

## Official TwinCATS Non-Motorized Plan

*Approved by TwinCATS Policy Committee and  
amended into 2035 Long Range Plan 11/21/2011*

### Section 1: Introduction

Providing the ability for users to walk and bike safely and comfortably is an extremely important aspect of the performance of transportation systems. The benefits of easy non-motorized travel are many:

- Walking and biking leads to better health, reducing obesity rates and lowering the risks for such ailments as diabetes and heart disease;
- Providing walkable destinations improves the mobility of older adults, lessening isolation and increasing independence;
- Amenable walking and biking conditions help attract and retain young professionals, as younger adults are increasingly choosing to rely less on cars for transport;
- Providing walkable and bikable shopping, service, and job access is crucial to the well being of households who live without cars, whether out of choice or economic necessity;
- Attractive walking and biking routes provide valued recreational amenities for residents and bolster an area's attractiveness to tourists.

The above list is only a partial statement of the value gained from good walking and biking facilities.

In light of this value, the Twin Cities Area Transportation Study (TwinCATS) has seen the need for an area-wide non-motorized plan. The main component of this plan – detailed in Section 2, below – is an inventory of area roads that are

particularly important to the area's bicyclists and pedestrians, compiled through discussions with area officials, public input collection, and the observations of planning and road agency staff. Context sensitivity is central to the task of designing transportation facilities, and this plan makes no mandates for specific design elements needed on any particular road segment. What the list is intended to do, however, is to ensure that each named stretch of road is given proper consideration for the best feasible walking and biking facilities. Any major (re)construction on these segments that does not include improved walking and biking facilities ought to have a strong rationale for such an exclusion.

In addition to providing a list of important non-motorized routes, the following plan contains additional background information on the state of non-motorized travel in the Benton Harbor/St. Joseph area. The plan contains an overview of public input gathered on non-motorized travel, examples of different types of non-motorized shortcomings seen throughout the area, a summary of area walking and biking safety statistics, and a brief discussion of local socio-economic conditions that affect the importance of walking and biking mobility. Finally, the plan document discusses a number of design resources, which can be turned to to help determine the best walking and biking facilities available in different contexts.

## Section 2: Designated Walking and Biking Routes

The following maps and lists contain an inventory of TwinCATS area on-road and off-road segments that have been deemed especially import to the area's non-motorized transportation network. This inventory is not meant to be a definitive list of all possible routes that could potentially benefit from improved walking or biking facilities (though it was meant to err on the side of inclusivity), nor is the inventory meant to prescribe any certain set of design measures for given sets of road segments. Rather, it is meant to designate locations of special importance to area bicyclists and pedestrians, and to ensure that these segments are given due consideration for design improvements that will foster better walking and biking environments.

The list was compiled through a number of overlapping measures. Many road segments were deemed a priority based on their inclusion in previous planning efforts, notably a regional 9-county plan. Several rounds of public surveys were also distributed, both in paper and electronic

form, in the summer of 2010 and the spring of 2011. Observational input was provided by the staff of the Southwest Michigan Planning Commission and several area road agencies. Finally, the list of designated roads and paths was brought before community officials representing the component cities, towns, and villages of SWMPC to get a feel for the relative priority of different identified locations and to fill in any remaining gaps.

The maps on pages 5 through 10 show the location of the prioritized road and path segments. The map on page 5 gives a wide view of the entire TwinCATS area, with the subsequent maps on pages 6 through 10 provide a more detailed view, giving road names and showing an aerial view of local features. Finally, the table on pages 11 through 13 gives a listing of all designated road segments, including segment boundaries, the communities within which the segments fall, and their status as federal aid eligible or not.

Figure 2.1: Full Area Non-Motorized Route Priorities

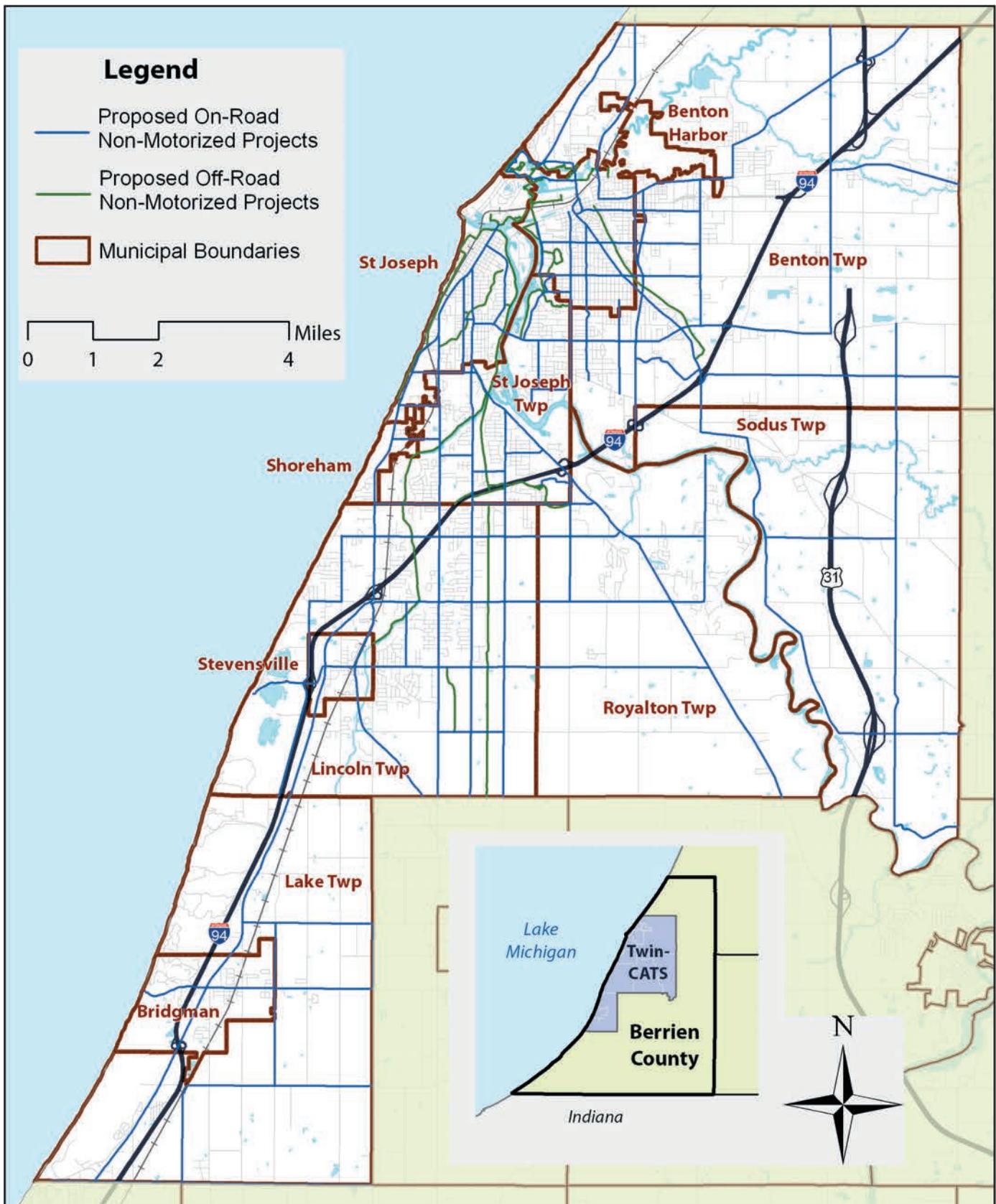
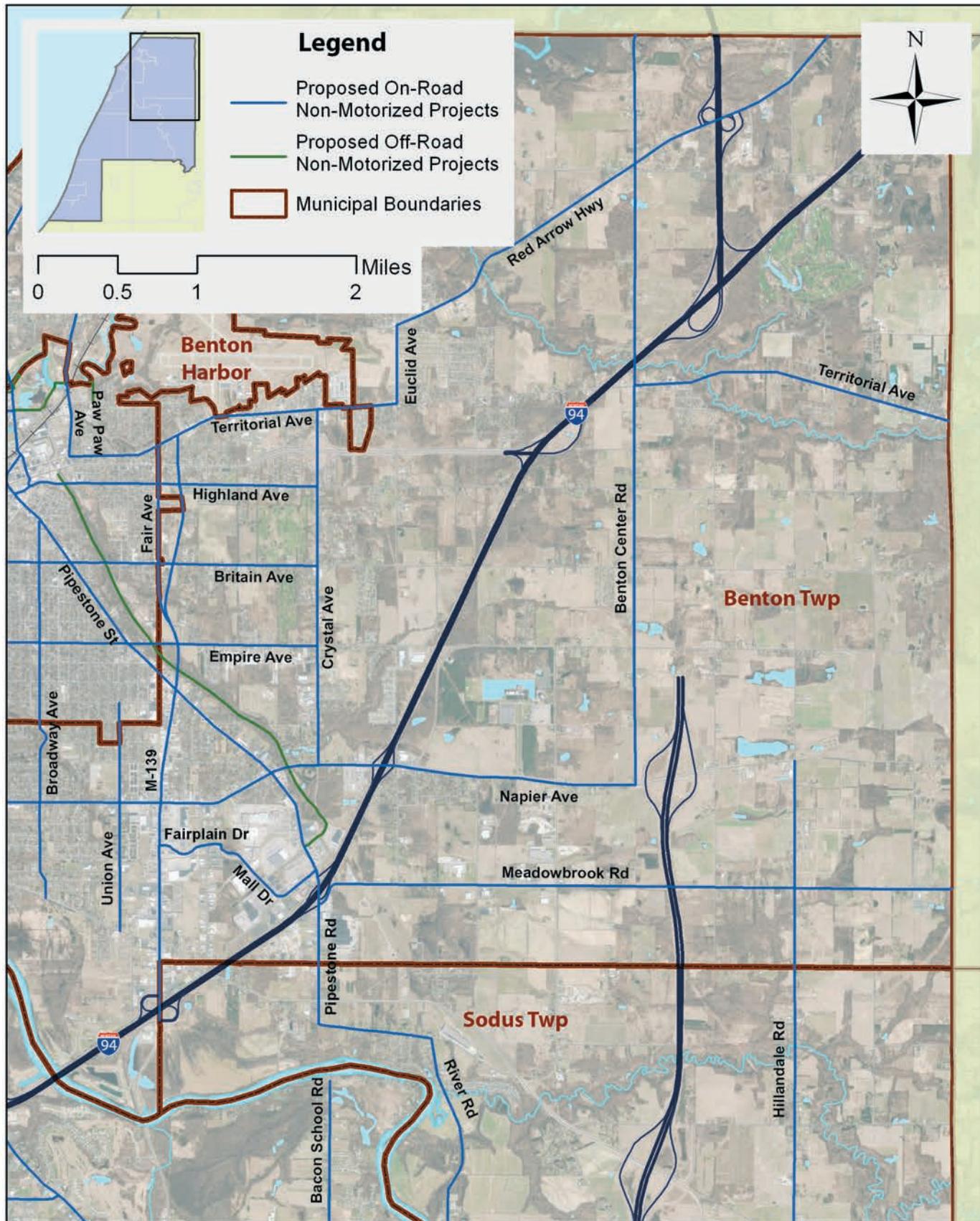


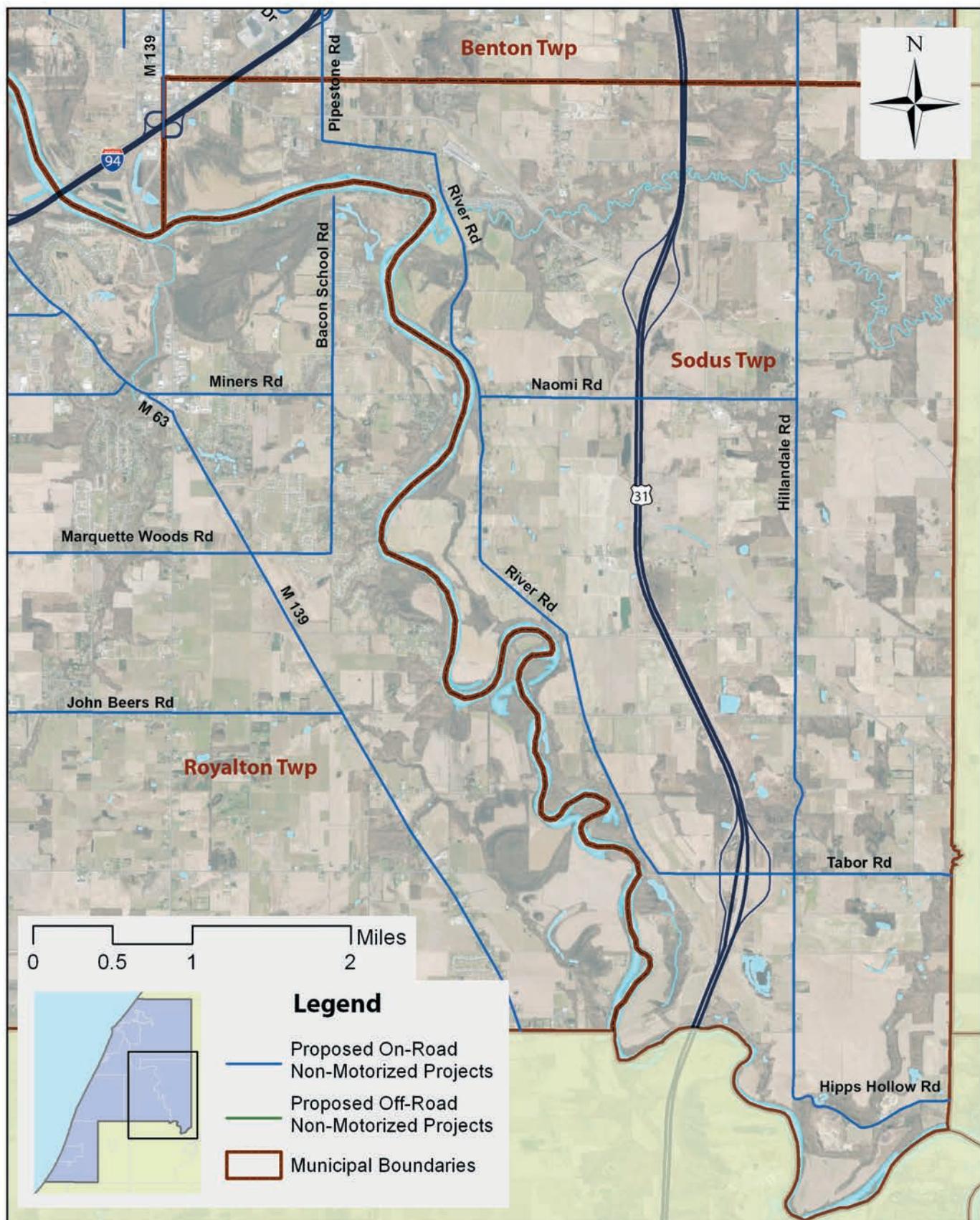
Figure 2.2: Non-Motorized Route Priorities, Northwest Zoom



Figure 2.3: Non-Motorized Route Priorities, Northeast Zoom



**Figure 2.4: Non-Motorized Route Priorities, Southeast Zoom**



**Figure 2.5: Non-Motorized Route Priorities, Southwest Zoom**

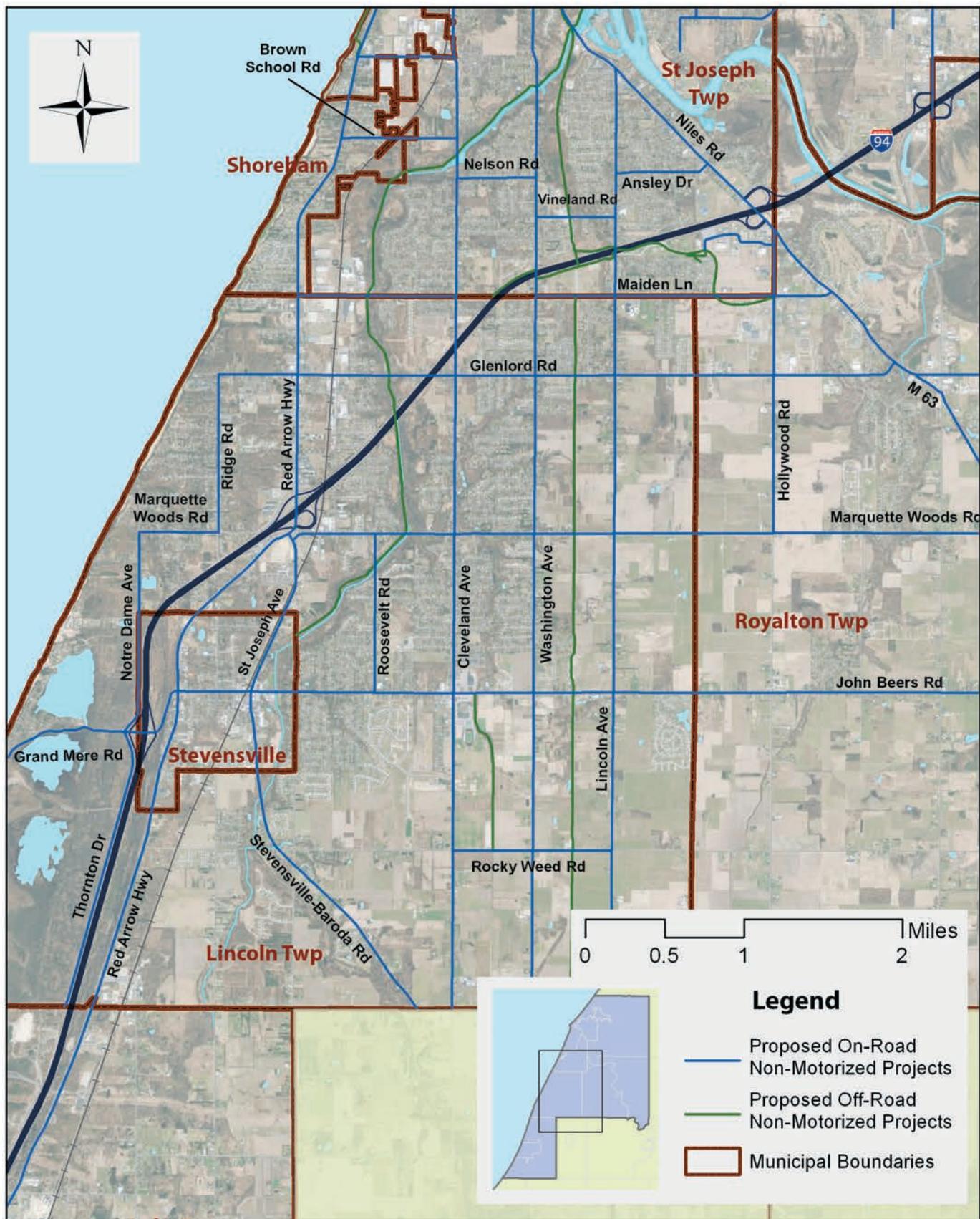
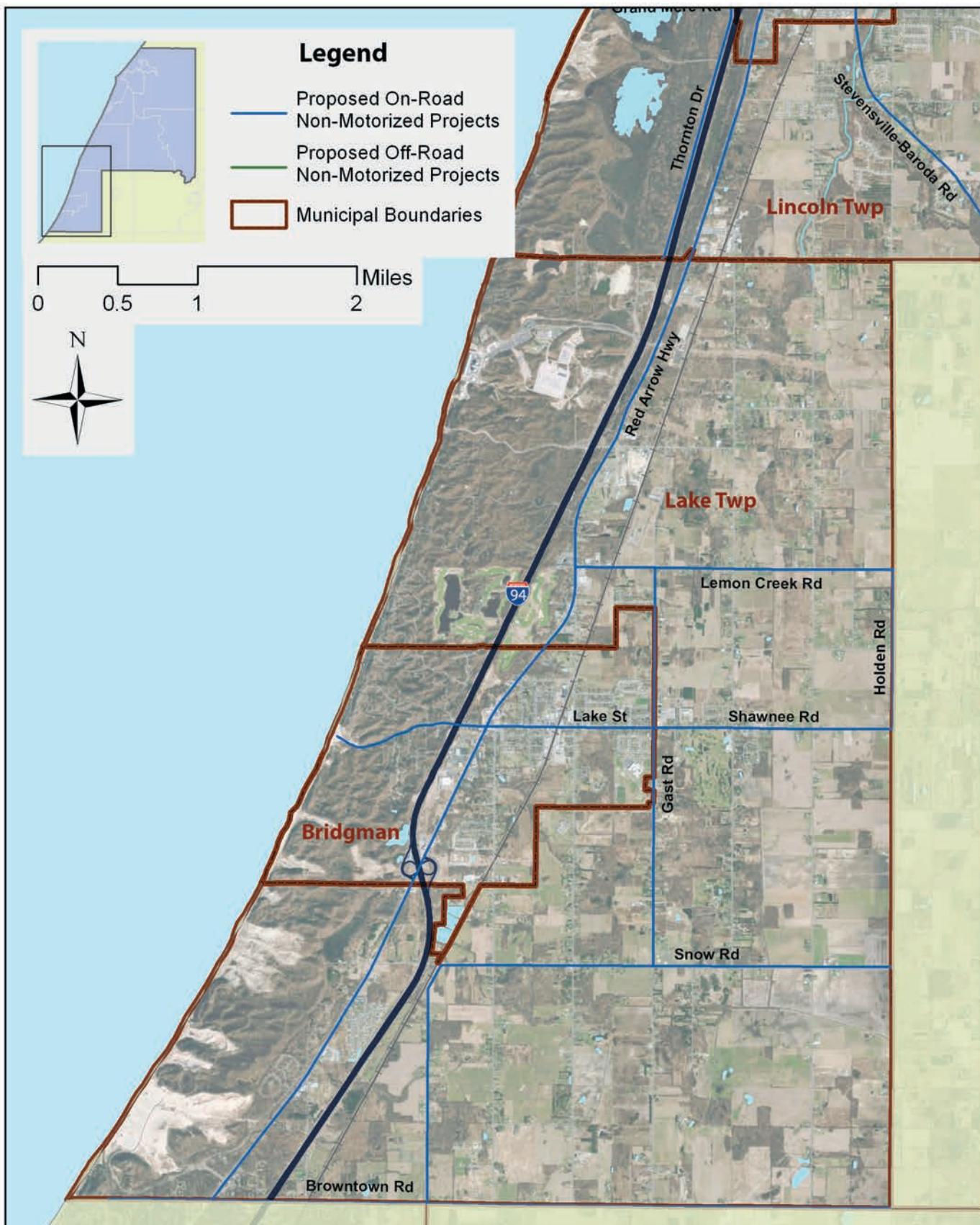


Figure 2.6: Non-Motorized Route Priorities, Far Southwest Zoom



**Table 2.1: Catalogue of Designated Streets**

Road Name	Segment Start	Segment End	Segment Communities	Federal Aid Eligibility
5th St	Water St	Highland Ave	Benton Harbor	Yes
Ansley Dr	Lincoln Ave	Niles Rd	St. Joseph Twp	No
Bacon School Rd	Linden Dr	Marquette Woods Rd	Royalton Twp	No
Benton Center Rd	Hagar Twp / Benton Twp border	Napier Ave	Benton Twp	Partial
Britain Ave	Riverside Dr	Crystal Ave	Benton Harbor, Benton Twp	Yes
Broad St	Main St	Langley St	St. Joseph	Yes
Broadway Ave	Pipestone St	Nickerson Rd	Benton Harbor, Benton Twp	Yes
Brown School Rd	Lakeshore Dr	Shoreham / St. Joseph Twp border	Shoreham	Yes
Browntown Rd	West end	Lake Twp / Chikaming Twp border	Lake Twp	Partial
Cleveland Ave	Lakeshore Dr	Linco Rd	Lincoln Twp, St. Joseph, St. Joseph Twp	Yes
Colfax Ave	Main St	Jakway Ave	Benton Harbor, Benton Twp, St. Joseph Twp	Yes
Crystal Ave	Territorial Ave	Napier Ave	Benton Twp	Yes
Empire Ave	Riverside Dr	Crystal Ave	Benton Harbor, Benton Twp	Yes
Euclid Ave	Red Arrow Hwy	Territorial Ave	Benton Twp	Yes
Fair Ave	Territorial Ave	M-139/MLK Dr junction	Benton Harbor, Benton Twp	Yes
Fairplain Ave	Napier Ave	Jakway Ave	Benton Twp	Yes
Fairplain Ave	M-139	Plaza Dr	St. Joseph Twp	Yes
Gast Rd	Lemon Creek Rd	Snow Rd	Bridgman, Lake Twp	No
Glenlord Rd	Ridge Rd	Niles Rd	Lincoln Twp, Royalton Twp	Partial
Grand Mere Rd	West end	Red Arrow Hwy	Lincoln Twp, Stevensville	No
Hawthorne Ave	Lakeshore Dr	Cleveland Ave	Shoreham, St. Joseph Twp	No
Highland Ave	Pipestone St	Crystal Ave	Benton Harbor, Benton Twp	Yes
Higman Park Dr	Jean Klock Park	N Shore Dr	Benton Harbor, Benton Twp	No
Hilldale Rd	Meadowbrook Rd	Hipps Hollow Rd	Benton Twp, Sodus Twp	Partial
Hilltop Rd	Lakeshore Dr	Niles Rd	St. Joseph, St. Joseph Twp	Yes
Hipps Hollow Rd	Hilldale Rd	Sodus Twp / Pipestone Twp border	Sodus Twp	No

**Table 2.1: Catalogue of Designated Streets (continued)**

Road Name	Segment Start	Segment End	Segment Communities	Federal Aid Eligibility
Hollywood Rd	Niles Rd	Marquette Woods Rd	Royalton Twp, Lincoln Twp	Yes
Holden Rd	Lemon Creek Rd	Shawnee Rd	Lake Twp	No
Jakway Ave	Lu Al Dr	Colfax Ave	St. Joseph Twp	No
John Beers Rd	Red Arrow Hwy	M-139	Lincoln Twp, Royalton Twp, Stevensville	Yes
Klock Rd	Jean Klock Park	N Shore Dr	Benton Harbor	Yes
Lake St	West end	Gast Rd	Bridgeman	Partial
Lakeshore Dr	State St	Maiden Ln	Shoreham, St. Joseph	Yes
Langley St	Broad St	Napier Ave	St. Joseph	Yes
Lemon Creek Rd	Red Arrow Hwy	Holden Rd	Lake Twp	Yes
Lincoln Ave	Niles Rd	Linco Rd	Lincoln Twp, St. Joseph Twp	Yes
Lu Al Dr	Jakway Ave	Riverbend Dr	St. Joseph Twp	No
M-139	Fair Ave/MLK Dr junction	South I-94 Entrance Ramps	Benton Twp	Yes
M-63	Hagar Twp / Benton Twp border	Benton Twp / Benton Harbor border (north of Klock Rd)	Benton Harbor, Benton Twp	Yes
	Miners Rd	Linco Rd	Royalton Twp	Yes
Maiden Ln	Lakeshore Dr	Cleveland Ave	Lincoln Twp, St. Joseph Twp	Yes
	Washington Ave	Niles Rd	Lincoln Twp, Royalton Twp, St. Joseph Twp	Yes
Main St (St Joe)	Blossomland Bridge	S State St	St. Joseph	Yes
Mall Dr	Plaza Dr	Pipestone Rd	Benton Twp	Yes
Marquette Woods Rd	Notre Dame Ave	Ridge Rd	Lincoln Twp	No
	St Joseph Ave	Bacon School Rd	Lincoln Twp, Royalton Twp	No
May St	Miami Rd	Colfax Ave	Benton Harbor, St. Joseph Twp	No
Meadowbrook Rd	Pipestone Rd	Benton Twp / Bainbridge Twp border	Benton Twp	Yes
Miami Rd	May St	Napier Ave	St. Joseph Twp	No
Miners Rd	Niles Rd	Brown School Rd	Royalton Twp	No
Martin Luther King Dr	Territorial Ave	M-139/Fair Ave junction	Benton Twp	Yes
N Shore Dr	Higman Park Dr	Water St	Benton Harbor, Benton Twp	Yes
Naomi Rd	River Rd	Hillandale Rd	Sodus Twp	Yes
Napier Ave	Niles Ave	Benton Center Rd	Benton Twp, St. Joseph Twp	Yes

**Table 2.1: Catalogue of Prioritized Streets (continued)**

Road Name	Segment Start	Segment End	Segment Communities	Federal Aid Eligibility
Nelson Rd	Cleveland Ave	Washington Ave	St. Joseph Twp	No
Niles Ave	Main St	Washington Ave	St. Joseph	Yes
Niles Rd	Washington Ave	Miners Rd	Royalton Twp, St. Joseph Twp	Yes
Notre Dame Ave	Marquette Woods Rd	Grand Mere Rd	Lincoln Twp, Stevensville	No
Palladium Dr	West end	Hollywood Rd	St. Joseph Twp	Yes
Paw Paw Ave	Hagar Twp / Benton Twp border	Territorial Ave	Benton Harbor, Benton Twp	Yes
Pipestone Rd	M-139	River Rd	Benton Twp, Sodus Twp	Yes
Pipestone St	Main St	M-139	Benton Harbor, Benton Twp	Yes
Red Arrow Hwy	Maiden Lane	Brownstown Rd	Bridgeman, Lake Twp, Lincoln Twp, Stevensville	Yes
	Euclid Ave	Benton Twp / Hagar Twp border	Benton Twp	Yes
Ridge Rd	Glenlord Rd	Marquette Woods Rd	Lincoln Twp	No
River Rd	Pipestone Rd	Tabor Rd	Sodus Twp	Yes
Riverside Dr	Main St	Empire Ave	Benton Harbor	Yes
Rocky Weed Rd	Cleveland Ave	Lincoln Ave	Lincoln Twp	Yes
Roosevelt Rd	Marquette Woods Rd	John Beers Rd	Lincoln Twp	No
Shawnee Rd	Gast Rd	Holden Rd	Lake Twp	Yes
Snow Rd	Brownstown Rd	Holden Rd	Lake Twp	Yes
St Joseph Ave	Red Arrow Hwy	Southern Stevensville / Lincoln Twp border	Lincoln Twp, Stevensville	Yes
State St	Lakeshore Dr	Hilltop Rd	St. Joseph	Yes
Stevensville-Baroda Rd	Southern Stevensville / Lincoln Twp	Linco Rd	Lincoln Twp	Yes
Territorial Ave	Paw Paw Ave	Euclid Ave	Benton Harbor, Benton Twp	Yes
	Benton Center Rd	Benton Twp / Bainbridge Twp border	Benton Twp	Yes
	Grand Mere Rd	Willow Rd	Lincoln Twp	No
Union Ave	Cross St	Nickerson Rd	Benton Harbor, Benton Twp	Yes
Vineland Rd	Washington Ave	Lincoln Ave	St. Joseph Twp	No
Washington Ave	Niles Ave	Linco Rd	Lincoln Twp, St. Joseph Twp	Yes
Water St	Main St	5th St	Benton Harbor	Yes
Woodward Ave	Empire Ave	May St	St. Joseph Twp	No

## Section 3: Local Conditions

In addressing the needs of a transportation system, it is important to have clear understanding of the local conditions that bear on its performance. This section describes these local conditions, including the experiences and perceptions of local non-motorized users, the observed conditions and safety performance of area roadways, and the presence of different population groups that have particular walking and biking needs.

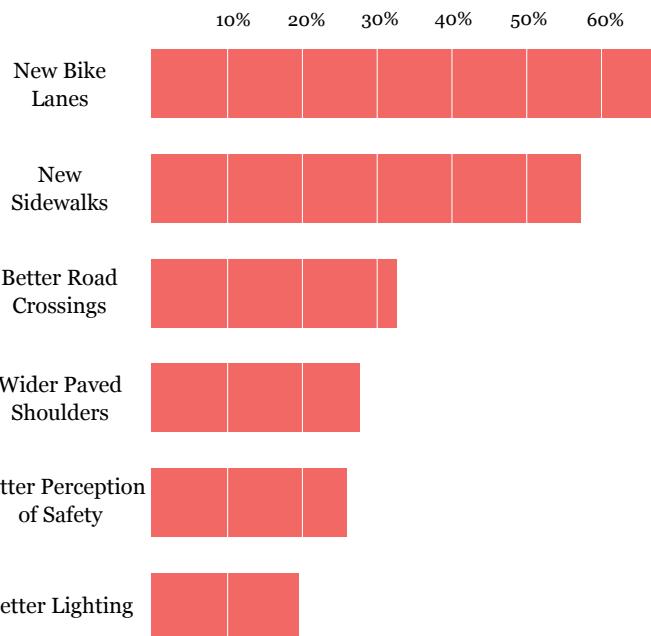
### Section 3.1: Public Input

Public input plays an important role in determining the transportation needs of area residents. Staff of the Southwest Michigan Planning Commission (SWMPC) used several methods to gather such input on the TwinCATS walking and biking environment. A series of four public input meetings were held in May 2011 in Lincoln Township and the cities of Benton Harbor, St. Joseph, and Bridgman in which residents were given an opportunity to tell staff about their own walking and biking habits and the ways in which they felt their walking and biking experiences could be improved. Additionally, a written walking and biking survey was also administered at the meetings, as well as being posted to the SWMPC website.

In all, 73 respondents finished the written survey. The questions they responded to fit into three general categories: questions about their personal characteristics (age, gender, home city/town, and disability status), questions about their travel habits (type, distance, and frequency of walking and biking trips), and perception of non-motorized conditions (specific problem areas and potential changes that would make them walk or bike more).

In answering questions about what facility improvements would encourage them to walk and bike more frequently, survey respondents chose from among a number of options. The results, displayed in Figure 3.1, show that a majority of people reported

**Figure 3.1:** Percentage of Survey Respondents Who Said the Following Improvements Would Encourage Them to Walk or Bike More



that their walking and biking would increase from new bike lanes (67.2%) and new sidewalks (57.4%). Among the listed design improvements, relatively large minorities of respondents also listed better road crossings, wider shoulders, a better perception of safety, and better lighting as potentially helpful.

In addition to specifying the sorts of design fixes they would find most useful, survey respondents also listed the specific locations, both streets and intersections, in which they would like to see improvements. A total of seven roads received more than ten mentions:

- Red Arrow Highway
- Hilltop Road
- Cleveland Avenue
- Niles Avenue
- Glenlord Avenue
- Washington Avenue
- Marquette Woods Road

## **Section 3.1: Public Input (continued)**

Specific intersections that received repeated mention include the intersection of Red Arrow Hwy. and Marquette Woods Rd. and the adjacent I-94 junction, the intersections of Hilltop Rd. with Cleveland Ave. and Niles Rd., and the intersection of Hollywood Rd. and Glenlord Rd.

While the above information is valuable in identifying particular segments of the area transportation system that could benefit from better walking and biking facilities, it's important to keep in mind the limitations of the survey device used. Namely survey respondents tended to be clustered in a few portions of the TwinCATS region (a slight majority of respondents claimed residence in either the city of St. Joseph or Lincoln Township) and were largely recreational bicyclists and pedestrians (recreation was by far the most common purpose reported for walking and biking trips, and respondents reported their most typical trip distances to be between 1 and 3 miles for walking and over 3 miles for biking). Thus, while the results gained are important, they should not be thought of as completely representative of all area residents who walk and bike.

## **Section 3.2: Local Design Obstacles**

The public input described in the preceding section, combined with the observations of local transportation officials and SWMPC staff, gives a number of insights into the performance of non-motorized transportation facilities throughout the TwinCATS area. This section seeks to flesh out a number of these insights, looking at particular ways in which the area transportation network presents obstacles to effect transportation via walking and biking.

The obstacles discussed in this section are broken into seven different types:

1. The absence of sidewalks
2. The presence of sidewalks in poor condition
3. The absence of marked bike paths
4. Unpaved or poorly maintained shoulders
5. Difficult road crossings
6. Barriers to bus access

For each of these obstacles, an example from the TwinCATS area is examined. The examination covers the ways in which the obstacle and others like it can be identified, why such obstacles are problematic, and ways in which they have been successfully addressed. These discussions of particular problems aren't meant to single out any particular neighborhood or community within TwinCATS. Rather, they're meant to show the concrete existence of barriers to successful transportation that occur within a wide range of communities, and to demonstrate the benefits that the TwinCATS area could reap by addressing them.

## **Obstacle #1: Absence of Sidewalks**

### **Area Example:**

Napier Avenue, from the St. Joseph River in St. Joseph Township east to Pipestone Rd. in Benton Township

### **Evidence of Need:**

- Identification in public surveys
- The presence of “goat paths,” where grass has been worn down by frequent walking
- Frequent observations of people walking or riding a wheelchair on the side of the road or in the roadway itself
- Presence of many pedestrian origins and destinations along roadway; for Napier Ave., these origins and destinations include
  - A large apartment complex and many single family houses
  - A middle school
  - Several grocery stores and markets
  - Several medical offices and other service centers
  - A number of churches
  - A several bus stops near the corner of Napier Ave. and M-139

### **Potential Design Fixes:**

Adding a sidewalk is the primary fix. Care should be taken, however, to make the sidewalk as accommodating as possible to the range of potential pedestrian users. Specifically, to the extent possible, the sidewalk should be sufficiently wide, set back from the roadway, well lit, free from obstacles, and possess curb cuts where necessary and a smooth, flat grad. For reference to more detailed design guidance, see Section 3 of this document.

### **Other Area Examples:**

M-139 (including Fair and MLK), Fairplain Dr., Mall Dr. and Pipestone Rd. in Benton Township; Red Arrow Hwy, north of intersection with Marquette Woods Rd. in Lincoln Township; Hilltop Rd. in St. Joseph and St. Joseph Township



*Pedestrian using “goat path” on south side of Napier Ave., between Colfax Ave. and Broadway Ave.*



*Goat path along north (right) side of Napier Ave., between Ogden Ave. and Union Ave. (photo from Bing Maps)*

## **Obstacle #2: Sidewalks in Poor Condition**

### **Area Example:**

Main Street, from the Ship Street to Broad Street in St. Joseph

### **Evidence of Need:**

- Identification in public surveys
- Lack of curb cuts, making navigation extremely difficult for many users
- Sidewalks following the angle sharply slanted driveway ramps
- The presence of obstacles within sidewalk, restricting mobility and significantly reducing the effect width of the sidewalk in many places
- Instances of cracked and uneven surfaces
- No buffer between sidewalk and traffic

### **Potential Design Fixes:**

As noted in for design fixes for the above design obstacle, sidewalk improvements should be sufficiently wide, set back from the roadway, well lit, free from obstacles, and possess curb cuts and a smooth, flat grad. Sidewalks should be easily navigable by all users, regardless of ability. Again, for reference to more detailed design guidance, see Section 3 of this document.

### **Other Area Examples:**

Many sidewalks throughout Benton Harbor, Niles Avenue in St. Joseph



*Absent curb cuts and lack of street buffers on east side of Main St., between Port St. and Ship St.*



*Obstacles in sidewalk and rough grading on east side of Main St., between Ship and Pleasant*

## **Obstacle #3: Absence of Marked Bike Paths**

### **Area Example:**

Pipestone Road, between M-139 Highway and Napier Avenue in Benton Township

### **Evidence of Need:**

- No existing shoulders or bicycle lanes
- Frequent observation of bicyclists riding in roadway
- Swiftly moving traffic, often in excess of the 35 mile-per-hour posted speed limit
- Numerous potential bicycle trip generators, including an adjacent school, a major shopping and employment center to the south, and a dense residential area with low rates of car access surrounding and to the north
- Other potential signs of the need for bike paths
  - Public input
  - A history of bike crashes
  - The existence of unused right-of-way

### **Potential Design Fixes:**

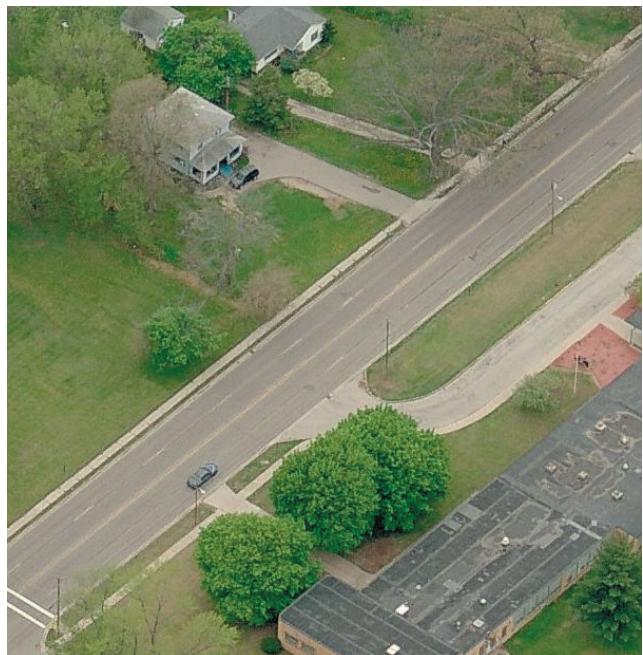
In the case of this section of Pipestone Rd., one potential design fix would be to undertake a “road diet,” converting the existing four travel lanes to two travel lanes, a center turn lane, and two bike lanes. Such road diets require sufficiently low traffic rates (Average Annual Daily Traffic counts for dieted roads are typically below 10,000-15,000) and may be seen as unpopular, but they offer a number of benefits, including a much more amenable biking environment, a reduction in excessive traffic speeds, and reductions in certain crash types. For both road diets and the standard addition of bike lanes to existing traffic lanes, bike lanes should have a minimum width of 4 feet, with 5 or more feet often preferable.

### **Other Area Examples:**

Portions of Empire Ave., M-139, Paw Paw Ave., Klock Dr., Napier Ave. Britain Ave., Crystal Ave., Fairplain Dr., Mall Dr., and other roads in Benton Harbor and Benton Township; Hilltop Rd. in St. Joseph; portions of Cleveland Ave., Washington Ave., Lincoln Ave., Hollywood Rd., Marquette Woods Rd., and St. Joseph Ave. in Lincoln Township, Royalton Township, and Stevensville; Gast Rd. and Shawnee Rd. in Bridgman and Lake Township; sections of Red Arrow Hwy.



*Street view of Pipestone Rd., between M-139 and Napier Ave., showing four travel lanes with no space for a shoulder or full bike lanes (photo from Google Maps)*



*Aerial view of Pipestone Rd., between M-139 and Napier Ave. (photo from Bing Maps)*

## **Obstacle #4: Unpaved or Poorly Maintained Shoulders**

### **Area Example:**

Pipestone Road, between Nickerson Road and River Drive in Sodus Township

### **Evidence of Need:**

- Shoulders with ample width for bike use but without paving
- Other problems pertaining to shoulder conditions not seen on this section of Pipestone Rd. include
  - Paved shoulders with excessive debris (rocks, tree limbs, trash, etc.)
  - Paved shoulders with advanced deterioration
  - Concrete seems and longitudinal grids that can catch bike tires and pose a severe risk to riders

### **Potential Design Fixes:**

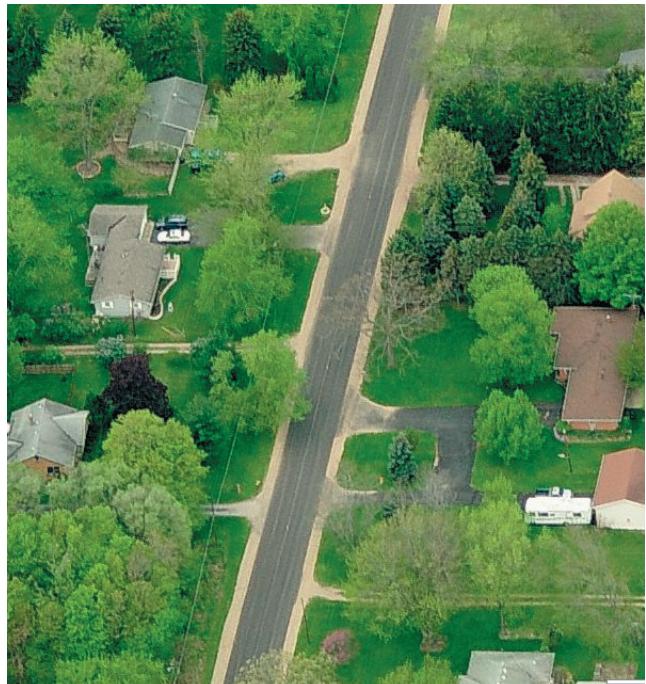
Where sufficient right of way exists, at least four feet of paved shoulders should be provided in order to facilitate safe bike riding. These shoulders should be kept free of debris, should feature pavement maintained in rideable conditions, and should be designed to be free of potentially dangerous edges and seems.

### **Other Area Examples:**

Shawnee Rd. in Lake Township; Marquette Woods Rd. in Lincoln and Royalton Townships; Cleveland Ave., Roosevelt Rd., and Washington Ave. in Lincoln Township; River Rd. in Sodus Township; sections of Red Arrow Hwy. along its length



*Wide, unpaved shoulder on north side of Pipestone Rd., between Nickerson Rd. and River Rd.*



*Aerial view of wide, unpaved shoulders on both sides of Pipestone Rd., between Nickerson Rd. and River Rd. (photo from Bing Maps)*

## **Obstacle #5: Difficult Road Crossings**

### **Area Example:**

The intersection of Napier Avenue and Colfax Avenue, on the border of St. Joseph Township and Benton Township

### **Evidence of Need:**

- A long crossing with no islands or other medians
- Public input reporting difficulty crossing and short signal times crossing Napier Ave.
- Pedestrian traffic generators, with several stores and a middle school directly adjacent to the intersection
- Other possible signs of problematic crossings
  - A history of serious crashes at or near the intersection
  - Intersections that are excessively complicated and difficult to navigate for bicyclists and pedestrians
  - Excessively wide turning radii, allowing for faster car speeds through the intersection and increasing the distances that pedestrians need to cross
  - Observations of pedestrians struggling with intersections or crossing mid-block in difficult circumstances

### **Potential Design Fixes:**

Ways of addressing intersection crossing width including shortening curb radii, extending curbs out into the intersection, installing traffic islands, or simply lengthening the signal time pedestrians have to cross (possibly through the use of pedestrian-activated signals). Other crossing design measures can include installing signs, signals, road markings, or protected medians at frequent midblock crossing sites or at previously unsignaled intersections, as well as making complicated intersections more navigable for pedestrians and cars.

### **Other Area Examples:**

Most of the intersections of both M-139 and Napier Ave., as well as several mid-block crossings, in Benton Township; the intersections of Main St. with Ship St., Port St., and Broad St. in St. Joseph; the intersections of Hilltop Rd. with Cleveland Ave. and Washington Ave. in St. Joseph Township; the intersection of Red Arrow Hwy. and St. Joseph Ave. in Lincoln Township.



*Pedestrian crosses Napier Ave. on the east side of Colfax Ave.*



*Aerial view of the intersection of Napier Ave. (left-right) and Colfax Ave. (up-down), showing a crossing width of five lanes on each side of the intersection, with a school building shown to the lower right*

## **Obstacle #6: Barriers to Bus Access**

### **Area Example:**

Mall Drive, between Harbor Pointe Apartments and retail complexes in Benton Township

### **Evidence of Need:**

- Observed absence of sidewalks, street crossings, shoulders, and other walking and biking facilities connecting to bus stops
- Bus records of heavy reliance on demand response (i.e. door-to-door) bus service near fixed route stops (resulting in great inefficiencies in transit provision)
- Presence of many potential destinations for and sources of bus riders in a neighborhood without connection to sidewalks or other non-motorized facilities
- Frequent observation of people walking and using wheelchairs within the roadway and on grassy adjacent strips.

### **Potential Design Fixes:**

Greater access to the five bus stops near Mall Drive can be created by ensuring that they are connected to sidewalks and bike lanes, and that nearby crossings have appropriate signage and markings. These walking and biking facilities should also connect to nearby destinations, such as retail and employment centers, as well as housing complexes, and should be designed to ensure that bus riders of all ability levels are able to navigate them.

### **Other TwinCATS Examples:**

Connections to the InterCare bus stop on M-139 and Empire Ave in Benton Township, the Briarwood Apartments bus stop on Union Ave. in Benton Township; the park and ride lot and Meijer bus stops in Lincoln Township, the Walgreens/Save-A-Lot/Big Lots stops near the corner of M-139 and Napier Ave. in Benton Township

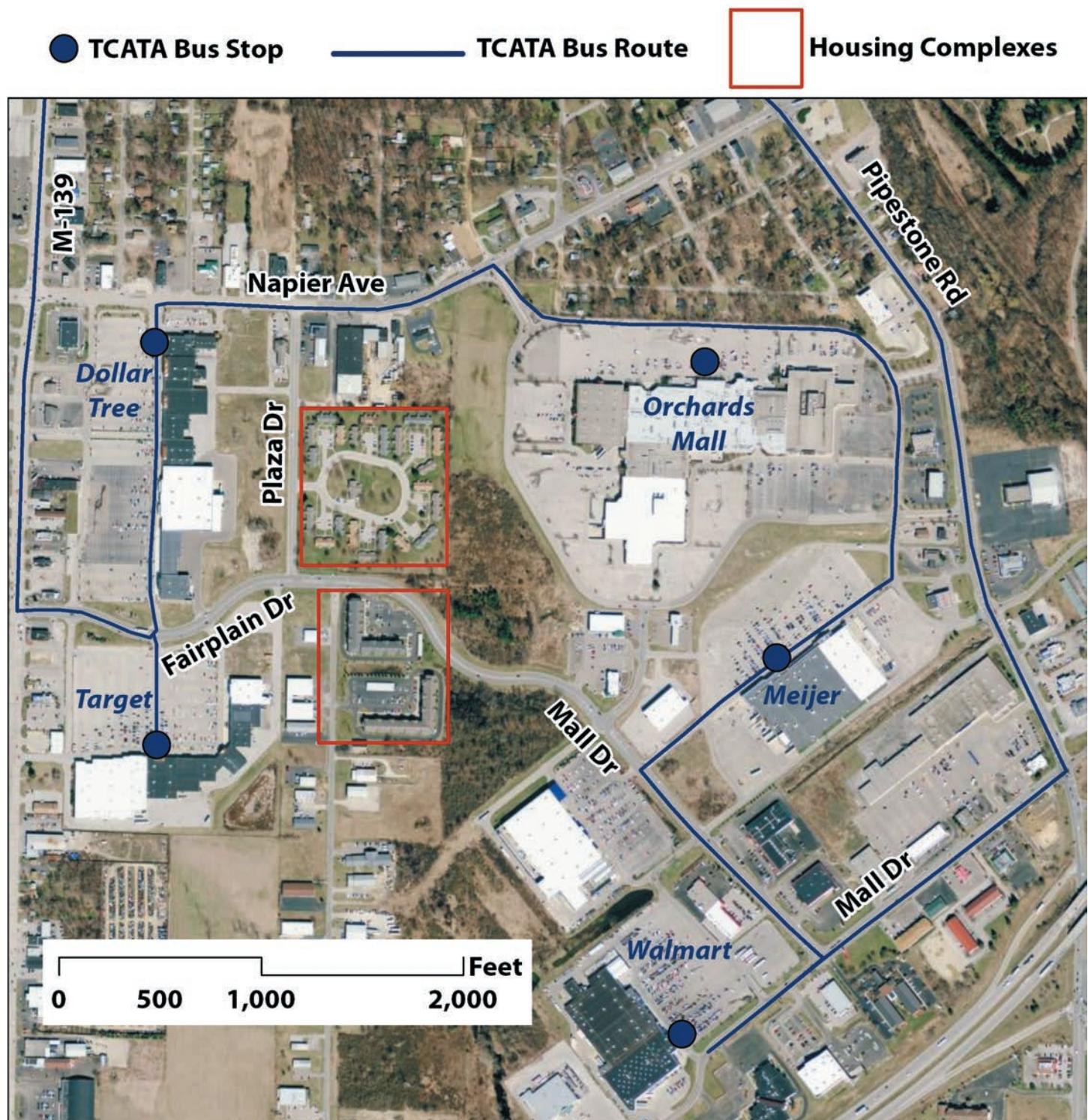


*Image of Mall Drive between a set of large apartment complexes and retail centers containing several bus stops; road showing five traffic lanes without sidewalks, bike lanes/shoulders, or intersection crossings; grass showing signs of heavy pedestrian use*



*Aerial view of Mall Dr. stretching east from the Harbor Pointe apartments, with several pedestrian “goat paths” and an absence of any walking and biking facilities (photo from Bing Maps)*

Figure 3.2: Transit Accessibility Along Mall Drive



*Aerial view of bus routes and stops, retail and job destinations, and housing centers near Fairplain Dr./Mall Dr.; none of the public roads shown in this view contain, sidewalks, bike lanes, or wide paved shoulders.*

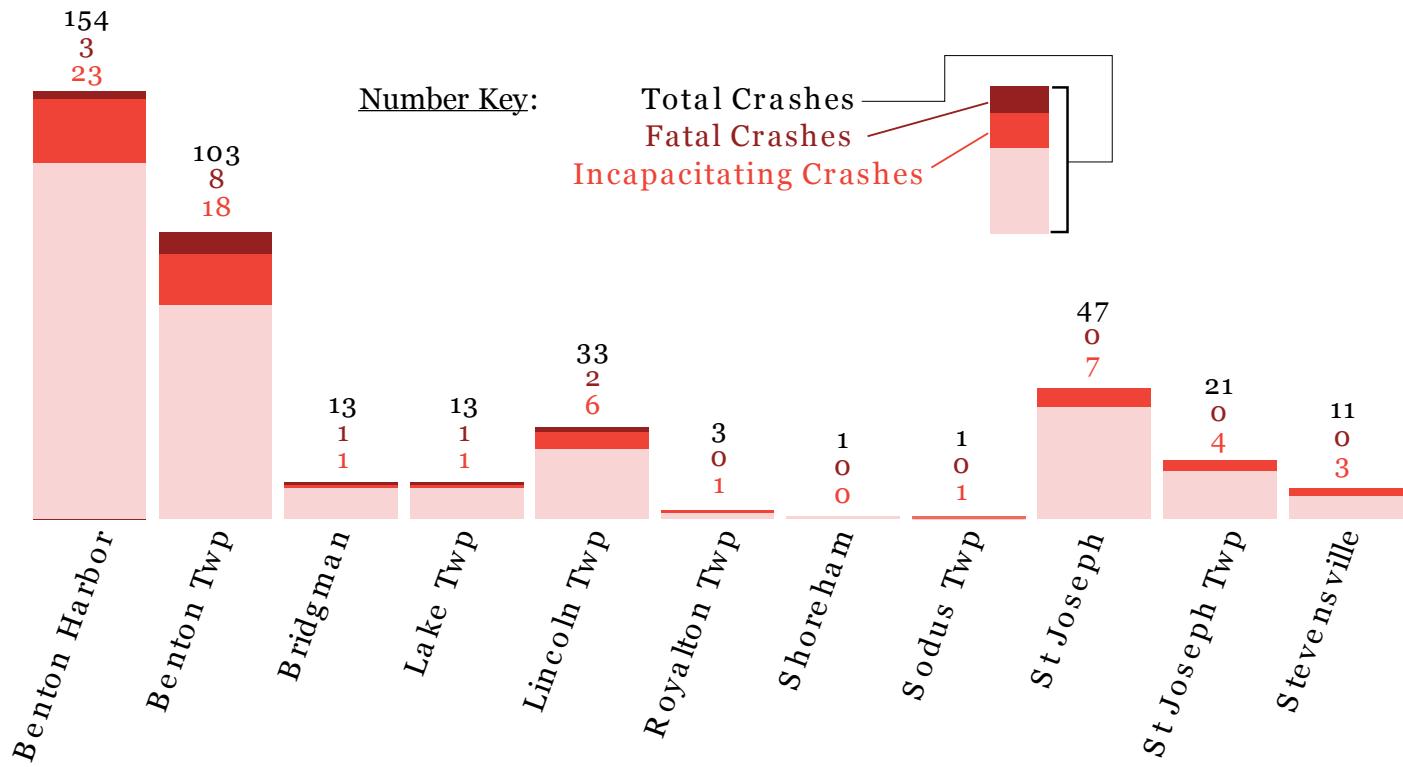
### Section 3.3: Safety Statistics

One of the primary goals for a good non-motorized transportation system is to promote the safety of bicyclists and pedestrians. Examining the number of dangerous crashes involving these users provides a basic means of evaluating how safe a transportation system is for them. Such an examination is aided by the State of Michigan, which maintains a detailed record of car crashes involving bicyclists and pedestrians. Looking at crash totals across a region can give a general sense of the dangers faced by road users, while the specific locations of crashes can help pinpoint problem areas. In addition to demonstrating safety problems, crash locations can help indicate areas where users are likely to feel uncomfortable walking or biking, and thus face restricted mobility.

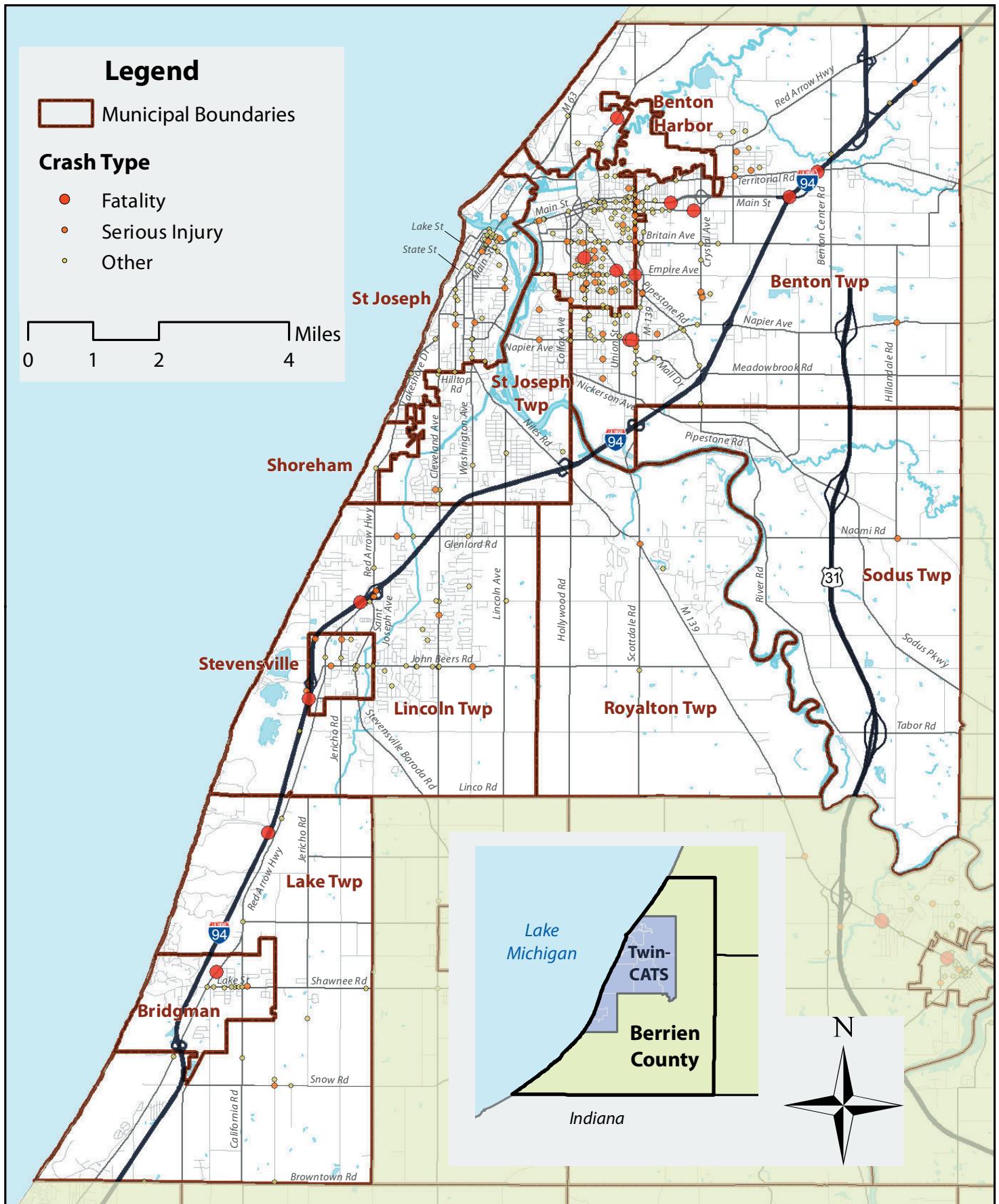
The plots in Figure 3.3, below, show the total of all bicycle and pedestrian crashes over the ten-year span from 2000 to the end of 2009. (Note that crashes occurring on the boundary of two jurisdictions are applied to both totals, so the sum across jurisdictions in Figure 2.1 is slightly higher than the overall

TwinCATS crash total.) The figure shows that while all TwinCATS jurisdictions have experienced bicycle and pedestrian crashes over the past decade, Benton Harbor and Benton Township have faced by far the highest incidence of such crashes. Benton Harbor has the highest number of total crashes (154) and crashes which resulted in incapacitating, non-fatal injuries (23), while Benton Township saw the highest number of fatal crashes (8). Figure 3.4 on the following page shows the precise location of these crashes, again split between fatal crashes, crashes with non-fatal but incapacitating injuries, and crashes with light or unknown injuries or with property damage only.

**Figure 3.3: Count of Car Crashes Involving Bicyclists or Pedestrians by Community, 2000 - 2009**



**Figure 3.4:** Map of Car Crashes Involving Bicyclists or Pedestrians, 2000 - 2009



## Section 3.4: Local Age Groups

The demographics of an area bear heavily on the extent to which its residents are likely to rely on walking and biking as primary modes of transportation. People who are too young to drive are likely to look for non-car options when trying to get around, and so one can expect a higher demand for non-motorized travel options in places with a disproportionate number of children. Likewise, the availability of walking options is becoming increasingly recognized as crucial for the mobility of older adults. As people age, they often outlive their ability to safely operate an automobile.<sup>1</sup> Without the presence of easily accessible walking destinations, they may then lose a great deal of independence.

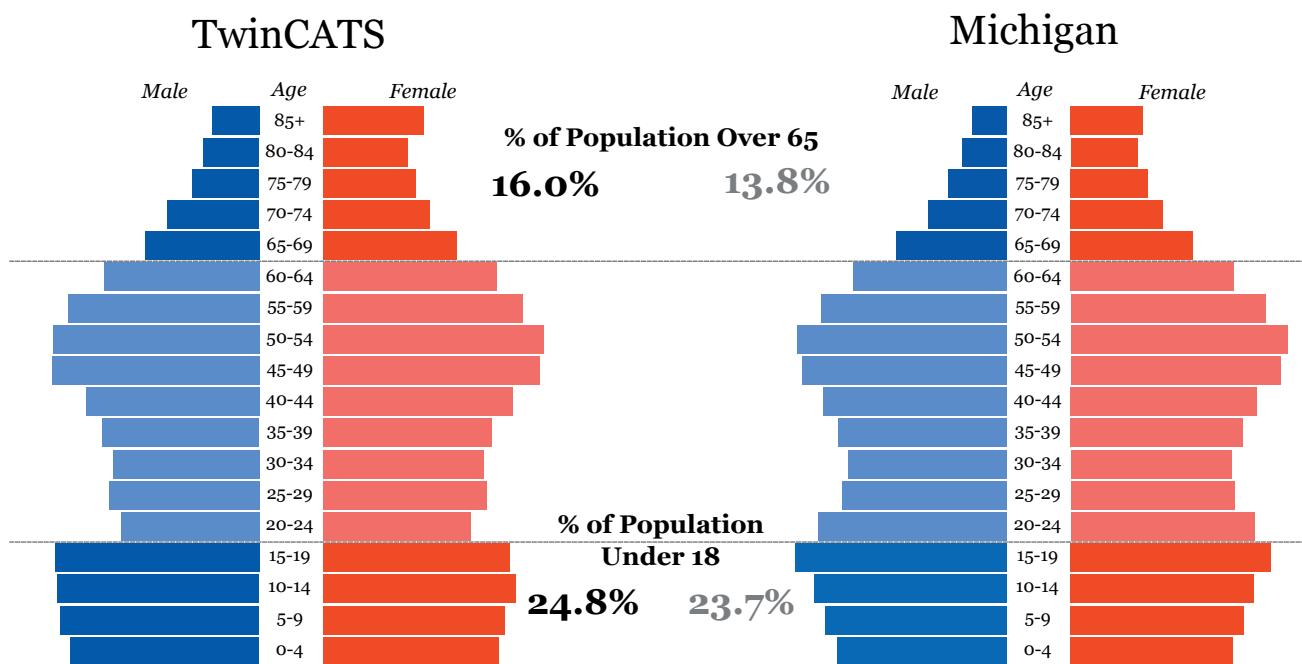
In addition to indicating a greater demand for walking and biking facilities, the demographics of an area can indicate special considerations for designing such facilities. For example, older pedestrians may benefit from extended crossing signals, crossing islands, and smoother, less demanding walking surfaces. Likewise, children may benefit from enhanced safety features, such as separated paths and

signs and signals alerting drivers of their presence.

Given the importance of old and young age groups to non-motorized transportation, it's interesting to note the peculiar demographics of the TwinCATS area. As shown in Figure 3.5, the TwinCATS population when compared to the whole state of Michigan has both a higher proportion of residents over the age 65 and a higher proportion of residents under the age of 18; the same comparison holds for the country as a whole. Figure 3.6 shows a map of age trends within specific TwinCATS neighborhoods. All of Benton Harbor, surrounding portions of Benton Township, and east and south portions of Lincoln Township and Royalton Township have a disproportionately large population of children. Meanwhile, many neighborhoods throughout the entire region see a high population of adults aged 65 and older.

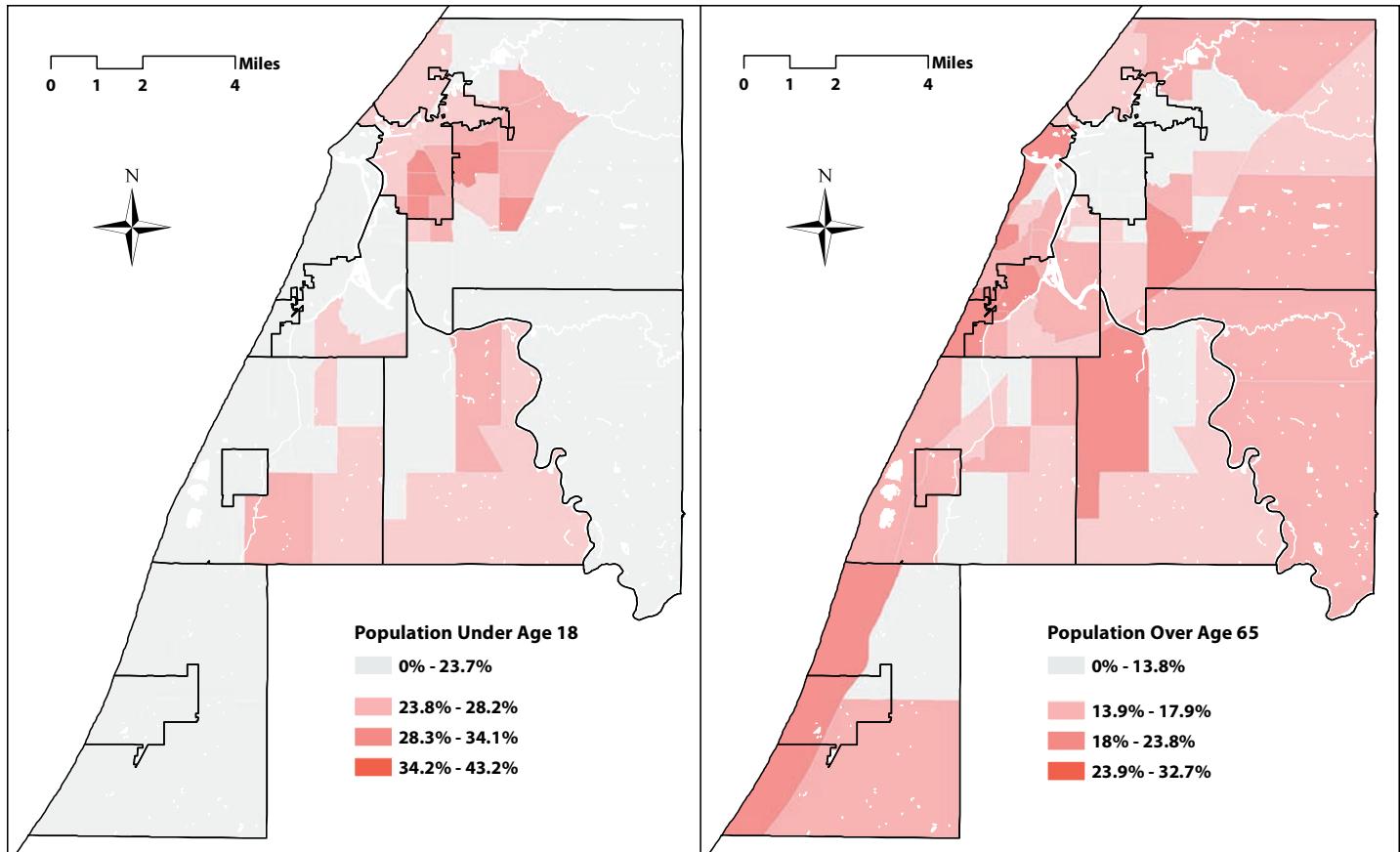
<sup>1</sup>. See, for example, Daniel J. Foley et al., "Driving Life Expectancy of Persons Aged 70 Years and Older in the United States," *American Journal of Public Health* 92, no. 8 (August 2002): 1284-1289.

**Figure 3.5: Comparison of Age Groups in TwinCATS Jurisdictions and the State of Michigan, 2010**



Data is from United States Census Bureau, 2010.

**Figure 3.6: Map of TwinCATS Neighborhoods with Prevalence of Young and Old Age Groups, 2010**

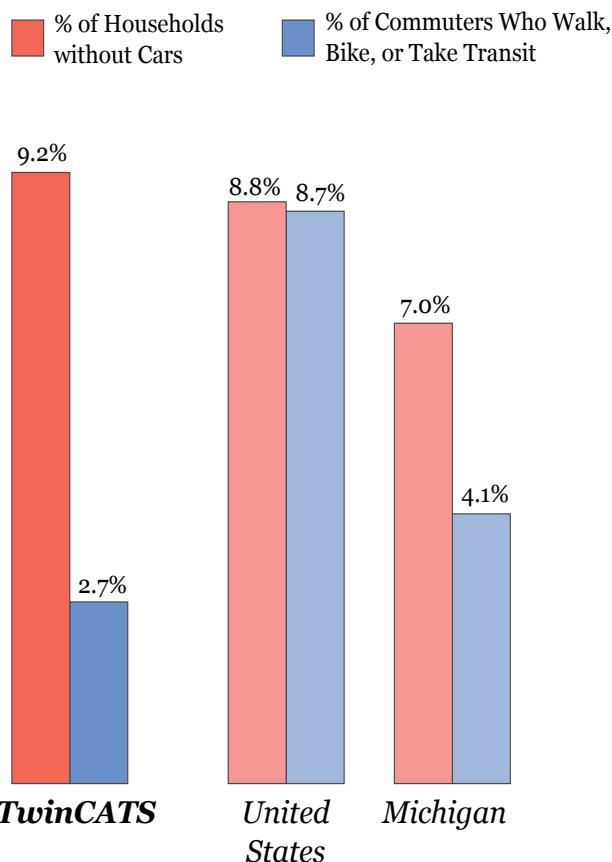


## Section 3.5: Local Car Access

Lack of access to cars, whether due to choice or the prohibitive costs of ownership and maintenance, is a major driving force of people relying on walking and biking as a primary mode of transportation. The U.S. Census Bureau, through its American Community Survey, tracks the number of households that neither own nor lease a private automobile. This statistic provides a strong indicator of how likely residents of a give area are to rely on walking and biking to meet their basic transportation needs.

Using American Community Survey statistics averaged over the period from 2005 to 2009, Figure 3.7 shows that the TwinCATS area has proportionately more households without cars than do either Michigan or the country as a whole. Despite this lack of car access, TwinCATS also has proportionately far fewer workers that walk, bike, or

**Figure 3.7** State and National Comparison of TwinCATS Car Ownership and Commuting, 2005-2009

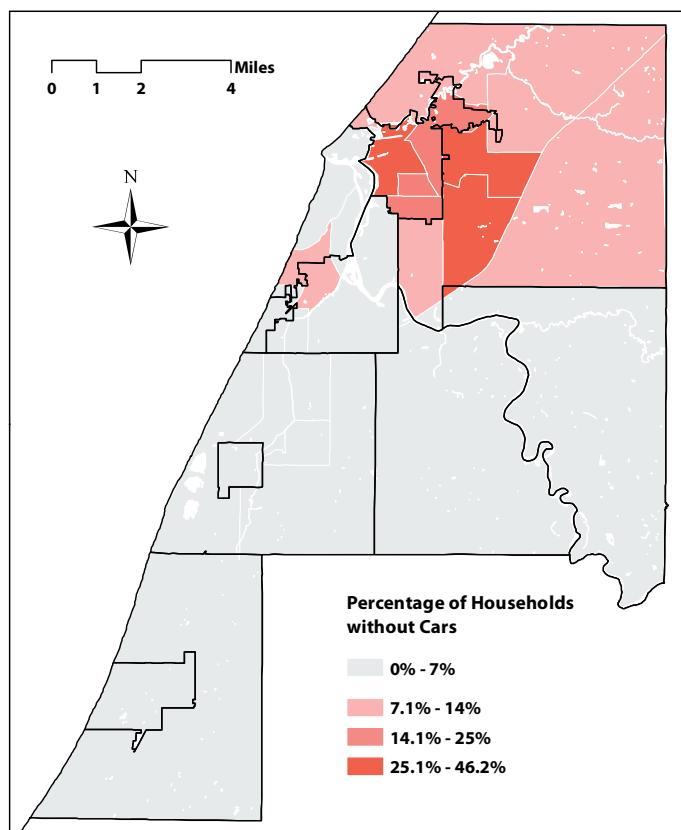


Data are from the American Community Survey, 2005-2009.

take public transportation to their jobs. This disparity hints strongly at a lack of non-motorized access to job locations throughout the region.

Figure 3.8 shows the specific TwinCATS neighborhoods with less car access than the state average. Along with a small swath in southern St. Joseph and northern St. Joseph Township, these low-access neighborhoods are heavily concentrated in Benton Harbor and Benton Township. This acute lack of access corroborates the many pedestrian and bicyclist crashes in Benton Harbor and Benton Township, and it throws into stark relief the many obstacles to non-motorized transportation in this area (see Section 3.2).

**Figure 3.8:** Map of TwinCATS Neighborhoods with Prevalence of Households without Cars, 2005-2009



Data are from the Merican Community Survey, 2005-2009. Colored regions of map represent neighborhoods with car ownership lower than state average.

## Section 3.6: Planning and Policy Environment

Regional non-motorized plans such as this one necessarily exist within a broader planning and policy context, consisting of federal and state policy, the policies and plans of neighboring regions, as well as those of the individual municipalities that make up the TwinCATS area. This section takes a brief look at this planning and policy environment.

### Federal Policy

Current federal transportation legislation is spelled out in the 2005 bill SAFETEA-LU (Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users). This legislation lays out a number of planning requirements centered on non-motorized transportation. In a March, 2010 policy statement, the federal Department of Transportation (DOT) highlighted some of these requirements:

- The metropolitan planning process will address the safety of non-motorized users (23 CFR 450.306(a)).
- As part of their minimum standards, metropolitan transportation plans will include pedestrian walkways and bicycle facilities (23 CFR 450.322(f)).
- Metropolitan plans and transportation improvement programs will provide for the development and management of transportation facilities that include “pedestrian walkways and bicycle transportation facilities” (23 U.S.C. 134(c)(2)).
- “Representatives of users of pedestrian walkways and bicycle transportation facilities” must also be targeted by documented public participation plans (23 CFR 450.210(a)).

In addition to these planning requirements, the federal DOT also stated that transportation agencies should “consider walking and bicycling as equals with other transportation modes.” In doing so, the federal DOT urges transportation agencies to “go beyond minimum design standards” for non-

motorized facilities and to develop facilities to meet the anticipated demand for walking and biking. For the full text the recent federal DOT policy statement, see [http://www.fhwa.dot.gov/environment/bikeped/policy\\_accom.htm](http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm).

### State Policy

The basis for Michigan transportation policy is contained in Public Act 51, passed in 1951. This act, as currently amended, requires at least one percent of state transportation funds to be spent on non-motorized transportation. Recently, the state of Michigan bolstered this commitment to non-motorized funding with the passage of Public Acts 134 and 135. These acts reaffirm the one percent requirement for non-motorized funding, as well mandating that local agencies develop 5-year programs for non-motorized facility improvements. The acts also enumerate the elements of complete streets policies and encourage local agencies to adopt them.

In addition to adopting a state-level complete streets policy, the state of Michigan has also been involved in non-motorized planning. The state’s 2005-2030 expresses the legitimacy of non-motorized travel on the state’s roadways and calls for the integration of non-motorized projects into the state’s call for projects.

### Local and Regional Planning

While federal and state policies set a general framework for the development of non-motorized facilities, a number of local and regional plans have taken a more concrete look at non-motorized transportation in Southwest Michigan.

- The Michigan Departments of Transportation and Natural Resources jointly produced a plan in 2007, entitled Michigan Trails at the Crossroads, to build a connected trail network across the state building new and upgrading existing facilities.
- AASHTO and the Adventure Cycling Association have combined to develop

## Section 3.6 (continued)

a U.S. bike route system that connects mapped routes across the country. One such route, U.S. Bike Route 35, passes through Southwest Michigan and the TwinCATS area. For more information, see <http://www.swmpc.org/usbr35.asp>.

- The Indiana-Michigan River Valley Trail is the product of an ongoing partnership between federal, state, county, and local officials to link destinations in southern Berrien County to northern Indiana via non-motorized trail. For more information, see <http://www.swmpc.org/inmitrail.asp>.
- The Harbor Country Hike and Bike Plan was adopted in 2010 to coordinate the non-motorized facilities in Chikaming Township, the City of New Buffalo, New Buffalo Township, Three Oaks Township, Grand Beach, and the Village of Three Oaks. For the full plan, see [http://www.lapinc.net/hchbplan/vision\\_plan.pdf](http://www.lapinc.net/hchbplan/vision_plan.pdf).
- The Friends of the McCoy Creek Trail is a group founded in 2004 that acts in a planning capacity to develop a trail network in Buchanan along McCoy Creek.

## Section 4: Design Resources

### Design Guidance

There are a number of resources that communities can turn to for guidance in selecting and implementing the best possible walking and biking facilities. These resources come from a number of sources: the Federal Department of Transportation (DOT) and its subsidiary groups, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA); prominent transportation associations, such as the Institute of Transportation Engineers (ITE) and the American Association of State Highway and Transportation Officials (AASHTO); numerous state and local transportation agencies, such as the Maryland State Highway Administration and the Washington State Department of Transportation; and other groups, including consultancies such as Parsons Brinckerhoff and other professional associates such as the National Association of City Transportation Officials (NACTO).

Below, an abbreviated list of potential design resources is given, starting with the official guidelines that are most central to accepted transportation practice, and moving on to a number of other sources that may be useful in diagnosing and addressing a variety of obstacles to walking and biking.

#### Americans with Disabilities Act (ADA) Guidelines

While there are numerous factors that go into designing appropriate non-motorized facilities, it is important that such facilities at a minimum conform to the basic requirements set out in ADA guidelines. The most recent set of ADA guidelines adopted by the federal DOT (available online at <http://www.access-board.gov/ada-aba/ada-standards-dot.cfm>) became effective in 2006. In dealing specifically with public paths, these guidelines address required path widths, curb ramp design, and connection to other transportation facilities such as bus stops.

In addition to DOT's current ADA guidelines, the Federal Access Board has also drafted a set of accessibility guidelines specifically for pedestrian

facilities with road rights-of-way (available online at <http://www.access-board.gov/prowac/nprm.htm>). These draft guidelines contain more detailed specifications for design elements such as street crossing, pedestrian islands, pedestrian signs and signals, and street furniture.

#### AASHTO and ITE Guidebooks

A series of AASHTO and ITE guidebooks are the most frequently cited sources of non-motorized roadway design standards. AASHTO has design guides specific to both bicycle and pedestrian facilities: *The AASHTO Guide for the Development of Bicycle Facilities* (1999) and *The AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities* (2004). The guides address the process of facility selection, as well as the minimum and desired design features of a variety of facility types. These features include such aspects as width, slope, surface quality, signs and markings, and design speeds. Neither guide is available in free electronic format, but both can be purchased from the AASHTO bookstore (<https://bookstore.transportation.org/>). Additionally, AASHTO has issued a draft version of a new *Guide for the Planning, Design, and Operation of Bicycle Facilities*, which is available for free online (<http://design.transportation.org/Documents/DraftBikeGuideFeb2010.pdf>)

Similarly to AASHTO, ITE has published separate guides for pedestrian (*Design and Safety of Pedestrian Facilities: An ITE Recommended Practice* (1998)) and bicycle (*Innovative Bicycle Treatments: An ITE Informational Report* (2002)) facilities, both of which are available for purchase online (<http://www.ite.org/emodules/scriptcontent/Orders/index.cfm>). The pedestrian guide discusses a wide range of facilities and offers specific recommendations for implementation in a variety of settings. The bicycle guide contains similar content, though it focuses instead on discussing the various advantages and disadvantages of different bicycle facilities without offering concrete recommendations for specific contexts.

## Section 4 (continued)

### DOT Guides and Selection Tools

In addition to the above guides, the federal DOT has released a number of non-motorized facility selection and design tools. The primary two tools are both from FHWA: *PEDSAFE: Pedestrian Guide and Countermeasure Selection System* (2004) and *BIKESAFE: Bicycle Countermeasure Selection System* (2006). Both guides are available in physical copy free of charge and can be ordered online: [http://safety.fhwa.dot.gov/ped\\_bike/ped\\_bike\\_order/](http://safety.fhwa.dot.gov/ped_bike/ped_bike_order/). Additionally, both guides can be accessed online at <http://www.walkinginfo.org/pedsafe/> and <http://www.bicyclinginfo.org/bikesafe/>, respectively. The guides contain a detail listing of non-motorized design measures, organized by purpose, and with a summary of use considerations and rough cost estimates. The guides also contain over 70 case studies of various measures as they have actually been implemented. Additionally, the online versions of the guides also feature automated selection tools, in which users specify general road-way conditions and desired outcomes, the selection tool produces a list of candidate design measures.

Finally, both FHWA and FTA have published guidelines for facilitating pedestrian linkages to transit. In FTA's *Improving Pedestrian Access to Transit* (1998, <http://safety.fhwa.dot.gov/saferjourney/library/pdf/fta.pdf>) and FHWA's Pedestrian Safety Guide for Transit Agencies (2008, [http://www.walkinginfo.org/training/collateral/resources/transit\\_guide.pdf](http://www.walkinginfo.org/training/collateral/resources/transit_guide.pdf)), the specific design and logistics considerations for allowing pedestrians to easily access busses and trains are considered.

### Other Non-Motorized Facility Guides

While the above ADA, AASHTO, ITE, and DOT guidelines, guidebooks, and selection tools are detailed and comprehensive in their treatment of walking and biking facilities, a number of other design guides offer complimentary information. These guides are too numerous to list in full here, but a number of useful lists exist online. The National Complete Streets Coalition compiles one such list. On their Resources webpage <http://www.completestreets.org/complete-streets-fundamentals/resources/>,

<http://www.completestreets.org/complete-streets-fundamentals/resources/>, they provide links to several dozen non-motorized guides from states, municipalities, metropolitan planning organizations, and private organizations. This resources page is also a useful location for finding examples of non-motorized policies at various levels of government, reports on non-motorized trends and conditions, as well as basic information on the relevance of non-motorized travel.

Finally, FHWA has a bicycle and pedestrian guidance webpage in which they provide links to official memoranda on non-motorized design issues, as well official responses they have given to design process inquiries. The page can be found at <http://www.fhwa.dot.gov/environment/bikeped/guidance.htm>