MTD NEXT

MARKET ANALYSIS

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NELSON NYGAARD

MTD NEXT

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OVERVIEW

The purpose of this market analysis is to examine the underlying conditions within the Champaign-Urbana Mass Transit District (MTD) as they relate to the demand for transit service throughout the district, and the places transit should serve. The findings from this market analysis will contribute to the recommendations that are ultimately identified for the District.

The underlying demand for transit is driven by a number of factors. The following four factors are particularly important and are the focus of this market analysis:

Population and Employment Density: Since transit relies on having more people in close proximity to service, higher population density drives demand for higher levels of service. Likewise, the location and density of jobs is a strong indicator of transit demand, as traveling to and from work accounts for the most frequent type of transit trip.

Transit Propensity: Differences in socio-economic characteristics mean that different groups of people are more or less likely to use transit. For example, households with many cars are much less likely to use transit than those with one or none.

Major Activity Centers: Major activity centers, such as universities, large employers, and shopping centers, are places that attract large volumes of people and can generate a large number of transit trips.

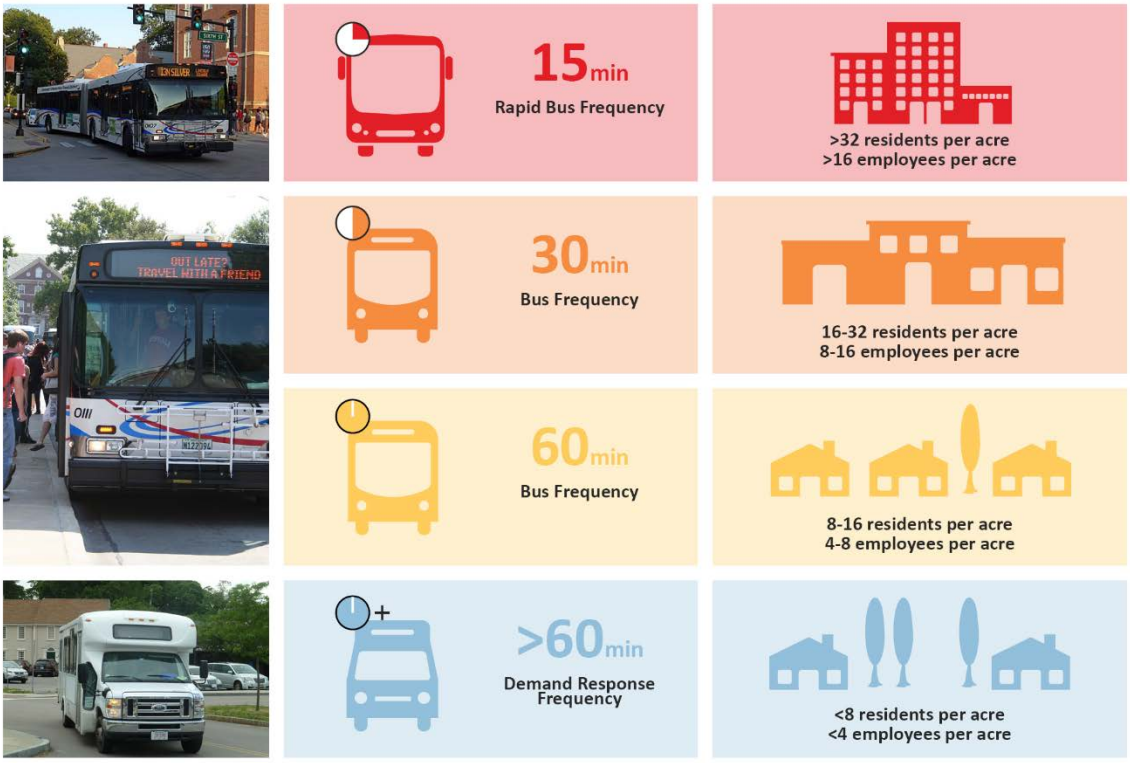
Travel Flows: Travel flows illustrate where people travel between and the types of trips people make. They provide insight into what places should be connected.

More than any other factor, population and employment density are the primary drivers of transit demand and, as such, provide strong indications of underlying transit demand. This is because:

- The reach of transit is generally limited to within a ¼ mile of a transit route. As a result, the size of the travel market is directly related to the density of development in that area.
- Transit service frequencies, in turn, are closely related to market size. Bigger markets support more frequent service, while smaller markets can support only less frequent service.
- To attract travelers who have other options, such as automobiles, transit must be relatively frequent – at least every 30 minutes.

Places with large numbers of people, jobs, and other activities produce the greatest demands for transit service. As a result, population density (residents per acre) and employment density (jobs per acre) provide an indicator of just how much demand there is for transit in a particular area. Higher population and job densities can support higher levels of transit service.

Figure 1: Density and Transit Demand



TRANSIT DEMAND

Underlying transit demand is based on the density of people and jobs throughout a study area weighted by the propensity of certain population groups to use public transit if it is available. Combining density and propensity provides an indication of where transit demand is highest.

POPULATION AND EMPLOYMENT

Population and employment densities are the two strongest indicators of both where the demand for transit is the highest and where it will work best. There are three reasons for this:

- For a cost-effective transit system, a high volume of customers is needed to support the service. The density of people in a place is a key indicator of the potential market for transit because people are generally willing to travel up to ¼ mile to a bus stop.
- Transit service frequencies, in turn, are closely related to market size. Bigger markets support more frequent service, while smaller markets can support less frequent service.
- To attract travelers who have other options, such as automobiles, transit must be relatively frequent – at least every 30 minutes, and preferably every 10 to 15 minutes. Below that, transit can be expected to serve only those who do not drive or cannot drive.

When population density and employment density are considered together, the demand for transit in many areas will be significantly higher than when looking at each factor alone. Considering population and employment density together also captures what areas have a mix of uses (residential, job centers, commercial areas) which can generate particularly high transit ridership.

TRANSIT PROPENSITY

National research shows that certain population groups have a higher propensity for transit use than the overall population. Some groups of people, such as people without access to a car, are more likely to use transit than those who do have access to a car. When significant numbers of individuals and households from high-transit demand groups cluster together, they can influence the underlying demand for transit to an extent that is not captured when only considering the total population.

To account for differences in transit use across populations within the study area, transit propensity factors were applied based on the relative existing transit use differences between these groups and the population as a whole (see Table 1). The factors measure how much more or less likely a particular group is to use transit than the general population. Transit propensity factors were calculated for the following social and economic characteristics:

- Race/Ethnicity
- Access to a vehicle
- Poverty level

Table 1 Transit Propensity Factors

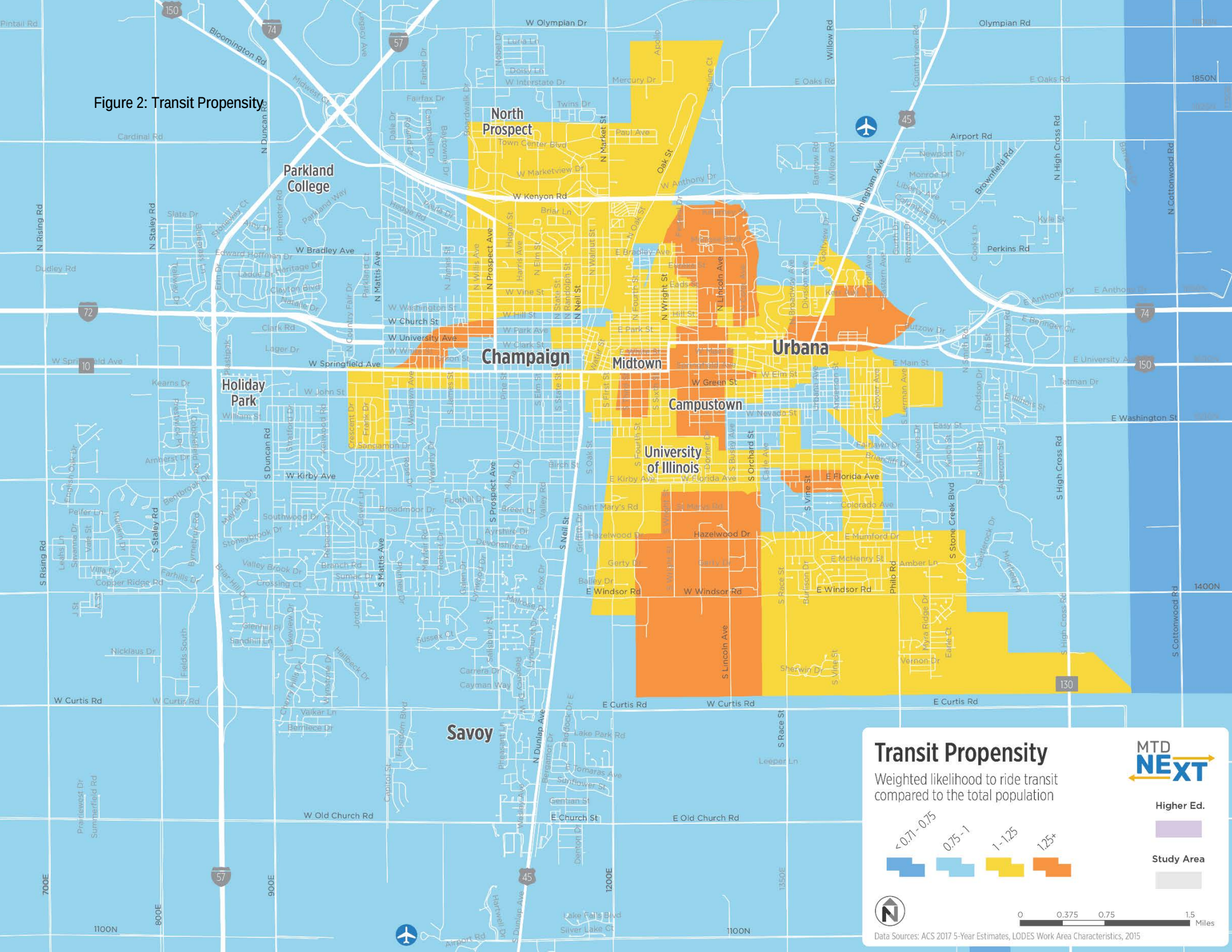
Transit Propensity Factors	
Vehicle Ownership	
No Car	3.49
One Car	1.27
2+ Cars	0.37
Poverty Level	
Under the Poverty Level	2.10
100% - 150% of the Poverty Level	1.15
Over 150% Poverty Level	0.69
Race	
White Alone	0.72
Black or African American	1.38
Asian	2.04
Other Race	1.13
Hispanic/Latino	
Not Hispanic/Latino	0.99
Hispanic/Latino	1.12

Source: Calculations developed using 2013 – 2017 American Community Survey 5-Year Estimates

These transit propensity factors were used to adjust the straight population density and account for the varying likelihood that people of different socio-economic groups will use transit. The presence of each population group is an important indicator of increased or decreased demand for public transit.

Within the District, there are notable areas of transit propensity in Midtown, Campustown, near the Carle Foundation Hospital, and to the area south of the University of Illinois. Overall propensity is higher on the east side of the District. Populations within these areas have a higher likelihood to utilize transit services if they are available. This likelihood does not directly indicate demand for transit, which is based on additional factors described in the next section of this document.

Figure 2: Transit Propensity



UNDERLYING TRANSIT DEMAND

When population, employment, and the propensity of different groups to use transit, are considered together, the total underlying transit demand is captured.

Within the District, transit demand is highest broadly between Hill Street to the north, Florida Avenue to the south, Prospect Avenue to the west, and Broadway Avenue to the east. Within this area, the following places demonstrate the highest demand for transit service:

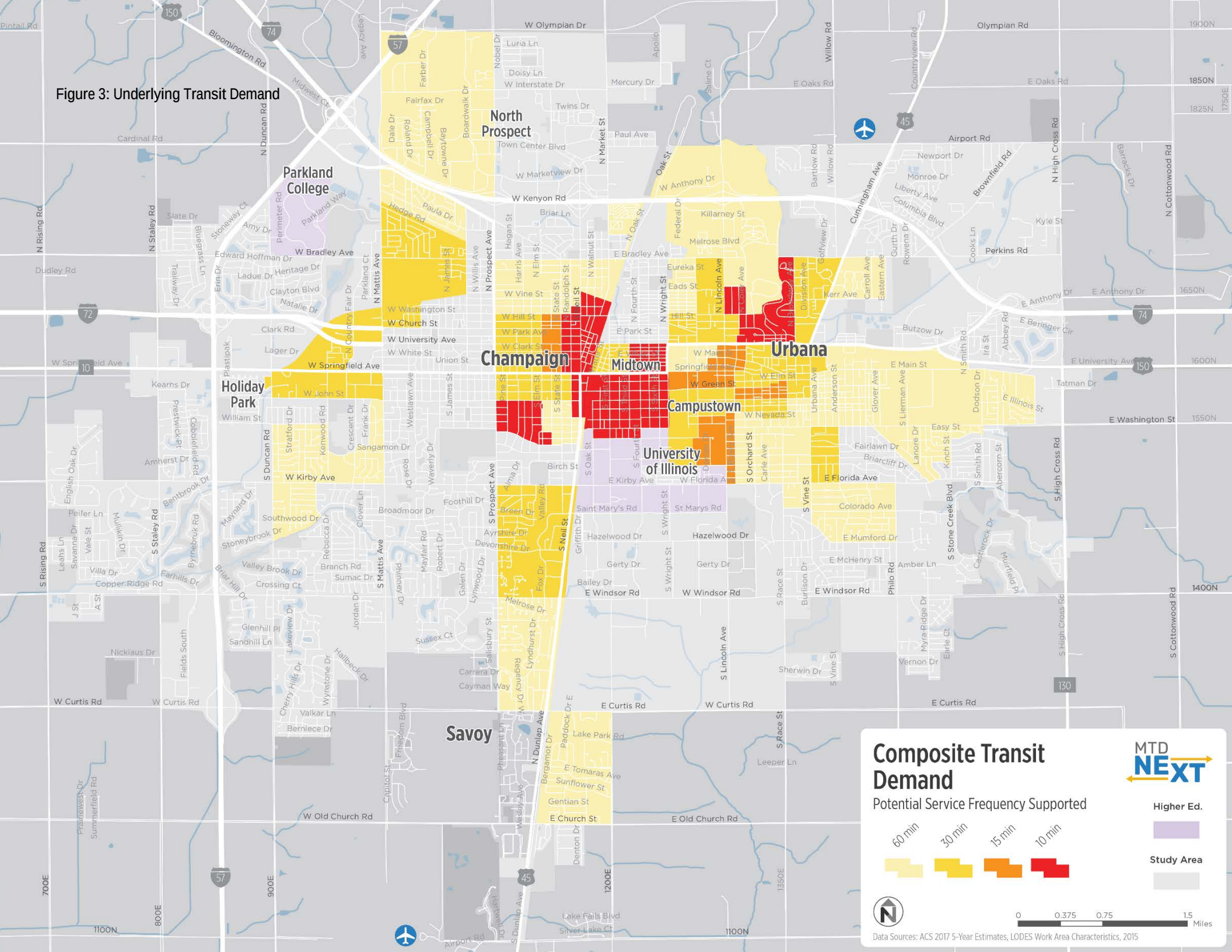
- Downtown Champaign
- Midtown
- Campustown
- The neighborhood between John Street, Prospect Avenue, Haines Boulevard, and Elm Boulevard
- The University of Illinois
- Neighborhoods around the Carle Foundation Hospital
- One Illinois Student Apartments

Outside of the central neighborhoods, downtown areas, and the University of Illinois, there is notable demand for transit service around:

- Kraft Foods and the neighborhoods to the southwest of the facility
- The residential neighborhood and employment center along Neil Street between Kirby Avenue and Windsor Road

The underlying transit demand indicates a need for frequent transit service in the core of the service area, specifically between east Champaign and west Urbana. As a primarily urban environment, these areas are ideal for fast and frequent transit service. The demand map also indicates select areas of notable demand just outside of the core. These areas are more suburban with winding roads, cul-de-sacs, and large plots of land with further setbacks. These areas are more challenging to serve with transit, however, the level of transit demand indicates that those areas have demand for a relatively high level of service.

Figure 3: Underlying Transit Demand



MAJOR ACTIVITY CENTERS

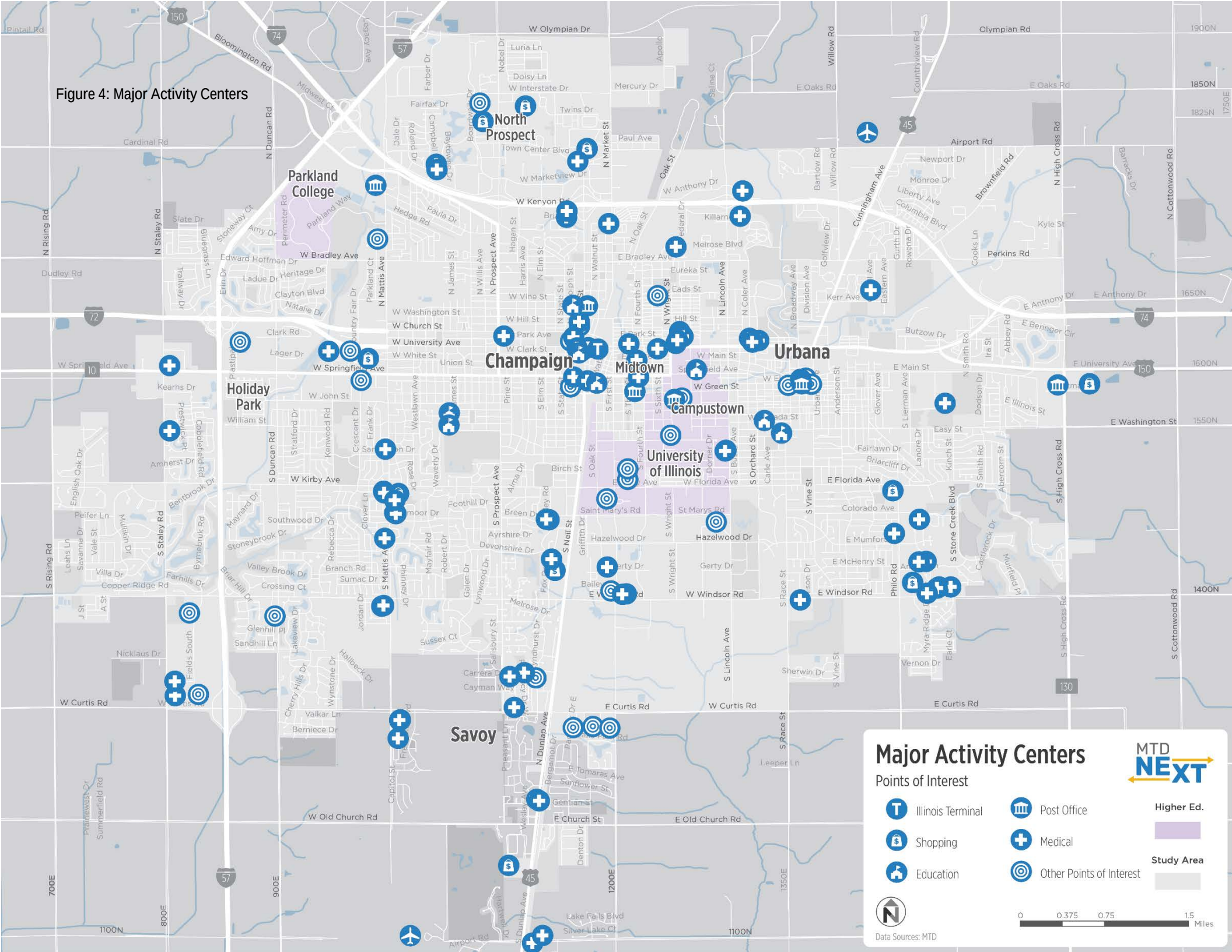
Activity centers generate additional demand for transit. These include large employers, hospitals and healthcare centers, universities, and entertainment destinations. While some of these major activity centers are located in areas with a high transit propensity, many are not. These locations represent places that may warrant transit service despite having a lower transit propensity.

Within the service area there are several important observations:

- Major activity centers are relatively evenly distributed between Champaign and Urbana. Areas outside of the core cities have fewer activity centers.
- Shopping centers and grocery stores are largely located farther from the center of the District.
- There is a concentration of medical facilities and hospitals in the center of the District. However, numerous clinics and primary care locations can be found in the suburban areas outside of the core.
- Many residential areas are not within walking of distance major trip generators. This land-use pattern suggests that individuals must rely on some other form of transportation to meet daily needs.
- Shopping destinations in suburban areas are mainly big box stores and strip malls. These locations have significant setbacks, with large parking lots located in the front of the store. This design is difficult to serve with transit, as customers are required to walk long distances with shopping carts and items, or the bus must deviate to provide closer access to the activity center.

While many of these areas are currently served by transit, not all activity centers are served at all times of day or on weekends. This can create challenges for attracting employees and accessing services. These types of challenges limit who can utilize public transportation services. Individuals who can only make their trip at a select time will seek alternative options and may choose simply not to use public transit at all based on the limitations.

Figure 4: Major Activity Centers



TRAVEL FLOWS

Work Trips (US Census)

The US Census Bureau produces Longitudinal Employer-Household Dynamics data (LEHD) which identifies the geographies where people live and work and is used to determine their general commute patterns. This data illustrates home to work trips made within the service area at the block group level.

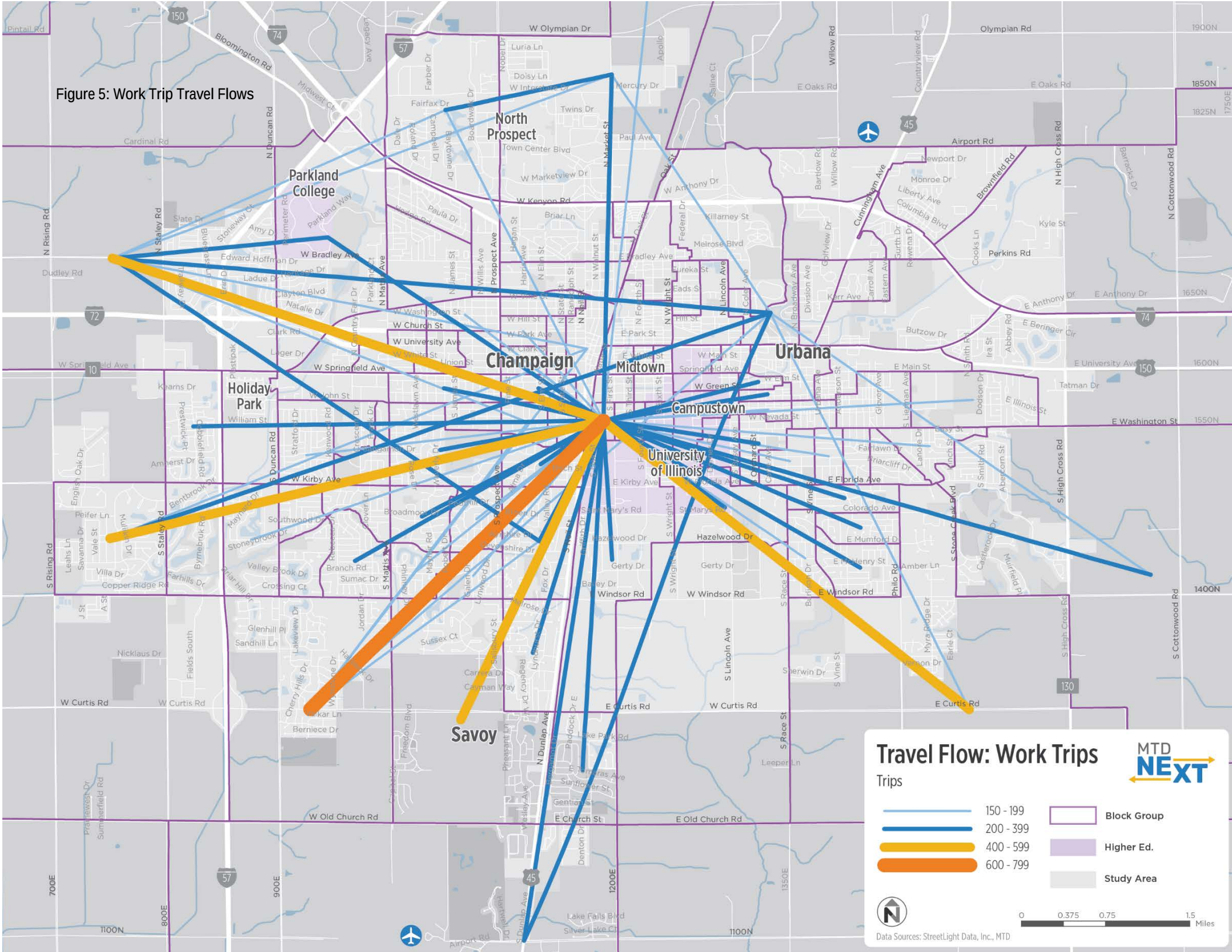
The University of Illinois at Urbana-Champaign is a major activity center in the community, and the travel flows reflect this, with significant travel flows converging near the University from various areas. Notably, there are substantial travel flows originating near:

- The area of Champaign immediately to the west of Savoy
- Savoy
- Kenwood
- Staley
- Southern Urbana to the southwest of Mira

In addition to the University, there are smaller but notable travel flows between Carle Foundation Hospital and several locations in the service area, primarily to the west and south.

While work travel flows are primarily centrally focused on the University, creating a radial travel pattern, there are several travel flows that cut across the service area and or do not pass through the core. These types of travel flows indicate a potential demand for crosstown transit services, which do not pass through the core or require a downtown transfer to complete. It should also be noted that travel demand is heavier to the western and southern edge of the service area.

Figure 5: Work Trip Travel Flows



All Trips (StreetLight)

Data from StreetLight was used to analyze travel patterns within the cities of Champaign and Urbana, as well as areas immediately surrounding the cities. StreetLight uses location data from smartphone applications and other GPS-enabled devices to provide detailed insight into people's travel behavior.

All Weekday Trips Within and Around Champaign-Urbana

Figure 6 illustrates travel flows within and just outside of Champaign-Urbana, for all trip purposes and on weekdays. The largest travel flows by far are to and from zones in the central and western part of the twin city area. These places include Midtown, University of Illinois, North Prospect, Parkland College, and Holiday Park. Comparatively, there is less travel between zones within the eastern and southern areas of Champaign-Urbana. In general, travel activity is heavier in the western half of the twin city area (Champaign) than in the eastern half (Urbana).

Weekday Peak Hour Trips within Champaign-Urbana

Figure 7 shows AM & PM peak-period weekday trips within Champaign-Urbana between the identified zones. The map shows that during the peak period, the region has relatively few travel destinations. This could be attributed to two primary factors. First, the off-peak travel schedules of students and faculty attending the University of Illinois. Second, trip generators outside of the core are very dispersed and as a result, no single area outside of the core generates a high volume of trips. As shown in the map, most of the peak-period trips are concentrated in zones close to the University of Illinois, North Prospect, and the western part of the twin city area in Champaign.

Weekday Off-Peak Hour Trips within Champaign-Urbana

Figure 8 shows off-peak trips within Champaign-Urbana. During off-peak hours on weekdays, the largest travel flows are to and from the University of Illinois. Relatively large trip volumes also originate in Parkland College, North Prospect, and Holiday Park. In comparison with peak-periods, off-peak periods generate more vehicular movement due to the high student population in the area.

All Weekend Trips Within and Around Champaign-Urbana

Figure 9 illustrates weekend travel flows within and just outside of Champaign-Urbana, for all trip purposes. The region has strong weekend traffic with most trips centered around North Prospect. This could be attributed to high commercial activity in the northern part of the area.

Figure 6: Weekday All Day Travel Flow

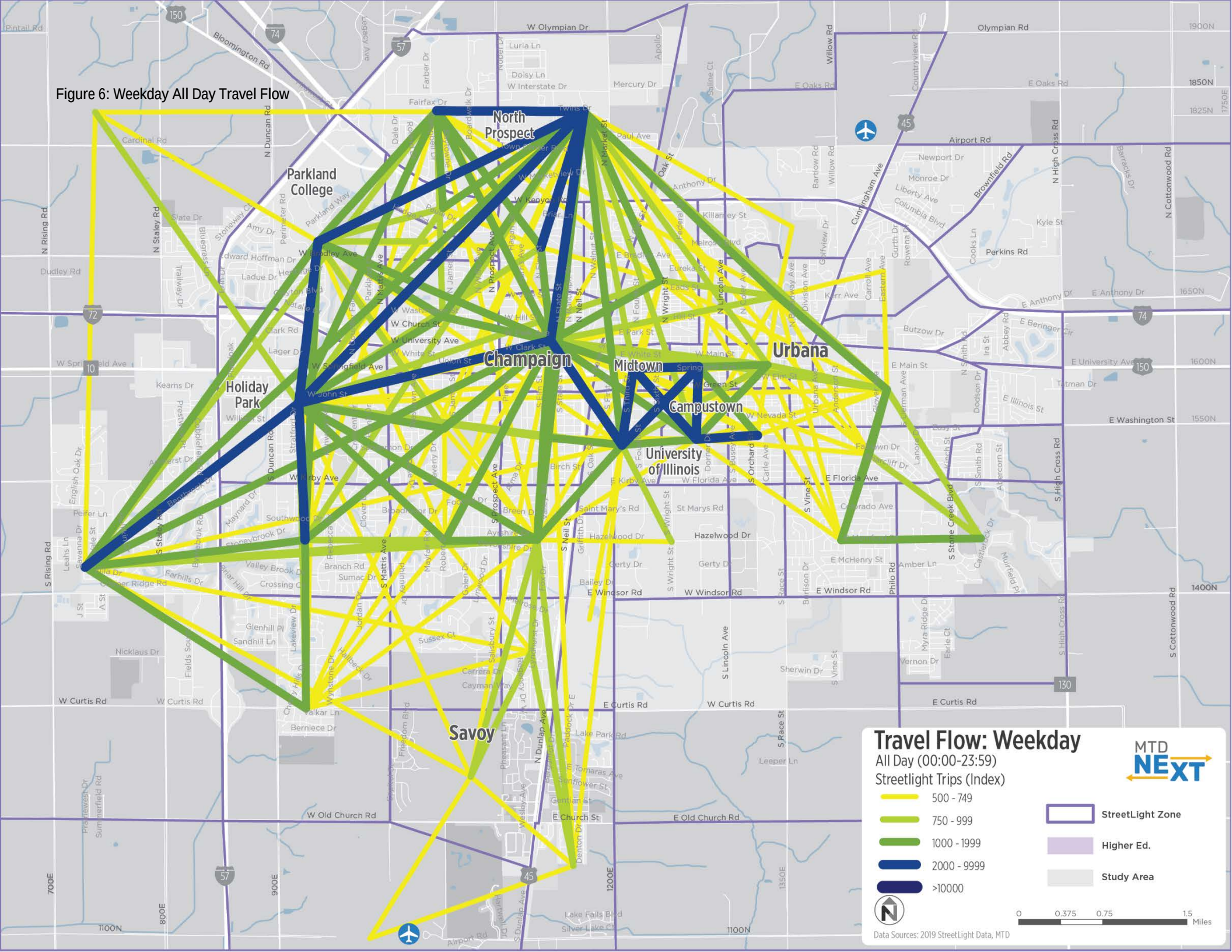


Figure 7: Weekday Peak-Period Travel Flow

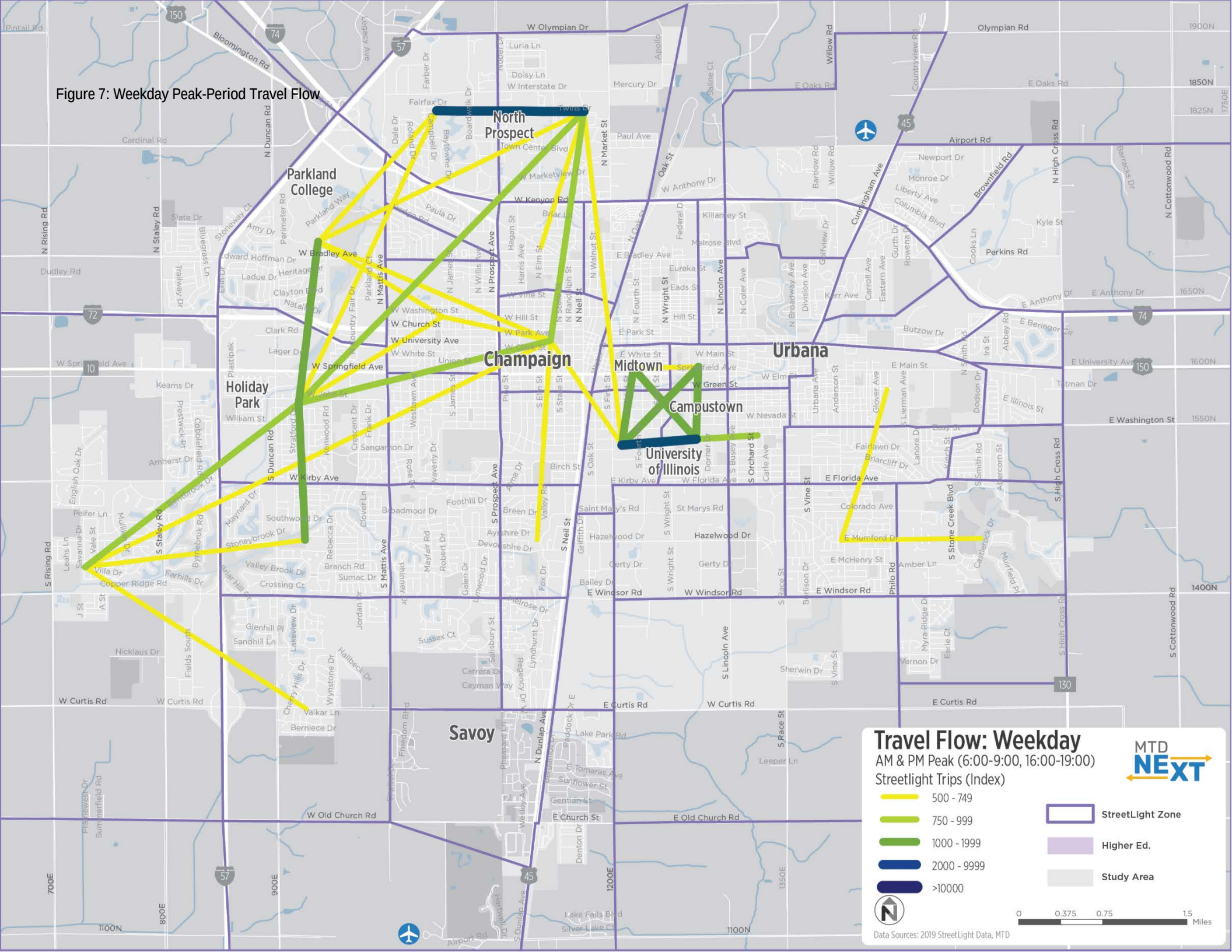


Figure 8: Weekday Off-Peak Travel Flow

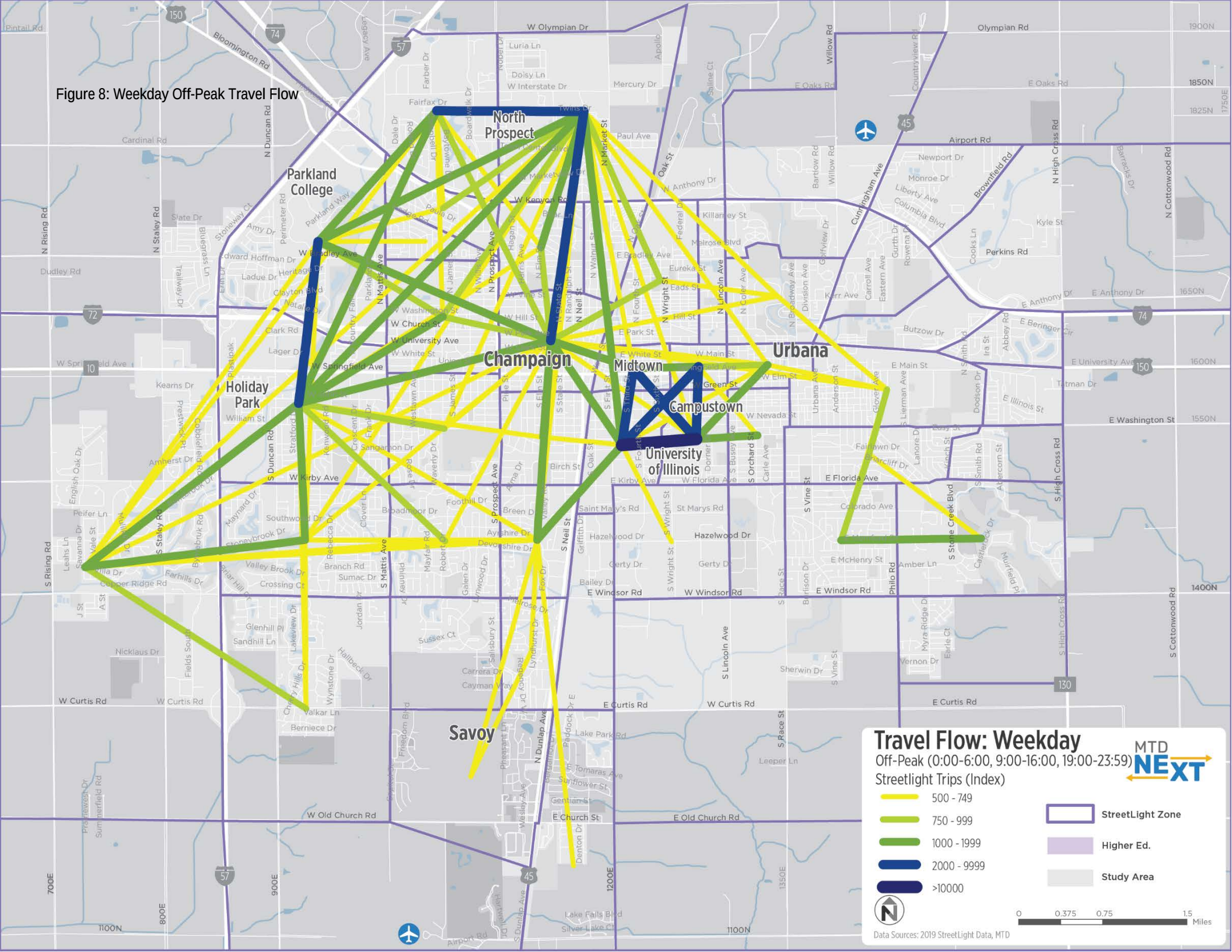
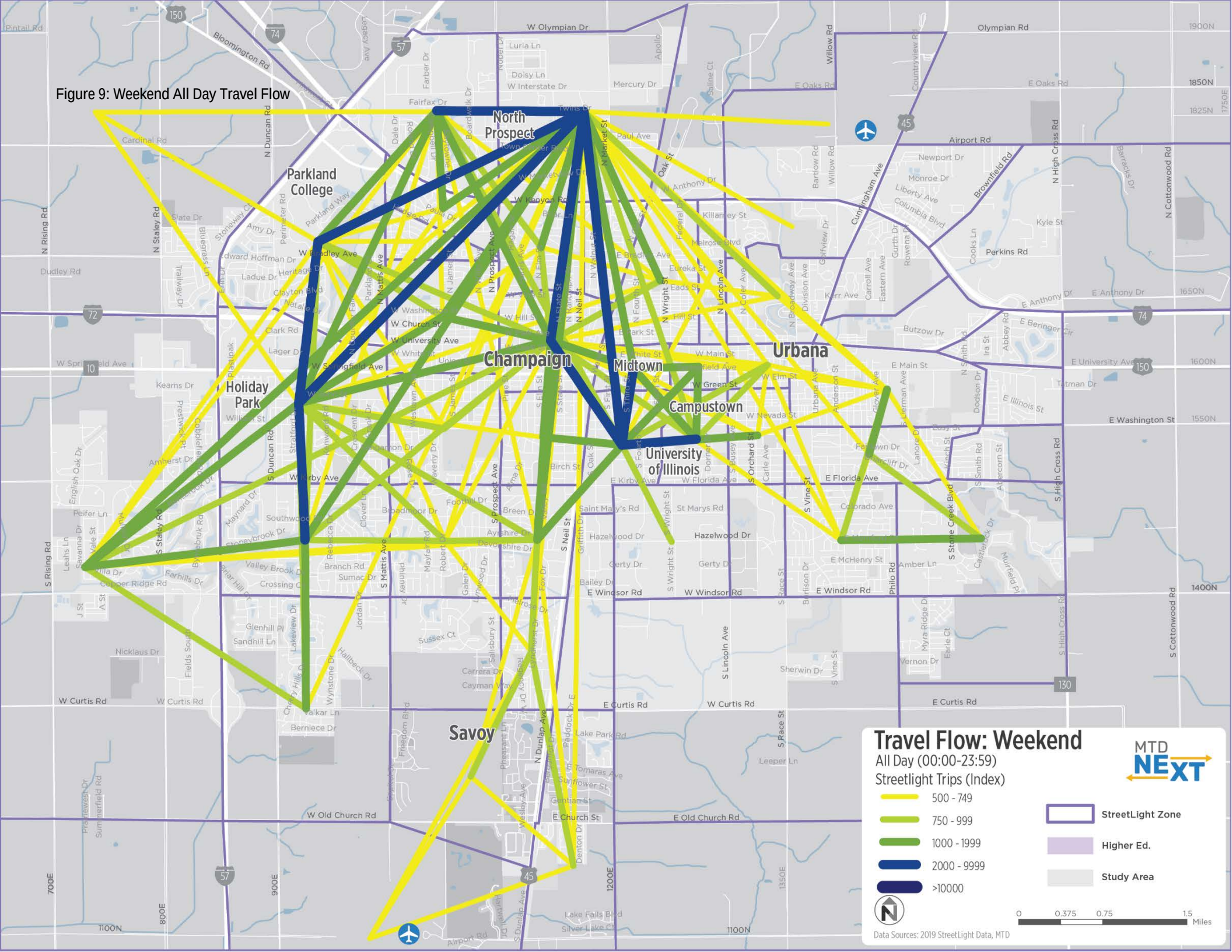


Figure 9: Weekend All Day Travel Flow



MARKET COMPETITION

All public transit providers compete with alternative modes of transportation for rides. This is particularly true in the District, which has a diverse market made up of students, workers, longtime residents, and new transplants. These potential customers have a wide range of transportation options to choose from when deciding how to travel. Within the District, there are numerous transportation options, including personal vehicles, bike share, walking, and Transportation Network Companies (TNCs). To be effective, public transit providers must focus investments on serving markets where transit performs better compared to other options.

Transit works best when it:

- Is designed simply
- Is direct, fast, frequent, and reliable
- Serves dense corridors
- Has a targeted customer market
- Serves trips longer than 10 minutes

SUMMARY

Activity in the District is concentrated around the University of Illinois, in the Campustown area, and in Downtown Champaign and Urbana. Additional areas of high demand include the area around the Clare Foundation Hospital and One Illinois Student Apartments. There is also notable demand in the neighborhood south of West John Street and west of South Neil Street. While the existing MTD service does serve these areas, there are gaps between the current level of service and market demand for transit service. This includes both areas that are underserved and connections that are difficult to make due to inconvenient transfer connections or limited frequencies during certain times of day. Some locations in the service area, even those close to the urban core, are served by lower levels of service than is warranted by demand, as indicated by population density, demographics, and job density. Some existing services do not adequately serve crosstown trips, especially to job opportunities and activity centers outside of the central urban environment.

- **Areas of high demand are not consistently served**. Within the District, there is notable demand for frequent transit in Midtown, Campustown, and near the Clare Foundation Hospital. While these areas are served by the existing MTD service, service varies widely by day of week and time of day. While some variation is appropriate based on travel demand, inconsistent service makes service too complex for customers and limits the overall usefulness of transit. The current service is highly oriented towards work trips and class schedules. While that does capture a key transit market, it does not work particularly well for other markets such as shopping, evening entertainment, and jobs that do not follow an eight-to-five workday.
- **There is a lack of crosstown connections**. Travel flows indicate opportunities for direct connections that do not pass through Downtown Champaign or Urbana. The most notable are travel flows to the Clare Foundation Hospital from areas to the west and south of the District. There is also a notable distribution of major activity centers on both the east side and the west side of the District. This indicates demand for longer crosstown connections, such as the existing Orange Route.
- **There are large areas of low transit demand.** While there are notable areas of transit demand in the District, there are also large areas with little or no transit demand. This type of environment is challenging to serve with transit, because service must pass through areas of very low productivity to connect to areas of demand. This naturally dilutes the overall productivity of transit service.
- **Access to major activity centers is limited.** Across the service area major activity centers are clustered, providing easy access to localized populations. However, in areas with no access to major activity centers, such as grocery stores, there are barriers to accessing food. The primary barriers are distance from residential areas to shopping centers and that the current transit service does not serve all activity at all times of day or weekends.

- **There is competition in the transportation market**. In the District, there are numerous transportation options, including personal vehicles, bike share, walking, and Transportation Network Companies (TNCs). Customers have the freedom of choice when deciding which option best meets their needs. While these options do create competition for public transit providers, it is important that public transit focuses on markets that it can attract and serve well. Students living within a 10-minute walk of campus are likely to walk to classes regardless of the level of transit service and are not a good market for transit, while students traveling farther to shopping represent a better market segment for transit.

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