



**Appendix 3:**  
**Needs Assessment**



# ACTIVE CHOICES:

Champaign County Greenways & Trails Plan

NEEDS ASSESSMENT

December 2012



**Active Choices: Champaign County Greenways & Trails Plan  
Needs Assessment 2012**

**GLOSSARY**

*Definitions were updated in 2014 to match those used in the final Active Choices Plan.*

**Accessibility:** the ability to reach and use infrastructure in a system according to physical distance from the infrastructure.

**Active transportation:** any self-propelled, human-powered transportation mode, including walking and bicycling.

**Bikeway:** a generic term for any road, street, path, or way that in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

**Connectivity:** the capacity to move from one place to another in a system.

**Greenway:** a corridor of open land managed for conservation and/or recreation. Greenways may follow natural land or water features such as rivers, shorelines or ridges, or human landscape features such as abandoned railroad corridors, trails or canals. Greenways may form connections between communities, parks, historic and cultural sites, and nature preserves. Although they differ in location and function, they provide recreational benefits, protect natural areas or enhance natural beauty and quality of life, and/or stimulate economic development opportunities in neighborhoods and communities.

**Trail:** a type of greenway which can accommodate one or many types of non-automobile users, including pedestrians, bicyclists, roller skaters, and wheelchair users. Trails can be used for recreation and/or transportation purposes, and can connect different land uses and facilities. Trails can be found in parks, natural environments, and other designated corridors.

## **Active Choices: Champaign County Greenways & Trails Plan Needs Assessment 2012**

Greenways and trails are important for many Champaign County residents because they believe this system improves their quality of life.<sup>1</sup> The system also provides people with the opportunity to engage in active transportation when they travel around the County as an alternative to automobiles. Given this significance, this needs assessment is an effort to gauge the provision of the public greenways and trails for people in the County. In the following sections, the connectivity and accessibility of our greenways and trails system is examined. These two indicators help evaluate how pedestrians and cyclists experience our current system; what type of infrastructure is available to these users; and where there are missing links in the system. This analysis will help determine how the system can be maintained currently and improved in the future to better serve the people of Champaign County.

### ***Greenways and Trails Connectivity***

Connectivity is the capacity to move from one place to another in a system. The greenways and trails in Champaign County together create a comprehensive system with many ways to travel between each segment. A critical step for improving this system is examining where current connectivity is low, medium and high. Once the quality of connectivity is established for greenways and trails, improvements to the system can be addressed where additional connectivity is most necessary.

#### *Trails Connectivity*

For the purpose of this analysis, the connectivity of the trails is measured according to the system's integration into existing road infrastructure, since people often use the road network to travel to and from the trails.<sup>2</sup> Chances are a cyclist will ride on the roads to reach bicycle infrastructure and a pedestrian will travel on a sidewalk along a road to reach a shared-use path.

The following spatial analysis examines the density of connection points per square mile of block groups in the County to measure trail connectivity. This will clarify how travelers interact with the trails system through connection points (i.e. entrances, exits, and intersections with the road network), and where connectivity of trails can be improved to enhance the regional system (*Figure 1*).

#### *Greenways Connectivity*

Champaign County trails connectivity is used in this analysis to determine the connectivity of greenways in the system (*Figure 1*). Greenways are often destinations in the greenways and trails system and not a means of travel. However, the existence of a trail network near a greenway and the quality of the trail's connectivity may increase the connectivity of the greenway to the greenways and trails system. Imagine if there are no trails near a greenway, then people must use sidewalks or the

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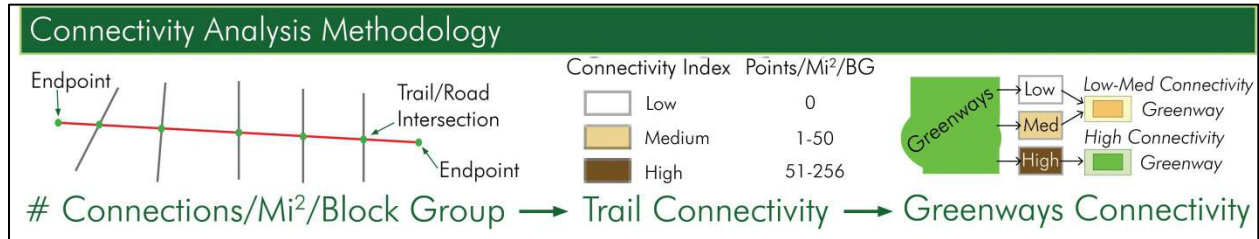
<sup>1</sup> CCRPC. Champaign County Greenways & Trails Plan. Appendix 3: Resident Survey. February 2004.

<sup>2</sup> Victoria Transportation Policy Institute. Roadway Connectivity: Creating More Connected Roadway and Pathway Networks. Web accessed 2012. <http://www.vtpi.org/tm/tm116.htm>

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road network to reach other segments of the greenways and trails system. If there are trails near the greenway, then people can use this infrastructure to connect to the regional system.<sup>3</sup>

Figure 1



### Trails Connectivity Analysis Results

Connectivity in the Champaign County trails system is generally limited to Champaign, Urbana, Savoy, Rantoul and Mahomet, as trail infrastructure is lacking in the other municipalities (Figure 2). In Champaign and Urbana, the highest connectivity exists near downtown Champaign, the University of Illinois, and along Philo Road, due to the trail infrastructure integration into the roadways in the area (Figure 3).

Connectivity is low in portions of northwest Champaign, western Champaign, central Urbana, and southern Savoy because of the lack of trail infrastructure, although these areas may make up for low trail infrastructure connectivity with complete streets in a grid-like, dense street network, which are often more bicycling and walking-friendly.<sup>4</sup> Mahomet has higher connectivity near the center of the Village, and fair connectivity in the surrounding areas, except in the southern portions (Figure 4). Rantoul has higher connectivity in its central and southern areas, but lacks connectivity in the north, southwest and southeast (Figure 5).

### Future Research

A complete ArcGIS sidewalk layer would help assess pedestrian access to the trails system more accurately. Currently, this layer is being developed for the urbanized area, but could be expanded to include the remainder of Champaign County for future research on regional transportation systems.

Certain areas with low trails connectivity may not need more trail infrastructure if road characteristics are present that make bicycling and walking easier, such as a well-connected street network, complete streets, dense streets, and/or low average daily traffic. These areas of the street network should be

<sup>3</sup> Please refer to the appendix for the complete trails and greenways connectivity analysis methodology.

<sup>4</sup> Smart Growth America. Complete Streets: Fundamentals. Web accessed 2012.  
<http://www.smartgrowthamerica.org/documents/cs/cs-brochure-features.pdf>.

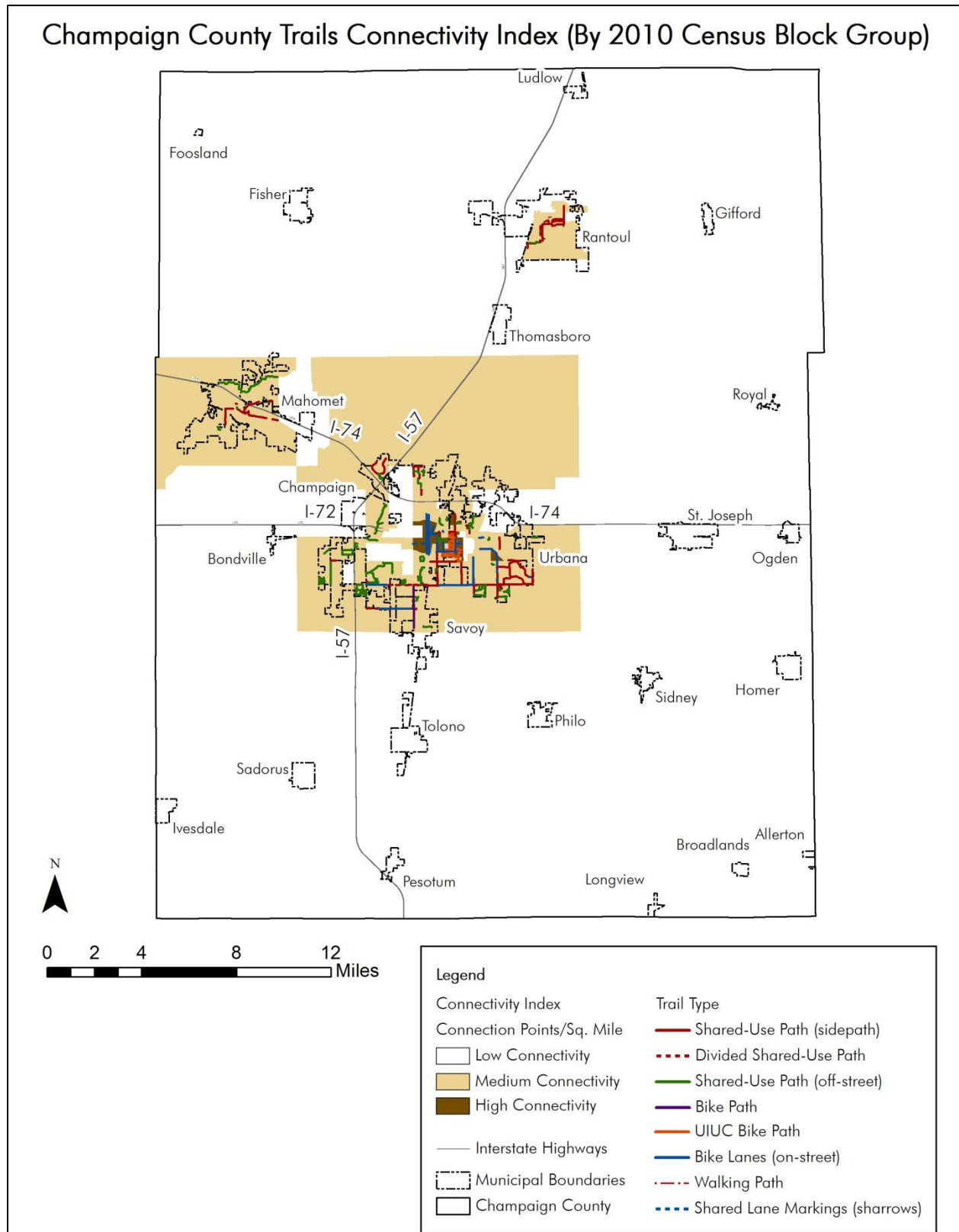
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studied further to assess options for making bicycling and walking more connected to the existing trails system.

Connectivity throughout the Champaign County trails system may be improved by using the signage described in the *Greenways & Trails Design Guidelines, Logos and Signage* document. The trails in the system can be better connected if information is given regarding location and directional information about their current location and destinations. This is especially true for areas that are connections between segments of the trails system without actual trail infrastructure.

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**Figure 2**





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Figure 3

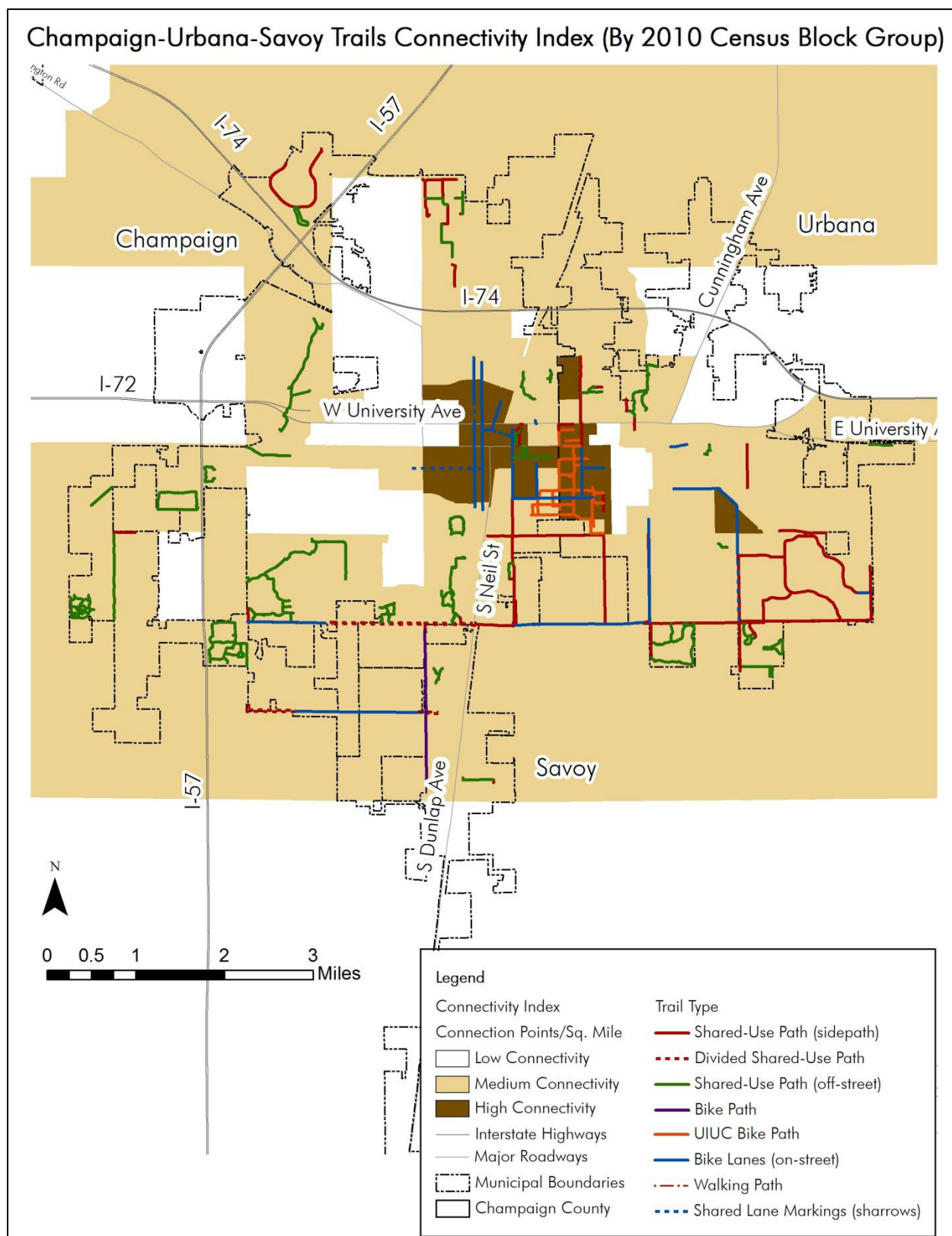
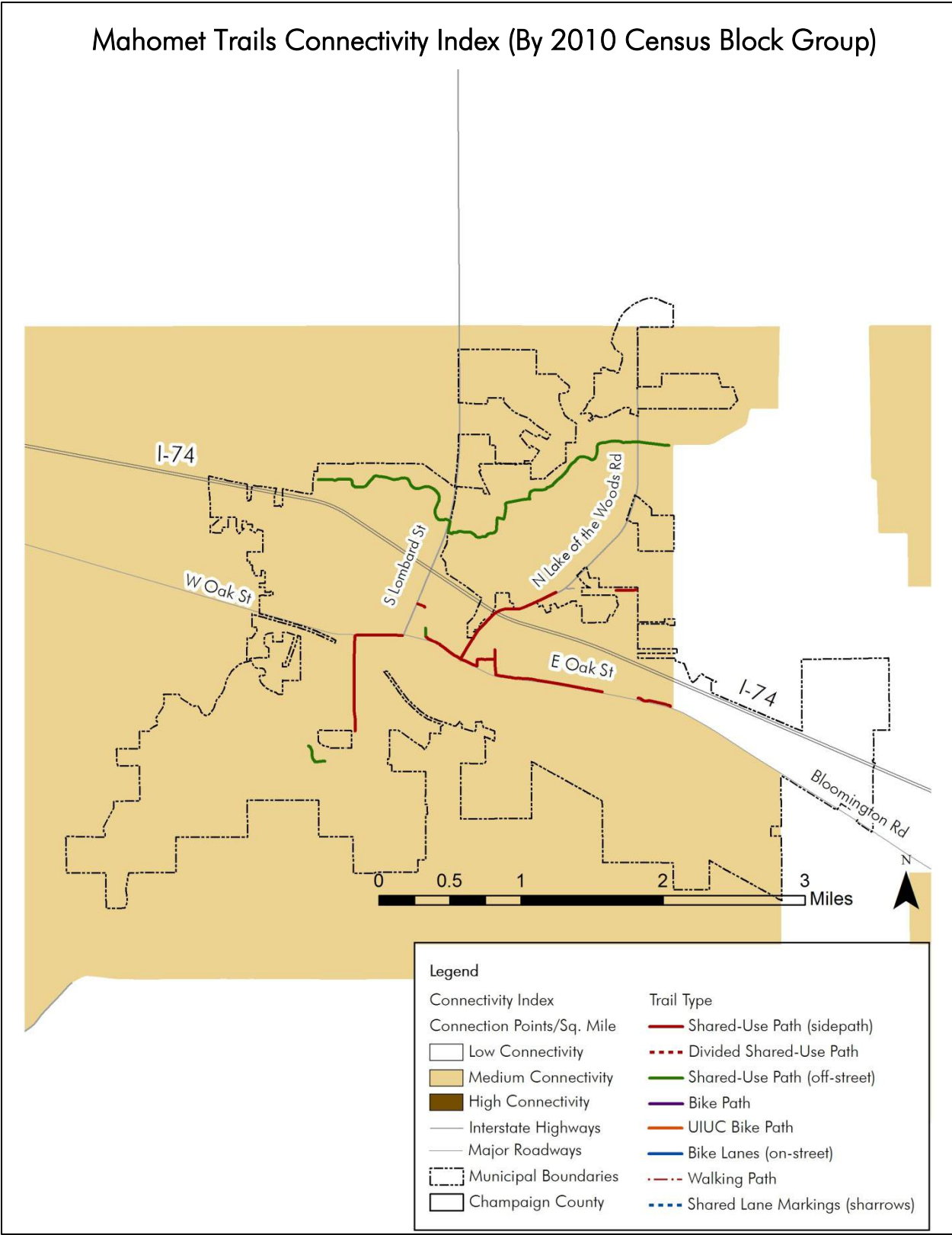


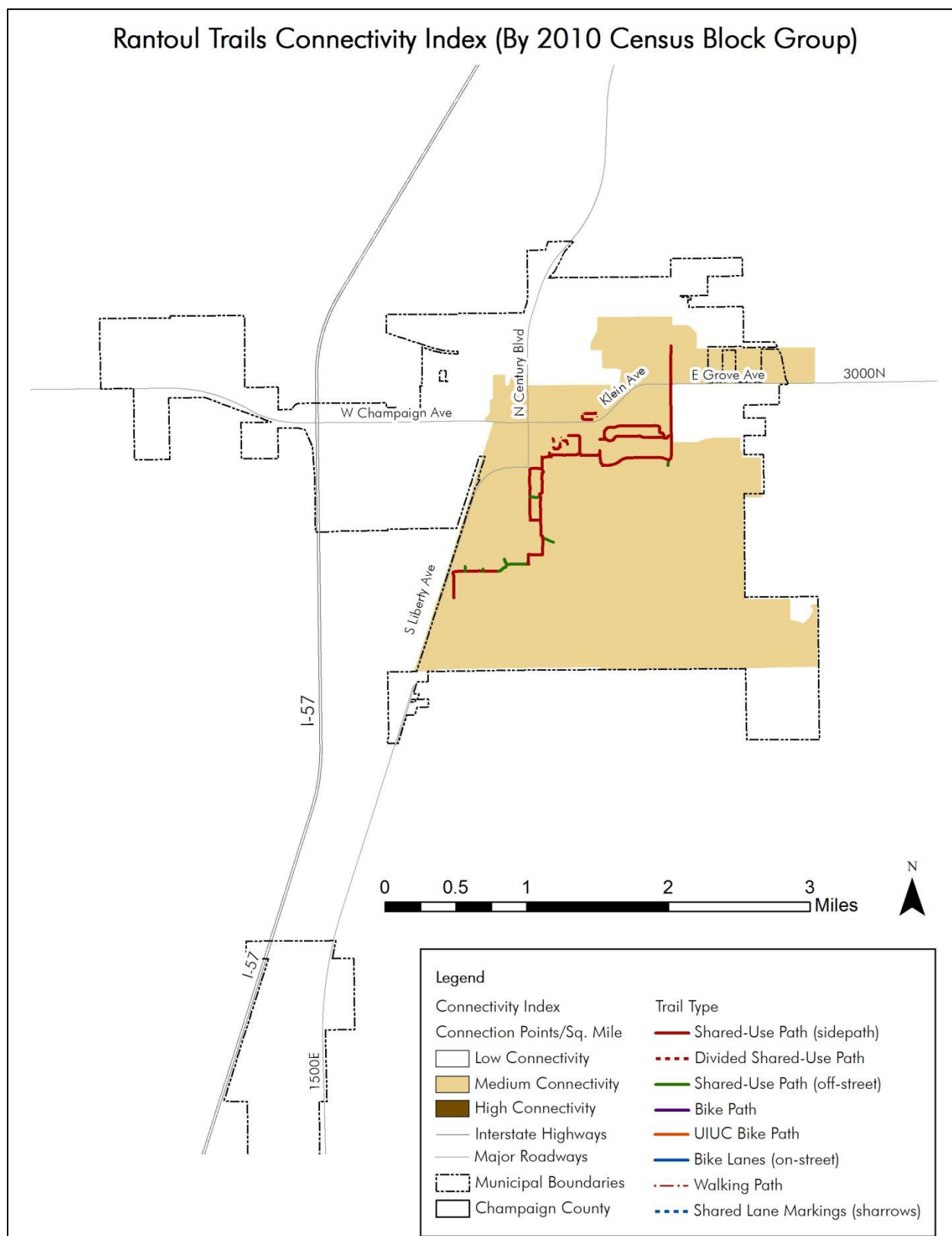


Figure 4



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Figure 5



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*Greenways Connectivity Analysis Results*

The most connected greenways in Champaign County are situated in Champaign and Urbana (Figure 6). These places are well served by road infrastructure and the trail network with many intersections with the street network throughout. The medium connectivity greenways are situated in Champaign, Urbana, Rantoul and Mahomet (Figure 7). These greenways are connected to road infrastructure or the trails network, but lack the density of intersections present in the high connectivity greenways. Greenways in the remaining areas of Champaign County have low connectivity to the trails system (Figure 8). The twenty largest greenways with low connectivity are shown in the map. These areas are generally in the rural municipalities or are Champaign County Forest Preserves and are in block groups without trail infrastructure.

*Future Research*

A comprehensive, County-wide sidewalk network would help more accurately evaluate the connectivity of the greenways system. This data would help explain the ability of pedestrians to connect to the system.

As the greenways system becomes more integrated into the trails system, research on which greenways contain trails and how long this trail infrastructure reaches outside the greenway would be an important measure of greenway connectivity to the regional system.

***Greenways and Trails Accessibility Opportunities***

Improved connectivity of trails in urban areas between existing infrastructure is a short term opportunity for increasing the connectivity of the greenways and trails system. Places where streets are safe, convenient and accessible to bicyclists, pedestrians and people with disabilities may not need enhanced infrastructure immediately, but signage to provide wayfinding for regional travelers may be useful.

Medium connectivity greenways should be connected to high and low connectivity greenways through trail infrastructure in the medium-term to strengthen regional connections between greenways and trails.

Over the long-term, infrastructure should be planned and built in rural areas to connect low connectivity trails and greenways to existing greenways and trails infrastructure.

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Figure 6

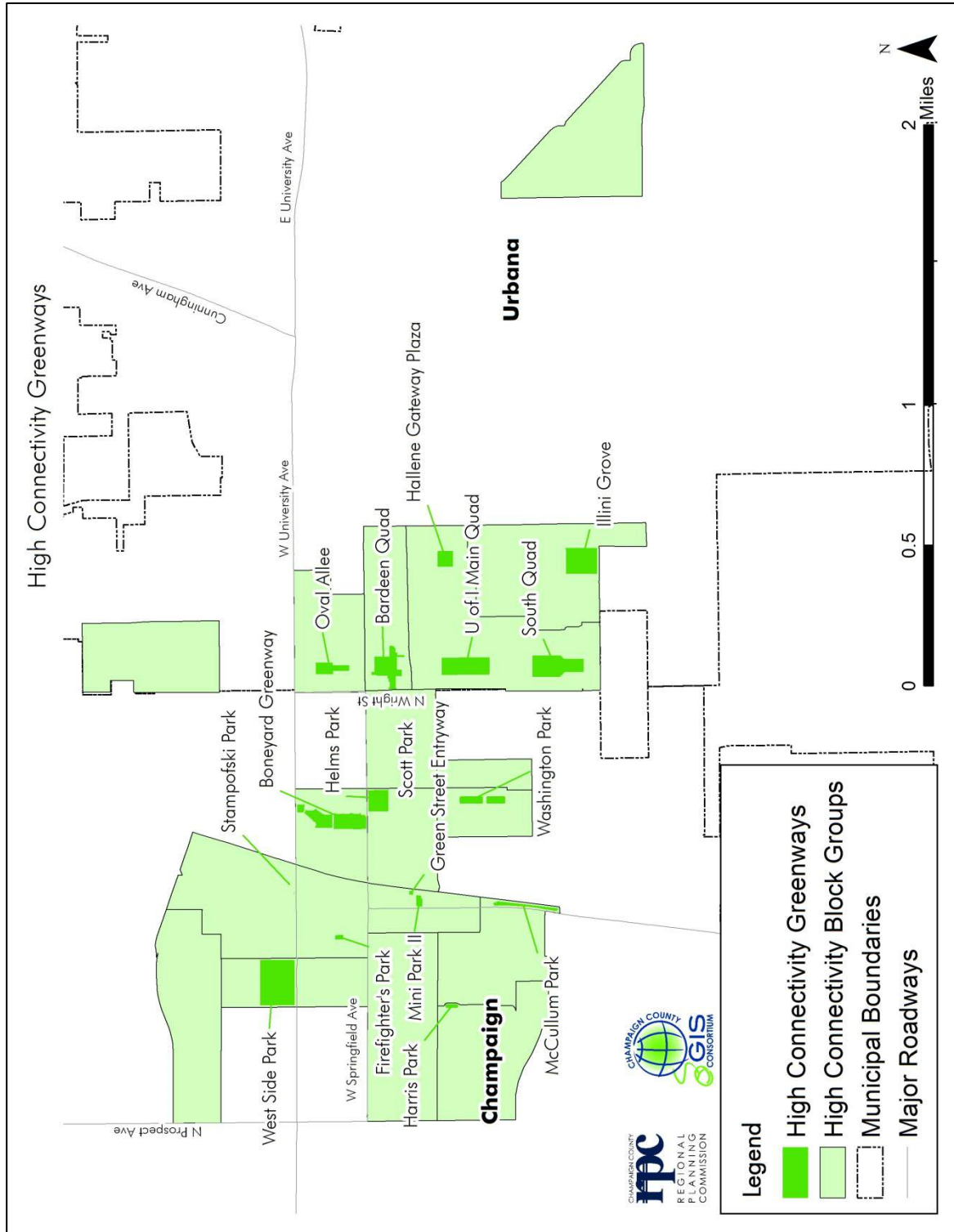
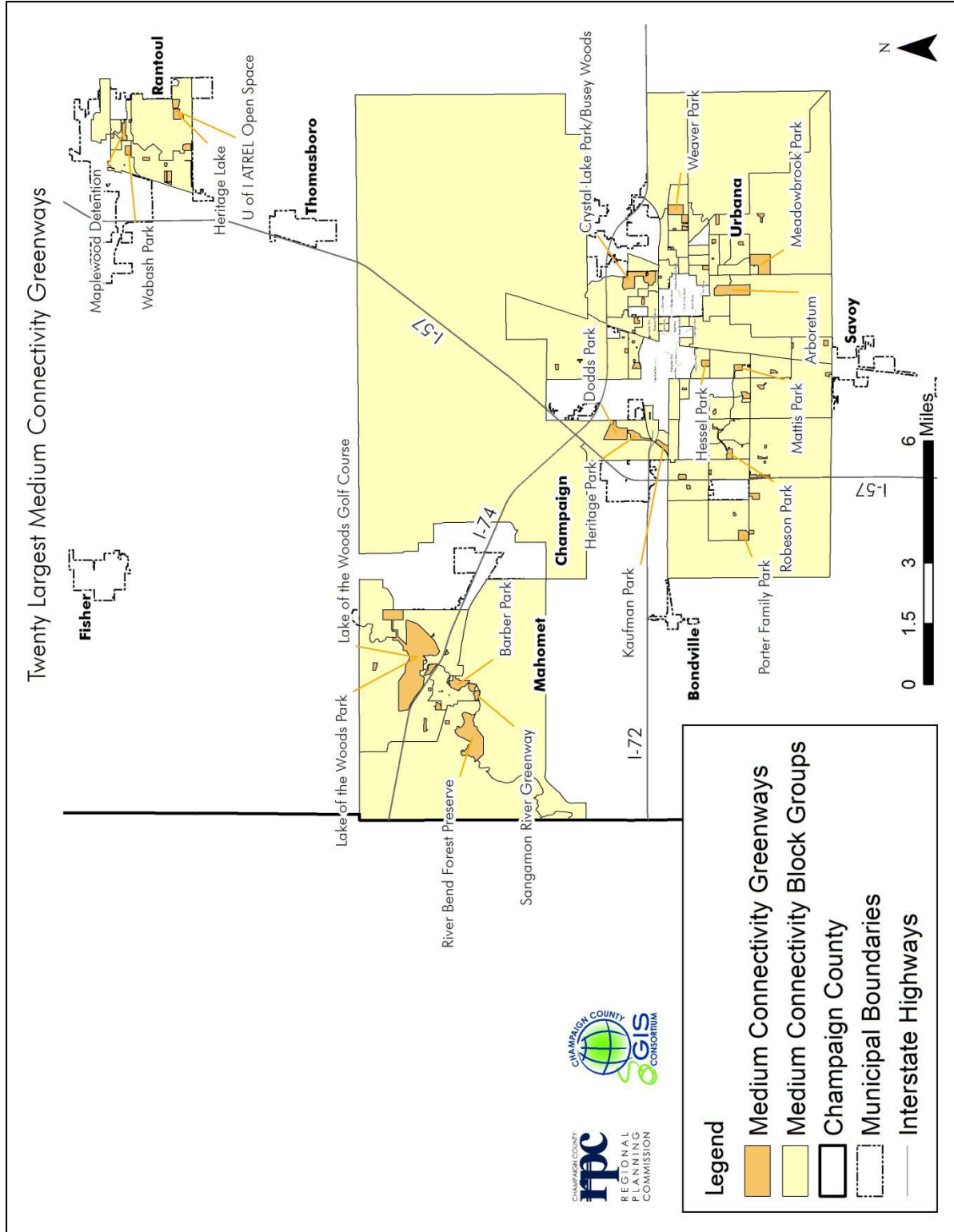
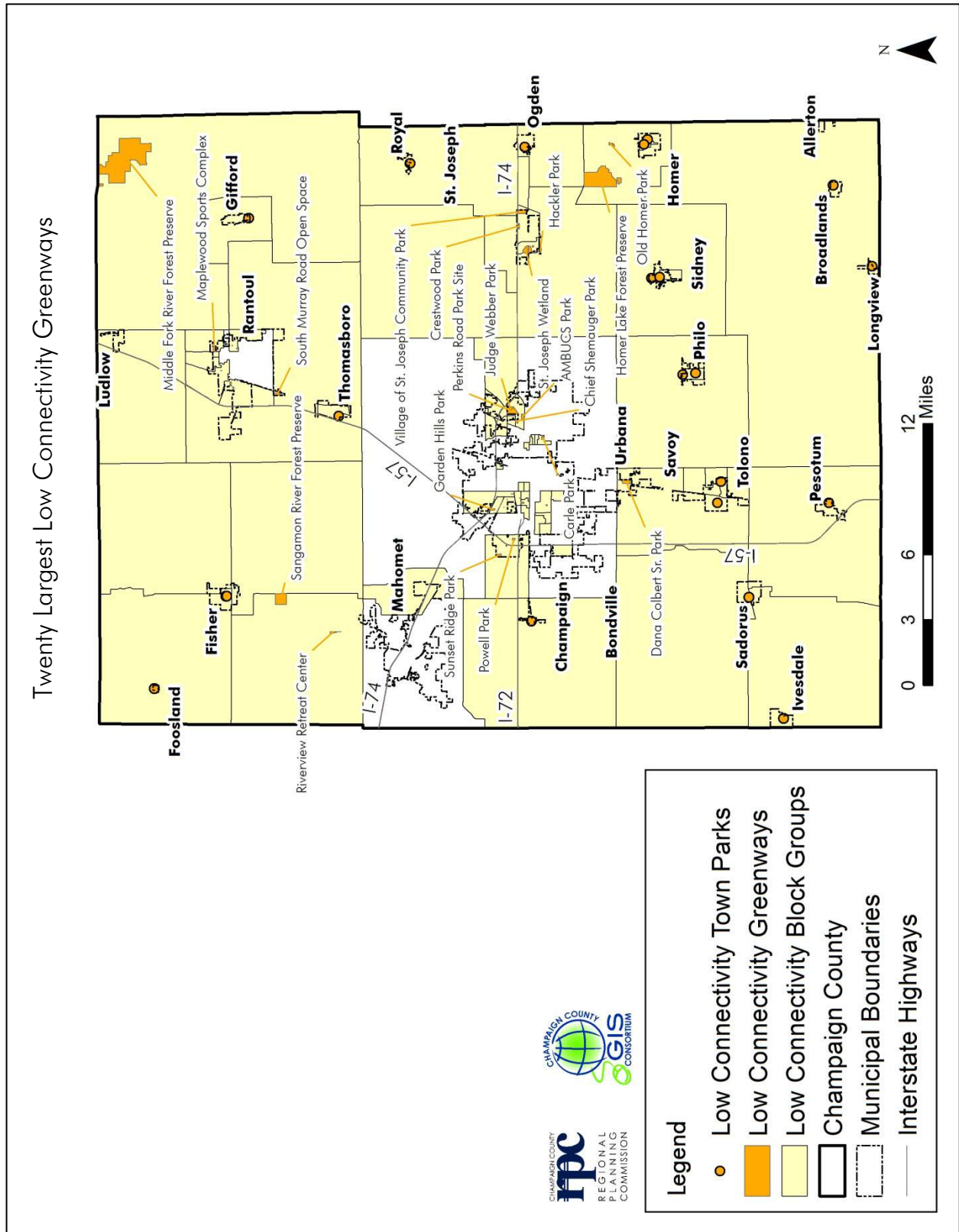


Figure 7



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Figure 8

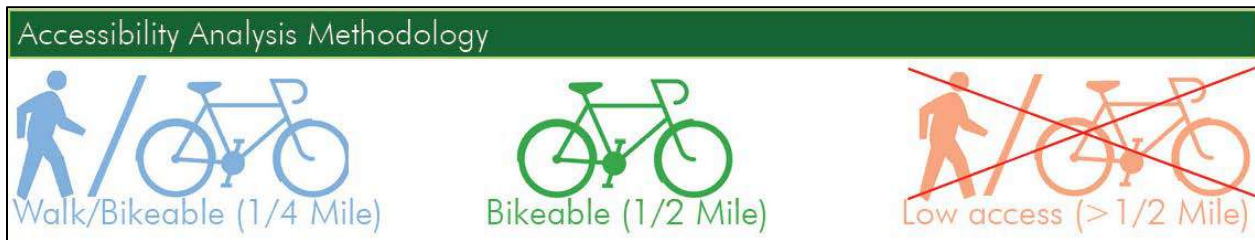




### *Greenways and Trails Accessibility*

Accessibility is the ability to reach and use infrastructure within a system according to physical distance from the infrastructure.<sup>5</sup> Households are often the place where people make the choice to drive, walk or bicycle to their destinations. One factor that may affect this decision is distance from different types of transportation infrastructure. A distance of a quarter mile is generally how far people will walk to use transportation infrastructure<sup>6</sup> and is used as a baseline for walking. A distance of a half-mile is generally a distance that makes people more willing to cycle<sup>7</sup> and is used as a baseline for cycling. For the purpose of this analysis, the accessibility of the Champaign County greenways and trails system is defined as the number of households within a walking or biking distance from the infrastructure (Figure 9). The accessibility of greenways and trails were studied independently to assess the provision of each for people in Champaign County.

Figure 9



### *Trails Accessibility Analysis Results*

In Champaign County, 45 percent of households have walk/biking access to trails and 69 percent have biking access to bicycle or shared-use trails. *Table 1* provides a comprehensive analysis of trails accessibility in the County for areas with accessible parcels. *Figure 10* shows a comparison of the share of walk/bikeable and bikeable households for each place with trails accessibility within Champaign County. Accessibility to the Champaign County trails system is highest in Champaign, Urbana, Savoy, Mahomet and Rantoul (*Figure 11*). Outside of these areas, accessibility to trails is generally lacking because of the absence of trail infrastructure.

In Champaign, residences in the south, southwest, and east have the greatest walking accessibility to walking trails (*Figure 12*). Bicycle infrastructure also exists in these areas and extends into central Champaign and near the University of Illinois. Portions of central, northern and western Champaign lack access to trail infrastructure completely.

<sup>5</sup> Litman, Todd. Evaluating Accessibility for Transportation Planning: Measuring People's Ability to Reach Desired Goods and Activities. Victoria Transport Policy Institute: Sept. 10, 2012.

<sup>6</sup> Tresidder, Mike. Using GIS to Measure Connectivity: An Exploration of Issues. Portland State University: Dec. 2005.

<sup>7</sup> Vernez-Moudon, A.V., Lee, C., Cheadle, A.D., et al., 2005. Cycling and the built environment, a US perspective. *Transp. Res. Part D* 10, 245–261.



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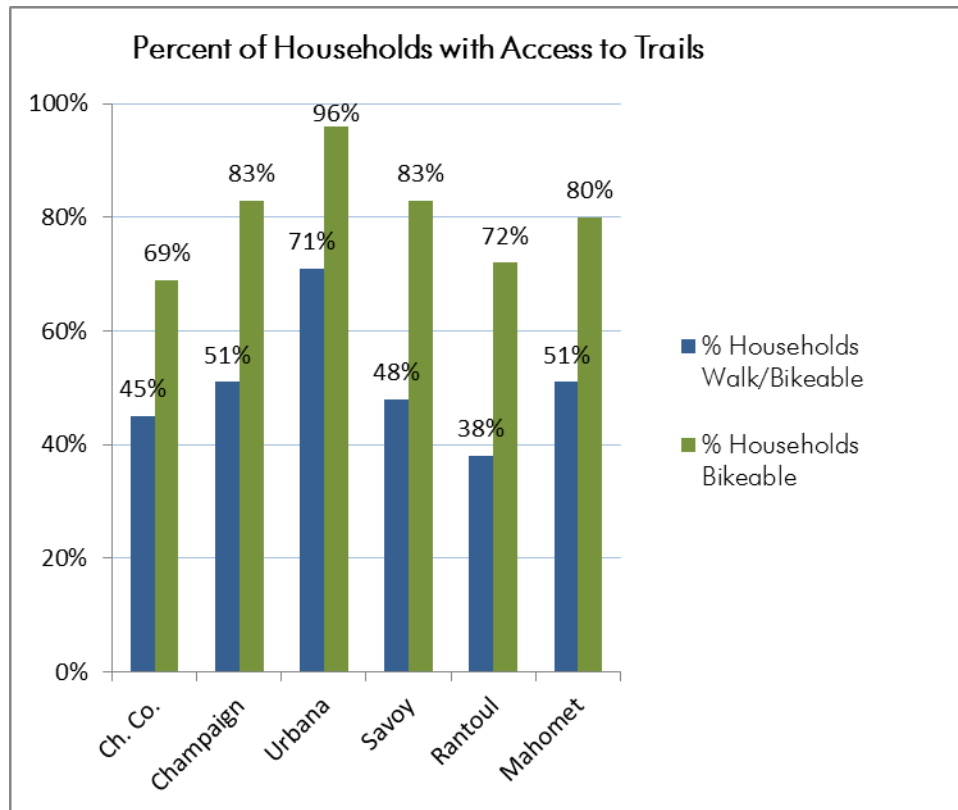
In Urbana, walking accessibility to the trails system is high near the University of Illinois and in the south and southwestern parts of the City. Bicycle access is high in these areas as well with additional access for bicycles in the central and southern parts of the City. Access to trails infrastructure is generally missing in the northeastern portions of Urbana. Savoy has high accessibility for bicycles and walking throughout most of the Village, except in the southeast and southwest.

Mahomet and Rantoul have walking and bicycling accessibility in their central sections (*Figures 13 & 14*). Walking and bicycle accessibility also exists for households along a southwest to northeast axis in both municipalities. Accessibility for both modes is lacking for residences in the northwestern and northern portions of both places.

**Table 1**

<b>Trails Accessibility Analysis Results by Place</b>					
<b>Place Name</b>	<b>Total HH*</b>	<b>Walk/Bikeable HH</b>	<b>% Total</b>	<b>Bikeable HH</b>	<b>% Total</b>
Champaign County	86,246	38,560	45%	59,304	69%
Champaign	33,681	17,224	51%	28,019	83%
Urbana	19,858	14,080	71%	19,108	96%
Savoy	3,087	1,473	48%	2,556	83%
Mahomet	2,579	1,303	51%	2,051	80%
Rantoul	5,438	2,047	38%	3,890	72%
*Households (HH) are at least partially within each respective place.					

**Figure 10**



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*Future Research*

Accessibility measured with a buffer is a fair measure of how people will reach trails infrastructure, but fails to take into account the road and sidewalk infrastructure people will use between home and the trails. A network analysis of this infrastructure with a countywide sidewalk layer, intersection ramps layer, and streets layer would be helpful for determining how people actually access the trails and not simply their distance from them. This type of analysis would also allow other obstacles to be considered such as highways, roads with high motor vehicle traffic, railroads, places that lack sidewalks and other considerable challenges for pedestrians, people with disabilities and cyclists attempting to access trail infrastructure.

An analysis that includes demographic information about populations near the trails infrastructure would reveal more about where accessibility should be improved for the system. Places with characteristics such as lower incomes or lack of motor vehicle access should be considered in decisions about bicycle or pedestrian infrastructure.

Shared-use paths help create access for everyone and may encourage more support of the trails system in the future. These paths should be studied more for their effects on pedestrian-bicycle interactions and safety benefits. Bicycle-only infrastructure is also important in areas where we would like to encourage bicycle use in a safe and efficient manner on pre-existing street infrastructure.

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Figure 11

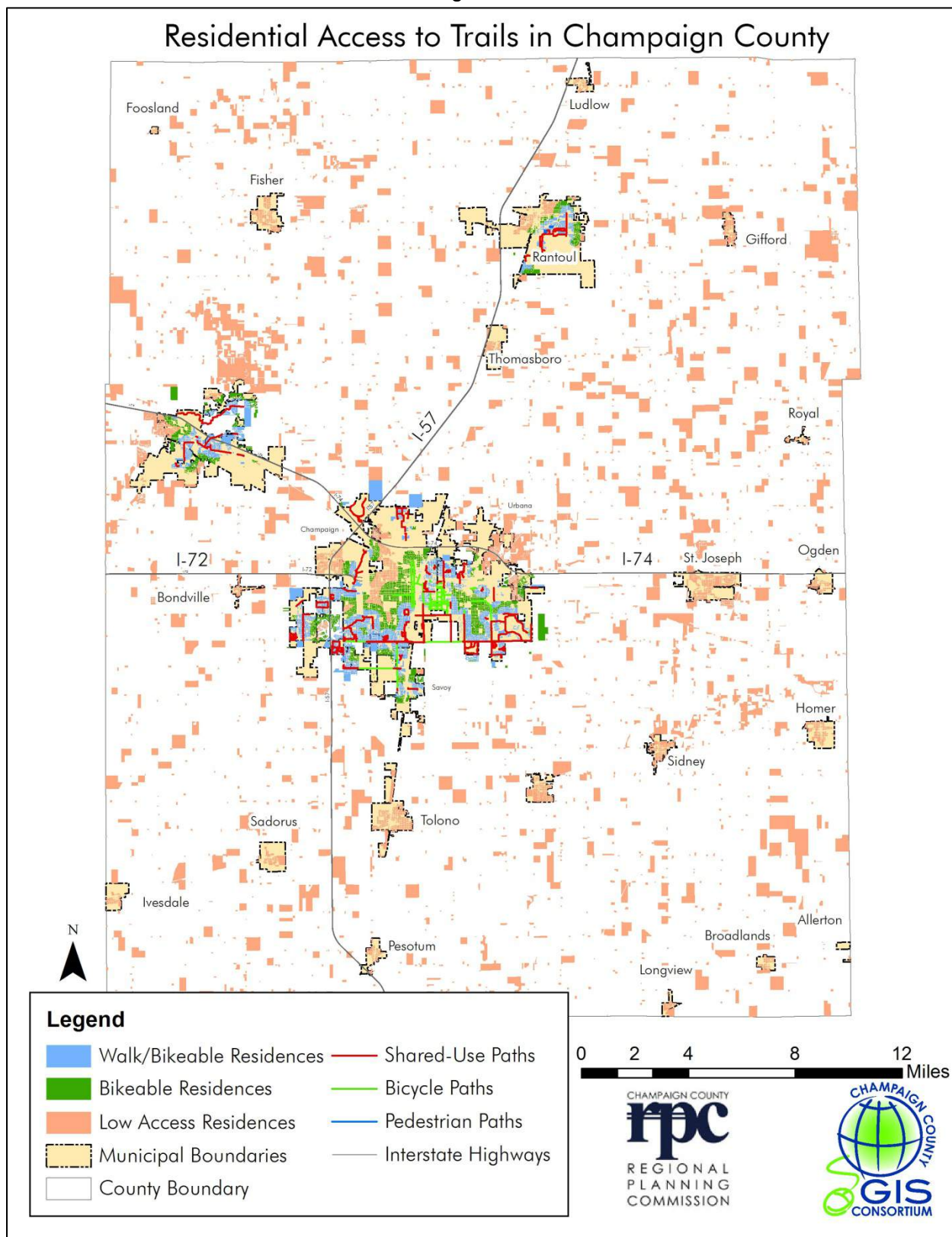


Figure 12

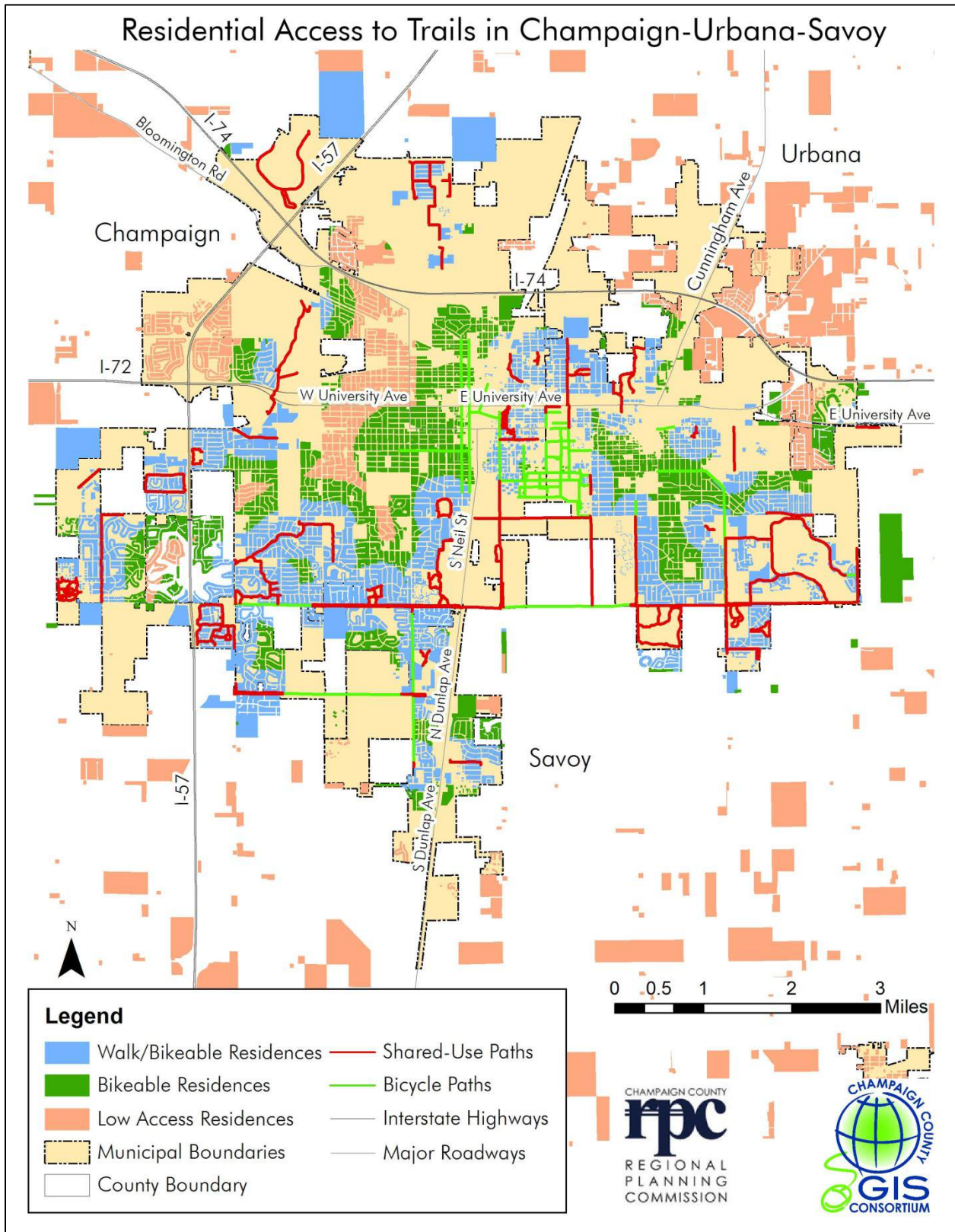




Figure 13

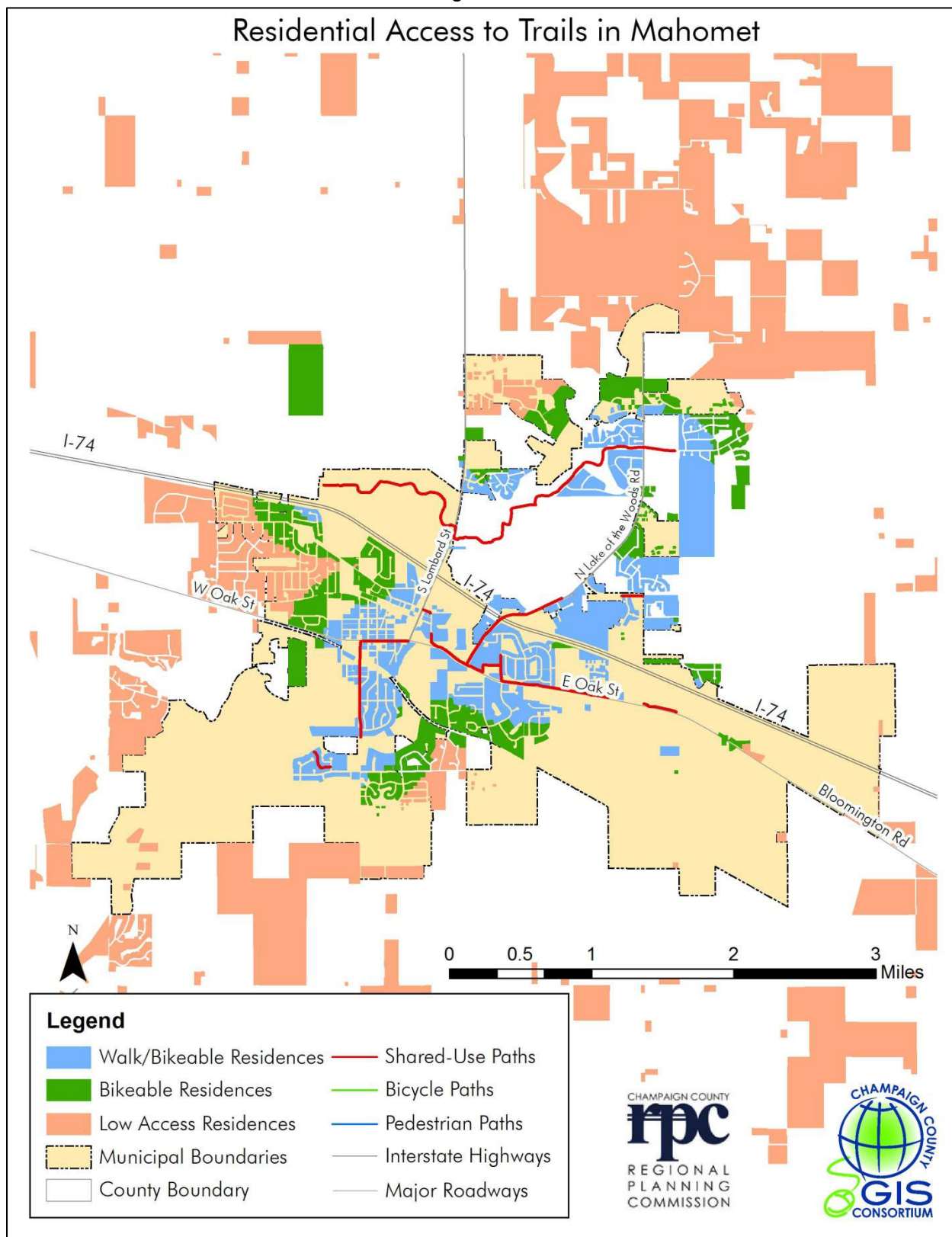
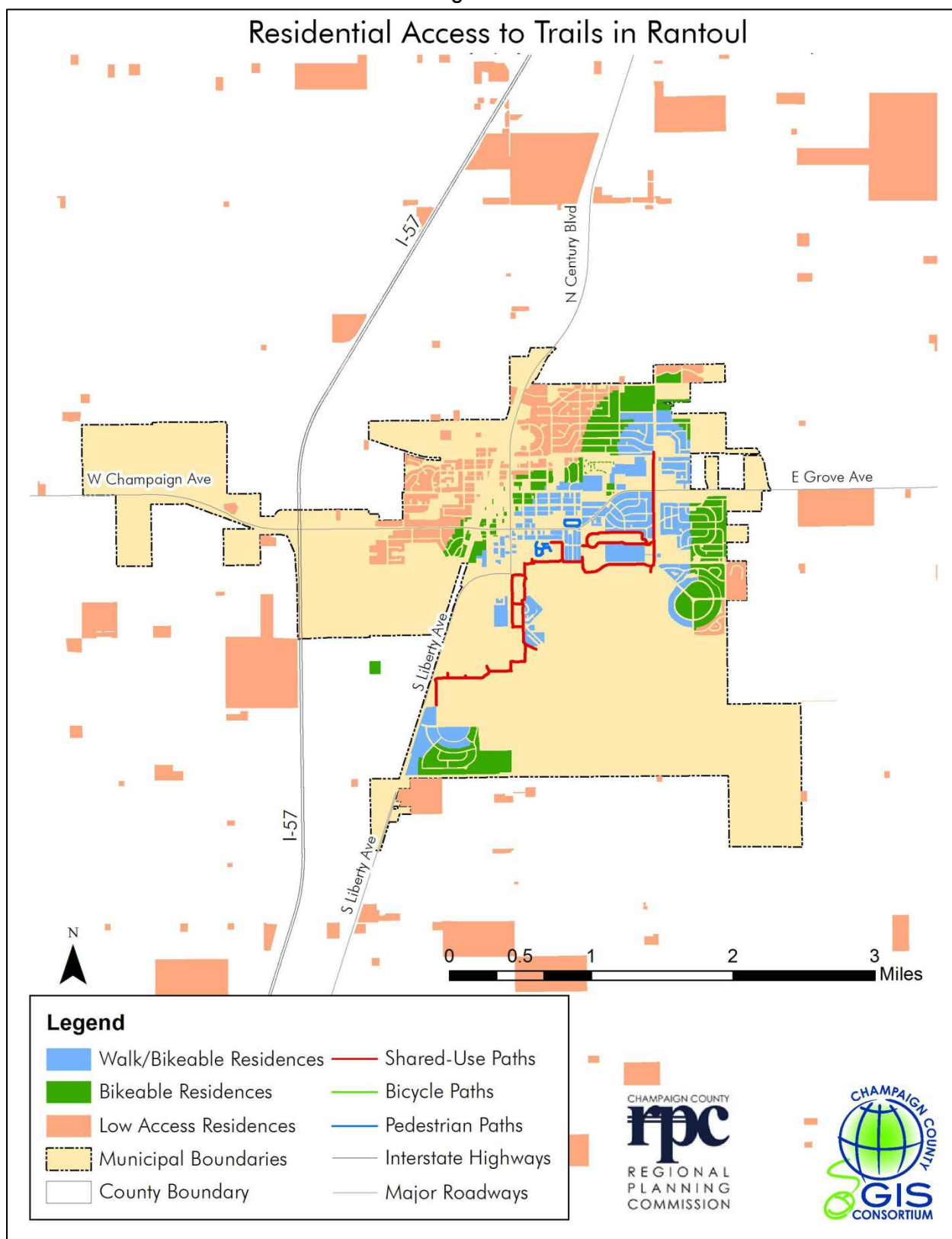


Figure 14



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*Greenways Accessibility Analysis Results*

In Champaign County, 72 percent of households are within a walk/biking distance of a greenway and 90 percent are within a biking distance. *Table 2* is a comprehensive analysis of greenways accessibility in Champaign County by municipality. *Figure 15* provides a comprehensive analysis of greenways accessibility for the most populous municipalities in the County.

Access to greenways for bicyclists is generally better than it is for trails since greenway infrastructure is more pervasive in the County, particularly because rural households have access to large greenways and/or town parks outside of Champaign, Urbana, Savoy, Mahomet and Rantoul (*Figure 16*). In Champaign, household walking access via trails to greenways is widespread, except for portions of the center, southern center and west (*Figure 17*). Bikeway access to greenways is available throughout the City with the exception of small portions of western and southern Champaign. The City of Urbana has widespread walking access to greenway infrastructure and bicycling access from nearly all households with the exception of those in the eastern extremities. Households in Savoy have walking access to the greenways in all but small parts of the southeastern and southwestern parts of the Village. Bicycle access is also available for most households except those in the southern portions. Bicycle and walking accessibility for households in Mahomet and Rantoul follow a pattern similar to trails accessibility with pedestrian and bicycle access following an axis from southwest to northeast (*Figures 18 & 19*). Some households in the southeast and southwest in Mahomet lack any access to greenways, while some households in southeast Rantoul lack access.

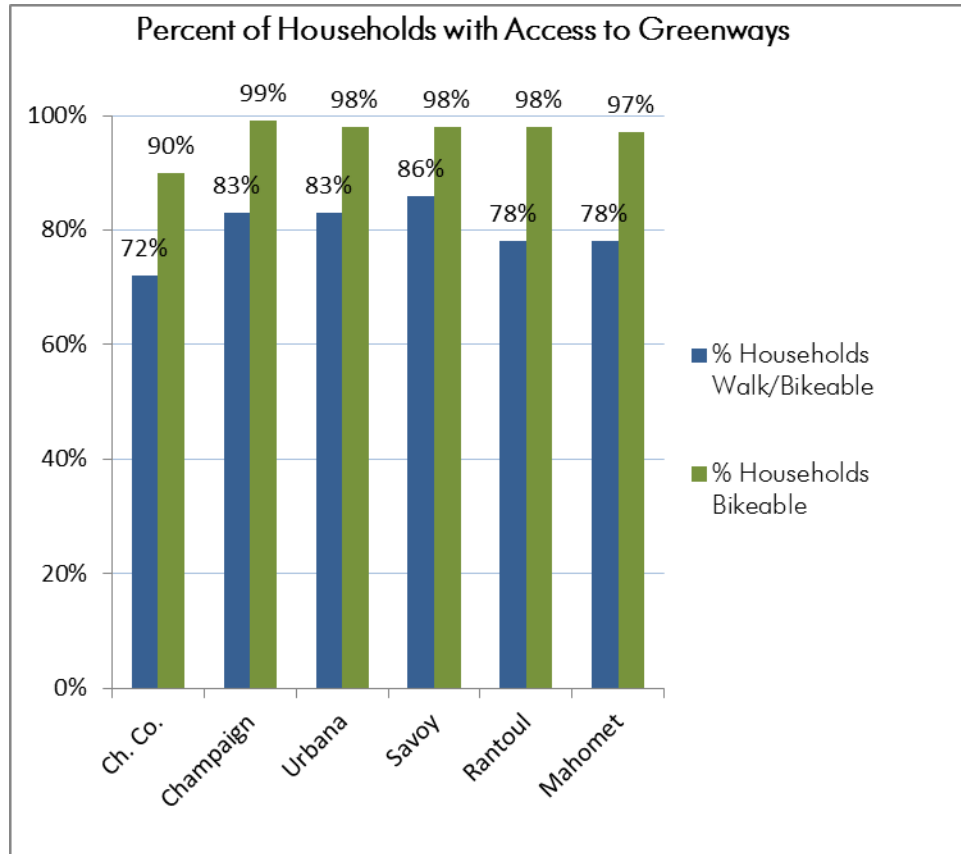


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**Table 2**

Champaign County Greenways Analysis Results by Place					
Place Name	Total HH*	Walk/Bikeable HH	% Total	Bikeable HH	% Total
Champaign County	86,246	61,870	72%	77,192	90%
Champaign	33,681	27,975	83%	33,177	99%
Urbana	19,858	16,557	83%	19,401	98%
Rantoul	5,438	4,215	78%	5,319	98%
Savoy	3,087	2,660	86%	3,035	98%
Mahomet	2,579	1,998	78%	2,490	97%
St. Joseph	1,548	805	52%	1,465	95%
Tolono	1,456	708	49%	1,264	87%
Fisher	783	272	35%	641	82%
Philo	578	298	52%	556	96%
Homer	552	299	54%	522	95%
Sidney	541	208	38%	473	87%
Thomasboro	541	153	28%	458	85%
Gifford	439	81	19%	183	42%
Ogden	347	156	45%	321	93%
Pesotum	264	95	36%	229	87%
Sadorus	215	120	56%	215	100%
Bondville	204	145	71%	175	86%
Broadlands	193	110	57%	193	100%
Ivesdale	157	105	67%	156	99%
Royal	152	69	45%	152	100%
Longview	124	117	94%	124	100%
Foosland	65	65	100%	65	100%
*Households (HH) are at least partially within each respective place.					

Figure 15



#### Future Research

Much like the trails accessibility, greenway accessibility measured with a buffer is a fair measure of how people will reach greenways, but fails to take into account the road and sidewalk infrastructure people will use between home and the green space. A network analysis of this infrastructure with a countywide sidewalk layer, intersection ramps layer, and trails infrastructure layer would be helpful for determining how people actually access the greenways and not just their distance from them. This type of analysis would also allow other obstacles to be considered such as highways, roads with high motor vehicle traffic, railroads, places that lack sidewalks and other considerable challenges for pedestrians, people with disabilities and cyclists attempting to access trails infrastructure.

An analysis that includes demographic information about populations near the greenways infrastructure would reveal more about where connections should be created for the system. Specifically, data about low income households or populations without access to vehicles would help illuminate where the need for increased trail infrastructure in and near greenways may be necessary.

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Town parks are an important part of the greenways system in Champaign County. They provide access to the more rural households of the County, but should be provided better connectivity to the greenways and trails system. Trail connections should be considered in town parks to provide greater regional access to people across the County.

Mixed use tax parcels are difficult to assess with the current residential tax parcels layer. This layer should be further researched to assess the amount of residences and businesses within mixed use parcels like those in downtown Champaign and Urbana.

***Greenways and Trails Accessibility Opportunities***

The accessibility to trails for low access residential parcels should be enhanced in urban areas by continuing to plan and create greenways and trails infrastructure.

Trail infrastructure should be planned and built in rural areas to increase the regional accessibility of the system across Champaign County.

Complete streets projects should be encouraged and cataloged if they are to be a proxy for trail infrastructure in the region.

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Figure 16

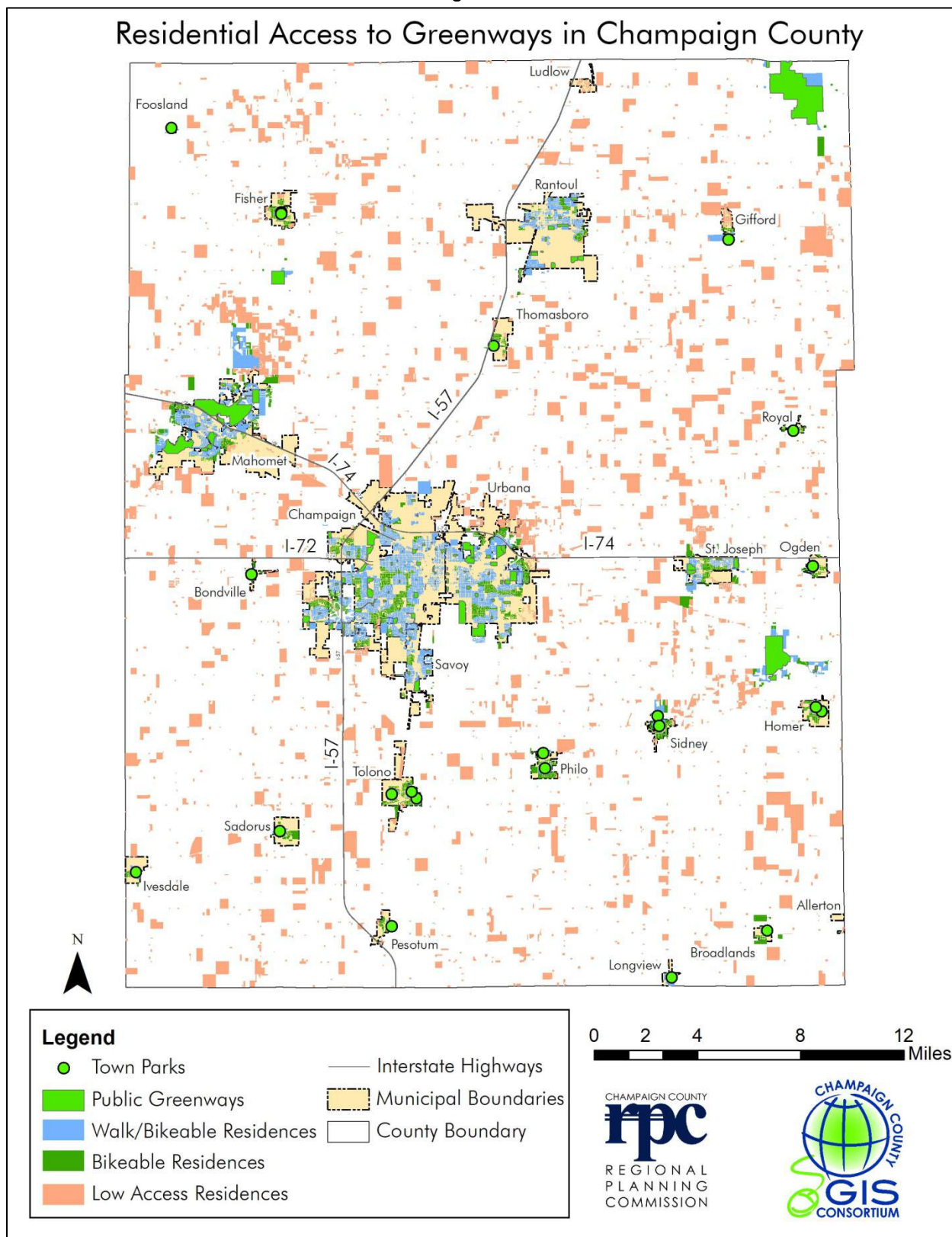


Figure 17

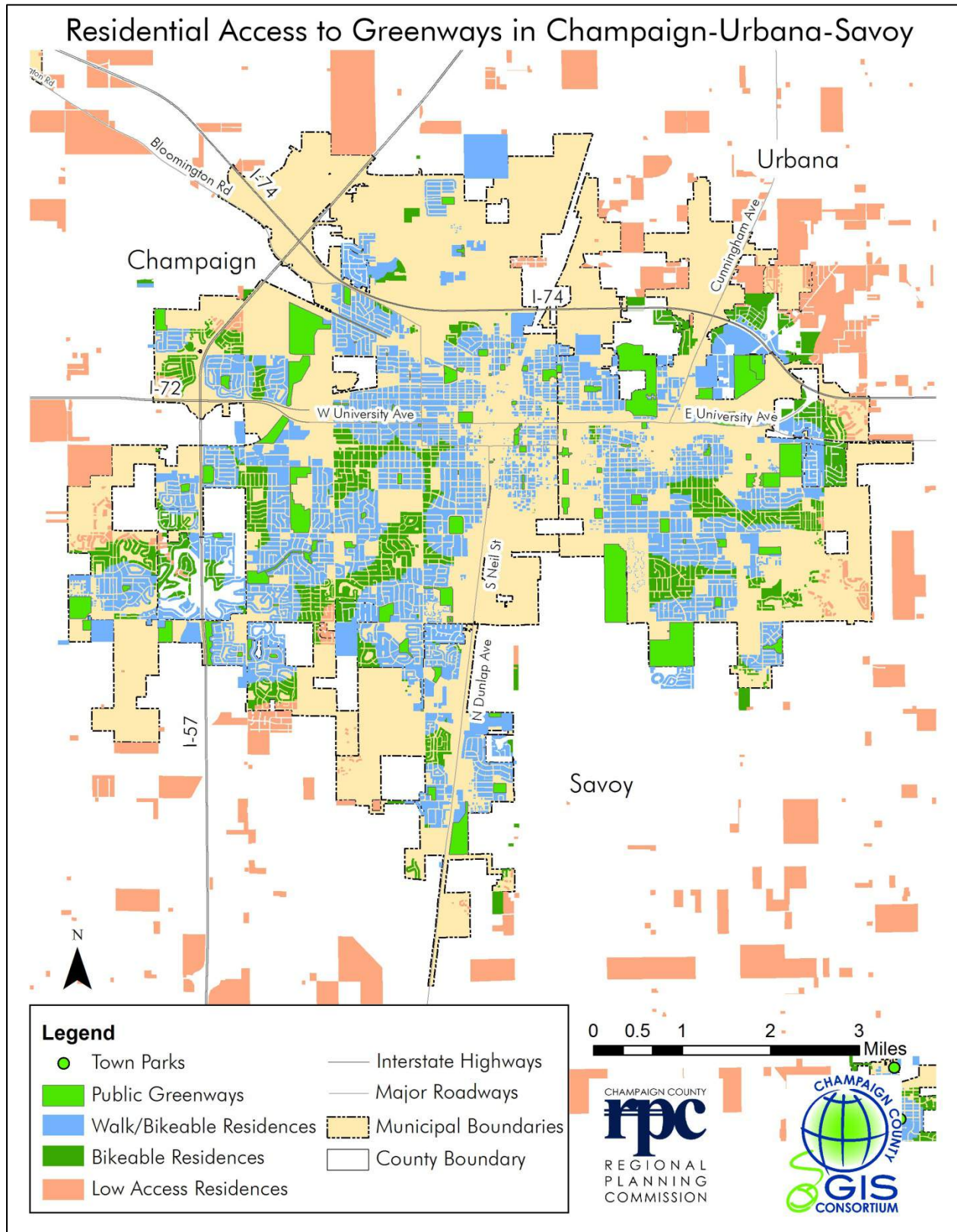




Figure 18

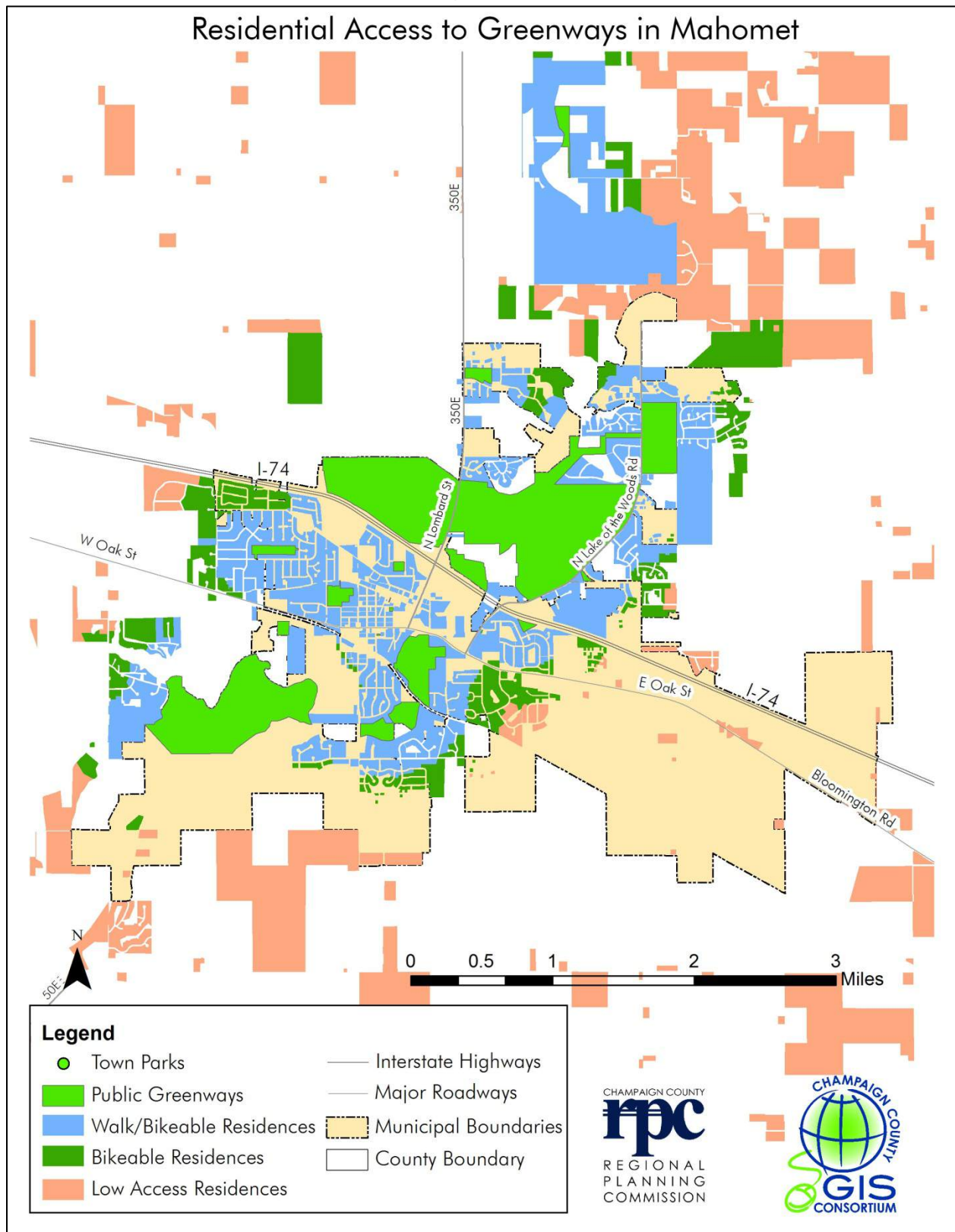
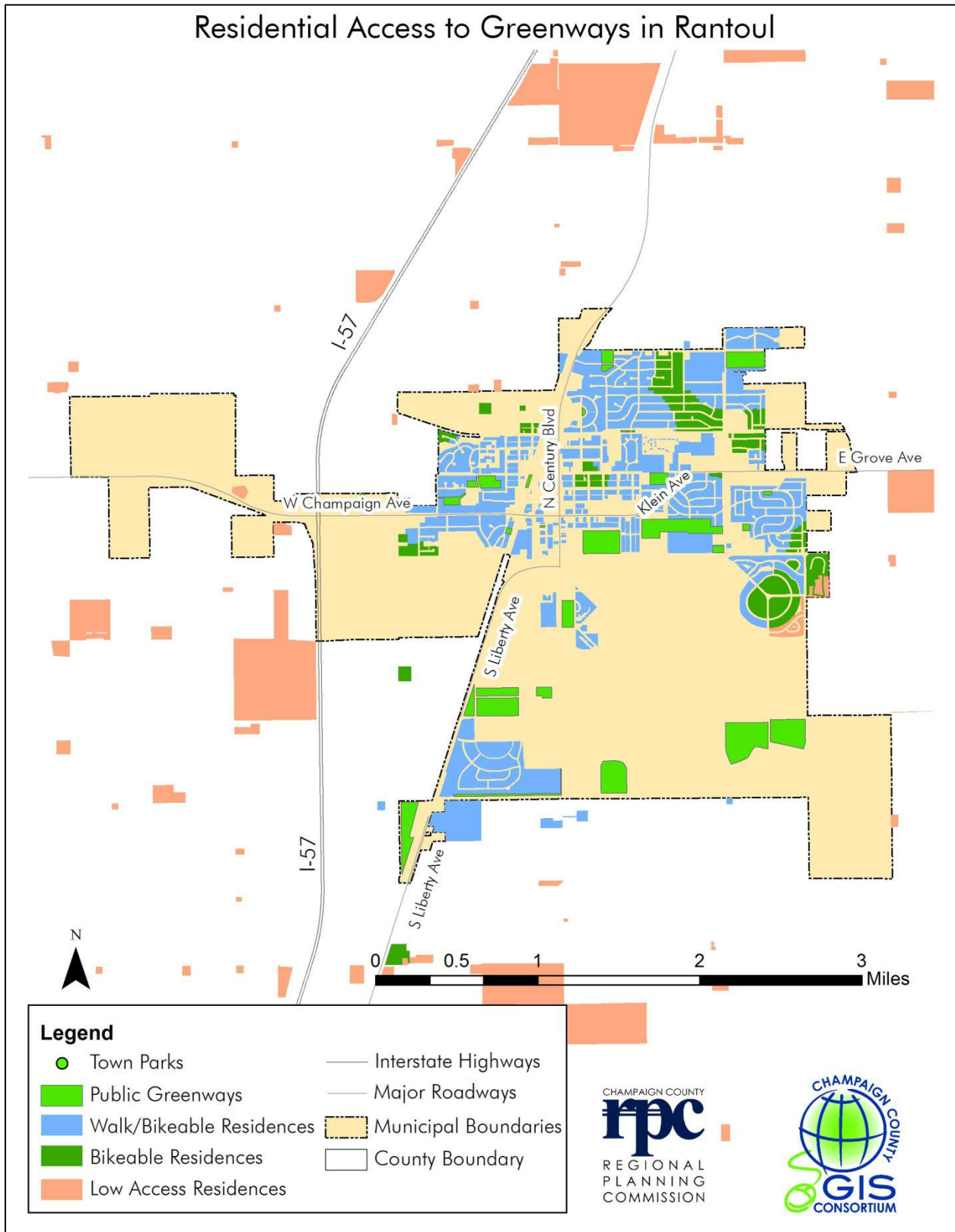


Figure 19

# Residential Access to Greenways in Rantoul





## APPENDIX

### Trails Connectivity Analysis Methodology

The following layers were used for this portion of the needs assessment:

- Municipal boundaries
  - Champaign County streets
  - Champaign County trails
  - Champaign County 2010 Census block groups
1. Use the Feature Vertices to Points tool with the Champaign County trails layer as the Input Feature and name the Output Feature Class "Trails\_Dangle\_Points." Select the Point Type as "Dangle" and run the tool.
    - a. This will give you the entrances and exits for each trail segment.
    - b. Some of the dangle points may need to be edited if trail segments are drawn with breaks in a contiguous trail.
  2. Use the Intersect tool to find the areas where the Champaign County streets and Champaign County trails layers intersect each other. Set both layers as Input Features in the tool, name the Output Feature Class "StreetTrails\_Intersect," make sure the JoinAttributes is on "All," and set the Output Type as "points."
    - a. This output will provide the intersection points between the trail system and the street network. These points are crucial for providing connectivity to the greenways and trails system.
    - b. Some of the points will need to be edited, particularly on round line segments where the tool will insert too many intersection points.
  3. Now that you have all the connectivity points for the trails layer (street/trails intersects & dangle points) you will need to spatially join this information to the layer for the 2010 Census block groups. In the Spatial Join tool, set the 2010 Census blocks groups as the target layer, the StreetTrails\_Intersect layer as the Join Features, and name the Output Feature Class "Spatial Join w/o Dangle Pts." Make sure the Join Operation setting is on "JOIN\_ONE\_TO\_ONE."
  4. Repeat this step with the output feature class as the Target Feature and the Trails\_Dangle\_Points layer as the Join Feature. Name the output feature "Trails with Connectivity Points."
  5. Open the attribute table of the Trails with Connectivity Points layer and create a new field named "TOT\_CONN\_PTS." Use the field calculator to create an equation that adds the two Join\_Count fields.
  6. Create another field called AREA\_SQMI, and use the Calculate Geometry function to calculate the area in square miles of each block group.
  7. Finally, create another field called PTS\_PER\_SQMI and use the field calculator to create the equation  $TOT\_CONN\_PTS/AREA\_SQMI$ .
    - a. This will give you the connectivity points per square mile for each Census block group.

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8. Some of the block groups in the county are within a close distance to connectivity points in other block groups, particularly for those block groups that have trails along their borders. To account for this, select the block groups with zero connection points and create a layer from this selection.
9. Use the Select by Location function to select features from StreetTrails\_Intersect and Trails\_Dangle\_Points layers based on the block group selection layer as the Source layer. Set the Spatial selection method as "Target layer(s) features are within a distance of the Source layer feature," check the "Apply a search distance" box, and set the distance as 50 feet.
  - a. This output shows you the connection points on the fringe of block groups without any points, which should not be overlooked in the connectivity process.
10. Update the TOT\_CONN\_PTS column for each block group that has adjacent points and use the field calculator again to calculate the TOT\_CONN\_PTS/AREA\_SQMI.
11. Symbolize your results according to INT\_PER\_SQMI with these breaks:
  - i. 0 – Low Connectivity
  - ii. 1-50 – Medium Connectivity
  - iii. 51-256 – High Connectivity

### **Greenways Connectivity Analysis Methodology**

The following layers were used for this portion of the needs assessment:

- The results of the Trails Connectivity Analysis
  - Champaign County Public Greenways
    - Greenways & Trails Public Parks
    - Champaign County Forest Preserves
  - Champaign County Town Parks
1. Begin the analysis with the results of the Trails Connectivity Analysis.
  2. Open the attribute table of the Connectivity Index layer and select the rows with "0" under the "PTS\_PER\_SQMI" column.
  3. Create a layer from this selection and label it "Low Connectivity BG"
  4. Use the Select by Location feature to select features the Public Greenways and Town Parks layers within the Low Connectivity BG source layer. Be sure to set the Spatial Selection Method to "Target layer(s) are within the Source layer feature."
    - a. This will provide you with all the greenways that have low access through the trails system.
  5. Create selections from the Champaign County Public Greenways and Town Park layers and label them "Low Connectivity Greenways" and "Low Connectivity Town Parks."
  6. Open the attribute table of the Connectivity Index layer and select the rows within the "PTS\_PER\_SQMI" column that are greater than 0 and less than or equal to 50.
  7. Create a layer from this selection and label it "Medium Connectivity."
  8. Repeat Step 4 with the Medium Connectivity layer.

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- a. This will provide you with all the greenways that have medium access through the trails system.
9. Create selections from the Champaign County Public Greenways and Town Park layers and label them "Medium Connectivity Greenways" and "Medium Connectivity Town Parks."
10. Open the attribute table of the Connectivity Index layer and select the rows within the "PTS\_PER\_SQMI" column that are greater than 50 and less than or equal to 256.
11. Create a layer from this selection and label it "High Connectivity."
12. Repeat Step 4 with the High Connectivity layer.
13. Create selections from the Champaign County Public Greenways and Town Park layers and label them "High Connectivity Greenways" and "High Connectivity Town Parks."
14. Symbolize the layers to show the various block groups and greenways according to their access type: low connectivity, medium connectivity, and high connectivity.
  - a. This will tell you which greenways are most connected to the street system and trails infrastructure.

### **Trails Accessibility Analysis Methodology**

The following layers were used for this portion of the needs assessment:

- Municipal boundaries
  - Champaign County streets
  - Champaign County trails
  - Champaign County housing by tax parcel
1. The Champaign County tax parcels layer includes the following household (HH) data:
    - a. 1100 Single Family Rental Dwelling (includes vacant lots); 1 HH
    - b. 1150 Owner/Occupied Single Family Dwelling; 1 HH
    - c. 1200 Duplex Rental Dwelling; 2 HH
    - d. 1250 Owner/Occupied Duplex Dwelling (Owner resides in 1/2); 2 HH
    - e. 1300/1350 Apartment – 3 to 7 Dwelling Units; 5 HH
    - f. 1400/1450 Apartment – 8 or more Dwelling Units; 8 HH
    - g. 1500/1600 Group home – Fraternity – Sorority; Individually counted
    - h. 1700/1750 Mobile Home Park; Individually counted
    - i. 1800 Condominium Rental Dwelling; Individually counted
    - j. 1850 Owner/Occupied Condominium Dwelling; Individually counted
    - k. 3000/3050 Owner/Occupied Commercial Use (Containing a Dwelling); Individually counted
    - l. 6000/6005 Properties Exempt from Taxation; Individually counted; 1 HH
    - m. 8150 Agricultural Use With Owner/Occupied Dwelling (10 Acres or Greater); 1 HH
  2. Open the Champaign County trails layer and select the path types that allow walking:
    - a. 1. Shared-Use Path (sidepath);
    - b. 2. Divided Shared-Use Path;

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- c. 3. Shared-Use Path (off-street); and
  - d. 7. Walking Path.
3. Create a new layer from this selection called "Pedestrian Paths."
4. Use the Select by Location function with the Selection method as "select features from," the Target layer as "Champaign County housing by tax parcels," the source layer as "Pedestrian Paths," and use the Spatial selection method of "Target layer features are within a distance of source layer." Set the search distance to 0.25 miles.
  - a. The output of this will give you the residential tax parcels that are within a walking distance (0.25 mi) of trails infrastructure.
5. Create a new layer from this selection called "Walkable HH." Use the summary statistics on the "units" column in the attribute table to find out how many households are walkable in the County.
6. Repeat Step 2 for biking paths and use the following path types:
  - a. 1. Shared-Use Path (sidepath);
  - b. 2. Divided Shared-Use Path;
  - c. 3. Shared-Use Path (off-street);
  - d. 4. Bike Path
  - e. 5. UIUC Bike Path
  - f. 6. Bike Lanes (on-street)
  - g. 8. Shared Lane Markings (sharrows)
7. Repeat Step 3 and label the selection "Bicycle Paths."
8. Repeat Step 4 and use a 0.5 mile buffer for the search distance.
9. Repeat Step 5 and call the layer "Bikeable HH." Use the summary statistics on the "units" column in the attribute table to find out how many households are bikeable in the County.
10. The total households with access to walking and biking paths in Champaign County are listed below:
  - a. Total Households – 86,246
  - b. Walking paths – 38,515 households or 45% of the total
  - c. Biking paths – 59,304 households or 69% of the total
11. These layers can be used to isolate the total, walkable and bikeable households for each municipal area within Champaign County.

### **Greenways Accessibility Analysis Methodology**

Begin with the following layers:

- Municipal Boundaries
- Champaign County Greenways
- Champaign County Forest Preserve Boundaries
- Champaign County Town Parks
- Champaign County Residential Parcels

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1. Open the attribute table for the Champaign County greenways layer and select all the rows with a "1" in the column labeled "Type." Create a layer from this selection and title it "Public Greenways no FP." This will give you all the public greenways in Champaign County, not including the Champaign County Forest Preserves.
2. Use the Merge tool to combine the "Public Greenways no FP" layer with the Forest Preserve boundaries, and title the output "Public Greenways."
3. Use the Buffer (Analysis) tool to create a ¼ mile buffer around the Public Greenways layer. Be sure to set the Dissolve Type to "All," and label the Output Feature Class as "Public\_GW\_QtrMiBuff."
4. Repeat Step 3 with the Champaign County Town Parks layer and label the Output Feature Class as "TP\_QtrMiBuff."
5. Next, repeat Steps 3 & 4 for the respective layers, but this time with a ½ mile buffer and label the outputs "Public\_GW\_HalfMiBuff" and "TP\_HalfMiBuff."
6. Use the Merge tool to combine the ¼ mile buffers and the ½ mile buffers of the Champaign County Greenways and Town Parks layers and label them "TP\_GWQtrMiBuff\_Merge" and "TP\_GWHalfMiBuff\_Merge."
  - a. This will give you a complete ¼ mile buffer and ½ mile buffer for all Champaign County greenways.
7. Use the Select by Location function with the merged ¼ mile buffer to select features from the Residential Parcels layer. Set the Spatial Selection Method as "Target layer(s) features intersect the Source layer feature."
8. Create a layer from the selected features and label it "Walkable Parcels."
9. Use the Select by Location function with the merged ½ mile buffer to select features from the Residential Parcels layer. Set the spatial selection method as "Target layer(s) features intersect the Source layer feature."
10. Create a layer from the selected features and label it "Bikeable Parcels."
11. Use the summary statistics on the "units" column in the attribute table of the Walkable Parcels and Bikeable Parcels layers to find out how many households have these types of access in the County.
12. The total households with access to greenways in Champaign County are listed below:
  - a. Total Households – 86,246
  - b. Walkable – 31,867 households or 37% of the County
  - c. Bikeable – 76,144 households or 88% of the County
13. These layers can be used to isolate the total, walkable and bikeable households for each municipal area within Champaign County as well.