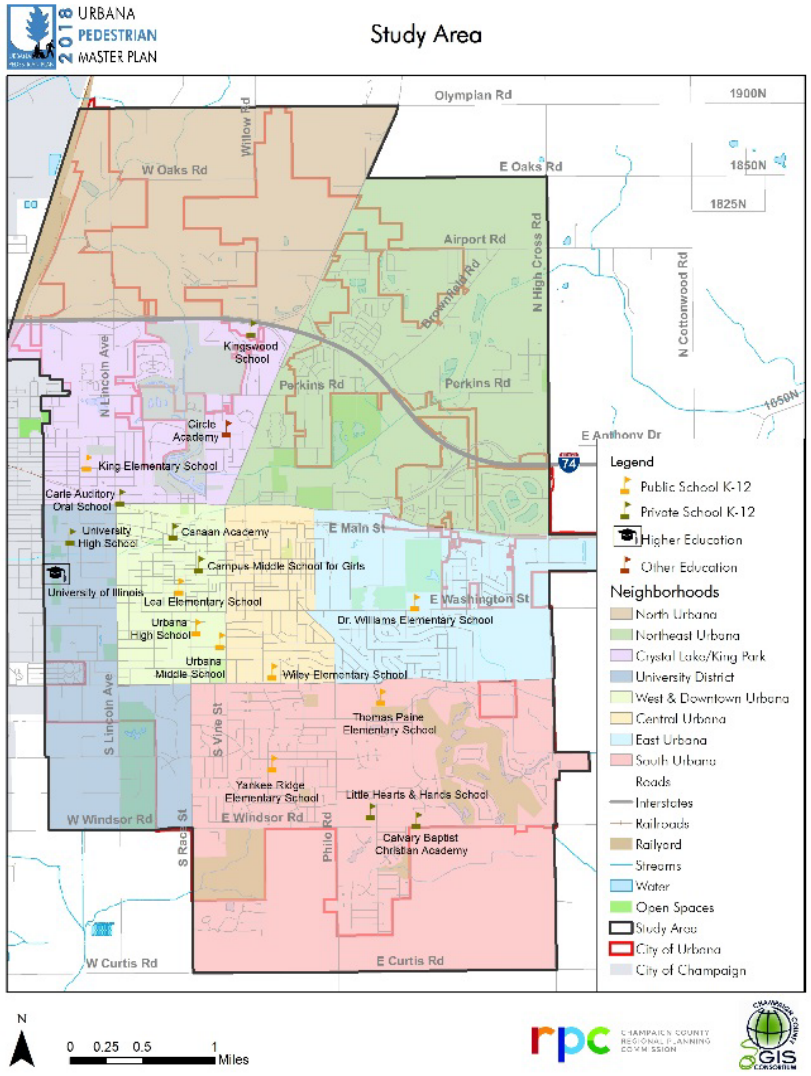
City of Urbana Pedestrian Master Plan

October 5, 2017 DRAFT

Study Area

The City of Urbana Pedestrian Master Plan study area encompasses all of the land within Urbana city limits, and the land between the city limits and the next closest major road. The study area boundaries are Olympian Road, Cunningham Avenue, Oaks Road, High Cross Road, Walmart and Birkey's Farm Store on the east side of High Cross Road, Curtis Road, Race Street, Windsor Road, and the west city limits. The study area includes some areas outside of city limits to plan for areas that maybe annexed into the City of Urbana in the future. Also, unincorporated developed areas adjacent to Urbana city limits should be considered when analyzing the area's pedestrian network, as residents in those areas likely use destinations located within city limits.



Map 1. Study Area

Existing Conditions DRAFT

As the microeconomics law of supply and demand explains, the relationship between supply and demand underlies allocation of resources. As citizen demand for pedestrian infrastructure increases, the supply of these resources will increase to meet the demand. For this plan, the existing demand based on the unique characteristics of the community has been examined in relationship to the existing supply of walking facilities in the study area. This will help to better understand how supply must change to meet the community's growing demand.

Demand

A community's population determines the demand for pedestrian resources. The unique needs of different socioeconomic and ethnic groups dictate what their demand will be. Where they want to go and how they want to get there, and the ability to get there safely will also direct their demand for facilities. The study area's demographics, major destinations, current use and pedestrian crashes have been examined to help reveal the community's existing requirements for walking infrastructure.

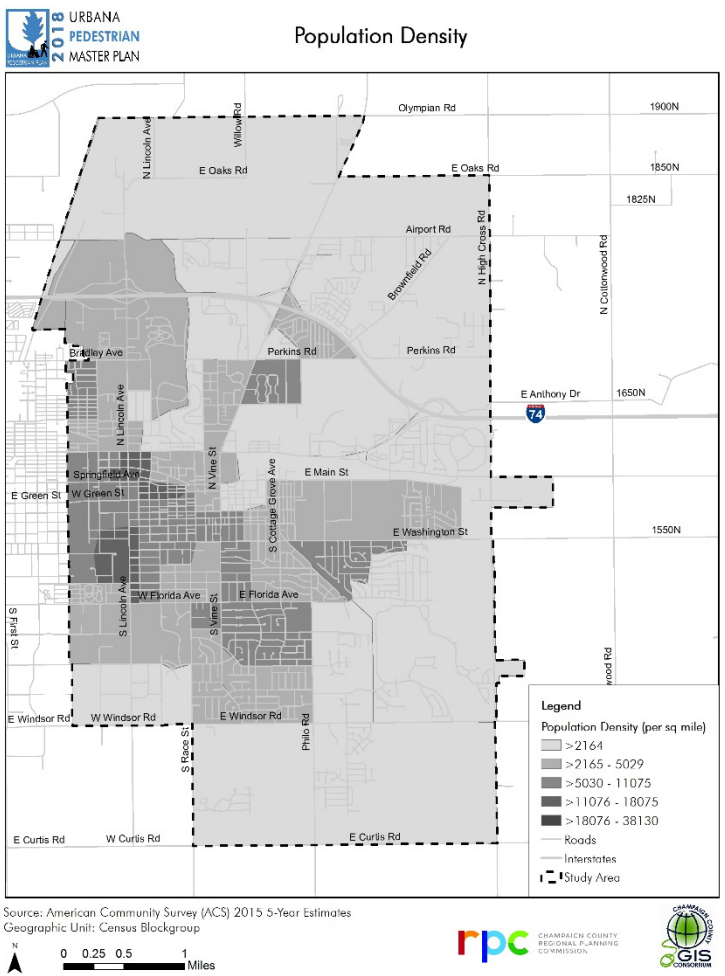
Demographics

In 2015, the City of Urbana had a total population of 41,988 people, just over 20% of Champaign County's total population (205,766).[i] Considering the areas outside of the city limits, the study area has a total population of 64,240.

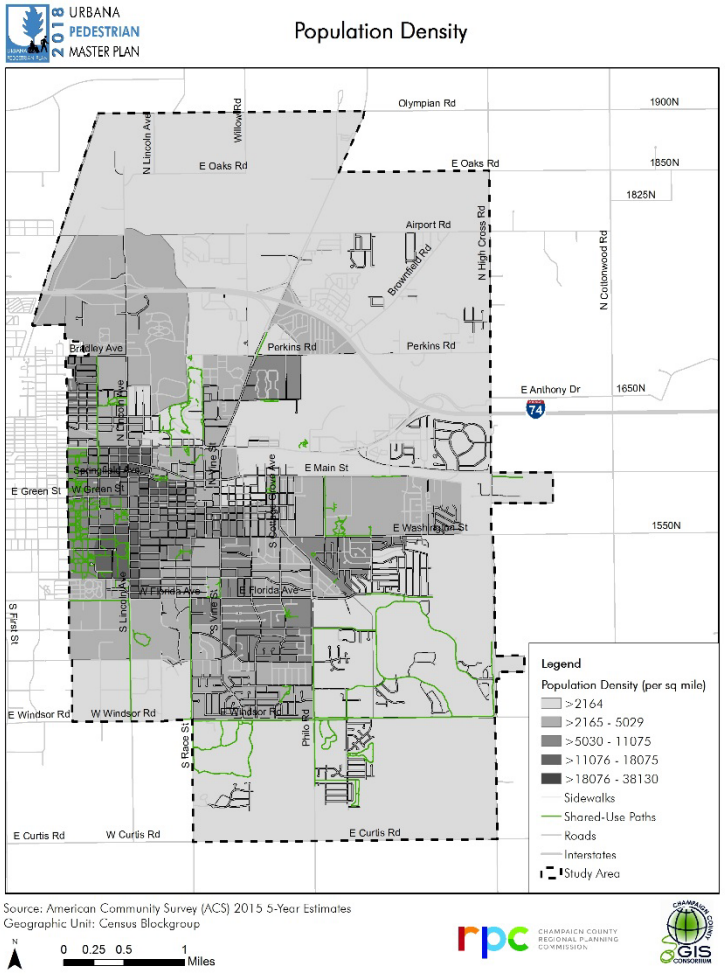
Population Density

The number of people per square mile varies greatly throughout the study area. Population density is greatest along Wright Street, the study area's western boundary, at about 38,000 people per square mile. However, this only represents a very small portion of the study area. The greatest population density completely contained in the study area is about 18,000 people per square mile on the border of the University District and West Urbana, specifically the area around Lincoln Avenue between Oregon Street and Florida Avenue. Population density generally decreases moving out from this point across the study area. Map 2 depicts this trend.

The areas of greater density have more existing pedestrian facilities than those that are less dense, shown in Map 3. These areas contain more people and have destinations that are closer together, two factors creating greater demand for pedestrian facilities.



Map 3. Population Density (per sq. mile)



Map 2. Population Density (per sq. mile) and Existing Pedestrian Facilities

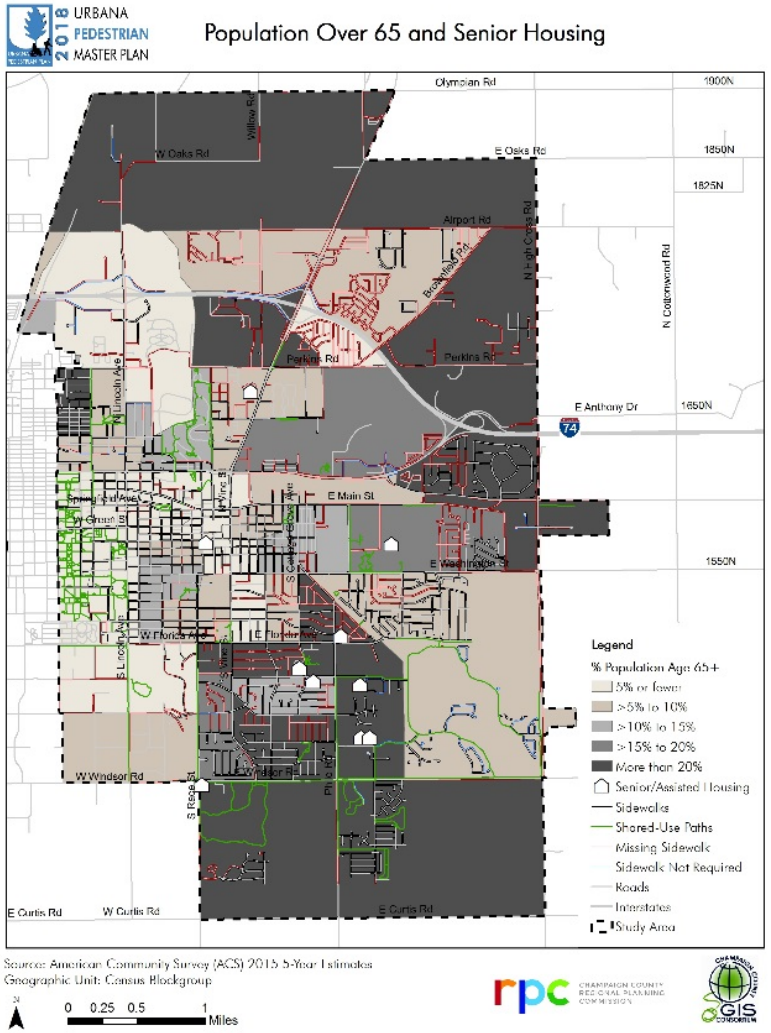
Age Groups

Populations of different ages have differing levels of mobility and interest in walking, influencing their tendency to use it as a means of transportation or recreation, i.e. their demand for walking facilities.

Almost 10 percent of the City of Urbana's population is below the age of 14. This group has fewer transportation options, generally relying on adults to get to where they need to be. Children between the ages of 10 and 14, making up approximately 3 percent of the City's population, may have some autonomy however, allowing them to walk on their own when travelling shorter distances.

The age group between 15 and 19 years old includes high school and some University of Illinois students, and represents about 14 percent of the City's population. Members of this group under the age of 16 cannot legally drive in the State of Illinois and therefore are likely users of the pedestrian network to access school, events, and other destinations throughout the study area. Older students are also likely pedestrians as they may not have access to a vehicle or may choose not to drive to the University of Illinois campus.

The majority the City's population is between the ages of 20 and 64. This group contains University students, recent graduates, professionals, and families. While this group is more likely to have access to a personal vehicle, but may still be interested in utilizing other means of transportation, not only as a means of recreation, but also for the commute to work.



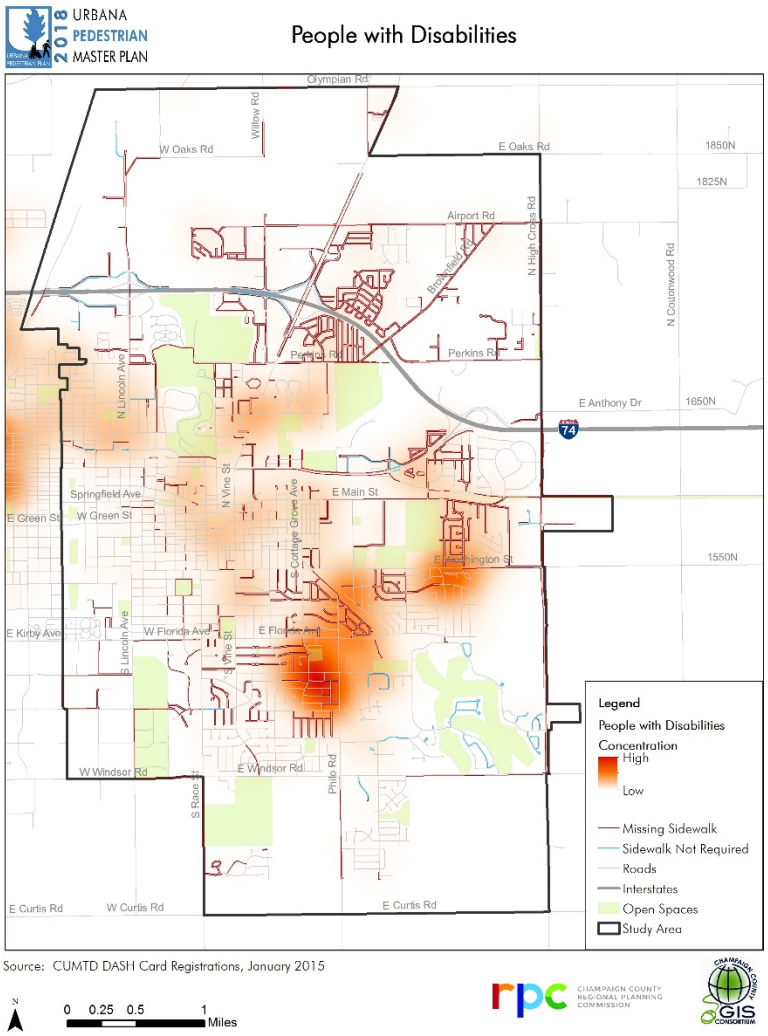
Map 4. Population Over 65 Years Old and Senior Housing Locations

Persons 65 years and older (i.e. Seniors) have unique transportation needs. This group is more likely to have movement impairments and lower levels of vision, limiting their ability to drive and making them more likely to use walking as a primary means of transportation. Along the north, northwest and southern boundaries of the study area, many areas have a population that is more than 20 percent Seniors. Map 4 shows that many of these areas also have the least existing pedestrian infrastructure and greatest number of missing sidewalk segments.

Population with Disabilities

Walking is a key form of physical activity and main means of transportation for all segments of the population, including people with disabilities. The Americans with Disabilities Act (ADA) of 1990 aims to ensure protections for individuals with disabilities. One way that it does this is through the prohibition of discrimination against people with disabilities by state and local government agencies. In turn, this means that transportation facilities, including pedestrian infrastructure, must be made safe and convenient for people of all abilities to walk or roll using wheelchairs.

Based on Champaign-Urbana Mass Transit District (CUMTD) DASH card registrations as of January 2015, areas with high concentrations of individuals with disabilities exist throughout the study area.[ii] DASH passes for riders with disabilities may be issued free of charge to individuals with significant difficulty boarding or alighting from an MTD vehicle for unlimited travel on any regular MTD service. The areas of highest concentration exist in Southeast Urbana around the intersection of Florida Avenue and Philo Road, as well as along East Washington



Map 5. Concentrations of People with Disabilities

Street between Smith Road and Pfeffer Road. Many people with disabilities also live at the center of the study area. These areas can be seen in Map 5. The map also shows areas where sidewalk segments are missing, which are common throughout the study area, especially in areas of higher concentrations of individuals with disabilities. Missing sidewalks makes it more difficult for people of all abilities to access destinations throughout the region, but especially difficult for those in wheelchairs or with other walking impairments.

Low-Income Populations

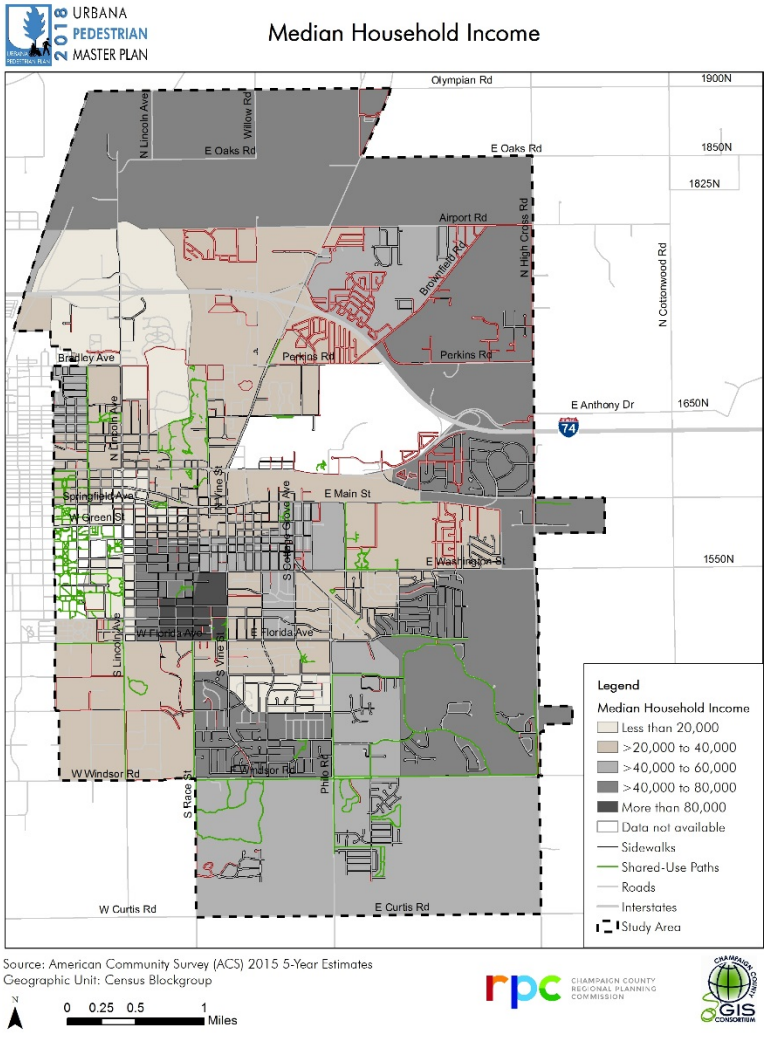
On average, people living in low-income households walk more.[iii] Financial constraints limit access to personal vehicles, requiring people to get where they need to go by foot, increasing demand for pedestrian infrastructure.

In the study area, median household income in 2015 ranged from less than $20,000 per year to more than $80,000 per year. The distribution of median household incomes in the study area is shown in Map 6. The majority of the study area population has a median household income falling between less than $20,000 and $40,000 per year, which is in keeping with the City of Urbana's median household income of $32,105 for the same period. This is significantly lower than the national median household income of $53,889.

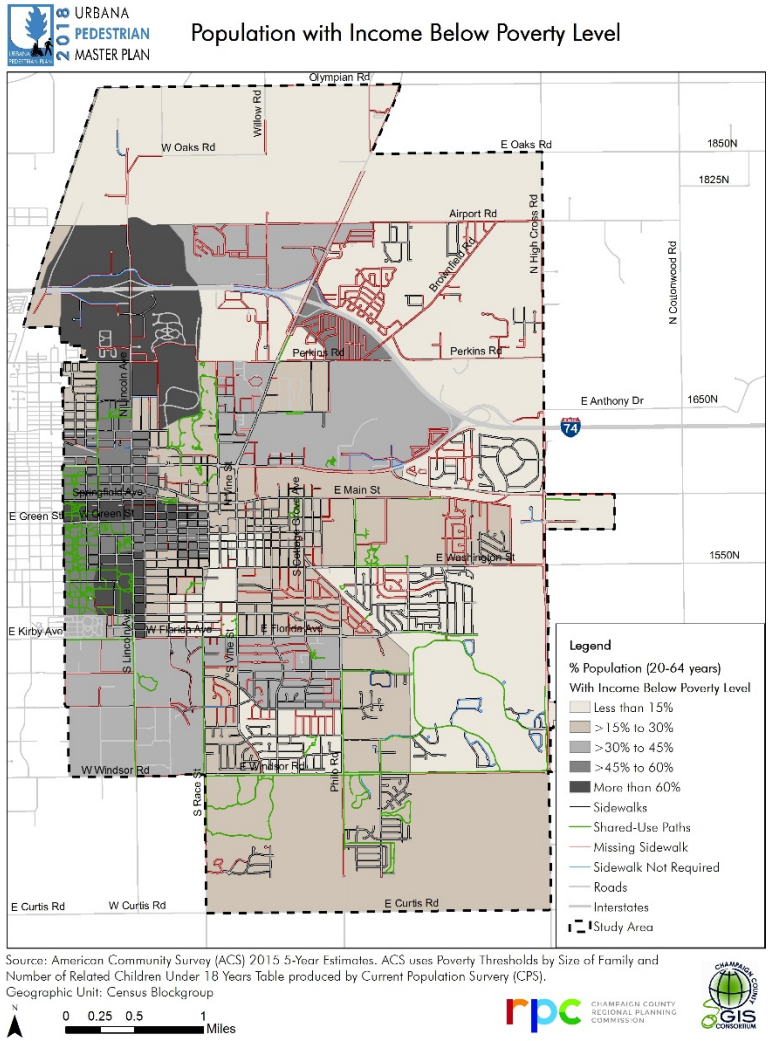
Approximately 38 percent of the City of Urbana's population of 18 to 64 year olds lived at or below the poverty level in 2015. This is reflected in the study area, where many areas had more than 30% of 20 to 64 year olds with an income below the poverty level during the same time. The distribution of these areas can be seen in Map 7.

Many of the areas with the lowest median household income and highest poverty rates are located along the western boundary of the study area, near the University of Illinois campus. This is because University students likely comprise a significant portion of the low-income population in the study area. Students do not comprise the entire low-income population, but do represent a unique group placing demand on the pedestrian network.

The significant low-income population throughout the study area, students or not, creates demand for safe and convenient walking facilities throughout the community. This population relies on a well-connected pedestrian network so they are able to access the resources they need, with or without a personal vehicle.



Map 6. Median Household Income



Map 7. Population of 20-64 Year Olds with Income below the Poverty Level, 2015

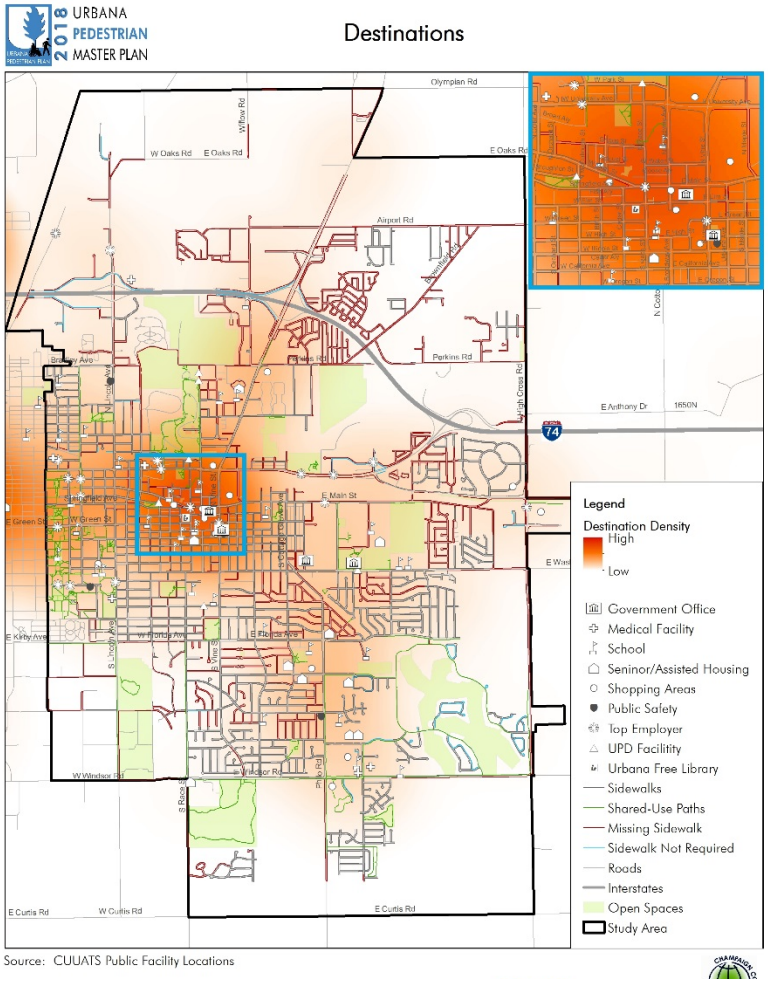
Destinations

Willingness to walk is directly related to where people live, work, go to school, shop, spend their free time, access transit, and proximity to other resources. Demand for pedestrian infrastructure is directly connected to the locations of destinations in community, and the creation of a well-connected pedestrian network must take the location of these destinations into consideration. This portion of the report examines the location of destinations needed to live day to day, housing density, and access to transit.

Destination Density

The density of destinations where goods and services may be obtained plays an important role in the viability of walking as a primary means of transportation. If destinations are too spread out, pedestrians will not be able to move between them conveniently or efficiently. Making it more difficult for those who use walking as a primary means of transportation, and less attractive to those who might otherwise walk for shorter trips.

In this assessment, many types of destinations needed in day to day life were considered. All of the destination types are included in Map 8. The medical facilities assessed included hospitals, clinics, and rehabilitation centers. Schools were defined as all institutions, public or private, providing K-12 education. Preschools and daycare centers were also included. Top employers were based on the number of employees recorded for sites in Urbana and include companies like the University of Illinois, Carle Foundation Hospital, Health Alliance Medical Plan, and other employers throughout the study area. The distribution of destinations in the study area is depicted in Map 8. The

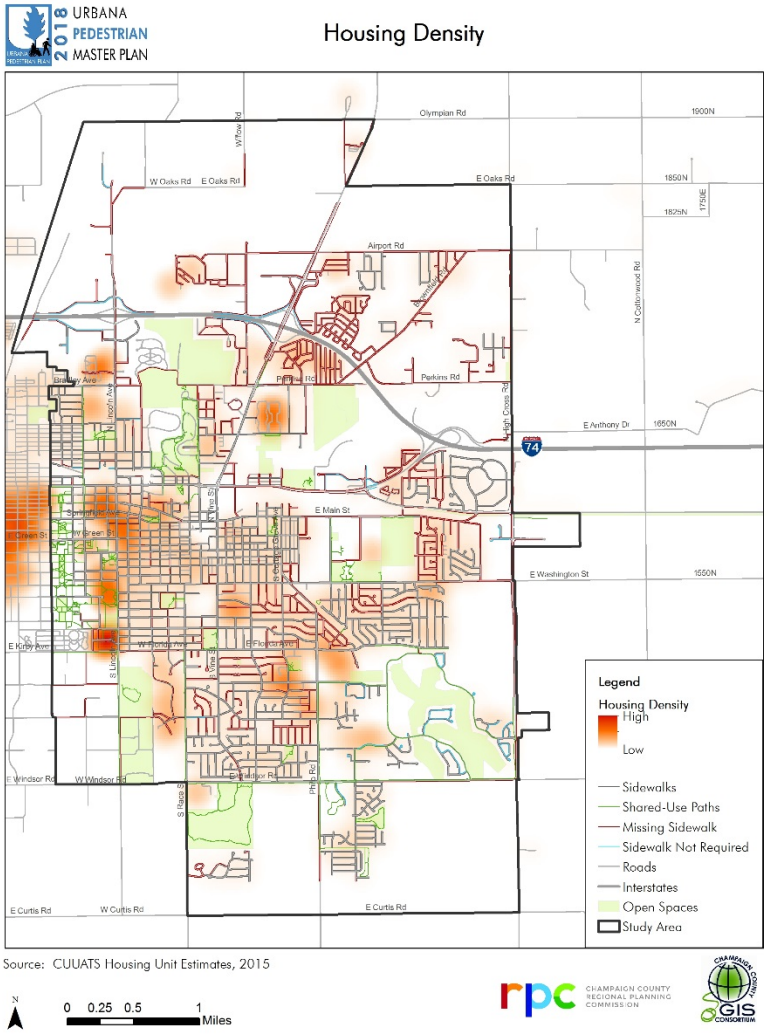


Map 8. Destination Density

greatest density of destinations can be found at the core of the study area, around Downtown Urbana; this area is bordered by University Avenue to the north, Vine Street to the east, Illinois Street to the south, and Coler Avenue to the west. Throughout the rest of the study area, destinations are fewer in number and more spread out, making access to needed resources more difficult by foot in these areas.

Housing Density

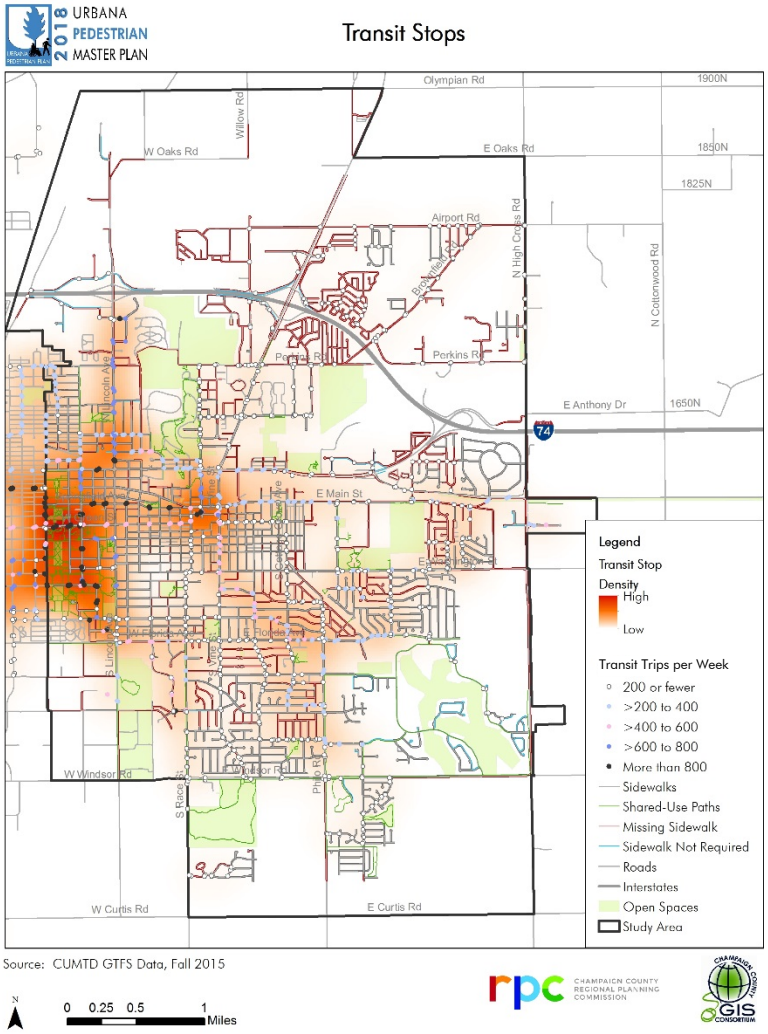
Like the density of destinations, housing density impacts the viability and likelihood of walking trips. With greater density comes more convenient and efficient access to surrounding resources. Map 9 shows the areas with the greatest density of housing units. The areas of greater density, indicated by the areas of darker orange, tend to lie adjacent to the areas of greater destination density shown in Map 8. By having areas of high housing density and high destination density near each other, walking as a primary means of transportation becomes more viable. While this is true for areas at the core of the study area, many of the outlying areas have both low housing and low destination density, meaning that distance between these sites are longer and walking is less convenient.



Map 9. Housing Density

Walking to Transit

There is a strong connection between walking and transit use. Not only must most transit users walk or bike to access bus stops and other transit infrastructure, but transit use and walking can be used in conjunction when making longer trips, making it more possible to make longer trips without a personal vehicle. This makes it very important for this infrastructure to be accessible by foot. Map 10 depicts the density of transit stops in the study area. The area along the western most boundary in the University District between Wright Street and Lincoln Avenue has the greatest density of transit stops. In the rest of the study area, transit stops are more spread out, making them more difficult to access by foot. Map 10 also depicts the number of trips per week per bus stop. The area with the greatest density of stops also has the greatest number of trips per stop. To ensure the option of transit use, it is important that access to stops and other infrastructure is considered as part of a well-connected pedestrian network.

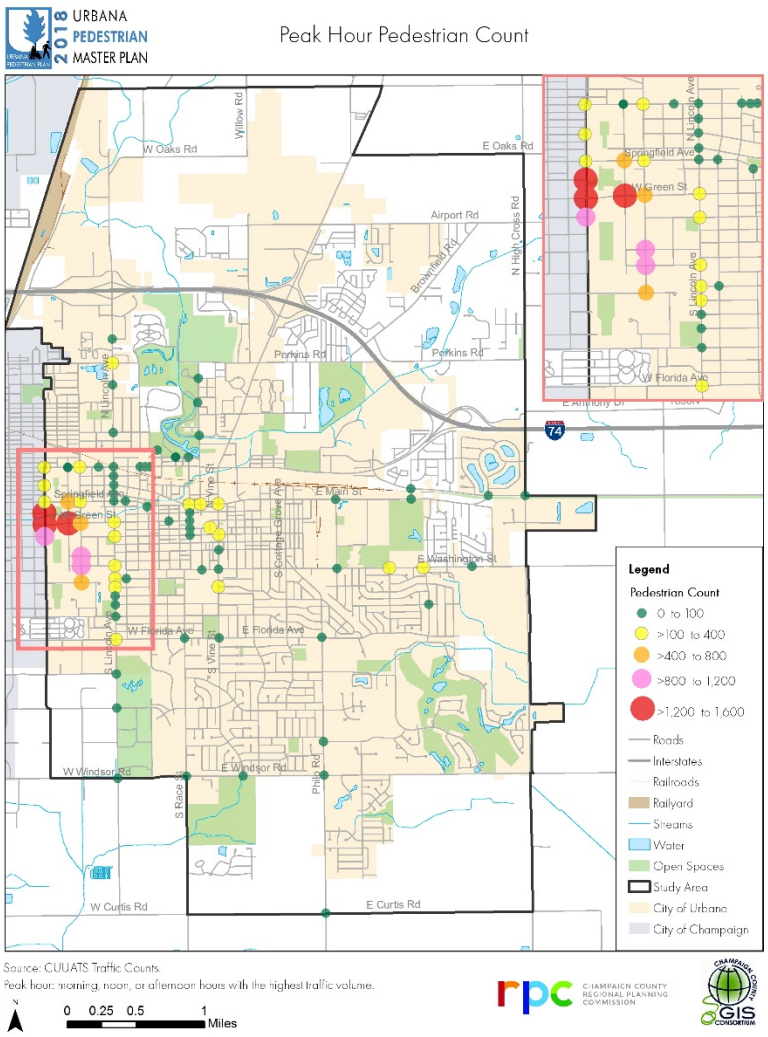


Map 10. Transit Density- Stops and Trips per Week

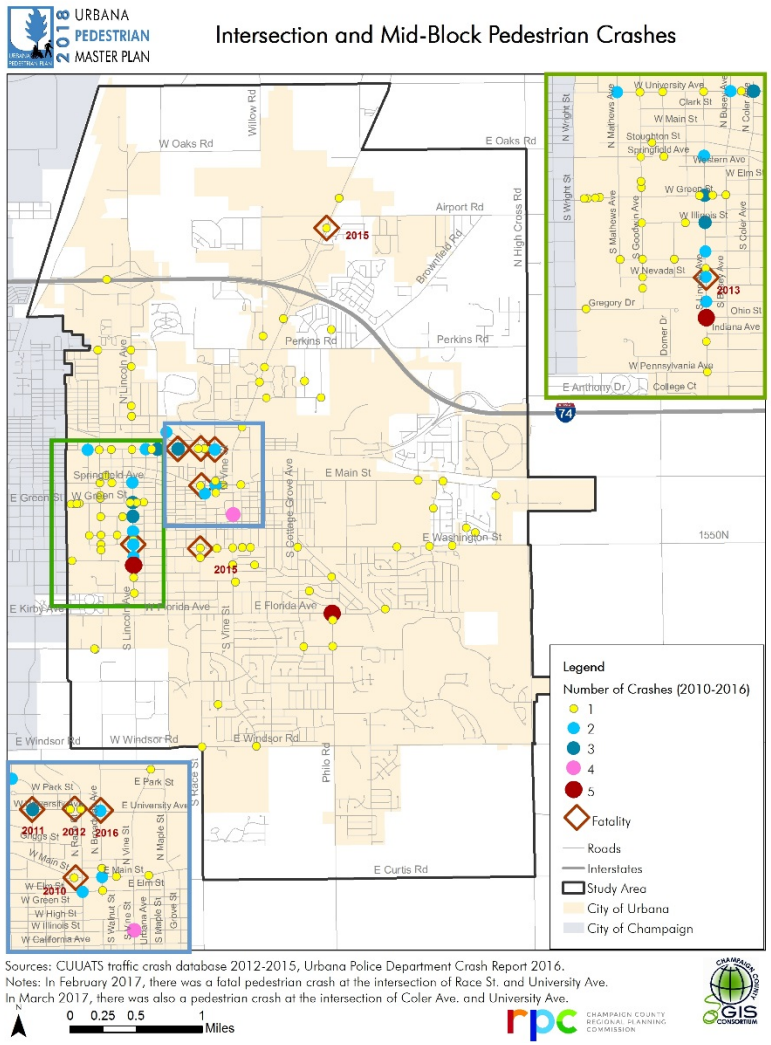
Counts and Crashes

Data about pedestrian counts and crashes depict demand for resources, counts showing where existing resources are most utilized, and crashes showing where there is a need for improved infrastructure and increased safety. Map 11 depicts peak hour pedestrian counts taken by the Champaign-Urbana Urbanized Area Transportation Study (CUUATS). The counts were taken at intersections throughout the study area and help to better understand where existing infrastructure is most used. The largest number of pedestrians were counted at intersections near the western boundary of the study area in the University District, and near the core of the study area. These are the same areas that were found to have the greatest density of destinations, housing, and transit stops, as well as the greatest population density.

Map 11. Pedestrian Counts



Areas with a high number of crashes indicate a demand for infrastructure improvements to increase safety. Map 12 depicts crash records from 2012 to 2016. The areas with the most crashes generally correspond to the areas with highest pedestrian counts. However, the severity of crashes and the areas most used do not necessarily correspond. In 2017, there was a fatal pedestrian crash at the intersection of Race Street and University Avenue, and in March 2017, there was a pedestrian crash at the intersection of Coler Avenue and University Avenue.



Map 12. Pedestrian Crashes, 2012-2015

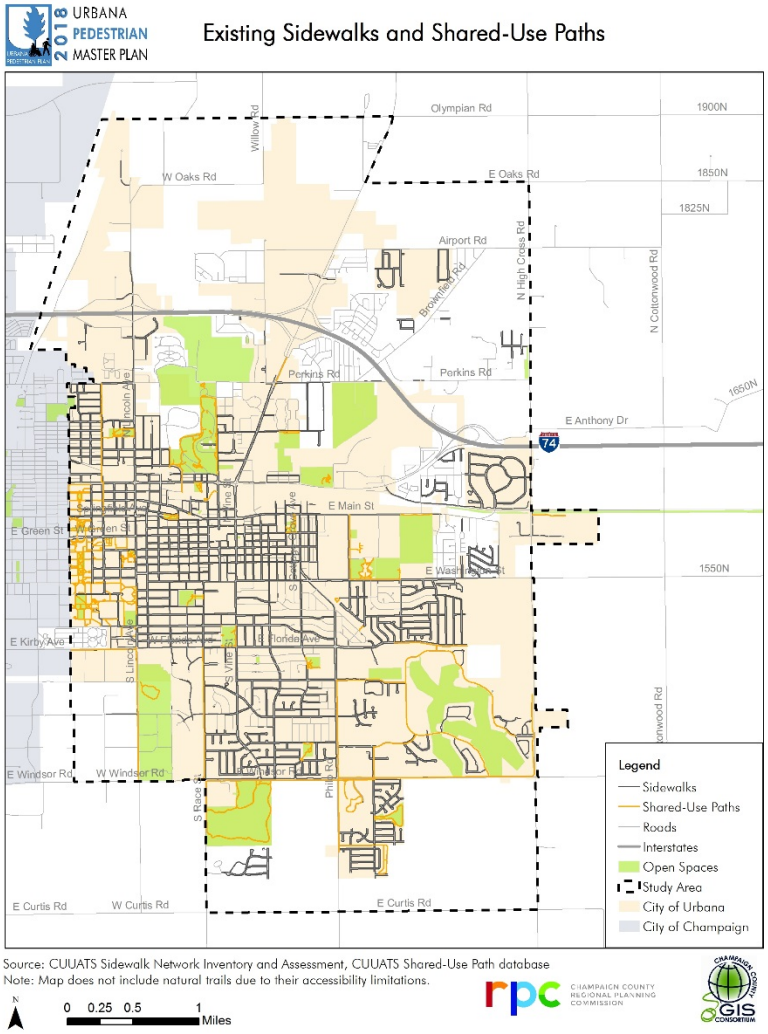
Supply

While the existing population, location of resources, use, and safety dictate demand for pedestrian infrastructure, existing supply is based on the current presence and condition of facilities. Supply takes into consideration not only the existence of pedestrian infrastructure, but also the quality of the facilities being supplied. These characteristics play a role in the likelihood of the community actually using the resources provided.

Existing Facilities and Jurisdiction

Existing Facilities

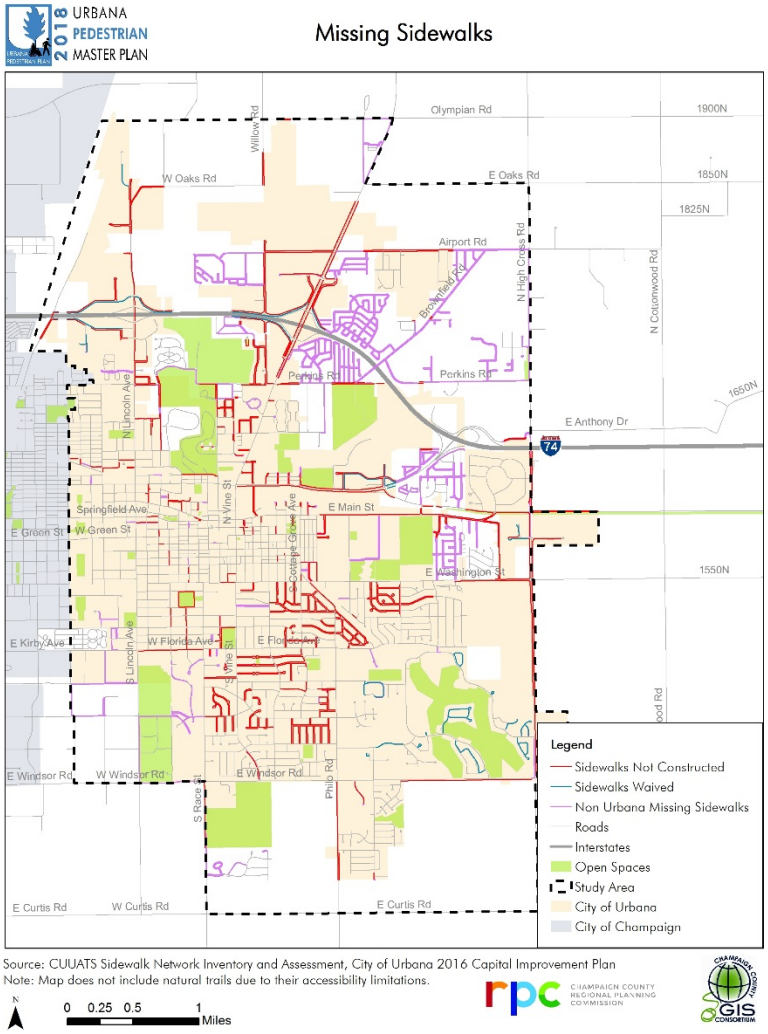
Pedestrian infrastructure is prevalent throughout the study area. These facilities are mainly comprised of sidewalks and shared-use paths, facilities that are physically separated from the roadway and can be shared by bicyclists and pedestrians.[iv] The locations of existing infrastructure, inventoried as part of the *Sidewalk Network Inventory and Assessment* completed by CUUATS, are depicted in Map 13.[v] The current network covers the core and southeastern portion of the study area, with some small gaps. Significant gaps in the network exist in the northern part of the study area, especially north of I-74. Residential areas in the eastern portion of the study areas, east of Philo Road between Florida Avenue and I-74 also lack sidewalks or other facilities.



Map 13. Existing Sidewalks and Shared-Use Paths

Missing Sidewalks

As part of the *Sidewalk Network Inventory and Assessment*, a sidewalk gap analysis was performed that identified missing sidewalk segments in currently developed areas. The missing sidewalk locations, both those that belong to the City of Urbana and those that do not, can be seen in Map 14. These missing segments represent barriers to mobility, especially for people with disabilities, and are potential locations for new sidewalk construction.



Map 14. Missing Sidewalk Segments

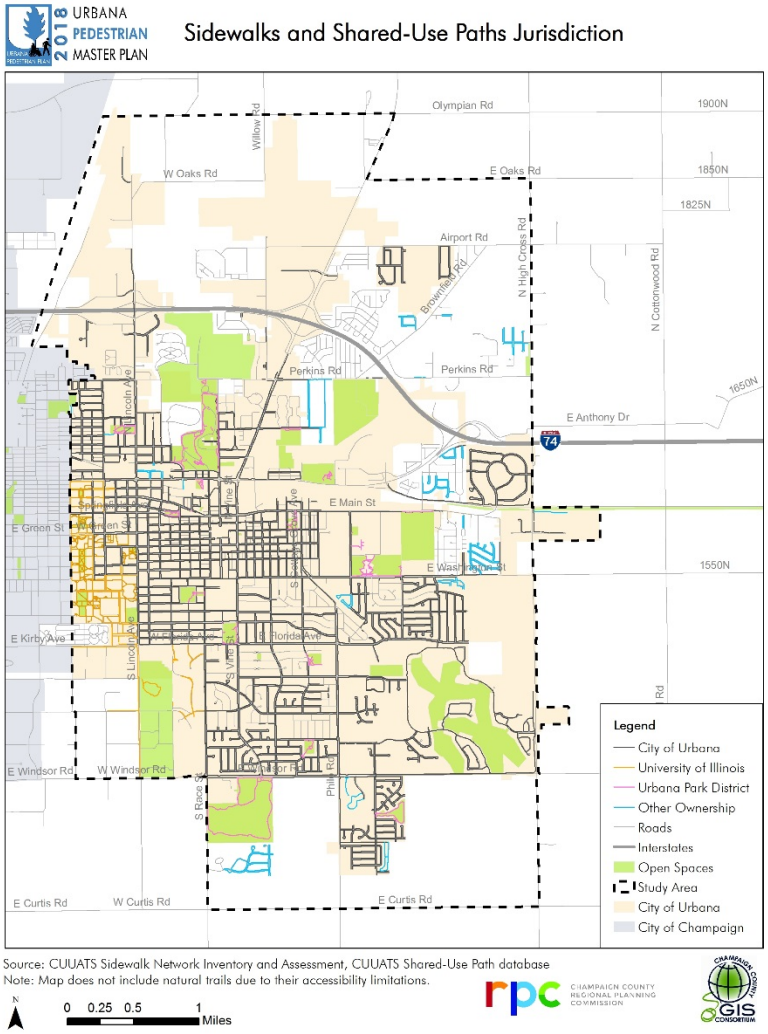
Jurisdiction

Within the study area and immediate surroundings, pedestrian infrastructure, like sidewalks and shared-use paths, is owned and/or maintained by multiple jurisdictions (see Map 15). The City of Urbana, University of Illinois, Urbana Park District, and other owners all control facilities within the study area. The City of Champaign has jurisdiction over facilities immediately adjacent to the western most boundary of the study area.

The consideration of these jurisdictions is critical to the development of new walking facilities and the creation of a well-connected pedestrian network. Ownership of the facilities dictates funding for improvements and therefore the ability to expand the supply of pedestrian infrastructure.

Roadway jurisdiction may also change as development occurs, transitioning land use from agriculture to residential and commercial uses. Roadway reconstruction is often required with these changes, and provisions for pedestrian infrastructure should be made as part of these plans.

Map 15. Sidewalks and Shared-Use Path Jurisdiction



Walking Environment

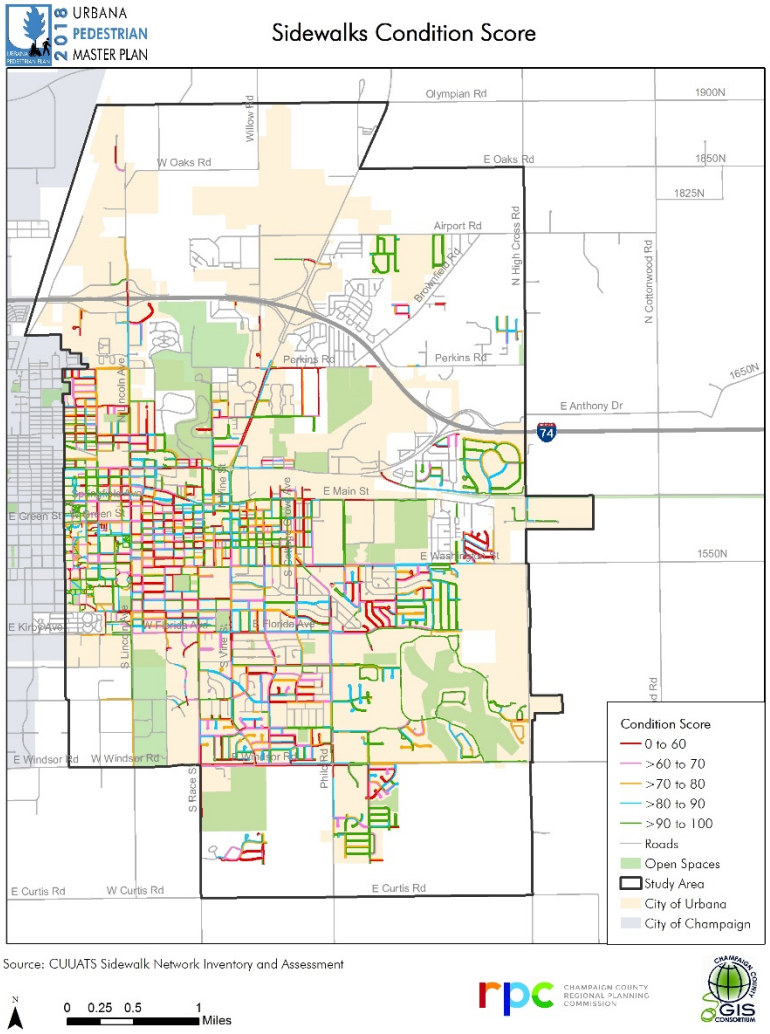
Physical Condition

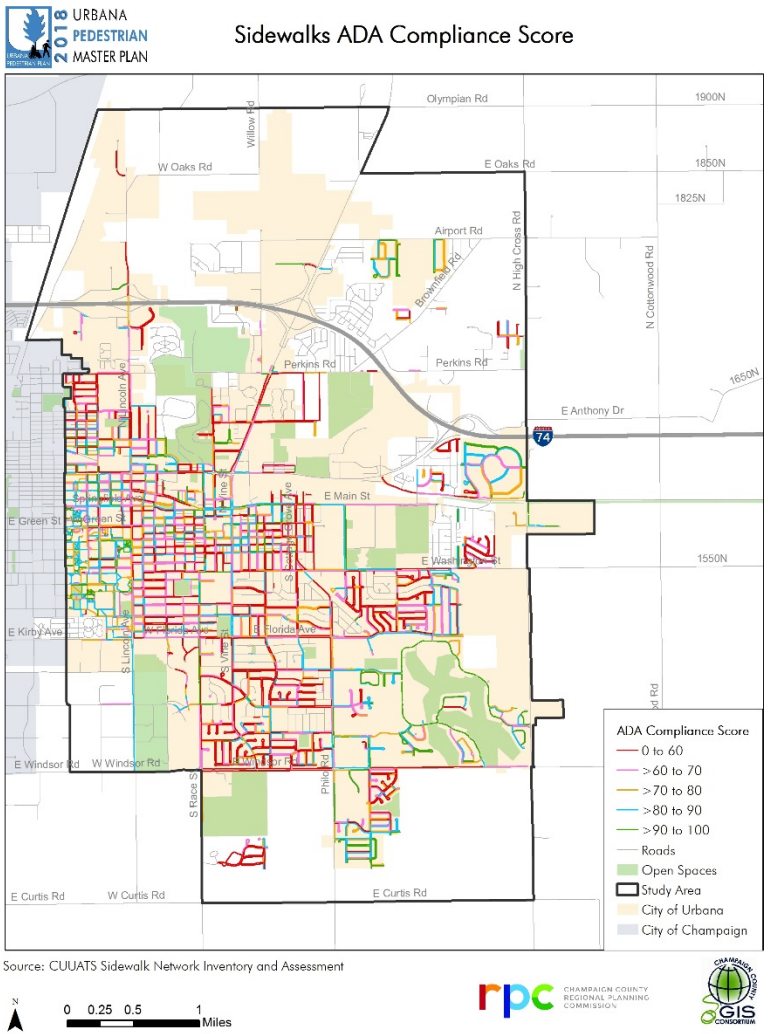
Data about the physical condition of pedestrian facilities in the study area were collected as part of the CUUATS *Sidewalk Network Inventory and Assessment*. This report gathered and analyzed information about the condition of sidewalks, curb ramps, crosswalks, and pedestrian signals. In addition to condition, these four elements were also assessed for their compliance with the Americans with Disabilities Act (ADA). Compliance scores are based on an index created to convert measurements taken in the inventory to scores that correspond with the Public Right-of-Way Accessibility Guidelines (PROWAG), the standard adopted by ADA. Lower scores indicate measurements outside of the compliant range.

Sidewalks

Condition and compliance scores were assessed for the sidewalk segments in the study area. The sidewalk condition score takes into consideration surface condition, vertical faults, and cracked panels. The ADA compliance score considers the sidewalks' cross slope, vertical faults, obstructions, and width. Map 16 shows the condition scores found for the sidewalk segments, which vary throughout the study area. Map 17 displays the compliance scores calculated for the study area. Compliance scores also vary throughout the study area, but are generally worse than the condition scores, meaning that many sidewalk segments are currently not in compliance with ADA.

Map 16. Sidewalk Condition Scores

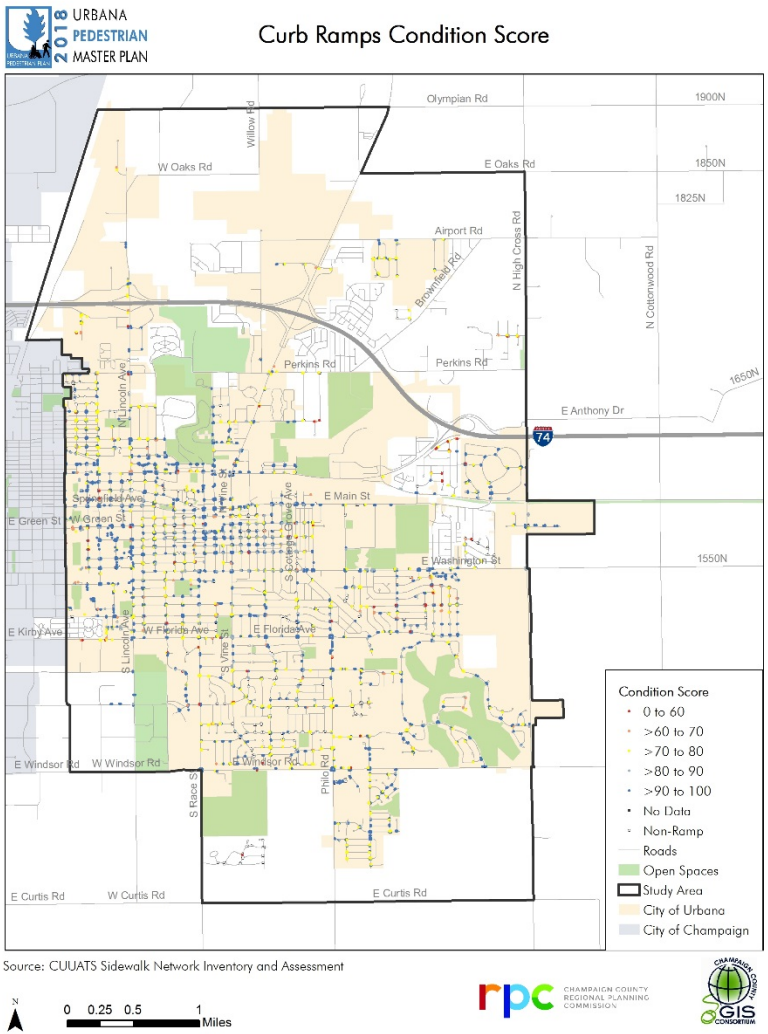




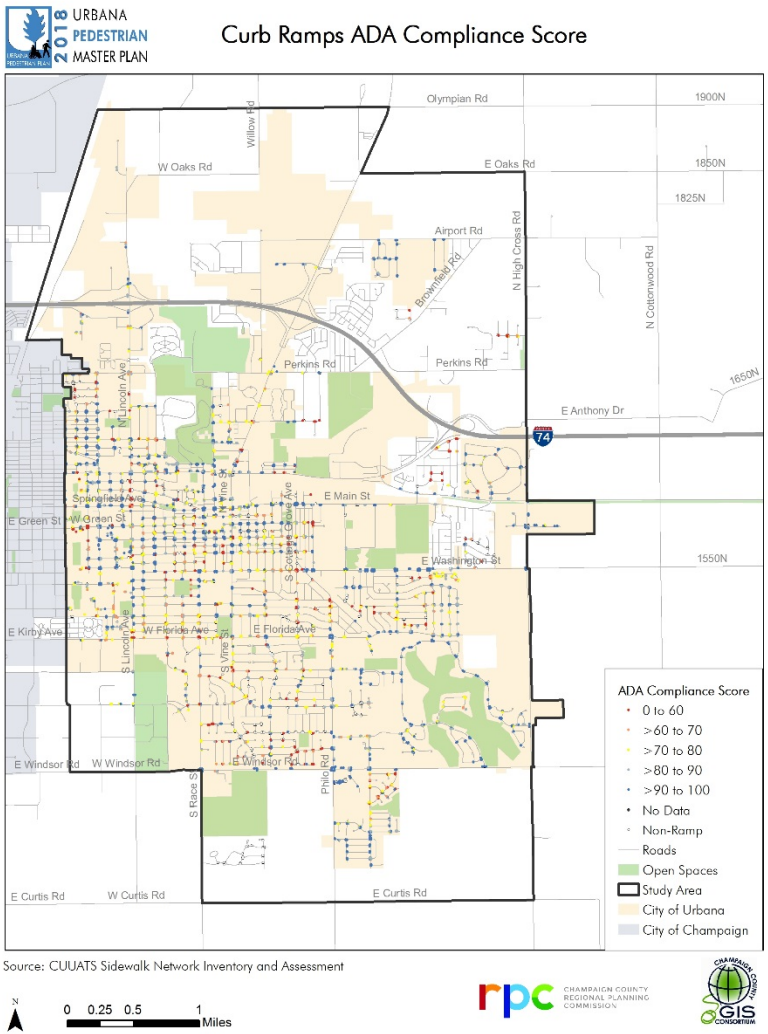
Map 17. Sidewalk Compliance Scores

Curb Ramps

Curb ramps are the transition between sidewalks and the street. Having curb ramps that are compliant with ADA requirements at all corners is necessary for creating an accessible pedestrian network for people with disabilities. The *Sidewalk Network Inventory and Assessment* assessed condition and compliance for curb ramps in the study area. The condition score considered the same variables as the sidewalk condition score. Sidewalks in the study area generally received high condition scores, as depicted by Map 18. Compliance scores for the curb ramps considered ramp geometry, detectable warning surface, gutter presence, landings, approaches and flares, and the presence of hazards. Additional information about these elements can be found in the report. Like the sidewalk segments, curb ramps generally received low compliance scores, meaning that many are currently have a negative impact on accessibility, especially for people with disabilities (Map 19).



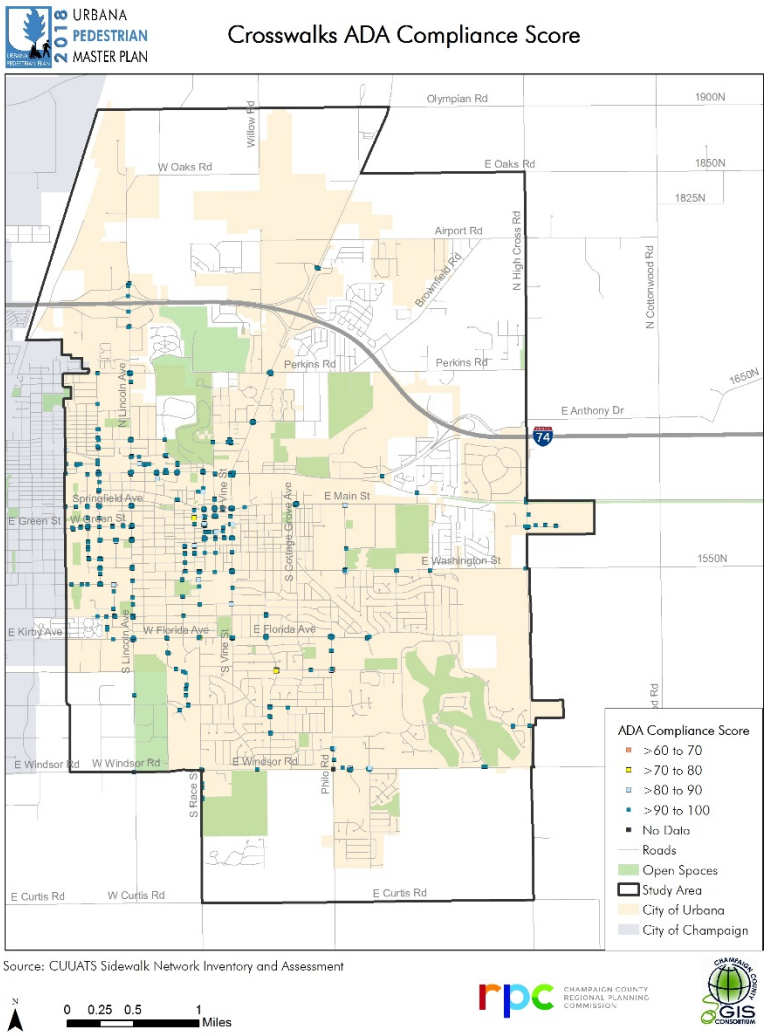
Map 18. Curb Ramp Condition Scores



Map 19. Curb Ramp ADA Compliance Score

Crosswalks

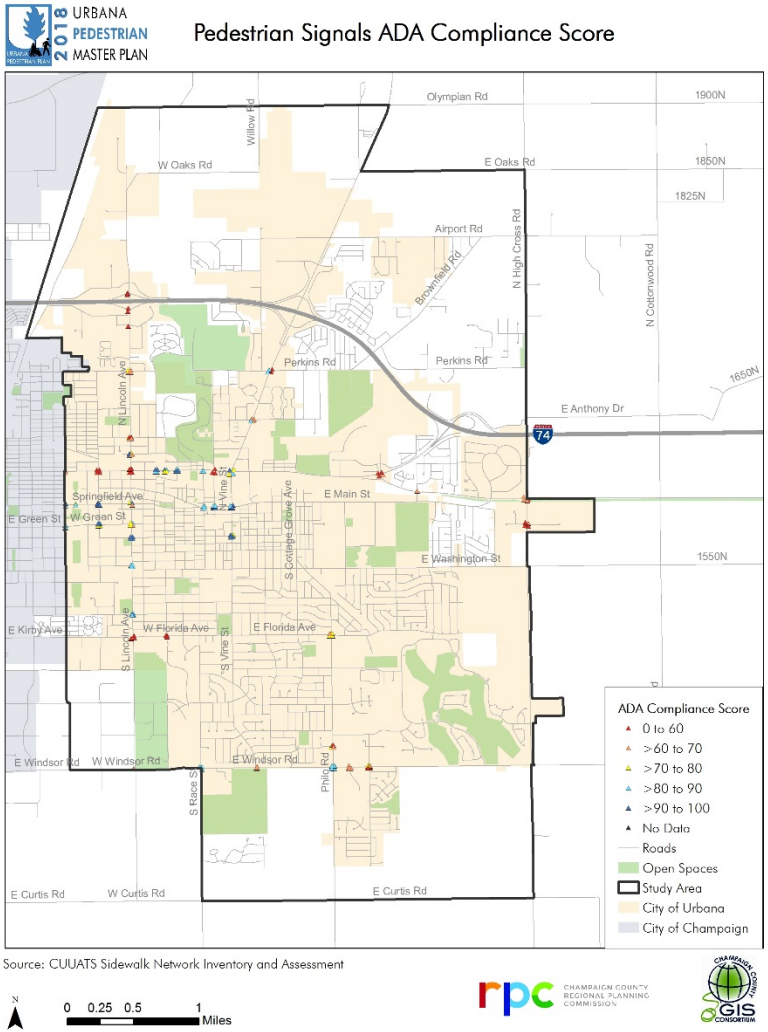
Crosswalks are needed to provide a safe pedestrian crossing at street intersections and midblock crossing locations. There was not a formalized data collection process for the condition of crosswalks. However, crosswalk compliance was assessed based on crosswalk width and cross slope. Cross slope is the slope of the crosswalk perpendicular to the direction of travel. Map 20 depicts crosswalk compliance scores, which are general high within the study area, with only a few crosswalks scoring below 90.



Map 20. Crosswalk ADA Compliance Scores

Pedestrian Signals

Pedestrian signals provide visual and/or audible cues for pedestrian crossing phases, increasing pedestrian safety. Like crosswalks, condition was not formally collected by the sidewalk inventory. However, compliance was assessed based on both ADA and Manual on Uniform Traffic Control Devices (MUTCD) standards. The criteria considered include button size, button height, button position and appearance, and tactile features, including a tactile arrow indicating the direction of crossing and vibrotactile walk indicator. Based on these criteria, the compliance of pedestrian signals in the study area is mixed, with many signals receiving a score of 80 or better, but with many also receiving a score of 60 or less. This is depicted in Map 21.



Map 21. Pedestrian Signal ADA Compliance Score

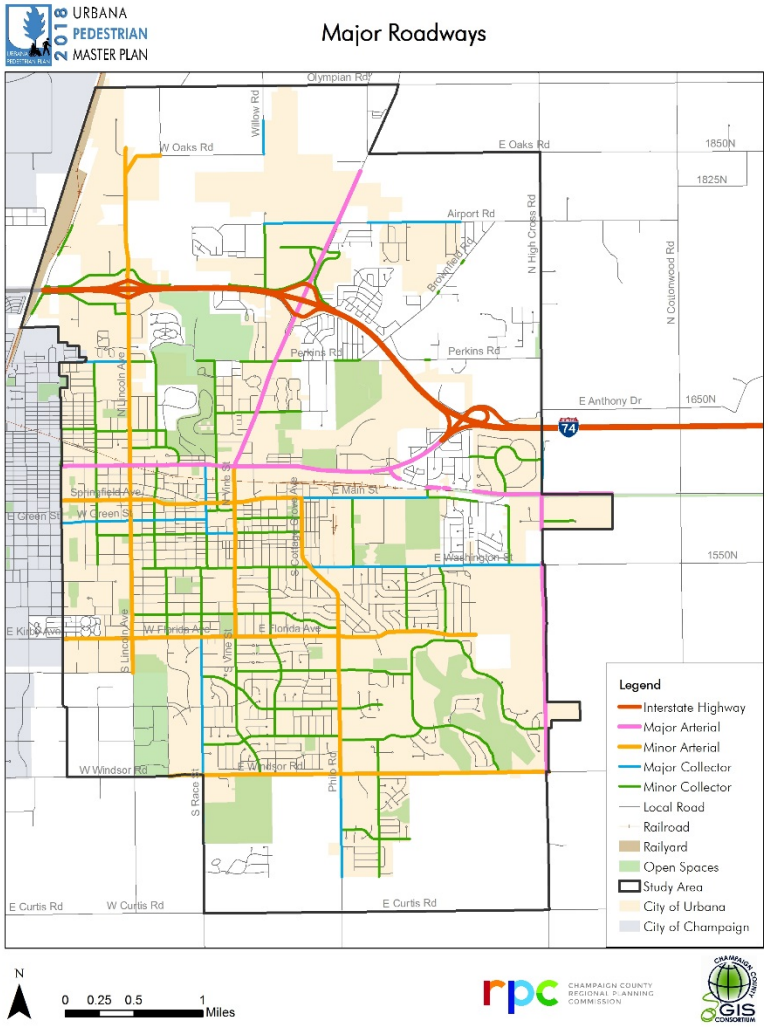
Conditions That Deter Walking

In addition to the physical condition of existing facilities, surrounding characteristics may demotivate walking in an area by making it uncomfortable or less safe.

Major Roadways

Following the roadway functional classification system defined by the Federal Highway Administration (FHWA), streets and highways are grouped based on the service they are intended to provide.[vi] Roadways are generally intended to provide travel mobility and access to land/property, and are classified based on the extent to which they provide these services. Mobility and accessibility generally have an inverse relationship, meaning that as one increases the other will decrease. Therefore, roadways usually only provide one of these services well. Arterials are roadways that have high mobility, provided by multiple, wide lanes and high speeds, while residential streets provide high accessibility by having fewer, narrower lanes and lower speeds. Collectors may be seen as transitional roadways between arterials and residential streets.

The roadways within the study area have been classified in Map 22. Major arterials in the study area are University Avenue (US 150), Cunningham Avenue (US 45), and High Cross Road (IL 130). These roadways have higher speeds and higher volumes (see Map 23 and 26). Both major and minor arterials are less desirable to walk along due to these characteristics.

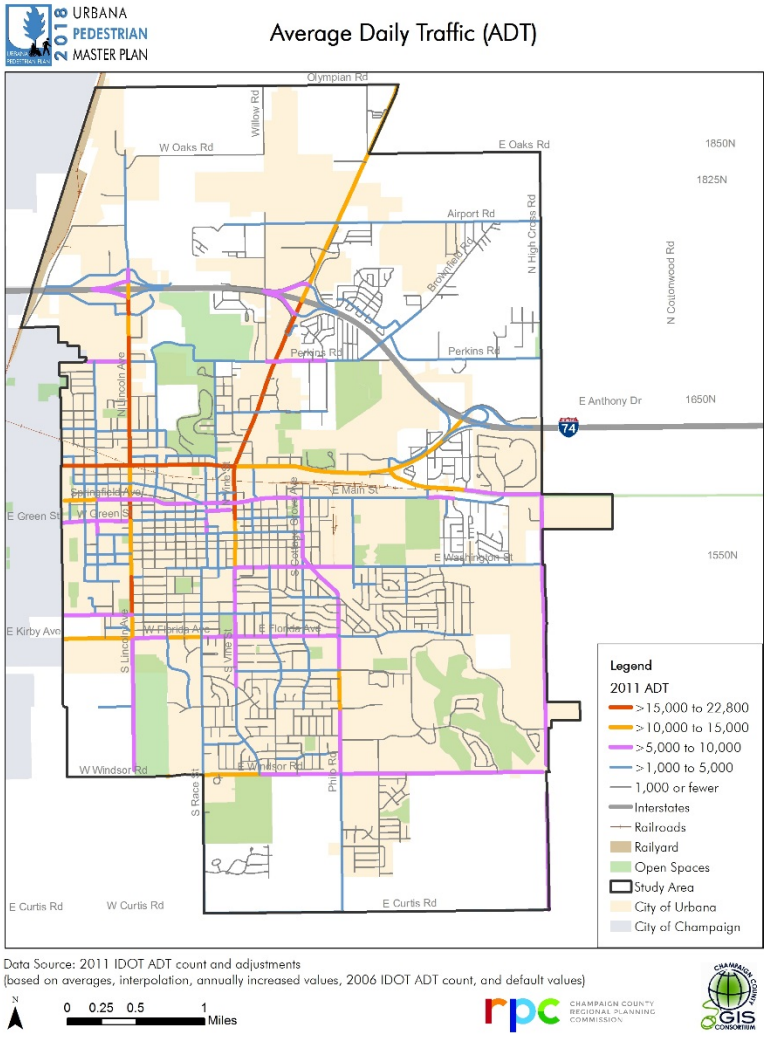


Map 22. Major Roadways

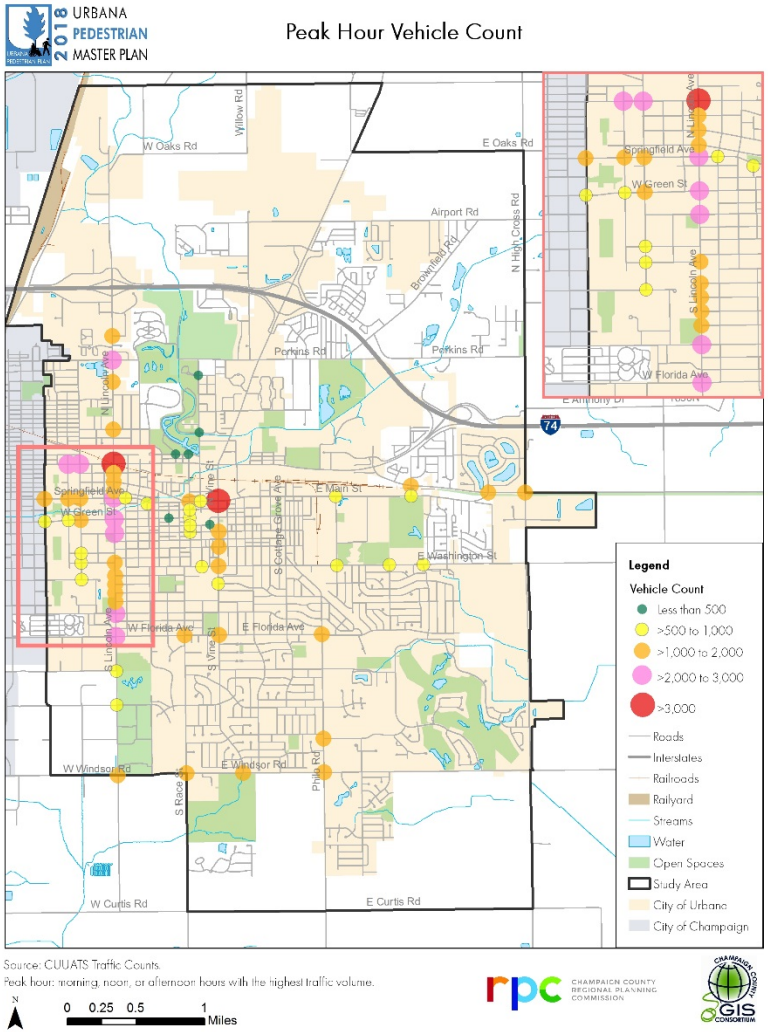
Vehicle Counts

Roadways with greater traffic are generally less desirable to walk along because of the increased likelihood for pedestrian-automobile interaction, which decreases comfort and safety for the pedestrian. Average daily traffic (ADT) as of 2011 was collected for major roadways (excluding residential streets) in the study area and is depicted in Map 23. Traffic volumes are highest along Lincoln Avenue, Cunningham Avenue, and University Avenue. These higher volume roadways create barriers in the pedestrian network, decreasing accessibility.

Peak hour traffic counts, which represent the time with the highest capacity requirements, were also gathered for key intersections throughout the study area. These counts can be seen in Map 24. The intersections of Main Street at Vine Street, as well as University Avenue at Lincoln Avenue have the highest peak hour traffic counts. Many of the other intersections along those four roadways also have high peak hour counts, making them difficult to cross during peak hour traffic periods in the morning (7-9 am) and evening (4-6 pm).



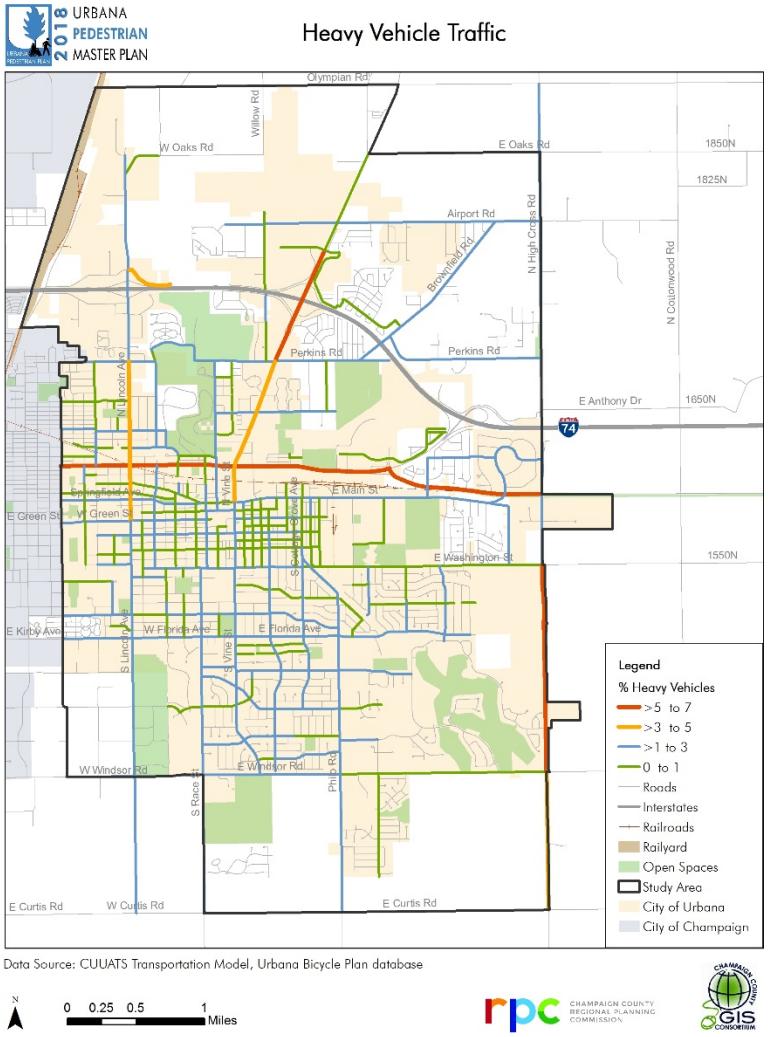
Map 23. Vehicle Average Daily Traffic (ADT), 2011



Map 24. Peak Hour Vehicle Counts

Heavy Vehicle Traffic

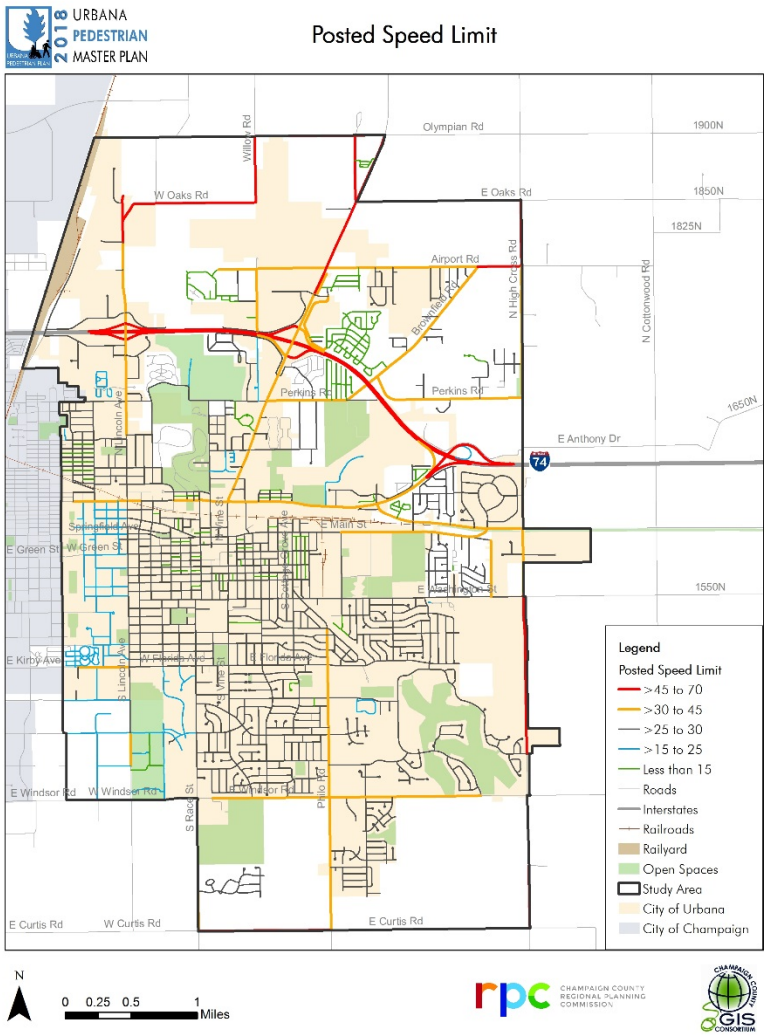
Heavy vehicles include buses and trucks with a Gross Vehicle Weight (GVW) rating of 10,000 pounds or more. The presence of these vehicles on the roadway can increase safety concerns and impact how safe pedestrians perceive the roadway to be. Map 25 depicts the percent of average daily traffic made up of heavy vehicles by roadway segment. This type of traffic is generally low in the study area, except along University Avenue and northern portions of Cunningham Avenue. These sections of roadway are federal routes (US 45, US 150), and are under the jurisdiction of the Illinois Department of Transportation (IDOT).



Map 25. Heavy Vehicle Traffic

Posted Speed Limit

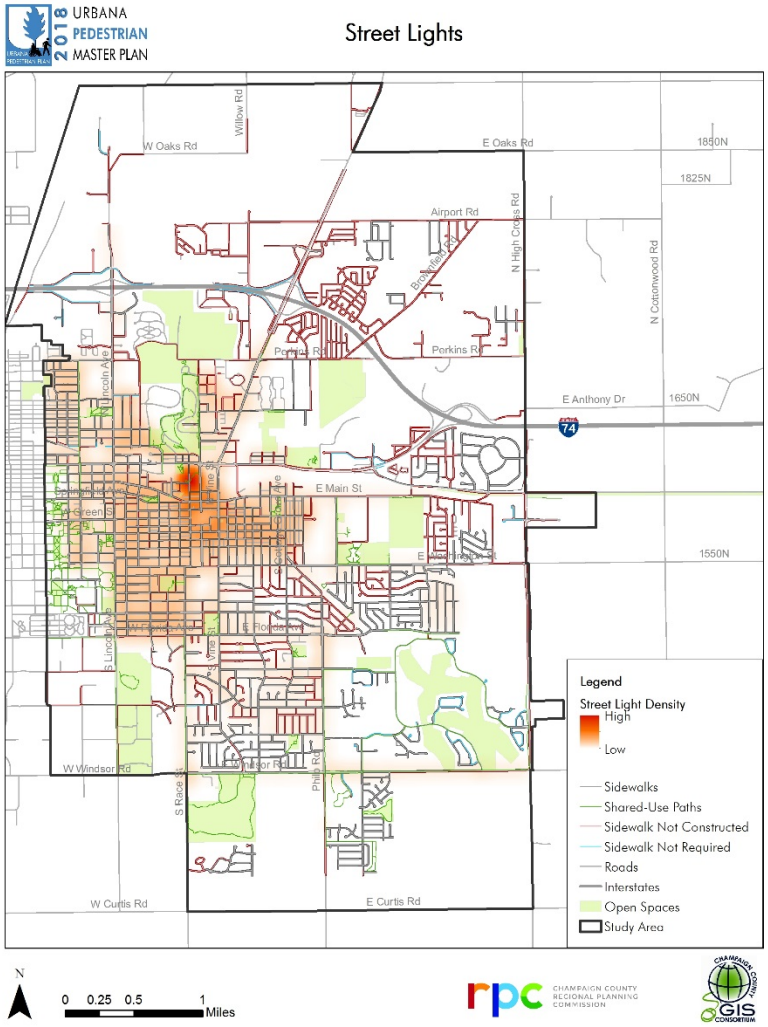
High-speed roadways create barriers to pedestrians by being difficult to cross and potentially increasing the severity and/or fatality chance of a vehicle-pedestrian crash if one does occur. The majority of the roadways in the study area have a speed limit between 25 and 30 miles per hour (mph) (Map 26). Pedestrian fatality risk is generally considered to increase at 35 mph or greater.[vii] Therefore, roadways with higher speed limits pose limitations to accessibility and may require additional treatments to maintain pedestrian safety.



Map 266. Posted Speed Limit

Street Lights

Street lighting can be an important part of pedestrian infrastructure. In some areas, additional lighting may be used to improve safety and security in the dark. The presence of street lights may also increase perceived security to users. In other areas, lighting may be unnecessary or even bothersome, creating light pollution.[viii] Much of the study area does not have a high density of street lighting, with most being present at the core of the study area near Downtown Urbana (Map 27).

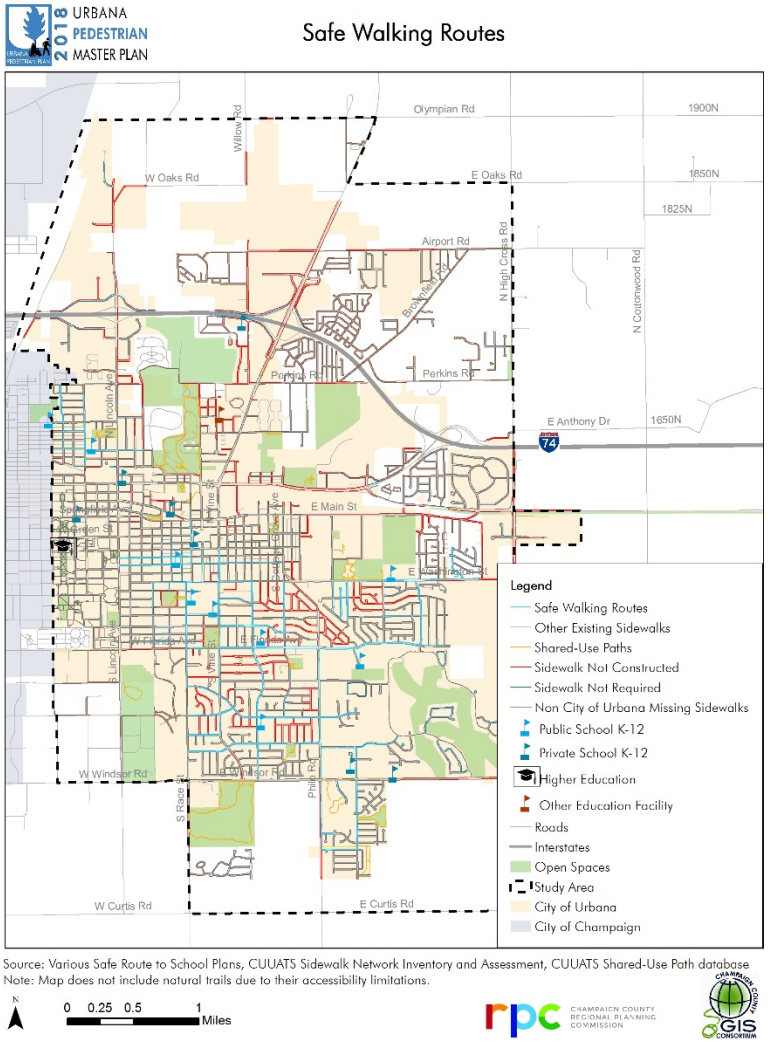


Map 277. Street Light Density

Safe Walking Routes

For the last 30 years, CUUATS has analyzed existing transportation conditions to determine safe walking routes to public elementary and middle schools in the Champaign-Urbana area. Scoring criteria take into account the presence of sidewalks, marked crosswalks, pedestrian-related signage, provision of adult crossing guards, the number of lanes crossed at an intersection, traffic volumes, traffic control devices (i.e. stoplights or stop signs), and posted speed limits.

Urbana School District #116 has six elementary schools that are neighborhood schools, which means that children living close to an elementary school attend that school. School walking boundaries of one mile or less have been established for these schools, as well as Urbana Middle School. Map 28 shows the suggested safe walking routes to all of these schools. Most of these schools do not cross a major road; if they do, the Urbana School District typically provides an adult crossing guard to help children safely cross these roads.



Map 28. Safe Walking Routes

[i] 2015 American Community Survey (ACS) 5-Year Estimates.

[i] Champaign- Urbana Mass Transit District (CUMTD). *Fares & Passes.* Retrieved from https://www.cumtd.com/riding/faresandpasses/

[iii] Snyder, T. (2014, May 8). *Low-Income Americans Walk and Bike to Work the Most.* Retrieved from http://usa.streetsblog.org/2014/05/08/low-income-americans-walk-and-bike-to-work-the-most/

[iv] Pedestrian and Bicycle Information Center. (2017). *Shared-Use Paths/Sidepaths.* Retrieved from http://www.pedbikeinfo.org/planning/facilities_ped_paths.cfm

[v] CUUATS. (2016). *Sidewalk Network Inventory and Assessment.* Retrieved from https://ccrpc.org/wp-content/uploads/2016/02/SidewalkNetworkInventoryAssessment.pdf

[vi] U.S. Department of Transportation. (1989). *FHWA Functional Classification Guidelines.* Retrieved from http://gpsinformation.info/roundabout/Guides/UrbanRuralDefinition.htm

[vii] World Health Organization (WHO). (2004). *Road safety- Speed.* Retrieved from http://www.who.int/violence_injury_prevention/publications/road_traffic/world_report/speed_en.pdf

[viii] Project for Public Spaces. (2009). *Lighting Use & Design*. Retrieved from https://www.pps.org/reference/streetlights/