

# CHAPTER 4 : EXISTING CONDITIONS





The Michiana Region is made up of unique towns, cities, and counties all at various stages of promoting and accommodating bicycle and pedestrian needs. Providing an assessment of existing conditions will inform current and future investments in active transportation facilities and programs. This chapter addresses planning efforts at the national, state, and local level; highlights trends and projections concerning active transportation, and provides a snapshot and analysis of the Michiana's existing active transportation network.

## Planning Efforts

Policies, programs, and plans are developed at the national, state, and local levels to provide planning guidance and work to achieve a consistent active transportation network. These efforts integrate human powered transportation into the motorized vehicle transportation system.

### National Level

The United States Department of Transportation (USDOT) policy initiatives incorporate a multi-modal transportation system, including bicycle and pedestrian transportation. The 2010 USDOT Policy Statement on Bicycle and Pedestrian Accommodation encourages transportation agencies to develop active transportation networks that accommodate all users. This task is reflected in national bicycle and pedestrian initiatives recently developed.

### Safer People, Safer Streets

The United States Department of Transportation (USDOT) launched a program, Safer People, Safer Streets Initiative, in late 2015, to address safety for people using non-motorized transportation. The initiative involves research, tools for local agencies, and events focused on road safety.

A year-long Mayors' Challenge for Safer People and Safer Streets

is a USDOT call to action for mayors to improve conditions for pedestrians and bicycle riders in their communities. The activities under the Challenge are:

- applying a Complete Streets approach,
- fixing barriers on streets,
- gathering bicycling and walking data,
- appropriate designing,
- creating bicycle/pedestrian networks,
- improving laws, and
- educating on and enforcing proper road use behavior.

Another component of the initiative is road safety assessments. The modal administrations of the USDOT lead on-the-ground, bicycling/walking assessments with transportation agencies and stakeholders.

The Road Safety for Transit Patrons Initiative provides technical assistance to transit operators, State DOTs, MPOs, counties, and cities to help increase interaction between agencies. The objective is to develop best practices that will improve bicycle and pedestrian connections to public transportation.



*One of the assessment teams surveying an intersection in South Bend*

The City of South Bend is one of over 200 communities that have signed on for the Mayors' Challenge for Safer People, Safer Streets. Since joining, the City has formed an action team, held a public focus group meeting, and adopted a Complete Streets Policy.

MACOG organized and hosted the USDOT pedestrian and bicycle assessment in South Bend. About 55 people from USDOT, INDOT, local government, and private sectors participated by visiting 10 sites to identify safety issues and how the transportation network accommodates those who walk or bike.



## **Step it Up!**

The Surgeon General issued a Call to Action in 2015, “Step it Up!”, to promote walking and walkable communities. Walking and other physical activities are necessary for good health, but most Americans are not active enough to reduce risks of chronic diseases and premature death. An active lifestyle improves physical and mental health, plus walking is a common form of transportation, and the Call to Action emphasizes the need for community leaders to support walking and other activities.

More specifically, Surgeon General Murthy recommends development of policies, programs, and plans that support people who choose to walk. Street and public spaces should be designed for walking and other exercises, and planned residential areas should be in close proximity to places of employment, retail, and public transportation. Streets need lighting and landscaping for pedestrian comfort while incorporating bicycles and slower vehicle traffic. Programs and policies include changes to roadway design standards, walking groups, wellness programs, and campaigns through media and community events.

Individuals must make decisions to be active, but the Surgeon General calls on certain groups to work toward the walkability goals. Community leaders and planners must work to provide access to safe, walkable areas. Transportation, land use, and urban design sectors should continue to work on Complete Streets and Smart Growth initiatives and implement public transit systems. Other sectors like education, healthcare, and media also

have roles in motivating long-term active lifestyles. With greater efforts, our communities can support physical activity of people of all ages and abilities.

## **Bicycle Friendly America and Walk Friendly Communities**



Bicycle friendly designations by the League of American Bicyclists recognize states, cities and towns, businesses, and universities for actively supporting bicycling. The program serves as a tool for these entities to assist in making bicycling an easy form of transportation and recreation for all people. The League of American

Bicyclists state that “the BFA Program is more than an Assessment:

- It’s a study into the DNA making bicycling safe and more comfortable for all people.
- It’s the combined knowledge of hundreds of engineers, government officials and bicycle advocates.
- It’s a toolkit of projects, policies, programs and plans design to make biking better.
- It’s a roadmap for improving conditions for bicycling and the direct assistance to make it happen.”

### **Michiana Bike Friendly Communities**

Our region boasts 3 Bicycle Friendly Communities and 8 Bicycle Friendly Businesses. Goshen, South Bend, and Warsaw and Winona Lake have all received a Bronze Designation. Bronze-level communities host bike clubs and events, have at least 1.2% of commuters commuting by bike, and have begun bicycle education and enforcement. Every community is different, so efforts are what count in recognition.

The League evaluates Bicycle Friendly Businesses on items such as showers, bike parking, distribution of bike safety, sponsorship of events, and the collection of commuter data.



The Walk Friendly Communities Program provides similar recognition to towns and cities that prioritize supporting safer walking environments. The WFC program currently recognizes 75 communities that are working to improve a wide range of conditions related to walking, including safety, mobility, access, and comfort. Currently, the only city in Indiana that is recognized is Bloomington, Indiana.



*A Bicycle Friendly Community Sign posted in our region*

- GTA Containers, INC. (Bronze) - South Bend
- Memorial Hospital and Health System (Bronze) - South Bend
- Depuy Orthopaedics (Bronze) - Warsaw
- Kosciusko REMC (Silver)- Warsaw
- SYM Financial Advisors(Bronze) - Winona Lake
- Green Earth Multisport (Silver), LLC - Winona Lake
- Trail House Village Bicycles (Bronze)- Winona Lake
- Cerulean Restaurant (Silver) - Winona Lake



## State Level

State level planning efforts consist of broader policy based initiatives, as well as a larger look at how our regional network connects to Hoosiers.

### Complete Streets

The Indiana Department of Transportation (INDOT) adopted the Indiana Department of Transportation Complete Streets Guide and Policy in 2014. As a policy at the State level, the INDOT policy emphasizes partnerships with local agencies and USDOT in planning for all users of the transportation system. INDOT also provides guidance and resources for local agencies to look to when creating policies of their own.

The guide recognizes a “one size fits all” design does not work for roads. Implementation strategies for US and State roads are not differentiated from the approach to local roads.

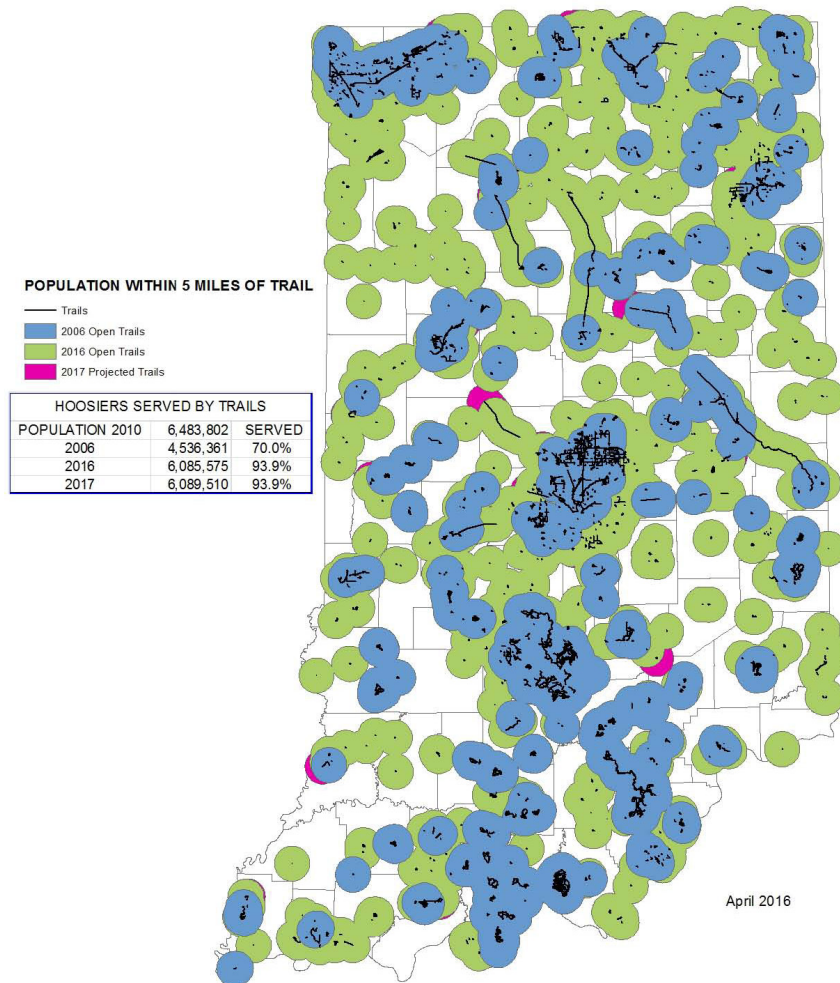
### State Trails

The Indiana Department of Natural Resources (DNR) developed a plan in 2006, Hoosiers on the Move, the Indiana State Trails, Greenways & Bikeways Plan, with the vision of having a trail within 15 minutes of all Indiana residents by 2016. In the plan, a trail is considered a path for both motorized and nonmotorized forms of transportation. For the plan, significant trails crossing counties were the only trails included. The Steering Committee envisioned the goal would be achieved by improving coordination for planning, increasing trail funding, acquiring more land, and educating the public on benefits of trails.

In the Michiana region, significant Statewide Points of Interest include the St. Joseph River, Potato Creek State Park, University of Notre Dame, Culver Academies, East Race, and Winona Mountain Bike Trail. Priority corridors are US 31, the Winona Interurban, South Shore, Pottawatomie Pathway, Old Lincoln Highway, and the Indiana Toll Road.

In April 2016, DNR released a progress report that measured growth in Indiana trails. By the time of the report, 98.2% of all Indiana residents were within 15 minutes, or 7.5 miles, of a trail. When the initial plan came out in 2006, it was just 82.9% of residents. Prior to this report, Governor Mike Pence introduced a goal of having a trail within 5 miles of all residents. As of April 2016, 93.9% of residents are within that distance.

**Figure 4.1 - Population within 5 miles of an Indiana Trails**



## Local Level

At the local level, many plans have been completed that incorporate active transportation into comprehensive or focused plans. They can be organized into relevant transportation plans and policies, master plans, and comprehensive plans.

### Transportation Plans and Policies

- Michiana on the Move: 2040 Transportation Plan
- Michiana Area Council of Governments Transportation Improvement Program
- Resolution No 69-2015: City of South Bend Complete Street Policy
- City of South Bend and City of Elkhart 3-Foot Passing Ordinances

### Trail Master Plans

- Goshen Park and Recreation Department 2014-2018 Master Plan
- St. Joseph County Parks Master Plan 2014-2018
- Warsaw + Winona Lake Bicycle and Pedestrian Master Plan
- Elkhart Pedal Panel Plan

### Comprehensive Plans

- City of Elkhart Comprehensive Plan Update, Chapter 6
- Marshall County, Indiana Comprehensive Plan
- Syracuse Comprehensive Plan, Section II
- Town of Bremen, 2014 Comprehensive Plan, Greenways and Trail Network
- Town of Culver Comprehensive Plan
- Town of Lakeville, 2011 Comprehensive Plan, Transportation Section
- Town of North Liberty Comprehensive Plan

- Uncommonly Great Goshen 2025, Transportation Chapter

## Trends & Projections

Similar to most of the country, the Michiana region uses personal motor vehicles for most commutes. The four counties of Elkhart, Kosciusko, Marshall, and St. Joseph have a working-age population of 266,000, and 91% use a motor vehicle for driving alone or carpooling. That is slightly lower than Indiana (92%) and higher than the United States (86%). However, the region's work commute reflects the trends of the state and country.

### Overall National Travel

The National Household Travel Survey tells the story of American household travel over 40 years. The United States Department of Transportation conducts a survey once every decade, most recently in 2009, to collect information from 150,000 households as a sample that represents national travel behavior. This most recent survey finds that although household sizes have shrunk, vehicles per household have increased. The Midwest has the second highest number of vehicles per household, at 1.95 in 2009.

Person Miles of Travel increased for both individuals and households, until 2001. Since 2001, the trend has changed, and miles have decreased for most purposes, especially social and recreational purposes and personal errands.

Vehicle ownership is related to population density. The higher the density, the higher the percentage of households without a vehicle. Still, the number of those without vehicles have decreased in all areas of the country, regardless of density. In fact, households with one vehicle has grown significantly between 2001 and 2009. 2.8 million more households became one-vehicle households since 2001.



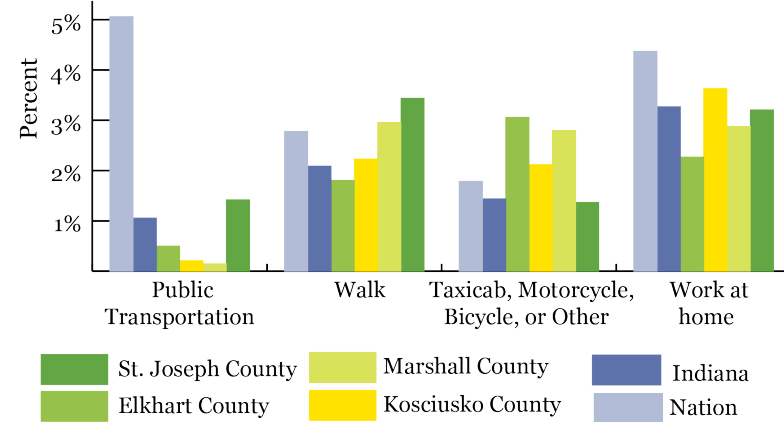
The responses from the survey reveal that the reasons for trips are not necessarily changing but that transportation habits are evolving. Households in all types of communities are becoming more likely to have motor vehicles, but distances they go with their vehicles are not always rising.

## Local Trends

As seen in Figure 4.2, Indiana, plus the country as a whole, many workers with higher median incomes are working at home. In the Michiana region, Kosciusko County shows a similar trend but the rest of the counties do not show significant populations working from home. In Elkhart and Marshall Counties, people with higher median incomes are carpooling. In St. Joseph County, they are using a motorcycle, bicycle, or taxicab.

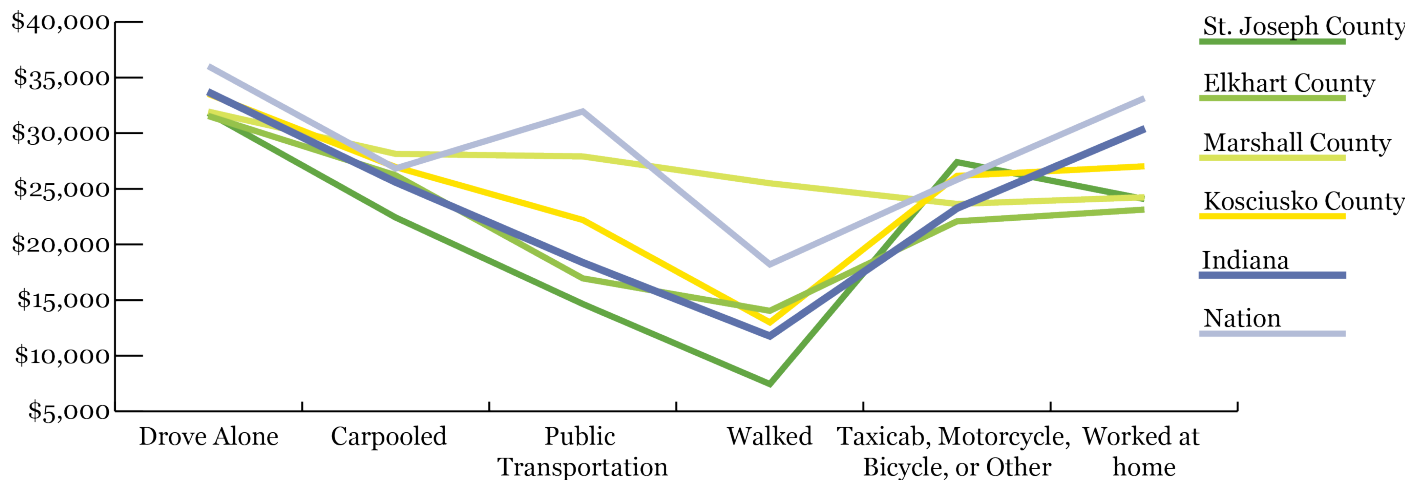
Outside of driving and carpooling, recurring modes of transportation to work vary across the counties (Figure 4.3) In Marshall and St. Joseph Counties, walking is the next most frequently used mode at 3 % and 3.4% respectively. In Elkhart County, 3.1% of workers will commute by motorcycle, bicycle, or taxicab. In Kosciusko County, 3.6% of workers will work at home.

**Figure 4.3- Means of Transportation to Work by County**



The Michiana Travel Study, conducted in the fall of 2013, was done to better understand the travel behavior of residents and university student in St. Joseph and Elkhart counties. The study found that 13.5% of people walked or biked for some of their trips, and 1.3% ride the bus. For college students, 19.11% walked or biked, and 3.33% rode the bus/ shuttle.

**Figure 4.2 - Median Earnings in the Past 12 Months by Means of Transportation to Work**



In the Michiana region, there are concentrations of carless households in central South Bend, northeast Marshall County, and northeast Elkhart County which fall over the regional threshold for households without cars. The MACOG Environmental Justice statement recognizes that as an Indicator of Potential Disadvantage because of limited mobility resulting from not owning a vehicle (Appendix B).

Source: 2010 - 2014 American Community Survey 5-Year Estimates

## Walking and Bicycling as Transportation

Nationally, people with low incomes have the highest rates of walking and bicycling to work. As income increases, the rate of walking and bicycling decreases with the exception of households with incomes over \$150,000. Around 15 percent of people that do not have access to motor vehicles walk to work, compared to only 4 percent of those with access to a motor vehicle. For bicycling, 3 percent without access to a motor vehicle ride bicycles to work, and under 1/2 percent with motor vehicle access ride bicycles to work.

Nationally, bicycling rates are lower than walking rates, but bicycle commuting increased 100 percent from 2000 to 2009. People of all races are riding more, though bicycle riding grew the most among African Americans and Asian Americans.

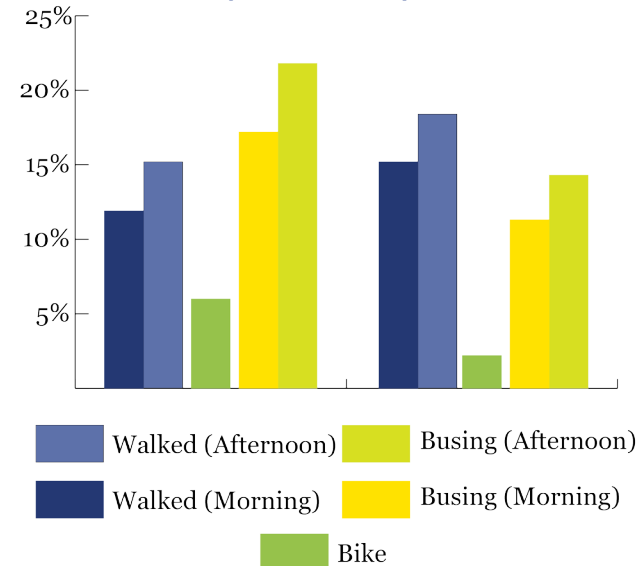


## Walking and Bicycling to School

The National Center for Safe Route to School reported in 2013 that walking to and from school increased considerably in five years. In 2007, 11.9 percent of students walked to school in the

morning and 15.2% walked home from school. In 2013, that jumped to 15.2% and 18.4%. This could be due to a significant decrease in busing between 2007 to 2013. Biking to and from school also experienced a decline from 2.6% to 2.2%.

**Figure 4.4-Percent of Students Walking, Biking, and Busing to School (2007 to 2013)**



Source: National Center for Safe Routes to School, Trends in Walking and Biking to School from 2007 to 2013

Active transportation as means of traveling to school varies on distance from home to school. It grew the most for children who lived less than a mile from school, and remained steady for children who lived over two miles away from school. Parental opinions about walking and bicycling have not changed: most think it is healthy and half think it is fun for their children, but belief that schools support active transportation has grown from 2007 to 2013.



Despite these significant increases in walking to school in the past five years, 1 out of every 5 or 6 students walking to school is much lower than historical trends. In 1969, nearly 1 out of 2 students walked or bike to school. Supporting an active transportation culture and encouraging and educating them and their parents about the benefits of walking and biking to school can help reverse a declining trend.



## Health

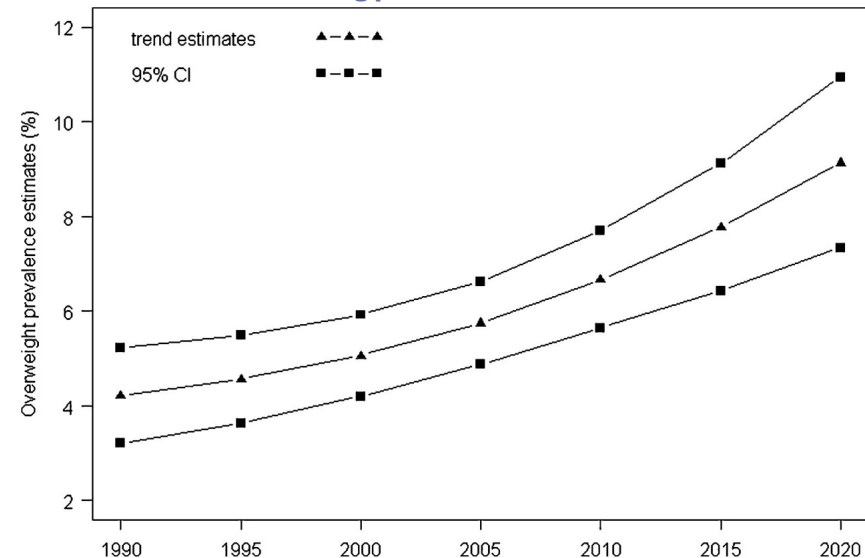
The relationship between the built environment and health is important. 30 minutes of physical activity per day is recommended for physical and mental health, and the design of our communities can encourage or discourage healthy behavior.

The Surgeon General's Call to Action in 2015, Step it Up!, addressed this issue. Walking and other physical activities are necessary for good health, but most Americans are not active enough to reduce risks of chronic diseases and premature death. One out of two adults has heart disease, cancer, diabetes, or another chronic disease. Exercise not only helps lower risks of

developing these conditions, but it also helps those with illnesses manage their symptoms. An active lifestyle improves physical and mental health, plus walking is a common form of transportation, and the Call to Action emphasizes the need for community leaders to support walking and other activities.

It is difficult to quantify determinants of health in the built environment, with many factors playing into active lifestyle choices. We do know that more than 1/3 of American adults are obese, and 1/3 of American children are overweight or obese. In the 1970s, only 5 percent of children were obese. Now, it is beginning earlier in life, across the globe, with 43 million preschoolers labeled as overweight or obese. At this rate, it could grow to 60 million children by only the year 2020. Walking and bicycling are affordable ways to get moving and reduce risks of developing health issues related to obesity. The report *At the Intersection of Active Transportation and Equity* (Safe Routes

**Figure 4.5 - Global prevalence and trends of overweight and obesity among preschool children**



Source: World Health Organization, *Am J Clin Nutr.* 2010 Nov;92(5):1257-64. doi: 10.3945/ajcn.2010.29786. Epub 2010 Sep 22.

to School National Partnership) states that almost 1/3 of transit users get the recommended physical activity because of walks taken to and from transit stops to their destinations. Areas with more transportation options encourage more physical activity and opportunities to reduce risks for health problems. That can mean people are able to walk or ride bikes as a commute or for leisure and recreation.

Bicyclist and pedestrian injuries and fatalities have steadily increased since 2009. In 2012, walkers and bicyclist fatalities represent 16.3 percent of all motor vehicle-related deaths in 2012. Addressing non-motorized safety issues, such as these, will help communities create safer, connected, and more utilized active transportation networks.

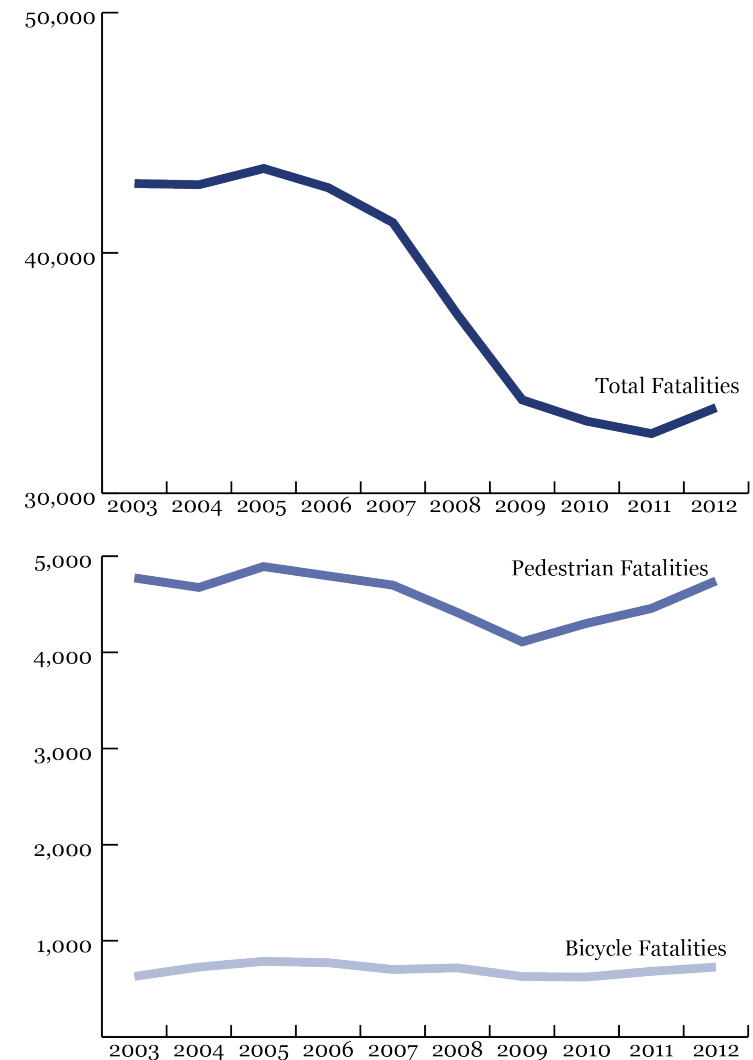


## Safety

Automobile-centric places also prompt discussions about safety for bicycle riders and pedestrians. Many involved in Active Transportation Plan focus groups noted safety concerns as deterrents to using active transportation on a more regular basis. Obstacles included high speed limits, visibility, and lack of facilities.

The USDOT found that bicyclist and pedestrian injuries and fatalities increased between 2009 and 2012. Bicyclist fatalities across the country rose to 726 in 2012, and pedestrian fatalities rose to 4,743. Both of those numbers were the highest in 5 years. From 2003 to 2012, pedestrian fatalities increase from 11 percent to 14 percent of all motor vehicle related deaths. Bicycle fatalities also increase in that time, from 1.5 percent in 2003 to 2.2% in 2011.

**Figure 4.6 - Total Fatalities and Pedestrian and Bicycle Fatalities in Traffic Crashes, 2003-2012**



Source: National Highway Traffic Safety Administration, Traffic Safety Fact, 2012 Data



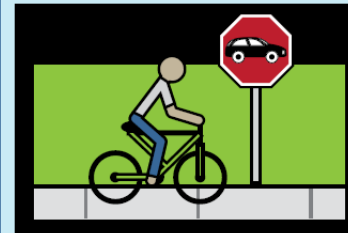
The *At the Intersection of Active Transportation and Equity* report found that a pedestrian's risk of being in collision decreased 34 percent when walking and bicycling rates double. As drivers, pedestrians, and bicyclists travel more on the same routes, they likely learn what to expect and take more caution.

The report also stated alcohol has played a role in many traffic crashes involving vehicles and bicyclists or pedestrians. In 2012, alcohol was involved in 37 percent of crashes killing bicyclists, and a quarter of those crashes involved an alcohol-impaired bicyclist. 48 percent of crashes killing pedestrians involved alcohol. Most fatal traffic crashes with pedestrians, with or without alcohol impairment, happen outside of intersections, so cautious, proper pedestrian behavior reduces the risk of crashes.



## Quality of Life

For the public, bicycles take up less parking space than vehicles, resulting in less demand for parking spaces. With groups of people substituting a few driving trips for bike rides, levels of carbon emissions from automobiles lower. Walking has the same benefits. Active transportation also puts the user out in the public, inviting more interaction with businesses and neighbors. Trips serve more than one purpose, by providing a form exercise, interaction with the community, and enjoyment of the neighborhood they live in.



### GETTING OUT OF OUR CARS FOR ½ OF SHORT TRIPS COULD SAVE:

- **\$900 million dollars** in driving costs per year
- **2 million metric tons** of CO<sub>2</sub> per year (equivalent to taking 400,000 cars off the road)

According to the 2009 U.S. National Household Transportation Survey (NHTS) over 10 billion miles per year are car trips of under one mile. This is like sending the entire population of Chicago driving to Las Vegas and back. If half of these trips under a mile were done by walking or biking, \$900 million dollars in driving cost and 2 million metric tons of CO<sub>2</sub> per year would be saved, all resulting in healthier communities (Environmental Protection Agency).

Many quality of life components look to attract and retain families in their communities however, how people age in communities should also be considered. While active transportation is a good way for our aging population to stay healthy, offering different transportation options is important. Transportation options, such as transit and golf carts, can connect the elderly to services and recreation, and will be studied further in an Access to Core Services Plan.

## Active Transportation Network

Building a transportation network that supports active modes of transportation has become an important initiative to many communities within the Michiana Region in recent years. As a result, the Michiana Region continues to see growth and investment in a number of bicycle and pedestrian facilities. The Michiana Region's current active transportation networks includes 937 miles of several types of facilities that can accommodate bicyclists and pedestrians; from dedicated bike-lanes in our more densely populated cities such as South Bend or Warsaw, to hundreds of miles of signed routes in our most rural unincorporated areas. While the region has seen significant improvements to bicycle and pedestrian connectivity, accessibility, and safety, there are also areas of concern and room for improvement in the Michiana region's network.

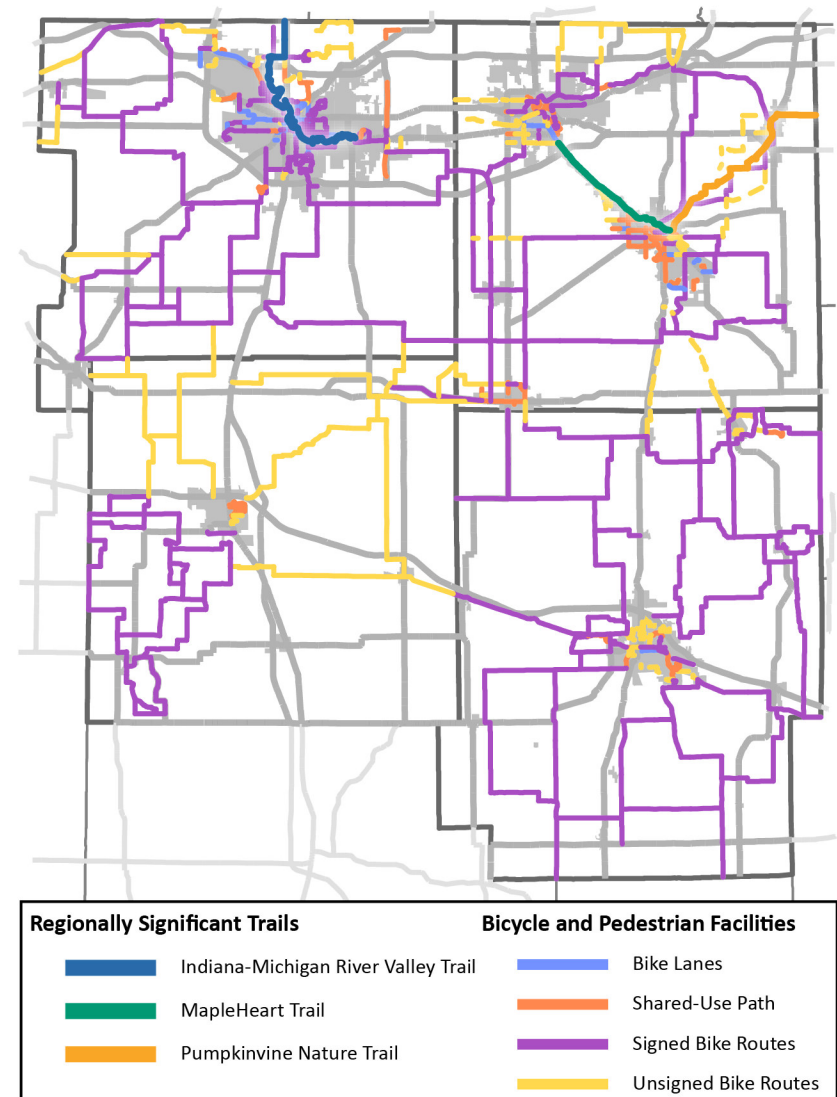
### Types of Facilities

The Michiana region currently identifies several types of facilities constructed to accommodate bicyclists and pedestrians:

**Shared-Use Paths** are separated facilities used by bikers, walkers, runners and skaters. They may follow a road or take their own path.



Figure 4.7 - Michiana Regional Bicycle and Pedestrian Facilities



Source: Regional Bicycle and Pedestrian Facilities Map



**Walking Paths** are typically sidewalks or trail that are best suited for pedestrians rather than other recreational uses. In most cases, bicyclists may use this facility, however more caution should be taken to avoid oncoming pedestrians or drivers.



**Bike Lanes** are 5' – 6' lanes marked in the pavement specifically reserved for bicyclists, usually on high traffic streets. The lane is generally marked with a white line and a bicycle icon.



**Signed Routes** are roads where bicycles and vehicles must share the same lane, but will include “Bike Route” or “Share the Road” signs.

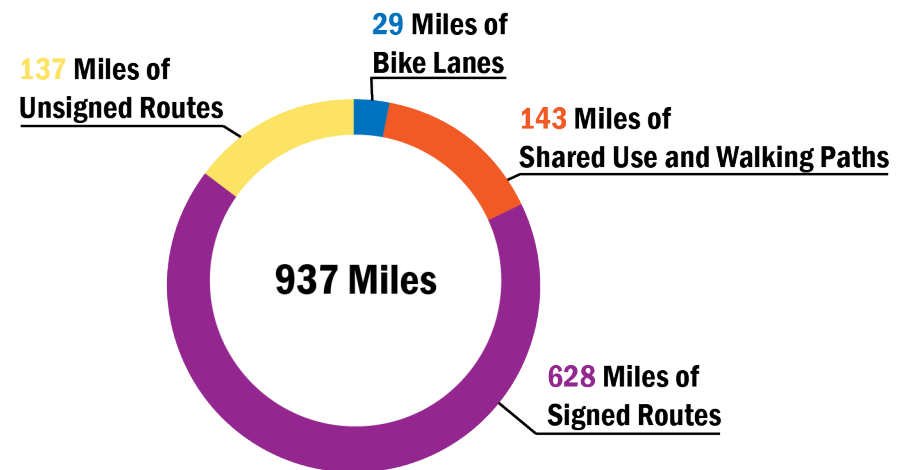


**Unsigned Routes** are roads that have not been formally identified but are acceptable for biking due to lower traffic conditions and wider roads.

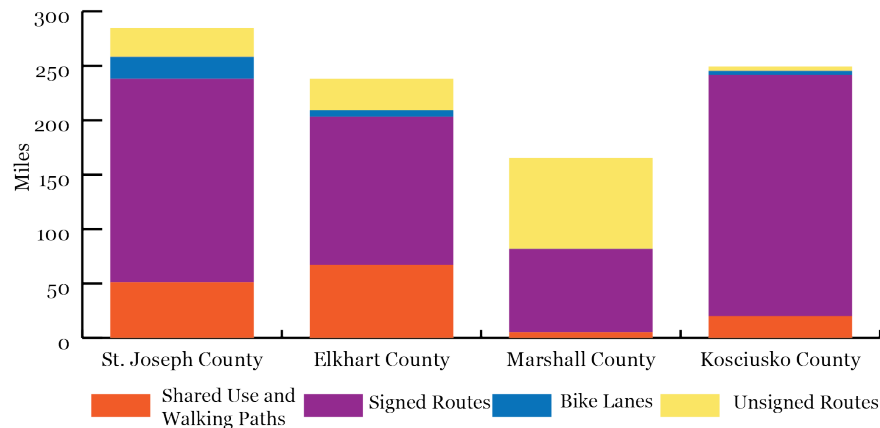


Our region consists of 29 miles of bike lanes, 143 miles of shared use and walking paths, 628 miles of signed routes, and 137 miles of unsigned routes. Figure 4.8 and 4.9 show a breakdown of bike and pedestrian facilities in our region and per county.

**Figure 4.8 -Existing Bike and Pedestrian Facilities in the Michiana Region**



**Figure 4.9-Bike and Pedestrian Facilities by County**



## Successes of Current System

- There are several transportation options available within the municipal boundaries of larger cities in Michiana region: South Bend, Mishawaka, Goshen, Elkhart and Warsaw
- The Pumpkinvine Trail, the Maple City Greenway, and the MapleHeart Trail compose a twenty-five (25) mile long regional network of trails connecting Elkhart, Goshen, Middlebury, and Shipshewana and are regularly utilized by recreationists and commuters.
- The Indiana Michigan River Valley Trail is composed of the Riverwalk in Mishawaka, East Bank and Northside Trails in South Bend, and smaller trails extending into Niles, Michigan. Currently the trail system is an excellent connection between Mishawaka and South Bend and plans are in place to improve connections between these two cities and Niles. The end result will be a thirty four (34) mile system connecting universities, schools, city centers, parks and recreational areas, hospitals, and several historical and cultural attractions.
- There are 80 miles of municipal proposed bike lanes,

shared-use paths, and signed routes within the Michiana region prior to the implementation of this plan, demonstrating local communities' interests in providing a safer and more accessible active transportation network

- Connections between Interurban Trolley and Transpo provide a public transit system between Goshen, Elkhart, Mishawaka, and South Bend
- Bike racks provided on the Interurban Trolley, Transpo, and the South Shore Line provide for an increased range of active transportation network

## Room for Improvement

- Many of our communities still lack convenient and comfortable connectivity. Important connections to improve include:
  - North-South connections between South Bend and Plymouth
  - North-South connections between Goshen and Warsaw
  - East-West connection between Elkhart and Mishawaka
  - Connectivity to outside regions such as Michigan, Northwest and Northeast Indiana
- Surface and maintenance conditions on many roadways and sidewalks make traveling difficult for cyclists and pedestrians
- Sidewalk connectivity to desired destinations is limited outside of core urban centers
- Majority of facilities are classified as "signed routes" outside of municipal boundaries, and not necessarily accommodate all levels of people who ride bikes and/or pedestrian traffic
- Some public transit routes lack amenities, such as benches or bus shelters, as well as accessible stopping locations



## Analysis

Various analyses can provide an in depth look into existing conditions for bicycling and walking. Crash, demand, and bicycle stress analyses were conducted to provide a sense of where the greatest need for infrastructure and improvements are located, and which roads might be most suitable for bicycle traffic.

### Non-Motorized Transportation Facility Demand

Although automobiles remains the primary means of transportation to get people to their desired destination, there is an increasing interest in the MACOG planning region in biking and walking not only for recreational purposes, but as a means of transportation. Many of the communities in the MACOG planning region have made great strides in incorporating active modes of transportation (non-motorized) into their built environment, where possible, but many destination areas throughout the region remain underserved. Schools, places of employment, retail and shopping centers and other common destinations generate and attract thousands of trips each day in communities across the MACOG planning region. The roads that service these destinations must be able to provide a higher level of service for the increased demand of users.

### Live, Work, Play & Learn Demand Analysis

For non-motorized transportation, higher concentrations of trip generators (such as residential and workplaces) and trip attractors (such as shopping centers and parks) are indicators of demand for bicycle and pedestrian facilities. An examination of regional demographic and point of interest data can give a better picture of where trip origins and destinations are concentrated throughout the MACOG planning region, and in turn high-demand areas to help decision makers decide on where to plan for bicycle and pedestrian facilities.

In order to properly map this information, MACOG conducted a bicycle and pedestrian demand analysis that summarizes where people live, work, play and learn. This demand model identifies the areas for expected bicycle and pedestrian travel by overlaying the locations of the land use mix and demographics into a composite map, outlining the regional demand. Figure 4.10 summarizes this approach.

**Figure 4.10 -Demand Model**

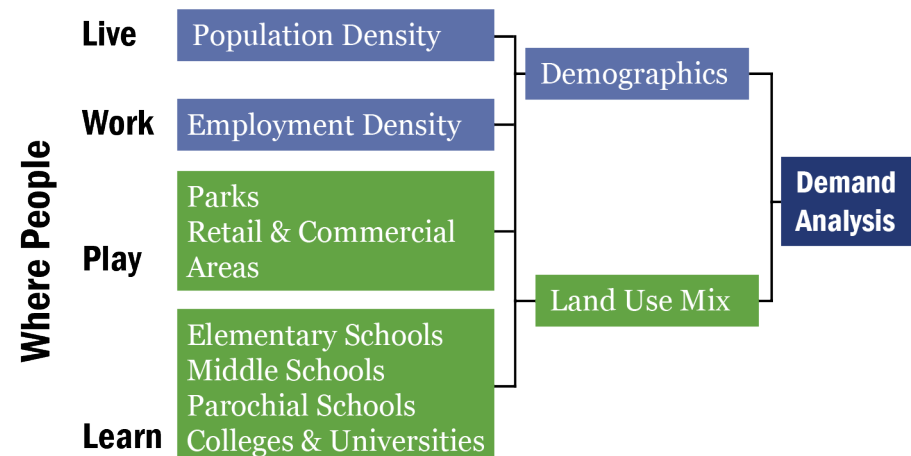
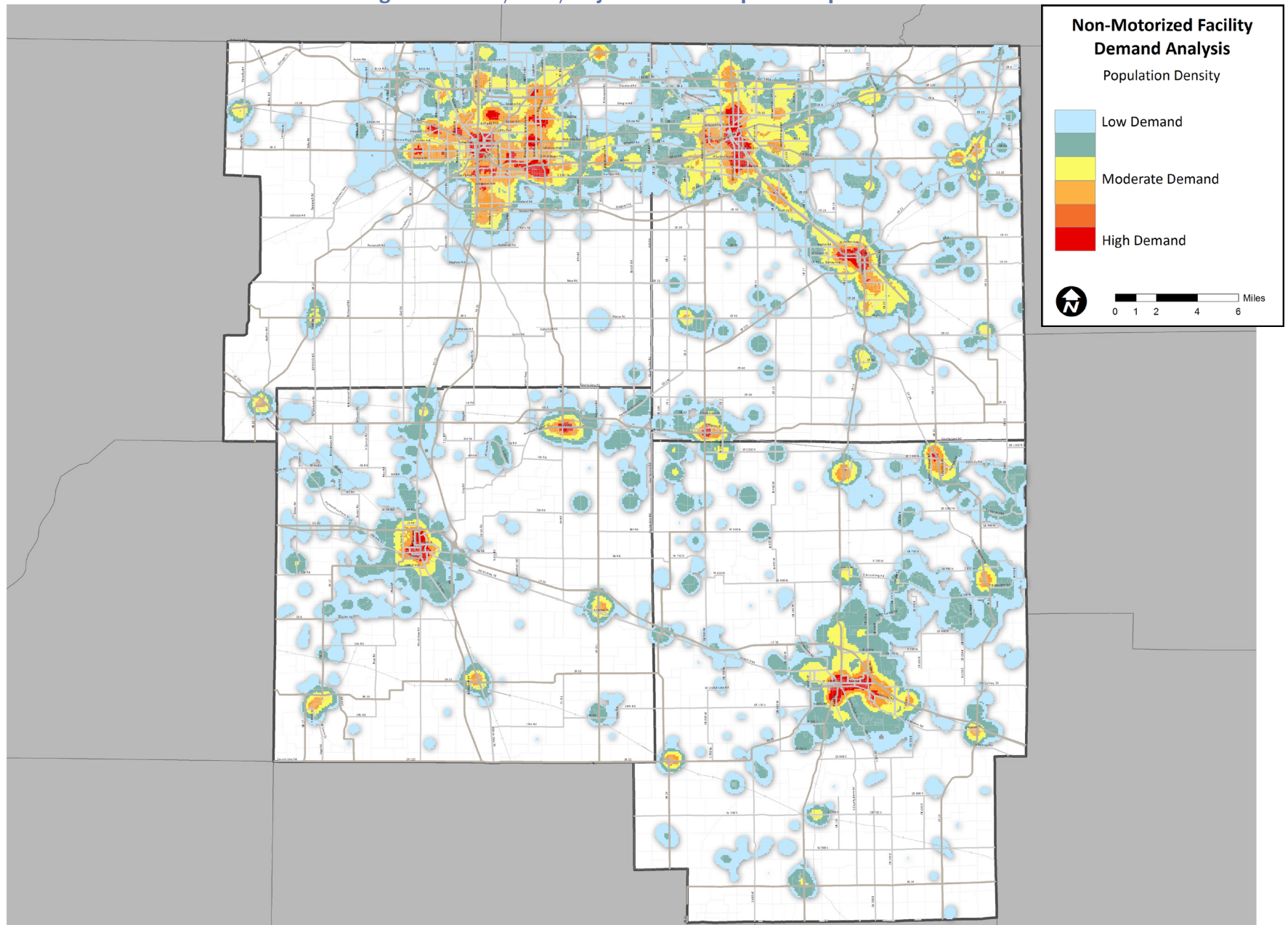


Figure 4.11 displays the results of the Live, Work, Play and Learn demand analysis. A complete summary of the Live, Work, Play and Learn demand analysis and methodology is located in the Appendix C.

The analysis shows that there is a strong composite density in the downtown areas of South Bend, Mishawaka, Elkhart, Goshen, Nappanee, Plymouth and Warsaw due to the high concentrations of jobs, entertainment and recreational amenities. There is also strong demand in the Notre Dame area as it is a prominent employer and learning institution

Figure 4.11 Live, Work, Play and Learn Composite Map





with pockets of high-density residential and recreational amenities nearby. The Elkhart urban area has a high linear demand along CR 9/Johnson Street and Prairie Street from Bristol Street through Downtown to Indiana Avenue/Main Street area. Much of this area is served by a continuous north/south connection via the Riverwalk Trail and on-street dedicated bike lanes along Richmond Street, Tipton Street and Sterling Avenue. However, there are limited east/west connections from this continuous route into Downtown and other high-demand areas, which make this corridor a primary candidate receiving improved bicycle and pedestrian facilities to properly connect these areas.

Additionally, this analysis highlights areas of demand that are not being sufficiently served by the current active transportation network. To better represent this, a Bicycle Level of Traffic Stress Analysis was conducted to establish the reach of facilities and where the supply can be improved to match the current demand. Similar analysis was conducted in detail for all urbanized areas within the MACOG planning region to aid its local public agencies in identifying areas of high-demand to support biking and walking travel. This analysis is located in the appendix of this Plan.

## Bicycle Suitability Analysis

While biking and walking can be subjective and unique experiences for each individual, there are basic roadway characteristics that impact the user experience. When aggregated, these characteristics can be used to determine general levels of comfort for bicyclists and pedestrians. Using MACOG's existing road data pertaining to speed limits, number of travel lanes, average daily traffic volume (AADT), and existing active transportation network, MACOG's roadway network was analyzed to determine current roadway suitability for bicycling. Due to limited availability of pedestrian facility data, analyzing the pedestrian level of

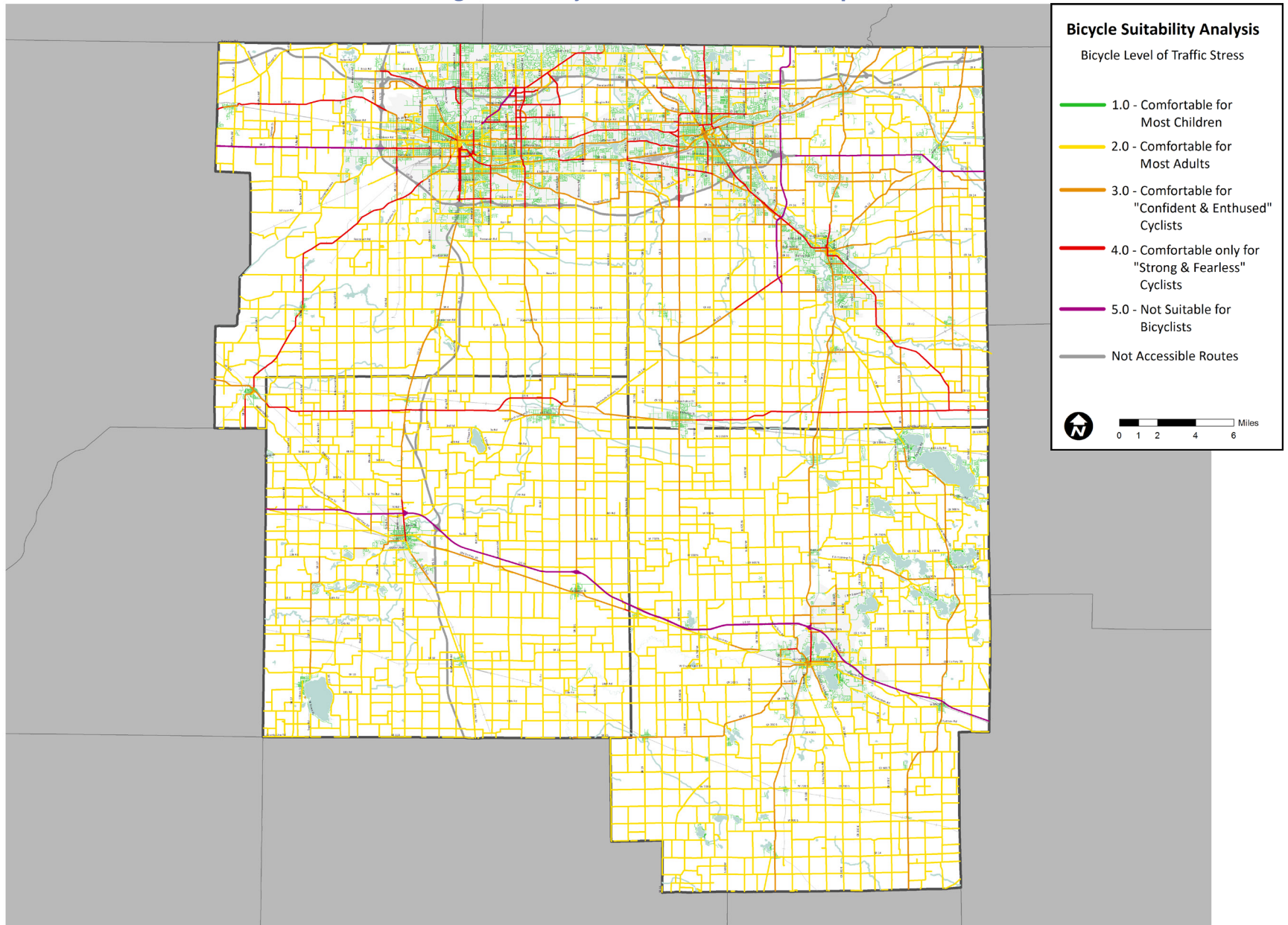
traffic stress was not conducted. A summary and map for the bicycle level of traffic stress are provided, and complete documentation is included in the appendix of the Plan. The results of this model will be used to identify bicycle network gaps as potential projects and aid in system-wide prioritization.

## Bicycle Level of Traffic Stress (BLTS)

The Bicycle Level of Traffic Stress (BLTS) analysis is based on the 2012 Mineta Transportation Institute (MTI) approach in which roadway segments are classified into one of four levels of traffic stress based on factors such as posted speed limit, number of travel lanes, and presence of bicycle lanes, as a level of determination for bicyclist comfort riding level. MACOG, however, incorporated the impact of traffic volumes and shared use facilities via signed routes or shared lane markings (sharrows). The lowest bicycle level of traffic stress, BLTS 1, is assigned to roads that would be tolerable for most children to ride, as well as multi-use trails that are separated from automobile traffic. The next rating, BLTS 2, is roads that can easily be ridden by most adults. BLTS 3 is the next level; assigned to road segments that would be comfortable for cyclists who are "confident" riding with or alongside traffic whether a bicycle facility is provided or not. Lastly, BLTS 4 is assigned to road segments that would only be acceptable to "strong and fearless" cyclists who tolerate riding on roadways with higher traffic volumes, speeds and limited pavement width. A fifth category was created to highlight roads that showed up with a rating of a four, but ultimately are not deemed suitable for on-road cyclists.

The BLTS model analyzed the full roadway network within the MACOG planning region excluding limited access highways, alleys, and service roads, to provide a full picture of connectivity around the four counties. The results of this analysis are shown in Figure 4.12 and scoring methodology is located in Appendix D. Much of the roads in the MACOG

Figure 4.12 Bicycle Level of Traffic Stress Map





planning region are deemed accessible for most adult riders. Disconnected clusters of low-stress streets characterize most of the urbanized street network; however, heavily traveled and high-speed roads like McKinley Ave, SR-2/Western Ave, SR-23, Cleveland Rd, and SR 19/Cassopolis St function as barriers to bicycle mobility.

## Bicycle & Pedestrian Crash Analysis

A person's level of perception with respect to safety concerns will determine if an individual will choose to bike or walk over drive their automobile. Safety, convenience and weather are the most common reasons for people opting not to bicycle more often on the road. Even if the trip is over a short distance, if an individual does not feel safe biking on the road or there is a gap in the network, more often than not, the individual has made up his or her mind not to bike or walk and will use a different mode of travel. Likewise, crashes involving motor vehicles represent a significant threat, both real and perceived, to the safety of bicyclists and pedestrians and the decision to choose to bike or walk. A survey was taken during the planning process of this Plan throughout the planning region. Respondents stated they feel motorists' attitudes towards non-motorized users to that of being impatient having to wait at intersection crossings or passing bicyclists on the open road, and don't believe that bicyclists are entitled to be on the road. An examination of the impacts of crashes on bicyclists and pedestrians emphasizes the liability of these road users. In 2014, bicyclists and pedestrians represented less than 1% of all individuals in traffic collisions in Indiana, but made up 11% of all traffic fatalities. Only 0.2% of motor vehicle occupants involved in traffic collisions were killed, compared to 5.7% of all bicyclists and pedestrians (Indiana Public Policy Institute)

MACOG is fortunate to have access to valuable collision data to help identify trends in crashes, understand crash characteristics, and develop safety promotions and other

countermeasures to create a safer environment for bicyclists and pedestrians. This section of the Plan summarizes reported crashes in the MACOG planning region that involved bicyclists and pedestrians between 2012 and present (2016).

## Summary

Over 864 non-motorized related collisions were reported in the MACOG planning region from 2012 to 2016. Of these 864 collisions, roughly 29% occurred in the City of South Bend, followed by the City of Elkhart with 23%. Approximately 769 incidents resulted in injuries and over 50% of those injuries were pedestrians. Additionally, 35 occurrences resulted in a fatality with around 75% being pedestrians. The 35 fatalities represent 13% of all motor vehicle related fatalities. Appendix E provides further analysis.

Figure 4.13 shows a composite of the bicycle and pedestrian crash locations as a heat map. This map gives a general overview of the locations with high frequencies of crashes in the MACOG planning region to help depict commonly used roadways by non-motorized users. In comparison with the Non-Motorized Facility Demand Map (Figure 4.13), the location of high frequency bicycle and pedestrian collisions correlates where the population and employment densities and mixture of other land uses encourage active transportation users. These would be the locations within the urban cores of South Bend, Mishawaka, Elkhart and Goshen. Furthermore, outside the urban cores, many crashes were located in neighborhoods surrounding arterial roadway corridors, such as McKinley Highway, Grape Road, SR 933, SR 331 and SR 23, US 31/Michigan St, Lincolnway West, and SR 19/Cassopolis St. This can attribute to limited neighborhood connectivity to access destination areas in which impels users to cross the higher volume, higher speed roadways as many crashes occurred at or near the intersections along one the listed arterial corridors from above.

Figure 4.13 Bicycle and Pedestrian Crash Heat Map

