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POLICY COMMITTEE

October 16, 2015
1:30 – 3:00 p.m.
Council Chambers (#115)

I. Call to Order

II. Approval of the Minutes
   a. September 11, 2015

III. Communications from the Chair

IV. Reports from Officers and/or Committees
   a. Citizens Advisory Committee
   b. Technical Advisory Committee

V. Reports from the MPO Staff
   a. Complete Streets Policy Review Update
   b. Crash Reports 2011-2013 & 2012-2014

VI. Old Business
   a. 2040 Metropolitan Transportation Plan

VII. New Business
   a. none

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 – November 6, 2015 at 1:30 p.m. (Council Chambers)

Adjournment

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

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POLICY COMMITTEE
September 11, 2015
1:30 – 3:00 p.m.

Policy Committee Meeting Minutes
September 11, 2015 Council Chambers #115

Attendance:

Policy Committee: Julie Thomas, Geoff McKim, Richard Martin, Tony McClellan, Jason Banach, Adam Wason, Andy Ruff, Lisa Ridge, Susie Johnson, Jack Baker, Kent McDaniel

Staff: Josh Desmond, Anna Dragovich, Vince Caristo, Scott Robinson, Emily Avers

I. Call to Order: Introductions were made by committee members. Josh Desmond previewed the technology upgrades to the Council Chambers.

II. Approval of the Minutes
   a. June 12, 2015: Kent McDaniel mentioned there was an error on the date. The minutes will be changed to show the correct date of June 12.
   b. August 7, 2015: Richard Martin mentioned a misspelling in the minutes. The minutes will be updated to reflect correct spelling.

   **Martin made motion to approve minutes with amendments. Jack Baker seconded. Motion passed through unanimous voice vote.

III. Communications from the Chair: None at this time

IV. Reports from Officers and/or Committees
   a. Citizens Advisory Committee: None at this time.
   b. Technical Advisory Committee: None at this time.

V. Reports from the MPO Staff
   a. Annual Completion Report: Anna Dragovich presented. This is a report that is done on an annual basis to outline all the work staff has done throughout the fiscal year as dictated in the work program. These are things like educational events, working on the MTP, working on the TIP, coming to MPO meetings. It is for the committee members' information and will be posted on the website.

   Martin asked about the percentage listed under the Fiscal Year Budget Summary for element 01 for administration, which has to do with intergovernmental coordination, the work program, staff training, and public outreach is at 102% of expected expense. How will we conduct those activities in this current year if we don't have any money left in that budget?

   Dragovich said it's a 2-year work program. All the funding is fluid between the two fiscal years. We're starting to draw on the other elements now that we've started FY '16.

   Desmond added we're under in some of the other elements. Overall, we're not in the hole for FY '15. Our new budget for '16 adds to the remaining funds from '15 that we will be able to spend down by the end of this fiscal year. We have a pretty healthy set of funds right now to cover those expenses.

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Martin said the other budgets are about what you would expect, right around the 50% range. This one is at 100%. Even if you have some money left over in those other lines, we would be expecting those to be spent during this year. Where are you going to get the money to move out?

Desmond said this only represents how we preformed against the FY '15 budget. It does not include the '16 funds. We're only looking at the expenses from '15 versus what was budgeted for '15. We have what was remaining from '15 plus our new '16 funds. While we may have gone over in '15 for one, we've gone under for others, so the budget is still in the green.

b. Annual List of Obligated Projects: Dragovich presented. This is a report we're required to compile on an annual basis that lists all the obligated projects within our MPO from Bloomington Transit, the City, County, and INDOT. A project will be let for construction, meaning all the bids will come in and a contractor will be selected. The project is obligated after a contractor is selected. This is when the project can start drawing funds and the federal government has promised to pay the federal portion as programmed on that project. The annual list of obligated projects is a list of projects and the amount of funding that has been drawn down in FY '16. It will be posted on our website.

c. 2016 MPO Meeting Schedule: Desmond said all City Boards and Commissions have been asked to figure out their schedules for 2016 so the rooms can be booked. We have proposed a schedule that is in your packet as well as a slight revision of that proposal. The Policy Committee has met on Fridays at 1:30 in Council Chambers. We've had input over the years from people who would like to change the meeting date to a Thursday instead. The revision I'm showing here shows the option for Thursday meetings. The Technical Advisory Committee and Citizens Advisory Committee schedule would remain the same. We're putting forward a proposal to see if anyone has any objections to changing to a Thursday afternoon at the same time.That's perfectly acceptable to staff. We're looking for a consensus from this group to see if they're willing to give that change a try for next year.

McKim likes Friday

Martin likes Friday. Thursday afternoons he has business meetings.

Johnson is fine with Friday.

Ridge is fine with Friday.

Ruff said we could get a proxy if we would be unable to attend. That would probably happen more if we switched to Thursday.

**Johnson made a motion to keep the meetings on Friday. McKim seconded. Motion passed through voice vote, 10:1.

VI. Old Business

a. 2040 Metropolitan Transportation Plan: Desmond provided an update. We've been working to get the model completed and get some data so we can start reviewing the scenarios and projects we're proposing for future growth development to start making some decisions going forward on exactly what our plan is for 2040. At our last meeting we had a pretty good conversation about the performance measures that we're going to use to measure the performance of those different scenarios so we have a common set of criteria with which to judge the different scenario's outputs. In your packet you have the first set of scenarios we asked our consultant to run for us. This is the initial set that was developed based on staff input, public input, our existing plan and input from our task force. We're going to ask you to give us input on any other projects you think we need to look at based on what you see we've tested so far. That is our main focus today. When we put the packet out we did not have the data outputs. We got results within the last day or two from the consultant for 7 out of 12 scenario outputs. You haven't had those to study and staff hasn't had them very long to study so we're not going to be able to have much of a conversation today. I wanted to give you a little context as to what those outputs are so you understand what you're looking at and give you some feedback in terms of how you want to consider those different

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outputs as you evaluate which scenario or combination of scenarios you think is the way we ought to go in the future.

You'll notice when we get to the outputs there's what we're listing as Scenario 0, which is the base year. We used 2013 as the base year and everything is projected forward from that. That's the best set of data we had to work with when we started building the model. When you see scenario 0, that's what the model says we're performing at today, or in 2013. Every other scenario is projected out to 2040 so we're looking at what's happening today as well as what's happening in 2040 under these different combinations of growth and development and projects that we might implement over that 25 year time period. Every scenario has a network assumption, which is the roadway and infrastructure network for that scenario and a growth and development assumption, whether it is going to be low, medium or fast growth and is it going to be sprawl type development, infill development where you're more focused on the core of an urban area or is it going to be a balance between the two. For this round of scenarios, all the scenarios except for 12 are based on the middle growth projection and the balance of different types of growth because we think that reflects how things are going and how things might go in the future. The twelfth scenario is primarily focused on infill growth as opposed to further outward growth. You won't be surprised by some of the results that come out in those performance measures. Scenario 0 is the base scenario. The first scenario is similar. We call it the Do Nothing or the existing plus committed (E+C) network- if we finish all the projects that we've already committed to building, let for construction bids or are already under construction and do nothing else. If we finish everything up that's in that status right now, how does that perform in 2040? Scenario 2 is a transit oriented scenario. What if we took bus route 3, which is an east/west route on 3rd St. and turned it into a bus rapid transit that has fast headways, direct boarding stations, fewer stops so it moves faster? Scenario 3 we call SR 37 or I69. We said what if we did everything we were planning to do but I69 never happened. We're modeling this because we want to understand how the inclusion or exclusion I69 impacts our transportation system over the next 25 years. It's more of an illustrative example. Scenario 4 we're calling a peak oil scenario. One of the neat things about the model is we have the ability to control for cost of vehicle operations which includes gasoline cost. What if we hit peak oil, gas prices go sky high, how does that impact our transportation choices throughout the system? Scenario 5 is what we call the transportation improvement project. That includes not only the projects that are in the E+C network, but everything that's in our TIP. Once we complete our 4 year plan, what does out network look like in the future? Scenario 6 is the TIP based allocation from Scenario 5 as well as some project priorities that were identified in our public workshops over the last couple years. Scenario 7 looks at finishing the TIP projects and then the majority of the projects that are in the 2035 plan right now and carrying those through. Scenario 8 is similar to 7 but more selective in terms of what projects we carried over from the 2035 plan. Scenario 9 is completing all of the TIP projects plus adding IU's hospital and research park over on the east side to see what impact that has on the system. Number 10 is the TIP plus a Sample Rd. bedroom community. What happens if we get a lot of suburban development around that interchange, how does that impact our system? Scenarios 9 and 10 are the ones where we varied our land use pattern from the standard stuff. We thought it would be instructive to see what impact land use policy decisions would have in addition to the transportation decisions we make in terms of projects we're going to invest in. 11 is an interesting one. We know in a lot of areas one-way streets are being converted to two-way streets. What if we took the College and Walnut corridor and the 3rd and Atwood corridor and turned those all into two-way streets? How would that impact access and traffic levels throughout the community. Twelve is the TIP plus a strong land use policy that focused all our growth to the core of the community on infill \development rather than further greenfield development on the fringes of the community. How would our transportation choices differ and how would those impacts differ?

If you look at the spreadsheet included in the memo, you'll see there's a column for each scenario that was run and a list of all the projects that were included each scenario. We have the first set of outputs, which I will get to you after the meeting so you can take some time to look at it. I think it would be helpful to put the project matrix next to the output matrix so you can see which projects were included. We have outputs for scenario 0, 1, 2, 5, 9, 10, 11, and 12. We will get the results from the remaining scenarios in the very near future. We have 3 different sets of data here on this sheet. The first block is the raw output. For example, the measure for Vehicle Miles Travelled is the actual Vehicle Miles Travelled projected for each scenario so you can compare them to each other, or the Daily Ridership for Transit Services are the actual numbers projected for those. The next set

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of information is all the same performance measures showing the percentage changes versus the base year. So versus today's performance, 25 years from now under these scenarios, how do they compare? For instance, vehicle miles travelled under E+C, vehicle miles travelled increased 21.3% compared to what's happening today. When you compare versus the base year there's a natural amount of growth that's going to happen, so virtually all of these measures are going to grow regardless. It's just a matter of to what degree are they going to grow under different scenarios. That doesn't hold true for every measure, but for many of them that's the case. The last set is percentage change compared to Scenario 1, which is the existing plus committed network. How does that performance compare against these other scenarios 25 years from now. I will point out when we run a scenario, whether it's the base year or in the 2040, that scenario output is a snapshot of a day in 2040, not a cumulative number for a year or for 25 years. That's what you're looking at when you see the raw data change from the percentage change. For a lot of these scenarios, the variance between what you'd say is the worst performer versus the best performer for a given performance measure may not be very big. It's a matter of small degrees over which scenario really is performing the best for a given performance measure. If we look at the non-motorized share of trips- trips by bicycles or pedestrians- the base year output is 38.3% of trips are non-motorized. The scenarios vary between 34.7% and 39%, so even our top performer in that category is 39% where as our base year is 38.3%. We're not seeing drastic changes in a category like that. There are some examples where you are going to see big changes. One of those examples would be vehicle miles traveled. We have ranges on that performance measure from a 3.2% decrease in our top performer to a 14.6% increase for our worst performer so far. That's an almost 18% range which is a pretty significant number when you're talking about millions of vehicle miles travelled over time. Some categories you can see a wide variety of outputs, some categories you're not going to see very many. The darkest green is the top performer in the category, the darkest red is the worst performer in a given category and then there are gradations in between to help guide your eye to where the highest and lowest are across the different scenarios. There's no single scenario that is going to win or lose in every single category. It's going to be a matter of degrees. We will really need to consider what our priorities are and to what degree we're willing to accept some things in order to achieve other things. It will be a matter of tradeoffs as we evaluate our options and really try to consider what's going to be the best. We haven't had this data for very long, you haven't had this data at all, so staff has not drawn any conclusions at this point. We want to hear if you have any thoughts about other projects you think might need to be tested as part of these scenarios, projects that weren't part of the 2035 plan you think we need to consider or things we didn't consider from the 2035 plan that we should put back in. We want to hear from you what other scenarios and projects you think we ought to consider as we move forward and look at the rest of these results. Next Thursday is our tentatively scheduled date to have the consultant install the model in our office and train us in how to actually use it. That will give us the ability to tweak some of these scenarios and add other elements to them as we move forward.

Ruff said in Scenario 3, Section 5 of I69 doesn't get it to Indianapolis. So don't you think the potential for a scenario that connects to Indianapolis is more likely to have a significant effect on the model's output then getting to Martinsville on Section 5? Is there any reason we couldn't model that?

Desmond said we could. The limitation is we don't know where the interchanges and frontage roads are going to be on that road, so we don't know exactly what the access issues are going to be in terms of generating traffic. Right now when we talk about traffic from outside the county we identify where the traffic is going in and out of the county and we have a raw number that we assume is coming in and out at that point. It may be a matter of just tweaking that number.

Ruff said the bedroom community scenario would seem to be somewhat dependent on the completion of Section 6. Otherwise it doesn't really change that much from the current scenario to warrant a project like that compared to the absence of Section 6.

Desmond said that's a good point. I will check with our consultant on how we dealt with Section 6 now that you raised that. But you're right, the access situation will be different with or without Section 6 and that may not make it as desirable to have that sort of a community there.

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Ruff asked if this type of modeling been done anywhere else far enough back that they are able to compare predictions generated by the model with measurements of actual changes. Can they look and see how their model predictions compare with what they actually saw 10 years later or 15, 20 years later? Or is the whole approach new enough that that data is not out there?

Desmond said to some extent it's out there. One thing we could do is look back at our outputs from our previous model where we projected to 2030 and we can look at what we thought the issues were going to be and see if that really happened or not, at least through today.

Ruff said this is a more sophisticated model. I'm wondering if there are examples from a model more like this in terms of its level of detail and sophistication that is old enough and was applied far enough back that there's results we can compare, just to see how they worked out. Lastly I know staff has just begun to look at these numbers but as professional transportation planners, was there anything that surprises you to the point of generating some skepticism of any kind or any red flags?

Desmond said he doesn't see anything like that. Something that is sort of jumping out is the land use policy scenario changes have had more impact than the transportation infrastructure changes we modelled. The bedroom community and the infill development scenarios are largely land use policy issues and not transportation investment issues that we would focus on in a plan like this and which are not necessarily in our control as an MPO either. But those are the ones that seem to have the biggest impacts in terms of changes versus the base year and versus the no build scenario. If you look at those, you'll see the infill development has a lot of positive impact in a lot of categories and the bedroom community has more of a negative impact in a lot of categories. They're the most extreme impacts.

Ruff said when you say positive impacts you mean relative to our stated goals and priorities are.

Desmond said relative to our expected performance based on the system as it is now.

Ruff said you're not necessarily surprised by that.

Desmond said not necessarily. For a long time we've understood land use policy has had a pretty profound connection and impact to people's transportation choices. I think that's playing out pretty clearly as we start to look at this date.

McKim said all scenarios except 3 include I69 Section 5 including the permanent closures of other roads associated with I69.

Desmond said that is correct.

McKim would like to see a connection of Industrial Blvd with Whitehall Crossing Blvd and a connection extending Profile Pkwy east across the ABB property to connect in with Gates Dr and then further extending Profile Pkwy south through the ABB property to connect with Jonathan Dr. He would like either a separate scenario or this scenario added to an existing scenario to see if the tool would show any difference related to those three projects.

Martin said since we take on these planning activities at least on a 5 year cycle, not a 10 or 15 year cycle, we aren't going to wait until 2040 to do it again. I'm more interested in the end point 5, 10, 15 years from now from these scenarios than I am in a 2040 end point. I want a way to think about what we're going to do the next time we take a look at this, how we're going to react at that point and how we're going to change what we might be doing at that point. The other one is I noticed you have a base set of projects we're going to do and then you have some selected projects you've added in. They don't all occur at once. If we're looking at scenarios in 5, 10, 15 year increments we can see how the impact of a particular project influences the entire system in a much shorter period of time and how we have to react to that. It may not be that adding a particular project is the right thing to do at that point in time. How can we use the model in a more dynamic way? We don't really do transportation planning 30 years at a time. You may end up with

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aberrations that occur in the shorter period of time that get masked when you look at the entire system 35 years out.

Desmond said that's why we look at groupings of years when we do the financial evaluation.

Martin said the model should help us when we start putting in the financial analysis. We would know which projects we would be funding and then we could do the modeling for those projects. It is important for us to use the model in a more dynamic way.

Baker said the 12 scenarios are not stand alone. They are all based on E+C and then add on different projects. Am I correct?

Desmond said there are common elements between all of them. In some scenarios we drop in one change for another.

Baker said when I get down to item 12 and compare that back to 10 I don't understand why 10 seems to be a major change but 12 is a minor change. What is the reason for that? 12 looks almost trivial. We're talking about adding some granny flats in to urban infill. Why would we be looking at that and not at major projects that are happening now in the urban core?

Desmond said the granny flats are just an example of development that might occur in that scenario, not the only type. It's more a percentage of the overall development in the area that is going to occur within the core area. We're not excluding major developments as part of that. It's more of what geographic location is that development happening in. The other scenarios are what we call standard, which is a mix of both infill and greenfield development. In scenario 12, there would be virtually no greenfield development, it would all be concentrated in the core for different types of housing and employment locations.

Baker said he's arguing with the wording in the scenario.

Thompson said in scenario 2 you have a bus rapid transit route. Could we get a scenario done where we have transportation that goes out of the city limits? Even if it's on the 4 or 5 main arteries.

McDaniel said on that note BT has spent some time looking at a bus rapid transit corridor on the 10th St. corridor for a while. Is that something you considered?

Desmond said not at this point, but we could look at that. I think there are some limitations with the 10th St. railroad bridge, but it's certainly an option.

VII. New Business

a. Functional Classification Changes*: Vince Caristo presented. We brought this item to you in 2013 and continued it at that time. The impetus for this is the 2010 decennial census. After each decennial census the Federal Highway Administration does a complete review of their Federal Functional Classification system. Because the National Highway System and National Truck Network are closely associated with the Federal Functional Classification Networks, INDOT decided to ask MPOs to review all three networks at the same time. Based on feedback we've received from several of you as well as staff members as the City and the County, it is the staff's recommendation to defer considering the Federal Functional Classification network at this time. We need to get more comfortable with what we're proposing. Unless there are any objections with that, we'd like to move forward just with the National Truck Network and the National Highway System today.

Johnson appreciates taking the time to understand the options. We need to have a better understanding and more in-depth information before we can make a good sound decision.

Thompson said it would be really useful if that proposed update list for Federal Functional Classifications, if you could provide a comparison of the last one with the current one. That would be useful as well.

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Johnson said if it would be helpful for the policy committee to review the criteria that would be used in awarding those functional classifications prior to staff going through the motions. We would like to know the criteria before you go through all the trouble of doing it.

Caristo said we can send the committees the guidelines and criteria that were prepared by the Federal Highway Administration for Federal Functional Classifications.

Johnson said maybe an accompanying memo that would talk about what kind of leeway and discretion we have outside of the guidelines. I want to know the limits we're bound by.

McDaniel announced Vince served on a bicycle master plan steering committee that IU put together. I wanted to report the study is done and I have delivered it to Vice President Morrison, who seems quite happy with it. We had Scott Robinson help us out with that as well. We wanted to make sure whatever we did at IU coordinated well with the City's plan. Right now it's in Tom Morrison's hands and I believe he's going to present it to the trustees. I hope he does that sometime this fall. Once the trustees approve it, it becomes official IU policy, so it gives a lot more authority. Thank you Vince and Scott for your help on that project. I think it's going to really make a difference.

Caristo said the National Highway System was created in the mid-1990s as a system of high priority routes that are critical to the nation's economic, military and mobility functions. The idea was to find a way to prioritize high priority investments on these roadways that are critical at the federal level. Being designated part of the National Highway System has implications for a roadway. There are implications for design, there are design standards such as 12 foot lanes, there are additional performance reporting requirements. For example bridges are required to have element level bridge inspections which are much more detailed and more costly than otherwise required on routes. There are additional controls on outdoor advertising. Federal law gives state DOTs more authority for selecting projects on NHS routes. That doesn't mean if a local road is included on the NHS system that INDOT would have entire control over projects, but they would have a significant say. After the passage of the last Federal Transportation Bill, Map 21, in 2012, every roadway that was classified as a primary arterial or above in the federal functional classification system was added to the NHS. That included a lot of local roadways across the country. The NHS system that exists today following Map21 includes most major state highways, SR37, SR45, as well as several local roadways within the City of Bloomington, College and Walnut, W. Bloomfield Rd. E 3rd St, Atwater. in the plan we're proposing to forward to INDOT and the Federal Highway Administration we've removed all local roadways that were included with Map 21 and we have removed SR 45 to the southwest on the logic that I69 supplants that roadway. We're proposing to include just the major state highways and interstates in the County. We think this fulfills the intent of the National Highway System from the federal perspective. We have shared this with INDOT and they feel what's proposed here is consistent with what the NHS should be. Today we're looking for your approval either on this network as proposed or with any changes you might have. We'd like to be able to send INDOT a proposed network of some kind.

Ruff said SR 48 on the west side out to the airport, Ivy Tech, is it not included because it's sort of a dead end? It does serve some important facilities.

Caristo said that was our thinking. We were trying to take a federal perspective here. It seems to be on a different scale than SR 37, I69 and SR 45.

Johnson asked why we would preclude them. What benefit do we have by taking them off the list? 48 and 45 specifically.

Caristo said the one thing that would impact us is roadways on the National Highway System would have to pertain to design standards for the NHS which could change in the future. Under INDOT's design manual today, NHS roadways must have at least 11 foot lanes. In some cases 12 foot lanes are required.10 foot lanes are not allowed although you could request a design exception. I don't know if the particular roadways in question are going to comply with the same design standards whether they are on the NHS or not, but there's the potential for the standards

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nationally on the NHS to change that would impact us locally. With a lot of these things there are risk factors. There are changes that could happen in the future that we just don't know about.

Johnson said one of her concerns is ongoing maintenance. If it's not on the list, does it make it easier for INDOT to walk away from it?

Desmond said along with all the additional requirements that are placed on NHS roads, there is no additional funding for those NHS roads. In a lot of ways, INDOTs effort is a less is more effort where can they focus their investments on a more prioritized list of streets versus including many more streets that they just know they are never going to be able to maintain to NHS level. While we might expect them or want to have them live up to a higher standard, they may say there's no way we can afford to do that, we're going to have to prioritize roads to a different way.

Johnson said even more reason to leave 45 and 48 on the list.

Martin said in the memo you say only 20% of counties have responded. If this is a national highway system, us taking an action to determine what's national seems a little bit out of place. We don't even know what our surrounding counties are going to do. I would be looking for direction from INDOT as to what they would consider to be part of the national highway system. I would be very concerned about us removing obligations that the state and federal government might have for the maintenance of those roads or degrading the standards by which they are constructed such that they go from being reasonably safe now to being unsafe. You have to remember it's those state highways that always sit at the top our crash report list. I would be very concerned about us removing an opportunity to get funding to deal with safety problems, like through HSIP funds, that on those roadways. If they're state highways I think they belong in the national system. I would also include 446. 446 is a major tourist destination route for us, as well as a connection down to US 50 and serves that function very well. 45 going up to Lake Lemon and the community up there and moving us off into the northern parts of Brown County. While I understand 45 going down to Bloomfield should not see the traffic there is because of the creation of I69, it is still the alternate when I69 becomes a problem. We know that every interstate from time to time has to be closed because of some kind of accident that occurs. It happens on 69, 65, 465. 45 would be used for interstate commerce under those conditions and we should make sure that the standards we use are standards that apply to roadways that handle interstate commerce. Those are reasons I think to keep these things as part of the NHS.

McKim asked if this is a decision only being made by MPOs or is this a county by county decision. Let's say we decide to keep 45 going to the southwest out of the system, but let's say Greene County decides to include it in the NHS. Does that mean there's a gap in the NHS or does INDOT resolve the county by county gaps?

Caristo said it is our understanding that INDOT is looking to the MPOs for understanding of local nuances they might not know about. What they're most interested in is our feeling on the inclusion of local roadways, the local primary arterials that were automatically added to the NHS after Map21. I think for Federal Highway Administration to approve changes, they're looking for concurrence with INDOT and MPOs and local government so if there's a disagreement in an area, I don't think the change will go through. So, for example, if we propose as an MPO to INDOT to add 446 to the NHS but they don't agree, I don't think it's going to be added.

McClellan said he is not most knowledgeable on the subject but he does believe what was stated is correct. Essentially, stuff like College and Walnut, that's what we're interested in. Do you want that included or do you not? It doesn't add funding, it does add cost when you come to design. If you don't have it on the system it makes it more flexible so you can do with it want. I would also add if you ever want to do some Complete Streets or something like that on the routes you have mentioned, being in the NHS will have an impact on that as well. The idea is we want to know what the local MPO would like to see with their roads because there are advantages to having it off the system.

McKim agreed with keeping the local roads off the system.

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Johnson said one could interpret what you said to mean that funding for a federally funded project would not be eligible if it comes off this list. So for example, Bloomfield Rd, if it were removed from the list between Walnut and I69, you said it would be cheaper for us to do a project there. Would it be cheaper because we wouldn't have to follow the INDOT guidelines and therefore not be eligible for federal funding?

McClellan said the NHS system of roads has its own specialty requirements. If you use federal dollars, there are still federal requirements, you still have to meet those, but for the NHS there is other stuff you'll see. The main intent is to make sure we can move things like military, that kind of stuff, on these system roads and to make sure that the characteristics on those roads can support that. I think that's the difference.

Johnson said she does want an expert to answer those questions. I really appreciate you doing you best. Those are really important questions that I think we need to have answered.

Desmond said to the best of our understanding the funding is not tied to the NHS designation. It's the functional classification that is primarily tied to the STP funding eligibility. I will confirm that.

McDaniel said it sounds like we're not ready to take action on this today.

Ruff said so there's not a pot of federal money that's reserved for NHS funding.

Caristo said what INDOT and the Federal Highway Administration have told us is "NHS mileage in a state does not affect the total amount of federal funding the state receives nor the distribution of funding among programs. Inclusion of a route on NHS will not provide local governments with additional funding opportunities for newly designated NHS routes." That's what exists today. As I said before there's the potential for federal law to change in the future and that always exists. As it exists today there are no funding implications locally and having additional state highways on the NHS doesn't increase the amount of money that INDOT will have to make improvements. It think that's the best we can offer to that question right now.

Johnson said the one word you used that triggered a thought in my mind is newly designated. As it stands the roads in the map are currently designated so if we took them off and then later decided to put them back on, then they would be newly designated, right?

Caristo said he's thinks she's correct that it refers to routes that are not currently on the system. Right now the local roadways we've been talking about are on the system.

Martin said it's an interesting wording that says it's not going to increase for newly designated roads which means we're getting something designated for the roads we have. That's the other side of that statement. We have this truck route designation which when we discussed it didn't seem to have any impact on anything and yet it's a designation that exists and why wouldn't our truck route designation be the same as our national highway designation? Why would anybody consider them to be a difference on that?

Jay Montelle from the Federal Highway Administration is the freight coordinator for our division office. I came down because MPOs across Indiana are all debating and discussing what they would like to have and INDOT is trying to make this effort to make sure what they provide to us is something that is consistent with what you all would like. We would love to combine the truck network and the national highway system. Unfortunately the federal regulations currently have two separate network designations. There's this National Highway System which Vince mentioned is from 1995 and then there's the National Network for Trucks. Very few people really understand what it's about. When the administrations' latest proposal to Congress came out, it defined the national network as being the National Highway System. As a division office, I would tell you I would like to see the two merged to avoid all of the confusion. When you're on a National Network Route there are restrictions on what kind of controls you can place on that route as a community because that is a national network identified for truck purposes. A lot of communities and a lot of MPOs around Indiana are looking at this national highway system and national network question to stop the confusion and make sure they all understand where we want the trucks to go. That's what

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we would like to see because we think it would be easier for all of us. We have been talking to INDOT about the National Highway System. The NHS was designated in 1995 but then in 2012 Congress said let's put every principle arterial on the national highway system. We had all these corridors that we called principle arterials, but they weren't principle arterials from a national or statewide perspective. In their long range planning process we've heard from INDOT staff that they've looked at statewide mobility corridors as their first cut as what are the roads of national significance that they think would rise to the category of NHS round. As far as the approval process, both functional classification changes and changes in National Highway System requests come to the Federal Highway Administration from the state DOT, but we want to see good coordination and cooperation. The federal regulation specifically call out larger Metropolitan Planning Organizations, but we've encouraged INDOT to make sure they're doing it with all metropolitan organizations. There's no current involvement I'm aware of that INDOT has done to see what individual counties would like to see. The regulations only speak to the need to have good coordination between metropolitan areas as well as the state DOT. One offer I would suggest is to have meeting between Federal Highway Administration, INDOT and your MPO to talk about some of these questions about what it means to be on or off the NHS, what are some of the requirements not just on the engineering design standards but as Vince also mentioned some of the other requirements. There is an asset management requirement, which is part of why Federal Highway Administration is very interested in seeing if areas wanted their local roads to be on that national system or not. The asset management plan looks at bridge conditions of all roads in the NHS. There are several communities that are saying they don't want to have a higher element level bridge inspection in order to be on the National Highway System. I'm not sure I'd put it on policy committee time because the conversations have been very helpful. We've done it with Indianapolis MPO already, we went to Northwest Indiana. We've had counties coming asking f they are not on the NHS or if they are not considered principle arterial will they lose funding for the projects they have designated. The answer is no. There are all kinds of scenarios you might have. I would offer up that kind of technical assistance opportunity where we can sit down together and go over these in a little more detail. That might be helpful before you make a final decision.

McDaniel asked how long it would take to set something like that up and when do we need to ask on this.

Montelle said next week would not be good, but 2 or 3 weeks. I will have to check with Eric Rader at INDOT. He's presented some of the background information.

Martin asked how long the session would be.

Montelle said they did a session for 2 days with Indianapolis. I would say let's see how one afternoon goes and if we want more time we can schedule additional time later. Sometimes things are very simple and we can give you information in advance. This way every one of you will understand more what kind of questions you have about how this decision may impact you.

Caristo said it's his understanding we're in the same position as a lot of MPOs across the state. I don't think there's an immediate urgency.

McDaniel said so we can afford to wait and set something like this up. Why don't we do that. We'll postpone action on this for now until we can have a chance to get together.

Montelle said I'll go ahead and talk to Mr. Rader and set something up. We'll work with Vince on staff.

b. Transportation Improvement Program Amendments*: Desmond said we have a couple of Transportation Improvement Program amendments. If you recall from the adoption of the FY '16-'19 TIP earlier this spring there was still a significant amount of HSIP as well as TAP funding left over that we did not have programmed to any specific project. There was funding available in FY '16 for HSIP, in '18 for HSIP and then in '19 for TAP and HSIP. We did a secondary call for projects specifically for those sources of funding. We received 2 applications which are under consideration today. Both of those applications are for FY '16 HSIP funding. We did not receive any applications for '18 or '19. We're not going to keep doing calls for projects over and over again. We're just going

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to keep our LPAs aware that funding is out there and it's a use it or lose it situation so the sooner they can get an application to us and get it approved, the sooner they can have access to that money so we don't lose it.

One of the requests today is from the City for $202,500 to fund a city-wide signal retiming project. It would do a study of all our signal timings and come to a more cohesive signal timing system that would better manage traffic speeds and flow throughout the city as well as provide better gaps for pedestrians when they're crossing those busy streets. We think that would be a great benefit to city traffic users of various modes. The County has requested $239,913 for 2 HAWK pedestrian signals. Those are the signals where you push the button, it flashes red and then goes solid red for traffic to stop, allow the pedestrians and bicycles to cross, and then will resume to normal traffic flow. The 2 signals requested are for placement along the Karst Farm Trail Phase I that was recently opened, one at Endwright Road and one at Gifford Rd. The two requests total up to just under the amount available for FY '16 so we don't have any conflict. They are both fundable in '16 and they are both eligible under the low-cost systematic side of the HSIP eligibility system so there's not worries in terms of submitting those for final eligibility up at INDOT. In fact, there are so few worries, that both projects are actually getting started with their design phase right now in the INDOT project system because we're confident these things are going to go through. We can't afford to lose any time if we want to get those funded this fiscal year. Both the TAC and the CAC unanimously supported both these projects at their last meeting. We would request you do so today so we can move forward.

McKim said we already have one HAWK signal on the Karst Farm Greenway at Vernal Pike and Losch Rd. and we definitely appreciate the MPO's support for this application for the 2 additional HAWK signals.

Floor was opened for public comment. There was none.

**Martin moved to approve the TIP amendment. McKim seconded. Motion passed through unanimous voice vote.

VIII. Communications from Committee Members *(non-agenda items)*
   a. Topic Suggestions for Future Agendas: None at this time.

IX. Upcoming Meetings
   a. Technical Advisory Committee – September 23, 2015 at 10:00 a.m. (McCloskey Room)
   b. Citizens Advisory Committee – September 23, 2015 at 6:30 p.m. (McCloskey Room)
   c. Policy Committee – October 16, 2015 at 1:30 p.m. (Council Chambers)

Adjournment

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

These minutes were adopted by the Policy Committee at their meeting held on_____ (EJEA).

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Bloomington/Monroe County
Metropolitan Planning Organization

Crash Report

Calendar Years 2012 through 2014

September, 2015

BLOOMINGTON • MONROE COUNTY
mpo

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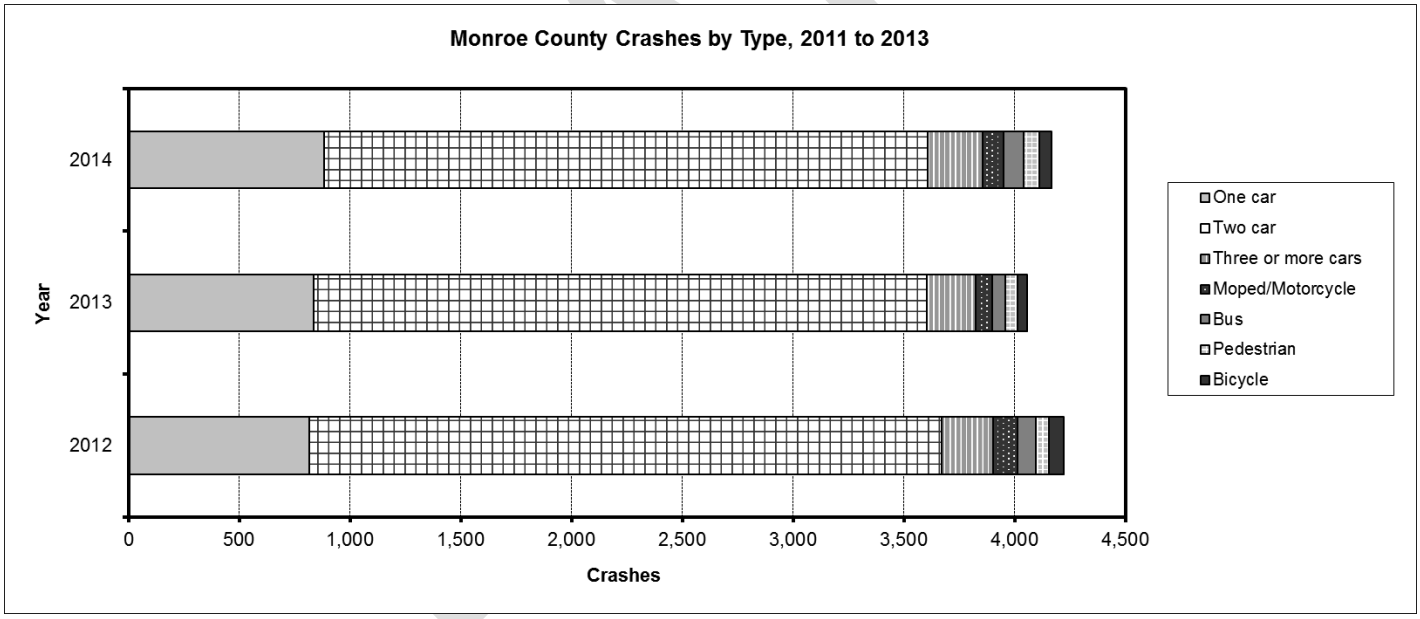
Executive Summary

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 2012 to 2014.

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 2012 to 2014. Additionally, the appendix contains information and analysis that may be of interest to some readers.

Summary of Crash Trends from 2012 to 2014
A total of 12,448 crashes were reported between 2012 and 2014 (Table 1). This figure represents a 2% increase from the previous period, as reported in last year's crash report (12,195 crashes from 2011 to 2013). Just over 80% 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 12,448 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 24 fatalities (Table 4), somewhat more than the 22 fatalities reported from 2011 to 2013. Of the 24 fatalities, the greatest number (10) resulted from single-car crashes, eight were from multiple-car crashes, three involved mopeds/motorcycles, and three involved a pedestrian. As has been the case for each of the prior nine years, 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 3). 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 AM, 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 4).

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 3rd St topped the list, followed by State Road 45/46 Bypass & E 10th St then State Road 37 & W Bloomfield Rd. 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 2,392 incidents (Table 5). Other leading causes include following too closely, following too closely, 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, and warrants further investigation.

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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 BMCMPO 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 5th leading cause of death overall, and of the 127,792 total unintentional accident-related deaths reported, 38,251 (30%) are attributed to transportation.[1] While it may not be possible to completely eliminate motor vehicle crashes, gaining a better understanding of their causes can help transportation planners and engineers reduce their frequency and severity. This report attempts to characterize the motor vehicle crashes in Monroe County, Indiana, providing the basis for informed transportation policies and infrastructure investments.

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

This report focuses on a three year period from 2012 to 2014. 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 2014 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 2012. Volume 63, Number 9. 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, 2012-2014") 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 (Table 6, Table 8), since more than one fatality can result from a single crash.

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Analysis

Crash Characteristics

This section provides a summary of crash characteristics in Monroe County, including the type and severity of crashes from 2012-2014. These factors reflect trends in the overall safety of the transportation system.

In 2014, a total of 4,167 motor vehicle crashes were reported in Monroe County (Table 1). Of these, eight resulted in one or more fatalities, while one-hundred sixty-two caused incapacitating injuries. For the vast majority of crashes (3,335), no injuries were reported. Two-car crashes were the most common, comprising 65% of the total. One-car crashes and those involving three or more cars were also common, accounting for 21% 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, or a 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 17% of all injury crashes.

Table 1. Crashes by Type and Severity, 2012-2014

	Crash Type	Severity				Annual Total	Percent of Annual
		Fatal Injury	Incapacitating Injury	Non-incapacitating	No injury/unknown		
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%
	Total	**9**	**90**	**854**	**3,270**	**4,223**	**100.0%**
	Percent of Annual Total	**0.2%**	**2.1%**	**20.2%**	**77.4%**	**100.0%**	
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	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%
	Total	**4**	**79**	**706**	**3,269**	**4,058**	**100.0%**
	Percent of Annual Total	**0.1%**	**1.9%**	**17.4%**	**80.6%**	**100.0%**	
2014	One car	3	27	115	737	882	21.2%
	Two car	3	45	353	2325	2726	65.4%
	Three or more cars	0	9	81	159	249	6.0%
	Bus	0	0	12	82	94	2.3%
	Bicycle	0	8	40	8	56	1.3%
	Moped/Motorcycle	0	16	58	18	92	2.2%
	Pedestrian	2	12	48	6	68	1.6%
	Total	**8**	**117**	**707**	**3,335**	**4,167**	**100.0%**
	Percent of Annual Total	**0.2%**	**2.8%**	**17.0%**	**80.0%**	**100.0%**	
3-Year	**Total**	**21**	**286**	**2,267**	**9,874**	**12,448**	
	Percent of 3-Year Total	**0.2%**	**2.3%**	**18.2%**	**79.3%**	**100.0%**	

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Figure 1. Crash Type by Severity, 2012-2014

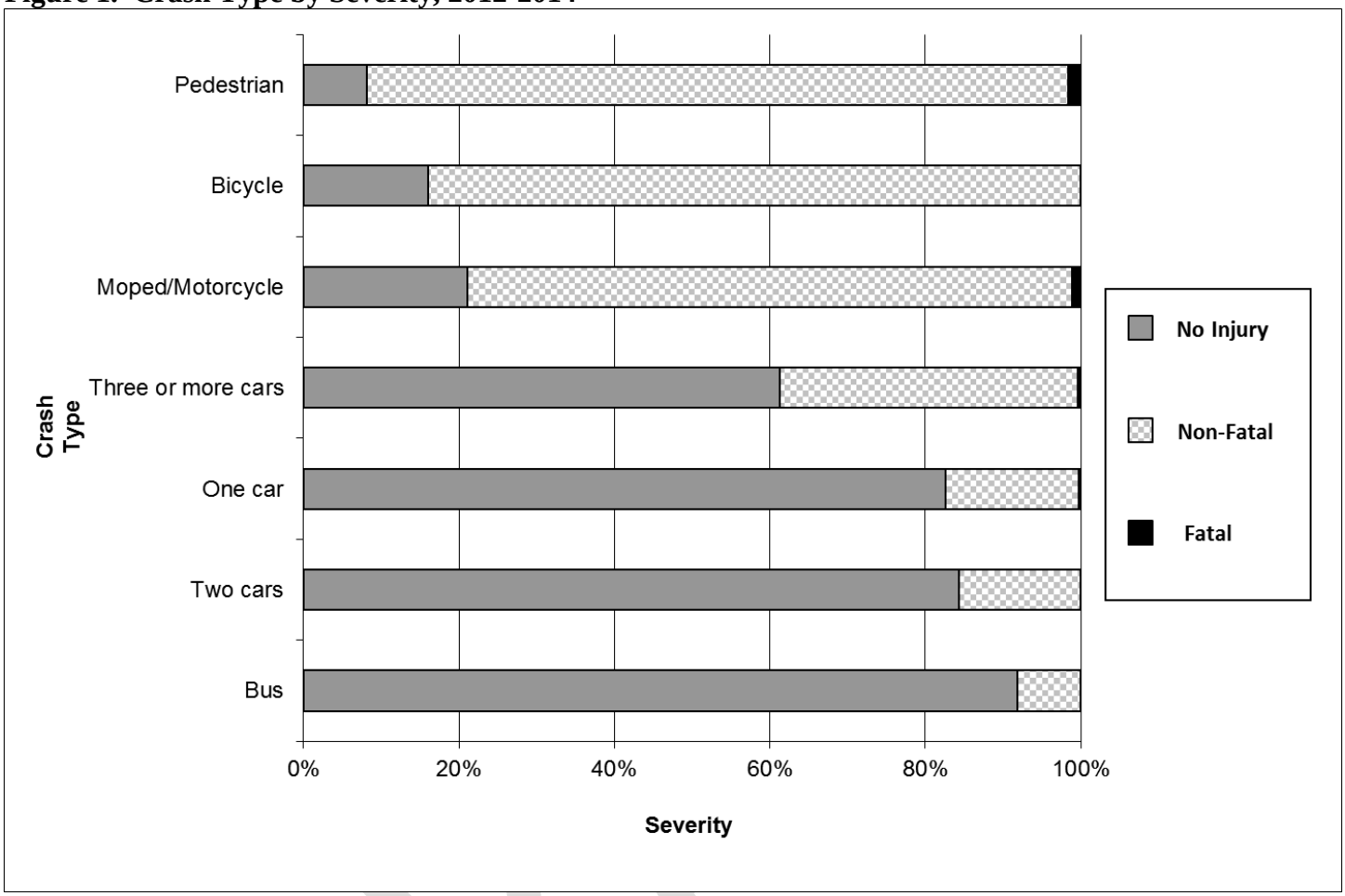
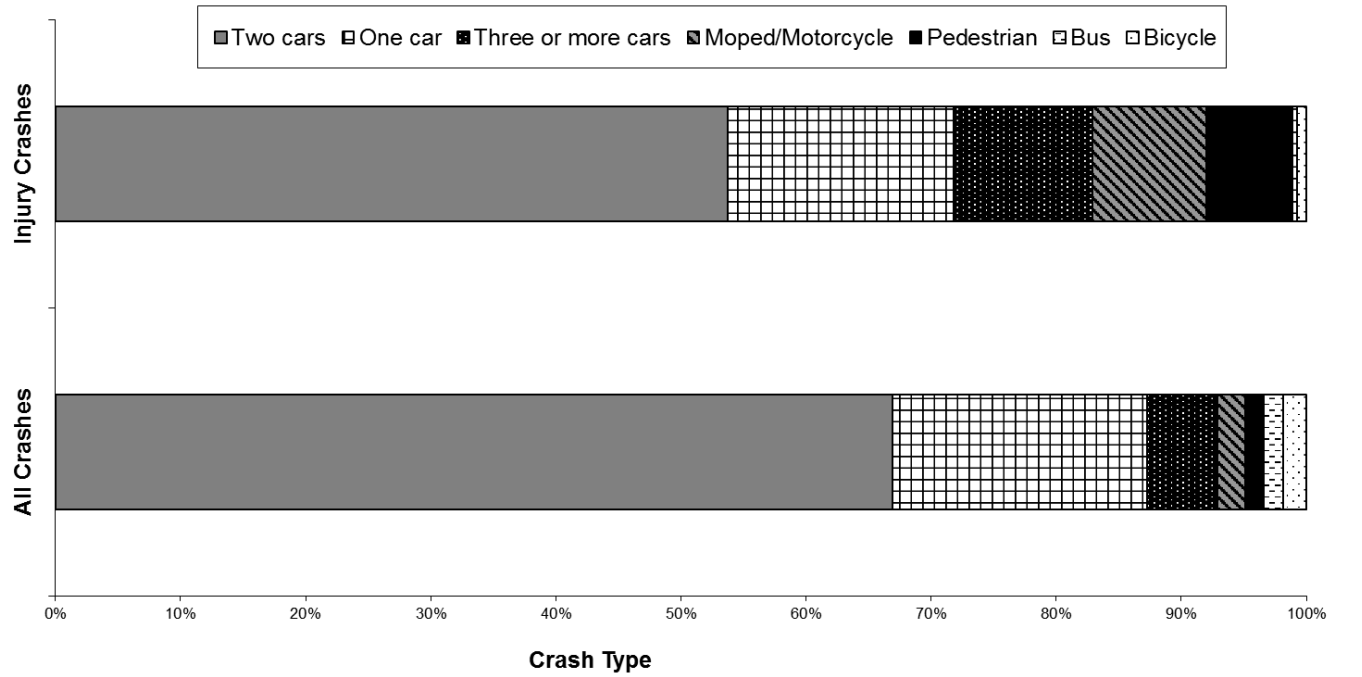


Figure 2. Crash Type by Severity, 2012-2014



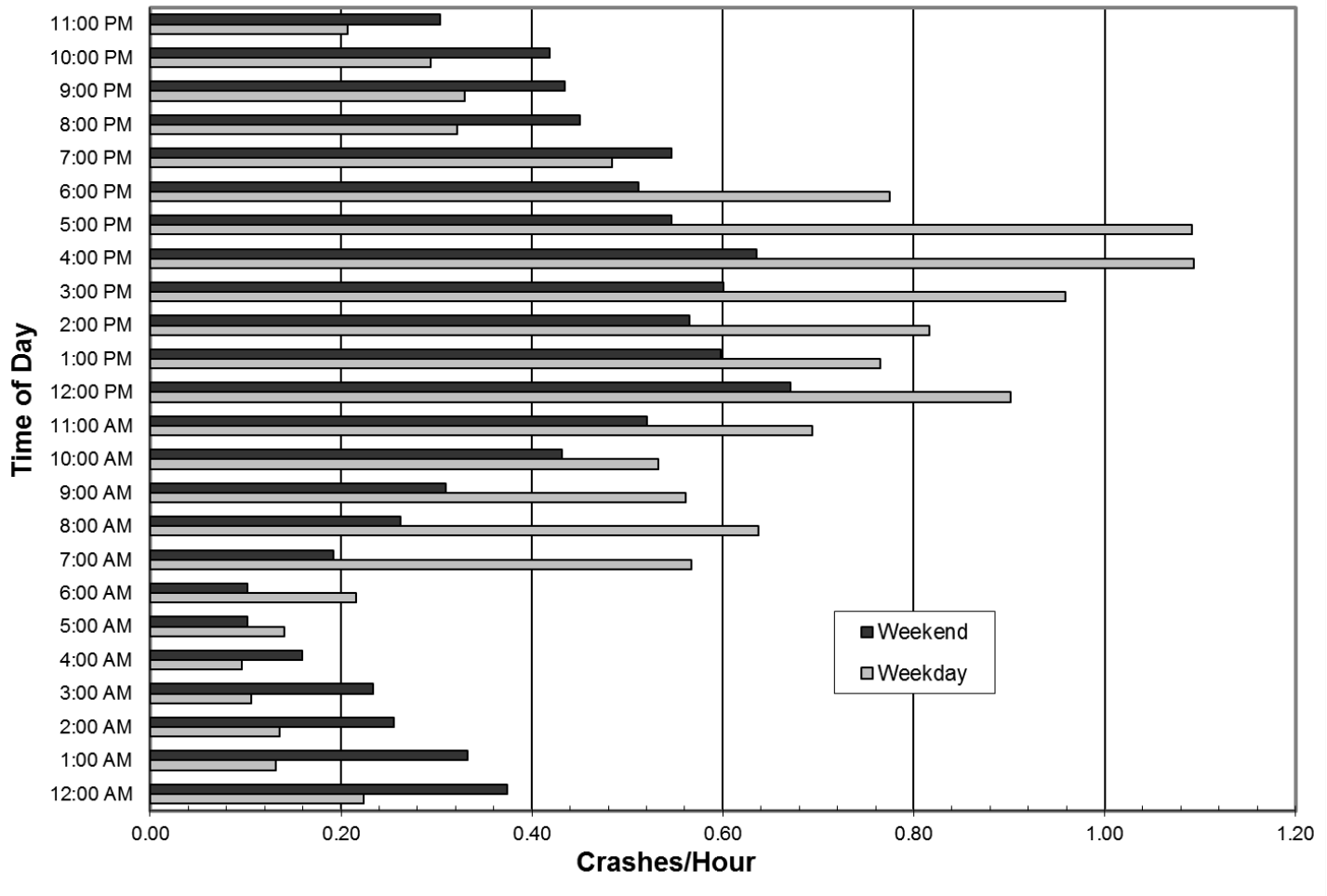
Time of Crashes

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.

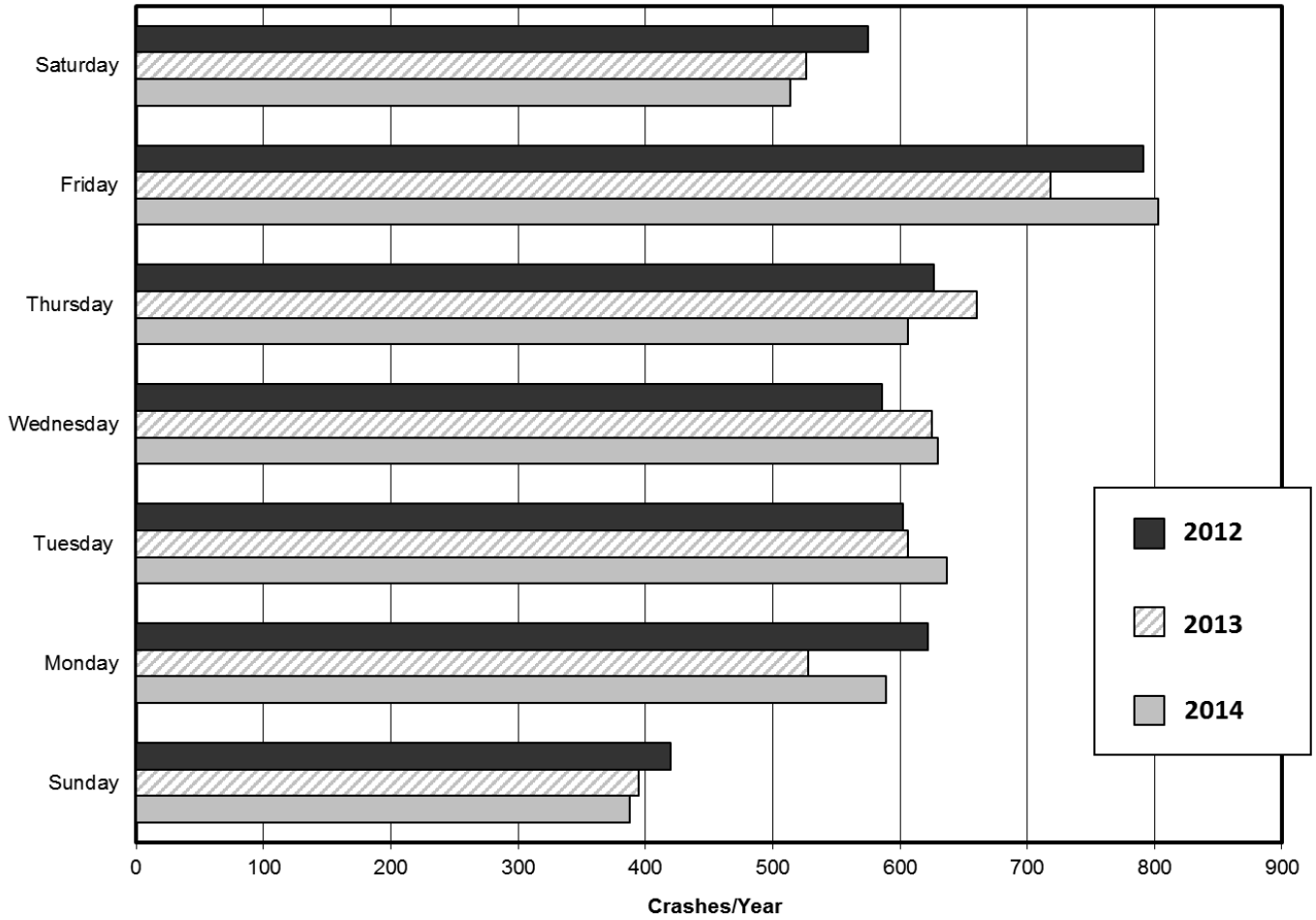
The hourly distribution of crashes for the weekend was less varied than for the work week. Crashes in the late evening and early morning were much more common during the weekend, and rush hour peaks were not as prevalent as on weekdays. During the study period, a greater number of crashes occurred on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

Figure 3. Crashes by Time of Day, 2012-2014 [2]



[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, 2012-2014



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 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 totals are listed in Table 2. Second, the highest crash total 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 crash total locations are ranked based on the overall severity of crashes that occurred at each location (Table 4). Analyzing crash totals, 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, 2014, the intersection with greatest crash number of crashes was State Road 37 & W 3rd St, where 36 crashes were reported (Table 2). This same intersection had the greatest number crashes during the period from 2012 to 2014, with 116 reported crashes. The highest crash total locations have remained consistent over time, with 82% of the locations in Table 2 having appeared in the previous year's analysis, covering the period 2011 to 2013.

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)[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 period[4]. During the period from 2012 to 2014, the intersection with the greatest crash rate according to this analysis was State Road 45 & D Gillham Dr.

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 2012 to 2014, the intersection with the greatest severity number was State Road 37 & W 3rd St, followed by State Road 37 & W Bloomfield Rd.

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.

[3] Crash Rate = N / ((Intersection_AADT) * 3 years * 365 days * 10^-6),
where N = total number of crashes from 2012 to 2014, and
where Intersection_AADT = sum of average annual daily traffic entering the intersection

[4] Traffic counts from obtained from the best available state and local sources.

[5] 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, 2012-2014

Crash Total Rank	Previous Rank	Intersection	Juris-diction	Year			3-Year Total
				2012	2013	2014	
1	1	State Road 37 & W 3rd St	IN	44	36	36	**116**
2	4	State Road 45/46 Bypass & E 10th St	IN	35	28	34	**97**
3	2	State Road 37 & W Bloomfield Rd	IN	35	32	27	**94**
4	5	State Road 46 & Pete Ellis Dr	IN	34	25	28	**87**
5	7	State Road 45 & S Gillham Dr	IN	26	26	33	**85**
6	3	State Road 46 & E 3rd St	IN	35	26	22	**83**
6	6	State Road 46 & S Kingston Dr	IN	43	16	24	**83**
8	11	State Road 37 & W Vernal Pike	IN	17	22	35	**74**
9	8	State Road 45 & S Liberty Dr	IN	24	23	20	**67**
10	13	State Road 45/46 Bypass & N Kinser Pike	IN	18	15	23	**56**
11	8	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	22	13	20	**55**
11	10	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	17	16	22	**55**
13	25	State Road 48 & N Curry Pike	IN	17	17	20	**54**
14	20	State Road 37 & W Tapp Rd	IN	11	17	25	**53**
14	32	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	18	17	18	**53**
16	11	State Road 48 & S Gates Dr	IN	13	15	24	**52**
16	19	E 10th St & N Union St	COB	15	23	14	**52**
18	13	S Walnut Street Pike & E Winslow Rd	COB	13	15	22	**50**
18	34	W 3rd St & S College Ave	COB	24	13	13	**50**
20	21	E 3rd St & S Fess Ave	COB	13	19	16	**48**
20	27	E 3rd St & S Swain Ave	COB	10	20	18	**48**
22	21	W Kirkwood Ave & N Walnut St	COB	18	14	14	**46**
22	21	W 4th St & S Walnut St	COB	14	18	14	**46**
24	18	E 17th St & N Jordan Ave	COB	8	20	16	**44**
24	15	W 10th St & N College Ave	COB	21	12	11	**44**
26	16	E 3rd St & S Jordan Ave	COB	12	17	14	**43**
26	-	W 2nd St & S College Ave	COB	15	13	15	**43**
26	16	State Road 48 & S Liberty Dr	IN	17	13	13	**43**
29	24	W 3rd St & N Walnut St	COB	22	10	10	**42**
30	-	E Grimes Ln & S Walnut St	COB	11	12	17	**40**
31	44	E Rhorer Rd & S Walnut Street Pike	MC	16	9	14	**39**
31	-	S Walnut St & W Country Club Dr/E Winslow Rd	COB	16	13	10	**39**
31	35	W 2nd St & S Patterson Dr	COB	8	14	17	**39**
31	32	W 7th St & N College Ave	COB	15	12	12	**39**
35	-	W Kirkwood Ave & N College Ave	COB	10	15	13	**38**
36	25	State Road 46 & S Smith Rd	IN	17	9	11	**37**
37	-	E 3rd St & S Highland Ave	COB	14	10	12	**36**
37	44	W 14th St & N Walnut St	COB	14	10	12	**36**
39	-	E 3rd St & S Washington St	COB	13	11	11	**35**
39	27	W Kirkwood Ave & N Rogers St	COB	16	12	7	**35**
39	44	State Road 45/46 Bypass & E 17th St	IN	9	12	14	**35**
39	39	E Kirkwood Ave & N Dunn St	COB	9	13	13	**35**
43	35	State Road 46 & N Smith Pike	IN	9	7	18	**34**
43	27	E 3rd St & S Woodlawn Ave	COB	11	9	14	**34**
43	-	W 8th St & N College Ave	COB	13	8	13	**34**
43	39	W 7th St & N Walnut St	COB	12	16	6	**34**
43	-	E 10th St & N Woodlawn Ave	COB	9	17	8	**34**
48	-	W 2nd St & S Rogers St	COB	6	15	12	**33**
48	35	E 10th St & N Jordan Ave	COB	15	10	8	**33**
48	41	E 10th St & N Sunrise Dr	COB	12	14	7	**33**
48	-	E 3rd St & S Dunn St	COB	9	9	15	**33**

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Table 3. Top 50 Crash Locations by Crash Rate, 2012-2014

Crash Total Rank	Crash Frequency Rank	Intersection	Jurisdiction	3-Year Total	Crashes per Million Entering Vehicles
1	5	State Road 45 & S Gillham Dr	IN	85	**5.06**
2	6	State Road 46 & S Kingston Dr	IN	83	**3.81**
3	20	E 3rd St & S Swain Ave	COB	48	**3.24**
4	39	E Kirkwood Ave & N Dunn St	COB	35	**3.15**
5	4	State Road 46 & Pete Ellis Dr	IN	87	**3.11**
6	20	E 3rd St & S Fess Ave	COB	48	**2.91**
7	1	State Road 37 & W 3rd St	IN	116	**2.83**
8	2	State Road 45/46 Bypass & E 10th St	IN	97	**2.69**
9	3	State Road 37 & W Bloomfield Rd	IN	94	**2.68**
10	18	S Walnut Street Pike & E Winslow Rd	COB	50	**2.64**
11	16	E 10th St & N Union St	COB	52	**2.61**
12	24	W 10th St & N College Ave	COB	44	**2.38**
13	31	E Rhorer Rd & S Walnut Street Pike	MC	39	**2.35**
14	37	E 3rd St & S Highland Ave	COB	36	**2.34**
15	24	E 17th St & N Jordan Ave	COB	44	**2.30**
16	48	E 10th St & N Sunrise Dr	COB	33	**2.30**
17	37	W 14th St & N Walnut St	COB	36	**2.29**
18	22	W 4th St & S Walnut St	COB	46	**2.04**
19	22	W Kirkwood Ave & N Walnut St	COB	46	**1.98**
20	43	E 3rd St & S Woodlawn Ave	COB	34	**1.97**
21	6	State Road 46 & E 3rd St	IN	83	**1.96**
22	14	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	53	**1.90**
23	48	E 3rd St & S Dunn St	COB	33	**1.89**
24	43	W 8th St & N College Ave	COB	34	**1.78**
25	9	State Road 45 & S Liberty Dr	IN	67	**1.76**
26	43	E 10th St & N Woodlawn Ave	COB	34	**1.70**
27	26	E 3rd St & S Jordan Ave	COB	43	**1.62**
28	31	W 7th St & N College Ave	COB	39	**1.62**
29	39	E 3rd St & S Washington St	COB	35	**1.57**
30	8	State Road 37 & W Vernal Pike	IN	74	**1.55**
31	26	W 2nd St & S College Ave	COB	43	**1.51**
32	35	W Kirkwood Ave & N College Ave	COB	38	**1.49**
33	18	W 3rd St & S College Ave	COB	50	**1.47**
34	43	W 7th St & N Walnut St	COB	34	**1.42**
35	31	W 2nd St & S Patterson Dr	COB	39	**1.40**
36	10	State Road 45/46 Bypass & N Kinser Pike	IN	56	**1.40**
37	36	State Road 46 & S Smith Rd	IN	37	**1.35**
38	13	State Road 48 & N Curry Pike	IN	54	**1.30**
39	11	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	55	**1.29**
40	39	W Kirkwood Ave & N Rogers St	COB	35	**1.28**
41	11	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	55	**1.28**
42	16	State Road 48 & S Gates Dr	IN	52	**1.25**
43	29	W 3rd St & N Walnut St	COB	42	**1.16**
44	48	E 10th St & N Jordan Ave	COB	33	**1.15**
45	48	W 2nd St & S Rogers St	COB	33	**1.15**
46	14	State Road 37 & W Tapp Rd	IN	53	**1.11**
47	26	State Road 48 & S Liberty Dr	IN	43	**1.10**
48	39	State Road 45/46 Bypass & E 17th St	IN	35	**1.08**
49	31	S Walnut St & W Country Club Dr/E Winslow Rd	COB	39	**1.07**
50	30	E Grimes Ln & S Walnut St	COB	40	**0.88**
51	43	State Road 46 & N Smith Pike	IN	34	**0.87**

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Table 4. Top 50 Crash Locations by Crash Severity, 2012-2014

Crash Severity Rank	Intersection	Juris-diction	Fatality	Incapacitating	Minor Injury	Property Damage Only	Severity Number
1	State Road 37 & W 3rd St	IN	0	2	30	84	**186**
2	State Road 37 & W Bloomfield Rd	IN	0	0	27	67	**148**
3	State Road 46 & S Kingston Dr	IN	0	0	26	57	**135**
4	State Road 37 & W Vernal Pike	IN	0	5	18	51	**135**
5	State Road 45/46 Bypass & E 10th St	IN	0	2	12	83	**131**
6	State Road 46 & Pete Ellis Dr	IN	0	0	18	69	**123**
7	State Road 46 & E 3rd St	IN	0	0	15	68	**113**
8	State Road 45/46 Bypass & N Kinser Pike	IN	1	0	20	35	**107**
9	State Road 45 & S Gillham Dr	IN	1	0	4	80	**104**
10	State Road 45 & S Liberty Dr	IN	0	2	10	55	**97**
10	State Road 48 & N Curry Pike	IN	0	3	14	37	**97**
10	S Walnut Street Pike & E Winslow Rd	COB	0	5	11	34	**97**
13	State Road 45/46 Bypass & N College Ave/N Walnut St	IN	0	1	18	36	**96**
14	W 4th St & S Walnut St	COB	0	3	14	29	**89**
15	State Road 45 & S Curry Pike/S Leonard Springs Rd	IN	0	1	13	41	**86**
16	State Road 45 & N Pete Ellis Dr/N Range Rd	IN	0	1	13	39	**84**
17	W 3rd St & S College Ave	COB	0	0	16	34	**82**
18	State Road 37 & W Tapp Rd	IN	0	0	14	39	**81**
19	W 2nd St & S Patterson Dr	COB	0	2	15	22	**79**
20	E 3rd St & S Jordan Ave	COB	0	0	14	29	**71**
21	State Road 48 & S Gates Dr	IN	0	0	9	43	**70**
22	E Grimes Ln & S Walnut St	COB	0	1	12	27	**69**
23	E 3rd St & S Fess Ave	COB	0	0	10	38	**68**
24	E 10th St & N Union St	COB	0	1	5	46	**67**
25	State Road 48 & S Liberty Dr	IN	0	1	9	33	**66**
25	State Road 46 & S Smith Rd	IN	0	1	12	24	**66**
27	E 3rd St & S Swain Ave	COB	0	0	8	40	**64**
27	E Rhorer Rd & S Walnut Street Pike	MC	0	1	10	28	**64**
29	E Kirkwood Ave & N Dunn St	COB	0	2	9	24	**63**
30	W 7th St & N College Ave	COB	0	1	9	29	**62**
31	E 10th St & N Jordan Ave	COB	0	0	14	19	**61**
32	W 2nd St & S College Ave	COB	0	0	8	35	**59**
32	W Kirkwood Ave & N College Ave	COB	0	1	8	29	**59**
34	State Road 45/46 Bypass & E 17th St	IN	0	1	9	25	**58**

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Crash Severity Rank	Intersection	Juris-diction	Fatal	Incapacitating	Personal Injury	Property Damage Only	Severity Number
35	W 3rd St & N Walnut St	COB	0	1	5	36	**57**
36	W 10th St & N College Ave	COB	0	0	6	38	**56**
36	E 17th St & N Jordan Ave	COB	0	0	6	38	**56**
36	E 3rd St & S Highland Ave	COB	0	0	10	26	**56**
39	S Walnut St & W Country Club Dr/E Winslow Rd	COB	0	0	8	31	**55**
39	E 3rd St & S Washington St	COB	0	0	10	25	**55**
41	W Kirkwood Ave & N Walnut St	COB	0	0	4	42	**54**
42	E 3rd St & S Woodlawn Ave	COB	0	1	7	26	**53**
43	W 8th St & N College Ave	COB	0	1	6	27	**51**
44	W 14th St & N Walnut St	COB	0	0	7	29	**50**
44	E 10th St & N Woodlawn Ave	COB	0	0	8	26	**50**
46	W 7th St & N Walnut St	COB	0	0	6	28	**46**
47	W Kirkwood Ave & N Rogers St	COB	0	0	4	31	**43**
48	W 2nd St & S Rogers St	COB	0	0	4	29	**41**
48	E 10th St & N Sunrise Dr	COB	0	0	4	29	**41**
50	E 3rd St & S Dunn St	COB	0	0	3	30	**39**
51	State Road 46 & N Smith Pike	IN	0	0	2	32	**38**

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Crash Factors

This section summarizes the primary crash factors from 2012 to 2014. 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 2012-2014, 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 2,400 crashes from 2012 to 2014. Following too closely and unsafe backing were also significant crash factors.

Table 5. Top 10 Primary Crash Factors by Severity, 2012-2014

Rank	Primary Factor	Severity				3-Year Total
		Fatal Injury	Incapacitating Injury	Non-Incapacitating Injury	No Injury/ Unknown	
1	Failure To Yield Right Of Way	2	72	610	1708	**2,392**
2	Following Too Closely	1	32	514	1485	**2,032**
3	Unsafe Backing	0	0	19	1353	**1,372**
4	Ran Off Road Right	5	49	226	743	**1,023**
5	Other	1	15	114	761	**891**
6	Speed Too Fast For Weather Conditions	0	12	71	443	**526**
7	Animal/Object In Roadway	0	4	32	466	**502**
8	Disregard Signal/Reg Sign	0	18	166	305	**489**
9	Improper Turning	0	7	37	425	**469**
10	Unsafe Lane Movement	0	5	43	375	**423**

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Fatalities

This section provides a focused look at motor vehicle fatalities in Monroe County from 2012 to 2014. As with previous sections, the material presented here can be useful for enforcement, education, and decision-making.

In 2014 there were nine fatalities in Monroe County (Table 6). Of these, four resulted from crashes involving a single car, three resulted from crashes involving two cars, and two were pedestrians. Over the period from 2012 to 2014, the average annual number of fatalities per 100,000 residents was 5.6 for Monroe County. This figure is well below the U.S. average of 10.35 fatalities per 100,000 people for 2013[6].

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 7).

Table 6. Fatalities by Crash Type, 2012-2014

Year	Crash Type						Total	Fatalities per 100,000 Population
	One car	Two cars	Three cars or more	Moped and Motorcycle	Bicycle	Pedestrian		
2012	6	1	1	2	0	1	**11**	**7.8**
2013	0	1	2	1	0	0	**4**	**2.8**
2014	4	3	0	0	0	2	**9**	**6.3**
Total	**10**	**5**	**3**	**3**	**0**	**3**	**24**	**5.6**

Table 7. Top Primary Crash Factors for Fatal Crashes, 2012-2014

Rank	Primary Factor	Fatal Injury	% of Total
1	Left Of Center	7	**33%**
2	Ran Off Road Right	5	**24%**
3	Pedestrian Action	3	**14%**
4	Failure To Yield Right Of Way	2	**10%**
5	Following Too Closely	1	**5%**
6	Unsafe Speed	1	**5%**
7	Obstruction Not Marked	1	**5%**
8	Other (Driver) - Explain In Narrative	1	**5%**
	Total	**21**	**100%**

[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 September 20, 2015.

Fatal Crash Locations

This section summarizes the locations for crashes that resulted in fatalities. From 2012 to 2014, there were 21 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, 2012-2014

Location	Juris-diction	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 Kinser Pike & W Rosewood Dr	COB	1	1	0	0	0	0
N Moon Rd, from W Sand College Rd to County Line	MC	2	1	0	0	0	0
Old State Road 37 & S E Rhorer Rd	MC	1	1	0	0	0	0
Old State Road 46, from State Road 46 to N Brummetts Creek 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 446 from E Allens Creek Rd to S Chapel Hill Rd	IN	1	0	1	0	0	0
State Road 45 & S Gillham Rd	IN	1	0	1	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 & N Fifth St	IN	1	0	0	0	0	1
State Road 46 & W Arlington Rd	IN	1	1	0	0	0	0
State Road 46 & W Flatwoods Rd	IN	1	0	1	0	0	0
State Road 46, from W Flatwoods Rd to W Chafin Chapel 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 Beasley Dr & S Curry Pike	MC	1	0	0	0	0	1
W Howard Rd & N Starnes Rd	MC	1	1	0	0	0	0
W Popcorn Rd from S Rockport Rd to S Ketcham Rd	MC	1	1	0	0	0	0

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Bicycle and Pedestrian Crashes

This section reports on the number of bicycle and pedestrian crashes in Monroe County from 2012 to 2014. 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 2013 American Community Survey indicates that 5.1% of commuters in Bloomington use a bicycle as their primary mode of transportation, while 14.7% walk[7]. The combined walking and biking commute rate ranks 7th among U.S. cities with a population of greater than 65,000 people. However, as described in this report, individuals using these modes of transportation are particularly vulnerable to injury.

In 2014, there were 56 reported crashes involving a cyclist and 68 involving a pedestrian (Table 1). This included twelve pedestrian and eight bicycle crashes that resulted in incapacitating injuries, and two pedestrian crashes that resulted in a fatality. During the period from 2012 to 2014, 351 pedestrian and bicycle crashes were reported, resulting in two pedestrian fatalities.

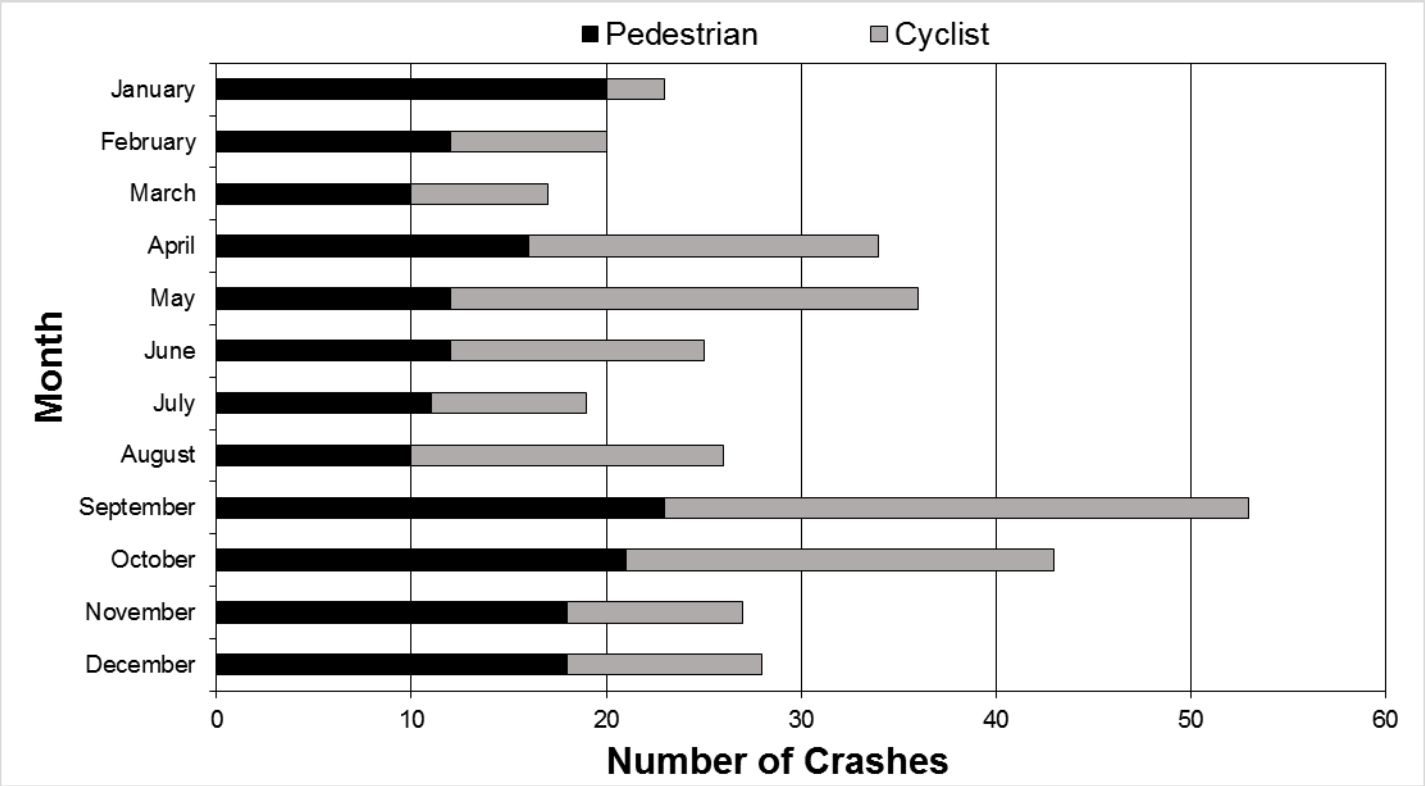
It is well understood that crashes involving these modes of transportation more often result in injury when compared with other crash types, therefore there is a need to reduce the frequency and severity of these crashes. Figure 5 shows that the frequency of bicycle and pedestrian crashes peaks each year in May and September. 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, 2012-2014

Intersection	Jurisdiction	Crash Type		Total Bike+Ped	All Crashes
		Bicycle	Pedestrian		
E 7th St & N Jordan Ave	COB	10	4	14	22
E 2nd St & S Walnut St	COB	4	2	6	32
N Dunn St & E Kirkwood Ave	COB	3	2	5	35
W 2nd St & S College Ave	COB	0	4	4	43
E 3rd St & S Jordan Ave	COB	1	3	4	43
N College Ave & W Kirkwood Ave	COB	1	3	4	38
E Kirkwood Ave & S Walnut St	COB	2	2	4	46
N Jordan Ave & S Jordan Ave	COB	3	1	4	16
W 6th St & N Morton St	COB	2	2	4	10
W 7th St & N College Ave	COB	1	3	4	39

[7] US Census Bureau. 2013 American Community Survey, 3-Year Estimate. http://www.census.gov/acs/

Figure 5. Bicycle and Pedestrian Crashes by Month, 2012-2014



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 many locations along the State Road 37/I-69 corridor. Improvements at the intersection of E Atwater Ave and S Henderson St which were completed in 2011 have resulted in a 54% reduction in crash frequency at that location, compared to the period from 2008 to 2010[8]. 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.

[8] At this location, 37 crashes occurred from 2008 to 2010, while 17 crashes occurred from 2012 to 2014.

Appendix

Figure A1. Top 50 Total Crash Locations, 2012-2014

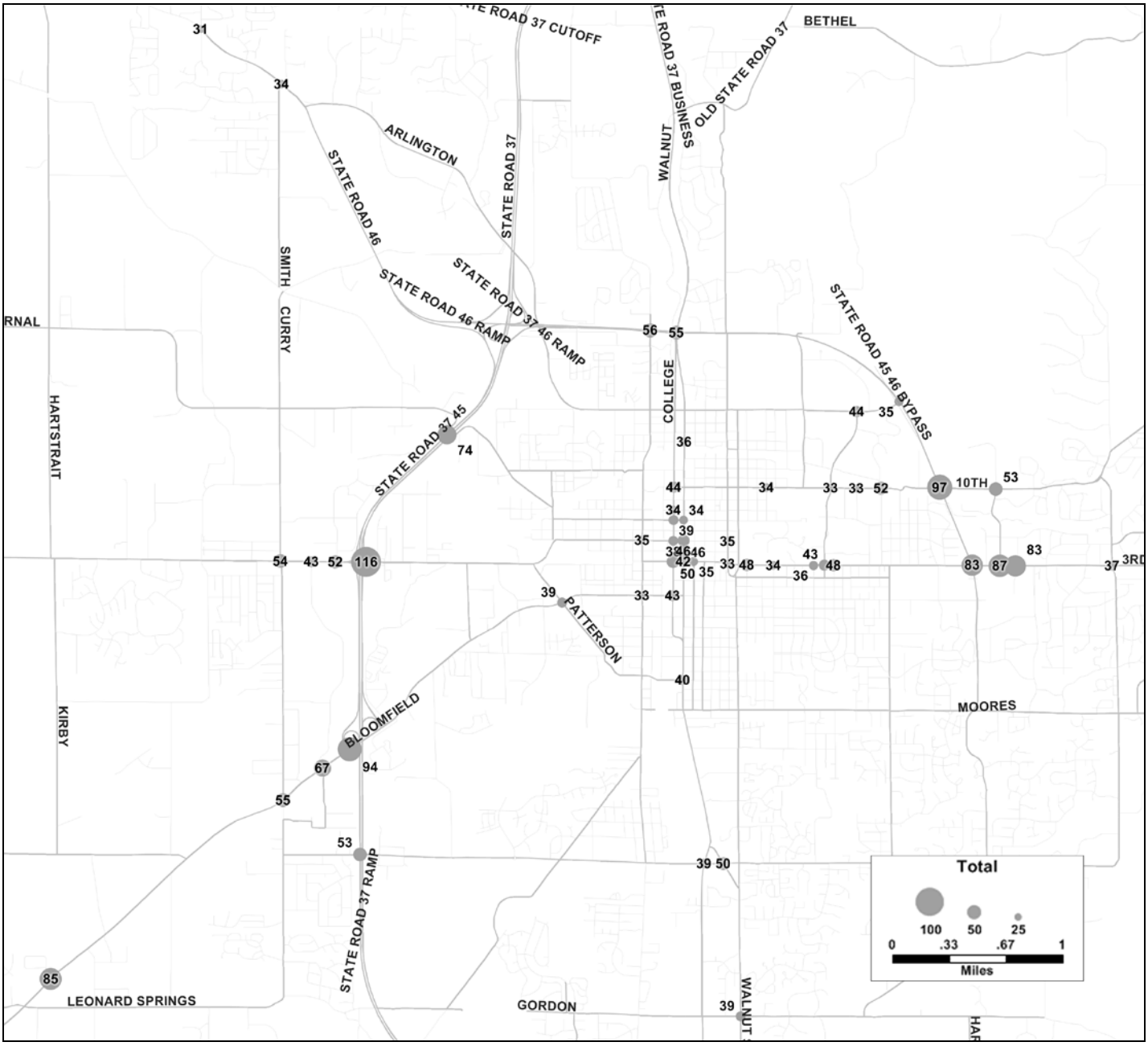


Figure A2. Fatal Crashes in Monroe County, 2012-2014

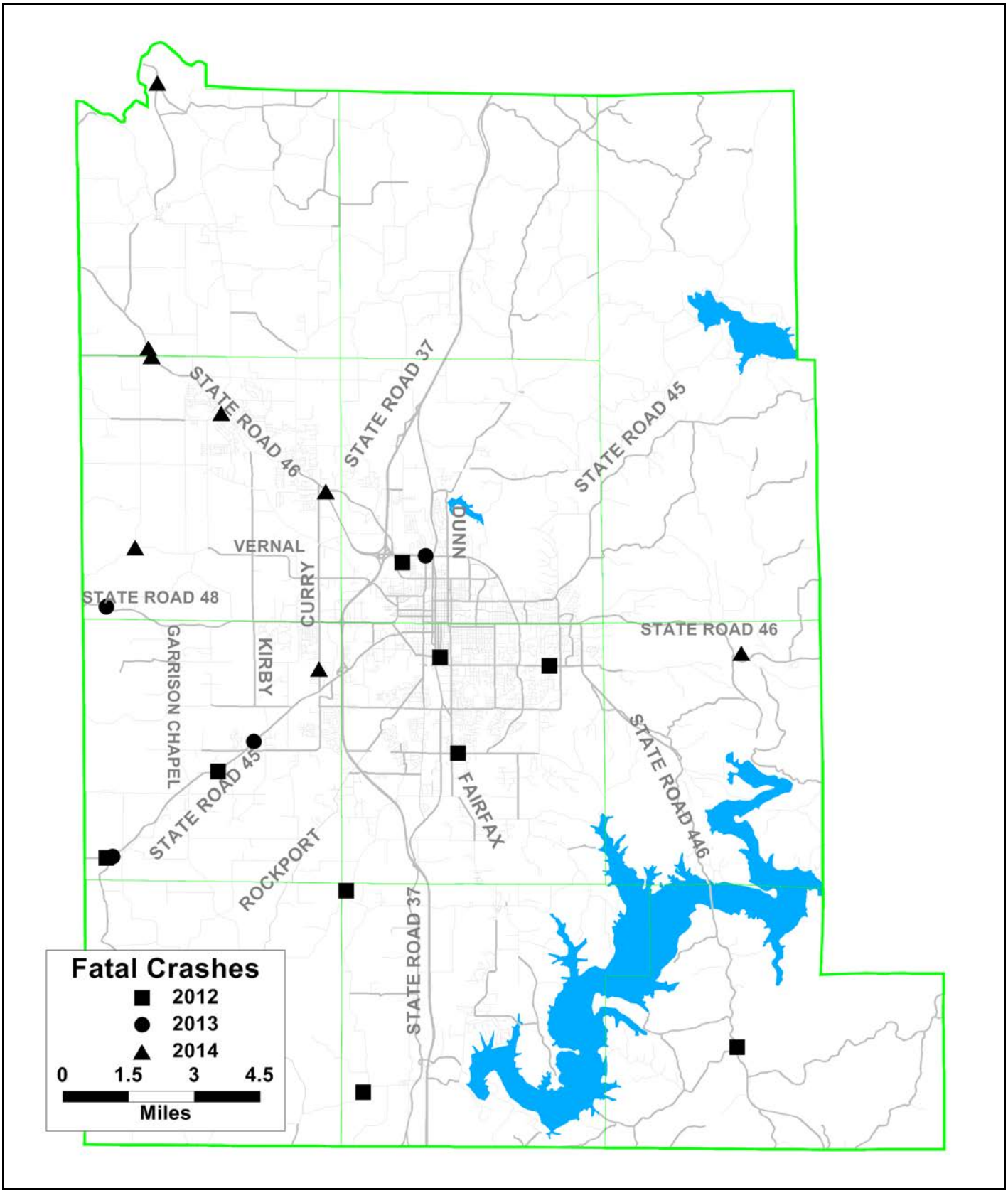


Figure A3. Fatalities by Gender and Crash Type, 2012-2014

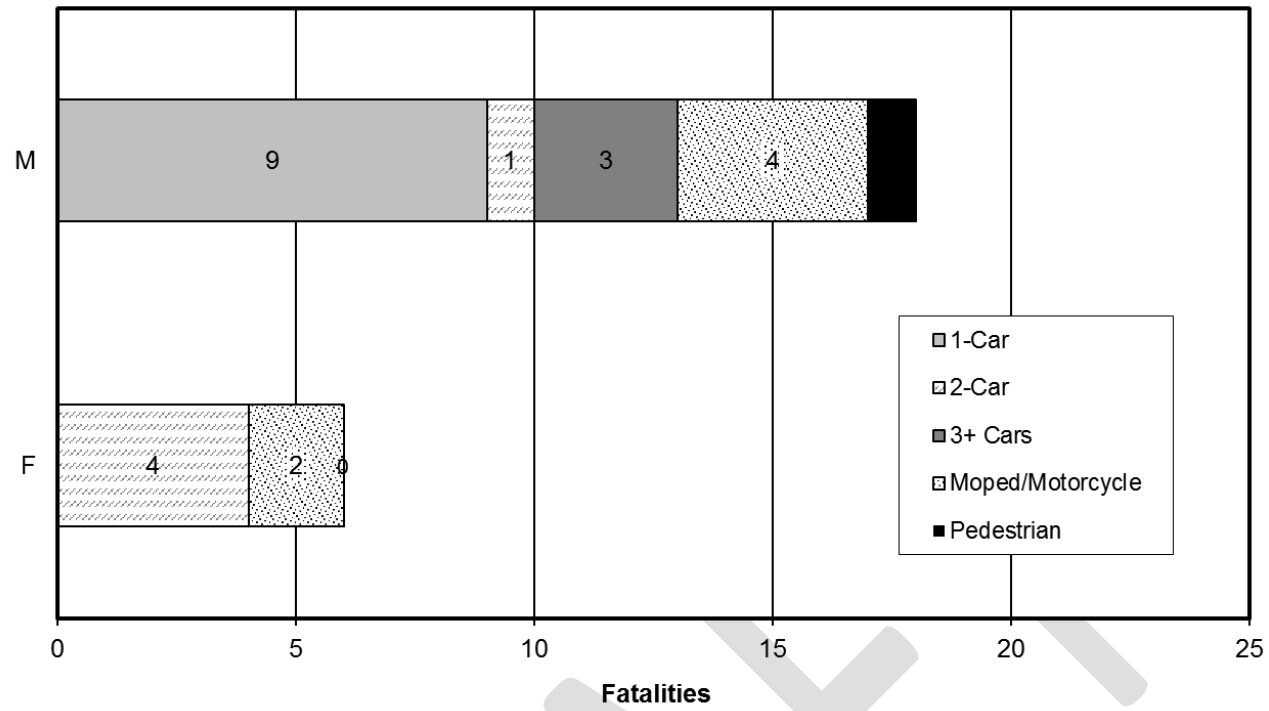
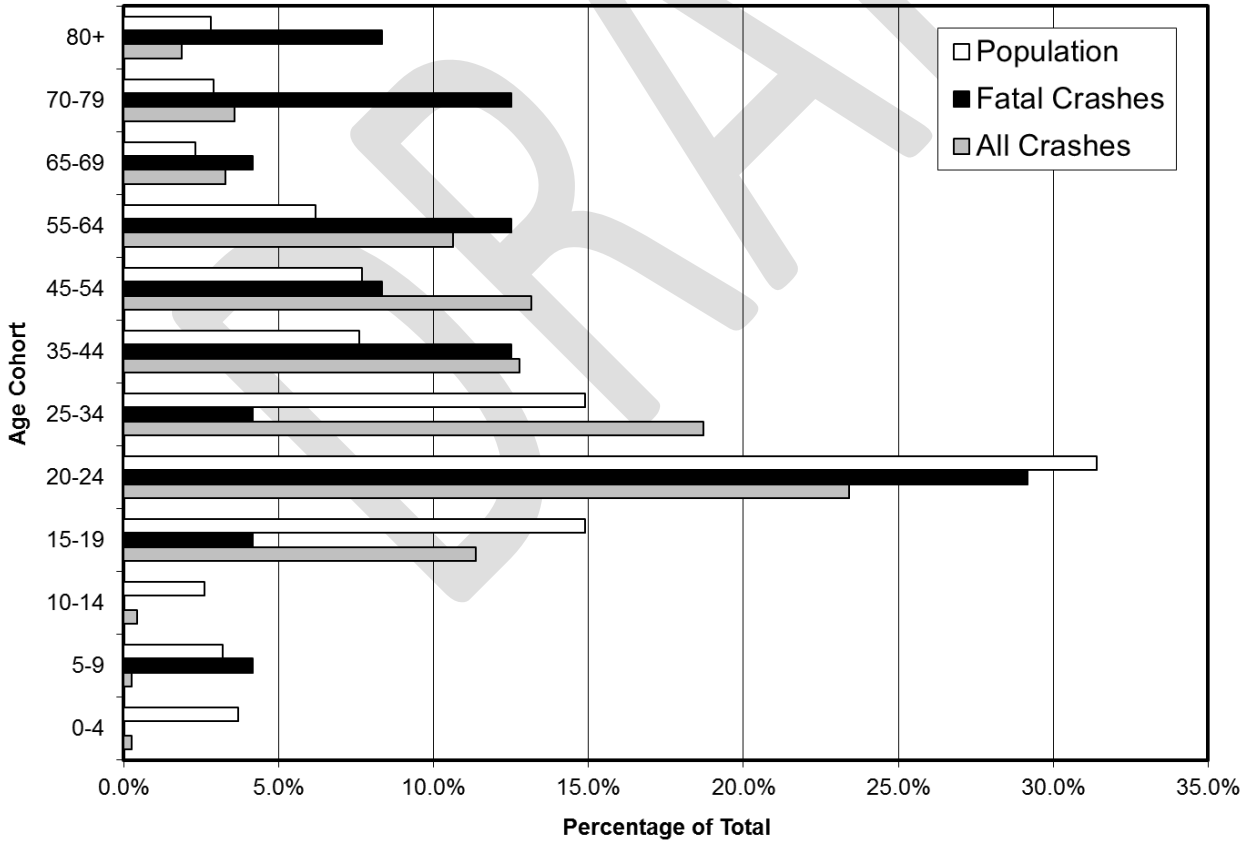


Figure A4. Portion of Individuals in All Crashes and Individuals Fatally Injured, by Age, 2012-2014[9,10]



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

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Table A1. Eligible HSIP Locations, 2012-2014

Current Rank	Location	Juris-diction	Fatal or Incapacitating Injury Crashes	Total Crashes	Fatal	Any Injury
1	W 3rd St & S College Ave	COB	5	55	0	29%
2	W Kirkwood Ave & N Walnut St	COB	3	49	0	35%
3	N Curry Pike & W Vernal Pike	MC	3	34	0	18%
4	S Walnut St & W Country Club Dr/E Winslow Rd	COB	2	41	0	41%
5	E 17th St & N Walnut St	COB	2	32	0	19%
6	W 3rd St & S Patterson Dr	COB	2	30	0	30%
7	E 7th St & N Jordan Ave	COB	2	24	0	46%
8	S Curry Pike & W Roll Ave	MC	2	22	0	36%
9	W 2nd St & S Walker St	COB	2	21	0	33%
9	S Fairfax Rd & S Walnut Street Pike	MC	2	21	0	38%
11	W Bloomfield Rd & S Weimer Rd	COB	2	18	0	44%
12	W 17th St & W Arlington Rd/N Monroe St	COB	2	16	0	50%
13	W 11th St & N Rogers St	COB	2	12	0	42%
14	S Adams St & S Patterson Dr	COB	2	10	0	20%
15	E 10th St & N Union St	COB	1	53	0	11%
16	W 2nd St & S College Ave	COB	1	44	0	23%
17	W 3rd St & N Walnut St	COB	1	43	0	14%
18	E Grimes Ln & S Walnut St	COB	1	41	0	32%
19	W 2nd St & S Patterson Dr	COB	1	40	0	28%
19	E Rhorer Rd & S Walnut Street Pike	MC	1	40	0	25%
21	W Kirkwood Ave & N College Ave	COB	1	39	0	23%
22	W Kirkwood Ave & N Rogers St	COB	1	36	0	28%
23	E 10th St & N Woodlawn Ave	COB	1	35	0	20%
23	E 3rd St & S Woodlawn Ave	COB	1	35	0	23%
25	E 10th St & N Fee Ln	COB	1	32	0	9%
26	E 10th St & N Jefferson St	COB	1	30	0	13%
26	E 3rd St & S Grant St	COB	1	30	0	27%
28	W 17th St & N Kinser Pike/N Madison St	COB	1	29	0	31%
29	E 3rd St & E Morningside Dr	COB	1	28	0	18%
30	E 10th St & N Lincoln St	COB	1	26	0	12%
30	W 6th St & N College Ave	COB	1	26	0	12%
30	W 1st St & S College Ave	COB	1	26	0	27%
33	E 3rd St & S Park Ridge Rd	COB	1	25	0	28%
33	E Buick Cadillac Blvd & S College Mall Rd	COB	1	25	0	24%
35	W 3rd St & S Cory Ln	COB	1	23	0	43%
36	W 3rd St & S Landmark Ave	COB	1	22	0	27%
36	E 13th St & N Fee Ln	COB	1	22	0	18%
36	E 3rd St & S Overhill Dr	COB	1	22	0	18%
36	W Country Club Dr & S Rockport Rd & W Tapp Rd	COB	1	22	0	23%
40	E 17th St & N Fess Ave	COB	1	21	0	14%
41	E 3rd St & S Roosevelt St	COB	1	21	0	29%
41	S Curry Pike & W Doyle Ave	MC	1	21	0	24%
43	E 17th St & N Lincoln St	COB	1	19	0	26%
43	E 17th St & N Indiana Ave	COB	1	19	0	32%
45	E Longview Ave & N Pete Ellis Dr	COB	1	18	0	39%
45	E Atwater Ave & S Henderson St	COB	1	18	0	33%
45	W Kirkwood Ave & N Madison St	COB	1	18	0	28%
45	N Smith Pike & W Woodyard Rd	MC	1	16	0	25%
45	E Atwater Ave & S Highland Ave	COB	1	16	0	25%
45	W 7th St & N Rogers St	COB	1	16	0	50%
45	E 3rd St & S High St	COB	1	16	0	25%

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MEMORANDUM

To: MPO Policy Committee

From: Josh Desmond, MPO Director

Date: October 9, 2015

Re: 2040 MTP – Travel Demand Model Scenarios & Results

Background

Since the last meeting, staff has received additional scenario results (see attachments). On the day of the Policy Committee meeting (October 16), our model consultant will be in the MPO office to install the new Travel Demand Model and train staff on its use. He will also attend the Policy Committee meeting to allow committee members to ask questions of him directly. The initial scenarios being tested on the model are again provided below for reference purposes.

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 3rd 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.

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	4	5	6	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	**Measure**	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		2,955,625	3,584,415	3,564,909	3,297,662	3,694,826	3,731,774	3,700,595	4,107,402	3,570,078	3,469,918
Demand	Vehicle Hours (VHT)		108,575	152,246	154,597	135,499	152,050	154,939	152,203	166,853	153,584	148,175
Demand	Work Trip - Vehicle Occupancy		1.08	1.08	1.07	1.09	1.08	1.08	1.07	1.07	1.08	1.08
Demand	Person Trips		589,162	690,749	690,748	690,748	690,738	690,738	692,285	702,061	690,744	685,964
Demand	Transit Share		4.49%	5.50%	6.39%	8.14%	5.50%	5.45%	5.51%	5.30%	5.50%	5.67%
Demand	Daily Ridership		27,792	39,892	46,555	59,038	39,895	39,496	40,458	39,056	39,897	40,808
Demand	Transit Trips		26,468	37,992	44,128	56,227	37,995	37,615	38,168	37,196	37,997	38,864
Demand	Transit Person Miles		51,875	60,819	72,535	91,984	60,818	60,210	60,955	61,815	60,819	60,398
Demand	Transit Person Hours		3,435	4,028	4,591	6,092	4,028	3,987	4,023	4,094	4,028	4,000
Demand	Non-Motorized Share		38.3%	37.2%	36.7%	40.9%	37.2%	36.8%	37.2%	34.7%	37.2%	39.0%
Demand	Non-Motorized Trips		225,589	256,619	253,542	282,280	256,617	254,051	257,262	243,832	256,619	267,585
Demand	Non-Motorized Person Miles		278,934	327,028	320,831	359,731	327,024	323,754	327,756	310,732.84	327,026	306,894
Demand	Non-Motorized Person Hours		42,974	50,384	49,435	55,421.94	50,383	49,879	50,496	48,176	50,383	47,287
Efficiency	Vehicle Hours Under Delayed Conditions		5,976	28,416	28,826	25,006	28,379	28,168	28,294	28,002	29,717	28,568
Efficiency	Avg. PM Peak Speed		27.22	23.54	23.06	24.34	24.30	24.09	24.31	24.62	23.25	23.42
Efficiency	Avg. Auto Trip Length		6.78	6.50	6.55	9.36	6.50	6.57	6.51	6.43	6.50	6.24
Efficiency	Lane Miles at LOS E or worse		9.93	65.88	65.91	58.00	65.79	64.48	65.59	64.92	68.89	65.52
Environ	Vehicle Emissions (Daily Tons CO2)		1,418	1,845	1,835	1,697	1,902	1,921	1,905	2,114	1,838	1,786
Safety	Fatal Accidents		12	15	15	14	16	16	16	17	15	15
Safety	Injury Accidents		1,111	1,453	1,461	1,313	1,472	1,494	1,474	1,626	1,457	1,410
Safety	Property Damage Accidents		3,068	4,011	4,034	3,626	4,066	4,126	4,071	4,489	4,023	3,894
Econ	Avg. Daily Roadway User Costs in 2040 ($2013 millions)		$ 2.697	$ 4.830	$ 4.412	$ 5.362	$ 4.405	$ 4.339	$ 4.409	$ 4.739	$ 4.398	$ 4.290
Econ	Daily User Cost per Vehicle Trip (Autos and Trucks)		$ 8.00	$ 12.19	$ 11.22	$ 13.64	$ 11.12	$ 10.95	$ 11.11	$ 11.26	$ 11.10	$ 11.30
Econ	Present Value ($2013 millions) 2013-2040 lifecycle user and safety benefits		n/a	n/a	$ 1,106.67	$ (430.04)	$ 1,019.04	$ 1,042.39	$ 993.90	$ (1,064.14)	$ 1,176.28	$ 1,820.47
Econ	Capacity Added to Meet Standards (Road Lane Miles)		9.93	65.88	65.91	58.00	65.79	64.48	65.59	64.92	68.89	65.52
Econ	Est. Cost to Achieve LOS D ($Million)		$ 7.45	$ 49.41	$ 49.43	$ 43.50	$ 49.34	$ 48.36	$ 49.20	$ 48.69	$ 51.67	$ 49.14

	Pct. Change Compared to Base Year		Scenario									
		Scen #-->	0	1	2	4	5	6	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	**Measure**	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		n/a	21.3%	20.6%	11.6%	25.0%	26.3%	25.2%	39.0%	20.8%	17.4%
Demand	Vehicle Hours (VHT)		n/a	40.2%	42.4%	24.8%	40.0%	42.7%	40.2%	53.7%	41.5%	36.5%
Demand	Work Trip - Vehicle Occupancy		n/a	-0.1%	-1.2%	1.2%	-0.1%	-0.1%	-1.2%	-1.2%	-0.1%	0.0%
Demand	Person Trips		n/a	17.2%	17.2%	17.2%	17.2%	17.2%	17.5%	19.2%	17.2%	16.4%
Demand	Transit Share		n/a	22.4%	42.2%	81.2%	22.4%	21.2%	22.7%	17.9%	22.4%	26.1%
Demand	Daily Ridership		n/a	43.5%	67.5%	112.4%	43.5%	42.1%	45.6%	40.5%	43.6%	46.8%
Demand	Transit Trips		n/a	43.5%	66.7%	112.4%	43.5%	42.1%	44.2%	40.5%	43.6%	46.8%
Demand	Transit Person Miles		n/a	17.2%	39.8%	77.3%	17.2%	16.1%	17.5%	19.2%	17.2%	16.4%
Demand	Transit Person Hours		n/a	17.2%	33.6%	77.3%	17.2%	16.1%	17.1%	19.2%	17.2%	16.4%
Demand	Non-Motorized Share		n/a	-3.0%	-4.1%	6.7%	-3.0%	-3.9%	-2.9%	-9.3%	-3.0%	1.9%
Demand	Non-Motorized Trips		n/a	13.8%	12.4%	25.1%	13.8%	12.6%	14.0%	8.1%	13.8%	18.6%
Demand	Non-Motorized Person Miles		n/a	17.2%	15.0%	29.0%	17.2%	16.1%	17.5%	11.4%	17.2%	10.0%
Demand	Non-Motorized Person Hours		n/a	17.2%	15.0%	29.0%	17.2%	16.1%	17.5%	12.1%	17.2%	10.0%
Efficiency	Vehicle Hours Under Delayed Conditions		n/a	375.5%	382.3%	318.4%	374.9%	371.3%	373.4%	368.6%	397.3%	378.0%
Efficiency	Avg. PM Peak Speed		n/a	-13.5%	-15.3%	-10.6%	-10.7%	-11.5%	-10.7%	-9.6%	-14.6%	-14.0%
Efficiency	Avg. Auto Trip Length		n/a	-4.1%	-3.4%	38.1%	-4.1%	-3.0%	-4.1%	-5.1%	-4.1%	-7.9%
Efficiency	Lane Miles at LOS E or worse		n/a	563.6%	563.9%	484.2%	562.7%	549.4%	560.7%	553.9%	593.9%	560.0%
Environ	Vehicle Emissions (Tons CO2)		n/a	30.1%	29.4%	19.7%	34.1%	35.4%	34.3%	49.1%	29.6%	25.9%
Safety	Fatal Accidents		n/a	27.7%	27.7%	19.1%	36.2%	36.2%	36.2%	44.7%	27.7%	27.7%
Safety	Injury Accidents		n/a	30.8%	31.5%	18.2%	32.5%	34.5%	32.7%	46.4%	31.1%	26.9%
Safety	Property Damage Accidents		n/a	30.7%	31.5%	18.2%	32.5%	34.5%	32.7%	46.3%	31.1%	26.9%
Econ	Roadway User Costs		n/a	79.1%	63.6%	98.8%	63.3%	60.9%	63.5%	75.7%	63.0%	59.1%
Econ	User Cost per Vehicle Trip (Autos and Trucks)		n/a	52.4%	40.3%	70.5%	39.0%	36.9%	38.9%	40.7%	38.8%	41.3%
Econ	Capacity Added to Meet Standards (Road Lane Miles)		n/a	563.6%	563.9%	484.2%	562.7%	549.4%	560.7%	553.9%	593.9%	560.0%
Econ	Est. Cost to Achieve LOS D ($Million)		n/a	563.6%	563.9%	484.2%	562.7%	549.4%	560.7%	553.9%	593.9%	560.0%

	Pct. Change Compared to E+C		Scenario									
		Scen #-->	0	1	2	4	5	6	9	10	11	12
		Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Category	**Measure**	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Demand	Vehicle Miles (VMT)		n/a	n/a	-0.5%	-8.0%	3.1%	4.1%	3.2%	14.6%	-0.4%	-3.2%
Demand	Vehicle Hours (VHT)		n/a	n/a	1.5%	-11.0%	-0.1%	1.8%	0.0%	9.6%	0.9%	-2.7%
Demand	Work Trip - Vehicle Occupancy		n/a	n/a	-1.1%	1.3%	0.0%	0.0%	-1.1%	-1.1%	0.0%	0.1%
Demand	Person Trips		n/a	n/a	0.0%	0.0%	0.0%	0.0%	0.2%	1.6%	0.0%	-0.7%
Demand	Transit Share		n/a	n/a	16.2%	48.0%	0.0%	-1.0%	0.2%	-3.7%	0.0%	3.0%
Demand	Daily Ridership		n/a	n/a	16.7%	48.0%	0.0%	-1.0%	1.4%	-2.1%	0.0%	2.3%
Demand	Transit Trips		n/a	n/a	16.2%	48.0%	0.0%	-1.0%	0.5%	-2.1%	0.0%	2.3%
Demand	Transit Person Miles		n/a	n/a	19.3%	51.2%	0.0%	-1.0%	0.2%	1.6%	0.0%	-0.7%
Demand	Transit Person Hours		n/a	n/a	14.0%	51.2%	0.0%	-1.0%	-0.1%	1.6%	0.0%	-0.7%
Demand	Non-Motorized Share		n/a	n/a	-1.2%	10.0%	0.0%	-1.0%	0.0%	-6.5%	0.0%	5.0%
Demand	Non-Motorized Trips		n/a	n/a	-1.2%	10.0%	0.0%	-1.0%	0.3%	-5.0%	0.0%	4.3%
Demand	Non-Motorized Person Miles		n/a	n/a	-1.9%	10.0%	0.0%	-1.0%	0.2%	-5.0%	0.0%	-6.2%
Demand	Non-Motorized Person Hours		n/a	n/a	-1.9%	10.0%	0.0%	-1.0%	0.2%	-4.4%	0.0%	-6.1%
Efficiency	Vehicle Hours Under Delayed Conditions		n/a	n/a	1.4%	-12.0%	-0.1%	-0.9%	-0.4%	-1.5%	4.6%	0.5%
Efficiency	Avg. PM Peak Speed		n/a	n/a	-2.1%	3.4%	3.2%	2.3%	3.3%	4.6%	-1.3%	-0.5%
Efficiency	Avg. Auto Trip Length		n/a	n/a	0.7%	44.0%	0.0%	1.1%	0.0%	-1.1%	0.0%	-4.0%
Efficiency	Lane Miles at LOS E or worse		n/a	n/a	0.0%	-12.0%	-0.1%	-2.1%	-0.4%	-1.5%	4.6%	-0.5%
Environ	Vehicle Emissions (Tons CO2)		n/a	n/a	-0.5%	-8.0%	3.1%	4.1%	3.2%	14.6%	-0.4%	-3.2%
Safety	Fatal Accidents		n/a	n/a	0.0%	-6.7%	6.7%	6.7%	6.7%	13.3%	0.0%	0.0%
Safety	Injury Accidents		n/a	n/a	0.6%	-9.6%	1.3%	2.8%	1.4%	11.9%	0.3%	-3.0%
Safety	Property Damage Accidents		n/a	n/a	0.6%	-9.6%	1.4%	2.9%	1.5%	11.9%	0.3%	-2.9%
Econ	Roadway User Costs		n/a	n/a	-8.7%	11.0%	-8.8%	-10.2%	-8.7%	-1.9%	-9.0%	-11.2%
Econ	User Cost per Vehicle Trip (Autos and Trucks)		n/a	n/a	-7.9%	11.9%	-8.8%	-10.2%	-8.9%	-7.7%	-9.0%	-7.3%
Econ	Capacity Added to Meet Standards (Road Lane Miles)		n/a	n/a	0.0%	-12.0%	-0.1%	-2.1%	-0.4%	-1.5%	4.6%	-0.5%
Econ	Est. Cost to Achieve LOS D ($Million)		n/a	n/a	0.1%	-12.0%	-0.1%	-2.1%	-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	4	5	6	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		1,208	1,623	1,623	1,623	1,623	1,620	1,682	1,548	1,623	1,794
Population with a 5D Score > 0.8		27,367	32,734	32,734	32,734	32,734	32,555	35,144	29,386	32,734	39,468
Households with a 5D Score > 0.8		6,575	9,516	9,516	9,516	9,516	9,461	10,013	7,397	9,516	10,956
Employment with a 5D Score > 0.8		35,293	52,307	52,307	52,307	52,307	52,183	47,637	47,311	52,307	57,080
Aggregate 5D Score (sum of 600 zones)		318.58	329.46	329.47	329.47	329.53	327.06	329.61	326.83	329.58	333.58
Average 5D Score		0.53	0.55	0.55	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	122,577	122,561	123,176	122,769	128,522	122,555	116,672
Population		152,952	188,760	188,760	188,760	188,760	188,760	189,464	188,229	188,760	188,759
Households		57,191	75,011	75,011	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	107,138	107,138	107,136	107,138	107,138
Autos per Household		1.64	1.63	1.63	1.63	1.63	1.64	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%	0.64%	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%	17.3%	17.2%	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%	12.69%	12.61%	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%	48.82%	48.71%	44.46%	44.16%	48.82%	53.28%

Pct. Change Compared to Base Year		Scenario									
	Scen #-->	0	1	2	4	5	6	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		n/a	34.3%	34.3%	34.3%	34.3%	34.1%	39.2%	28.1%	34.3%	48.5%
Population with a 5D Score > 0.8		n/a	19.6%	19.6%	19.6%	19.6%	19.0%	28.4%	7.4%	19.6%	44.2%
Households with a 5D Score > 0.8		n/a	44.7%	44.7%	44.7%	44.7%	43.9%	52.3%	12.5%	44.7%	66.6%
Employment with a 5D Score > 0.8		n/a	48.2%	48.2%	48.2%	48.2%	47.9%	35.0%	34.1%	48.2%	61.7%
Average 5D Score		n/a	3.4%	3.4%	3.4%	3.4%	3.3%	3.5%	2.6%	3.5%	4.7%
Aggregate Number of Autos		n/a	30.7%	30.7%	30.7%	30.7%	31.3%	30.9%	37.0%	30.7%	24.4%
Population		n/a	23.4%	23.4%	23.4%	23.4%	23.4%	23.9%	23.1%	23.4%	23.4%
Households		n/a	31.2%	31.2%	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%	34.6%	34.6%
Autos per Household		n/a	-0.3%	-0.3%	-0.3%	-0.4%	0.1%	-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%	34.3%	34.1%	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%	-3.1%	-3.6%	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%	10.3%	9.7%	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%	10.1%	9.9%	0.3%	-0.4%	10.1%	20.2%

Pct. Change Compared to E+C		Scenario									
	Scen #-->	0	1	2	4	5	6	9	10	11	12
	Land Use-->	Base	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	Mid-Stnd	IURP	Bed Comm.	Mid-Stnd	Infill
Measure	Net-->	Base	E+C	E+C+BRT	E+C	TIP	TIP+	TIP	TIP	2-Ways	TIP
Acres with a 5D Score > 0.8		n/a	n/a	-	0.00%	0.00%	-0.20%	3.62%	-4.61%	0.00%	10.52%
Population with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	0.00%	-0.55%	7.36%	-10.23%	0.00%	20.57%
Households with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	0.00%	-0.58%	5.22%	-22.27%	0.00%	15.13%
Employment with a 5D Score > 0.8		n/a	n/a	0.00%	0.00%	0.00%	-0.24%	-8.93%	-9.55%	0.00%	9.12%
Average 5D Score		n/a	n/a	0.003%	0.003%	0.020%	-0.730%	0.044%	-0.798%	0.035%	1.250%
Aggregate Number of Autos		n/a	n/a	0.00%	0.00%	-0.01%	0.49%	0.16%	4.85%	-0.02%	-4.82%
Population		n/a	n/a	0.00%	0.00%	0.00%	0.00%	0.37%	-0.28%	0.00%	0.00%
Households		n/a	n/a	0.00%	0.00%	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%	0.00%	0.00%
Autos per Household		n/a	n/a	0.00%	0.00%	-0.01%	0.49%	-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%	0.00%	-0.20%	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%	0.00%	-0.55%	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%	0.00%	-0.58%	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%	0.00%	-0.24%	-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	v
Walk/Bike/Transit oriented	0.8 to 1.0	High density, mixed land uses, many destinations within walking distance, road design favors walking, good access to transit

Scenario Assumptions		Scenario												
		0	1	2	3	4	5	6	7	8	9	10	11	12
Year		2013	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040	2040
TAZ Scenario		Base	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-Stndrd	Mid-IURP	Mid-Stndrd	Mid-Stndrd	Mid-Cmpct
Net Scenario		Base	EC	EC+R3	EC-69	EC	TIP	TIP+Pub	TIP+30MTP	TIP+Fullerton	TIP	TIP	TIP	TIP
Transportation Projects	**Type**	**Base Year**	**Existing Plus Committed**	**BRT on Route 3**	**SR 37**	**Peak Oil**	**TIP**	**TIP + Public Workshop Allocation**	**TIP + MTP 2030 Carryover**	**TIP + MTP 2030 Limited Carryover**	**TIP + IU Research Park**	**TIP + Sample Rd. Bedroom Community**	**TIP + 2 Way College, Walnut, 3rd, Atwater**	**TIP + Urban Infill**
Dowtown Transit Center	Transit	x	x	x	x	x	x	x	x	x	x	x	x	x
17th Street and Jordan Sidepath	Path		x	x	x	x	x	x	x	x	x	x	x	x
Black Lumber Trail	Path		x	x	x	x	x	x	x	x	x	x	x	x
Karst Farm Trail Phase 2a	Path		x	x	x	x	x	x	x	x	x	x	x	x
Old SR37 and Dunn St. Trail	Path		x	x	x	x	x	x	x	x	x	x	x	x
17th St./Arlington/Monroe Roundabout	Road		x	x	x	x	x	x	x	x	x	x	x	x
Fullerton Pike Phase 1	Road		x	x	x	x	x	x	x	x	x	x	x	x
I-69 Section 4	Road		x	x	x	x	x	x	x	x	x	x	x	x
Mt. Tabor Rd. Reconstruction	Road		x	x	x	x	x	x	x	x	x	x	x	x
I-69 Section 5	Road		x	x	Omit	x	x	x	x	x	x	x	x	x
Bus Rapid Transit on Route 3	Transit			x										
Jackson Creek Trail Phase 1	Path						x	x	x	x	x	x	x	x
Rogers Rd. Sidepath	Path						x	x	x	x	x	x	x	x
South Henderson Sidepath	Path						x	x	x	x	x	x	x	x
Winslow Rd. Sidepath	Path						x	x	x	x	x	x	x	x
10th Street and Law Lane Connection	Road						x	x	x	x	x	x	x	x
17th Street Reconstruction	Road						x	x	x	x	x	x	x	x
Fullerton Pike Phase 2	Road						x	x	x	x	x	x	x	x
Jackson Creek Trail Phase 2	Path							x	x					
Fullerton Pike connection from I-69 to Rogers Rd.	Road							x		x				
Masters/Harstrait connection	Road							x						
Connection between Industrial Park Dr and Whiteha	Road							x						
Extension of Profile Parkway east to Gates Dr	Road							x						
Extension of Profile Parkway south to Jonathan Dr	Road							x						
B-Line Trail Extension to Karst Farm Trail	Path							x						
New Transit Route 10	Transit							x						
Curry Pike (Constitution to Tapp)	Road								x					
Fullerton Pike connection from I-69 to Walnut St.	Road								x					
South Adams Street (14th to Law)	Road								x					
Sudbury Drive	Road								x					
Weimer Road	Road								x					
3rd and Atwater 2 way	Road												x	
College and Walnut 2 way	Road												x	