meeting Minutes  
August 26, 2015 McCloskey Room 135, City Hall

Technical Advisory Committee Minutes are transcribed in a summarized outline manner. Audio recordings of the meeting are available in the Planning & Transportation Department for reference.

Technical Advisory Committee: Jim Ude, Kevin Tolloty, Jason Eakin, Toby Turner, Kurt Babcock, John Carter, Laura Haley, Lew May, Tonia Lucas, Roy Aten, Andrew Cibor, Bill Williams

MPO Staff: Anna Dragovich, Josh Desmond, Vince Caristo

Others: James Culbertson

- I. Call to Order and Introductions
- II. Approval of Minutes
  - a. June 24, 2015\* – Mr. Aten motioned, Ms. Lucas seconded. Motion passed and approved.
- III. Communications from the Chair
- IV. Reports from Officers and/or Committees
  - a. Project Updates
- V. Reports from MPO Staff
  - a. Administrative Modification
  - b. Quarterly Tracking Report
  - c. Annual Completion Report
  - d. 2016 Meeting Schedule
- VI. Old Business
  - a. Complete Streets Policy Review
- VII. New Business
  - a. 2040 MTP
  - b. Functional Classification Review\* - Ms. Lucas motioned, Mr. Aten seconded. Motion passed and approved.
  - c. TAP/HSIP Transportation Improvement Program Amendments\* - Mr. Carter motioned, Ms. Lucas seconded. Motion passed and approved.
- VIII. Communications from Committee Members (*non-agenda items*)
  - a. Topic suggestions for future agendas

Adjournment

*\*Action Requested / Public comment prior to vote (limited to five minutes per speaker)*

These minutes were adopted by the Technical Advisory Committee at their meeting held on



**MEMORANDUM**

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To: Members of the MPO Citizens and Technical Advisory Committees  
From: Anna Dragovich, Senior Transportation Planner  
Date: September 17, 2015  
Re: FY 2015 Annual List of Obligated Projects

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**Background**

The current Annual Listing of Federally Obligated Projects report includes all projects in the Bloomington/Monroe County region that received federal obligation in fiscal year 2015 (July 1 through June 30). MPOs are required, under Moving Ahead for Progress in the 21st century (MAP-21) to publish an annual listing of projects which funds have been obligated in the preceding year as a record of project delivery and progress report for public information and disclosure.

Obligated projects are those that have been approved by the federal government for reimbursement. FHWA defines obligation as the federal government's legal commitment (promise) to pay or reimburse the states or other entities for the federal share of a project's eligible costs. Thus, an obligated project is one that has been approved by the federal government for reimbursement, though not necessarily reimbursed yet. Additionally, obligated projects were not necessarily initiated or completed in this year. The obligated project cost reflected in this report also may not equal final project cost.

**Requested Action**

No action requested

## Fiscal Year 2015 Annual List of Obligated Projects

### Bloomington/Monroe County Metropolitan Planning Organization

Contract #	Des	Road	Location	Work Type	Program Class Name/Fund Type	Sponsor	Phase	Obligation Total
B 28755	0300808	ST 1001	Bridge #78 over Clear Creek on Rogers Street	Bridge Replacement	Normal Project	Monroe County	CN	\$1,143.05
B 28755 Total								\$1,143.05
B 31903	0801060	ST 1026	Bridge# 33 over Jack's Defeat Creek on Mt Tabor Road	Bridge Replacement, Other Construction	Group II	Monroe County	CE CN UT1 UT2	\$270,493.36 \$5,570,421.90 \$42,262.60 \$27,141.25
B 31903 Total								\$5,910,319.11
PLC 36163	1382121	IR 1001	Inspection and re-inspection of county bridges 20' and greater in length	Bridge Inspections	Local Bridge	Monroe County	CN PE1	\$0.00 \$229,550.00
PLC 36163 Total								\$229,550.00
R 29488	0600370	VA VARI	Karst Farm Greenway - Monroe County	Enhancement	Transportation Enhancement	Monroe County	CE CN	\$246,880.00 \$183,031.78
R 29488 Total								\$429,911.78
R 31902	0801059	ST 1025	Fullerton Pike - Phase 1	Road Reconstruction (3R/4R Standards)	Group II	Monroe County	RW1	\$811,800.00
R 31902 Total								\$811,800.00
R 33272	0902263	IR 1001	Karst Farm Greenway, phase 2a	Bike/Pedestrian Facilities	Transportation Alternatives	Monroe County	CE CN	\$126,931.77 \$1,779,676.17
R 33272 Total								\$1,906,607.94
R 35921	1382431	ST 1001	Karst Farm Trail Phase 3	Bike/Pedestrian Facilities	Transportation Alternatives	Monroe County	PE1	\$48,000.00
R 35921 Total								\$48,000.00
B 35900	1173326	IR 1035	Bridge 46 on Kinser Pike over Bean Blossom Creek	Br Repl, Comp.Cont.Steel Beam	Local Bridge	Monroe County	RW1	\$134,800.00
B 35900 Total								\$134,800.00
PLC 37870	1297633	IR 1017	Hunters Creek Road from SR446 to Tower Ridge Road	Other Type Project (Miscellaneous)	Demonstration Project	Monroe County	RW1	\$796,348.00
PLC 37870 Total								\$796,348.00
R 35316	0800768	IR 1004	Bridge 12 on Stinesville Road over Jack's Defeat Creek	Bridge Replacement, Other Construction	Demonstration Project	Monroe County	CN	\$314,386.55
	0901794	IR 1001	Stinesville Road approximately 2.5 miles N of SR 46 west of Ellettsville	Road Reconstruction (3R/4R Standards)	Group IV	Monroe County	CN	\$463,434.34
R 35316 Total								\$777,820.89
R 37596	1400783	IR 1039	Sample Road, from Bottom Road to Old 37 North	Road Reconstruction (3R/4R Standards)	Group IV	Monroe County	PE1	\$1,823,132.00
R 37596 Total								\$1,823,132.00
PLC 37104	1173691	PR 0000	Bloomington -- Non-infrastructure activities for seven local schools	Other Type Project (Miscellaneous)	SRTS	Bloomington	PE1	\$110,000.00
PLC 37104 Total								\$110,000.00
R 33271	0901710	ST 1018	Intersection of 17th St at Jordan Ave	Intersect. Improv. W/ Added Turn Lanes	Group II	Bloomington	CE CN	\$168,206.48 \$2,188,694.58
R 33271 Total								\$2,356,901.06
R 35923	1382429	ST 1001	Black Lumber Trail from Henderson St. to Walnut St.	Bike/Pedestrian Facilities	Group II	Bloomington	PE1	\$122,040.00
R 35923 Total								\$122,040.00
R 36022	0901730	ST 1029	Tapp and Rockport intersection improvement	Intersection Improvement, Roundabout	Group II	Bloomington	PE1	\$744,265.60
R 36022 Total								\$744,265.60
R 37423	1400166	VA 1032	Curb Ramps throughout various locations in Bloomington	Safety Revisions	HSIP	Bloomington	PE1	\$70,000.00
R 37423 Total								\$70,000.00
R 36195	1172625	MS TRST	Capitalize purchase of engine/transmission rebuilds&tires for BT route vehicles	Transit Misc Equipment	Transit	Bloomington Public Transportation Corp	PE1	\$130,000.00
R 36195 Total								\$130,000.00
R 36198	1172614	MS TRST	Transit Operating Assistance for CY 2012	Transit Operating	Transit	Bloomington Public Transportation Corp	PE1	\$8,018,049.00
R 36198 Total								\$8,018,049.00
R 36206	1382501	MS TRST	Purchase 40 foot buses	Transit Purchase Vehicles	Transit	Bloomington Public Transportation Corp	PE1	\$880,000.00
R 36206 Total								\$880,000.00
R 36214	1382510	MS TRST	Purchase support and maintenance vehicles	Transit Purchase Vehicles	Transit	Bloomington Public Transportation Corp	PE1	\$88,400.00
R 36214 Total								\$88,400.00
R 36217	1382519	MS TRST	Replace fuel usage hardware/software	Transit Misc Equipment	Normal Project	Bloomington Public Transportation Corp	PE1	\$25,000.00
R 36217 Total								\$25,000.00
R 36218	1382517	MS TRST	Replace paratransit scheduling software/purchase sch software w/AVL technology	Transit Misc Equipment	Transit	Bloomington Public Transportation Corp	PE1	\$150,000.00
R 36218 Total								\$150,000.00
R 36221	1172620	MS TRST	The purchase of BT Access vehicles	Transit Purchase Vehicles	Transit	Bloomington Public Transportation Corp	PE1	\$106,750.00
R 36221 Total								\$106,750.00

B 35249	1297004	SR 46	3.00 miles E of SR-446 over Stephens Creek on SR-46	Bridge Thin Deck Overlay	Normal Project	Indiana Department of Transportation	CN PE1	\$447,392.00 \$95,000.00
B 35249 Total								\$542,392.00
IR 29982	9010075	SR 45	From Kinser Pike to Pete Ellis Dr	Added Travel Lanes, HMA	Major Moves - Major New	Indiana Department of Transportation	CE	\$330,626.92
IR 29982 Total								\$330,626.92
IR 33742	1006075	PR 69	Branch of Clear Creek to SR 37	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	CE CN District Division RW1	\$13,340.00 \$325,157.86 \$20,947.50 \$2,787.22
IR 33742 Total								\$362,232.58
IR 34269	1006572	PR 69	On Bolin Ln, approx 1.25 mi W of SR37 and 3.2 mi S of SR37 intersection w SR45	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN	\$67,381.72
IR 34269 Total								\$67,381.72
IR 35953	1382565	PR 69	Kinser Pike, West side of SR37, just south of Kinser Pike & SR37 Intersection -	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN RW1	\$224,554.44 \$0.00
	1382566	PR 69	Whisnand, On Whisnand Rd and N. Walnut St. Approx 0.6 m S of SR37/Walnut St. Int	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CE CN RW1	\$500,000.00 \$868,030.16 \$0.00
	1382577	PR 69	Long Pond; On N Bottom Rd W of SR37, NW of SR37/Walnut St interchange	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN RW1	\$1,392,749.50 \$0.00
IR 35953 Total								\$2,985,334.10
IR 35954	1382567	PR 69	Victor Pike, East side of Victor Pike, N of Tramway Rd., S of Dillman Rd.	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CE CN	\$70,000.00 \$999,977.70
IR 35954 Total								\$1,069,977.70
IR 35957	1382575	PR 69	Creek Road; On east side of SR37 along Bryants Creek Road.	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	RW1	\$0.00
IR 35957 Total								\$0.00
IR 35958	1382578	PR 69	Modesto; On Lawson Rd and N. Bottom Rd, N of Wylie Rd	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CE CN	\$80,000.00 \$1,614,626.84
	1382579	PR 69	Wylie; On Wylie Rd, west side of SR37, approx 1.1 m N of Walnut Interchange	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN	\$112,747.36
IR 35958 Total								\$1,807,374.20
IR 37369	1383231	PR 69	SR 37 from Victor Pike to SR 39 Monroe/Morgan Counties	Demolition, Remove Buildings, Foundations	Major Moves - Major New	Indiana Department of Transportation	CN	\$4,116,062.00
IR 37369 Total								\$4,116,062.00
PLC 37301	0300381	PR 69	From S of Bloomington via SR37 corridor to SR39 (tier 2 environ study) SAFETEALU	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
PLC 37301 Total								\$0.00
PLC 37340	1382776	PR 69	I-69 Section 5 - IFA Reimbursement for Financial & Legal Consult	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	CN PE1	\$0.00 \$2,000,000.00
PLC 37340 Total								\$2,000,000.00
PLC 37363	1382576	PR 69	Griffith; On west side of SR37,between Ellis Rd and Wylie Rd Intersect with SR37	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
PLC 37363 Total								\$0.00
PLC 37364	1382557	PR 69	Beanblossom Creek, On N Walnut St & Beanblossom Creek - see log	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN RW1	\$0.00 \$0.00
PLC 37364 Total								\$0.00
PLC 37368	1382586	PR 69	Stout Valley; On west side of SR37 Approx .6 m N of Acuff Rd, 0.3 m S of Kinser	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN RW1	\$0.00 \$0.00
PLC 37368 Total								\$0.00
PLC 37474	1400692	PR 69	Wapahani Park Mitigating 4F impacts east of I-69, south of second st	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN	\$921,172.00
PLC 37474 Total								\$921,172.00
PLC 37991	1297885	PR 69	From S of Bloomington via SR37 corridor to SR39	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	CE CN PE1 RW1 UT1 UT2	\$3,500,000.00 \$20,000,000.00 \$9,283,830.00 \$50,422,938.00 \$35,753,754.76 \$5,000,000.00
	1401409	PR 69	Rockport Road over I-69 at RP 114+85 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
	1401593	PR 69	Fullerton Pike over I-69 at RP 115+25 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
	1401594	PR 69	Tapp Road over I-69 at RP 116+27 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
	1401595	PR 69	SR 45 over I-69 at RP 117+01 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00
	1401596	PR 69	SR 48 over I-69 at RP 118+18 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00

1401613	PR 69	I-69 Northbound over CSX Railroad at RP 118+86 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401614	PR 69	I-69 Southbound over CSX railroad at RP 118+86 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401615	PR 69	Vernal Pike over I-69 at RP 119+49 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401616	PR 69	SR 46 over I-69 at RP 120+09 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401617	PR 69	Arlington Road over I-69 at RP 120+57 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401618	PR 69	Kinser Pike over I-69 at RP 122+55 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401619	PR 69	I-69 Northbound over Griffy Creek at RP 123+03 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401620	PR 69	I-69 Southbound over Griffy Creek at RP 123+03 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401621	PR 69	I-69 Northbound over Beanblossom Creek at RP 123+26 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401622	PR 69	I-69 Southbound over Beanblossom Creek at RP 123+26 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401623	PR 69	Walnut Street over I-69 at RP 123+49 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401624	PR 69	I-69 Northbound over Beanblossom Overflow at RP 123+83 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401625	PR 69	I-69 Southbound over Beanblossom Overflow at RP 123+83 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401626	PR 69	Sample Road over I-69 at RP 125+92 (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401627	PR 69	Chambers Pike over I-69 at RP 128+65. (Monroe County)	New Br, Comp.Cont.Pres.Conc.Bulb T-Beam	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401628	PR 69	I-69 Northbound over Bryants Creek at RP 130+91. (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
1401629	PR 69	I-69 Southbound over Bryants Creek at RP 130+91 (Monroe County)	Bridge Rehabilitation Or Repair	Major Moves - Major New	Indiana Department of Transportation	CN	\$0.00	
PLC 37991 Total							\$123,960,522.76	
RS 37117	1383224	SR 46	Red Hill Road to end of concrete section near SR 37	Surface Treatment, Thin HMA Overlay	Pavement Preservation Initiative	Indiana Department of Transportation	CN	\$4,489,448.46
RS 37117 Total							\$4,489,448.46	
RS 37887	1383223	SR 446	E Moores Pike to SR 46	Surface Treatment, Thin HMA Overlay	Pavement Preservation Initiative	Indiana Department of Transportation	CN	\$444,197.66
RS 37887 Total							\$444,197.66	
T 34708	1173647	SR 46	SR 46 and Matthews Drive at RP 47 + 08 in Ellettsville	New Signal Installation	Normal Project	Indiana Department of Transportation	CN	\$6,962.97
T 34708 Total							\$6,962.97	
IR 33739	1006076	PR 69	County Line to Harmony Rd	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	RW1 UT1 UT2	\$357,162.42 \$76,500.00 \$75,233.00
	1172059	PR 69	Bridge over tributary over Indian Creek	New Bridge, Other	Major Moves - Major New	Indiana Department of Transportation	CN	\$275,987.96
	1172070	PR 69	From County Line to Harmony Road	Signs, Lighting, Signals And Markings	Major Moves - Major New	Indiana Department of Transportation	CN	\$322,977.12
IR 33739 Total							\$1,107,860.50	
IR 33741	0500450	PR 69	Harmony Rd to Branch of Clear Creek	New Road Construction	Major Moves - Major New	Indiana Department of Transportation	District Division RW1 UT1 UT2	\$20,947.50 \$178,917.98 \$639,771.19 \$569,770.67
IR 33741 Total							\$1,409,407.34	
IR 34268	1172121	PR 69	On Breeden Rd, approx 1.1 mi S of SR 45	Environmental Mitigation	Major Moves - Major New	Indiana Department of Transportation	CN	\$297,888.94
IR 34268 Total							\$297,888.94	
<b>\$171,589,680.28</b>								



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## MEMORANDUM

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**To:** Technical Advisory & Citizens Advisory Committees

**From:** Vince Caristo, MPO Staff

**Date:** September 18, 2015

**Re:** 2013 and 2014 Crash Reports

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### **Background**

The MPO's annual Crash Report is intended to provide a system-wide analysis of the causes and trends of crashes in Monroe County that can assist local public agencies in targeting transportation investments to improve safety. Each report covers a three-year period, and highlights the frequency, severity, location and other related characteristics of crashes. The results of the Crash Report are one factor that determines project eligibility for local Highway Safety Improvement Funding (HSIP).

### **2013 Crash Report: Covering 2011 through 2013**

A draft version of this report is included in this packet. The results of this report will be not presented at the upcoming meeting, but comments or questions are welcome. Comments on the report that are received by Wednesday, October 7 will be taken into consideration for the final version.

### **2014 Crash Report: Covering 2012 through 2014**

A draft version of this report will be presented at the upcoming meeting in order to provide an opportunity to suggest additional analyses, visualizations, or clarifications that may be useful to include in the final version. Comments on the draft report that are received by Wednesday, October 7 will be taken into consideration for the final version.

### **Action Requested**

No action is requested at this time.

*Bloomington/Monroe County  
Metropolitan Planning Organization*

# **Crash Report**

**Calendar Years 2011 through 2013**

**September, 2015**

**BLOOMINGTON • MONROE COUNTY**



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# Executive Summary

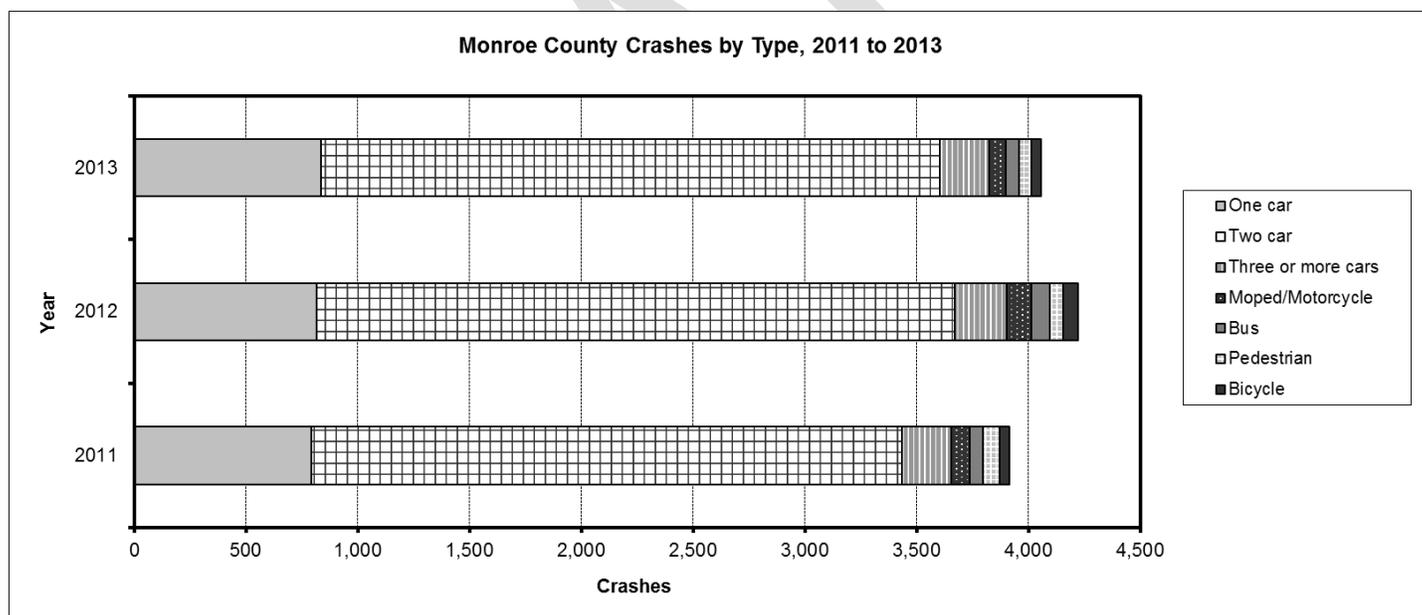
The current version of the Bloomington/Monroe County Metropolitan Planning Organization (MPO) Crash Report continues the MPO's effort to provide a thorough analysis of the causes and trends of crashes in Monroe County. This year's report includes crash data from 2011 to 2013.

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 2011 to 2013. Additionally, the appendix contains information and analysis that may be of interest to some readers.

## Summary of Crash Trends from 2011 to 2013

A total of 12,195 crashes were reported between 2011 and 2013 (Table 1). This figure represents a negligible (1%) increase from the previous period, as reported in last year's crash report (12,056 crashes from 2010 to 2012). 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 12,195 crashes provides useful insights into trends involving pedestrians, bicyclists, buses, mopeds/motorcycles, and crashes that resulted in fatalities. Over the course of the three years analyzed, there were 22 fatalities (Table 4), somewhat more than the 31 fatalities reported from 2010 to 2012. Of the 22 fatalities, the greatest number (8) were from multiple-car crashes, seven were from single-car crashes, six involved mopeds/motorcycles, and one 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 the primary factors. The intersection at State Road 37 & W 3<sup>rd</sup> St topped the list, followed by State Road 37 & W Bloomfield Rd then State Road 46 & E 3rd St. Because these intersections continue to exhibit high numbers of crashes from year to year, safety analysis and possible 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 2,497 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 7<sup>th</sup> St & Jordan Ave had the highest number of bicycle crashes, and warrants 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 2012 shows that unintentional accidents were the 5<sup>th</sup> leading cause of death overall, and of the 127,792 total unintentional accident-related deaths reported, 38,251 (30%) are attributed to transportation.<sup>1</sup> 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 2011 to 2013. 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 2013 alone are often highlighted to provide a snapshot of the most recent year.

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<sup>1</sup> Centers for Disease Control, National Center for Health Statistics. National Vital Statistics Reports – Deaths: Final Data for 2012. Volume 63, Number 9. [http://www.cdc.gov/nchs/data/nvsr/nvsr63/nvsr63\\_09.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr63/nvsr63_09.pdf). Accessed on September 17, 2015.

# 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 94% 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, 2011-2013”) shows how many crashes resulted in a fatal injury in 2011, but it would be incorrect to interpret this column as the number of fatalities in 2011, 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 2011-2013. These factors reflect trends in the overall safety of the transportation system.

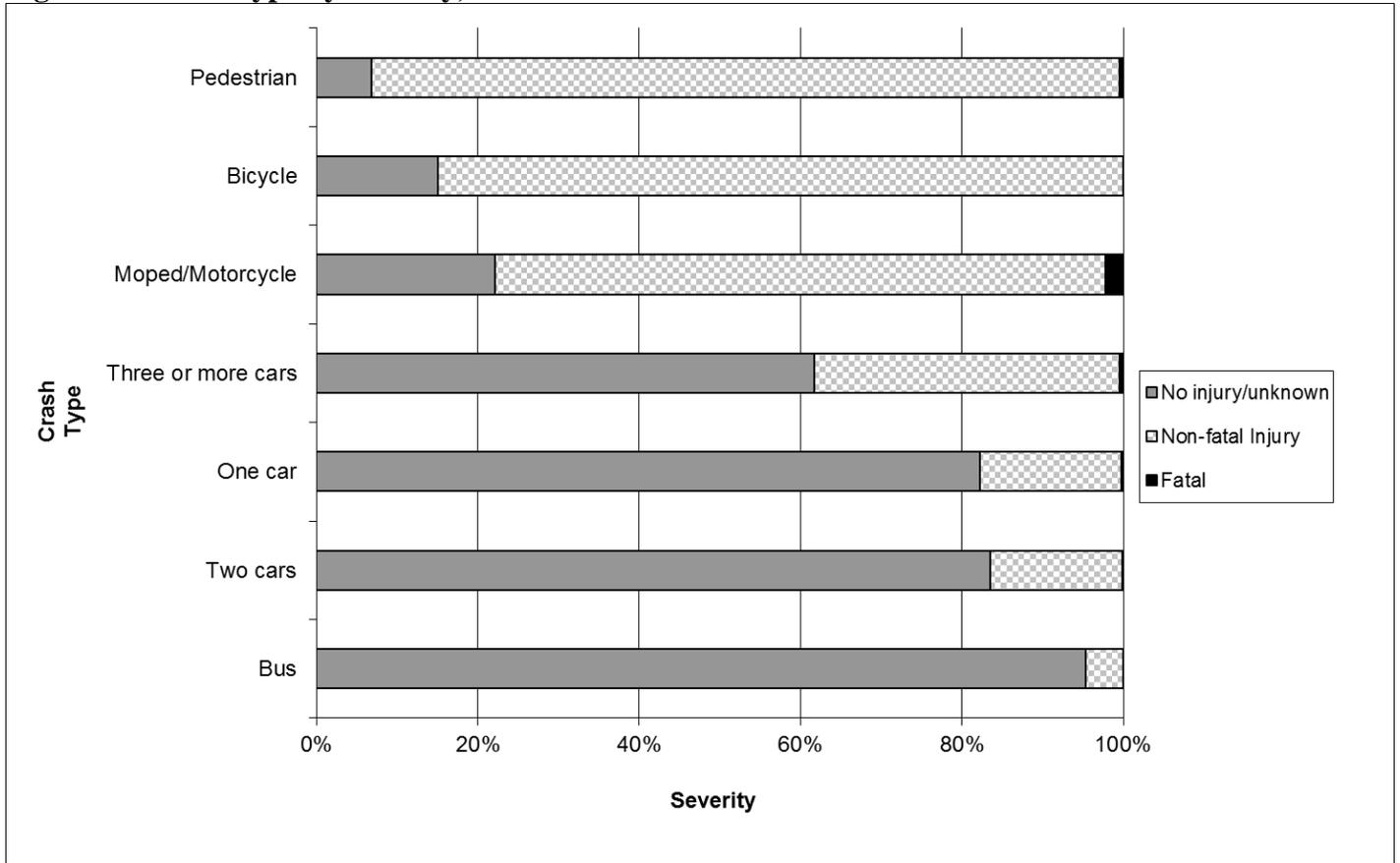
In 2011, a total of 3,914 motor vehicle crashes were reported in Monroe County (Table 1). Of these, nine resulted in one or more fatalities, while sixty-two caused incapacitating injuries. For the vast majority of crashes (3,074), no injuries were reported. Two-car crashes were the most common, comprising 68% of the total. One-car crashes and those involving three or more cars were also common, accounting for 20% 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 21% of all injuries.

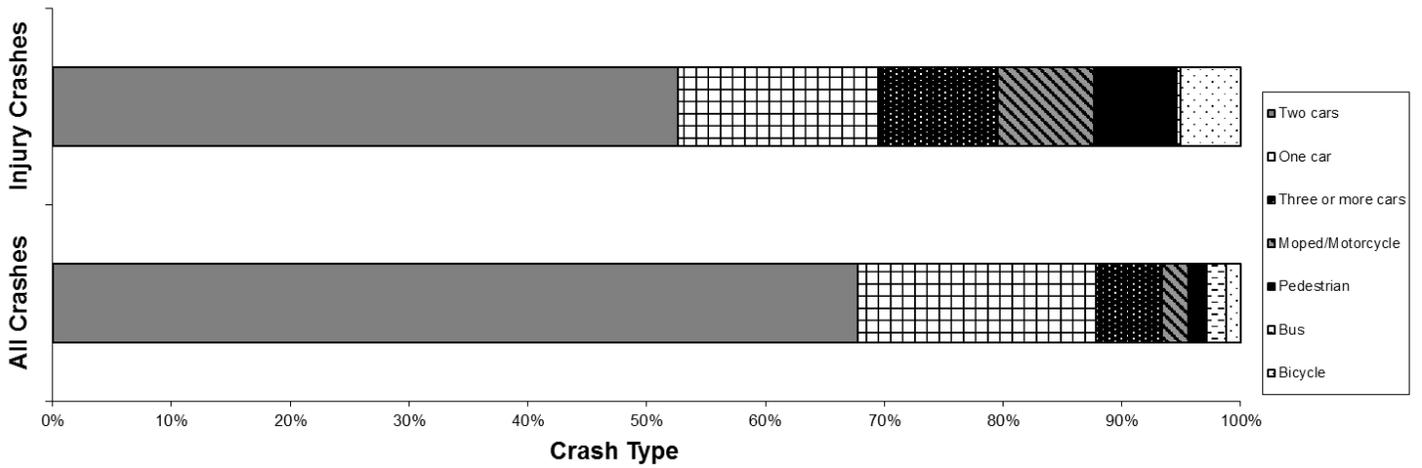
**Table 1. Crashes by Type and Severity, 2011-2013**

Crash Type		Severity				Annual Total	Percent of Annual
		Fatal Injury	Incapacitating Injury	Non-incapacitating	No injury/unknown		
2011	One car	3	13	123	652	791	20.2%
	Two car	3	17	428	2194	2642	67.5%
	Three or more cars	0	6	71	146	223	5.7%
	Bus	0	0	2	55	57	1.5%
	Bicycle	0	3	34	4	41	1.0%
	Moped/Motorcycle	3	13	48	19	83	2.1%
	Pedestrian	0	10	63	4	77	2.0%
	<b>Total</b>	<b>9</b>	<b>62</b>	<b>769</b>	<b>3074</b>	<b>3914</b>	<b>100.0%</b>
	<b>Percent of Annual Total</b>	<b>0.2%</b>	<b>1.6%</b>	<b>19.6%</b>	<b>78.5%</b>	<b>100.0%</b>	
2012	One car	4	18	136	660	818	19.4%
	Two car	1	32	462	2359	2854	67.6%
	Three or more cars	1	5	91	135	232	5.5%
	Bus	0	1	4	75	80	1.9%
	Bicycle	0	5	51	10	66	1.6%
	Moped/Motorcycle	2	19	65	25	111	2.6%
	Pedestrian	1	10	45	6	62	1.5%
	<b>Total</b>	<b>9</b>	<b>90</b>	<b>854</b>	<b>3270</b>	<b>4223</b>	<b>100.0%</b>
	<b>Percent of Annual Total</b>	<b>0.2%</b>	<b>2.1%</b>	<b>20.2%</b>	<b>77.4%</b>	<b>100.0%</b>	
2013	One car	0	20	118	700	838	20.7%
	Two car	1	35	381	2351	2768	68.2%
	Three or more cars	2	7	75	134	218	5.4%
	Bus	0		2	56	58	1.4%
	Bicycle	0	2	35	9	46	1.1%
	Moped/Motorcycle	1	10	50	16	77	1.9%
	Pedestrian	0	5	45	3	53	1.3%
	<b>Total</b>	<b>4</b>	<b>79</b>	<b>706</b>	<b>3269</b>	<b>4058</b>	<b>100.0%</b>
	<b>Percent of Annual Total</b>	<b>0.1%</b>	<b>1.9%</b>	<b>17.4%</b>	<b>80.6%</b>	<b>100.0%</b>	
3-Year	<b>Total</b>	<b>22</b>	<b>231</b>	<b>2329</b>	<b>9613</b>	<b>12195</b>	
	<b>Percent of 3-Year Total</b>	<b>0.2%</b>	<b>1.9%</b>	<b>19.1%</b>	<b>78.8%</b>	<b>100.0%</b>	

**Figure 1. Crash Type by Severity, 2011-2013**



**Figure 2. Crash Type by Severity, 2011-2013**



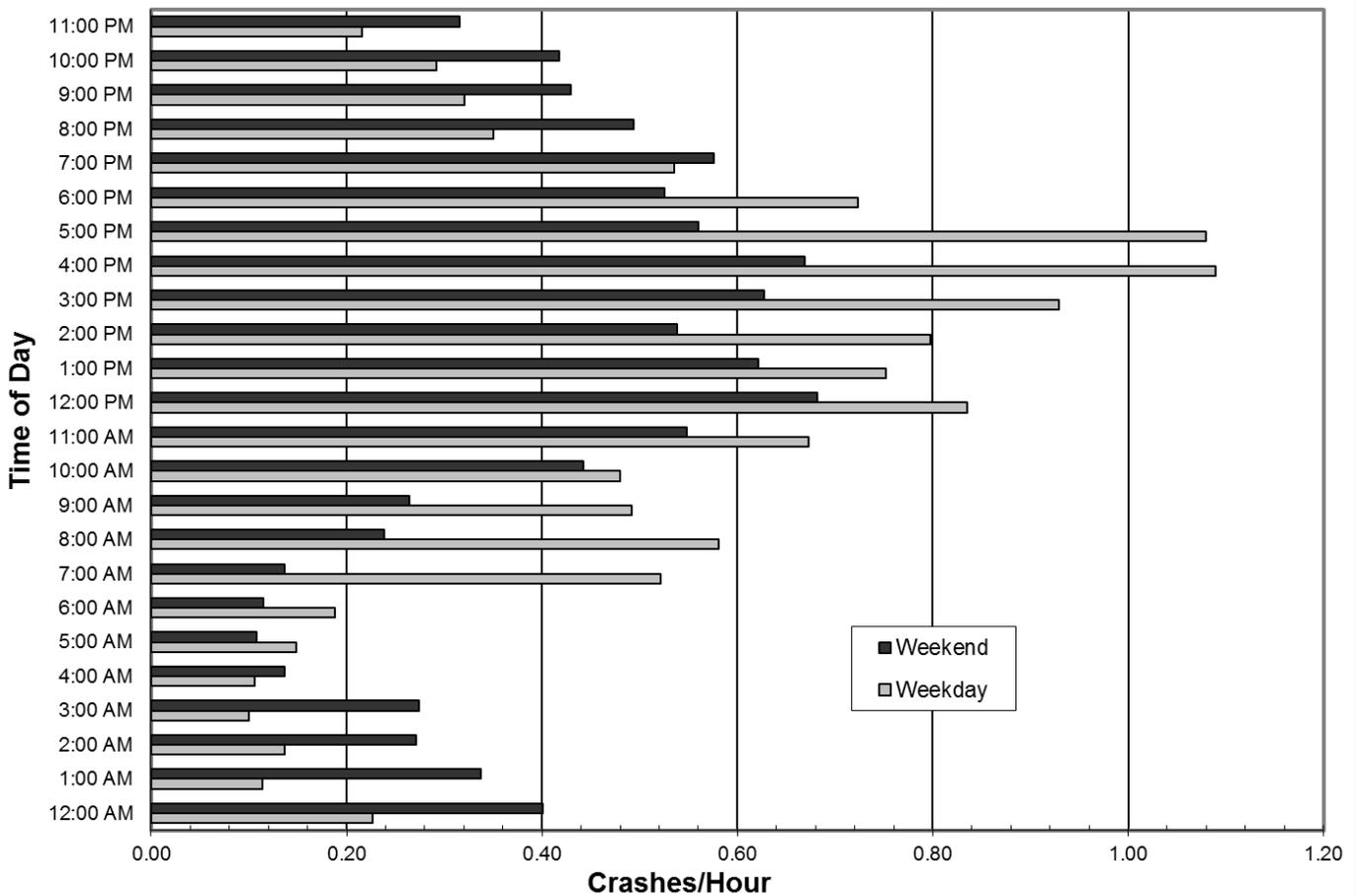
## Time of Crashes

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, 4:00 PM to 6:00 PM. The late afternoon was the most likely time for a crash to occur, with more than one per hour.

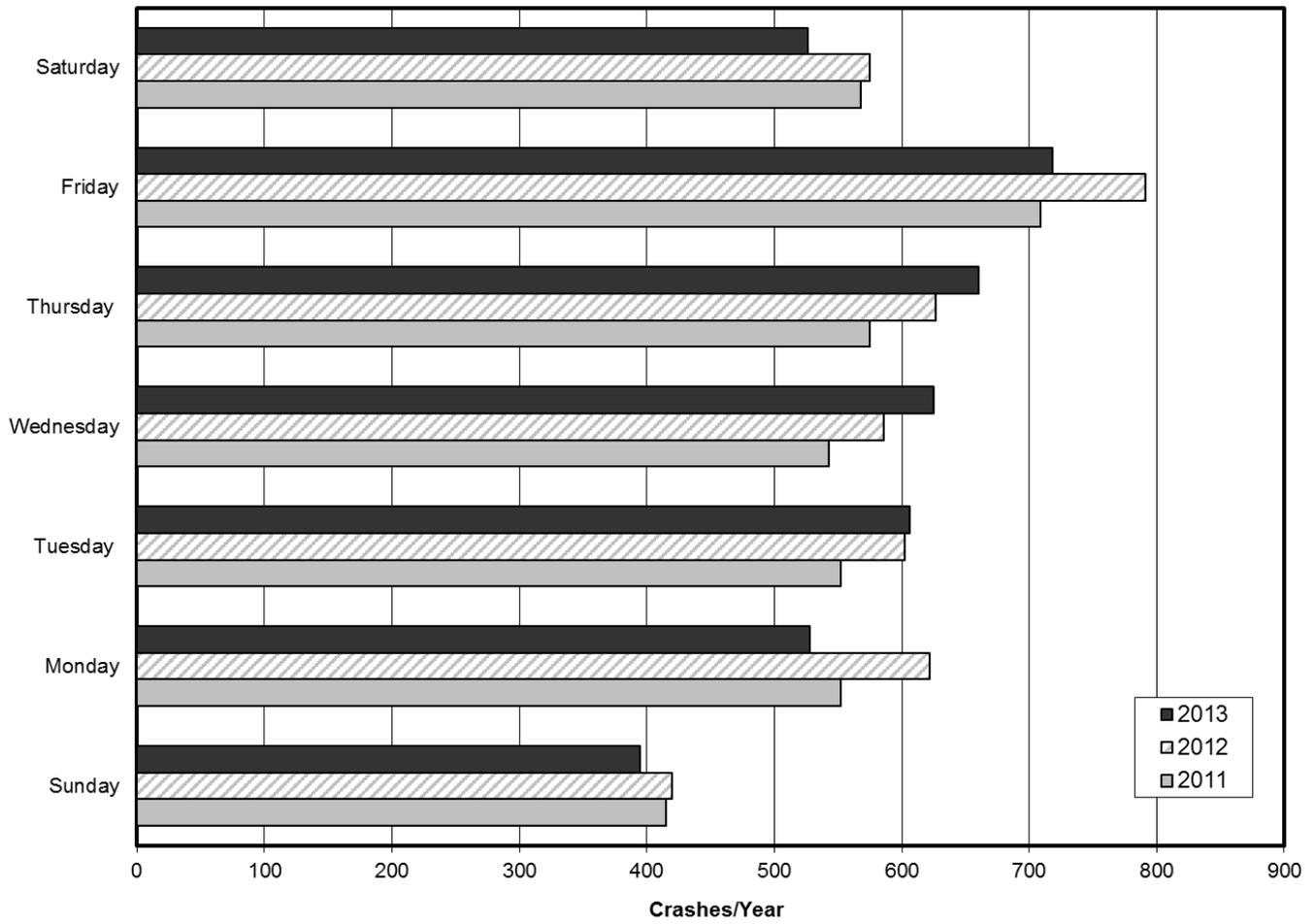
The hourly distribution of crashes for the weekend was less varied than for the work week. Crashes in the late evening and early morning were much more common during the weekend, and rush hour peaks were not as prevalent as on weekdays. During the study period, a greater number of crashes occurred on Fridays than on any other day and the fewest crashes occurred on Sundays (Figure 4).

**Figure 3. Crashes by Time of Day, 2011-2013<sup>2</sup>**



<sup>2</sup> 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, 2011-2013**



## 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 the most recent year, 2013, the intersection with greatest crash number of crashes was State Road 37 & W 3<sup>rd</sup> St, where 36 crashes were reported (Table 2). This same intersection had the greatest number crashes during the period from 2011 to 2013, with 112 reported crashes. The highest frequency crash locations have remained consistent over time, with 88% of the locations in Table 2 having appeared in the previous year's analysis, covering the period 2010 to 2012.

However, locations with a high crash total are not necessarily more hazardous than locations with a lower crash total. 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)<sup>3</sup>. 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 period<sup>4</sup>. During the period from 2011 to 2013, 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)<sup>5</sup>. During the period from 2011 to 2013, the intersection with the greatest severity number was State Road 45 & S Gillham Dr, followed by State Road 46 & S Kingston Dr.

The methodology used in this report does not help identify locations which have a higher than expected crash total, 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.

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<sup>3</sup> Crash Rate =  $N / ((\text{Intersection\_AADT}) * 3 \text{ years} * 365 \text{ days} * 10^{-6})$ ,

where N = total number of crashes from 2011 to 2013, and

where Intersection\_AADT = sum of average annual daily traffic entering the intersection

<sup>4</sup> Traffic counts from obtained from the best available state and local sources.

<sup>5</sup> Severity Number = (Fatal Crashes \* 12) + (Incapacitating Injury Crashes \* 6) + (Non-Incapacitating Injury Crashes \* 3) + (Property Damage Only Crashes)

**Table 2. Top 50 Crash Locations by Crash Total, 2011-2013**

Crash Frequency Rank	Previous Rank	Intersection	Jurisdiction	Year			3-Year Total
				2010	2012	2013	
1	2	State Road 37 & W 3rd St	IN	32	44	36	112
2	1	State Road 37 & W Bloomfield Rd	IN	36	35	32	103
3	3	State Road 46 & E 3rd St	IN	35	35	26	96
4	6	State Road 45/46 Bypass & E 10th St	IN	25	35	28	88
5	3	State Road 46 & Pete Ellis Dr	IN	21	34	25	80
6	5	State Road 46 & S Kingham Dr	IN	18	43	16	77
7	12	State Road 45 & S Gillham Dr	IN	24	26	26	76
8	6	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	29	17	16	62
8	9	State Road 45 & S Liberty Dr	IN	15	24	23	62
10	8	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	25	22	13	60
11	20	E 10th St & N Union St	COB	21	15	23	59
11	12	State Road 37 & W Vernal Pike	IN	20	17	22	59
13	10	W 3rd St & S College Ave	COB	17	24	13	54
13	16	State Road 45/46 Bypass & N Kinser Pike	IN	21	18	15	54
15	22	E 17th St & N Jordan Ave	COB	25	8	20	53
16	9	State Road 48 & S Liberty Dr	IN	21	17	13	51
16	18	E 3rd St & S Jordan Ave	COB	22	12	17	51
18	12	W 10th St & N College Ave	COB	17	21	12	50
19	17	State Road 48 & S Gates Dr	IN	20	13	15	48
20	28	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	11	18	17	46
21	35	E 3rd St & S Fess Ave	COB	12	13	19	44
21	25	W Kirkwood Ave & N Walnut St	COB	12	18	14	44
21	32	W 4th St & S Walnut St	COB	12	14	18	44
24	24	W 3rd St & N Walnut St	COB	10	22	10	42
25	-	State Road 46 & N Curry Pike	IN	7	17	17	41
25	19	State Road 48 & S Smith Rd	IN	15	17	9	41
27	15	W 3rd St & S Cory Ln	COB	24	10	6	40
27	25	W 7th St & N Walnut St	COB	12	12	16	40
27	-	E 3rd St & S Swain Ave	COB	10	10	20	40
27	39	W Kirkwood Ave & N Rogers St	COB	12	16	12	40
27	28	W 2nd St & S College Ave	COB	12	15	13	40
32	21	State Road 37 & W Tapp Rd	IN	11	11	17	39
32	45	S Walnut St & W Country Club Dr/E Winslow Rd	COB	10	16	13	39
34	39	S Walnut Street Pike & E Winslow Rd	COB	10	13	15	38
35	38	E 10th St & N Sunrise Dr	COB	11	12	14	37
35	45	E 10th St & N Woodlawn Ave	COB	11	9	17	37
35	22	E 10th St & N Fee Ln	COB	15	10	12	37
35	32	E Rhorer Rd & S Walnut Street Pike	MC	12	16	9	37
39	31	E 3rd St & S Woodlawn Ave	COB	16	11	9	36
39	28	E 3rd St & S Washington St	COB	12	13	11	36
41	37	E 10th St & N Jefferson St	COB	12	16	7	35
41	25	E 10th St & N Jordan Ave	COB	10	15	10	35
41	-	E 2nd St & S College Mall Rd	COB	10	12	13	35
44	32	W 17th St & N Kinser Pike/N Madison St	COB	15	10	9	34
44	43	E 17th St & N Dunn St	COB	18	10	6	34
44	35	E 3rd St & S Highland Ave	COB	10	14	10	34
44	-	State Road 45/46 Bypass & E 17th St	IN	13	9	12	34
44	39	W 7th St & N College Ave	COB	7	15	12	34
49	-	E 3rd St & S Grant St	COB	10	11	12	33
50	50	E 13th St & N Indiana Ave	COB	11	10	10	31
50	45	E 7th St & N Jordan Ave	COB	13	12	6	31
50	-	State Road 46 & N Union Valley Rd	IN	12	10	9	31

**Table 3. Top 50 Crash Locations by Crash Rate, 2011-2013**

Crash Rate Rank	Crash Frequency Rank	Intersection	Jurisdiction	3-Year Total	Crashes per Million Entering Vehicles
1	7	State Road 45 & S Gillham Dr	IN	76	4.53
2	6	State Road 46 & S Kingston Dr	IN	77	3.53
3	11	E 10th St & N Union St	COB	59	2.97
4	2	State Road 37 & W Bloomfield Rd	IN	103	2.94
5	5	State Road 46 & Pete Ellis Dr	IN	80	2.86
6	1	State Road 37 & W 3rd St	IN	112	2.73
7	18	W 10th St & N College Ave	COB	50	2.70
8	27	E 3rd St & S Swain Ave	COB	40	2.70
9	21	E 3rd St & S Fess Ave	COB	44	2.66
10	35	E 10th St & N Sunrise Dr	COB	37	2.57
11	41	E 10th St & N Jefferson St	COB	35	2.53
12	50	E 13th St & N Indiana Ave	COB	31	2.51
13	4	State Road 45/46 Bypass & E 10th St	IN	88	2.44
14	50	E 7th St & N Jordan Ave	COB	31	2.36
15	3	State Road 46 & E 3rd St	IN	96	2.27
16	35	E Rhorer Rd & S Walnut Street Pike	MC	37	2.23
16	44	E 3rd St & S Highland Ave	COB	34	2.21
16	15	E 17th St & N Jordan Ave	COB	53	2.11
19	39	E 3rd St & S Woodlawn Ave	COB	36	2.09
20	34	S Walnut Street Pike & E Winslow Rd	COB	38	2.01
21	21	W 4th St & S Walnut St	COB	44	1.95
22	16	E 3rd St & S Jordan Ave	COB	51	1.92
23	21	W Kirkwood Ave & N Walnut St	COB	44	1.89
24	35	E 10th St & N Woodlawn Ave	COB	37	1.84
25	44	E 17th St & N Dunn St	COB	34	1.78
26	27	W 7th St & N Walnut St	COB	40	1.67
27	20	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	46	1.65
28	8	State Road 45 & S Liberty Dr	IN	62	1.63
28	39	E 3rd St & S Washington St	COB	36	1.61
30	44	W 17th St & N Kinser Pike/N Madison St	COB	34	1.60
31	13	W 3rd St & S College Ave	COB	54	1.59
32	27	W 3rd St & S Cory Ln	COB	40	1.50
33	25	State Road 46 & S Smith Rd	IN	41	1.50
34	27	W Kirkwood Ave & N Rogers St	COB	40	1.47
35	8	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	62	1.46
36	49	E 3rd St & S Grant St	COB	33	1.42
37	44	W 7th St & N College Ave	COB	34	1.41
38	27	W 2nd St & S College Ave	COB	40	1.40
38	10	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	60	1.39
40	35	E 10th St & N Fee Ln	COB	37	1.37
40	13	State Road 45/46 Bypass & N Kinser Pike	IN	54	1.35
42	16	State Road 48 & S Liberty Dr	IN	51	1.31
43	11	State Road 37 & W Vernal Pike	IN	59	1.24
44	41	E 10th St & N Jordan Ave	COB	35	1.22
45	41	E 2nd St & S College Mall Rd	COB	35	1.19
46	24	W 3rd St & N Walnut St	COB	42	1.16
47	19	State Road 48 & S Gates Dr	IN	48	1.16
48	32	S Walnut St & W Country Club Dr/E Winslow Rd	COB	39	1.07
49	44	State Road 45/46 Bypass & E 17th St	IN	34	1.05
50	25	State Road 48 & N Curry Pike	IN	41	0.98
51	32	State Road 37 & W Tapp Rd	IN	39	0.82
52	50	State Road 46 & N Union Valley Rd	IN	31	0.78

**Table 4. Top 50 Crash Locations by Crash Severity, 2011-2013**

<b>Crash Severity Rank</b>	<b>Intersection</b>	<b>Jurisdiction</b>	<b>Fatality</b>	<b>Incapacitating</b>	<b>Minor Injury</b>	<b>Property Damage Only</b>	<b>Severity Number</b>
1	State Road 37 & W 3rd St	IN	0	2	27	83	176
2	State Road 37 & W Bloomfield Rd	IN	0	0	34	69	171
3	State Road 46 & E 3rd St	IN	0	0	15	81	126
4	State Road 45/46 Bypass & E 10th St	IN	0	1	16	71	125
5	State Road 46 & S Kingston Dr	IN	0	0	21	56	119
6	State Road 46 & Pete Ellis Dr	IN	0	1	12	67	109
7	State Road 37 & W Vernal Pike	IN	0	4	13	42	105
8	State Road 45 & S Gillham Dr	IN	1	0	3	72	93
8	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	0	1	13	48	93
8	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	0	1	14	45	93
8	State Road 45/46 Bypass & N Kinser Pike	IN	1	0	14	39	93
12	W 3rd St & S College Ave	COB	0	2	12	40	88
13	State Road 45 & S Liberty Dr	IN	0	0	12	50	86
14	W 3rd St & S Cory Ln	COB	0	1	19	20	83
15	S Walnut St & W Country Club Dr/E Winslow Rd	COB	0	2	16	21	81
16	State Road 48 & S Liberty Dr	IN	0	0	14	37	79
16	W Kirkwood Ave & N Walnut St	COB	0	3	10	31	79
18	E 10th St & N Union St	COB	0	1	7	51	78
18	E 3rd St & S Jordan Ave	COB	0	1	11	39	78
20	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	0	0	14	32	74
21	State Road 46 & S Smith Rd	IN	0	0	16	25	73
22	W 10th St & N College Ave	COB	0	0	10	40	70
23	State Road 48 & N Curry Pike	IN	0	2	9	30	69
23	W Kirkwood Ave & N Rogers St	COB	0	1	12	27	69
23	E 7th St & N Jordan Ave	COB	0	2	14	15	69
26	E 3rd St & S Fess Ave	COB	0	0	11	33	66
27	E 17th St & N Jordan Ave	COB	0	0	5	48	63
28	State Road 48 & S Gates Dr	IN	0	0	7	41	62
29	W 3rd St & N Walnut St	COB	0	1	7	34	61
29	W 17th St & N Kinser Pike/N Madison St	COB	0	1	11	22	61
31	W 2nd St & S College Ave	COB	0	0	9	31	58
31	S Walnut Street Pike & E Winslow Rd	COB	0	0	10	28	58
31	E 10th St & N Woodlawn Ave	COB	0	1	8	28	58
34	E 2nd St & S College Mall Rd	COB	0	0	11	24	57

<b>Crash Severity Rank</b>	<b>Intersection</b>	<b>Jurisdiction</b>	<b>Fatal</b>	<b>Incapacitating</b>	<b>Personal Injury</b>	<b>Property Damage Only</b>	<b>Severity Number</b>
34	State Road 45/46 Bypass & E 17th St	IN	0	1	9	24	<b>57</b>
34	State Road 46 & N Union Valley Rd	IN	0	2	8	21	<b>57</b>
37	State Road 37 & W Tapp Rd	IN	0	1	6	32	<b>56</b>
37	E Rhorer Rd & S Walnut Street Pike	MC	0	1	7	29	<b>56</b>
37	E 3rd St & S Washington St	COB	0	0	10	26	<b>56</b>
40	E 3rd St & S Swain Ave	COB	0	0	7	33	<b>54</b>
41	W 4th St & S Walnut St	COB	0	0	4	40	<b>52</b>
41	W 7th St & N Walnut St	COB	0	0	6	34	<b>52</b>
43	W 7th St & N College Ave	COB	0	0	8	26	<b>50</b>
43	E 3rd St & S Grant St	COB	0	1	6	26	<b>50</b>
45	E 10th St & N Fee Ln	COB	0	0	6	31	<b>49</b>
45	E 10th St & N Jordan Ave	COB	0	0	7	28	<b>49</b>
47	E 13th St & N Indiana Ave	COB	0	0	8	23	<b>47</b>
48	E 10th St & N Jefferson St	COB	0	1	3	31	<b>46</b>
48	E 3rd St & S Highland Ave	COB	0	0	6	28	<b>46</b>
50	E 10th St & N Sunrise Dr	COB	0	0	4	33	<b>45</b>
51	E 3rd St & S Woodlawn Ave	COB	0	0	4	32	<b>44</b>
52	E 17th St & N Dunn St	COB	0	0	3	31	<b>40</b>

## Crash Factors

This section summarizes the primary crash factors from 2011 to 2013. 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.

Table 5 shows the top 10 primary crash factors for 2011-2013, which account for over three-quarters of total crashes. Failure to yield right of way was once again the most common cause of crashes, contributing to nearly 2,500 crashes from 2011 to 2013. Following too closely and unsafe backing were also significant crash factors.

**Table 5. Top 10 Primary Crash Factors by Severity, 2011-2013**

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	56	651	1787	<b>2,497</b>
2	Following Too Closely	1	23	478	1439	<b>1,941</b>
3	Unsafe Backing	0	2	28	1258	<b>1,288</b>
4	Other	1	18	136	832	<b>987</b>
5	Ran Off Road Right	6	37	204	651	<b>898</b>
6	Speed Too Fast For Weather Conditions	0	8	95	410	<b>513</b>
7	Animal/object In Roadway	0	5	34	450	<b>489</b>
8	Disregard Signal/Reg Sign	0	18	158	277	<b>453</b>
9	Improper Turning	0	3	31	417	<b>451</b>
10	Unsafe Lane Movement	0	3	35	346	<b>384</b>

## Fatalities

This section provides a focused look at motor vehicle fatalities in Monroe County from 2011 to 2013. As with previous sections, the material presented here can be useful for enforcement, education, and decision-making.

In 2013 there were four fatalities in Monroe County (Table 6). Of these, two resulted from crashes involving three or more vehicles, one resulted from a two-car crash, and one from crash involving a moped or motorcycle. Over the period from 2011 to 2013, the average annual number of fatalities per 100,000 residents was 5.7 for Monroe County. This figure is well below the U.S. average of 10.63 fatalities per 100,000 people for 2010<sup>6</sup>.

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

**Table 6. Fatalities by Crash Type, 2011-2013**

Year	Crash Type						Total	Fatalities per 100,000 Population
	One car	Two cars	Three cars or more	Moped and Motorcycle	Bicycle	Pedestrian		
2011	3	3	0	3	0	0	9	6.4
2012	6	1	1	2	0	1	11	6.4
2013	0	1	2	1	0	0	4	2.8
<b>Total</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>22</b>	<b>5.7</b>

**Table 7. Top Primary Crash Factors for Fatal Crashes, 2011-2013**

Rank	Primary Factor	Fatal Injury	% of Total
1	Ran Off Road Right	6	27%
2	Left Of Center	6	27%
3	Failure To Yield Right Of Way	3	14%
4	Unsafe Speed	2	9%
5	Pedestrian Action	1	5%
6	Following Too Closely	1	5%
7	Improper Lane Usage	1	5%
8	Overcorrecting/Oversteering	1	5%
9	Other	1	5%
	<b>Total</b>	<b>22</b>	<b>100%</b>

<sup>6</sup> 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 2011 to 2013, there were 22 fatal crashes, which resulted in 24 fatalities. The locations of these fatal crashes are identified in Table 8. 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, 2011-2013**

Location	Jurisdiction	Total Deaths	Number of Crashes				
			One Car	Two Cars	Three or More Cars	Moped or Motorcycle	Pedestrian
E Moores Pike & S Olcott Blvd	COB	1	0	0	0	1	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
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 Victor Pike from W Fluck Mill Rd to W Tramway Rd	MC	3	1	0	0	0	0
State Road 37 & W Wayport Rd	IN	1	0	1	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 45 & S Gillham Rd	IN	1	0	1	0	0	0
State Road 45 & W Sparks Rd	IN	1	1	0	0	0	0
State Road 45 from S Breeden Rd to E Church Rd (Greene County)	IN	1	0	0	1	0	0
State Road 45 from S Breeden Rd to S Burch/Stanford Rd	IN	1	0	0	1	0	0
State Road 45 from S Darrell Dr to S Dunlap Rd	IN	1	0	0	0	1	0
State Road 45/46 Bypass & Kinser Pike	IN	1	0	0	1	0	0
State Road 46 From E Kent Rd To N Brummetts Creek Rd	IN	1	0	1	0	0	0
State Road 48 from W Vernal Pike to W State Road 43	IN	1	0	0	0	1	0
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 2011 to 2013. 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% walk<sup>7</sup>. The combined walking and biking commute rate ranks 2<sup>nd</sup> among U.S. cities with a population of greater than 65,000 people<sup>8</sup>. 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 2011 to 2013, 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.

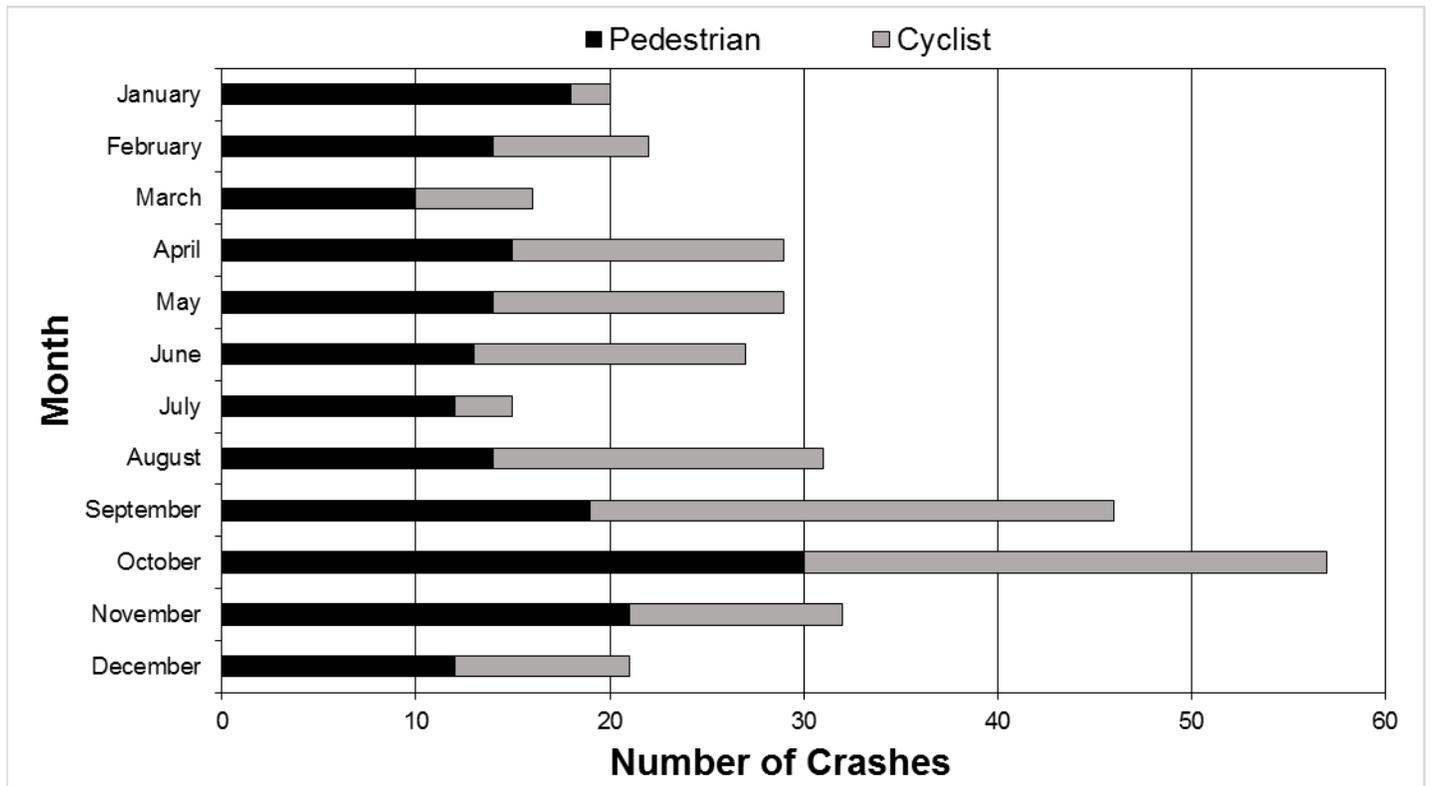
**Table 9. Top Bicycle and Pedestrian Crash Locations, 2011-2013**

Intersection	Jurisdiction	Crash Type		Total
		Bicycle	Pedestrian	
E 7th St & N Jordan Ave	COB	13	3	16
N Jordan Ave & S Jordan Ave	COB	2	2	4
W 6th St & N Morton St	COB	2	2	4
E 3rd St & S Jordan Ave	COB	1	3	4
W 7th St & N College Ave	COB	1	3	4
State Road 37 & W 3 <sup>rd</sup> St	IN		3	3
W 1st St & S College Ave	COB	2	1	3
E 2nd st & W 2nd St	COB	2	1	3
E 3rd St & S Kingston Dr	COB		3	3
E Miller Dr & S Walnut St	COB	1	2	3
E 3rd St & S Washington St	COB	2	1	3
N Dunn St & E Kirkwood Ave	COB	2	1	3
W 3rd St & S Cory Ln	COB	3		3
W 17th St & N Kinser Pike/N Madison St	COB		3	3
E 2nd St & S Washington St	COB	3		3
E 10th St & N Union St	COB	1	2	3
W Kirkwood Ave & S Walnut St	COB	1	2	3
E 10th St & N Jordan Ave	COB		3	3
E 7th St & N Walnut St	COB	2	1	3
W Kirkwood Ave & N Rogers St	COB	1	2	3

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

<sup>8</sup> Ibid.

**Figure 5. Bicycle and Pedestrian Crashes by Month, 2011-2013**



## Conclusion

This report has demonstrated a number of meaningful trends relating to motor vehicle crashes in Monroe County. The information should be used to 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, such as at man locations along the State Road 37/I-69 corridor. 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, and the curve realignment of N Dunn & Old State Route 37 which is currently in progress. 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.

This report has identified many locations that would 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. Information regarding spring and fall spikes in bicycle and pedestrian crashes should be used to inform education and enforcement strategies. Future versions of this report may consider a more detailed analysis of age- and alcohol-related factors. 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.

In order to help identify locations which have a higher than expected crash total, crash rate, or severity index, 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.

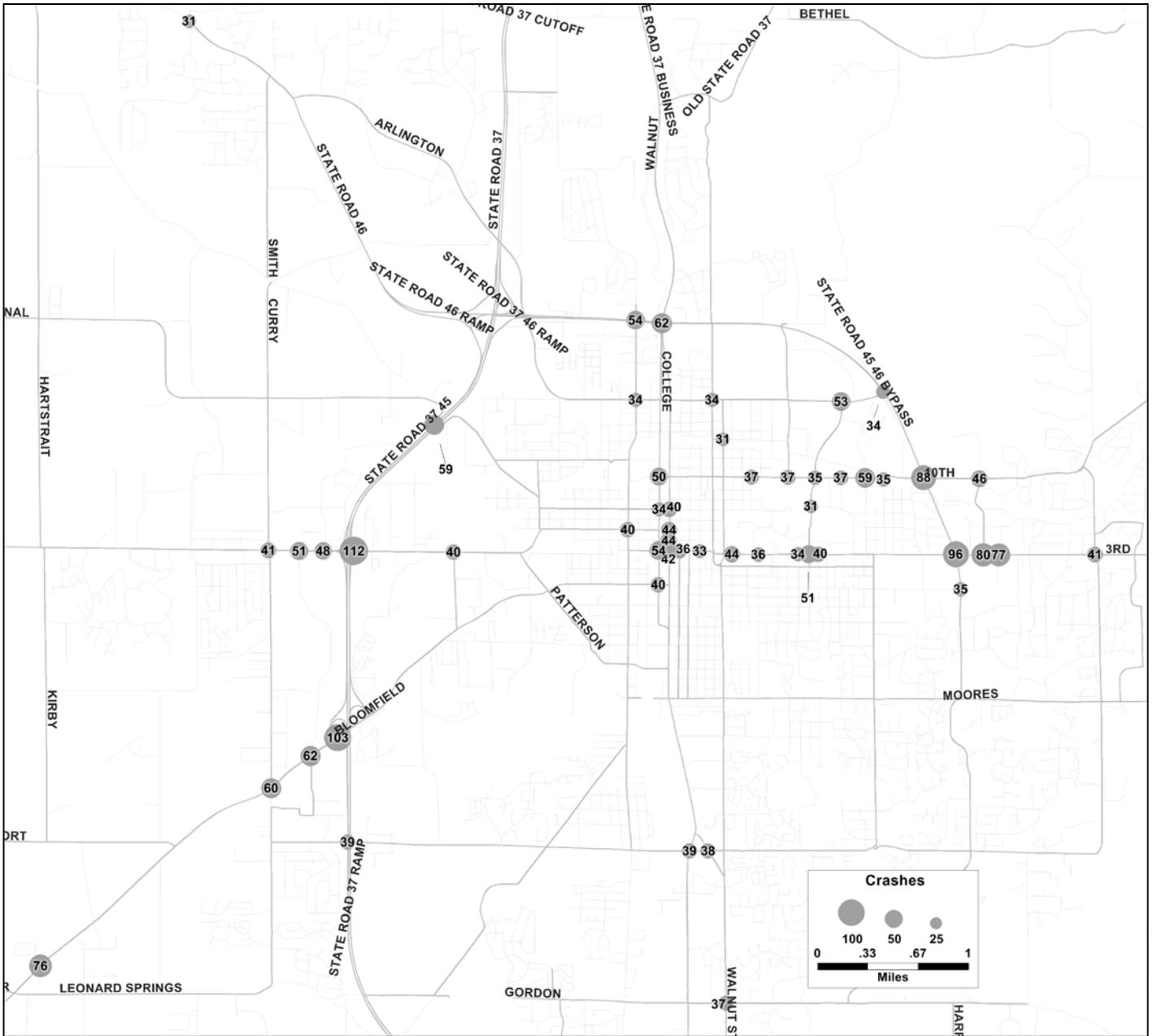
By identifying potentially problematic locations, this report has taken the first step to improving safety on our local roadways. It is expected that transportation planners, engineers, and local officials together will use this information to determine locations that need attention, and seek funding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

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

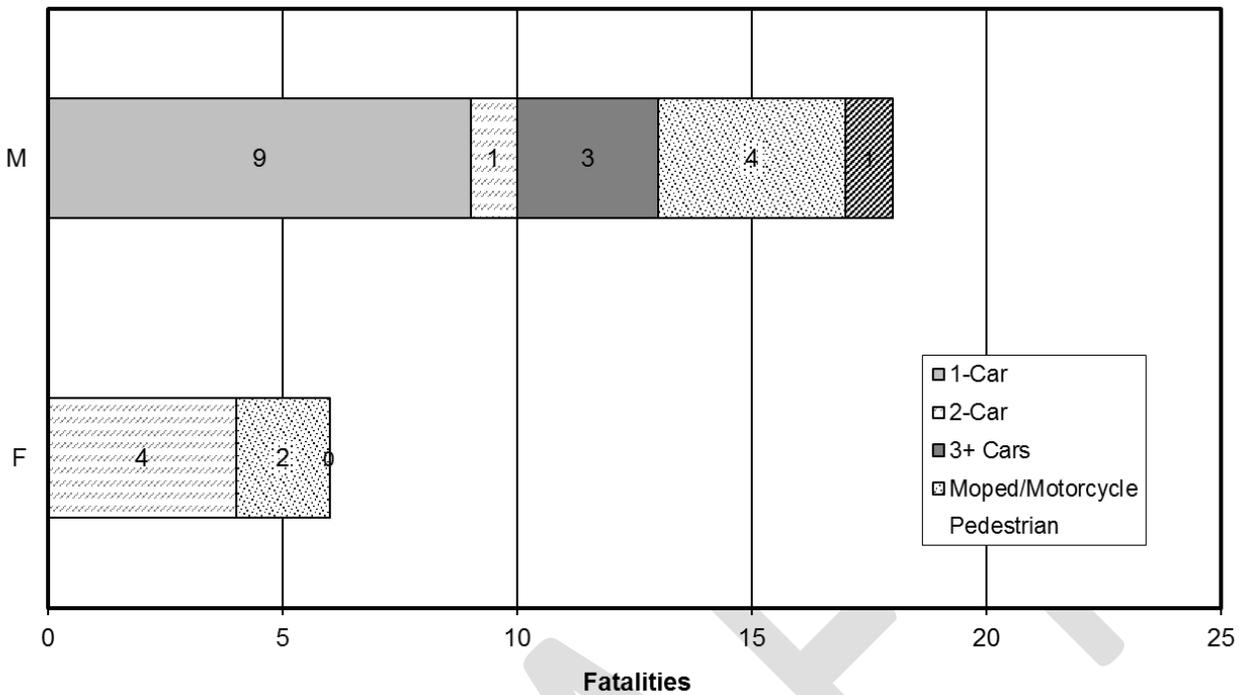
# Appendix

Figure A1. Top 50 Total Crash Locations, 2011-2013

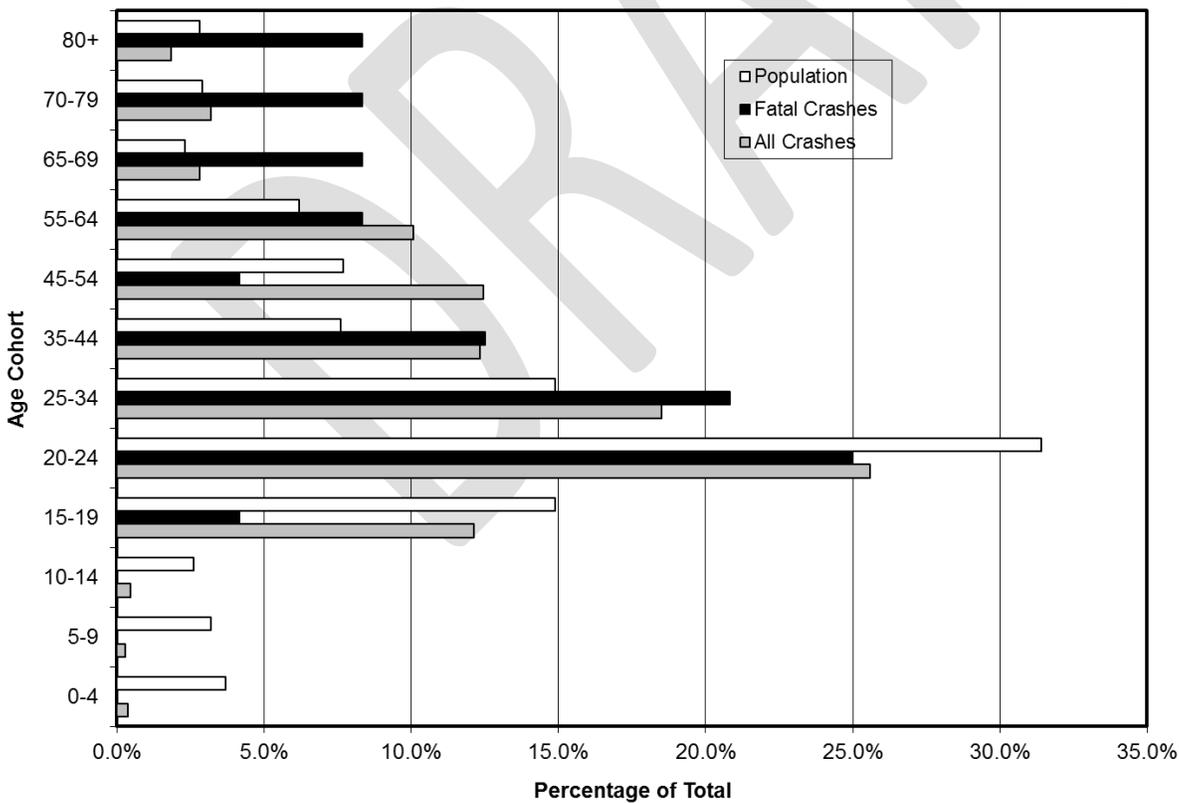




**Figure A3. Fatalities by Gender and Crash Type, 2011-2013**



**Figure A4. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age, 2011-2013<sup>10,11</sup>**



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

<sup>11</sup> 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.

Table A1 is the list of intersection locations that are automatically eligible for HSIP funding. 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.

DRAFT

**Table A1. Eligible HSIP Locations, 2011-2013**

Current Rank	Location	Jurisdiction	Fatal or Incapacitating Injury Crashes	Total Crashes	Fatal	Any Injury
1	W Kirkwood Ave & N Walnut St	COB	3	44	0	30%
2	W 3rd St & S College Ave	COB	2	54	0	26%
3	S Walnut St & W Country Club Dr/E Winslow Rd	COB	2	39	0	46%
4	E 7th St & N Jordan Ave	COB	2	31	0	52%
5	W 3rd St & S Patterson Dr	COB	2	28	0	39%
6	E 17th St St & N Walnut St	COB	2	25	0	28%
7	E 3rd St & E Morningside Dr	COB	2	23	0	26%
7	W 17th St & W Arlington Rd/N Monroe St	COB	2	23	0	48%
9	N Curry Pike & W Vernal Pike	MC	2	21	0	19%
10	W 11th St & N Rogers St	COB	2	9	0	33%
11	E 10th St & N Union St	COB	1	59	0	14%
12	E 3rd St & S Jordan Ave	COB	1	51	0	24%
13	W 3rd St & N Walnut St	COB	1	42	0	19%
14	W 3rd St & S Cory Ln	COB	1	40	0	50%
14	W Kirkwood Ave & N Rogers St	COB	1	40	0	33%
16	E Rhorer Rd & S Walnut Street Pike	MC	1	37	0	22%
16	E 10th St & N Woodlawn Ave	COB	1	37	0	24%
18	E 10th St & N Jefferson St	COB	1	35	0	11%
19	W 17th St & N Kinser Pike/N Madison St	COB	1	34	0	35%
20	E 3rd St & S Grant St	COB	1	33	0	21%
21	N College Ave & W Kirkwood Ave	COB	1	30	0	17%
22	E Grimes Ln & S Walnut St	COB	1	29	0	38%
23	W 3rd St & S Kimble Dr	COB	1	28	0	39%
24	W 2nd St & S Patterson Dr	COB	1	27	0	33%
25	E Miller Dr & S Walnut St	COB	1	26	0	23%
26	E Buick Cadillac Blvd & S College Mall Rd	COB	1	24	0	29%
26	W 1st St & S College Ave	COB	1	24	0	33%
26	E 17th St & N Fess Ave	COB	1	24	0	8%
26	E 17th St & N Lincoln St	COB	1	24	0	29%
30	S Fairfax Rd & S Walnut Street Pike	MC	1	21	0	43%
30	E Atwater Ave & S Henderson St	COB	1	21	0	48%
30	E 13th St & N Fee Ln	COB	1	21	0	24%
34	W 3rd St & S Landmark Ave	COB	1	19	0	26%
35	E 3rd St & S Roosevelt St	COB	1	18	0	28%
36	W Kirkwood Ave & N Madison St	COB	1	18	0	33%
36	E Longview Ave & N Pete Ellis Dr	COB	1	18	0	39%
38	S Curry Pike & W Roll Ave	MC	1	16	0	38%
38	N Smith Pike & W Woodyard Rd	MC	1	16	0	31%
40	W Allen St & W Bloomfield Rd	COB	1	15	0	20%
40	W 2nd St & S Walker St	COB	1	15	0	47%
40	E 3rd St & S High St	COB	1	15	0	27%
40	E 10th St & N Dunn St	COB	1	15	0	33%
40	W Arlington Rd, at SR 37	COB	1	15	0	33%
45	S College Ave & W Smith Ave	COB	1	14	0	21%
46	E 4th St & S Grant St	COB	1	13	0	8%
46	W 6th St & N Morton St	COB	1	13	0	31%
46	W Gourley Pike & N Kinser Pike	COB	1	13	0	38%
46	E Rhorer Rd & S Sare Rd	MC	1	13	0	46%
50	E Hillside Dr & S Nancy St	COB	1	12	0	33%
50	E Morningside Dr & N Smith Rd	COB	1	12	0	25%
50	N Adams St & W Kirkwood Ave	COB	1	12	0	17%

## MEMORANDUM

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**To:** Technical Advisory & Citizens Advisory Committees  
**From:** Josh Desmond, MPO Director  
**Date:** September 16, 2015  
**Re:** 2040 MTP – Travel Demand Model Scenarios & Results

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### Background

At the last meeting, staff presented an overview of the Performance Measures that would be used to analyze the results of the travel demand scenarios. At this time, staff is providing those preliminary results. Staff will present and discuss these results in greater detail at the September 23 meeting.

### Scenarios

There are twelve initial scenarios that have been tested on the new Travel Demand Model. A matrix comparing the contents of each scenario is attached to this memo. Below is a brief narrative overview of each scenario.

**1. Do Nothing [also known as the Existing plus Committed Network (E+C)]**

The network is under the base year conditions of 2013 (roadway configurations, operations of traffic control devices, transit services, and bicycle and pedestrian facilities) with only the committed or new transportation projects scheduled for construction (bid awards by FY 2014, not including operations and maintenance projects). The committed projects include: Section 5 of I-69; Fullerton Pike Phase I; Karst Farm Trail Phase 2a; Matthews Drive/Bridge 33 reconstruction; 17th Street/Arlington Road/Monroe Street roundabout; 17th Street and Jordan Avenue sidepath and reconstruction; Old SR 37 and Dunn Street trail and reconstruction; and the Black Lumber Trail. The E+C network is included as part of all other scenarios.

**2. Bus Rapid Transit Route #3**

This scenario converts and slightly modifies Bloomington Transit's Route #3 (an east/west route following 3<sup>rd</sup> Street) by changing it into a bus rapid transit (BRT) route. This route would have 10-minute headways and signal preemption for a time efficient route. This scenario will help understand the impacts associated with a major east-west bus rapid transit route.

**3. State Road 37**

This scenario matches Scenario 1 except for the exclusion of Section 5 of I-69. This is done to further understand the impacts associated with I-69 beyond the corridor as well to identify other local needs outside the I-69 corridor.

**4. Peak Oil**

In this scenario, the impacts of rising gasoline prices are considered as part of the mode choice process. The E+C network is not modified, but as fuel prices increase it is expected that trips will be altered or

reduced. This scenario will help understand some of the economic and behavioral influences on transportation with fuel prices at \$5.00 per gallon. Fuel efficiencies as well as alternative fuels and new technologies may be mitigating factors, but this scenario tests a reasonable constraint (cost) in the mode-choice process.

#### **5. Transportation Improvement Program (TIP)**

This scenario represents the E+C network modified by the recent approval of the FY 2016-2019 TIP. Additional transportation projects for this scenario are: Rogers Road Sidepath; Winslow Road Sidepath; 10th Street and Law Lane new road connection; 17th Street reconstruction; Fullerton Pike Phases 1 & 2; South Henderson Sidepath; and Jackson Creek Trail Extensions. This scenario will provide information on the most recent projects approved in the TIP and expected to be completed well before 2040.

#### **6. TIP + Public Workshop Allocation**

This scenario uses the TIP network (Scenario 5) with the addition of priorities identified by two public workshops. The additional transportation projects include a westward B-Line Trail extension to Karst Farm Trail, Fullerton Pike connection from I-69 to Rogers Street (3-lane with sidewalks and sidepath that connects to Clear Creek Trail), a completed Jackson Creek Trail network, and new transit service route along Tapp/Winslow/Rogers/Country Club from Curry Pike and SR 45 to Sare Road and Rogers Road with 30 minute headways.

#### **7. TIP + 2035 LRTP Carryover Projects**

This scenario evaluates older priorities from the previous LRTP that have yet to come to fruition. Some of these projects have not moved forward for a variety of reasons, such as lack of anticipated private sector developments or changes in funding priorities. A detailed description is available in the 2035 MTP. Generally speaking, projects in this scenario include completing South Adams Street, connecting East 14th Street to Law Lane, completing Sudbury Drive, connecting Fullerton Pike from I-69 to Walnut Street, modernization of Curry Pike from Constitution Avenue to Tapp Road, realignment of Weimer Road, and completion of all of Jackson Creek Trail. Information from this scenario will help reassess some of the challenging lingering needs previously identified.

#### **8. TIP + 2035 LRTP Limited Carryover**

This scenario is essentially the same as Scenario 7, but omits Weimer Road, 14th Street, Curry Pike, Sudbury Drive, and sections of Jackson Creek Trail that are not part of the current TIP. This analysis provides information mostly on the new 3-lane connection of Fullerton Pike from I-69 to Rogers Street and projects included within the TIP.

#### **9. TIP + IU Research Park**

In this scenario, Bloomington Hospital will relocate to the Indiana University Research Park area at East 10th Street and SR 45/46 Bypass. The old Hospital site will convert to a traditional single family housing neighborhood. This scenario will help better understand some of the impacts associated with Bloomington Hospital relocating.

#### **10. TIP + Sample Road Bedroom Community**

A new interchange will be built at Sample Road as part of I-69. This scenario illustrates impacts associated with concept of a new bedroom community with easy access to either Bloomington or Indianapolis. This is possible due to improved access to relatively vacant land and the proximity of Sample Road to major destinations. This scenario allocates most of the new population growth around this interchange to demonstrate maximum impacts for a sprawl-like land use development.

### **11. TIP + 2-Way Streets**

This scenario converts certain one way streets back into two way streets, including College Avenue, Walnut Street, 3rd Street, and Atwater Avenue. This will provide some information on the impacts of one way streets in Scenario 5 when compared with the results of this scenario.

### **12. TIP + Urban Infill**

Another way to look at allocating new population growth rather than with a new bedroom community is to allocate growth to existing housing by minor increases in neighborhood densities with the inclusion of accessory living units or granny flats. This scenario offers another way to compare the impacts of land use policy on the transportation network like in Scenario 10.

### **Performance Measures**

Each of the scenarios listed above has been tested on the new Travel Demand Model. Attached to this memo is a summary of all of the Performance Measures outputs that have been provided so far. Results are available for seven out of the twelve scenarios, with the remaining data expected soon. Staff will present the results in more detail at the meeting on September 23.

### **Action Requested**

No action is requested at this time. Staff is seeking further input from the Policy Committee about potential projects and scenarios that may be tested on the Travel Demand Model.



Scenario Statistics		Scenario								
		Scen #-->	0	1	2	5	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		2,955,625	3,584,415	3,564,909	3,694,826	3,700,595	4,107,402	3,570,078	3,469,918
Demand	Vehicle Hours (VHT)		108,575	152,246	154,597	152,050	152,203	166,853	153,584	148,175
Demand	Work Trip - Vehicle Occupancy		1.08	1.08	1.07	1.08	1.07	1.07	1.08	1.08
Demand	Person Trips		589,162	690,749	690,748	690,738	692,285	702,061	690,744	685,964
Demand	Transit Share		4.49%	5.50%	6.39%	5.50%	5.51%	5.30%	5.50%	5.67%
Demand	Daily Ridership		27,792	39,892	46,555	39,895	40,458	39,056	39,897	40,808
Demand	Transit Trips		26,468	37,992	44,128	37,995	38,168	37,196	37,997	38,864
Demand	Transit Person Miles		51,875	60,819	72,535	60,818	60,955	61,815	60,819	60,398
Demand	Transit Person Hours		3,435	4,028	4,591	4,028	4,023	4,094	4,028	4,000
Demand	Non-Motorized Share		38.3%	37.2%	36.7%	37.2%	37.2%	34.7%	37.2%	39.0%
Demand	Non-Motorized Trips		225,589	256,619	253,542	256,617	257,262	243,832	256,619	267,585
Demand	Non-Motorized Person Miles		278,934	327,028	320,831	327,024	327,756	310,732.84	327,026	306,894
Demand	Non-Motorized Person Hours		42,974	50,384	49,435	50,383	50,496	48,176	50,383	47,287
Efficiency	Vehicle Hours Under Delayed Conditions		5,976	28,416	28,826	28,379	28,294	28,002	29,717	28,568
Efficiency	Avg. PM Peak Speed		27.22	23.54	23.06	24.30	24.31	24.62	23.25	23.42
Efficiency	Avg. Auto Trip Length		6.78	6.50	6.55	6.50	6.51	6.43	6.50	6.24
Efficiency	Lane Miles at LOS E or worse		9.93	65.88	65.91	65.79	65.59	64.92	68.89	65.52
Environ	Vehicle Emissions (Daily Tons CO2)		1,418	1,845	1,835	1,902	1,905	2,114	1,838	1,786
Econ	Roadway User Costs		\$ 2,697,096	\$ 4,380,325	\$ 4,412,088	\$ 4,404,915	\$ 4,408,730	\$ 4,738,826	\$ 4,397,602	\$ 4,289,733
Econ	User Cost per Vehicle Trip (Autos and Trucks)		\$ 8.00	\$ 11.06	\$ 11.22	\$ 11.12	\$ 11.11	\$ 11.26	\$ 11.10	\$ 11.30
Econ	Capacity Added to Meet Standards (Road Lane Miles)		9.93	65.88	65.91	65.79	65.59	64.92	68.89	65.52
Econ	Est. Cost to Achieve LOS D (\$Million)		\$ 7.45	\$ 49.41	\$ 49.43	\$ 49.34	\$ 49.20	\$ 48.69	\$ 51.67	\$ 49.14

Pct. Change Compared to Base Year		Scenario								
		Scen #-->	0	1	2	5	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		n/a	21.3%	20.6%	25.0%	25.2%	39.0%	20.8%	17.4%
Demand	Vehicle Hours (VHT)		n/a	40.2%	42.4%	40.0%	40.2%	53.7%	41.5%	36.5%
Demand	Work Trip - Vehicle Occupancy		n/a	-0.1%	-1.2%	-0.1%	-1.2%	-1.2%	-0.1%	0.0%
Demand	Person Trips		n/a	17.2%	17.2%	17.2%	17.5%	19.2%	17.2%	16.4%
Demand	Transit Share		n/a	22.4%	42.2%	22.4%	22.7%	17.9%	22.4%	26.1%
Demand	Daily Ridership		n/a	43.5%	67.5%	43.5%	45.6%	40.5%	43.6%	46.8%
Demand	Transit Trips		n/a	43.5%	66.7%	43.5%	44.2%	40.5%	43.6%	46.8%
Demand	Transit Person Miles		n/a	17.2%	39.8%	17.2%	17.5%	19.2%	17.2%	16.4%
Demand	Transit Person Hours		n/a	17.2%	33.6%	17.2%	17.1%	19.2%	17.2%	16.4%
Demand	Non-Motorized Share		n/a	-3.0%	-4.1%	-3.0%	-2.9%	-9.3%	-3.0%	1.9%
Demand	Non-Motorized Trips		n/a	13.8%	12.4%	13.8%	14.0%	8.1%	13.8%	18.6%
Demand	Non-Motorized Person Miles		n/a	17.2%	15.0%	17.2%	17.5%	11.4%	17.2%	10.0%
Demand	Non-Motorized Person Hours		n/a	17.2%	15.0%	17.2%	17.5%	12.1%	17.2%	10.0%
Efficiency	Vehicle Hours Under Delayed Conditions		n/a	375.5%	382.3%	374.9%	373.4%	368.6%	397.3%	378.0%
Efficiency	Avg. PM Peak Speed		n/a	-13.5%	-15.3%	-10.7%	-10.7%	-9.6%	-14.6%	-14.0%
Efficiency	Avg. Auto Trip Length		n/a	-4.1%	-3.4%	-4.1%	-4.1%	-5.1%	-4.1%	-7.9%
Efficiency	Lane Miles at LOS E or worse		n/a	563.6%	563.9%	562.7%	560.7%	553.9%	593.9%	560.0%
Environ	Vehicle Emissions (Tons CO2)		n/a	30.1%	29.4%	34.1%	34.3%	49.1%	29.6%	25.9%
Econ	Roadway User Costs		n/a	62.4%	63.6%	63.3%	63.5%	75.7%	63.0%	59.1%
Econ	User Cost per Vehicle Trip (Autos and Trucks)		n/a	38.2%	40.3%	39.0%	38.9%	40.7%	38.8%	41.3%
Econ	Capacity Added to Meet Standards (Road Lane Miles)		n/a	563.6%	563.9%	562.7%	560.7%	553.9%	593.9%	560.0%
Econ	Est. Cost to Achieve LOS D (\$Million)		n/a	563.6%	563.9%	562.7%	560.7%	553.9%	593.9%	560.0%

Pct. Change Compared to E+C		Scenario								
		Scen #-->	0	1	2	5	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		n/a	n/a	-0.5%	3.1%	3.2%	14.6%	-0.4%	-3.2%
Demand	Vehicle Hours (VHT)		n/a	n/a	1.5%	-0.1%	0.0%	9.6%	0.9%	-2.7%
Demand	Work Trip - Vehicle Occupancy		n/a	n/a	-1.1%	0.0%	-1.1%	-1.1%	0.0%	0.1%
Demand	Person Trips		n/a	n/a	0.0%	0.0%	0.2%	1.6%	0.0%	-0.7%
Demand	Transit Share		n/a	n/a	16.2%	0.0%	0.2%	-3.7%	0.0%	3.0%
Demand	Daily Ridership		n/a	n/a	16.7%	0.0%	1.4%	-2.1%	0.0%	2.3%
Demand	Transit Trips		n/a	n/a	16.2%	0.0%	0.5%	-2.1%	0.0%	2.3%
Demand	Transit Person Miles		n/a	n/a	19.3%	0.0%	0.2%	1.6%	0.0%	-0.7%
Demand	Transit Person Hours		n/a	n/a	14.0%	0.0%	-0.1%	1.6%	0.0%	-0.7%
Demand	Non-Motorized Share		n/a	n/a	-1.2%	0.0%	0.0%	-6.5%	0.0%	5.0%
Demand	Non-Motorized Trips		n/a	n/a	-1.2%	0.0%	0.3%	-5.0%	0.0%	4.3%
Demand	Non-Motorized Person Miles		n/a	n/a	-1.9%	0.0%	0.2%	-5.0%	0.0%	-6.2%
Demand	Non-Motorized Person Hours		n/a	n/a	-1.9%	0.0%	0.2%	-4.4%	0.0%	-6.1%
Efficiency	Vehicle Hours Under Delayed Conditions		n/a	n/a	1.4%	-0.1%	-0.4%	-1.5%	4.6%	0.5%
Efficiency	Avg. PM Peak Speed		n/a	n/a	-2.1%	3.2%	3.3%	4.6%	-1.3%	-0.5%
Efficiency	Avg. Auto Trip Length		n/a	n/a	0.7%	0.0%	0.0%	-1.1%	0.0%	-4.0%
Efficiency	Lane Miles at LOS E or worse		n/a	n/a	0.0%	-0.1%	-0.4%	-1.5%	4.6%	-0.5%
Environ	Vehicle Emissions (Tons CO2)		n/a	n/a	-0.5%	3.1%	3.2%	14.6%	-0.4%	-3.2%
Econ	Roadway User Costs		n/a	n/a	0.7%	0.6%	0.6%	8.2%	0.4%	-2.1%
Econ	User Cost per Vehicle Trip (Autos and Trucks)		n/a	n/a	1.5%	0.6%	0.5%	1.8%	0.4%	2.2%
Econ	Capacity Added to Meet Standards (Road Lane Miles)		n/a	n/a	0.0%	-0.1%	-0.4%	-1.5%	4.6%	-0.5%
Econ	Est. Cost to Achieve LOS D (\$Million)		n/a	n/a	0.1%	-0.1%	-0.4%	-1.5%	4.6%	-0.5%

Color Coding	
Best Performer	
Better than Avg.	
Average	
Worse than Avg.	
Worst Performer	
n/a	

Scenario Statistics	Scenario								
	Scen #-->	0	1	2	5	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		1,208	1,623	1,623	1,623	1,682	1,548	1,623	1,794
Population with a 5D Score > 0.8		27,367	32,734	32,734	32,734	35,144	29,386	32,734	39,468
Households with a 5D Score > 0.8		6,575	9,516	9,516	9,516	10,013	7,397	9,516	10,956
Employment with a 5D Score > 0.8		35,293	52,307	52,307	52,307	47,637	47,311	52,307	57,080
Aggregate 5D Score (sum of 600 zones)		318.58	329.46	329.47	329.53	329.61	326.83	329.58	333.58
Average 5D Score		0.53	0.55	0.55	0.55	0.55	0.54	0.55	0.56
Aggregate Number of HH Autos		93,780	122,578	122,577	122,561	122,769	128,522	122,555	116,672
Population		152,952	188,760	188,760	188,760	189,464	188,229	188,760	188,759
Households		57,191	75,011	75,011	75,011	75,389	75,011	75,011	75,011
Jobs		79,611	107,138	107,138	107,138	107,138	107,136	107,138	107,138
Autos per Household		1.64	1.63	1.63	1.63	1.63	1.71	1.63	1.56
Pct. Of Acres with a 5D Score > 0.8		0.48%	0.64%	0.64%	0.64%	0.66%	0.61%	0.64%	0.71%
Pct. Of Population with a 5D Score > 0.8		17.9%	17.3%	17.3%	17.3%	18.5%	15.6%	17.3%	20.9%
Pct. Of Households with a 5D Score > 0.8		11.50%	12.69%	12.69%	12.69%	13.28%	10.01%	12.69%	15.11%
Pct. Of Employment with a 5D Score > 0.8		44.33%	48.82%	48.82%	48.82%	44.46%	44.16%	48.82%	53.28%

Pct. Change Compared to Base Year	Scenario								
	Scen #-->	0	1	2	5	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		n/a	34.3%	34.3%	34.3%	39.2%	28.1%	34.3%	48.5%
Population with a 5D Score > 0.8		n/a	19.6%	19.6%	19.6%	28.4%	7.4%	19.6%	44.2%
Households with a 5D Score > 0.8		n/a	44.7%	44.7%	44.7%	52.3%	12.5%	44.7%	66.6%
Employment with a 5D Score > 0.8		n/a	48.2%	48.2%	48.2%	35.0%	34.1%	48.2%	61.7%
Average 5D Score		n/a	3.4%	3.4%	3.4%	3.5%	2.6%	3.5%	4.7%
Aggregate Number of Autos		n/a	30.7%	30.7%	30.7%	30.9%	37.0%	30.7%	24.4%
Population		n/a	23.4%	23.4%	23.4%	23.9%	23.1%	23.4%	23.4%
Households		n/a	31.2%	31.2%	31.2%	31.8%	31.2%	31.2%	31.2%
Jobs		n/a	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%	34.6%
Autos per Household		n/a	-0.3%	-0.3%	-0.4%	-0.7%	4.5%	-0.4%	-5.1%
Pct. Of Acres with a 5D Score > 0.8		n/a	34.3%	34.3%	34.3%	39.2%	28.1%	34.3%	48.5%
Pct. Of Population with a 5D Score > 0.8		n/a	-3.1%	-3.1%	-3.1%	3.7%	-12.7%	-3.1%	16.9%
Pct. Of Households with a 5D Score > 0.8		n/a	10.3%	10.3%	10.3%	15.5%	-12.9%	10.3%	31.4%
Pct. Of Employment with a 5D Score > 0.8		n/a	10.1%	10.1%	10.1%	0.3%	-0.4%	10.1%	20.2%

Pct. Change Compared to E+C	Scenario								
	Scen #-->	0	1	2	5	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	TIP	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	3.62%	-4.61%	0.00%	10.52%
Population with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	7.36%	-10.23%	0.00%	20.57%
Households with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	5.22%	-22.27%	0.00%	15.13%
Employment with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	-8.93%	-9.55%	0.00%	9.12%
Average 5D Score		n/a	n/a	0.003%	0.020%	0.044%	-0.798%	0.035%	1.250%
Aggregate Number of Autos		n/a	n/a	0.00%	-0.01%	0.16%	4.85%	-0.02%	-4.82%
Population		n/a	n/a	0.00%	0.00%	0.37%	-0.28%	0.00%	0.00%
Households		n/a	n/a	0.00%	0.00%	0.50%	0.00%	0.00%	0.00%
Jobs		n/a	n/a	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Autos per Household		n/a	n/a	0.00%	-0.01%	-0.35%	4.85%	-0.02%	-4.82%
Pct. Of Acres with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	3.62%	-4.61%	0.00%	10.52%
Pct. Of Population with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	6.96%	-9.97%	0.00%	20.57%
Pct. Of Households with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	4.70%	-21.10%	0.00%	19.11%
Pct. Of Employment with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	-8.93%	-9.55%	0.00%	9.12%

Color Coding
Best Performer
Better than Avg.
Average
Worse than Avg.
Worst Performer
n/a

5D/Urban Design Score		
Category	Range	Characteristics
Auto oriented	0.0 to 0.2	Low density, low diversity, no destinations within walking distance, road design favors autos, little or no transit
More auto oriented than avg.	0.2 to 0.4	
Average for area	0.4 to 0.6	
More walk oriented than avg.	0.6 to 0.8	High density, mixed land uses, many destinations within walking distance, road design favors walking, good access to transit
Walk/Bike/Transit oriented	0.8 to 1.0	



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## MEMORANDUM

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**To:** Technical Advisory & Citizens Advisory Committees

**From:** Anna Dragovich, Senior Transportation Planner

**Date:** September 16, 2015

**Re:** Complete Streets Policy Review

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### Background

At the last meetings of both the TAC and CAC, I proposed a Complete Streets Policy process. This proposal outlined a process that would require a project to collect input, identify stakeholders, identify challenges & opportunities, select an alternative, create a scope of work, etc. and be deemed compliant or not, all before it could be programmed in to the TIP. This essentially would create a process whereby an LPA is required to do work on a project prior to have a funding commitment from the MPO. Discussions with the TAC centered on the challenges that this process would present for an LPA. Some were uneasy about the amount of work to be done on a project for potentially no funding to follow. In short, the unpredictability of such a process was not favored, and so, I've come back to you with a revised proposal that still maintains an open, transparent and collaborative process, but also gives our LPAs some certainty as far as the funding of a project. A flowchart on the following page illustrates those changes to the originally proposed process. Please expect a full explanation and presentation on this flowchart at your meetings on September 23.

### Proposed Next Steps

If both the CAC and TAC are comfortable with the proposed outline, then I'll return to the committees in October to dial in on two initial steps of the process. The first being the guidelines for LPAs to use when making the case for why a project should be exempt and the second being the items to be included in a LPAs application for policy compliance. These two steps have also been indicated by a yellow star in the flowchart.

### Action Requested

Staff is asking committee members to provide feedback and suggestions on the proposed complete streets policy process.

