



Lawrence Transit and KU Route Redesign Study

FINAL REPORT

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1. EXECUTIVE SUMMARY

Lawrence, Kansas is home to the University of Kansas and Haskell Indian Nations University. Like many communities hosting large universities, Lawrence is served by two complementary transit systems. KU on Wheels has served the University of Kansas (KU) with fixed-route services since 1971. The City of Lawrence launched Lawrence Transit System in 2000 and has worked with the KU to coordinate service since 2006, including jointly funding two fixed routes beginning in 2009. Today, Lawrence Transit and KU on Wheels publish a single Transit Guide that includes information on ten city routes, eight university routes, and two jointly funded coordinated routes. In 2019, before the COVID-19 pandemic, the two systems collectively carried approximately 3 million passengers.

As the Lawrence community recovers from the disruptions of the COVID-19 pandemic, the Lawrence Transit Route Redesign study provides an opportunity to take a fresh look at the existing transit network, identify the strengths and weaknesses of each route, and develop recommendations to address the changing mobility landscape in the city, including a new multimodal transfer facility.

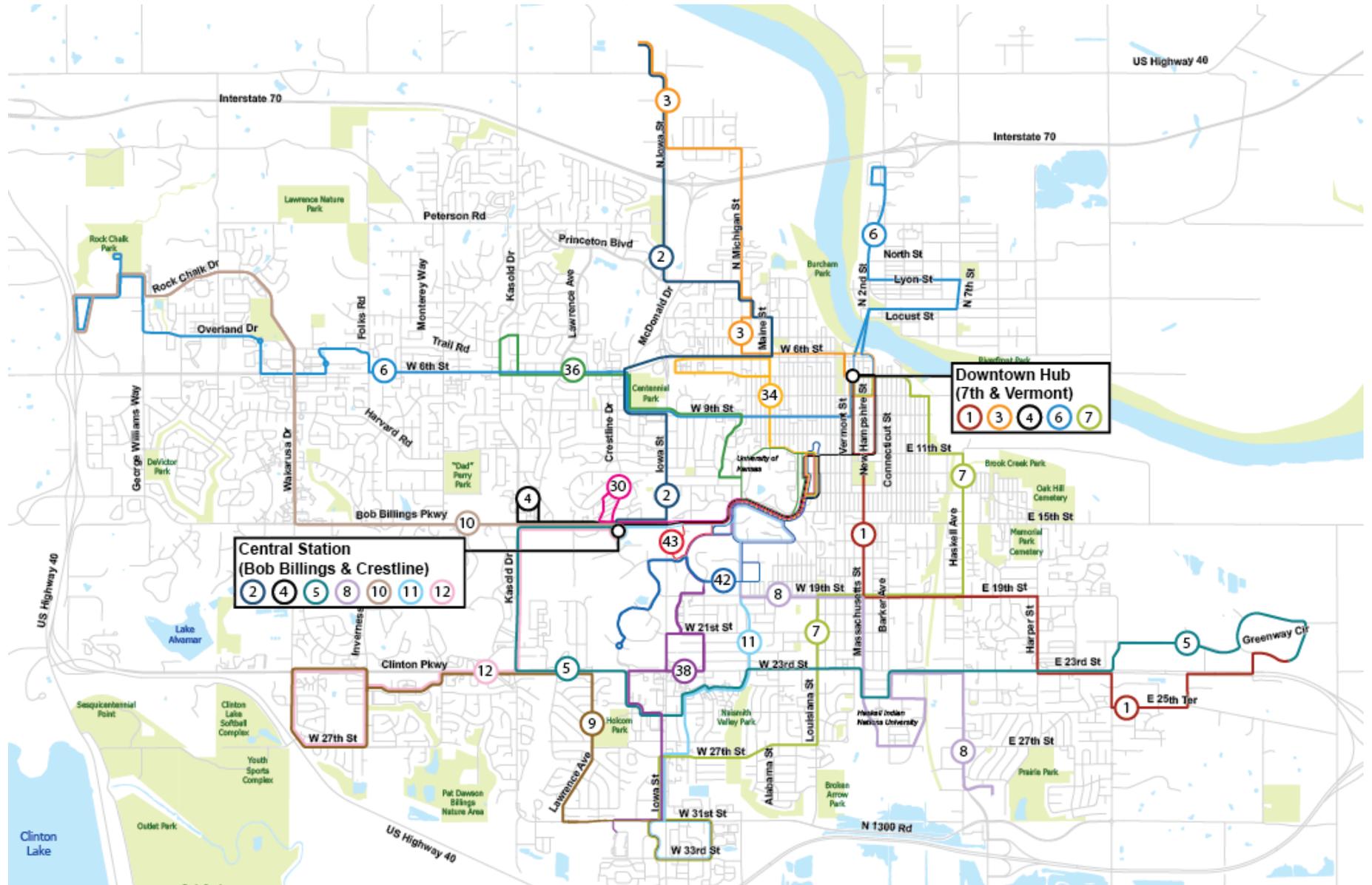
Figure 2 shows a system map of the recommended fixed-route network. The recommendations presented in this document are designed to create a more efficient and effective transit network that incorporates the new Central Station at Bob Billings Parkway and Crestline Drive, and allows for maximum flexibility in terms of future schedule adjustments in response to any changes in funding availability. In addition, the recommendations include, for the first time, Sunday service throughout the City of Lawrence, in the form of app-based demand response service known as microtransit. Finally, the recommendations presented in this document are designed to be cost-neutral and implementable with existing available resources.

FIGURE 1: LAWRENCE TRANSIT AND KU BUSES IN OPERATION



Source: Top: Journal-World File Photo, www2.ljworld.com
Bottom: Nomin Ujyediin, Kansas News Service

FIGURE 2: RECOMMENDED FIXED-ROUTE NETWORK



This document consists of ten chapters that follow this executive summary. Each corresponds to the major phases of the study:

- **Chapter 2 – Existing Services:** An overview of existing transit services in the study area, including current operating characteristics.
- **Chapter 3 – Budget and Funding:** A description of current fare policies and funding sources.
- **Chapter 4 – Market Analysis:** An assessment of both the need and potential for transit service in the study area based on density and demographic characteristics as well as regional travel patterns.
- **Chapter 5 – Public and Stakeholder Outreach:** A summary of public and stakeholder input, collected in meetings and surveys over the course of the study, and used to inform the development of preliminary recommendations.
- **Chapter 6 – Service Assessment:** A diagnostic assessment of the existing systems' strengths, weaknesses, and opportunities, as identified through the combination of technical analyses and industry best practices.
- **Chapter 7 – Preliminary Service Scenarios and Stakeholder Reactions:** A review of the two preliminary service redesign scenarios, and the feedback received from stakeholders in response to each scenario.
- **Chapter 8 – Final Recommendations:** A detailed set of recommendations presented route by route, and including an assessment of the equity impacts of the recommendations.
- **Chapter 9 – Implications of Zero-Fare Transit:** A consideration of the impacts of zero-fare service on equity, ridership, and costs; based on a review of case studies.
- **Chapter 10 – Financial Plan:** A ten-year projection of the operating expense impacts of two scenarios: a scenario in which the fare policy does not change and a scenario in which zero-fare service is implemented.



2. EXISTING SERVICES

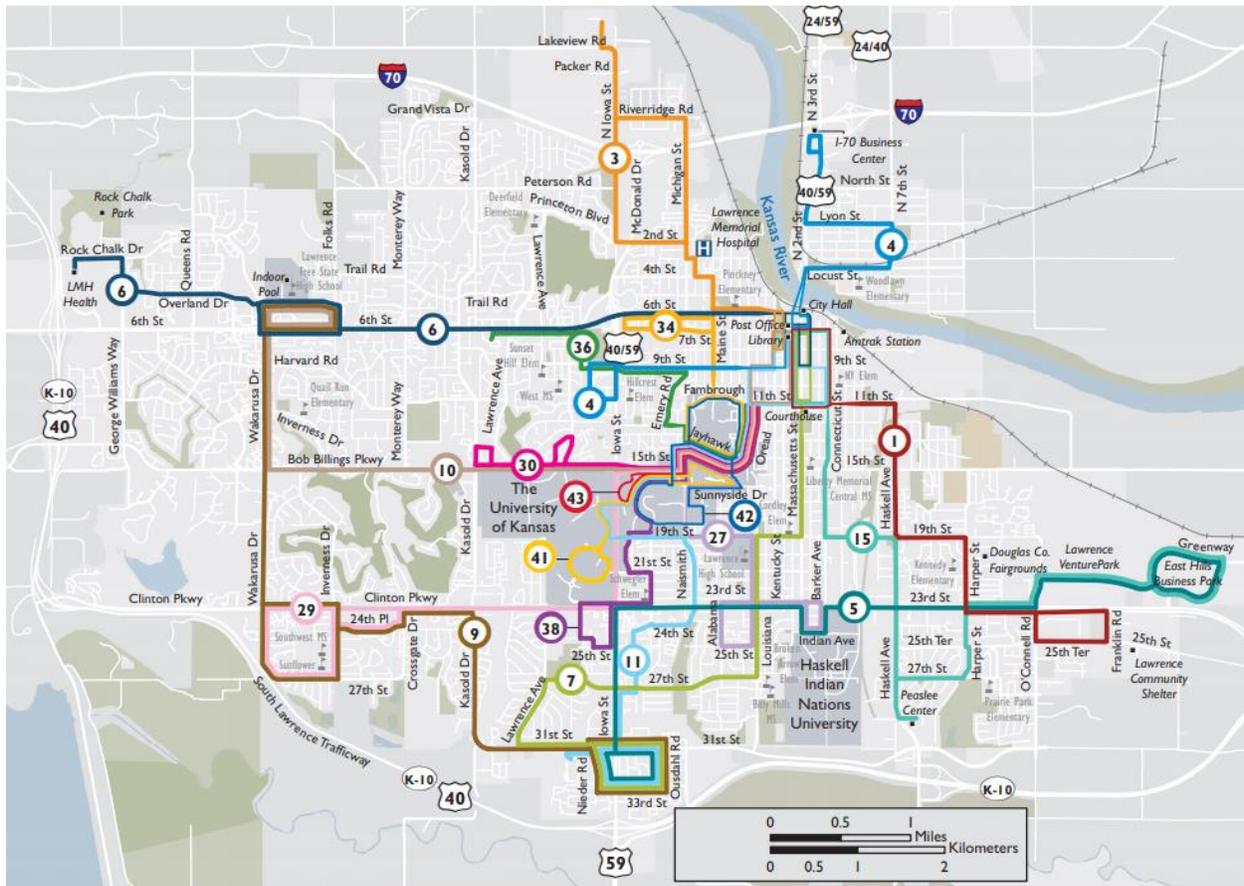
The service descriptions below reflect the Lawrence Transit and KU on Wheels services operating in fall 2019, prior to the COVID-19 pandemic. Some routes and schedules have since been modified due to the pandemic and for other reasons, but for the purpose of this document, the fall 2019 service snapshot serves as a baseline for analysis and discussion.

2.1. Lawrence Transit

Lawrence Transit operates bus services year-round. During regular services, Lawrence Transit operates twelve fixed routes from approximately 6:00 a.m.–8:00 p.m. Monday through Friday, including two coordinated routes (see Section 2.3), and ten fixed routes on Saturdays from 6:00 a.m.–8:00 p.m. Routes 11 and 29 operate a B schedule when the KU is out of session. **Figure 3** shows the system map.¹

Table 1 summarizes the basic service characteristics for each fixed route.

FIGURE 3: COMBINED LAWRENCE TRANSIT AND KU ON WHEELS SYSTEM MAP



¹ (C) 2019; City of Lawrence, Kansas, M. Seybold. <https://lawrencetransit.org/routes/>



TABLE 1: LAWRENCE TRANSIT FIXED-ROUTE SERVICE DESCRIPTIONS

Route	Name	Service Description	Service Span	Average Service Frequency
1	Downtown to East Lawrence	Serves east and southeast Lawrence. Destinations include Hobb's Park, industrial and commercial areas east of Downtown, East Lawrence Rec Center, Douglas County Fairgrounds, Lawrence Community Shelter, and Douglas County Jail.	Monday–Friday: 6:03 a.m.–7:57 p.m. Saturday: 6:03 a.m.–7:57 p.m.	30 minutes 30 minutes
3	Downtown to Lakeview Road	Serves northwest Lawrence. Destinations include Lawrence Memorial Hospital, businesses on Lakeview Road and North Iowa Street, residential areas along Peterson, Kasold, Riverridge, and North Michigan.	Monday–Friday: 6:15 a.m.–7:45 p.m. Saturday: 6:15 a.m.–7:45 p.m.	30 minutes 30 minutes
4	North Lawrence to 9th & Iowa	Serves North Lawrence and 9th Street. Destinations include Downtown, Ballard Community Center, Lyon Street Park, North 2nd and 3rd Street commercial areas, I-70 Business Center, DMV, and The Merc.	Monday–Friday: 6:03 a.m.–8:00 p.m. Saturday: 6:03 a.m.–8:00 p.m.	60 minutes 60 minutes
5	South Iowa to East Hills Business Park	Serves south and southeast Lawrence. Destinations include Haskell Indian Nations University, commercial areas along 23rd Street, Iowa Street, Venture Park, and East Hills Business Park.	Monday–Friday: 6:00 a.m.–8:00 p.m. Saturday: 6:00 a.m.–8:00 p.m.	30 minutes 30 minutes
6	Downtown to Rock Chalk Park	Serves the 6th Street corridor and LMH Health West. Destinations along this route include Downtown, Free State High School, and Rock Chalk Park.	Monday–Friday: 6:03 a.m.–7:54 p.m. Saturday: 6:03 a.m.–7:54 p.m.	30 minutes 30 minutes
7	Downtown to South Iowa	Serves central and south-central Lawrence. Destinations include Downtown, South Park, Liberty Memorial Central Middle School, Babcock Place, Lawrence High, Billy Mills Middle School, Holcom Park, and the commercial area at 31st & Iowa.	Monday–Friday: 6:02 a.m.–8:00 p.m. Saturday: 6:02 a.m.–8:00 p.m.	30 minutes 30 minutes
9	South Iowa to 6th & Wakarusa	Serves west and southwest Lawrence, connecting 6th & Wakarusa to 31st & Iowa. Destinations include Free State High, Southwest Middle School, Sunflower Elementary, LMH South, and commercial areas at 6th & Wakarusa, Bob Billings & Wakarusa, Clinton & Kasold, and 31st & Iowa.	Monday–Friday: 6:02 a.m.–7:57 p.m. Saturday: 6:02 a.m.–7:57 p.m.	60 minutes 60 minutes
10	Downtown to 6th & Wakarusa	Serves west and central Lawrence, connecting 6th & Wakarusa to Downtown via the KU campus. Destinations include Free State High, commercial areas at 6th & Wakarusa and Bob Billings and Wakarusa, Bob Billings, and Jayhawk Boulevard.	Monday–Friday: 6:02 a.m.–8:00 p.m. Saturday: 6:02 a.m.–8:00 p.m.	30 minutes 30 minutes
15	Downtown to Peaslee Center	Serves east and southeast Lawrence. Destinations include Hobb's Park, Peaslee & Workforce Centers, Prairie Park Nature Center, Venture Park and East Hills Business Park.	Monday–Friday: 6:00 a.m.–7:56 p.m. Saturday: 6:00 a.m.–7:56 p.m.	60 minutes 60 minutes



Route	Name	Service Description	Service Span	Average Service Frequency
27	KU to Haskell Indian Nations University	Connects HINU and neighborhoods southeast of KU with KU campus.	Monday–Friday: 7:05 a.m.–6:21 p.m.	40 minutes

2.2. KU on Wheels

The University of Kansas' KU on Wheels transit service operates during the university's fall and spring sessions. Ten routes, routes 30-44 operate exclusively Monday–Friday and one additional route, coordinated route 11A (see **Section 2.3**), also operates on Saturday. Coordinated routes 11 and 29 operate on the A schedule while KU is in session. **Figure 4** shows a system map focused on KU.²

² Source: <https://lawrencetransit.org/routes/>



Table 2 summarizes the basic service characteristics for each route.

FIGURE 4: KU CAMPUS DETAIL MAP

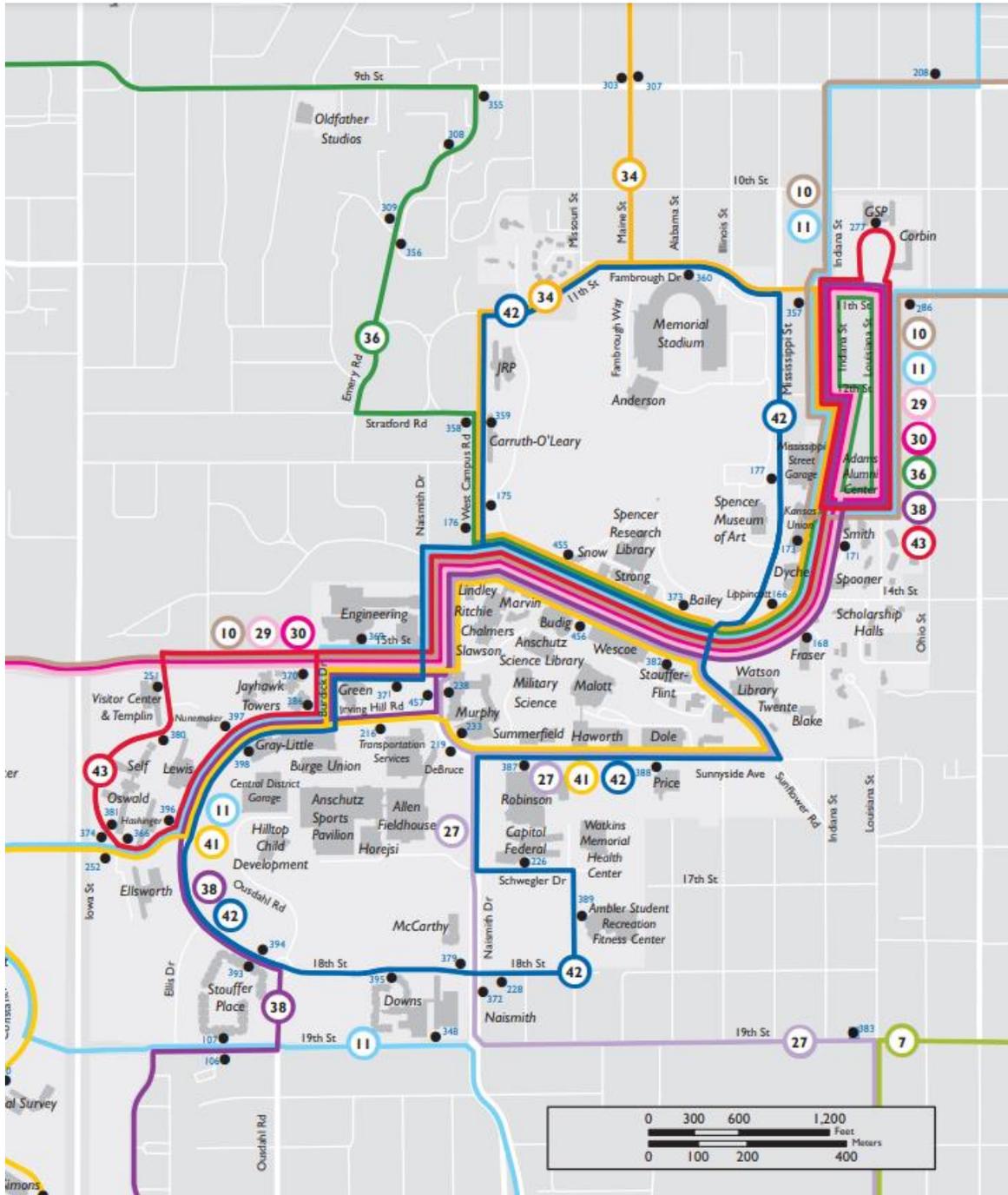


TABLE 2: KU ON WHEELS FIXED-ROUTE SERVICES CHARACTERISTICS

Route	Name	Service Description	Service Span	Average Service Frequency
30	Bob Billings & Kasold to KU	Connects apartment complexes along Bob Billings west of campus with KU.	Monday–Friday: 7:00 a.m.–10:30 p.m.	20 minutes
34	KU to 7 th Street	Connects neighborhood and apartment complexes north of campus with KU.	Monday–Friday: 7:00 a.m.–10:00 p.m.	20 minutes
36	6 th via Emery to KU	Connects apartment complexes on 6th and 9th streets northwest of campus with KU.	Monday–Friday: 7:00 a.m.–10:00 p.m.	20 minutes
38	25 th & Melrose to KU	Connects apartment complexes and neighborhood south of campus with KU.	Monday–Friday: 7:00 a.m.–10:00 p.m.	25 minutes
41	Campus Circulator (Yellow)	Connects remote parking and research buildings west of Iowa Street with Jayhawk Boulevard and central KU campus.	Monday–Friday: 7:00 a.m.–5:30 p.m.	10–12 minutes
42	Campus Circulator (Blue)	Connects Central District, Rec Center, and Memorial Stadium via Jayhawk Boulevard on the KU campus.	Monday–Friday: 7:00 a.m.–5:30 p.m.	8–10 minutes
43	Campus Circulator (Red)	Connects Daisy Hill and North Campus residence halls to Jayhawk Boulevard.	Monday–Friday: 7:00 a.m.–5:30 p.m.	7–9 minutes
44	Campus Evening Circulator	Modified combination of routes 41-43 that serves most of KU campus during the evenings.	Monday–Friday: 5:30 p.m.–10:30 p.m.	30 minutes

2.3. Coordinated Routes

Lawrence Transit and KU on Wheels jointly fund and operate two coordinated routes: 11 and 29. Each of these routes operates a high level of service on the A schedule, when classes are in session during the fall and spring semesters at KU, and a lower level of service during class breaks and the summer semester. **Table 3** summarizes the basic service characteristics for each route and schedule.

TABLE 3: COORDINATED ROUTES SERVICE CHARACTERISTICS

Route	Name	Service Description	Schedule	Service Span	Average Service Frequency
11	Downtown to KU to South Iowa	Serves central and south central Lawrence connecting Downtown to 31st & Iowa via the KU campus. Destinations include East Lawrence, Jayhawk Boulevard, Daisy Hill, West Campus, and residential and commercial areas south of 23rd Street.	A	Monday–Friday: 6:00 a.m.–8:00 p.m. 8:00 p.m.–10:30 p.m.	30 minutes 60 minutes
			B	Saturday – see “B” schedule (next row) Monday–Friday: 6:30 a.m.–4:00 p.m. 4:00 p.m.–8:00 p.m.	30 minutes 60 minutes
29	27th & Wakarusa to KU	Connects residential areas in southwest Lawrence with the KU campus. Destinations include residential areas along Clinton Parkway, Wakarusa, and 24 th Place, commercial area at Clinton and Kasold, and LMH South.	A	Monday–Friday: 7:00 a.m.–6:00 p.m. 6:00 p.m.–10:30 p.m.	20 minutes 60 minutes
			B	Monday–Friday: 7:20 a.m.–6:20 p.m.	40 minutes



2.4. Additional Transportation Services

In addition to fixed route service offered by Lawrence Transit and KU on Wheels, there are several other regional, paratransit, and on-demand service offered in the area. They are:

- **ADA Services**
 - **T Lift:** Provides paratransit services within Lawrence city limits to riders who cannot use fixed route transit because of a disability.
 - **JayLift:** Provides transportation within Lawrence city limits to KU students, staff, and faculty who have disabilities.
- **Social Services**
 - **Babcock Bus:** The Lawrence-Douglas County Housing Authority provides transit to residents of Babcock Place and Peterson Acres by donation.
 - **Bert Nash Center:** Provides transportation to Bert Nash clients for medical, shopping, or employment related trips.
- **Senior Services**
 - **Independence, Inc.:** Provides on-demand transportation to the elderly and persons with disabilities. Transportation is also open to the general public.
 - **Senior Resource Center for Douglas County, Inc. (SRC):** provides Douglas County residents age 60 and over with demand-response transportation.
- **Late Night Services**
 - **Night Line:** Provides scheduled demand-response service from 8:00 p.m.–6:00 a.m. within Lawrence city limits.
 - **SafeRide:** This demand-response service provides KU students a ride home from anywhere within Lawrence city limits from 10:30 p.m.–2:30 a.m. when classes are in session.
- **K-10 Connector:** When KU classes are in session, RideKC, Kansas City’s transit provider, operates the K-10 Connector. The 510 K-10 Connector connects KU with the KU Edwards Campus in Overland Park.
- **Intercity Services**
 - **Amtrak:** The train station along East 7th street provides service to Topeka and Kansas City and is part of a larger rail network that connects Chicago with Los Angeles. One westbound trip departs the station daily at 11:49 pm, and one eastbound trip departs the station daily at 5:09 am.
 - **Greyhound:** A greyhound stop is located at Vermont St and West 7th Street. Three westbound (direct to Topeka) and two eastbound (direct to Kansas City) trips depart from the location daily.
- **Private Shuttles:** Apartment complexes that cater to students sometimes offer private shuttles to the KU campus. The Nest operates three campus shuttles and The Connection operates a shuttle as well.

2.5. Passenger Amenities and Transit Facilities

2.5.1. Bus Stops and Amenities

Lawrence Transit has 315 bus stops, including 50 with shelters and benches and 35 with benches only. KU has 53 additional bus stops on campus. 13 have shelters and benches, and 13 more have benches only.

2.5.2. Passenger Information

Passenger schedules, system maps, and a trip planner tool are available online at the Lawrence Transit website, <https://lawrencetransit.org/>. In addition to online resources, two mobile tools are available. A free bus app called “MyBusLawrence” can be downloaded and provides real-time bus location data. A text



messaging service is also available that allows users to text a bus stop number and receive a reply with the next bus arrival times.

2.5.3. Transit Center

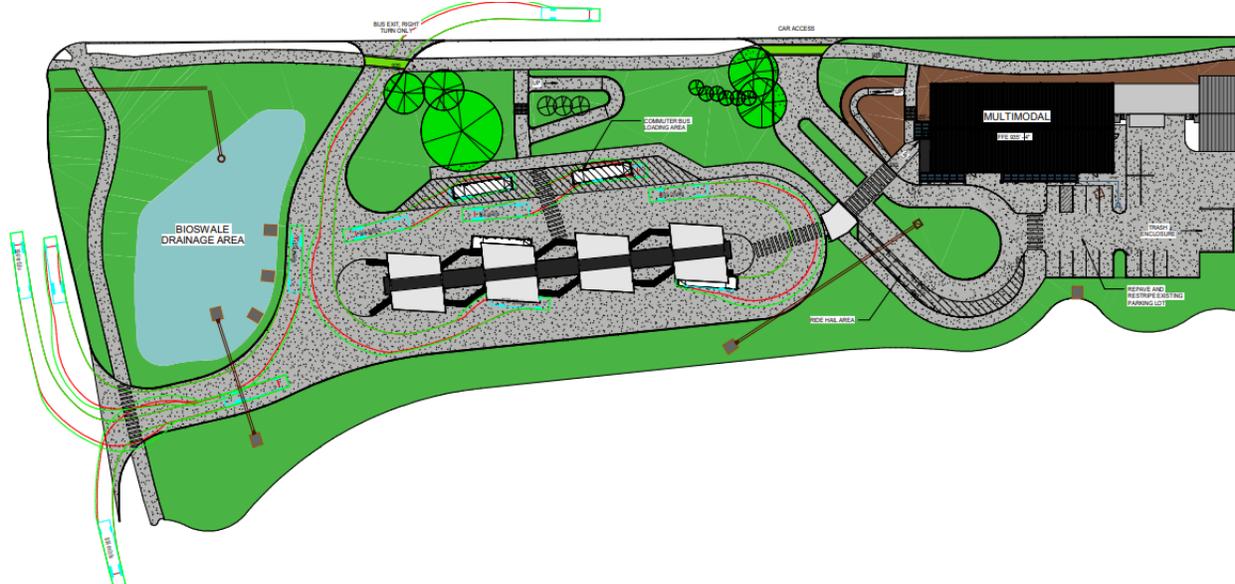
One of the Lawrence Transit Route Redesign goals is to develop service improvement recommendations to ensure a smooth integration of the new Central Station that is being developed at the southeast corner of Bob Billings Parkway and Crestline Drive. The 2018 [Lawrence Bus Transfer Location Analysis](#) studied five potential transfer locations that would improve the efficiency of the transit system. The report provided a comparative analysis that evaluated sites based on:

- Travel time, with 30-minute trips preferred.
- Centralized location, preferably central to University of Kansas and shopping districts.
- Accommodates an indoor facility, with a lot size of two and a half acres.
- Accommodates fleet operations, ease of ingress/egress and bus maneuverability on-site.
- Located outside of residential neighborhoods along an arterial street or land use buffer.
- Cost-effective to acquire property, preferably owned by the City or other public institution.
- Ease of constructability, with utilities present and clear of structures or other development.

The 2018 report identified the southeast corner of Bob Billings Parkway and Crestline Drive as a potential location for the transfer facility. KU and the City of Lawrence signed an agreement in July 2020 to develop a bus transfer center in the open green space at the corner and potentially use some or all of the building and parking footprints to the east. **Figure 5** depicts one of the draft concepts for the site. Currently, the site has no transit activity. This system redesign will restructure service to utilize the Bob Billings & Crestline site as a transfer center and reduce the role the Lawrence Public Library (707 Vermont Street) has as a transfer hub. Today, the Lawrence Public Library is Lawrence Transit's main transfer hub. The proposed location's size would support the growth of the transit system and may include amenities such as:

- Enhanced markers or signage to indicate an entrance to campus.
- Saw-tooth style transit bays with one-way traffic flow.
- Indoor areas for operators and transit users that may include restrooms, a waiting area, and a public meeting space.

FIGURE 5: CONCEPTUAL LAYOUT OF PROPOSED LAWRENCE BUS TRANSFER LOCATION AT BOB BILLINGS PARKWAY AND CRESTLINE DRIVE



3. BUDGET AND FUNDING

3.1. Revenues and Expenses

In FY 2019, Lawrence Transit's total expenditures were \$7,326,502, with \$7,223,272 in operating expenses and \$103,230 in capital expenses. In FY 2020, Lawrence Transit's total expenditures rose to \$9,108,200, with \$7,163,300 in operating expenses and \$1,944,900 in capital expenses, the latter of which were primarily vehicle replacements. **Figure 6** and **Figure 7** show Lawrence Transit's Operating and Capital Revenue Sources, respectively, in 2020. The majority of Lawrence Transit's operating revenue comes from local and federal funding sources, with very modest portions coming from the state and fares. However, Lawrence Transit's capital revenues are primarily from the state (over three-quarters) and federal government, with only a very small portion of capital revenues coming from local funding.

FIGURE 6: LAWRENCE TRANSIT OPERATING REVENUE SOURCES, FY 2020

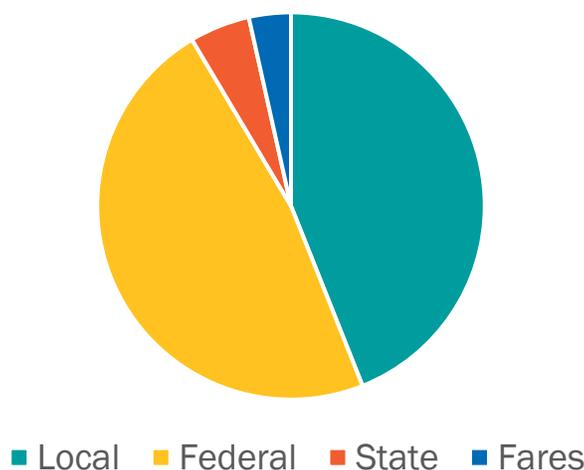
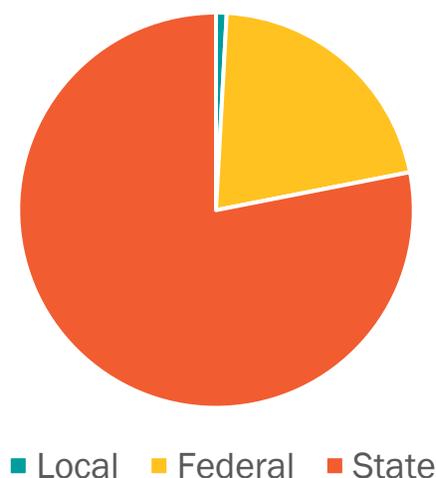


FIGURE 7: LAWRENCE TRANSIT CAPITAL REVENUE SOURCES, FY 2020



In FY 2019, KU on Wheels' total expenditures were \$4,549,804, with \$3,111,728 in operating expenses and \$1,438,076 in capital expenses. In FY 2020, KU on Wheels' total expenditures were \$5,000,598, with

\$3,644,426 in operating expenses and \$1,280,907 in capital expenses. The majority of KU's operating and capital revenues come from student fees, which are charged on a per student, per semester basis. Student fees are reviewed annually by the Student Senate, so the operating budget for transit service can increase or decrease from year to year, based on the funding priorities of the Student Senate.

3.2. Fares

Table 4 shows fare and pass options for the Lawrence Transit system. Any fares collected on KU buses are passed through to Lawrence Transit, but as indicated in **Table 5**, KU Card holders can ride routes on either system without paying a fare.

TABLE 4: LAWRENCE TRANSIT FARES AND PASSES

	Regular	Reduced*	T-Lift**
One-way fare	\$1.00	\$0.50	\$2.00
Night Line fare	\$2.00	-	-
Day Pass	\$2.75	\$1.35	-
10-Ride Punch Card	\$10.00	\$5.00	\$20.00
Monthly Pass	\$34.00	\$17.00	\$68.00
K-12 Semester Pass	\$10 for four months		-
KU Card	Free		
Children (5 & under)	Free		
Transfers	Free		

*Applies to students (without Semester Pass) in kindergarten through 12th grade, Haskell Indian Nations University students, seniors (ages 60+), and persons with disabilities.

**Paratransit; requires certification.

In 2019, Lawrence Transit reported \$439,972 in farebox revenue, with \$294,781 coming from fixed-route service and \$145,191 from T-Lift. In 2020, due to the COVID-19 pandemic, farebox revenues dropped to \$249,004, with \$168,166 from fixed-route and \$80,838 from T-Lift.

3.3. Financial Indicators

Table 5 shows the performance of Lawrence Transit's two modes (fixed-route and demand response) and KU on Wheels with respect to key financial productivity metrics. 2019 data is used here to allow for comparison with the latest available national averages reported in the National Transit Database (NTD).

TABLE 5: FINANCIAL PRODUCTIVITY METRICS FOR LAWRENCE TRANSIT AND KU ON WHEELS, FY 2019

Metric	Lawrence Transit - Fixed-route	Lawrence Transit - T-Lift	KU on Wheels	National Average
Cost per vehicle revenue hour	\$60.07	\$60.51	\$89.71	\$85.11 (Fixed-route bus, unweighted average) \$63.62 (Demand response, unweighted average)
Cost per passenger mile	\$1.49	\$7.25	\$2.09	\$1.90 (Fixed-route bus) ³ \$5.63 (Demand response)
Cost per passenger trip	\$4.37	\$28.99	\$1.88	\$5.24 (Fixed-route bus) \$42.85 (Demand response)
Fare revenue per passenger trip	\$0.27	\$1.77	n/a	\$0.98 (Fixed-route bus) ¹ \$2.86 (Demand response)
Farebox recovery ratio	6%	6%	n/a	21% (Fixed-route bus) 7% (Demand response)

³ Includes only agencies that are Full Reporters to the NTD.



Lawrence Transit and KU on Wheels have costs per vehicle revenue hour and costs per passenger trip that are considerably below national averages; the two agencies' use of purchased transportation as well as labor rates in Kansas being lower than the national average may contribute to this difference. KU on Wheels' cost per passenger mile is slightly above the national average, while Lawrence Transit's is below.

Lawrence Transit's fare revenue per passenger trip is significantly below the national average for demand response and, notably, nearly four times lower than the national average for fixed-route bus. Along with a farebox recovery of less than a third the national average, these data indicate that Lawrence Transit collects a significantly smaller portion of its revenues, especially for fixed-route service, from fares compared to peer agencies with similar service levels. This may be in part due to the number of KU passengers on city routes.



4. MARKET ANALYSIS

More than any other factor, density determines the effectiveness and efficiency of public transportation. Places with higher concentrations of people and/or jobs tend to have higher transit ridership. At the same time, most transit agencies have a mandate to provide comprehensive service in the communities they serve and to provide mobility for residents with no other means of transportation. The purpose of this Market Analysis is to both identify the strongest transit corridors in the City of Lawrence and to highlight areas with relatively high transit need. Thus, the Market Analysis consists of two key components: Transit Potential and Transit Need.

While Transit Potential is an analysis of population and employment density, Transit Need focuses on socio-economic characteristics such as income, automobile availability, age, and disability status that are indicative of a higher propensity to use transit. Transit use is also influenced by the built environment. In particular, certain land uses—such as retail centers, civic buildings, multifamily housing, educational institutions, medical facilities, and major employment centers—tend to generate transit trips at a relatively higher rate. As such, these ridership generators are included in the maps describing Transit Potential and Transit Need. Additionally, the City of Lawrence is home to two colleges, the University of Kansas and Haskell Indian Nations University, both of which are currently served by fixed-route transit and outlined in maps in this section. Fixed-Route transit service is shown on Figure 8 through Figure 16 as they operated in fall 2019.

4.1. Transit Potential

Transit service is generally most effective in areas with high concentrations of residents and/or jobs. The following Transit Potential analysis uses the 2020 population and employment projections from the Lawrence Transit Travel Demand Model (T2040). The geographic divisions used for this analysis are Transportation Analysis Zones (TAZ).

4.1.1. Population Density

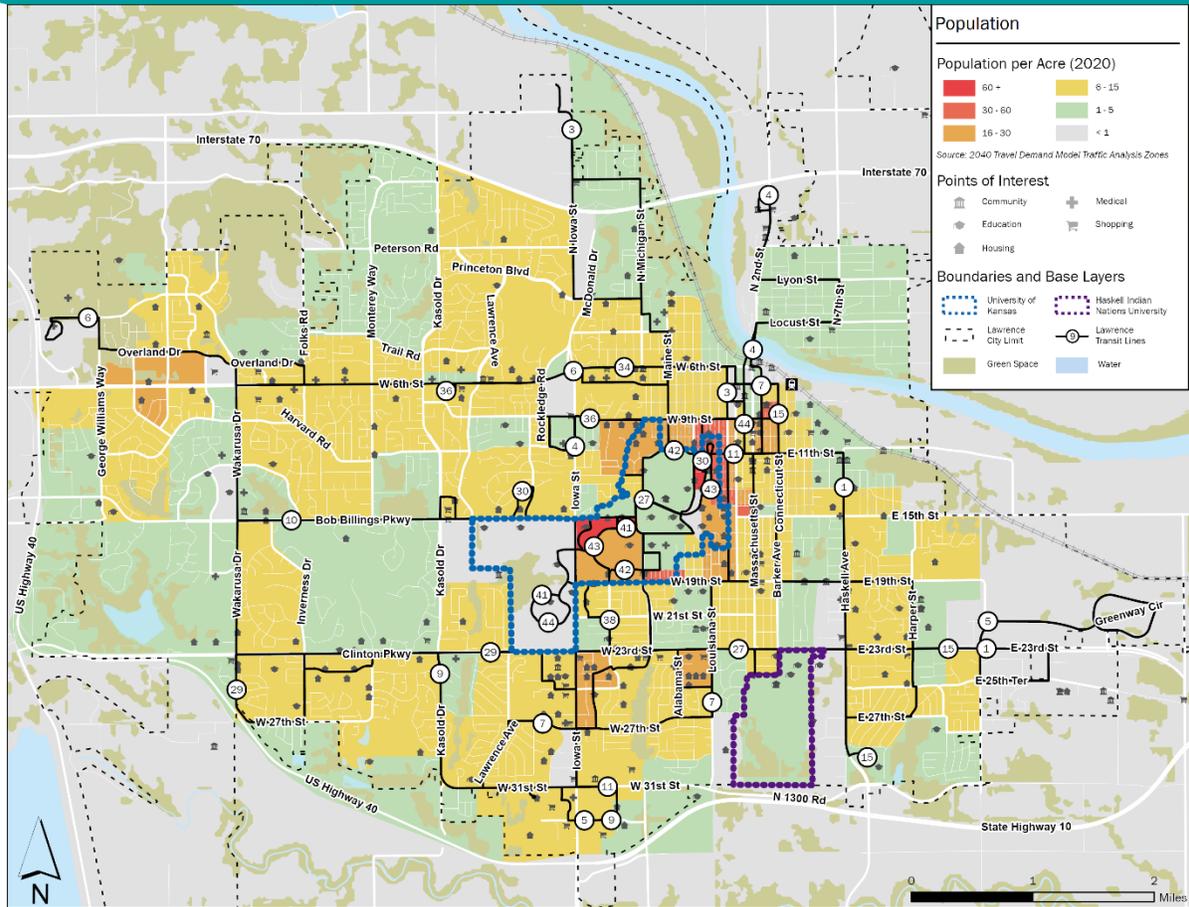
Public transportation is most efficient when it connects population and employment centers where people can easily walk to and from bus stops. Transit's reach is generally limited to within one-quarter mile to one-half mile of the transit line, or a 10-minute walk. For this reason, the size of a transit travel market is directly related to an area's population density. Typically, a density greater than five people per acre is needed to support base-level (hourly) fixed-route transit service. **Figure 8** shows the population density of Lawrence. Yellow areas indicate places where fixed-route service could be feasible; areas that are orange or red have the potential to support more frequent service.

Lawrence at large has low population density unresponsive of traditional fixed-route transit; however, pockets of transit-supportive densities are prominent throughout the City of Lawrence, concentrated most heavily around the KU campus, but also along Iowa St (US-59), West 6th Street, East 23rd Street, along Massachusetts Street, and in the area surrounding Lawrence Memorial Hospital.



FIGURE 8: POPULATION DENSITY

City of Lawrence | University of Kansas Transit System Redesign Study

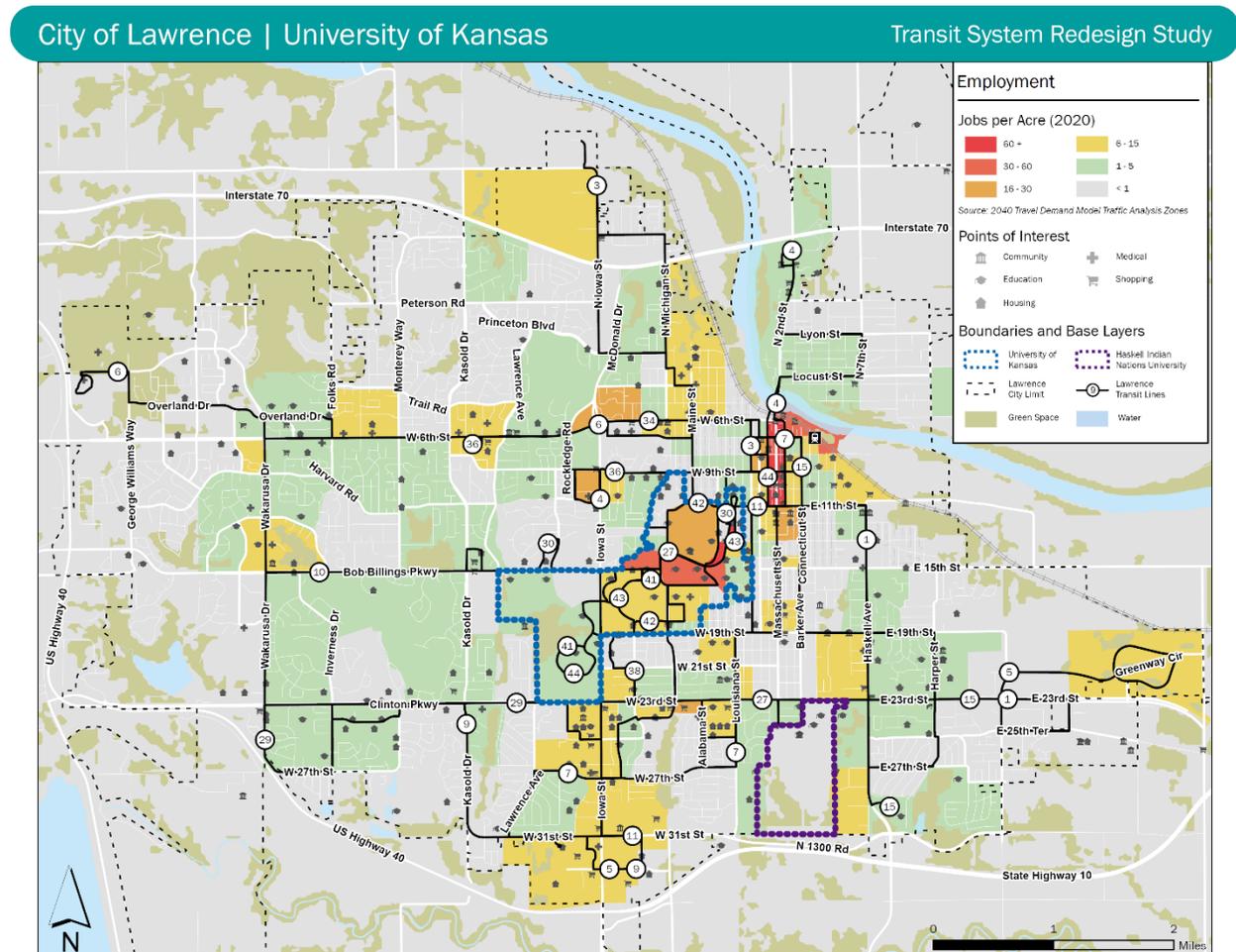


4.1.2. Employment Density

Given that traveling to and from work accounts for the largest single segment of transit trips in most markets, the location and number of jobs in a region are also strong indicators of transit demand. Transit that serves areas of high employment density also provides key connections to job opportunities. Like population density, an employment density greater than five jobs per acre can typically support base-level fixed-route service. This density corresponds with the yellow, orange, and red areas in **Figure 9**.

In Lawrence, job concentration is highest in Downtown Lawrence around the Massachusetts Street commercial corridor and around the University of Kansas. Additionally, there are some pockets of job density on the south side of the city along Iowa Street (US-59) between 23rd Street and Kansas State Highway 10.

FIGURE 9: EMPLOYMENT DENSITY



4.1.3. Transit Potential

Transit Potential, depicted in **Figure 10**, combines the population and employment densities for each TAZ shown previously to indicate fixed-route service viability in the study area. In Lawrence, the areas of highest transit potential are concentrated primarily between the University of Kansas and the Massachusetts Street corridor in Downtown Lawrence. These places also stood out as areas with high concentrations of jobs and population as well in the previous sections. When combining the two metrics, however, many more places appear to be potentially supportive of fixed-route transit services, most notably along Iowa Street/US-59 south of 23rd Street & Iowa, where there are high concentrations of retail jobs and multi-family housing developments. Additionally, several locations along West 6th Street, West



4.2. Transit Need

Above all, public transportation is a mobility tool. Certain population subgroups have a relatively higher propensity to use transit as their primary means of local and regional transportation. These groups include:

- People without access to an automobile, whether it be by choice or due to financial or legal reasons, often have no other transportation options besides using transit.
- Persons with disabilities, many of whom cannot drive and/or have difficulty driving.
- Low-income individuals, typically because transit is less expensive than owning and operating a car.
- Youth and Young adults is defined as persons from age 15 to 24. This group has in recent years shown a greater interest in transit, walking, and biking than in driving.
- Older adults, who as they age, often become less comfortable or less able to operate a vehicle.

The maps in this section show the relative densities of each of these five high-transit-propensity population subgroups by Census block groups in Douglas County to help determine where the need for transit service is greatest.

With density ranges differing for each demographic analysis, the maps utilize a Jenks Natural Breaks classification method to assign each block group to one of five density categories. For each analysis, depending on the natural break category into which it falls, a score from 1 (lowest density) to 5 (highest density) is assigned to each block group. Following the analysis of each individual factor, the Transit Need Index map (**Figure 16**) shows the composite Transit Need score for each block group based on the sum of its scores in each preceding analysis. For example, if a block group falls in the highest density category for each of the five demographic analyses, it will end up with a Transit Need Index value of 25 (5+5+5+5+5). The lowest possible Transit Need Index score is 5 (1+1+1+1+1).

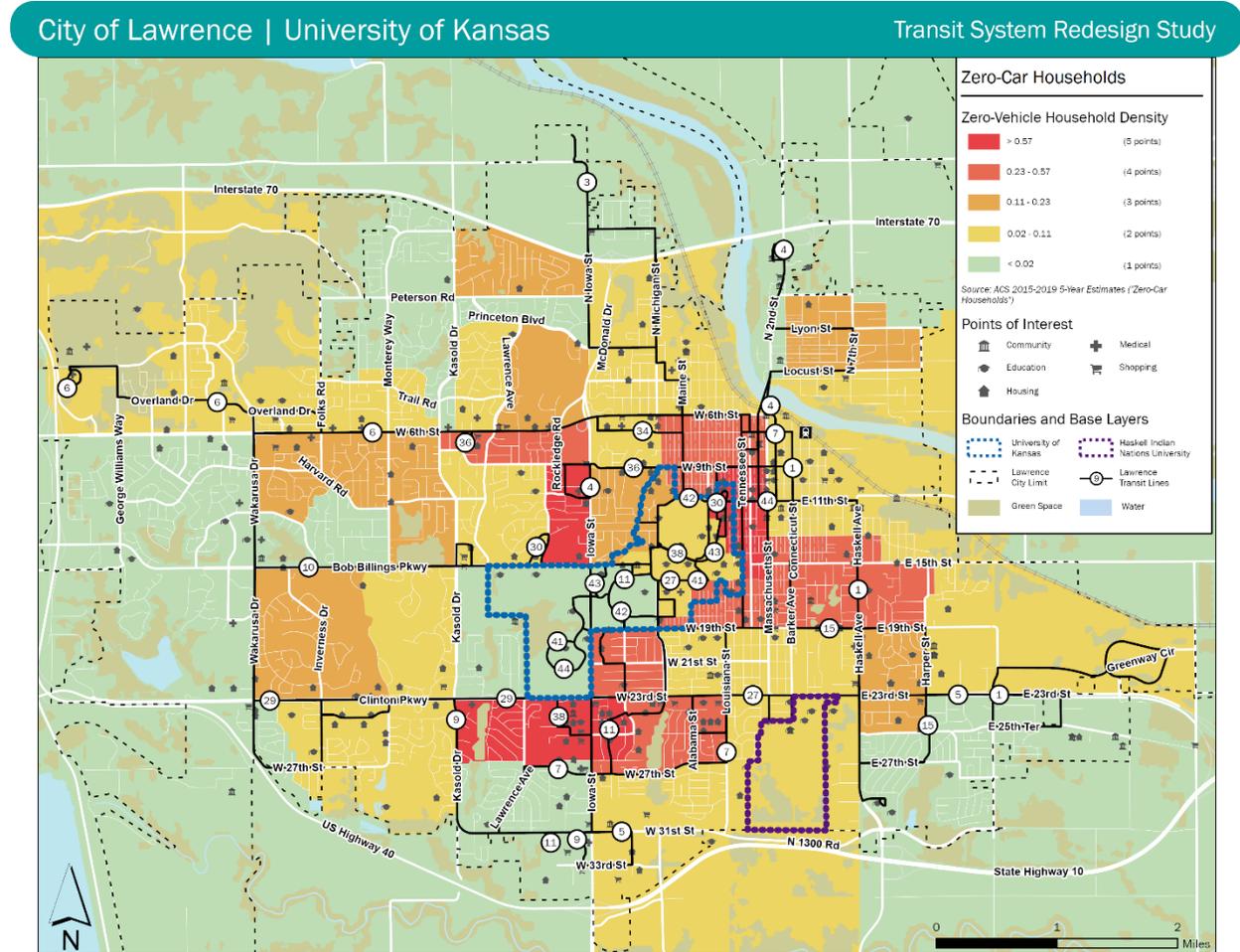
While the Transit Potential analysis highlights areas of Lawrence with actual densities to support fixed-route service, Transit Need is a relative measure that estimates the need for transit compared to other block groups. There is not, however, a specific Transit Need Index score or value that represents a threshold for supporting fixed-route service. Instead, Transit Need should be considered alongside Transit Potential. If two areas have similar and sufficient Transit Potential, the area with higher Transit Need should be prioritized for service. Conversely, in some locations, while the density of transit-dependent population groups may be relatively high, if the total population and/or employment density are still quite low, the potential to generate substantial fixed-route transit ridership will also remain low.



4.2.1. Zero-Vehicle Household Density

Figure 11 shows zero-vehicle household density throughout the City of Lawrence. The highest concentrations of zero-vehicle households is near the University of Kansas campus, Downtown, and along Iowa Street (US-59), particularly at the West 9th Street and West 23rd Street intersections.

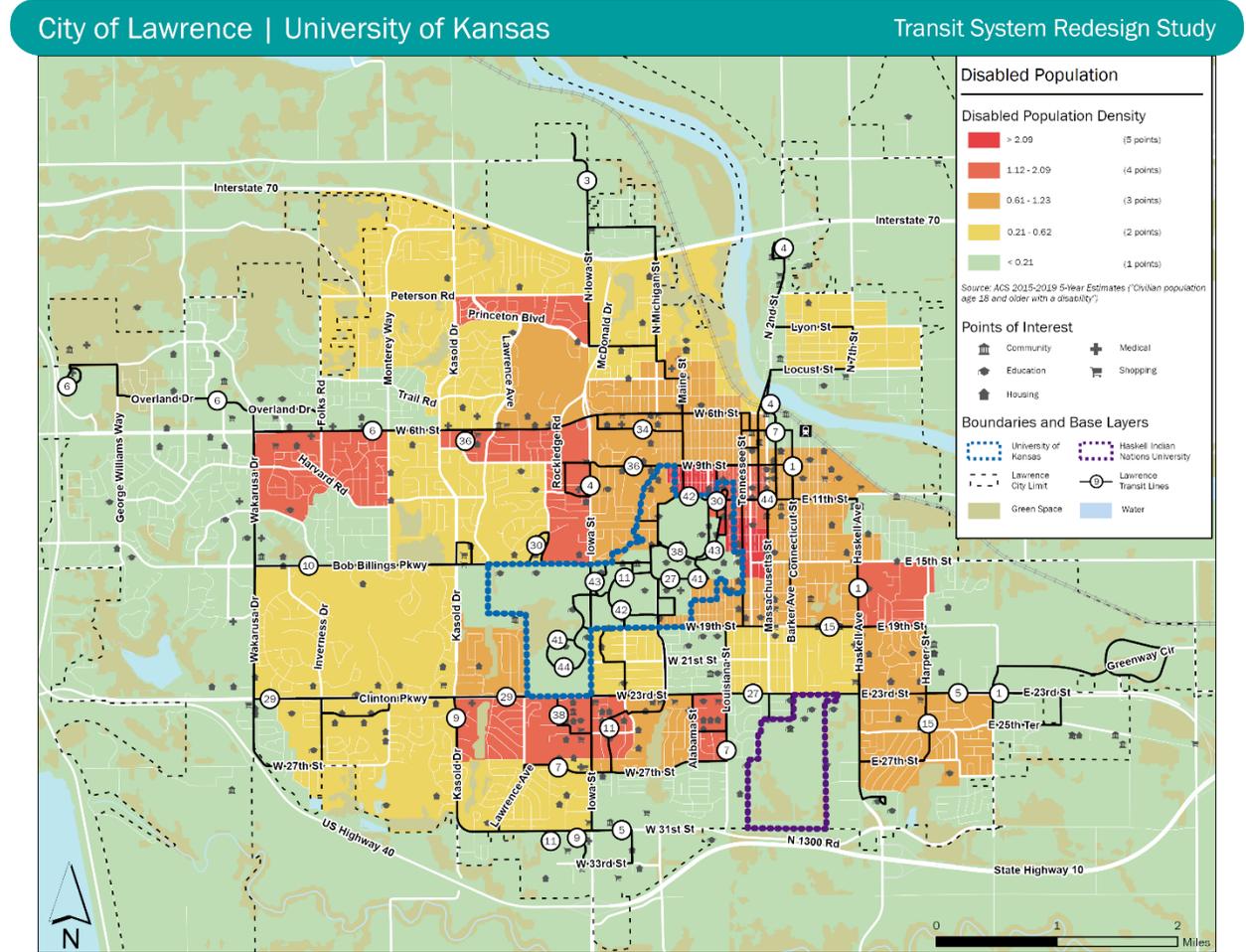
FIGURE 11: ZERO-VEHICLE HOUSEHOLD DENSITY



4.2.2. Population with Disabilities Density

Figure 12 shows the density of people living with a disability. The highest concentrations of people with a disability are found adjacent to the University of Kansas campus along Tennessee and Kentucky Streets. Additional areas with high densities of populations with a disability can be found in West Lawrence along West 6th Street and Clinton Parkway and West 23rd Street at Iowa Street, as well as in the Quail Run neighborhood, where there are several care homes. Existing fixed-route transit operates along arterial roads only in the Quail Run neighborhood, potentially requiring long walks for some transit riders.

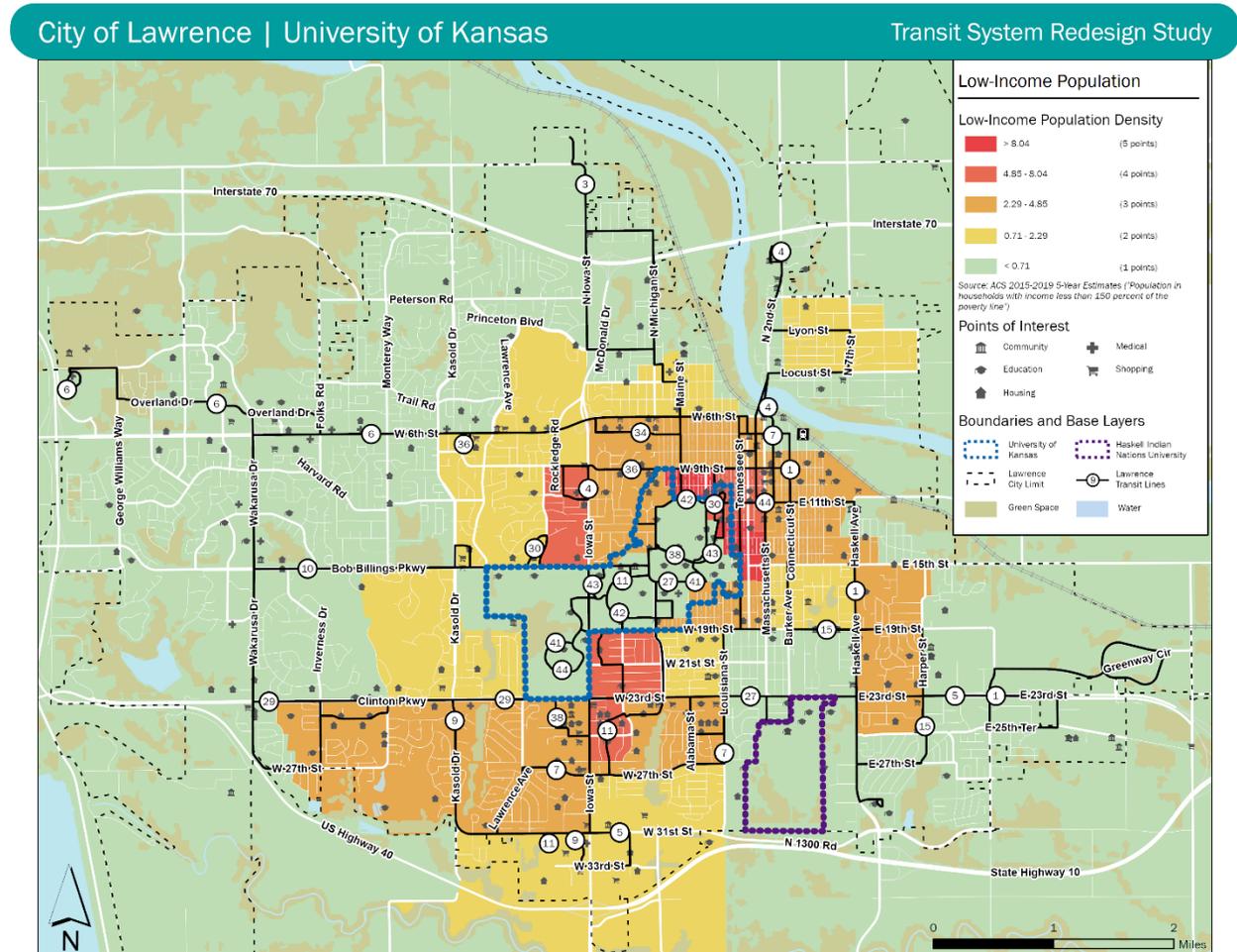
FIGURE 12: POPULATION WITH DISABILITIES DENSITY



4.2.3. Low-Income Population Density

Figure 13 shows the density of low-income households throughout Lawrence. Low-income households are defined as those earning less than 150 percent of the federal poverty line. Low-income households are concentrated most densely around the Oread neighborhood and east of Iowa Street along West 23rd Street. Additionally, part of the Sunset Hills neighborhood between Crestline Drive and Iowa Street appears to have relatively more low-income households than Iowa Street.

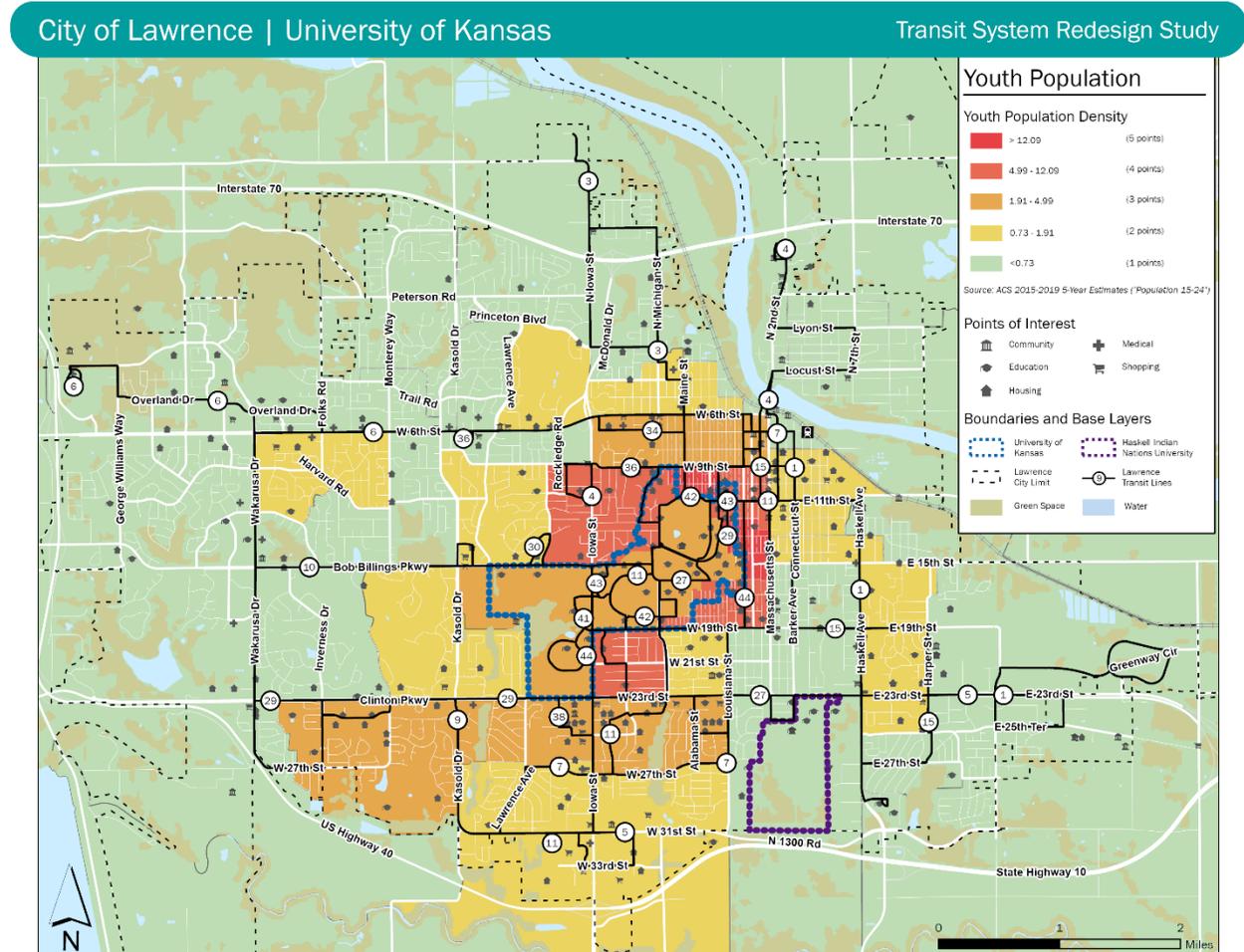
FIGURE 13: LOW-INCOME POPULATION DENSITY



4.2.4. Youth and Young Adult Population

Figure 14 shows the density of the youth and young adult population of Lawrence. Generally, the city of Lawrence has a very high youth and young adult population density, relative to Douglas County, so high concentrations of youth appear prevalent throughout the city. The population is most highly concentrated in the area immediately surround the University of Kansas.

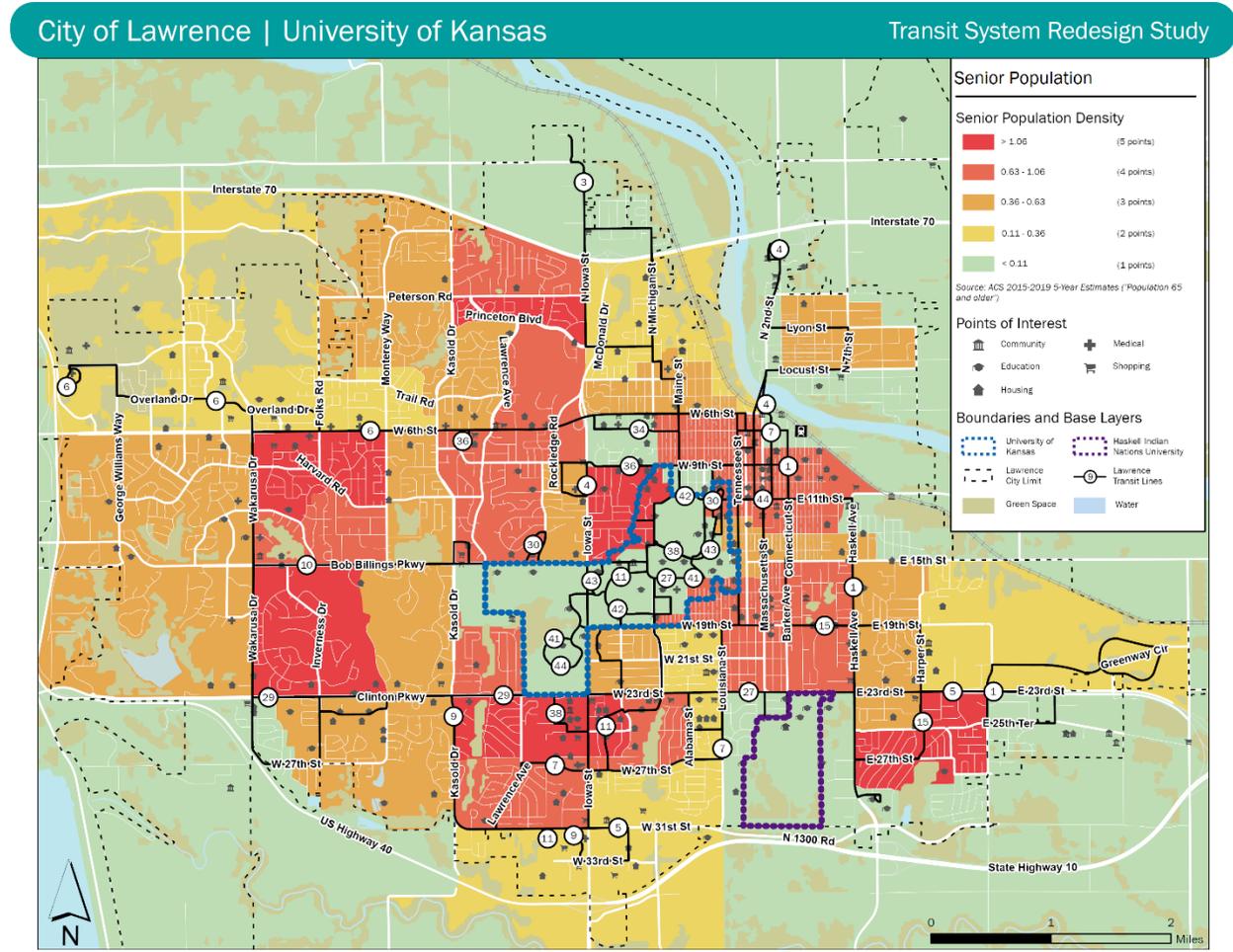
FIGURE 14: YOUTH AND YOUNG ADULT POPULATION DENSITY



4.2.5. Senior Population

Figure 15 shows the population of adults aged 65 or older in Lawrence. The city of Lawrence has a high senior-aged population density, relative to Douglas County, so high concentrations of seniors appear prevalent throughout the city. In Lawrence, concentrations of seniors are highest in neighborhoods east of Wakasura Drive between West 6th Street and Clinton Parkway, around West 23rd Street and Iowa Street, and in the neighborhood of Prairie Park. Additional pockets of high senior density can be found in the neighborhoods adjacent to Princeton Boulevard. Transit services in most of these neighborhoods primarily serve arterial roads only and would require riders to walk to the nearest stop to access transit.

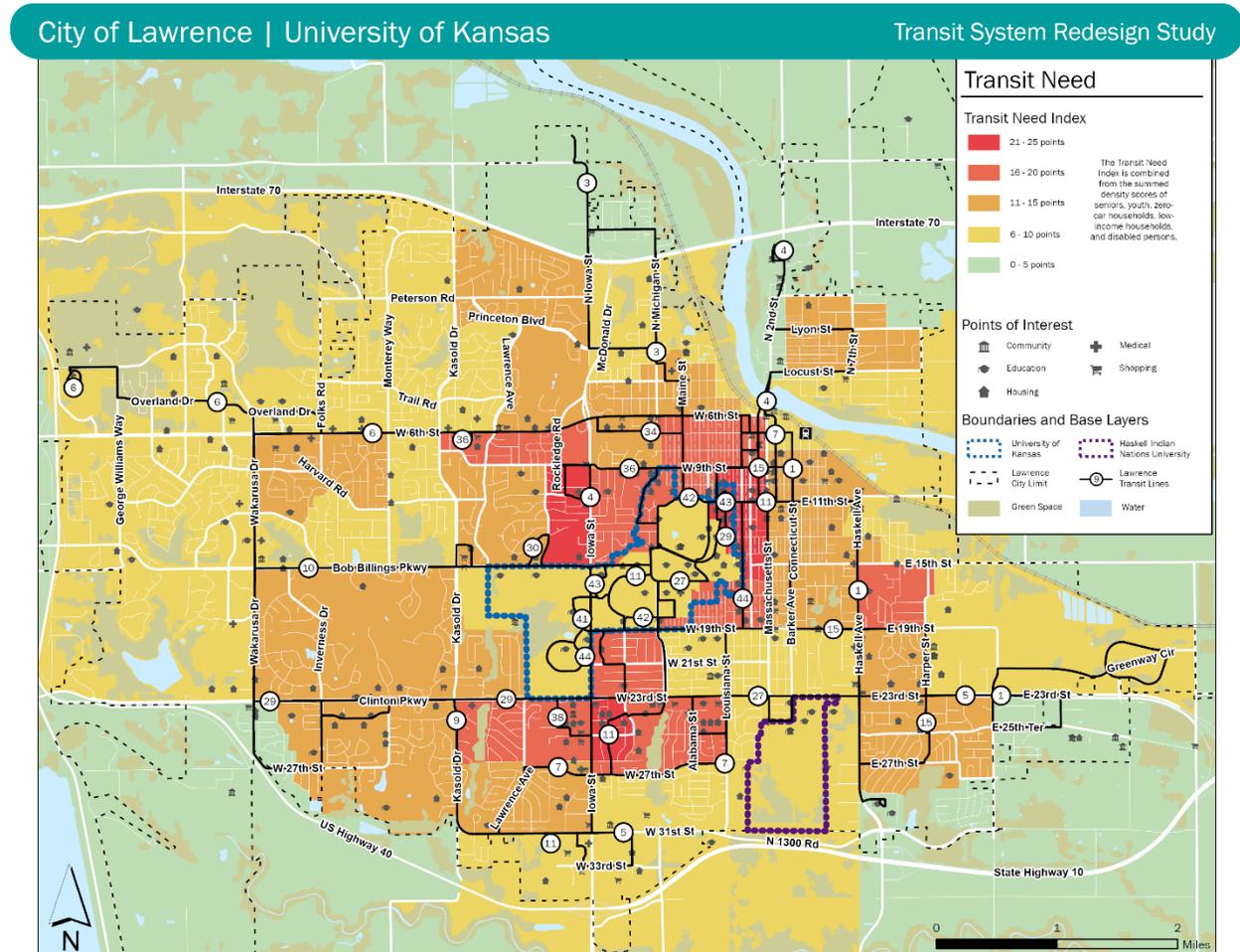
FIGURE 15: SENIOR POPULATION DENSITY



4.2.6. Transit Need

Figure 16 combines the five preceding demographic-density maps into one composite Transit Need map. The Transit Need Index reveals that the populations most likely to need transit services are most prevalent in neighborhoods and new housing developments along Iowa Street, West 9th Street, south of West 23rd Street, west of Massachusetts Street, and the Brook Creek neighborhood in eastern Lawrence.

FIGURE 16: TRANSIT NEED COMPOSITE SCORE



5. PUBLIC AND STAKEHOLDER OUTREACH

During the summer of 2021, Lawrence Transit and University of Kansas staff conducted outreach with riders of both systems as well as the general public. The purpose of this first round of community outreach was to receive input from current riders and other community members about the way they use transit, reasons for riding or not riding transit, and their opinions and priorities for future service. In support of this goal, the first round of outreach consisted of two initiatives, each of which is summarized in this chapter:

- Focus groups conducted via Zoom with University affiliates, frontline staff, major employers, community resources, and the general public.
- Surveys distributed online as well as in paper copies distributed at key locations.
- Focus groups were asked questions about transit services in Lawrence, including what is working well and what could improve. Survey respondents were asked questions about their ridership habits, most common transit trip, opinions about transit, and demographics. Both groups were asked trade-off questions about their preferences for transit services in Lawrence, and both groups were given the opportunity to provide free-form responses and comments. The input collected through the focus groups and survey was used to inform service scenario development in later stages of the Route Redesign Study.

5.1. Focus Groups

Lawrence Transit and KU Transportation Services staff held five public meetings, one each for university affiliates, community resources, and the general public, and two with frontline staff. The general public focus group was two hours, and all other focus groups were held for one hour. A total of 23 people attended the focus groups. The team held a focus group for major employers that did not have any attendees.

Eight people affiliated with KU attended the focus group. This included students and staff working with international programs and grants. A total of nine staff participated in two focus groups. Four participants attended the community resources focus group. This included library staff, a representative from the Healthy Built Environment Council, and interested citizens. Two participants joined for the general public focus group.

5.1.1. What are Lawrence Transit and/or KU on Wheels doing well?

Many focus group participants mentioned that drivers are helpful and friendly and can successfully de-escalate situations. The University focus group also mentioned that drivers are especially helpful with new KU students. People praised the transit system, believe that it works well overall, and that other communities of similar sizes do not have similar service. Staff were happy with the types of services provided and specifically mentioned the Night Line, SafeRide, and paratransit services. Participants were happy with bus routes and one felt that the transfer between routes 1 and 11 is handled well.

5.1.2. How can Lawrence Transit and KU on Wheels improve?

Participants had a variety of ideas about how to improve transit services in Lawrence. Many suggestions revolved around adding new types of service, include holiday service, Sunday service, evening and late-night service, or new express routes connecting opposite sides of town. Other suggestions involved improving existing service, such as increasing service, reducing travel times for passengers, or improving on-time performance. One group requested implementing a zero-fare policy.

Two different groups mentioned coordinating service with Kansas City services, including the K10 Connector, which participants said does not run late enough or enough on weekends. Additional park &



rides were also suggested as a way for people living farther away to more easily access services. Some participants suggested ideas for making the transit services easier to understand. Finally, one participant suggested having a “free bus” day every few months so that people can try out the service.

5.1.3. Do passengers have the tools they need to understand and use the service?

Focus group participants had both positive things to say about available tools and suggestions for improvements. First, participants at the general public focus group stated that the website is informative and interactions with customer service agents have been very positive. The University group noted that the app works well. There was general agreement among all groups that drivers are helpful. Frontline staff noted that riders sometimes rely on them to assist them with directions and information.

While good tools exist, there may be barriers for riders to access or understand them. One participant noted that many seniors do not understand how to use a cell phone or any of the new tools on the website. Bus brochures and the Rider Guide require experience to read and can be confusing for international students who may not be familiar with the format. Frontline staff thought that lack of access to technology in general is a barrier, and that the trip planner interface is difficult for many riders to use. Staff also noted that sometime routes are called by nicknames, such as the “Walmart to Walmart Bus”, which can be confusing for riders because that name is not printed on materials. Frontline staff then suggested that larger maps with landmarks on them could be more helpful to customers, as many riders ask about the same locations. Staff also noted that language barriers are sometimes a problem on buses.

5.1.4. Is the passenger environment inviting?

Overall, focus group participants believe that the passenger environment is inviting. Participants have had positive interactions with customer service, and other frontline staff. One participant also noted their positive experience with paratransit service.

Participants listed a number of suggestions that would make the passenger environment more inviting. Improving stops with benches, chairs, or shelters was mentioned in two of the focus groups, which would help elderly riders in particular and any rider in inclement weather. Participants also had suggestions about the buses themselves. In particular, they suggested that City buses needed to be updated and that KU on Wheels has newer buses; some buses need to be cleaner; and the noise on some buses makes it hard to communicate.

5.1.5. Model Communities

Participants in focus groups were asked if there are other communities that get transit right. Many mentioned the Kansas City streetcar as a success which was marketed well, serves popular destinations, is zero-fare, and has good ridership. Champaign, Illinois was also mentioned as a transit-supportive, university town that combines university and city transit. Topeka was also given as an example, although it is larger than Lawrence and more spread out.

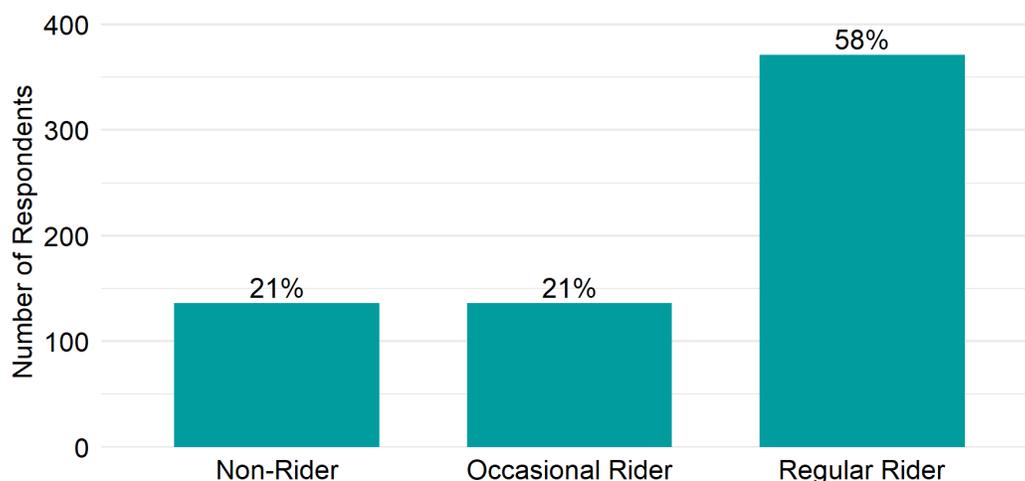
5.2. Survey

In addition to targeted focus groups, an online survey collected feedback about transit service from the public. The survey was available online in the summer of 2021 and received a total of 661 responses. Nearly three-fifths of the responses were from regular riders, who ride transit at least weekly; one-fifth from occasional riders, who ride transit less than weekly; and a one-fifth from non-riders, who reported never riding transit, as shown in **Figure 17**. In the following summary, “riders” includes regular riders and occasional riders.

The survey asked respondents to provide basic demographic information, details about their transit usage, information about their most common transit trip, opinions about existing transit services, and preferences for future service.



FIGURE 17: SURVEY RESPONSES BY RIDER TYPE



5.2.1. Key Survey Findings

Several key themes and findings emerged from the summary and analysis of the rider survey responses, including the following:

- KU has a clear effect on the makeup of transit ridership in Lawrence, including the number of riders who are students, young, and lower income.
- “Choice” riders represent a significant portion of ridership; nearly half of riders have daily access to their own vehicle, and an additional 14 percent of riders have occasional access to a shared vehicle. However, not owning a car remains a top reason why riders choose transit.
- While home locations were spread throughout Lawrence, destinations of the respondents’ most common transit trip were highly concentrated in KU and in downtown Lawrence.
- Work and school are the most common trip types. Most outbound trips happen between 7:00 a.m. and 11:00 a.m. on weekdays, with the return trip happening weekdays between 3:00 p.m. and 7:00 p.m. More than half of common trips (56 percent) are under 30 minutes.
- Most respondents said that if the bus had not been available for their most recent trip, they would have replaced the trip by walking (27 percent) or driving (23 percent).
- Respondents reacted positively to existing service, with the highest scores in professional and courteous staff, reasonable fares, and comfortable and well-kept buses. The lowest scores included the ease of understanding the website, schedules that meet travel needs, and the ease of understanding maps and schedules.
- Riders preferred improving weekday and Saturday service rather than adding Sunday service; maintaining fares rather than eliminating fares at the risk of reduced service; improving service rather than expanding service; and providing more frequent bus service rather than longer service hours.
- Respondents who left additional comments were most likely to write about route suggestions (43 responses); fares (25 responses), including requesting free fares systemwide or a free fare program for low-income riders; adding Sunday service (17 responses); more frequent service (16 responses); and adding bus stop amenities such as benches and shelters (11 responses).



5.2.2. Demographics

All survey respondents, regardless of transit usage, were asked a series of demographic questions.

AGE

Figure 18 shows survey respondents' age ranges, broken out by rider and non-rider. Riders who responded to the survey are most likely to fall in the 18-24 age range, while non-riders are most likely to be 35-44 years old. This likely reflects the fact that many riders are KU students. **Figure 19** shows the breakdown of Lawrence's population by age according to the U.S. Census Bureau. Slightly over a quarter of Lawrence's total population falls in the 18-24 age range.

FIGURE 18: SURVEY RESPONSES BY AGE

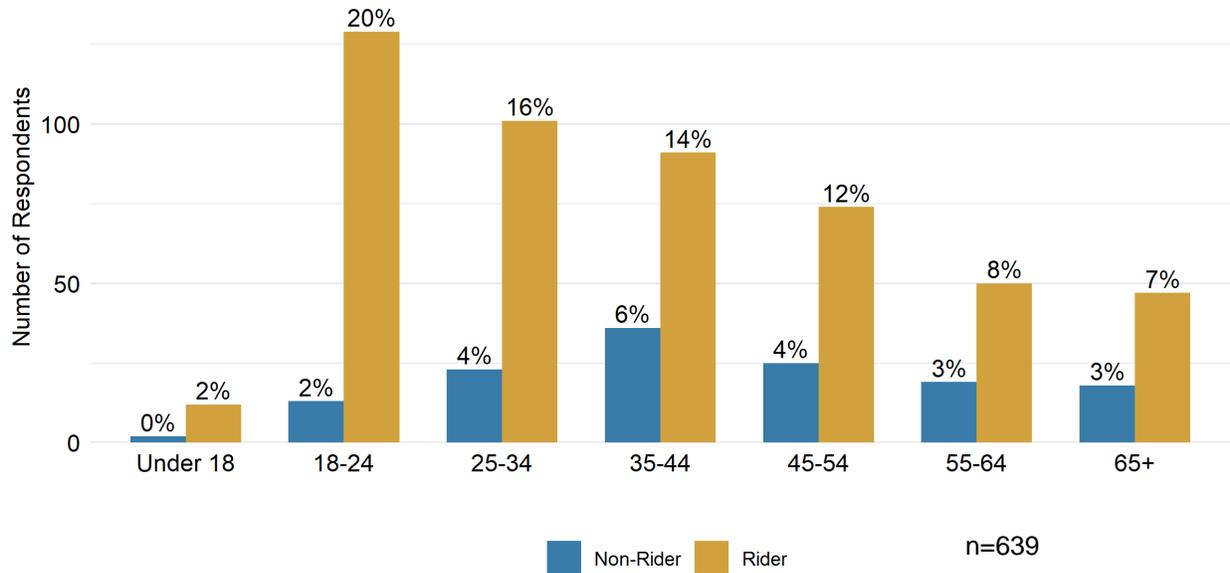
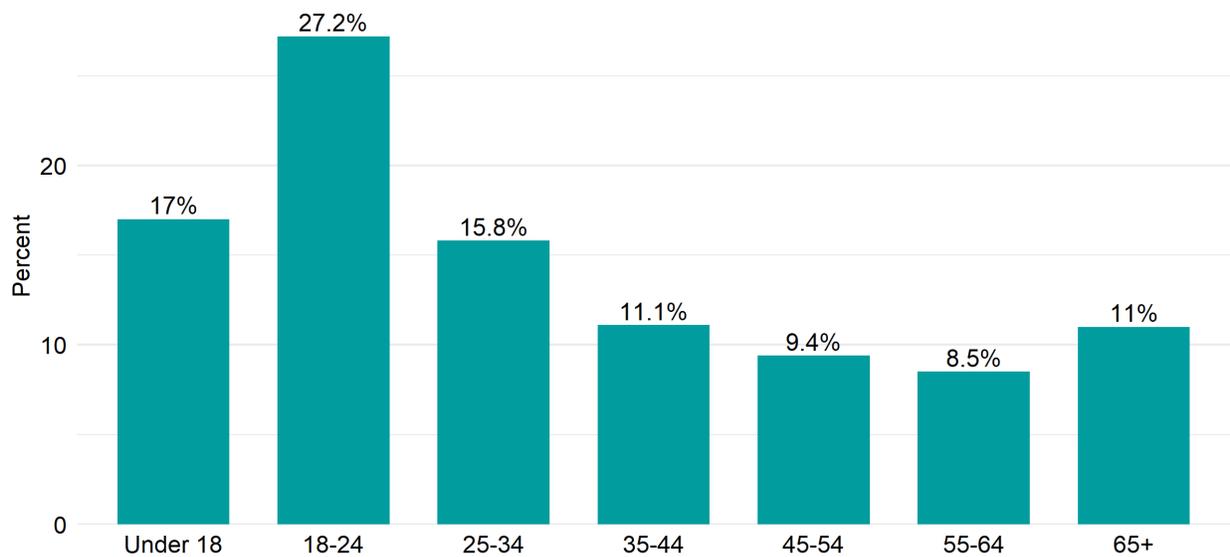


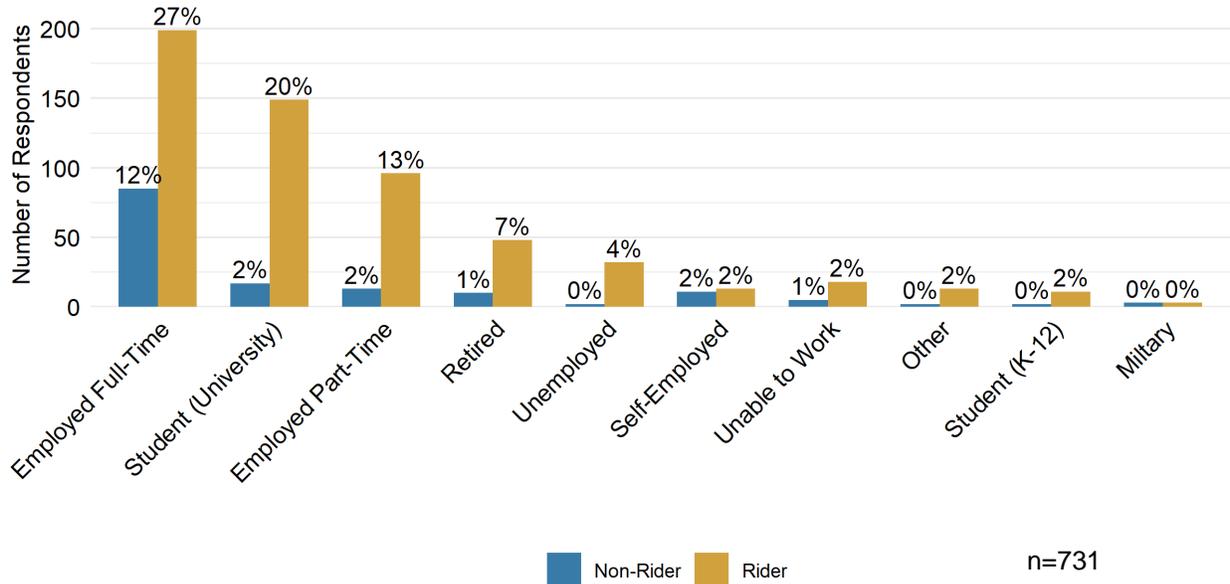
FIGURE 19: POPULATION BY AGE IN LAWRENCE, KS (U.S. CENSUS BUREAU, ACS 2019 5-YEAR ESTIMATES)



EMPLOYMENT STATUS

Figure 20 shows survey respondents' employment status, broken out by riders and non-riders. For both riders and non-riders, most respondents are employed full-time, university students, or employment part-time. Some respondents selected multiple answers.

FIGURE 20: SURVEY RESPONSES BY EMPLOYMENT STATUS



RACE AND ETHNICITY

Figure 21 shows race and ethnicity of respondents, broken out by rider status. Figure 22 shows the overall race and ethnicity characteristics of Lawrence from the U.S. Census Bureau. Survey respondents were largely white, with some Asian and Hispanic/Latino respondents, which closely matches the racial makeup of Lawrence.

FIGURE 21: SURVEY RESPONSES BY RACE AND ETHNICITY

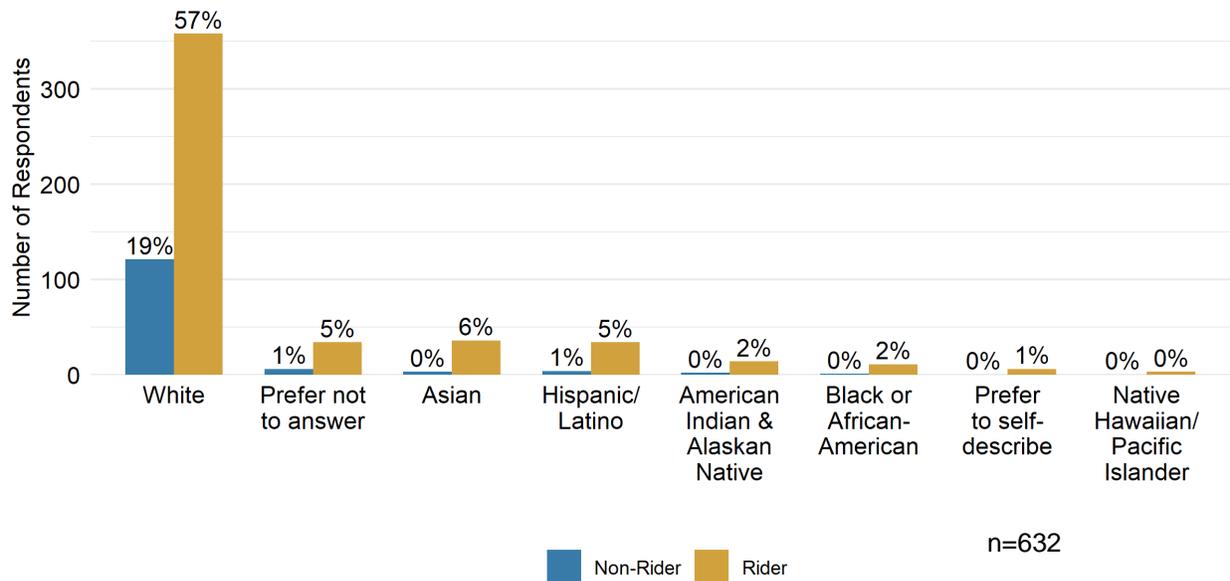
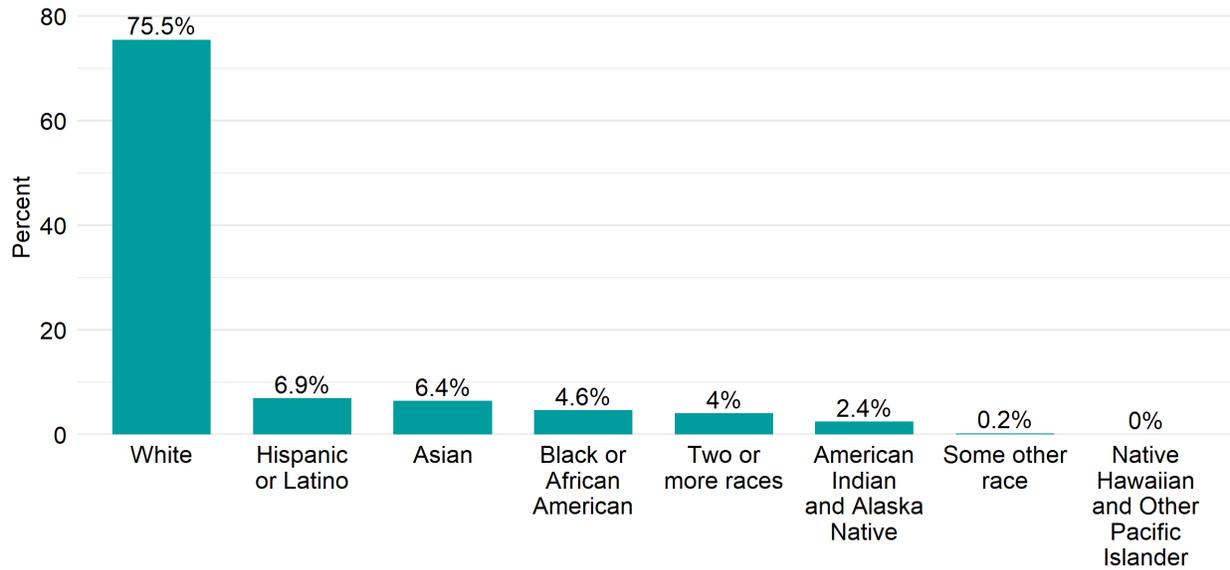


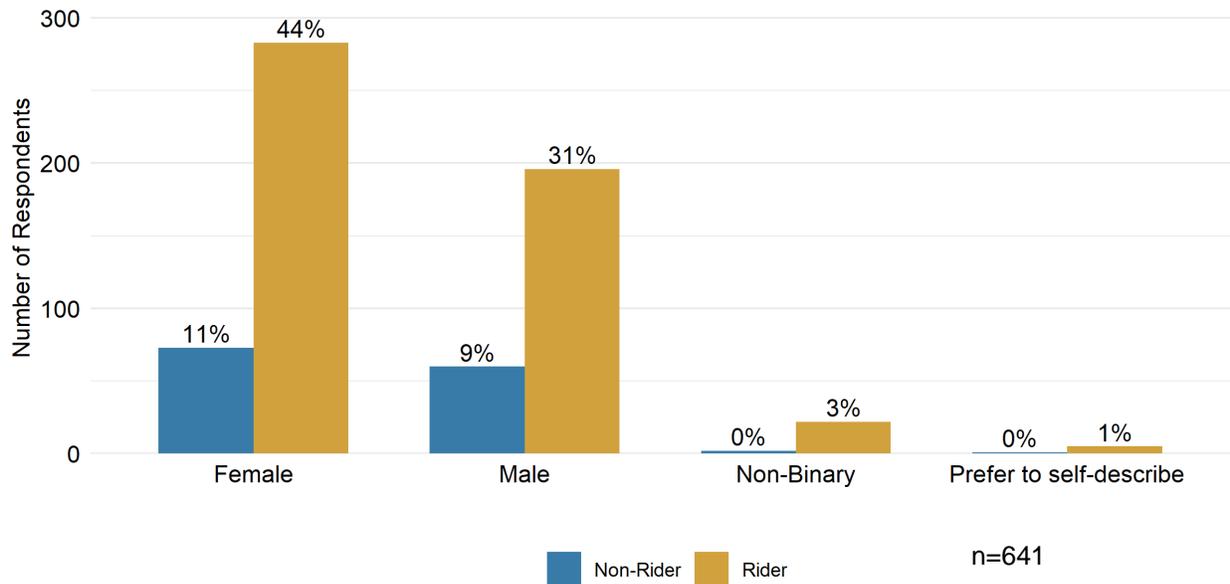
FIGURE 22: RACE AND ETHNICITY IN LAWRENCE, KS, U.S. CENSUS BUREAU, ACS 2019 5-YEAR ESTIMATES



GENDER IDENTITY

Figure 23 shows the gender identity of survey respondents, broken out by rider status. Survey respondents, and especially those that ride transit, were more likely to be female.

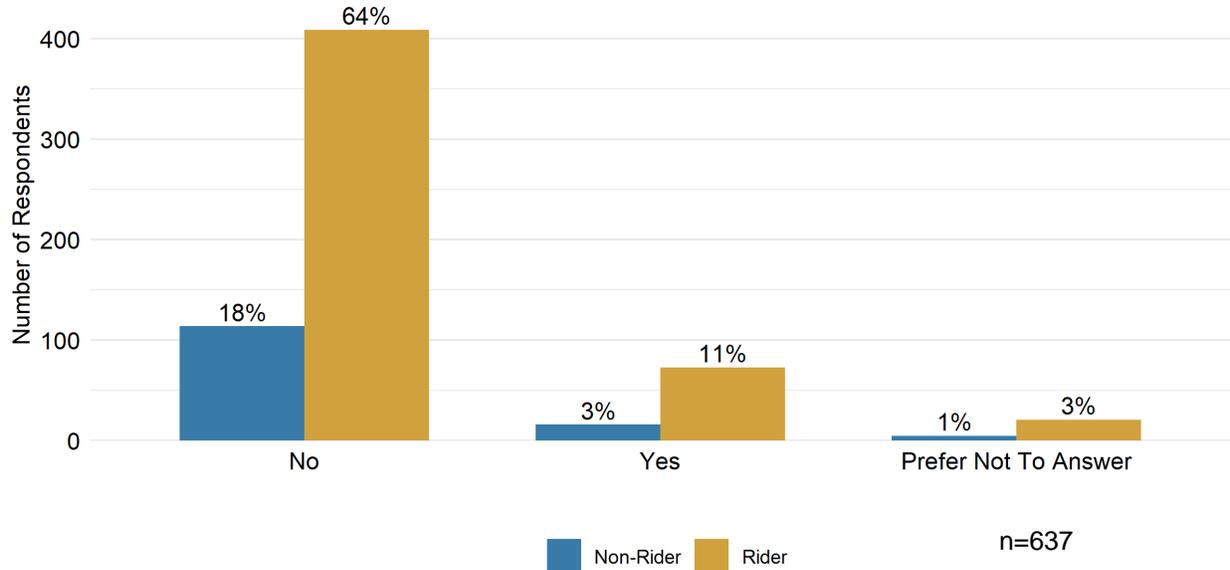
FIGURE 23: SURVEY RESPONSES BY GENDER IDENTITY



DISABILITY

Figure 24 shows the disability status of survey respondents, broken out by rider status. Most respondents do not experience disabilities, although eleven percent of respondents are riders with a disability.

FIGURE 24: SURVEY RESPONSES BY DISABILITY STATUS



HOUSEHOLD INCOME

Figure 25 shows survey respondents' household income, broken out by rider status. Riders are likely to have much lower incomes than non-riders. 28 percent of respondents are riders with incomes of less than \$25,000, while the largest income category for non-riders was \$100,000 - \$150,000 (four percent of respondents). Figure 26 shows household income in Lawrence, KS from the U.S. Census Bureau. Nearly one-quarter of Lawrence households have income less than \$24,999.

FIGURE 25: SURVEY RESPONSES BY HOUSEHOLD INCOME

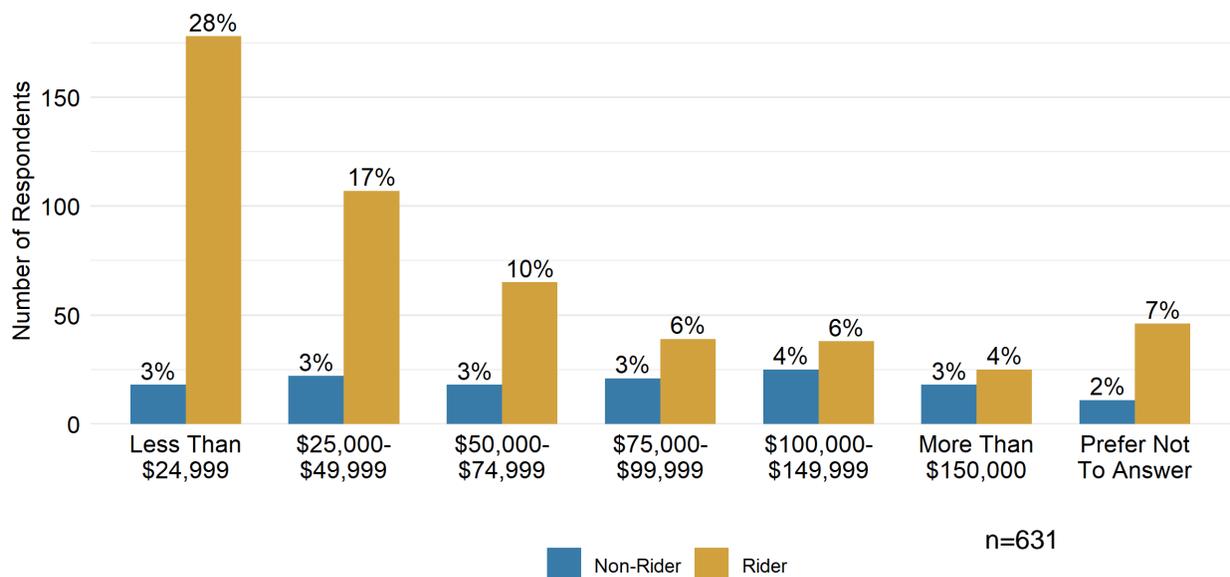
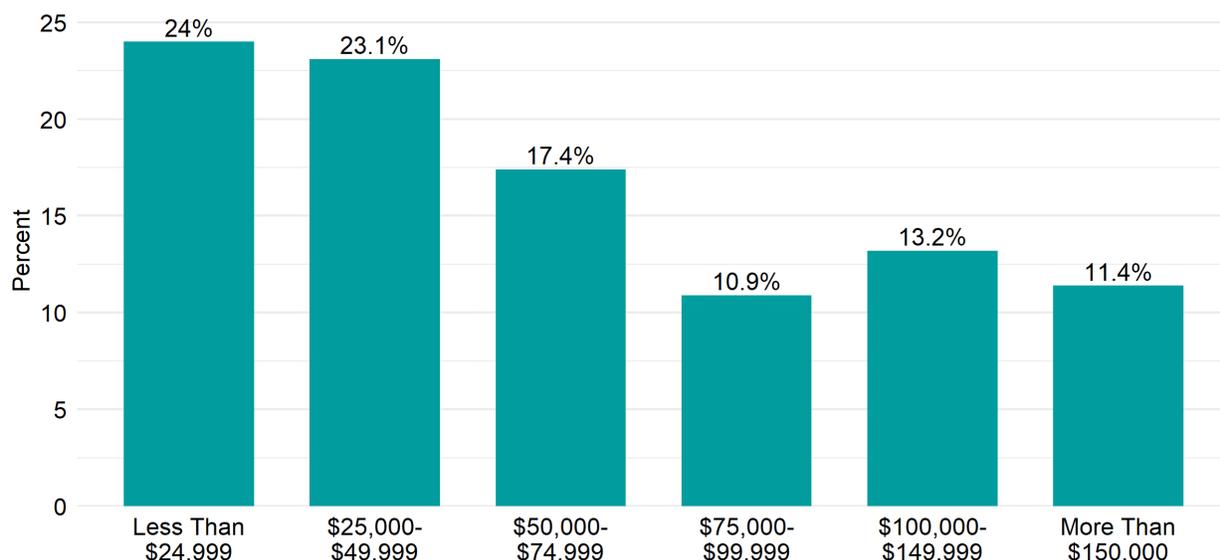


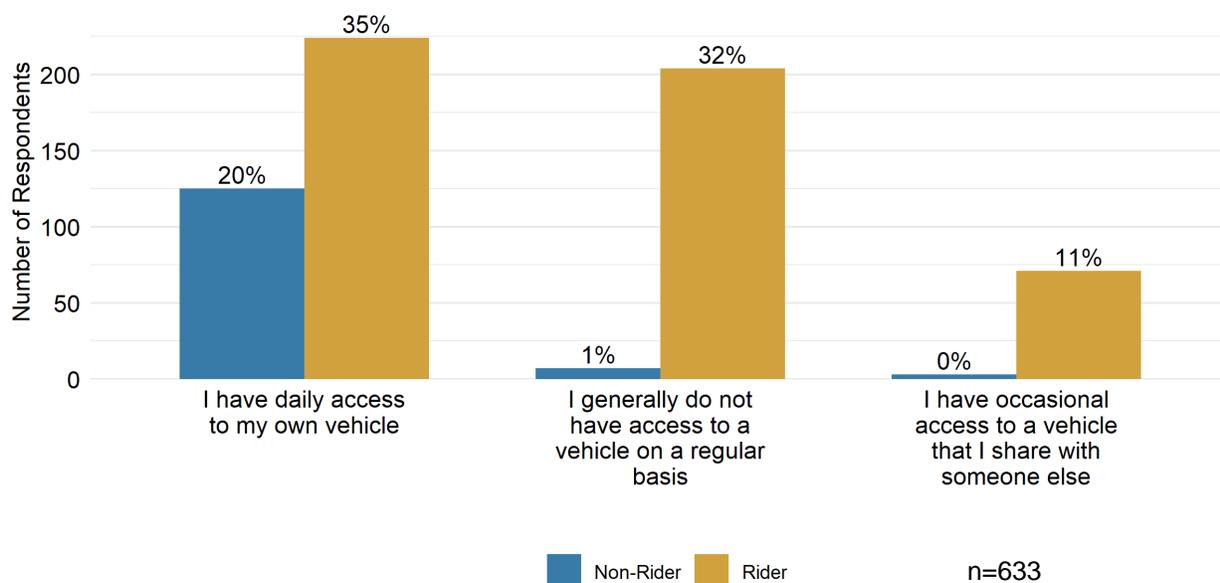
FIGURE 26: HOUSEHOLD INCOME IN LAWRENCE, U.S. CENSUS BUREAU (ACS 2019 5-YEAR ESTIMATES)



ACCESS TO PERSONAL VEHICLE

Figure 27 shows respondents’ access to a personal vehicle, broken out by rider status. Most respondents (59 percent), regardless of rider status, have daily access to their own vehicle. Riders who have access to their own vehicle (36 percent of all respondents) are likely “choice” riders, who could use alternate modes, but choose to use transit instead. A little over one-quarter of respondents (28 percent) are riders who do not have access to a personal vehicle, who are likely “captive” riders, in that they do not have other transportation choices.

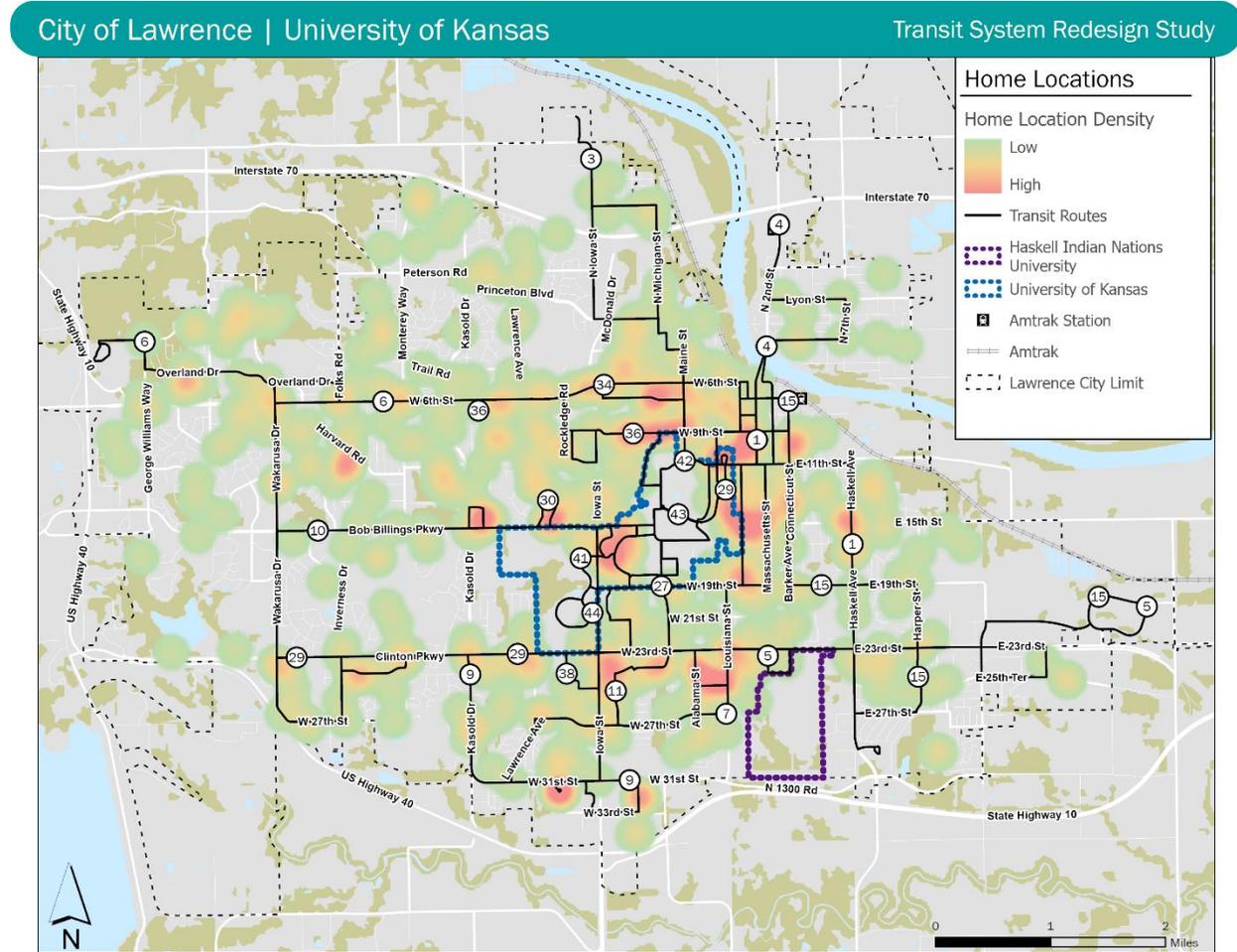
FIGURE 27: SURVEY RESPONSES BY ACCESS TO A PERSONAL VEHICLE



HOME LOCATION

Figure 28 shows reported home locations of survey respondents. Respondents were able to choose a location on a map or provide an address or nearest intersection. There are high concentrations of home locations near KU, along Bob Billings Parkway, along 23rd Street, and along 31st Street.

FIGURE 28: HOME LOCATIONS



5.2.3. Rider Status

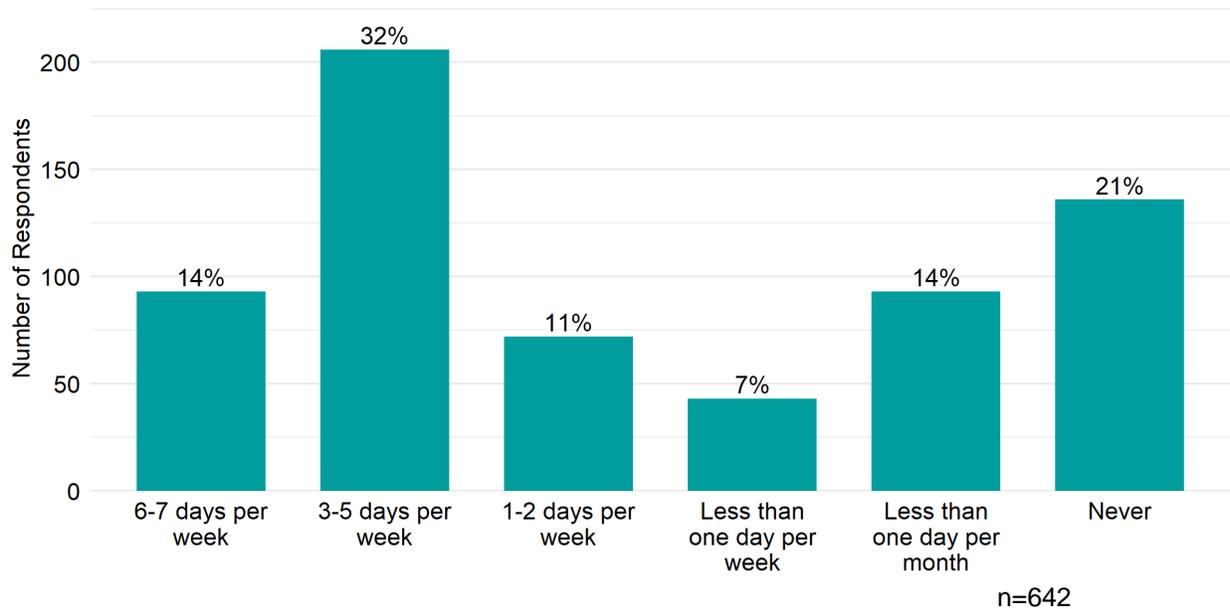
Survey respondents were asked several questions about their transit usage. This includes how often they ride transit, their opinions about transit service in Lawrence, and their reasons for either using or not using transit.

FREQUENCY OF TRANSIT USAGE

Figure 29 shows survey respondents' frequency of transit ridership. Survey respondents were most likely to either be regular riders, riding transit 3-5 days a week (32 percent of respondents) or non-riders, who never ride transit (21 percent of respondents).



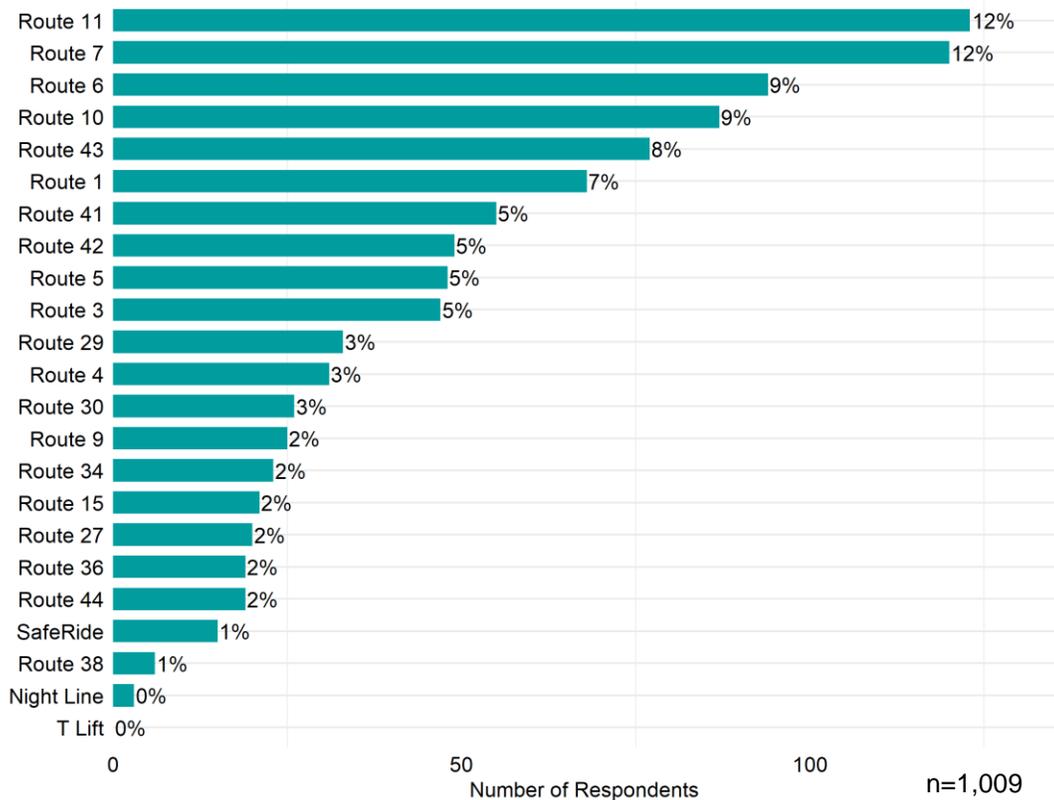
FIGURE 29: SURVEY RESPONSES BY RIDERSHIP FREQUENCY



ROUTES USED

Survey respondents who ride transit were asked to provide up to three routes that they ride regularly. **Figure 30** shows the total number of times that each route was mentioned. Routes 11, 7, 6, and 10 were the most commonly cited routes that respondents ride regularly.

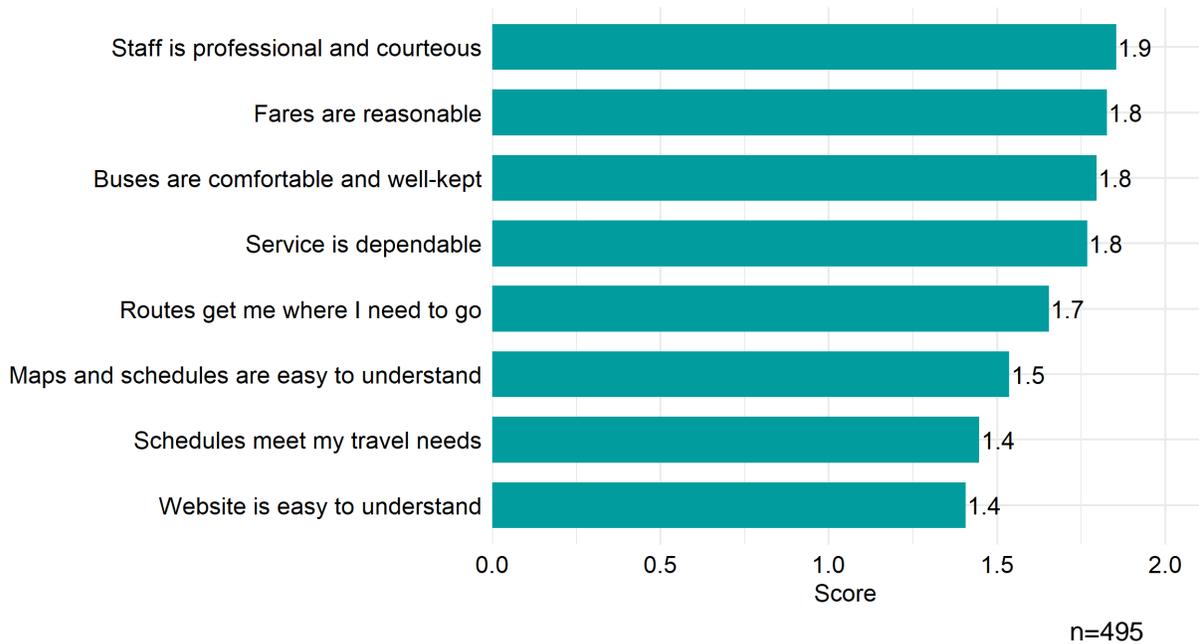
FIGURE 30: ROUTES USED MOST OFTEN BY SURVEY RESPONDENTS



RIDER OPINIONS

Respondents who ride transit were asked whether they agreed, disagreed, or were neutral about a variety of statements about transit services in Lawrence. In **Figure 31**, a score of 2 represents “agree”, a score of 0 represents “disagree”, and a score of 1 represents a “neutral” response. A higher average score indicates a more positive association. Transit service in Lawrence scores most highly in professional and courteous staff, reasonable fares, and comfortable and well-kept buses. At 1.4, a score in between “neutral” and “agree”, the lowest-scoring statements were the ease of understanding the website and schedules that meet travel needs.

FIGURE 31: SURVEY RESPONDENTS’ OPINIONS ABOUT TRANSIT SERVICE

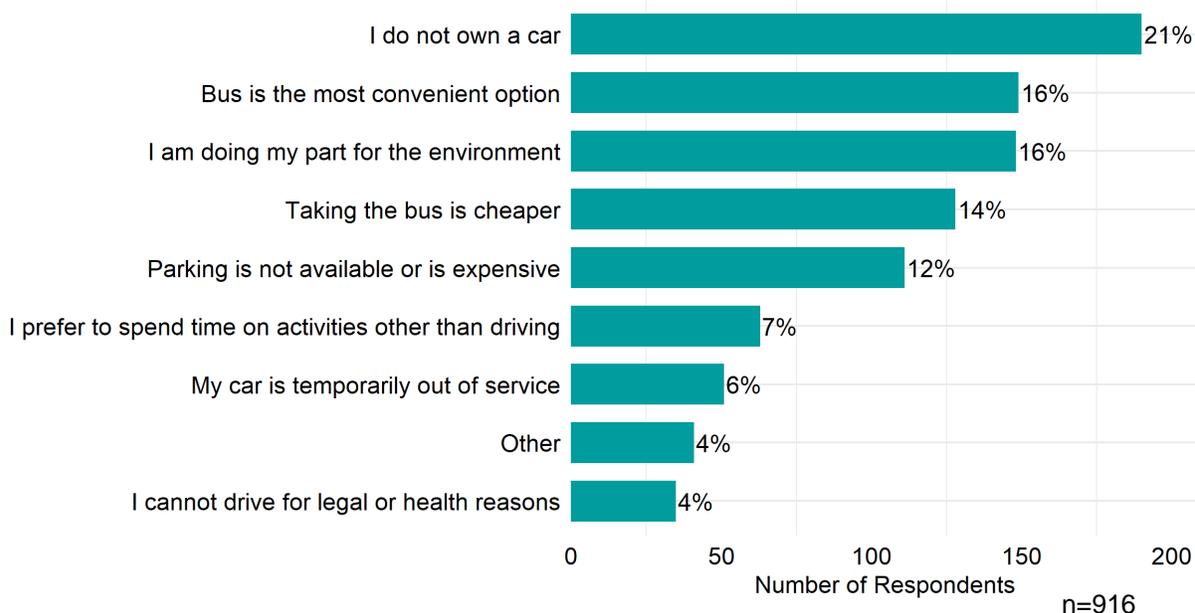


REASONS FOR TRANSIT USE

Respondents who ride transit at least occasionally were asked why they ride transit. Respondents could select as many responses as they liked. **Figure 32** shows that the top reason for riding transit was not owning a car, followed by the bus being convenient, and a belief that riders are doing their part for the environment.

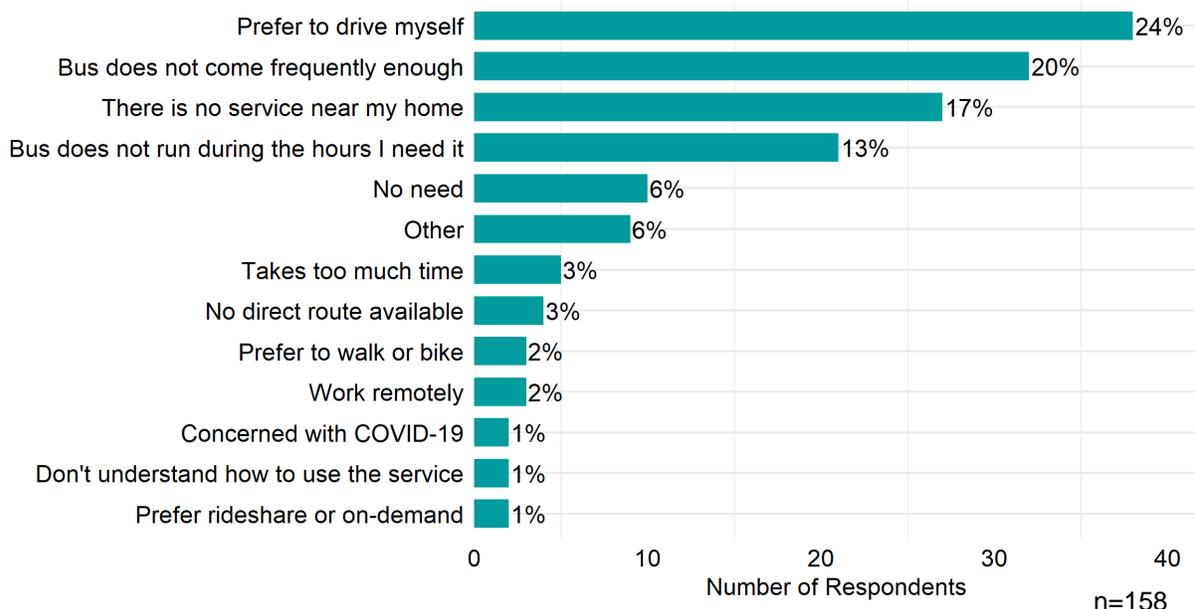


FIGURE 32: REASONS WHY RESPONDENTS USE TRANSIT



Similarly, respondents who reported never riding transit were asked why they do not ride. **Figure 33** shows these results. Non-riders reported not riding transit primarily because they have access to and prefer to use a personal vehicle. However, the next reasons were the bus not coming frequently enough and lack of bus service near the respondents' home. Other concerns, like the lack of service hours, long travel times, or lack of a direct route were also mentioned.

FIGURE 33: REASONS WHY NON-RIDERS DO NOT RIDE TRANSIT



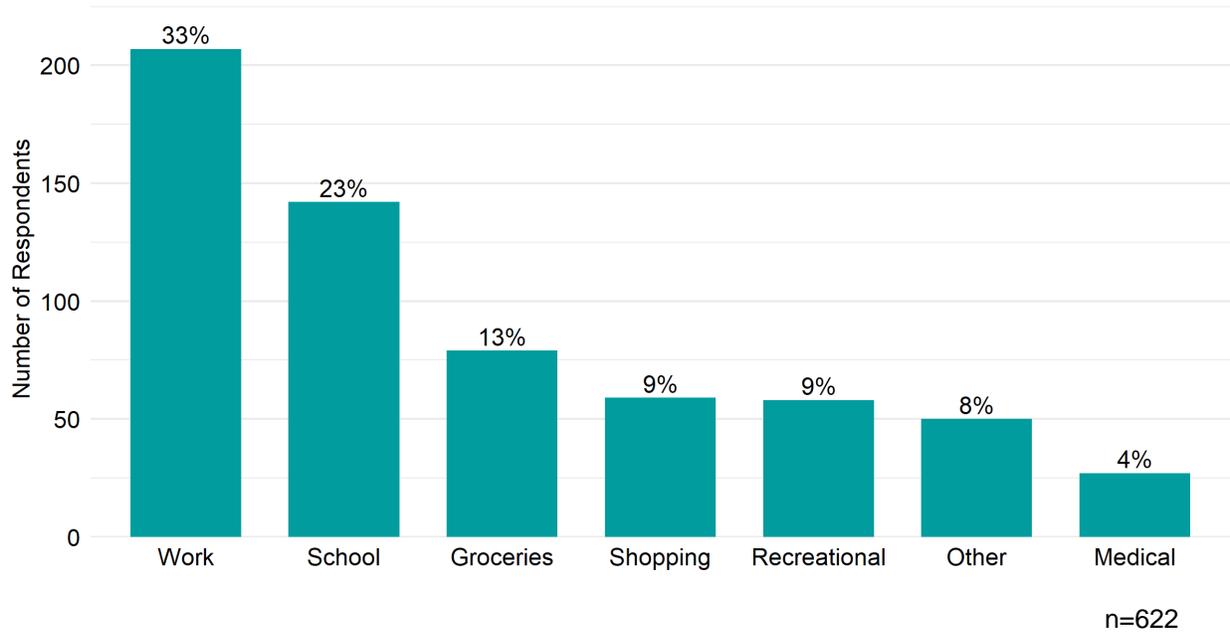
5.2.4. Most Common Trip

Survey respondents who ride transit were asked details about the most common transit trip that they take.

PURPOSE

Figure 34 shows the most common trip purposes. Work accounts for one-third of all trips, while school trips account for nearly one-quarter.

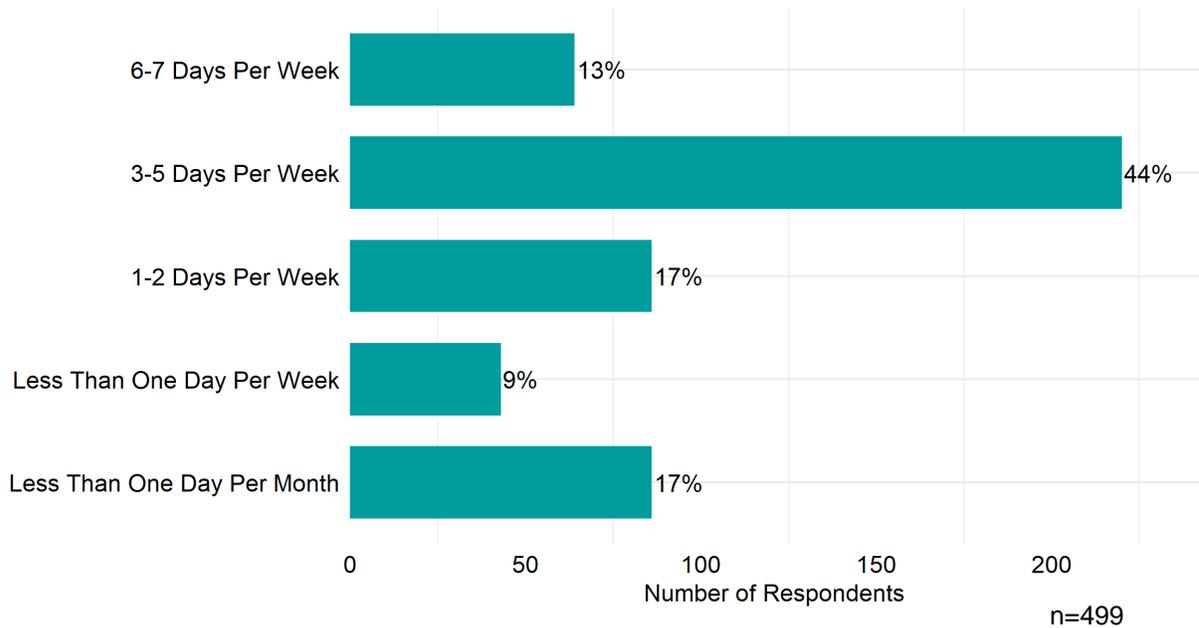
FIGURE 34: MOST COMMON TRIP PURPOSES



FREQUENCY OF TRIPS

Figure 35 shows frequency of trips. Nearly half of all reported trips are taken 3-5 days per week.

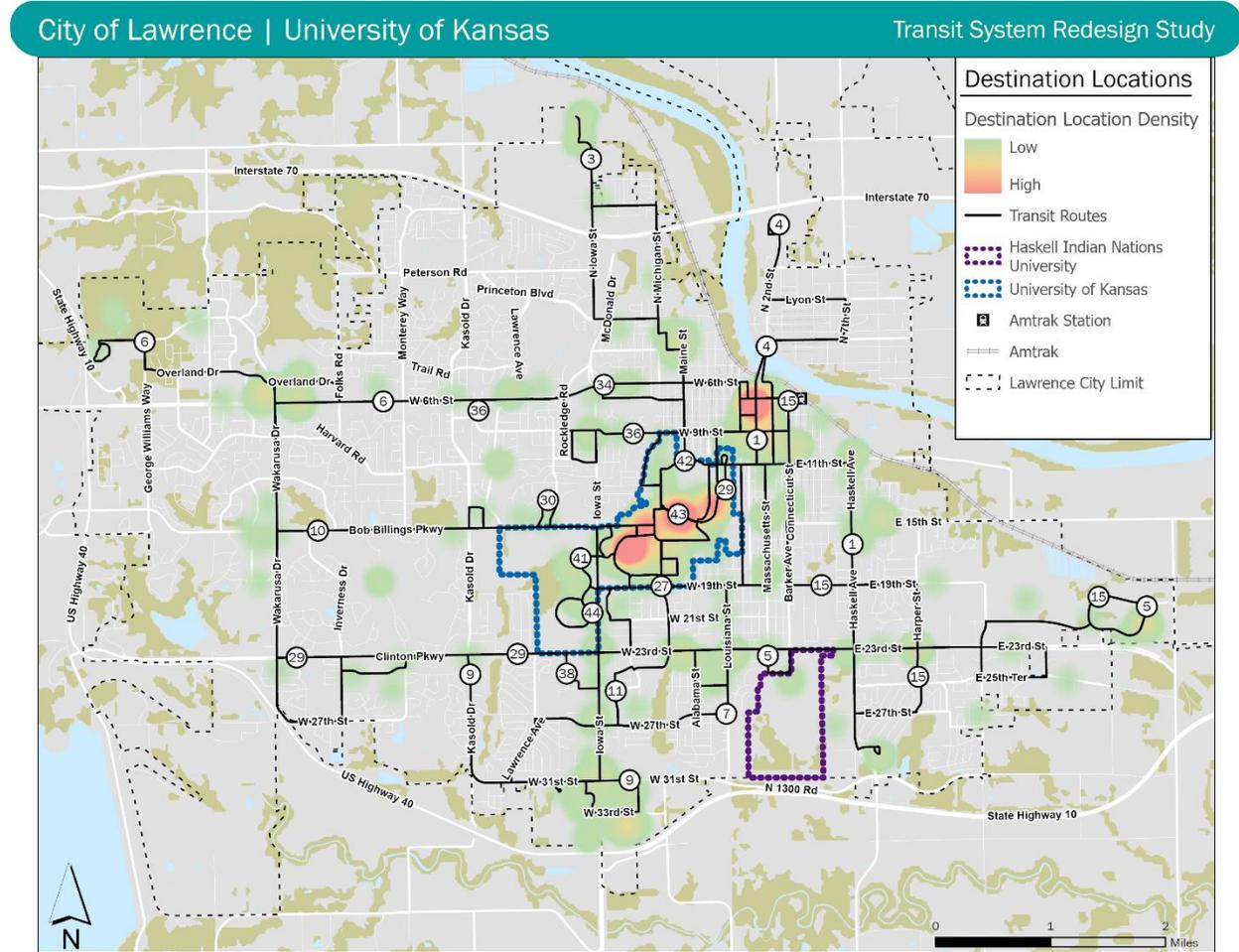
FIGURE 35: RIDERS' FREQUENCY OF TRIPS



DESTINATIONS

Respondents were asked to locate their trip destination on a map or alternatively, provide an address or the nearest intersection. Common destinations appear in **Figure 36**. The most common destinations are KU and downtown Lawrence, with less common destinations spread out throughout Lawrence.

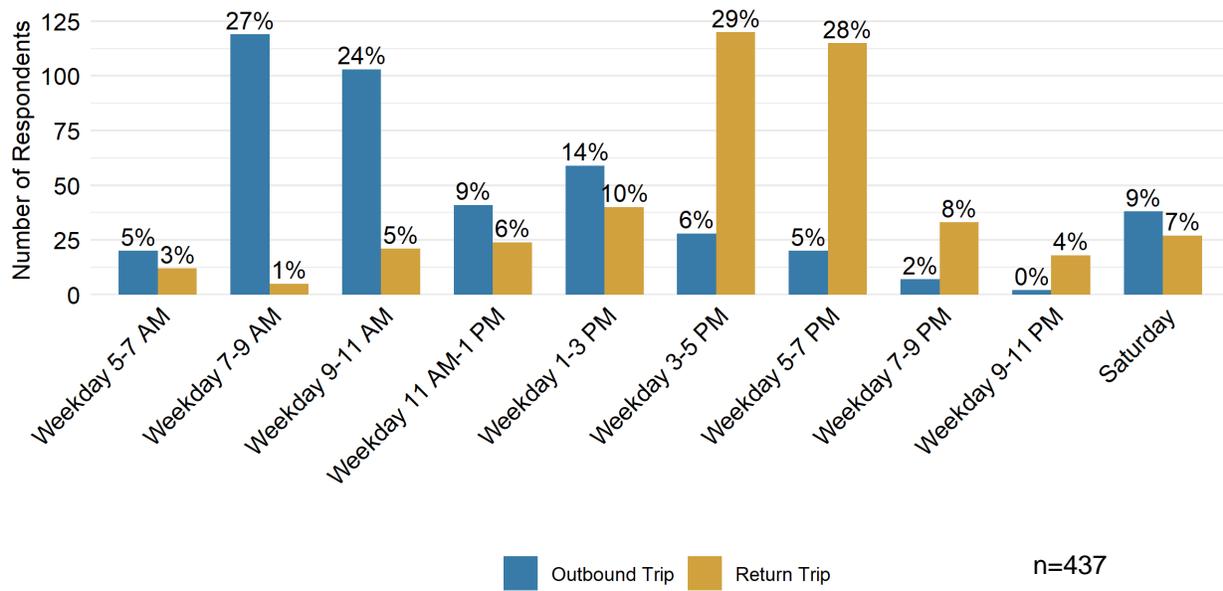
FIGURE 36: DESTINATION DENSITY



TIME PERIOD

Figure 37 shows the most common time periods for both the outbound and return portions of respondents' most common transit trips. Half of outbound trips occur during weekday morning peaks (between 7:00 a.m. and 11:00 a.m.), with another 15 percent occurring during weekday early afternoon (1:00 p.m. to 3:00 p.m.) and another nine percent on Saturdays. Similarly, over half of return trips occur during weekday afternoon peaks (from 3:00 p.m. to 7:00 p.m.), with early afternoons representing an additional 10 percent of trips.

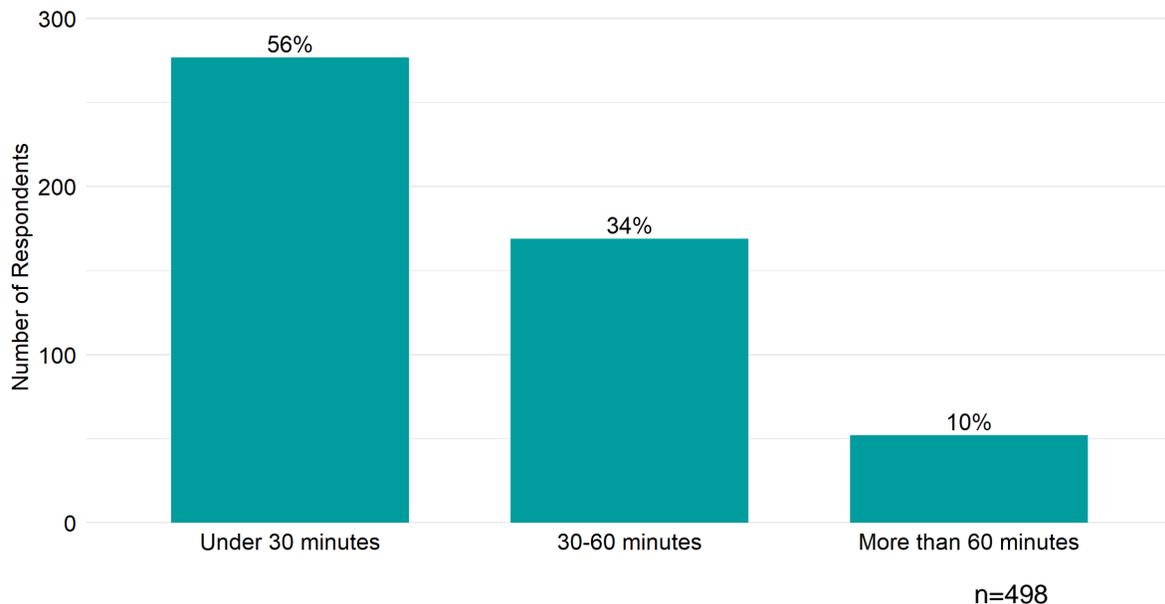
FIGURE 37: TIME PERIODS OF OUTBOUND AND RETURN TRIPS



TIME DURATION

Figure 38 shows the duration of respondents' most common transit trip. Over half of trips are under 30 minutes, one-third are between 30 and 60 minutes, and only 10 percent are longer than one hour.

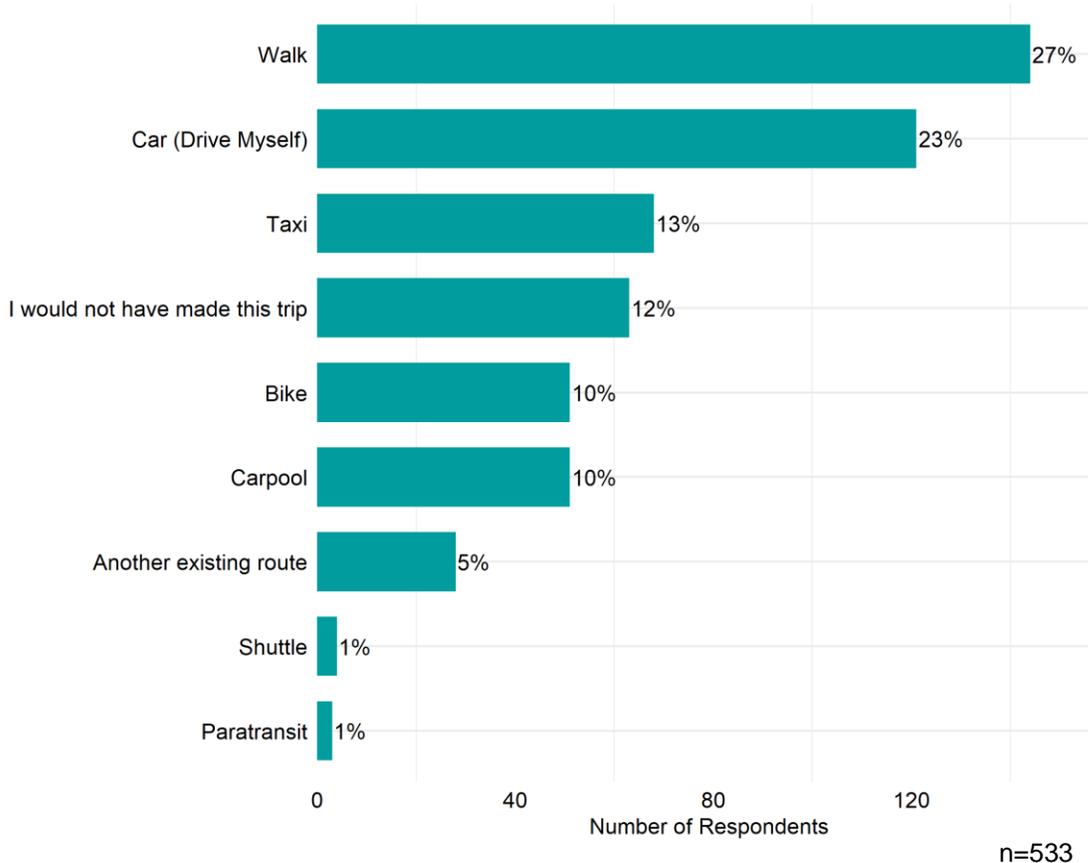
FIGURE 38: TIME DURATION OF MOST COMMON TRIP



ALTERNATIVE MODE

Respondents were asked how they would have completed their most common trip if transit was not available. **Figure 39** shows these responses. Over one-quarter of respondents would have chosen to walk, while just under one-quarter would have driven themselves. Taxi, bike, and carpool each represented around one-tenth of respondents, and 12 percent said they would not have made this trip at all.

FIGURE 39: ALTERNATIVE MODES

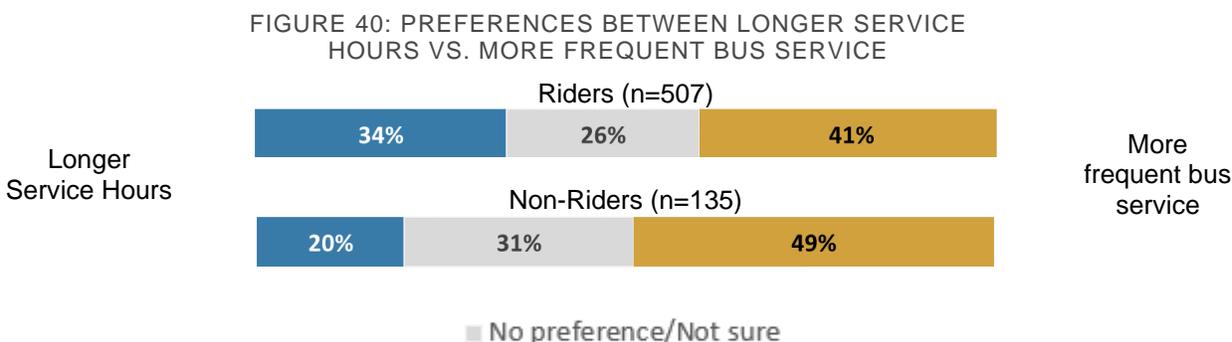


5.3. Trade-Off Questions

Survey respondents and focus group attendees were asked a series of trade-off questions about their preferences for transit service. The trade-off questions reflect the fact that budgets are constrained and not all improvements are possible; the responses to these questions can help planners decide which improvements are most beneficial to the community. Results are reported broken out by rider status and the number of respondents in each group is given, as more riders responded to the survey than non-riders.

5.3.1. Longer Service Hours vs. More Frequent Bus Service

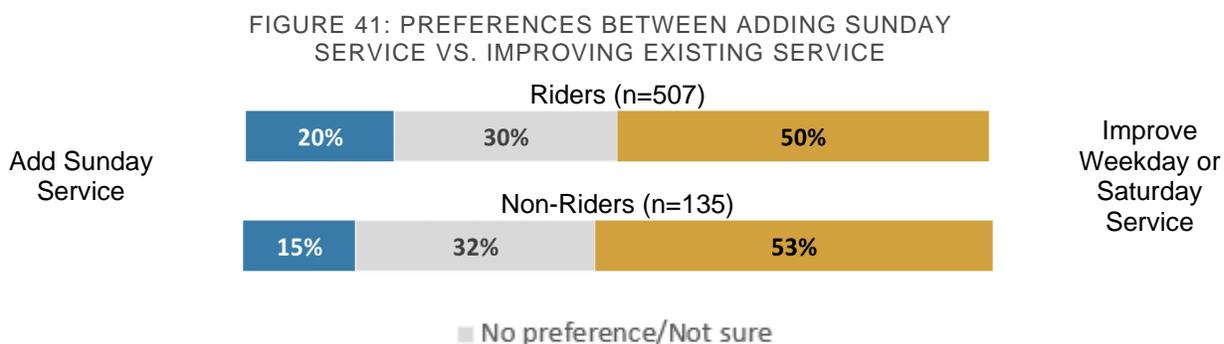
Figure 40 shows survey respondents' preferences. Both riders and non-riders prefer more frequent bus service over longer service hours. Non-riders have a stronger preference, and riders' preferences are closer to being split between the two options.



Most of the focus groups preferred more frequent service, including the University group, the frontline staff group, and the general public focus group. The community resources group preferred longer service hours, since many activities happen later and waiting for a bus is better than having no bus at all. The general public focus group mentioned that many buses seem to be empty in the evenings, so extending service did not seem worth it.

5.3.2. Adding Sunday Service vs. Improving Weekday or Saturday Service

Figure 41 shows survey respondents' preferences. Both riders and non-riders prefer to improve weekday or Saturday service rather than adding Sunday service, at around 50 percent of respondents in each group.



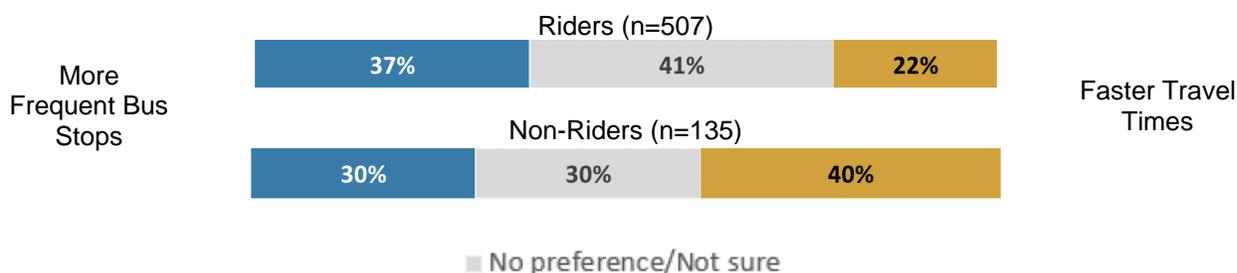
Focus group respondents, on the other hand, were more likely to talk about the benefits of Sunday service and to brainstorm ways to make it possible. The University focus group mentioned that Sunday service is important for international students as they are unlikely to own a car, and therefore do not have another means of transport on Sundays. The staff group thought that Sunday service could start as a flex zone, rather than a fixed route service, which would allow people to get around on Sundays without committing too many resources. The community resources group was not convinced that Sunday service is necessary, although they also thought that a Sunday on-demand service would be a helpful way to start Sunday services. Sunday service was a priority in the general public focus group.



5.3.3. More Frequent Bus Stops vs. Faster Travel Times

Figure 42 shows survey respondents' preferences. Riders preferred more frequent bus stops, while non-riders preferred faster travel times.

FIGURE 42: PREFERENCES BETWEEN MORE FREQUENT BUS STOPS VS. FASTER TRAVEL TIMES

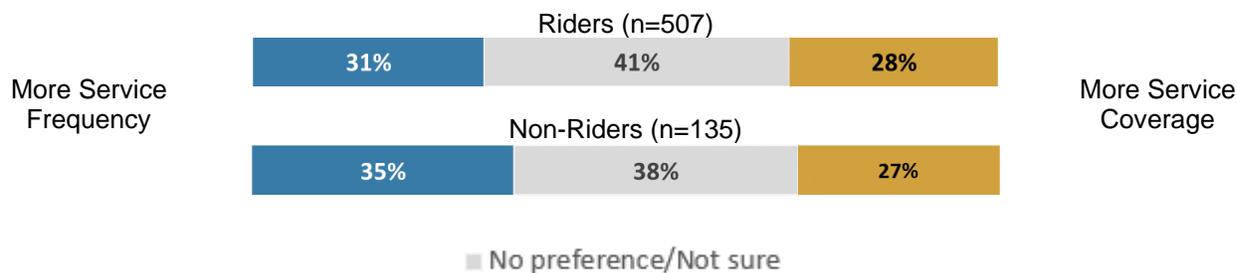


Focus group participants also expressed divergent views. The University and community resources groups both voiced the opinion that it depends on who a route is serving – students and elderly riders have different preferences. While students might be happy to walk farther for a faster travel time, elderly riders or riders with disabilities might prefer more frequent bus stops to avoid traveling farther. Poor weather conditions were also cited as a reason for more frequent bus stops. Staff also noted that elderly clients would also like more stops with shelters. In the general public focus group, one person mentioned that routes 1 and 6 need more frequent stops because of the type of road that they traverse.

5.3.4. More Service Frequency vs. More Service Coverage

Figure 43 shows survey respondents' preferences. Both riders and non-riders preferred more service frequency rather than more service coverage, although riders were close to being split on this question.

FIGURE 43: PREFERENCES BETWEEN MORE SERVICE FREQUENCY VS. MORE SERVICE COVERAGE



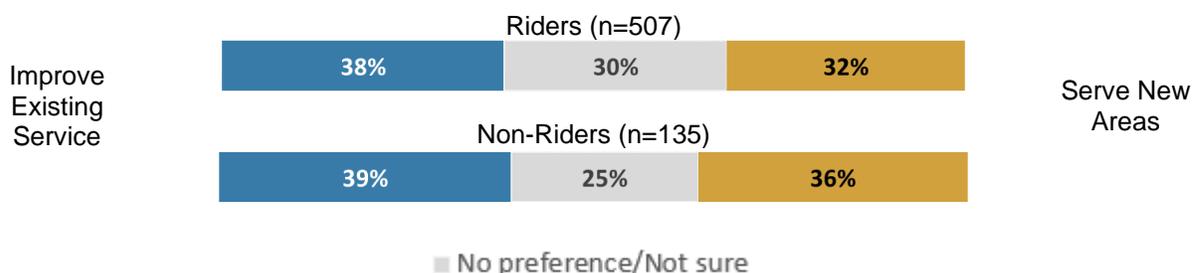
All of the focus groups preferred more service coverage, contrary to the survey results. Frontline staff believe that routing through neighborhoods, like Route 11, works better than serving major thoroughfares because the bus is more a part of the community. Other reasons include the fact that many main roads are not safe for pedestrians. Frontline staff preferred service coverage over frequency because they noted that Lawrence is expanding, and the service will need to expand to serve more residents.



5.3.5. Improve Existing Service vs. Serve New Areas

Figure 44 shows survey respondents' preferences. Both riders and non-riders preferred to improve existing services rather than serve new areas, although the numbers were close.

FIGURE 44: PREFERENCES BETWEEN IMPROVING EXISTING SERVICE VS. SERVING NEW AREAS

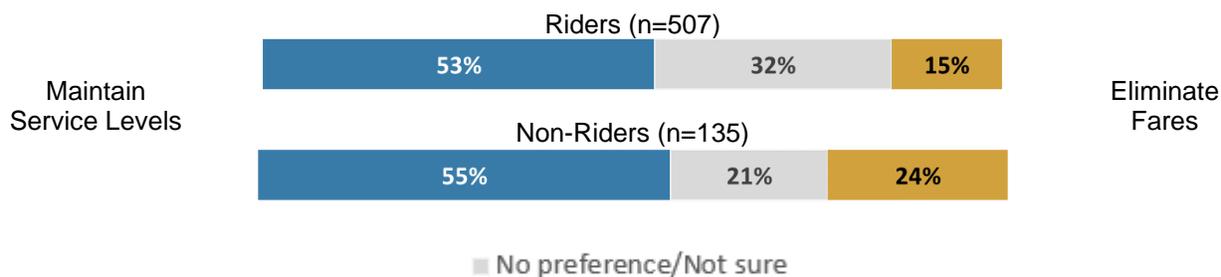


Focus group attendees did not necessarily show a preference for serving new areas but did spend time talking about areas in Lawrence that may warrant new service. The community resources group identified North Lawrence is one neighborhood that could use more service and noted that it is a more established neighborhood deserving of bus service. West of Wakarusa also does not have service but has traditionally been a place with high automobile ownership. However, there are new apartment buildings being built, possibly warranting new service, although some participants thought that residents might oppose 40-foot buses going through those communities.

5.3.6. Maintain Service Levels vs. Eliminate Fares

Figure 45 shows survey respondents' preference. Riders and on-riders preferred maintaining service levels rather than eliminating fares, with over half of each group responding in support. One-third of riders and one-fifth of non-riders did not have a preference. Non-riders were more likely to support eliminating fares than riders. Many survey respondents wrote free-response comments at the end of the survey about fare policy, with several supporting the idea of reduced or free fares, but wary of potential service cuts.

FIGURE 45: PREFERENCES BETWEEN MAINTAINING SERVICE LEVELS VS. ELIMINATING FARES



However, focus group respondents strongly supported eliminating fares and mentioned the possibility of at least providing free fares for low-income residents. The frontline staff focus group supported reducing fares, since many passengers cannot afford to pay, but they were also concerned about where the money for operations would come from.

5.4. Free Responses

Survey respondents who left additional comments were mostly likely to write in about route suggestions (43 responses); fares (25 responses), mostly requesting free fares systemwide or a free fare program for low-income riders; adding Sunday service (17 responses); more frequent service (16 responses); and adding bus stop amenities such as benches and shelters (11 responses). Focus group attendees also had route suggestions.



5.4.1. Route Suggestions

While route suggestions varied, Route 11 was mentioned frequently with requests to leave this route unchanged, often coming from students. Respondents requesting more frequent service also often mentioned Route 11.

“Route 11 should not be changed. Each morning during the fall and spring semesters the buses are fully packed with students traveling from the apartments (Reserve, Spanish Crest) to campus.”

Other route suggestions include:

- Address crowding on Route 30 during peak periods.
- Add service to the airport.
- Reroute Route 10 to serve Rock Chalk Park.

5.4.2. Fares

Of respondents who mentioned fares, the most common responses were requests to make service free and the suggestion to have a reduced or free-fare program for low-income riders. Four respondents asked about specific fare pass products such as monthly or weekly passes, and three respondents requested that fares be free without reducing service levels. Two respondents requested raising fares. Some sample responses are below.

“I believe fares are a fiscal burden for some low-income passengers, and low-income individuals are more likely to depend on the bus service. I would like to see some mechanism to try to reduce/eliminate fares for at least some passengers, either through some system based on eligibility, or eliminating fares at certain stops in low-income neighborhoods.”

5.4.3. Other Comments

Other notable comments often centered around requests for additional service, like more frequent service, Sunday service, or late-night service. People frequently requested more shelters and benches at stops to make waiting for the bus more pleasant and manageable. Drivers requested more bathroom accessibility during their focus group, and one participant requested an information booth at the new transfer hub.

“I would love to see a creative use of funding to eliminate fares, but not at the cost of service reductions.”

“I love that we live in such a bus-friendly city. It should be a priority to make the routes as accessible as possible to all residents in Lawrence. If everyone had access to free bus service, it could improve the lives of many, which trickles into the city as a whole. We would benefit environmentally and economically.”



6. SERVICE ASSESSMENT

The stakeholder input summarized in the previous chapter, together with the findings of the market analysis discussed in **Chapter 4**, provide context for the assessment of the strengths, weaknesses, and opportunities of each Lawrence Transit and KU on Wheels route. Using these analyses as a starting point, the study team developed detailed, diagnostic profiles for each route. The profiles, presented in this chapter, describe each route's service characteristics, ridership patterns, productivity, and on-time performance. At the conclusion of each route profile is a list of potential service improvement options for the route, based on the quantitative findings of the profile and a set of qualitative guiding principles, discussed below, representing industry best practices.

6.1. Guiding Principles

Transit service is most successful when it is easy to use and intuitive to understand. The following principles describe the characteristics of such a transit system:

6.1.1. Service Should Operate at Regular Intervals

In general, people can easily remember repeating patterns, but have difficulty remembering irregular sequences. Transit routes that operate less frequently than every 15 minutes should utilize clockface scheduling to the greatest extent possible. With a clockface schedule, each bus arrives at the same time or times each hour. For example, a bus route with 20-minute frequency might arrive at :00, :20, and :40 each hour throughout a service period. Clockface scheduling significantly enhances transit service usability, as it allows passengers to easily remember when their bus will come without having to rely on paper or online schedules.

6.1.2. Routes Should Operate Along a Direct Path

The fewer directional changes a route makes, the easier it is to understand. Circuitous alignments are disorienting and difficult to remember. Some deviations from the most direct path of travel are necessary and justifiable given that major destinations are sometimes located off major arterial roadways. However, frequent deviations from the most direct path of travel will increase travel times for the majority of passengers, and thus should be avoided unless there is a strong justification.

6.1.3. Routes Should be Symmetrical

Routes should operate along the same alignment in both directions to make it easy for riders to know where to catch the bus for their return trip. Providing service on different streets, depending on direction, is sometimes unavoidable due to one-way traffic patterns, but to the extent possible, bus stops for service in opposite directions should be across from one another on opposite sides of the same street. Large one-way loops can also frustrate riders by forcing out-of-direction travel on either the outbound or return leg of their trip. In most circumstances, transit riders prefer bi-directional services that they have to walk somewhat further to access, over a closer but one-way route.

6.1.4. Routes Should Serve Well-Defined Markets

The purpose of a transit route should be clear. Each route should include strong anchors and a mix of origins and destinations. Service duplication should be avoided unless it is for a specific purpose such as to increase effective frequency in a high-ridership "trunk" corridor, before two routes diverge.



6.2. Route Profiles

ROUTE: 1

Downtown to East Lawrence

Route Type: *Neighborhood*

Funding: *City*

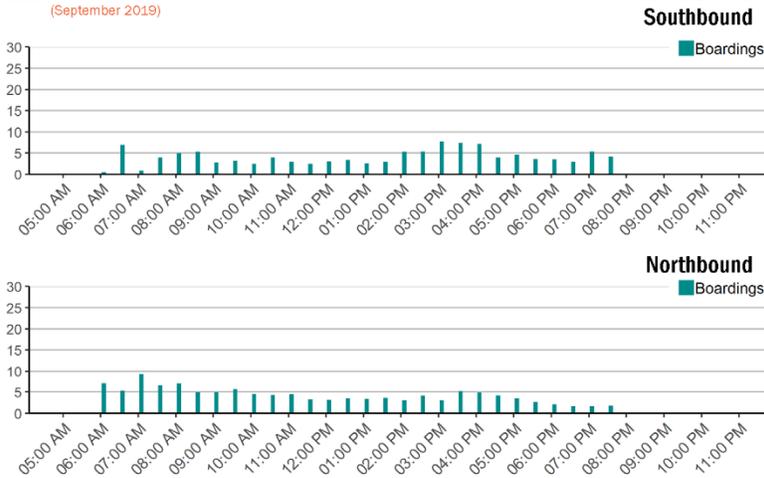
Description: *Route 1 serves east and southeast Lawrence. Destinations include Downtown, Hobb's Park, industrial and commercial areas east of Downtown, East Lawrence Rec Center, Douglas County Fairgrounds, Lawrence Community Shelter, and Douglas County Jail.*

Key Points of Interest: *City Hall, Senior Center, Library, Courthouse, East Lawrence Recreation Center, and Lawrence Community Shelter.*

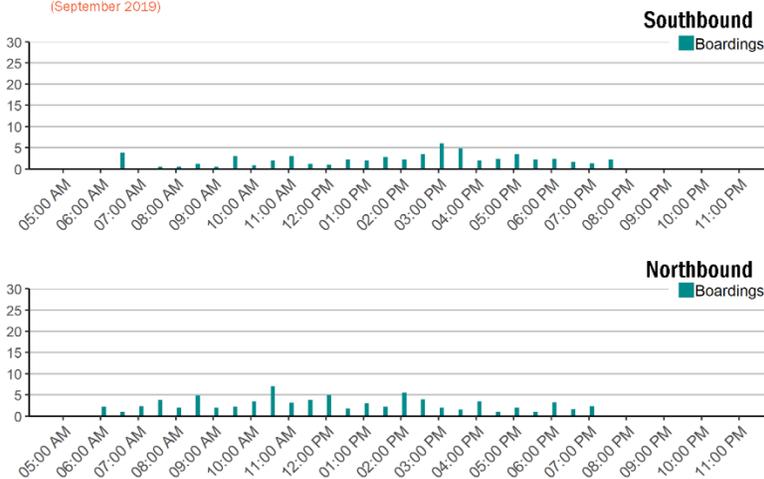
Daily Statistics (2019)

	Total Boardings	City Rank	Passengers per Hour	City Rank	Passengers per Mile	City Rank	Passengers per Trip	City Rank
Weekday	262	6/12	9.4	8/12	1.1	7/12	4.7	6/12
Saturday	176	4/10	6.3	4/10	0.71	4/10	3.1	5/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:03 a.m. - 7:57 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:03 a.m. - 7:57 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

On-Time Performance (2019)

Trips	Early	On-Time	Late
	7%	85%	8%

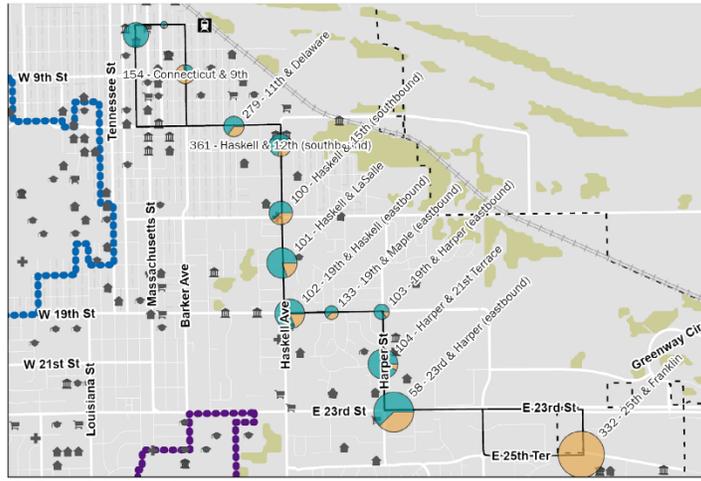
Annual Statistics (2019)

	Actual	City Rank
Revenue Hours	8,535	5/12
Revenue Miles	76,136	7/12
Operating Costs	\$499,518	5/12
Ridership	76,036	6/12

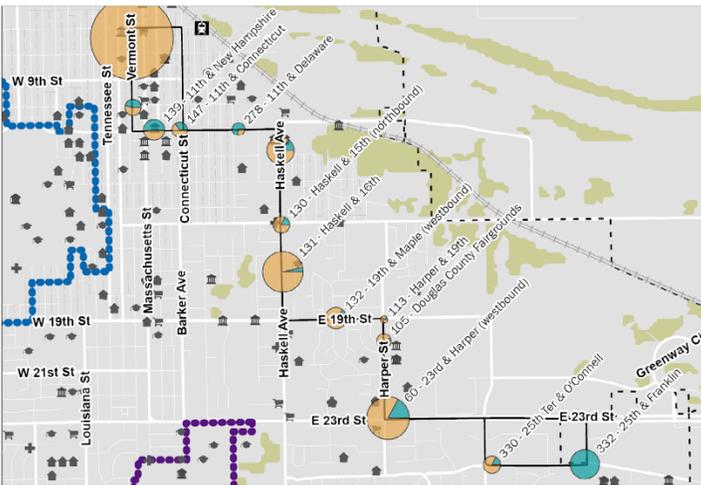
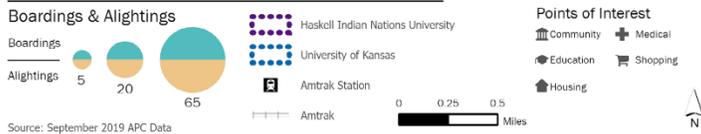




Weekday Ridership by Stop
(September 2019)



1 Southbound | Average Weekday Ridership



1 Northbound | Average Weekday Ridership



Route Analysis

Strengths

- Provides an important link to Lawrence Community Shelter and Douglas County Jail.
- Relatively high service frequency.
- Fairly direct route.
- Serves several areas of higher-density housing including mobile home parks and multi-family housing communities.
- Strong on-time performance.

Weaknesses

- Fewer than five passengers per trip on most weekday and Saturday trips.
- No Sunday service.
- No direct access to full-service grocery stores.

Opportunities

- Reduce frequency during lower-demand time periods to improve route productivity.
- Modify route to link high-density housing with at least one full service grocery store.
- Replace weekend service with demand response service.



ROUTE: 3

Downtown to Lakeview Road

Route Type: *Neighborhood*

Funding: *City*

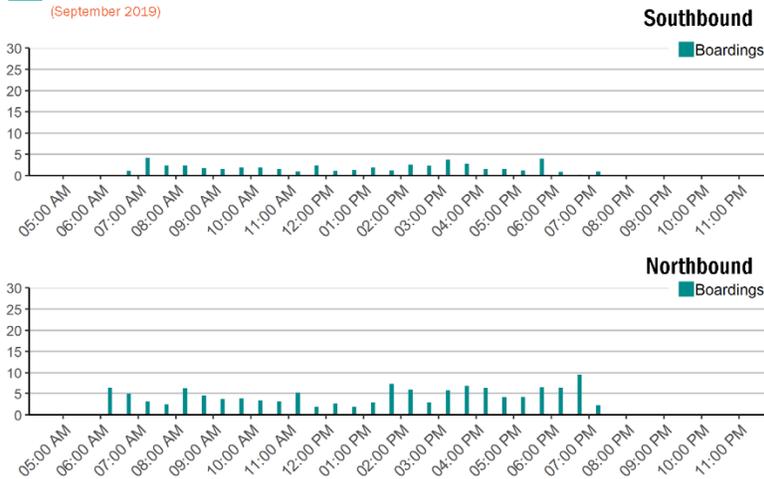
Description: Route 3 serves northwest Lawrence. Destinations include Lawrence Memorial Hospital, businesses on Lakeview Road and North Iowa Street, residential areas along Peterson, Kasold, Riverridge, and North Michigan.

Key Points of Interest: Library, Senior Services, Public Schools, Apartments, Lawrence Memorial Hospital, Heartland Medical Clinic

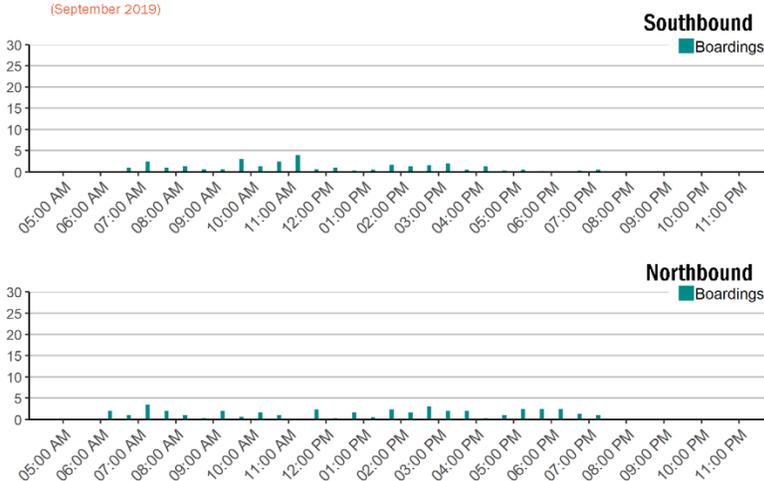
Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	157 City Rank 8/12	11.5 City Rank 6/12	0.8 City Rank 9/12	2.9 City Rank 11/12
Saturday	67 City Rank 9/10	4.9 City Rank 8/10	0.34 City Rank 8/10	2.4 City Rank 9/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:15 a.m. - 7:45 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:15 a.m. - 7:45 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

On-Time Performance (2019)

Trips	Early	On-Time	Late
	15%	83%	3%

Annual Statistics (2019)

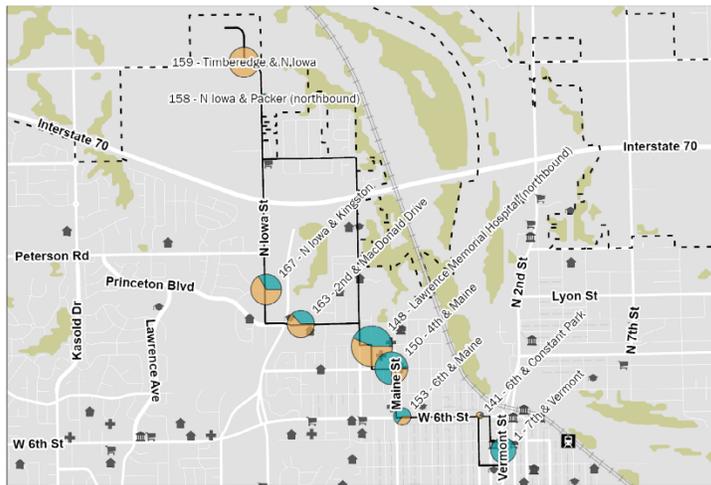
	Actual	City Rank
Revenue Hours	4,175	11/12
Revenue Miles	61,093	10/12
Operating Costs	\$244,368	11/12
Ridership	43,385	8/12



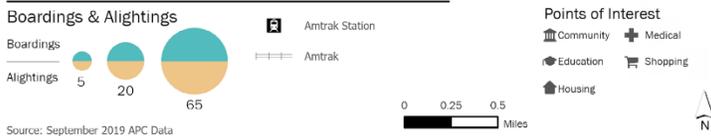
Weekday Ridership by Stop
(September 2019)



3 Southbound | Average Weekday Ridership



3 Northbound | Average Weekday Ridership



Route Analysis

Strengths

- Provides an important link to Lawrence Memorial Hospital.
- Relatively high service frequency.
- Serves several large distribution centers and areas of higher-density housing including mobile home parks and multi-family housing communities.
- Strong on-time performance.

Weaknesses

- Fewer than five passengers per trip on most weekday and Saturday trips.
- Low ridership north of 2nd Street.
- No Sunday service.
- One-way service only on segments of Iowa Street and Michigan Street.
- No direct access to full-service grocery stores.

Opportunities

- Reduce off-peak frequency to improve route productivity.
- Truncate route at Lawrence Memorial Hospital to improve productivity.
- Replace service north of 2nd St. with demand response service.
- Operate service along a consistent alignment in both directions.
- Modify route to link high-density housing with at least one full service grocery store.
- Replace weekend service with demand response service.



ROUTE: 4

North Lawrence to 9th & Iowa

Route Type: *Neighborhood*

Funding: *City*

Description: Route 4 serves North Lawrence and 9th Street. Destinations include Downtown, The Merc, 9th Street, Ballard Community Center, Lyon Street Park, North 2nd and 3rd Street commercial areas, I-70 Business Center, and DMV.

Key Points of Interest: City Hall, Library, Senior Services, Apartments

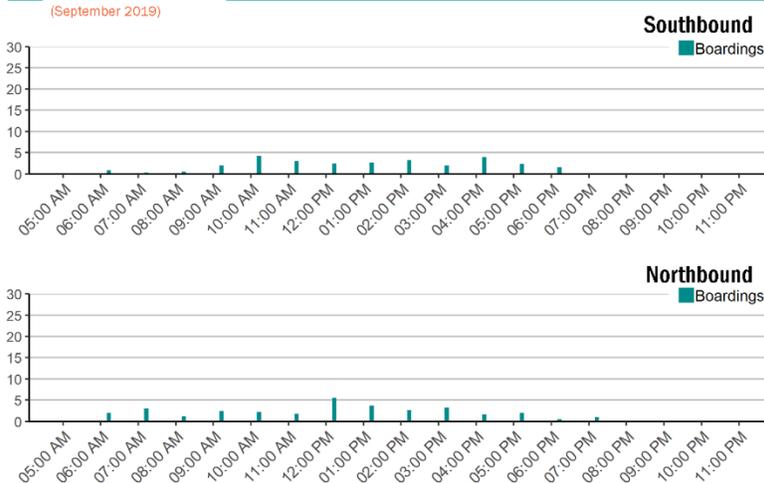
Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	121 City Rank: 10/12	8.6 City Rank: 9/12	0.9 City Rank: 8/12	4.2 City Rank: 7/12
Saturday	77 City Rank: 7/10	5.5 City Rank: 6/10	0.58 City Rank: 5/10	2.6 City Rank: 7/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday

Span: 6:03 a.m. - 8:00 p.m.

Frequency: 60 min (Peak), 60 min (Off-Peak)

Saturday

Span: 6:03 a.m. - 8:00 p.m.

Frequency: 60 min (Peak), 60 min (Off-Peak)

On-Time Performance (2019)

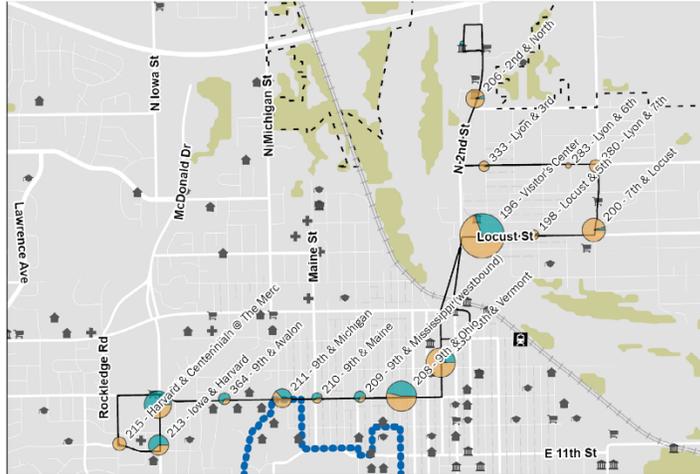


Annual Statistics (2019)

	Actual	City Rank
Revenue Hours	4,298	8/12
Revenue Miles	40,524	11/12
Operating Costs	\$251,556	8/12
Ridership	34,807	9/12



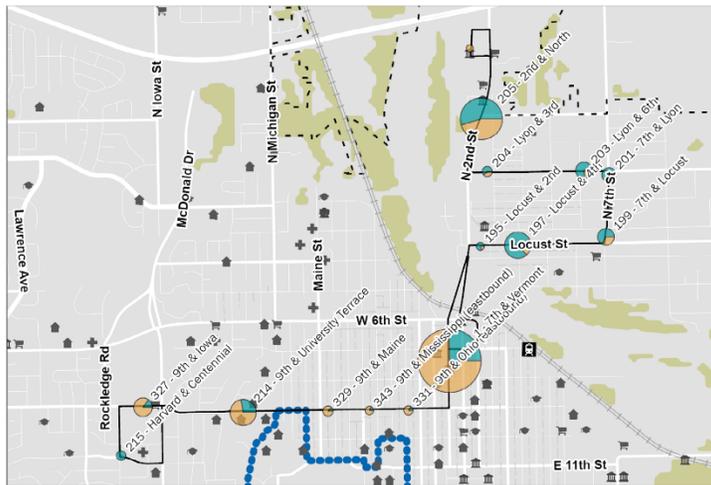
Weekday Ridership by Stop
(September 2019)



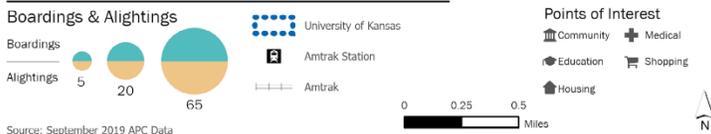
4 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



4 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides important transit link for North Lawrence residents.
- Easy-to-remember clockface frequency.
- Provides weekday and Saturday service
- Strong on-time performance.

Weaknesses

- Fewer than five passengers per trip on most weekday and Saturday trips.
- Somewhat circuitous alignment through North Lawrence.
- No Sunday service.

Opportunities

- Replace route with demand response service to improve coverage and productivity.
- Shift service from Lyon to North Street to provide closer access to Riverside mobile home park.



ROUTE: 5

South Iowa to East Hills Business Park

Description: Route 5 serves south and southeast Lawrence. Destinations include Haskell Indian Nations University, commercial areas along 23rd Street, Iowa Street, Venture Park, and East Hills Business Park.

Route Type: Crosstown

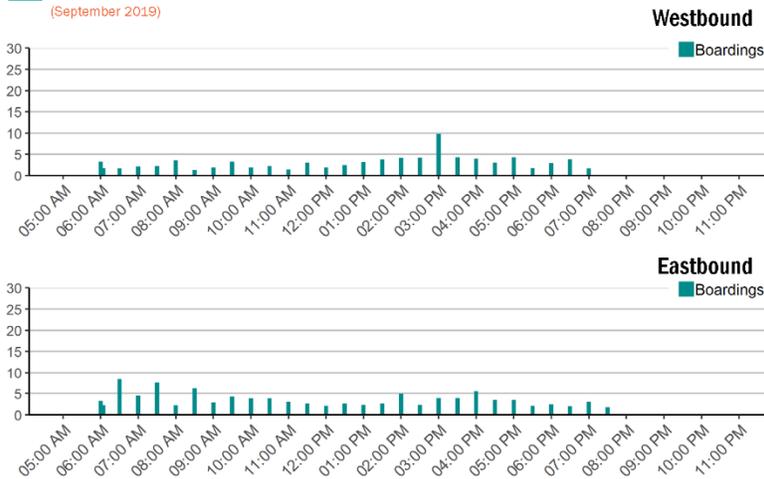
Funding: City

Key Points of Interest: Library, Haskell Indian Nations University, Apartments, Haskell Indian Health Center, Grocery Stores

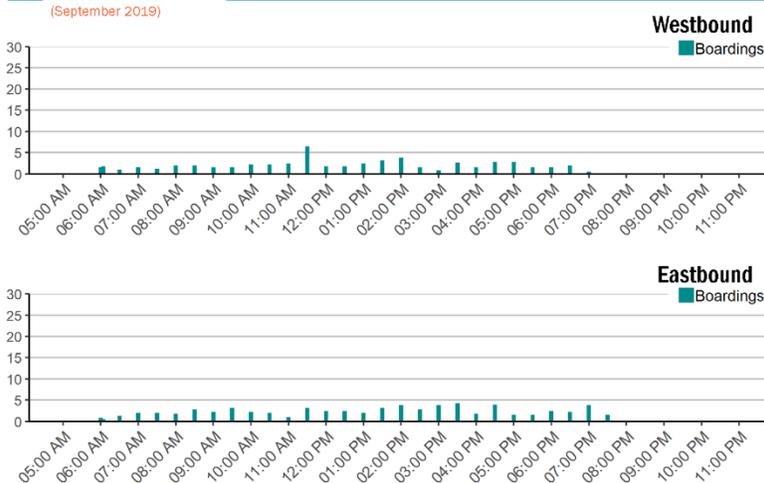
Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	196 City Rank: 7/12	7 City Rank: 10/12	0.5 City Rank: 10/12	3.5 City Rank: 9/12
Saturday	139 City Rank: 6/10	5 City Rank: 7/10	0.37 City Rank: 7/10	2.5 City Rank: 8/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:00 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:00 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

On-Time Performance (2019)

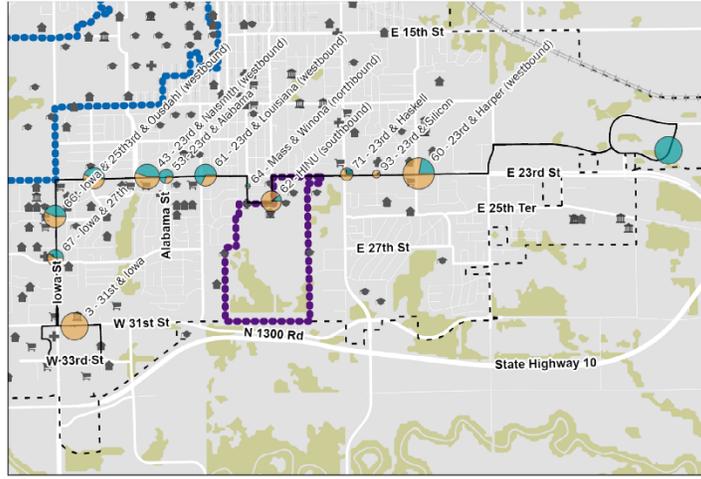
Trips	Early	On-Time	Late
	13%	80%	6%

Annual Statistics (2019)

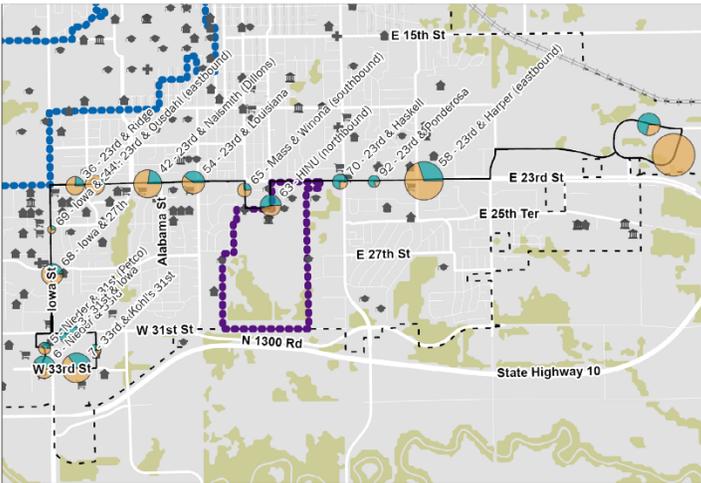
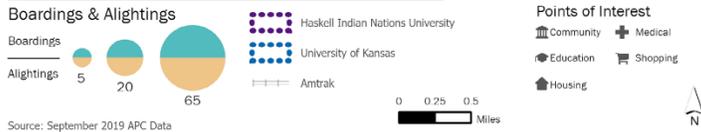
	Actual	City Rank
Revenue Hours	8,565	2/12
Revenue Miles	114,511	2/12
Operating Costs	\$501,315	2/12
Ridership	57,086	7/12



Weekday Ridership by Stop
(September 2019)



5 Westbound | Average Weekday Ridership



5 Eastbound | Average Weekday Ridership



Route Analysis

Strengths

- Provides cross-town service between East Hills Business Park and the Iowa Street corridor, south of 23rd Street.
- Direct alignment with few deviations.
- Connects HINU to retail and grocery destinations
- Easy-to-remember clockface frequency and relatively frequent service.
- Offers weekday and Saturday service
- Strong on-time performance.

Weaknesses

- Low ridership and productivity relative to the transit potential and transit need of areas served.
- Not anchored at major transfer hubs like KU and downtown Lawrence, making transfer opportunities somewhat unpredictable.
- Some redundancy with other routes, including Route 7 and Route 15.
- Potentially challenging environment for pedestrians due to wide right-of-way along 23rd St., lack of passenger amenities, and distance between trip generators (apartments) and transit corridor.

Opportunities

- Split route into two routes, with each serving a mix of ridership generators and anchored at a major transfer hub like KU or downtown Lawrence. For example, one route could serve the East Hills Business Park, HINU, Dillons on Massachusetts St. and downtown Lawrence.
- Consider replacing fixed-route service in southeast Lawrence with demand response service to better align with the area's auto-oriented land-use and built environment.



ROUTE: 6

Downtown to Rock Chalk Park

Description: Route 6 serves the 6th Street corridor and the hospital. Destinations along this route include Downtown, Free State High School, and commercial areas along 6th, and Rock Chalk Park.

Route Type: Crosstown

Funding: City

Key Points of Interest: Apartments, Lawrence Memorial Hospital, Farmers Market

Daily Statistics (2019)

	Total Boardings	City Rank	Passengers per Hour	City Rank	Passengers per Mile	City Rank	Passengers per Trip	City Rank
Weekday	348	5/12	12.9	5/12	1.2	6/12	6.4	5/12
Saturday	239	3/10	8.8	3/10	0.81	3/10	4.4	4/10

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:03 a.m. - 7:54 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:03 a.m. - 7:54 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

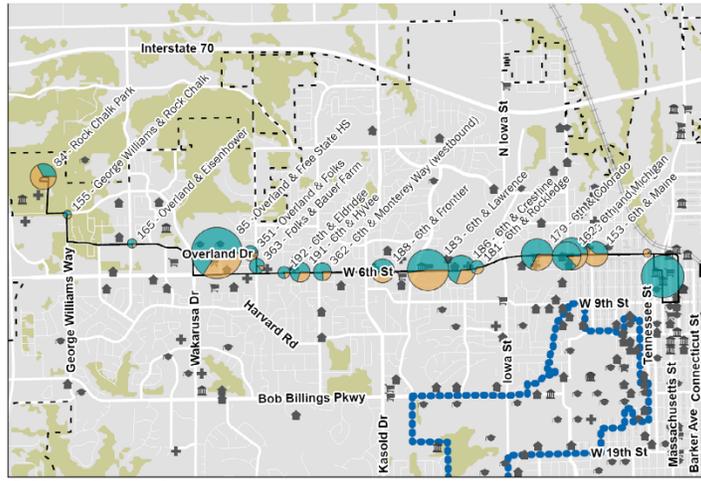


Annual Statistics (2019)

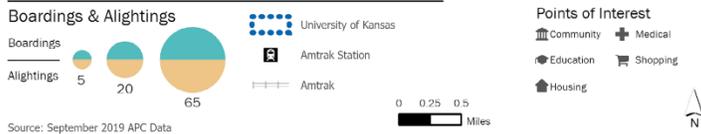
	Actual	City Rank
Revenue Hours	8,289	6/12
Revenue Miles	90,872	5/12
Operating Costs	\$485,143	6/12
Ridership	101,179	5/12



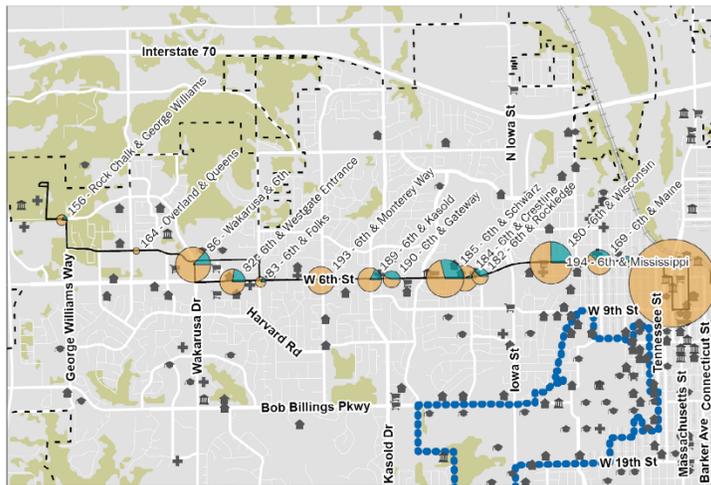
Weekday Ridership by Stop
(September 2019)



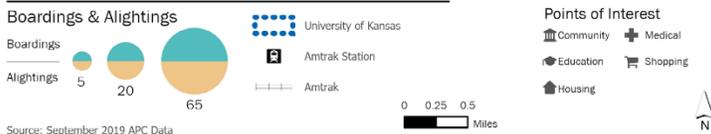
6 Westbound | Average Weekday Ridership



Source: September 2019 APC Data



6 Eastbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides important transit link to northwest Lawrence, including LMH Health West
- Fairly direct alignment with few deviations.
- Easy-to-remember clockface frequency and relatively frequent service.
- Multiple transfer opportunities available in downtown Lawrence.

Weaknesses

- Low ridership west of Wakarusa Dr.
- Long distance between stops west of Wakarusa Dr.
- One way service along parts of Overland Dr. and W. 6th St., forcing out-of-direction travel or long walk distances to/from bus stops.

Opportunities

- Truncate route at Wakarusa Dr. or Congressional Dr. to reduce unproductive service.
- Shift Rock Chalk Park service to another route with direct service to KU.
- Add stops west of Wakarusa to make service more accessible.
- Operate along a single consistent alignment west of Folks Rd. to reduce out-of-direction travel.
- Consider replacing fixed-route service west of Wakarusa Dr. with demand response service to better align with the area's auto-oriented land-use and built environment.



ROUTE: 7

Downtown to South Iowa

Route Type: Crosstown

Funding: City

Description: Route 7 serves central and south-central Lawrence. Destinations include Downtown, South Park, Central Middle School, Babcock Place, Lawrence High, South Middle School, Holcomb Park, and commercial area at 31st & Iowa.

Key Points of Interest: County Administration, Library, Motor Vehicle Registration, Senior Services, Apartments, Grocery Stores

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	421 City Rank: 4/12	15.1 City Rank: 4/12	1.4 City Rank: 3/12	7.5 City Rank: 4/12
Saturday	319 City Rank: 2/10	11.4 City Rank: 2/10	1.08 City Rank: 2/10	5.7 City Rank: 2/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:02 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:02 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

On-Time Performance (2019)

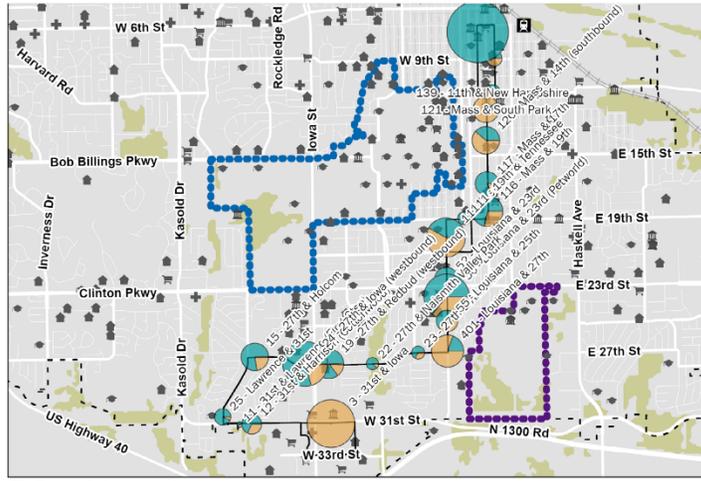


Annual Statistics (2019)

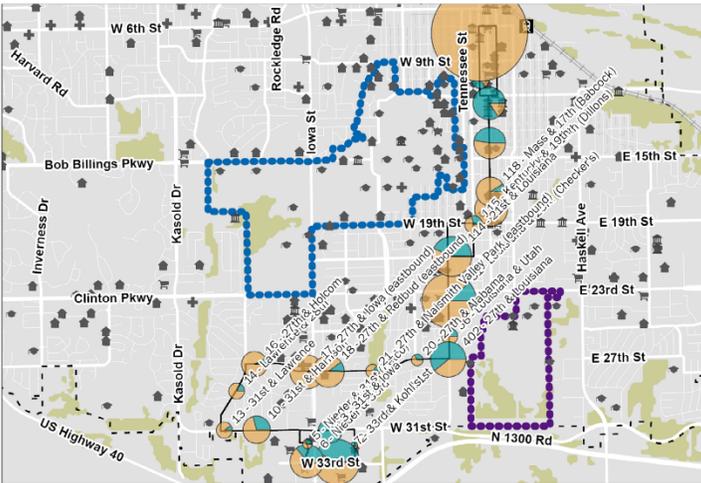
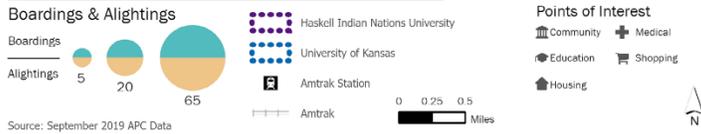
	Actual	City Rank
Revenue Hours	8,565	2/12
Revenue Miles	90,872	5/12
Operating Costs	\$501,315	2/12
Ridership	123,989	4/12



Weekday Ridership by Stop
(September 2019)



7 Southbound | Average Weekday Ridership



7 Northbound | Average Weekday Ridership



Route Analysis

Strengths

- Destination-rich route with service to Lawrence High School and several large grocery stores and retail centers.
- Strong ridership on several trips, especially during school commute times and on Saturdays.
- Relatively frequent service.
- Strong on-time performance.

Weaknesses

- No Sunday service.
- Inconsistent alignment between northbound and southbound trips near Lawrence High School.
- Low ridership west of Iowa Street.

Opportunities

- Reduce frequency during lower-demand time periods to improve route productivity.
- Add Sunday service, based on relatively high demand on Saturdays.
- Operate along consistent alignment in both directions near Lawrence High School
- Replace service west of Iowa St. with demand response service.
- Consider shifting service from Massachusetts St. to Haskell Ave. to balance destination-rich route with high concentration of multi-family housing.



ROUTE: 9

South Iowa to 6th & Wakarusa

Route Type: Crosstown

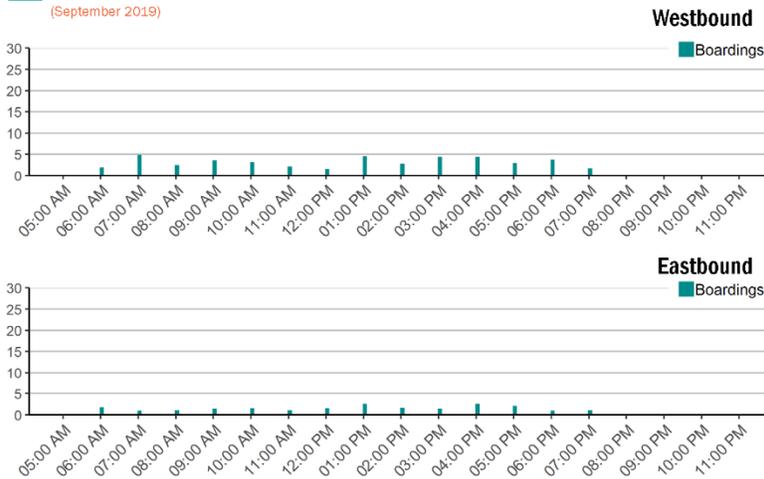
Funding: City

Description: Route 9 serves west and southwest Lawrence, connecting 6th & Wakarusa to 31st & Iowa. Destinations include Free State High, Southwest Middle School, Sunflower Elementary, LMH South, and commercial areas at 6th & Wakarusa, Bob Billings & Wakarusa, Clinton & Kasold, and 31st & Iowa.
Key Points of Interest: Social Security Administration, Apartments, VA Clinic, Grocery Stores, Shopping

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	81 City Rank: 12/12	5.8 City Rank: 12/12	0.4 City Rank: 12/12	2.9 City Rank: 12/12
Saturday	67 City Rank: 8/10	4.8 City Rank: 9/10	0.31 City Rank: 9/10	4.8 City Rank: 3/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:02 a.m. - 7:57 p.m.
Frequency	60 min (Peak) / 60 min (Off-Peak)
Saturday	
Span	6:02 a.m. - 7:57 p.m.
Frequency	60 min (Peak) / 60 min (Off-Peak)

On-Time Performance (2019)

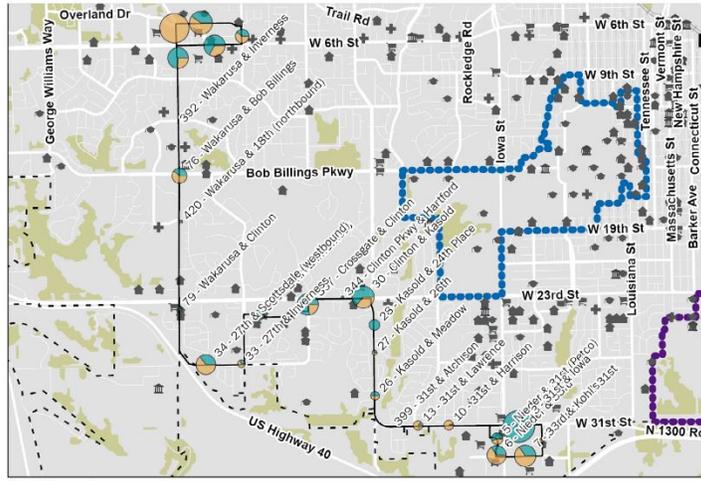


Annual Statistics (2019)

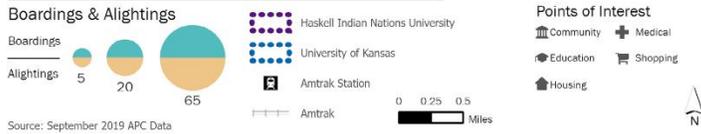
	Actual	City Rank
Revenue Hours	4,298	8/12
Revenue Miles	65,084	8/12
Operating Costs	\$251,556	8/12
Ridership	24,038	10/12



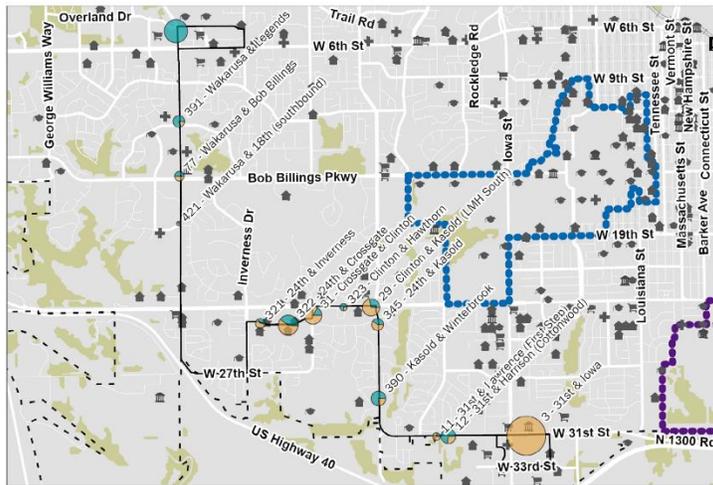
Weekday Ridership by Stop
(September 2019)



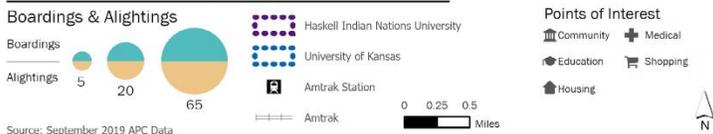
9 Westbound | Average Weekday Ridership



Source: September 2019 APC Data



9 Eastbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides cross-town service between northwest Lawrence and south Lawrence.
- Provides access to both the Social Security Administration and VA Clinic on Wakarusa Dr.
- Easy-to-remember clockface frequency.
- Provides weekday and Saturday service
- Strong on-time performance.

Weaknesses

- Fewer than five passengers per trip on most weekday and Saturday trips.
- Low ridership at most stops other than route termini.
- Some redundancy with other routes, including Route 10 and Route 29.
- Inconsistent alignment between eastbound and westbound trips between Wakarusa Dr. and Inverness Dr.
- Not anchored at major transfer hubs like KU and downtown Lawrence, making transfer opportunities somewhat unpredictable.

Opportunities

- Operate along consistent alignment in both directions between Wakarusa Dr. and Inverness Dr.
- Reduce redundancy with other routes and link to new Bob Billings transit hub by operating along Kasold Dr., north of Clinton Pkwy.
- Replace route with demand response service to reduce redundancy with better performing routes and to expand service coverage in west Lawrence.



ROUTE: 10

Downtown to 6th & Wakarusa

Route Type: Crosstown

Funding: City

Description: Route 10 serves west and central Lawrence, connecting 6th & Wakarusa to Downtown via the KU campus. Destinations include Downtown, Free State High, commercial areas at 6th & Wakarusa and Bob Billings and Wakarusa, Bob Billings, and KU.

Key Points of Interest: County Administration, Library, Motor Vehicle Registration, Social Security Administration, KU, Apartments, VA Clinic, Farmers Market

Daily Statistics (2019)

	Total Boardings	City Rank	Passengers per Hour	City Rank	Passengers per Mile	City Rank	Passengers per Trip	City Rank
Weekday	501	3/12	18	3/12	1.4	4/12	9	2/12
Saturday	154	5/10	5.5	5/10	0.43	6/10	2.7	6/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:02 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)
Saturday	
Span	6:02 a.m. - 8:00 p.m.
Frequency	30 min (Peak) / 30 min (Off-Peak)

On-Time Performance (2019)

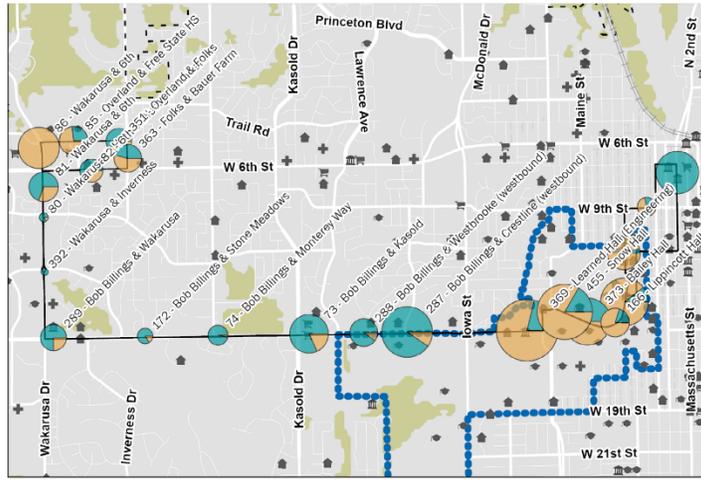
Trips	Early	On-Time	Late
	10%	79%	11%

Annual Statistics (2019)

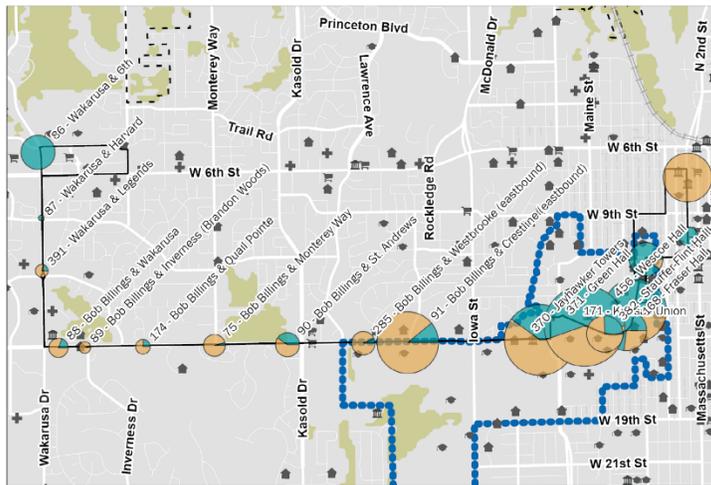
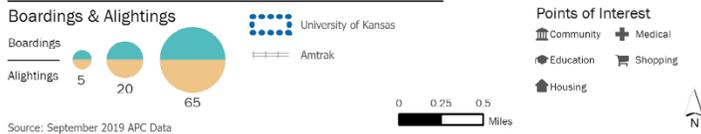
	Actual	City Rank
Revenue Hours	8,565	2/12
Revenue Miles	109,906	3/12
Operating Costs	\$501,315	2/12
Ridership	135,838	3/12



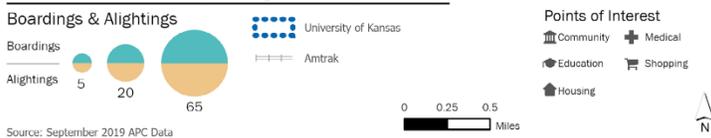
Weekday Ridership by Stop
(September 2019)



10 Westbound | Average Weekday Ridership



10 Eastbound | Average Weekday Ridership



Route Analysis

Strengths

- Generally strong ridership and productivity on weekdays.
- Strong anchors at KU and downtown Lawrence with many transfer opportunities.
- Relatively frequent service and easy-to-remember clockface frequency.

Weaknesses

- Relatively low Saturday ridership.
- Route ends short of Rock Chalk Park, forcing a transfer for passengers traveling to the sports complex from KU.
- Low ridership at most stops west Kasold Dr.
- Fairly large one-way loop through downtown Lawrence.

Opportunities

- Simplify alignment through downtown Lawrence by operating inbound and outbound service along the same alignment or within close proximity of one another.
- Extend service to Rock Chalk Park to facilitate a one-seat ride between the sports complex and KU.
- Reduce Saturday service frequency or replace the route with demand response service to improve productivity.



ROUTE: 11

South Iowa to KU to Downtown

Route Type: Crosstown

Funding: Coordinated

Description: Route 11 serves central and south-central Lawrence, crossing the KU campus. Destinations include East Lawrence, Downtown, Jayhawk Boulevard, Naismith Drive, and residential and commercial areas south of 23rd Street.

Key Points of Interest: County Administration, Motor Vehicle Registration, Library, Senior Services, KU, Apartments, Grocery Stores

Daily Statistics (2019)

	Total Boardings	Passengers per Hour		Passengers per Mile		Passengers per Trip						
		City Rank	KU Rank	City Rank	KU Rank	City Rank	KU Rank					
Weekday	946	1/12	5/10	24.5	2/12	8/10	2.5	1/12	7/10	14.8	1/12	3/10
Saturday	474	1/10	1/2	13.6	1/10	1/2	1.25	1/10	1/2	26.3	1/10	1/2

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday

Span: 6:03 a.m. – 10:33 p.m.

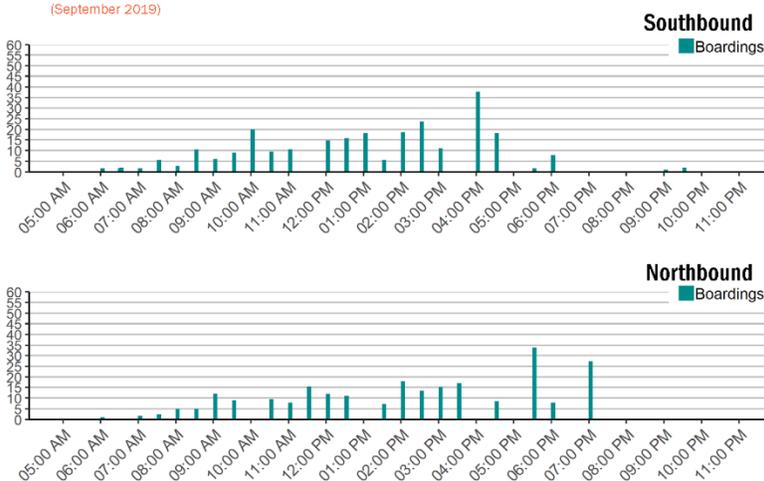
Frequency: 30 min (Peak) / 30 min (Off-Peak)

Saturday

Span: 6:31 a.m. – 7:52 p.m.

Frequency: 30 min (Peak) / 60 min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

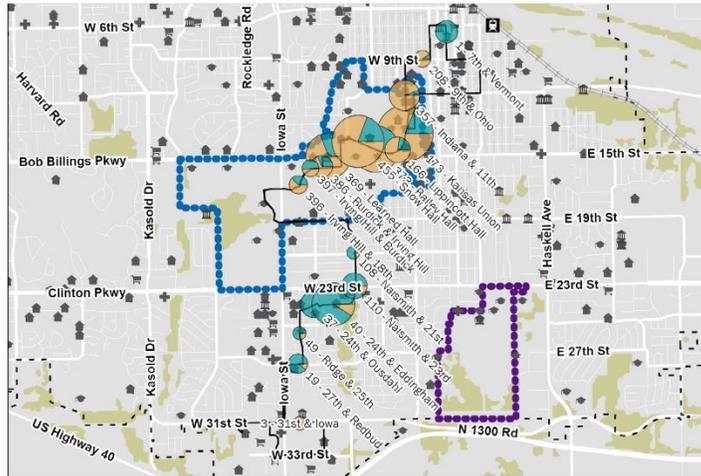


Annual Statistics (2019)

	Actual	City Rank	KU Rank
Revenue Hours	11,658	1/12	1/10
Revenue Miles	116,046	1/12	1/10
Operating Costs	\$784,153	1/12	1/10
Ridership	265,833	1/12	3/10



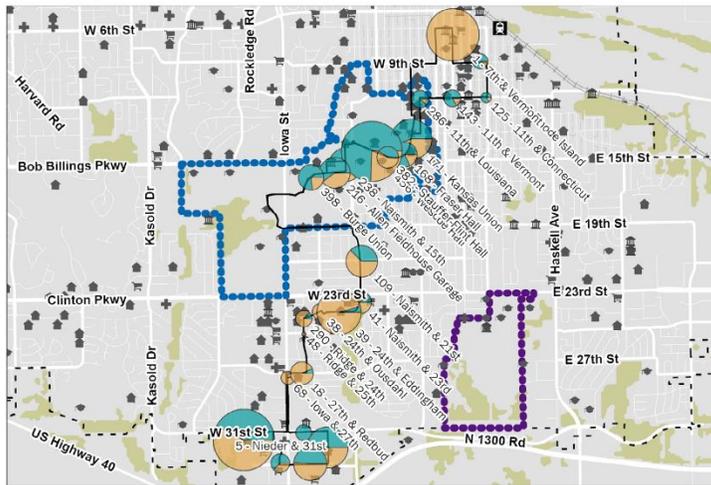
Weekday Ridership by Stop
(September 2019)



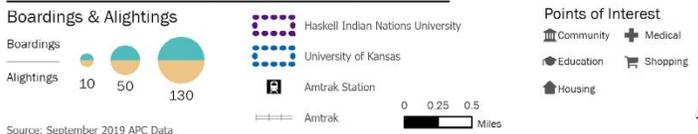
11 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



11 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides cross-town service between downtown Lawrence and South Iowa Street retail corridor, via the KU campus.
- Easy-to-remember clockface frequency and relatively frequent service.
- Multiple transfer opportunities available in downtown Lawrence and at KU.
- Strong ridership, with several trips carrying more than 40 passengers.
- Weekday and Saturday service.

Weaknesses

- Relatively circuitous alignment for passengers traveling past KU.
- Potential overcrowding on trips exceeding 40 passengers.
- 90-minute service frequency on Saturdays.
- One way service segments on both ends of the route, forcing out-of-direction travel.

Opportunities

- Consider higher service frequency on Saturdays and during peak ridership periods.
- Split route into two, with both routes anchored at the new Bob Billings transit hub.
- Turn bus around on Neider Road to reduce one-way service.



ROUTE: 15

Downtown to the Peaslee Center

Route Type: *Neighborhood*

Funding: *City*

Description: Route 15 serves east and southeast Lawrence. Destinations include Downtown, Hobb's Park, Industrial and commercial areas east of Downtown, East Lawrence Rec Center, Peaslee & Workforce Centers, Prairie Park Nature Center, Venture Park and East Hills Business Park.

Key Points of Interest: County Administration, Motor Vehicle Registration, Library, Senior Services, Apartments, Farmers Market

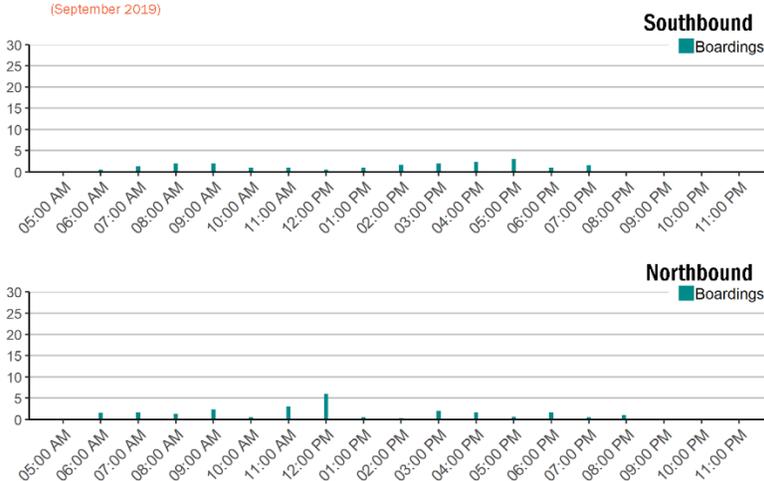
Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	86 City Rank: 11/12	6.2 City Rank: 11/12	0.4 City Rank: 11/12	3.1 City Rank: 10/12
Saturday	38 City Rank: 10/10	2.7 City Rank: 10/10	0.18 City Rank: 10/10	1.4 City Rank: 10/10

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	6:00 a.m. - 7:56 p.m.
Frequency	60 min (Peak) / 60 min (Off-Peak)
Saturday	
Span	6:00 a.m. - 7:56 p.m.
Frequency	60 min (Peak) / 60 min (Off-Peak)

On-Time Performance (2019)



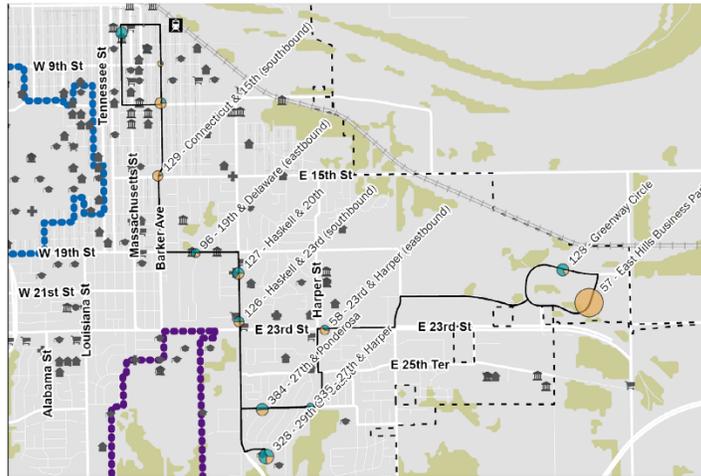
Annual Statistics (2019)

	Actual	City Rank
Revenue Hours	4,267	10/12
Revenue Miles	63,549	9/12
Operating Costs	\$249,759	10/12
Ridership	23,959	11/12





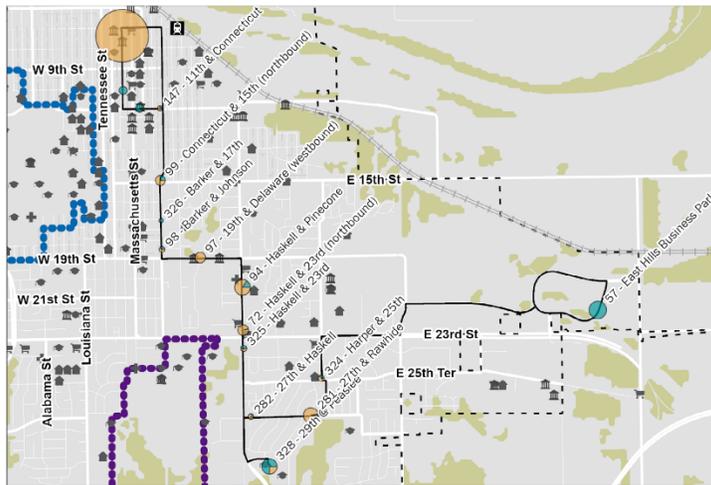
Weekday Ridership by Stop
(September 2019)



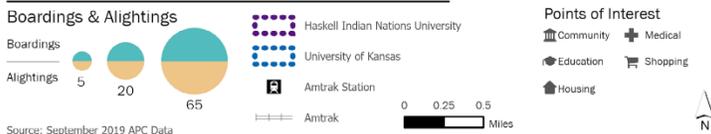
15 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



15 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides an important link to Peaslee Technical Training Center.
- Easy-to-remember clockface frequency.
- Provides weekday and Saturday service.

Weaknesses

- Fairly circuitous alignment with significant deviation required to serve Peaslee Technical Training Center.
- Weak transit potential along Barker Ave. due to lack of multifamily housing or other transit trip generators.
- Very low ridership on Saturdays, and generally low ridership overall, with fewer than five passengers per trip on most weekday and Saturday trips.

Opportunities

- Streamline route by eliminating deviation to Peaslee Technical Training Center.
- Replace service south of 23rd St. with demand response service.
- Modify route to serve a stronger transit corridor such as Massachusetts St.
- Eliminate Saturday service due to low ridership.



ROUTE: 27

KU to Haskell Indian Nations University

Description: Route 27 provides local service, connecting Indian Nations University, neighborhoods southeast of Kansas University, and Kansas University.

Route Type: *Neighborhood*

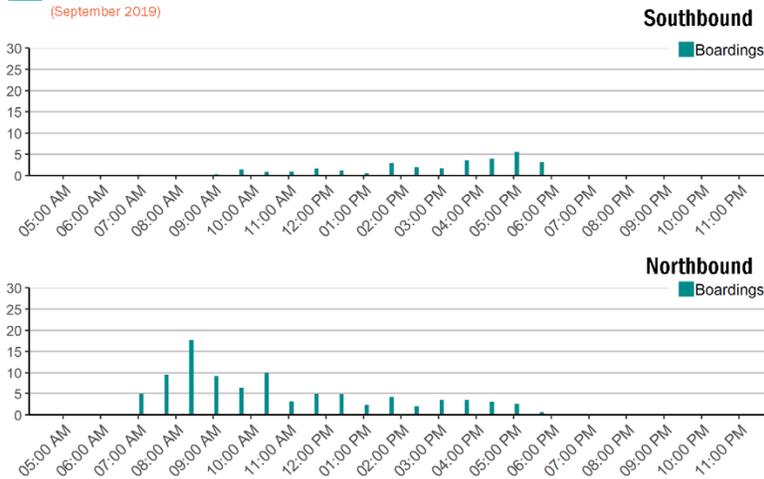
Key Points of Interest: Library, KU, Haskell Indian Nations University, Apartments, Haskell Indian Health Center

Funding: *City*

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	129 City Rank 9/12	11.3 City Rank 7/12	1.3 City Rank 5/12	3.8 City Rank 8/12
Saturday	N/A	N/A	N/A	N/A

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)

Southbound

Northbound

Operating Characteristics

Weekday

Span: 7:05 a.m. – 6:21 p.m.

Frequency: 40 min (Peak), 40 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak), - min (Off-Peak)

On-Time Performance (2019)

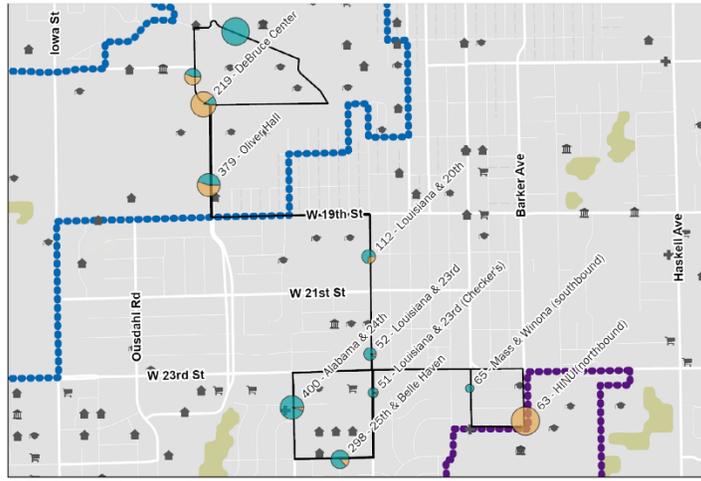
Trips	Early	On-Time	Late
	24%	73%	3%

Annual Statistics (2019)

	Actual	City Rank
Revenue Hours	1,790	12/12
Revenue Miles	15,386	12/12
Operating Costs	\$104,754	12/12
Ridership	20,209	12/12



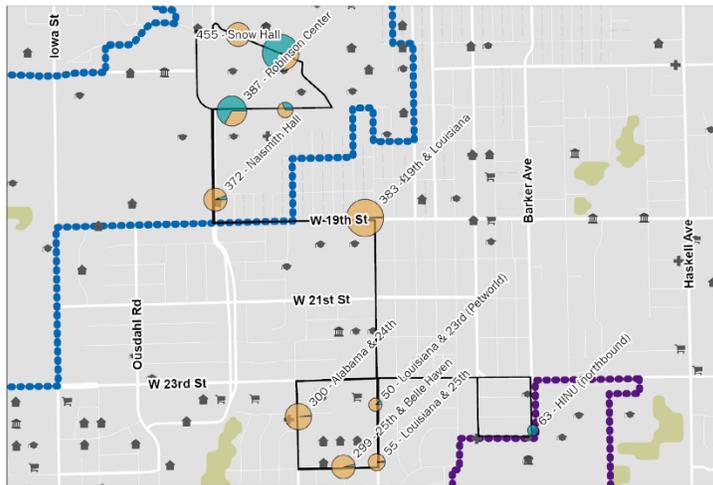
Weekday Ridership by Stop
(September 2019)



27 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



27 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides transit link between KU and HINU, as well as between both campuses and a large concentration of off-campus housing and retail destinations near 23rd and Louisiana St.

Weaknesses

- Lowest total ridership among Lawrence Transit routes.
- Relatively little ridership activity at stops serving HINU campus.
- Infrequent and non-clockface service headways.
- Operates during school semesters only, potentially creating disruptions for other riders between semesters.

Opportunities

- Shorten route to allow for clockface frequency (30-minute service), potentially by eliminating low-ridership service to HINU.
- Extend route to create a 60-minute cycle time.
- Replace route with demand response service, operating year-round.



ROUTE: 29

27th & Wakarusa to KU

Description: Route 29 connects residential areas in Southwest Lawrence with the KU campus. Destinations include apartments and townhomes along Clinton Parkway, Wakarusa, and 24th Place, HyVee, and LMH South.

Route Type: Crosstown

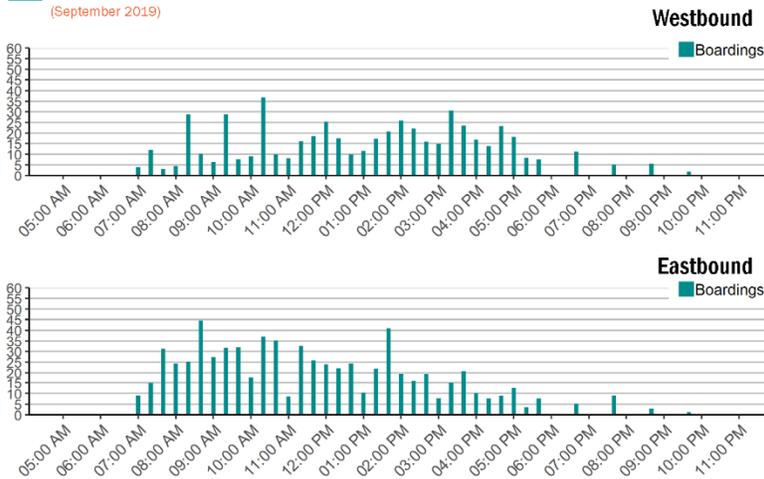
Funding: Coordinated

Key Points of Interest: KU, Apartments, Veterinary Hospital

Daily Statistics (2019)

	Total Boardings	City Rank		KU Rank		Passengers per Hour	City Rank		KU Rank		Passengers per Mile	City Rank		KU Rank	
		Rank	Rank	Rank	Rank		Rank	Rank	Rank	Rank					
Weekday	787	2/12	6/10	31	1/12	5/10	1.9	2/12	10/10	8.7	3/12	6/10			
Saturday		N/A	N/A		N/A	N/A		N/A	N/A		N/A	N/A			

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday

Span: 7:00 a.m. – 10:27 p.m.

Frequency: 20 min (Peak) / 20 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak) / - min (Off-Peak)

On-Time Performance (2019)



Saturday Ridership by Trip (September 2019)

Westbound

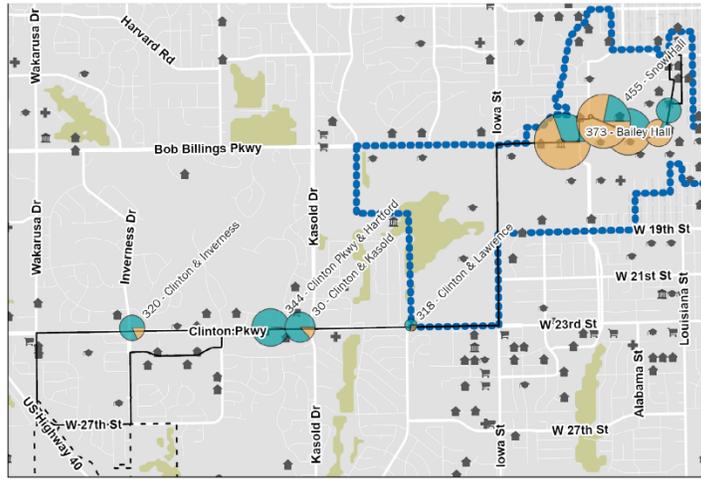
Eastbound

Annual Statistics (2019)

	Actual	City Rank	KU Rank
Revenue Hours	6,299	7/12	4/10
Revenue Miles	100,440	4/12	2/10
Operating Costs	\$423,711	7/12	4/10
Ridership	195,088	2/12	4/10



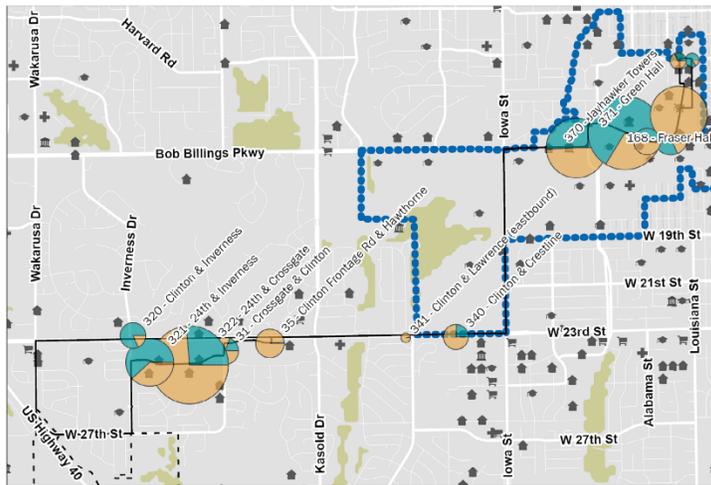
Weekday Ridership by Stop
(September 2019)



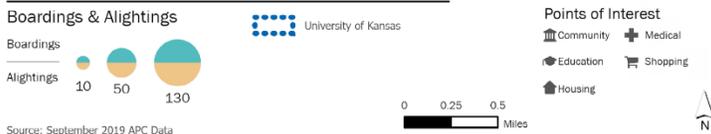
29 Westbound | Average Weekday Ridership



Source: September 2019 APC Data



29 Eastbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides transit link between KU and several off-campus apartment communities in southwest Lawrence along the Clinton Pkwy. corridor.
- Fast and frequent service, with easy-to-remember clockface frequency.
- Simple and direct alignment
- Multiple transfer opportunities available in downtown Lawrence and at KU.
- Strong ridership, with several trips carrying more than 30 passengers.

Weaknesses

- Low ridership after 8:00 pm.
- Poor on-time performance due to significant number of early arrivals.

Opportunities

- Consider truncating route at the new Bob Billings transit hub, where multiple frequent connection opportunities would be available to various parts of the KU campus.
- Route service along Kasold Dr., rather than Iowa street, due to higher ridership potential.
- End service at 8:00 pm to reduce unproductive trips.



ROUTE: 30

Bob Billings & Kasold to KU

Route Type: *Neighborhood*

Funding: *University*

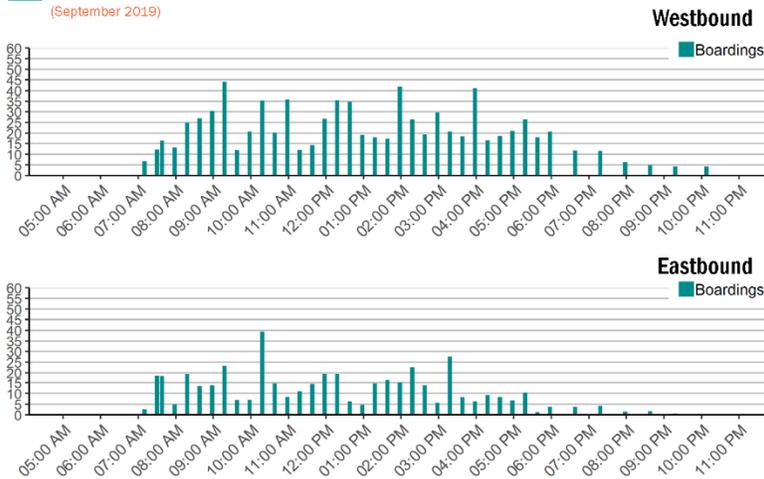
Description: *Route 30 provides local service, connecting neighborhoods west of KU with the university.*

Key Points of Interest: *KU, Apartments*

Daily Statistics (2019)

	Total Boardings	KU Rank	Passengers per Hour	KU Rank	Passengers per Mile	KU Rank	Passengers per Trip	KU Rank
Weekday	1,229	2/10	47.8	3/10	5.4	3/10	15.8	2/10
Saturday		N/A		N/A		N/A		N/A

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)

Westbound

Eastbound

Operating Characteristics

Weekday

Span: 7:10 a.m. – 10:25 p.m.

Frequency: 20 min (Peak) / 40 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak) / - min (Off-Peak)

On-Time Performance (2019)

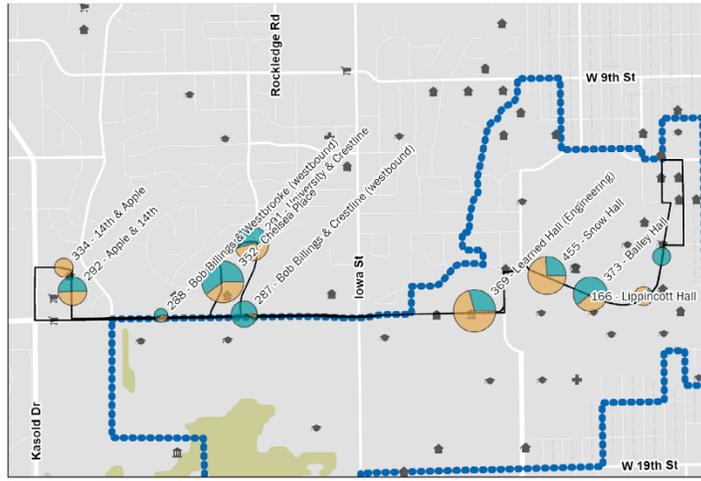


Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	4,035	7/10
Revenue Miles	35,953	8/10
Operating Costs	\$306,652	7/10
Ridership	191,651	5/10



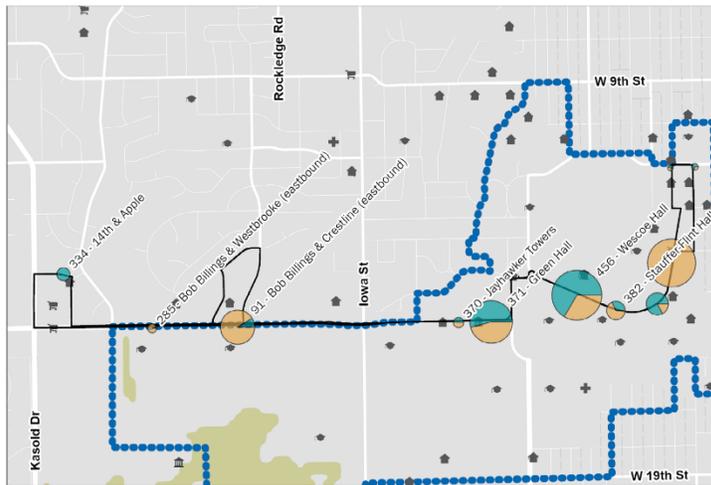
Weekday Ridership by Stop
(September 2019)



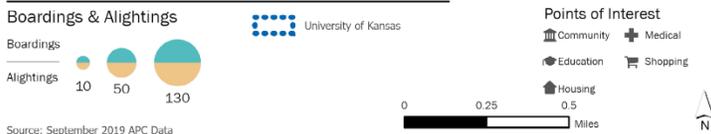
30 Westbound | Average Weekday Ridership



Source: September 2019 APC Data



30 Eastbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides fast and frequent service between KU and several large off-campus apartment communities.
- Strong ridership with several trips carrying more than 30 passengers.
- Easy-to-remember clockface frequency.
- Many transfer opportunities at Snow Hall and Kansas Union.

Weaknesses

- Very little ridership north of Kansas Union.
- Northbound buses stop across from Kansas Union creating congestion and possible safety issues.
- Challenging unsignalized left turn from 14th St. to Kasold Dr.
- Challenging operating environment in Meadowbrook Apartments due to slope and parked cars.

Opportunities

- Use Mississippi St., 11th St., Indiana St., and Oread Ave. to allow buses to serve the Kansas Union in the southbound direction only, if slope allows.
- Consider repurposing parking Lot 16 into a transit center to allow buses to turn around and lay-over at highest turn-over point.
- Truncate route at new Bob Billings transit hub to reduce redundancy with Route 10.
- Consider removing loop through Meadowbrook Apartments due to challenges caused by weather conditions and parked cars.
- Good candidate for new coordinated route with 10.
- Consider merging extending the route to downtown and operating as a short-turn pattern of Route 10 ending at the Bob Billings transit hub.



ROUTE: 34

KU to 7th Street

Description: Route 34 provides local service, connecting neighborhoods north of KU with the university.

Route Type: *Neighborhood*
Funding: *University*

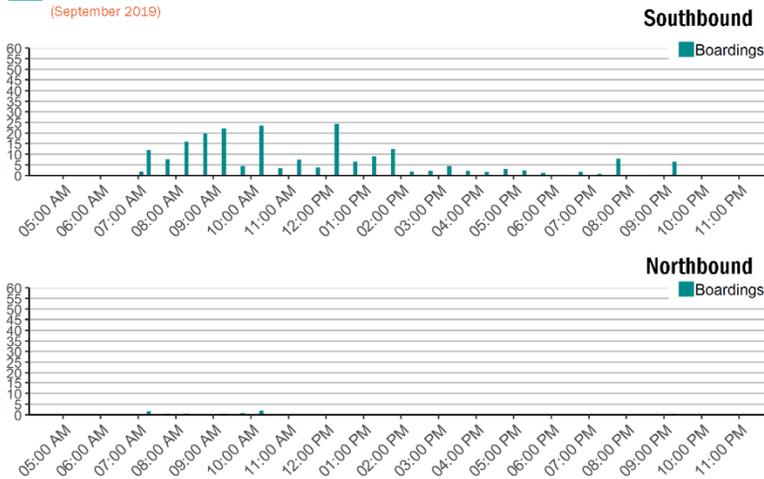
Key Points of Interest: *KU, Apartments*

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	310	20.5	2.1	3.4
Saturday	N/A	N/A	N/A	N/A

Note: All metrics include KU Rank (10/10 for Weekday, N/A for Saturday).

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	7:06 a.m. – 10:08 p.m.
Frequency	20 min (Peak) / 40 min (Off-Peak)
Saturday	
Span	No Service
Frequency	- min (Peak) / - min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

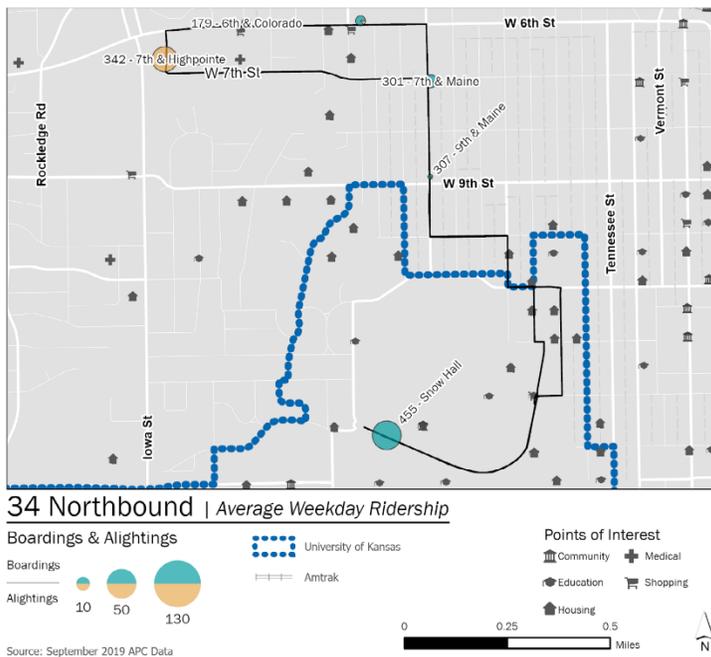
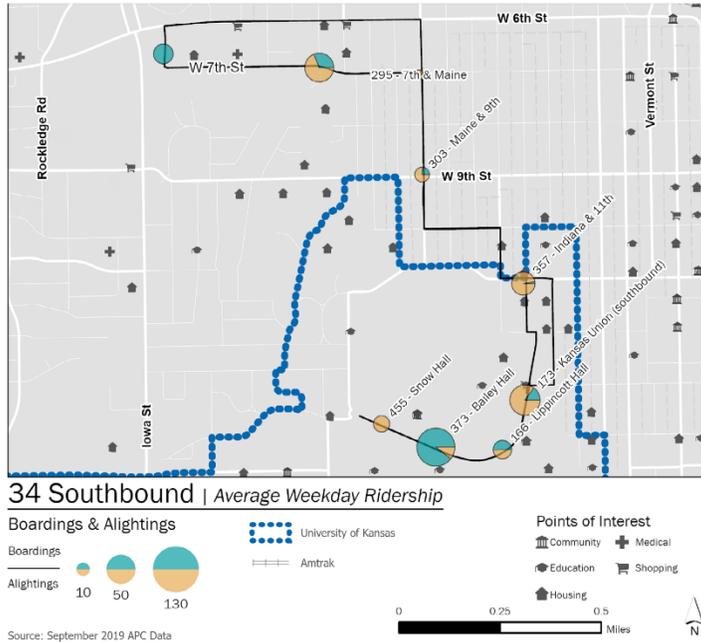
Trips	Early	On-Time	Late
	21%	76%	3%

Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	2,371	9/10
Revenue Miles	23,079	9/10
Operating Costs	\$180,173	9/10
Ridership	48,316	9/10



Weekday Ridership by Stop
(September 2019)



Route Analysis

Strengths

- Provides fast and frequent service between KU and several off-campus apartment communities on 6th and 7th St.
- Easy-to-remember clockface frequency.
- Many transfer opportunities at Snow Hall and Kansas Union.

Weaknesses

- Lowest ridership and productivity among KU routes.
- No outbound stop on Fambrough Dr. to complement inbound stop at Fambrough and Alabama St.
- Low ridership along 6th Street.

Opportunities

- Interline with another KU route to create cycle time on combined route that allows for more scheduling flexibility (potentially Route 27 or 38).
- Reduce service frequency during lower-ridership periods to improve overall service productivity, which might be more feasible if interlined.
- Operate clockwise along 6th and 7th St. to better serve apartment communities between the two streets, if right turn onto 6th St. can be made safely.
- Add outbound stop near Fambrough and Maine Street to reduce out-of-direction travel for passengers.



ROUTE: 36

6th via Emery to KU

Description: Route 36 provides local service, connecting neighborhoods northeast of KU with the university.

Route Type: Neighborhood
Funding: University

Key Points of Interest: KU, Apartments

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	600	23	2.5	7.7
Saturday	N/A	N/A	N/A	N/A

Note: All metrics include KU Rank (8/10 for Boardings, 9/10 for Passengers per Hour, 8/10 for Passengers per Mile, 7/10 for Passengers per Trip).

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday	
Span	7:00 a.m. – 10:17 p.m.
Frequency	20 min (Peak) / 40 min (Off-Peak)
Saturday	
Span	No Service
Frequency	- min (Peak) / - min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

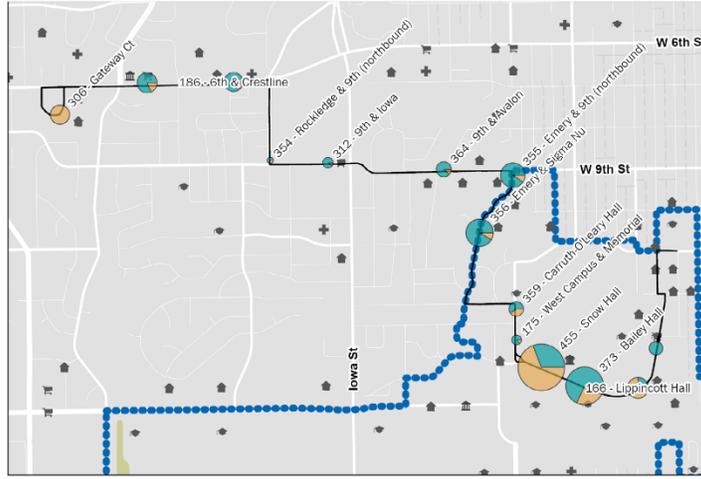
Trips	Early	On-Time	Late
	33%	65%	2%

Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	4,098	6/10
Revenue Miles	38,151	7/10
Operating Costs	\$311,425	6/10
Ridership	93,644	8/10



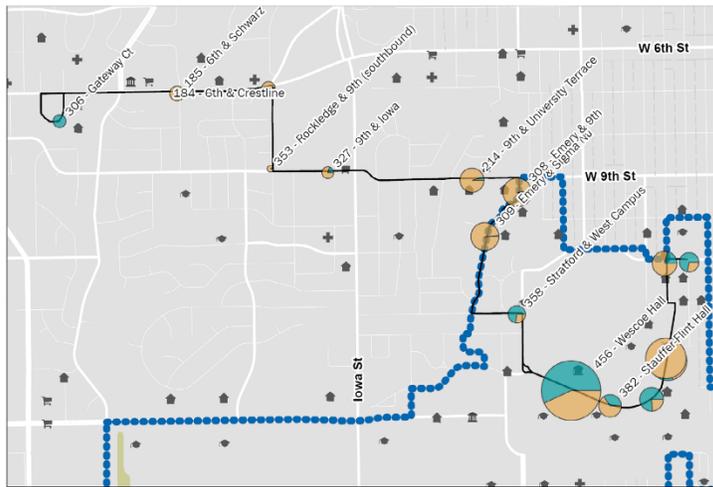
Weekday Ridership by Stop
(September 2019)



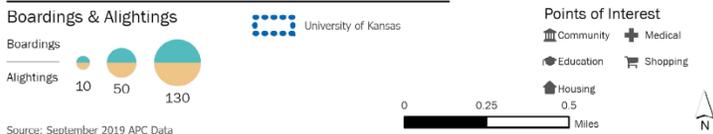
36 Westbound | Average Weekday Ridership



Source: September 2019 APC Data



36 Eastbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides fast and frequent service between KU and several off-campus apartment communities on 6th and 9th St.
- Links KU campus and off-campus housing communities to retail and commercial destinations including The Merc Co-Op and Dillons.
- Easy-to-remember clockface frequency.
- Many transfer opportunities at Snow Hall and Kansas Union.

Weaknesses

- Low ridership after 6:00 pm, with no trips carrying more than five passengers during this time of day.
- Relatively low ridership west of Emery Road.

Opportunities

- Interline with another KU route to create cycle time on combined route that allows for more scheduling flexibility (potentially Route 27 or 38)
- End service earlier due to low ridership after 6:00 pm.
- Consider replacing fixed-route shuttle service with demand response service in the evenings and on weekends.
- Terminate route at 9th St. to improve productivity.



ROUTE: 38

25th & Melrose to KU

Description: Route 38 provides local service, connecting neighborhoods south of KU with the university.

Route Type: Neighborhood

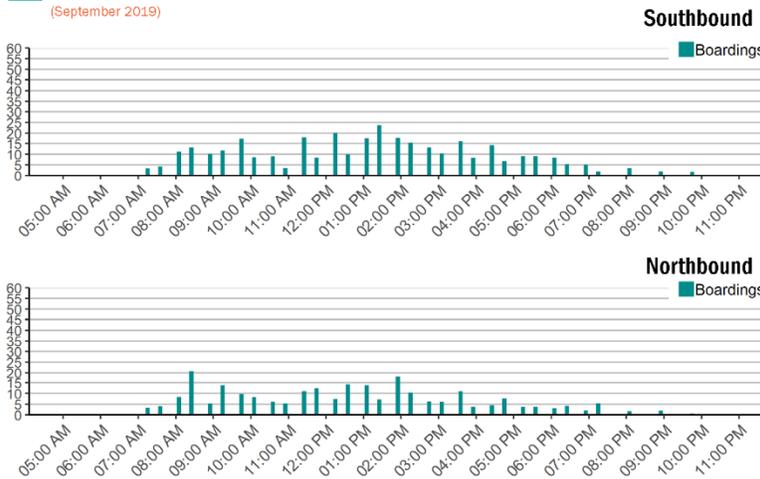
Key Points of Interest: KU, Apartments

Funding: University

Daily Statistics (2019)

	Total Boardings	KU Rank	Passengers per Hour	KU Rank	Passengers per Mile	KU Rank	Passengers per Trip	KU Rank
Weekday	681	7/10	24.8	7/10	2.8	6/10	11.2	4/10
Saturday		N/A		N/A		N/A		N/A

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)

Southbound

Northbound

Operating Characteristics

Weekday

Span: 7:15 a.m. – 10:13 p.m.

Frequency: 25 min (Peak) / 50 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak) / - min (Off-Peak)

On-Time Performance (2019)

Trips	Early	On-Time	Late
	43%	52%	5%

Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	4,302	5/10
Revenue Miles	38,779	6/10
Operating Costs	\$326,937	5/10
Ridership	106,218	7/10



ROUTE: 41

Campus Circulator (Yellow)

Description: Route 41 circulates through the southern portion of the KU campus, serving West Campus to Jayhawk Boulevard.

Route Type: Circulator

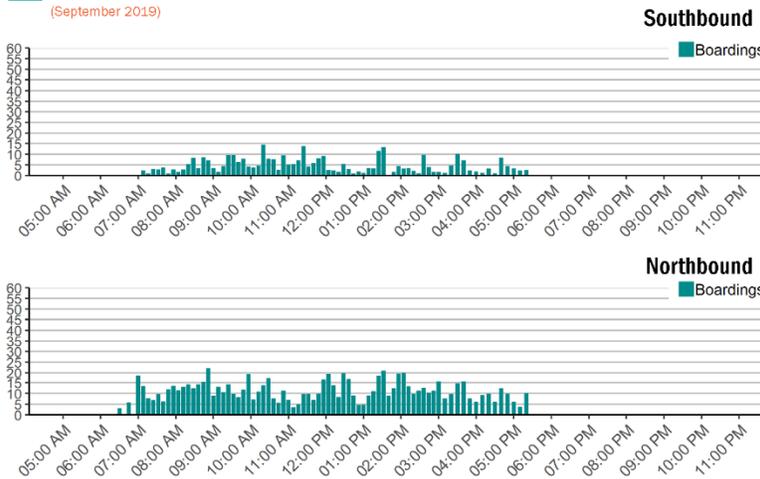
Key Points of Interest: KU, Apartments

Funding: University

Daily Statistics (2019)

	Total Boardings	KU Rank	Passengers per Hour	KU Rank	Passengers per Mile	KU Rank	Passengers per Trip	KU Rank
Weekday	1,088	3/10	27	6/10	3.6	5/10	8.9	5/10
Saturday		N/A		N/A		N/A		N/A

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday

Span: 7:00 a.m. – 5:30 p.m.

Frequency: 8 min (Peak) to 10 to 15 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak) to - min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

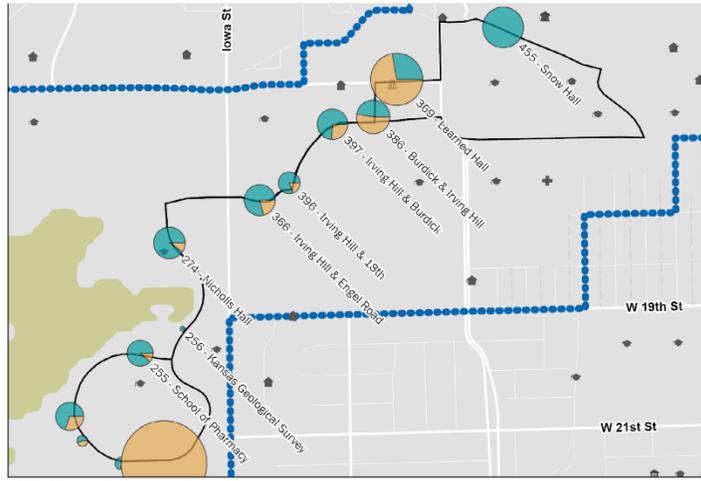
Trips	Early	On-Time	Late
	32%	53%	16%

Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	9,994	2/10
Revenue Miles	74,648	3/10
Operating Costs	\$759,574	2/10
Ridership	269,730	2/10



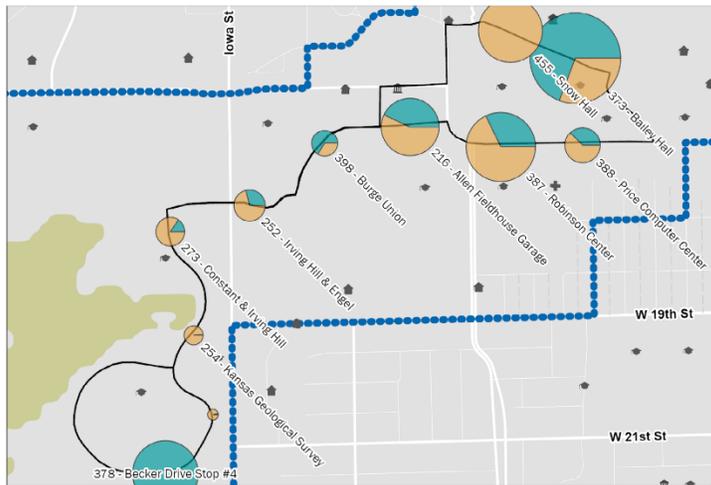
Weekday Ridership by Stop
(September 2019)



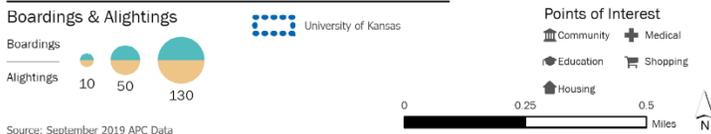
41 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



41 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides fast and frequent on-campus circulation, connecting remote parking, research and academic buildings, and recreation facilities.
- Many transfer opportunities at Snow Hall.

Weaknesses

- Inconsistent alignment between eastbound and westbound trips between Nasmith Dr. and Burdick Dr.
- One-way circulation through campus forces out-of-direction travel.
- Early end of service.
- Separate funding source that is not comingled with other transit routes, so there could be funding issues to mix with other routes' service.

Opportunities

- Provide more bi-directional service by following an alignment similar to Route 44.
- Consider splitting route coverage between two separate routes, with Jayhawk Boulevard served by one route, and Sunnyside by another in order to provide bi-directional service in both corridors.
- Consider interlining opportunities to optimize service schedule on Route 41 and other routes.
- Operate service until at least 6:00 pm, as ridership is near ten passengers per trip on final westbound trip at 5:30.
- Consider adding campus-wide demand response service in the evenings and on weekends.



ROUTE: 42

Campus Circulator (Blue)

Route Type: Circulator

Funding: University

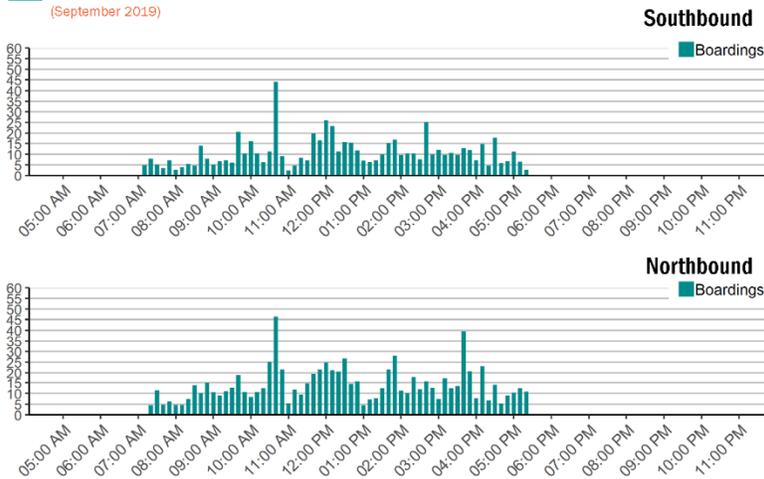
Description: Route 42 circulates through the northern portion of the KU campus, serving the Rec Center and Kansas Union.

Key Points of Interest: KU, Apartments

Daily Statistics (2019)

	Total Boardings	KU Rank	Passengers per Hour	KU Rank	Passengers per Mile	KU Rank	Passengers per Trip	KU Rank
Weekday	1,051	4/10	50.1	2/10	4.2	4/10	7	8/10
Saturday		N/A		N/A		N/A		N/A

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)

Southbound

Northbound

Operating Characteristics

Weekday

Span 7:10 a.m. – 5:30 p.m.

Frequency 8 to 10 min (Peak) 8 to 10 min (Off-Peak)

Saturday

Span No Service

Frequency - min (Peak) - min (Off-Peak)

On-Time Performance (2019)

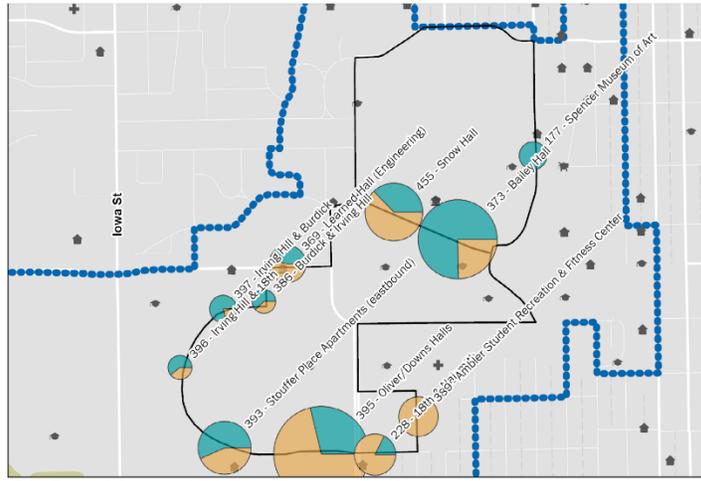
Trips	Early	On-Time	Late
	28%	62%	11%

Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	3,297	8/10
Revenue Miles	38,936	5/10
Operating Costs	\$250,572	8/10
Ridership	163,993	6/10



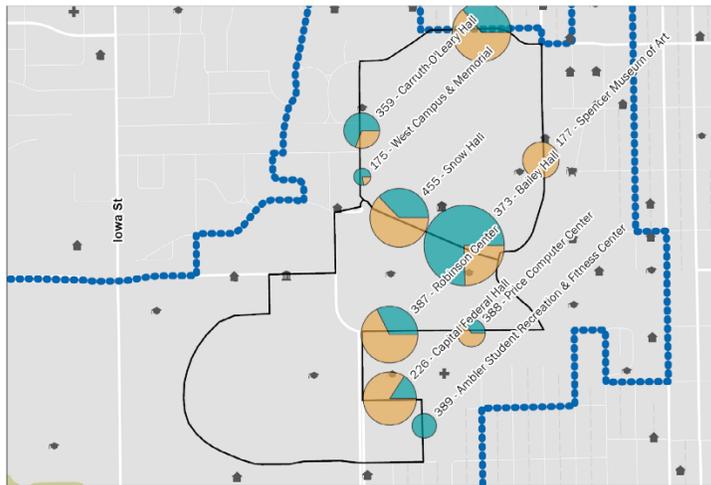
Weekday Ridership by Stop
(September 2019)



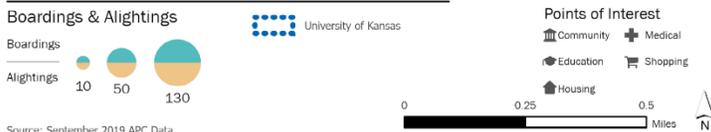
42 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



42 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides fast and frequent on-campus circulation, connecting the Rec Center to the Kansas Union, academic buildings, and residence halls.
- Strong ridership throughout the service day, with an average ridership of 50 passengers per hour. \$Many transfer opportunities at Snow Hall.

Weaknesses

- One-way service design forces out-of-direction travel for most passengers, but especially for passengers wishing to travel from the Rec Center to the Daisy Hill area.
- Northbound and southbound buses both serve Jayhawk Blvd in the westbound direction, which may cause confusion among riders.
- Poor on-time performance due to significant number of early arrivals.
- Early end of service.

Opportunities

- Extend route to Bob Billings transit hub.
- Restructure alignment to maximize bi-directional service. For example, from the Bob Billings transit hub, buses could serve the Daisy Hill area, and then travel south along Irving Hill Rd. to serve the Rec Center before continuing on to the Kansas Union and returning to the Bob Billings transit hub via the Rec Center and Daisy Hill area.
- If service alignment remains unchanged, consider applying separate route numbers to northbound and southbound service to reduce likelihood of confusion for passengers along Jayhawk Blvd.
- Consider evening service and extending restructured route from Kansas Union to Emery Road to provide one-seat ride from Greek houses to Rec Center.



ROUTE: 43

Campus Circulator (Red)

Route Type: Circulator

Funding: University

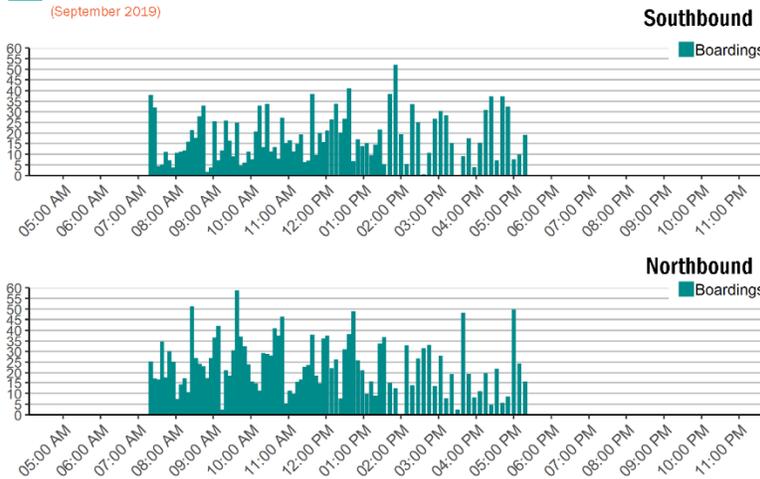
Description: Route 43 circulates through the northern portion of the KU campus, serving Daisy Hill, GSP, and Jayhawk Boulevard.

Key Points of Interest: KU, Apartments

Daily Statistics (2019)

	Total Boardings	Passengers per Hour	Passengers per Mile	Passengers per Trip
Weekday	4,692	91.5	15.7	27.9
Saturday	N/A	N/A	N/A	N/A

Weekday Ridership by Trip (September 2019)



Saturday Ridership by Trip (September 2019)

Southbound

Northbound

Operating Characteristics

Weekday

Span: 7:10 a.m. – 5:30 p.m.

Frequency: 7 to 9 min (Peak), 7 to 9 min (Off-Peak)

Saturday

Span: No Service

Frequency: - min (Peak), - min (Off-Peak)

On-Time Performance (2019)

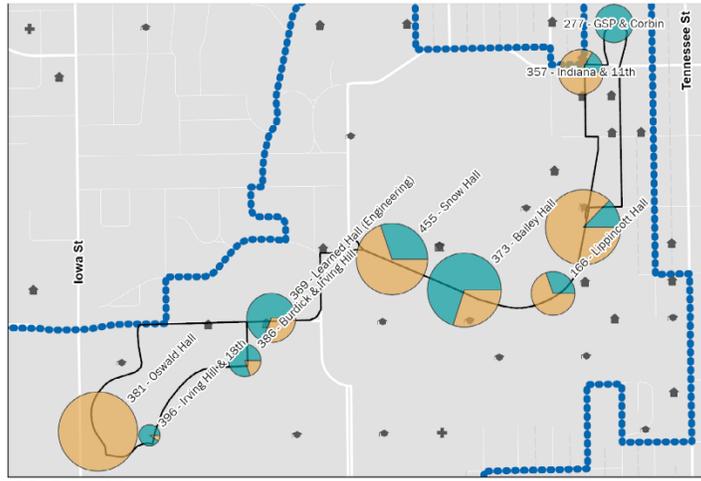
Trips	Early	On-Time	Late
	25%	69%	7%

Annual Statistics (2019)

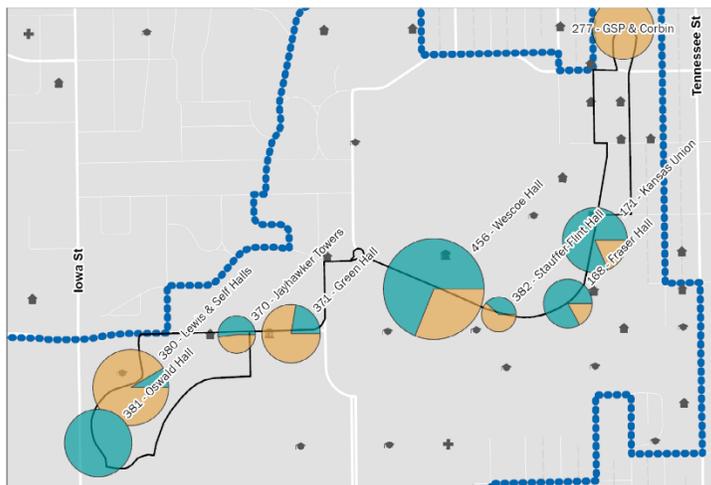
	Actual	KU Rank
Revenue Hours	8,054	3/10
Revenue Miles	46,943	4/10
Operating Costs	\$612,112	3/10
Ridership	731,995	1/10



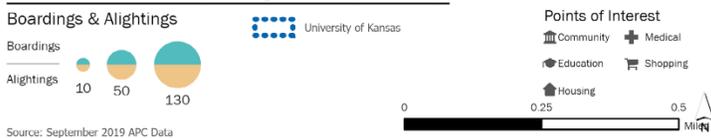
Weekday Ridership by Stop
(September 2019)



43 Southbound | Average Weekday Ridership



43 Northbound | Average Weekday Ridership



Route Analysis

Strengths

- Provides fast and frequent on-campus circulation, connecting residence halls in the Daisy Hill area to academic buildings and the Kansas Union
- Highest ridership and productivity of all KU routes.
- Strong ridership throughout the service day, with an average ridership of 50 passengers per hour.
- Simple and direct alignment.
- Many transfer opportunities at Snow Hall.

Weaknesses

- Potentially overcrowded buses, as several trips exceed 40 passengers.
- Early end of service.

Opportunities

- Supplement capacity between Daisy Hill and Jayhawk Blvd./Kansas Union with frequent service between Bob Billings transit hub and KU campus.
- Invest in pedestrian improvements and passenger amenities at Engle Road and 15th Street to create additional transit access opportunities for Daisy Hill area residents.



ROUTE: 44

Campus Evening Circulator

Description: Route 44 circulates through the KU campus.

Route Type: Circulator

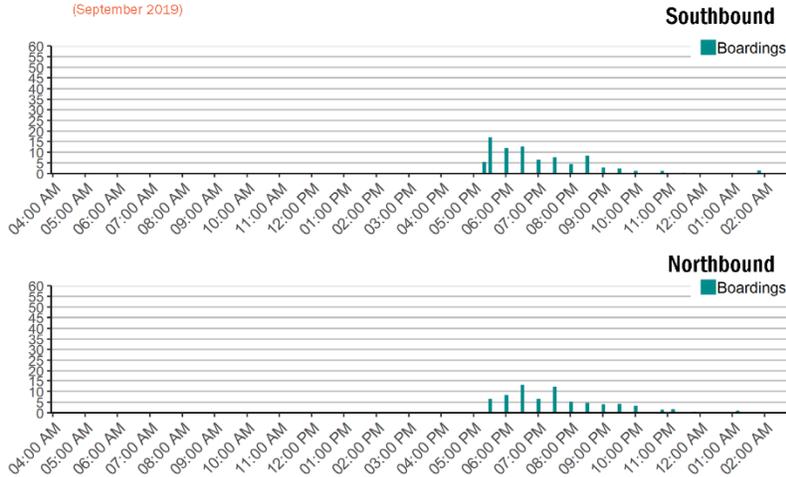
Key Points of Interest: KU, Apartments, Library

Funding: University

Daily Statistics (2019)

	Total Boardings	KU Rank	Passengers per Hour	KU Rank	Passengers per Mile	KU Rank	Passengers per Trip	KU Rank
Weekday	331	9/10	36.3	4/10	11.4	2/10	6.9	9/10
Saturday	28	2/2	3.1	2/2	0.83	2/2	1.5	2/2

Weekday Ridership by Trip (September 2019)



Operating Characteristics

Weekday

Span: 5:31 p.m. – 10:30 p.m.

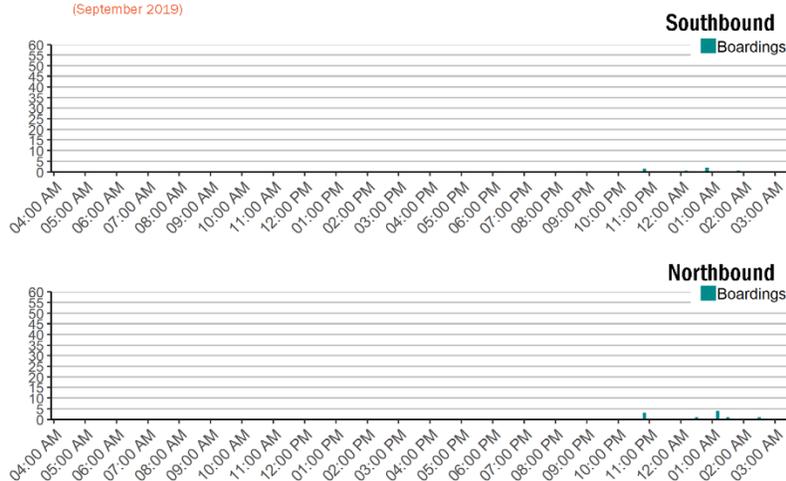
Frequency: - min (Peak) / 30 min (Off-Peak)

Saturday

Span: Late Night

Frequency: - min (Peak) / - min (Off-Peak)

Saturday Ridership by Trip (September 2019)



On-Time Performance (2019)

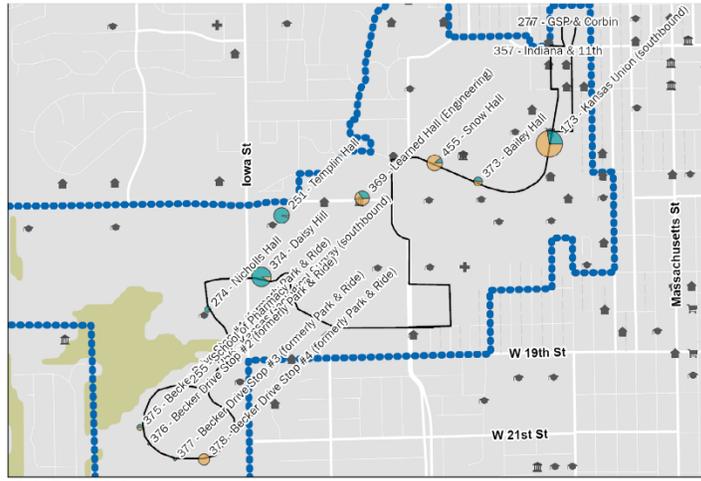


Annual Statistics (2019)

	Actual	KU Rank
Revenue Hours	813	10/10
Revenue Miles	2,739	10/10
Operating Costs	\$61,788	10/10
Ridership	20,677	10/10



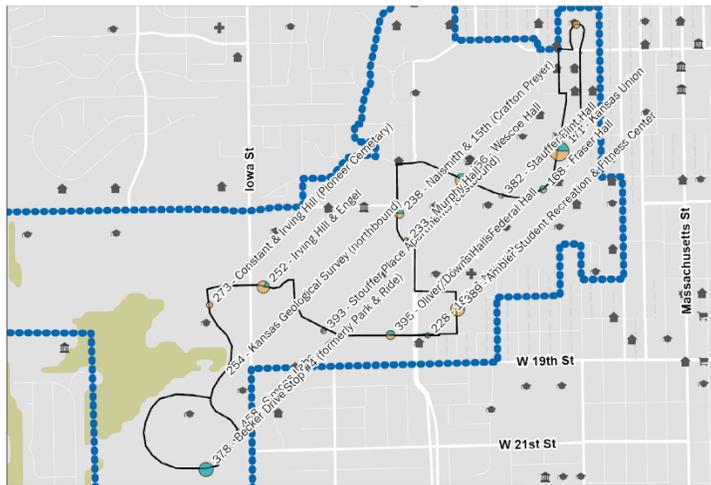
Weekday Ridership by Stop
(September 2019)



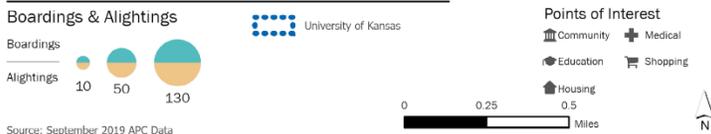
44 Southbound | Average Weekday Ridership



Source: September 2019 APC Data



44 Northbound | Average Weekday Ridership



Source: September 2019 APC Data

Route Analysis

Strengths

- Provides evening and late-night service coverage, linking remote parking and student housing with the Rec Center, Kansas Union, and academic buildings.
- Easy-to-remember clockface frequency.
- Relatively high productivity at almost 40 passengers per service hour.

Weaknesses

- No weekend service.
- Relatively low average ridership per trip.
- One-way service along 15th and 18th St. forces out-of-direction travel or relatively long-walk distances for some passenger, including those traveling from the Rec Center to the Daisy Hill area.

Opportunities

- Begin service later and extend hours on several "regular" routes until at least 6:00 pm.
- If service begins later, consider replacing fixed-route service model with demand response service, potentially by expanding and redesigning the SafeRide service to allow more trip types, and improving the booking process.
- Consider providing weekend demand response service.



7. PRELIMINARY SERVICE SCENARIOS AND STAKEHOLDER REACTIONS

The opportunities identified at the end of each diagnostic route profile present a range of possible options for improving the performance of the respective route. In some cases, the options that are presented are contradictory, because there is almost always more than one way to improve service. For example, if a route has poor productivity, its frequency can be reduced to achieve a better ratio between service supply and demand. Alternatively, the route could be replaced with an on-demand service that only serves an area upon request.

7.1. Overview of Scenarios

Using the opportunities from the route profiles as a starting point, the study team developed two preliminary service redesign scenarios for the study area. Both scenarios incorporated a subset of the service improvement ideas that emerged from the route profiles. Both scenarios were also designed to address two key issues that are expected to impact transit operations in Lawrence in the near-term:

- Lawrence Transit's new Central Station is expected to be completed in the third quarter of 2023. The station's location at Bob Billings Parkway and Crestline Drive requires a reorientation of Lawrence's transit network to maximize the benefit of the new facility. Both scenarios were designed to integrate seamlessly into the new Central Station once it is open.
- Funding for the KU on Wheels service is determined annually by KU's Student Senate. To ensure that KU on Wheels service can quickly adjust to changes in funding availability, the KU on Wheels routes in both scenarios were design to have round-trip cycle times that are factors of 60 minutes (i.e. 60 minutes, 30 minutes, 20 minutes, or 15 minutes). With this approach, service frequencies can easily be scaled up or down based on funding availability.

The two preliminary service redesign scenarios were similar in their overall service coverage, but different in the specific alignments of each route. Both scenarios made use of design features which would be new to the Lawrence service area:

- **Interlining:** Interlining is the practice of operating a single bus or group of buses on more than one route. Interlining is used to optimize cycle times and ensure one-seat rides to key destinations. For example, if one route has insufficient running or recovery time, and another route has an excess of recovery time, interlining the two routes can allow for optimal running and recovery time for both routes. When a bus alternates between serving one route or another, passengers who board the bus while it is on one route are able to reach destinations on the other route without having to physically transfer between buses.
- **Microtransit:** Microtransit is a technology-driven demand-response service model that allows riders to directly dispatch transit vehicles through a smartphone app (call-in options are available as well, for users without smartphones). The technology and user-interface of microtransit is similar to services like Uber and Lyft, but utilizing more transit-specific vehicles. Microtransit is a particularly effective tool for serving lower-density and/or automobile-oriented environments, as well as providing service during time periods with lower ridership demand.

Maps of both scenarios, followed by route-by-route descriptions of how each scenario differs from existing service, are shown below.



FIGURE 46: SERVICE REDESIGN SCENARIO 1

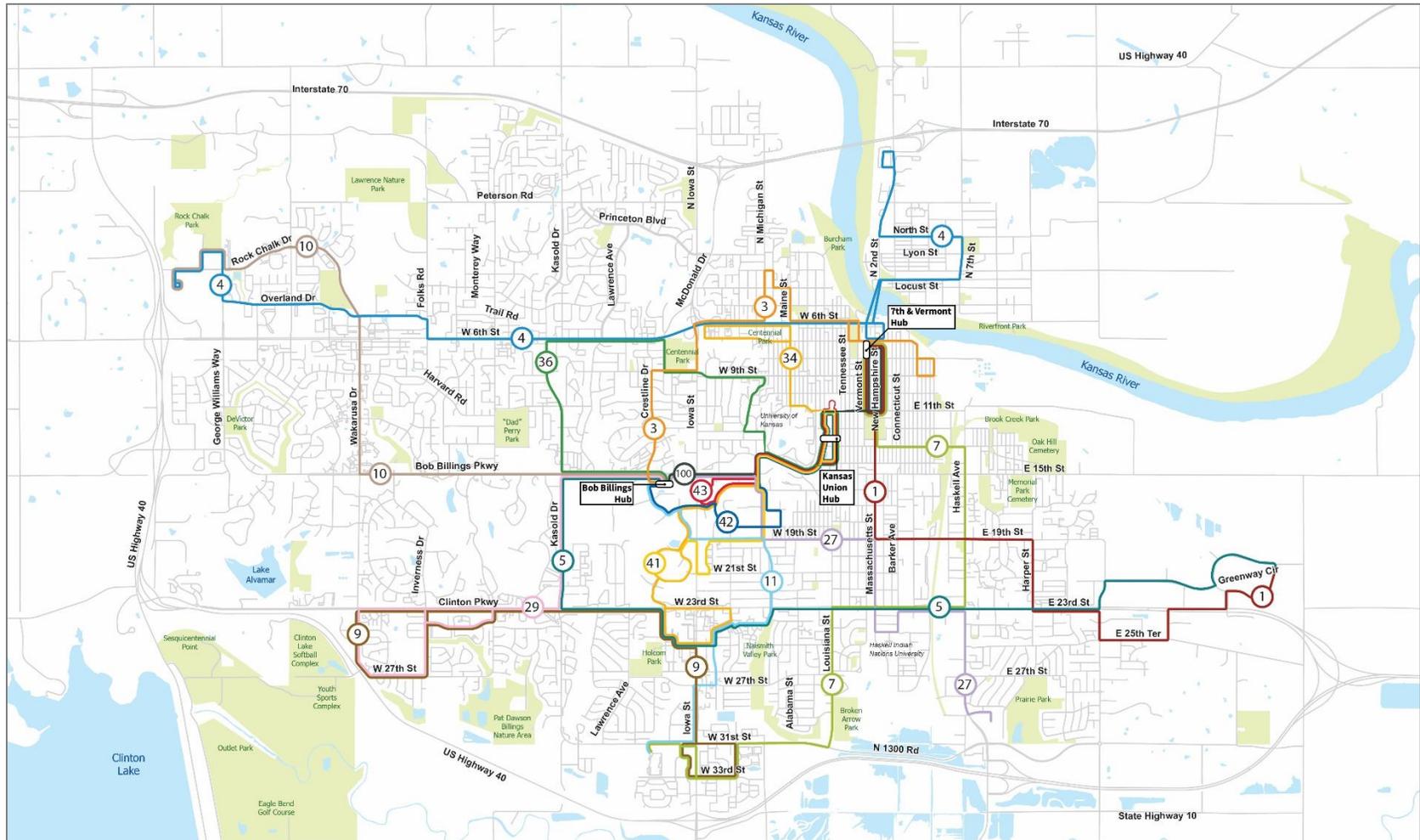


TABLE 6: SERVICE REDESIGN SCENARIO 1

SCENARIO DESCRIPTION BY ROUTE				
Route	EOL 1	EOL 2	Key Changes from Current	Other Notes
1	Downtown	East Hills Business Park	Shifted from Haskell to Massachusetts to serve Dillon's; extended from Douglas County Jail to East Hills Business Park	Interlined with Route 5 at business park to ensure connections
3	Bob Billings Hub	East 9th Street	Extended east to serve Amtrak and East 9th Street District; rerouted south from Memorial Hospital to Bob Billings Hub	Serves Meadowbrook Apartments and the Merc Co-Op; microtransit replaces service north of hospital
4	Driver's License Examiner (North 3rd Street)	LMH West Campus	Replaces service on W. 9th with service on W. 6th corridor; shifts service from Lyon to North Street	Serves Dillon's and Walmart; service Free State High School and Rock Chalk Park; could be interlined with Route 10 at LMH West to ensure connections
5	Bob Billings Hub	East Hills Business Park	Restructured to serve Bob Billings Hub instead of south Iowa Street retail; replaces deviation into HINU with deviation to serve apartments near Iowa and 23rd/Clinton Parkway	Interlined with Route 1 at business park to ensure connections
6	N/A	N/A	Consolidated with Route 4	
7	Downtown	Reserve on West 31st	Restructured to create one-seat ride from multi-family housing along Haskell corridor and both downtown and south Iowa retail	Interlined with Route 11 at Reserve to provide one-seat ride to retail destination; microtransit replaces service west of Iowa
9	South Iowa retail	Clinton @ Wakarusa	Truncated at Clinton and Wakarusa rather than extending to Free State High School; shifted from Kasold to Iowa and Clinton to serve apartments along Melrose and Crestline	Interlined with Route 29 at Wakarusa and Clinton to provide one-seat ride to manage cycle times
10	Bob Billings Hub	LMH West Campus	Truncated at Bob Billings Hub instead of downtown; extended northwest to LMH West	Serves multifamily housing along Wakarusa north of Overland; links Rock Chalk Park to Bob Billings; could be interlined with Route 4 to ensure connections
11	Bob Billings Hub	Reserve on West 31st	Truncated at Bob Billings Hub instead of downtown	Interlined with Route 7 at Reserve to provide one-seat ride to retail destination;
15	N/A	N/A	Replaced by service coverage on Routes 1 and 27	
27	Bob Billings Hub	Peaslee Center	Restructured to link Bob Billings Hub to educational institutions: KU, Lawrence HS, HINU, and Peasley Center	Connection opportunities at 19th and 23rd streets, as well as KU and Bob Billings Hub
29	Bob Billings Hub	Clinton @ Wakarusa	Truncated at Bob Billings Hub instead of downtown; new service on Kasold	Interlined with Route 9 at Wakarusa and Clinton to provide one-seat ride to manage cycle times



SCENARIO DESCRIPTION BY ROUTE

30	Downtown	Bob Billings Hub	Renamed to Route 100 to convey unique significance of the route. Truncated at Bob Billings Hub instead of Orchard Corners/Apple Lane Apartments; extended to downtown	Primary link between downtown, KU, and Bob Billings Hub; Orchard Corners served by Route 36; Meadowbrook Apartments served by Route 3
34	W 7th Street	W 25th Street	Consolidates Routes 34, 41, and 38	Longer route creates more scheduling flexibility
36	Bob Billings Hub	Kansas Union	Extended south to link 6th Street corridor to Bob Billings Hub	Serves Orchard Corners Apartments from Kasold Drive; could be interlined with Route 42 for one-seat ride to KU
38	N/A	N/A	Consolidated Routes 34	Stewart Avenue Apartments by Route 41
41	Becker Drive	Kansas Union	Extended to Kansas Union for consistency; shifted from Irving Hill Road to Naismith Drive to serve Stewart Ave and Rec Center	More bi-directional service; Sunnyside Ave destinations served from corner of Neismith Drive or Jayhawk Blvd
42	Bob Billings Hub	Kansas Union	Restructured as a bi-directional route linking Rec Center to both Jayhawk Blvd/Union and Daisy Hill/Bob Billings Hub	Sunnyside Ave destinations served from corner of Neismith Drive or Jayhawk Blvd
43	GSP	Daisy Hill	Unchanged	
44	N/A	N/A	Replaced with microtransit service	



FIGURE 47: SERVICE REDESIGN SCENARIO 2

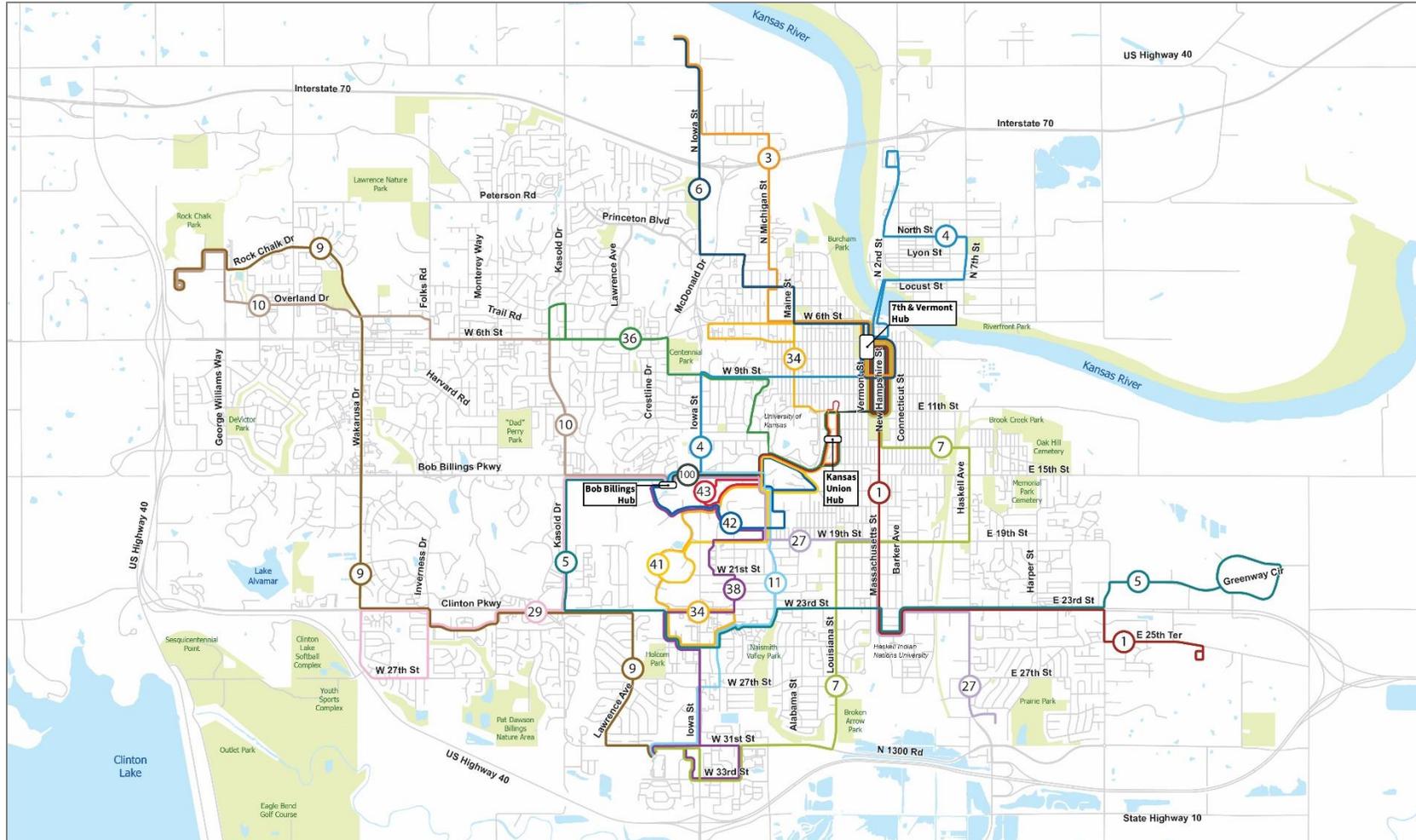


TABLE 7: SERVICE REDESIGN SCENARIO 2

SCENARIO DESCRIPTION BY ROUTE				
Route	EOL 1	EOL 2	Key Changes from Current	Other Notes
1	Downtown	Lawrence Community Shelter	Shifted from Haskell to Massachusetts to serve Dillon's and HINU	Closer access to Community Shelter
3	Downtown	Timberedge Road	Bi-directional service on Michigan Street, with Hallmark service shifted to Route 6	Interlined with Route 6 to alternate between Michigan and Iowa corridors; both corridors served (either inbound or outbound) on every round-trip
4	Driver's License Examiner (North 3rd Street)	Bob Billings Hub	Extends route from the Merc Co-Op to Bob Billings Hub; shifts service from Lyon to North Street	New transfer opportunities at Bob Billings; alternative route to downtown, bypassing KU
5	Bob Billings Hub	East Hills Business Park	Restructured to serve Bob Billings Hub instead of south Iowa Street retail; adds deviation to serve apartments near Iowa and 23rd/Clinton Parkway	New transfer opportunities at Bob Billings
6	Downtown	Timberedge Road	Restructured to serve Memorial Hospital, Hallmark, and N. Iowa industrial parks	Interlined with Route 3 to alternate between Michigan and Iowa corridors; both corridors served (either inbound or outbound) on every round-trip
7	Downtown	Reserve on West 31st	Restructured to create one-seat ride from multi-family housing along Haskell corridor and both downtown and south Iowa retail; shifts service from 27th to 31st St. to better serve multi-family housing along Ousdal Rd.	Interlined with Route 9 at Reserve to provide one-seat ride from neighborhoods south of Clinton Parkway to Lawrence High School; serves Just Food
9	LMH West Campus	Reserve on West 31st	Extended to LMH West Campus from Walmart; elimination of service along W. 27th to reduce one-way service; shifted from Kasold to Lawrence Ave	Interlined with Route 7 at Reserve to provide one-seat ride from neighborhoods south of Clinton Parkway to Lawrence High School; serves multifamily housing along Wakarusa north of Overland
10	Bob Billings Hub	LMH West Campus	Truncated at Bob Billings Hub instead of downtown; extended northwest to LMH West; Shifted from Bob Billings and Wakarusa to Kasold and W. 6th	Covers part of W. 6th in place of Route 6
11	Bob Billings Hub	Reserve on West 31st	Truncated at Bob Billings Hub instead of downtown	Interlined with Route 38 at the Reserve and Bob Billings Hub to create bi-directional circulator and reduce redundancy
15	N/A	N/A	Replaced by service coverage on Routes 5 and 27	
27	Bob Billings Hub	Peaslee Center	Restructured to link Bob Billings Hub to educational institutions: KU, Lawrence HS, HINU, and Peaslee Center	Connection opportunities at 19th and 23rd streets, as well as KU and Bob Billings Hub



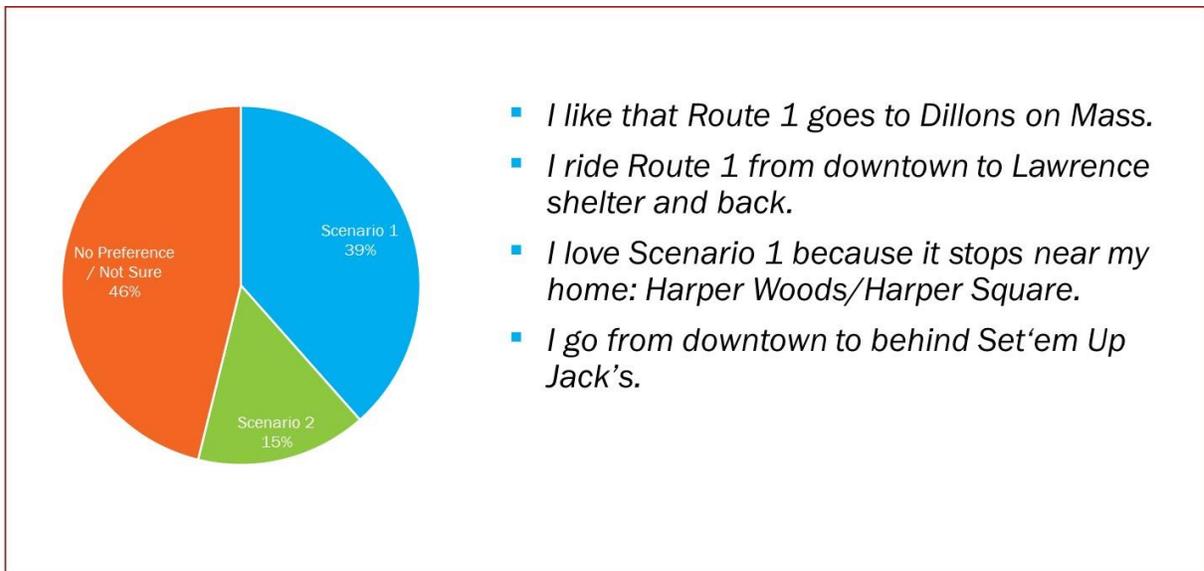
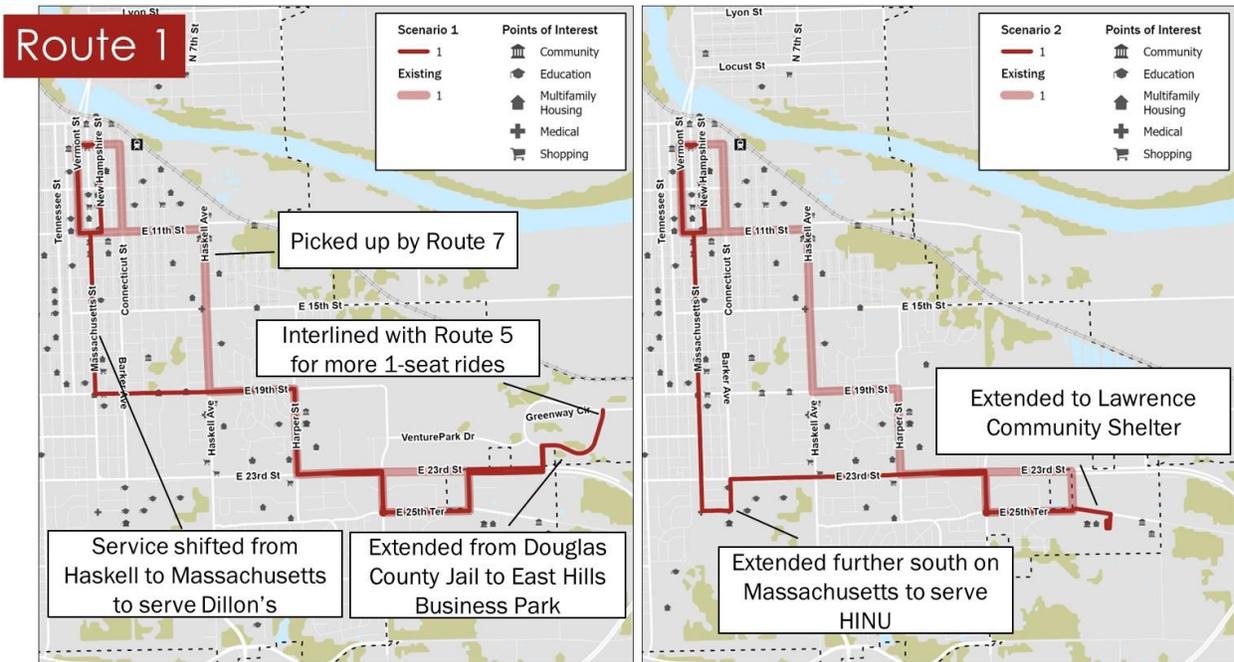
SCENARIO DESCRIPTION BY ROUTE				
29	Bob Billings Hub	Clinton @ Wakarusa	Truncated at Bob Billings Hub instead of downtown; new service on Kasold	Will need to be interlined with another route at Bob Billings Hub to manage cycle times
30	Downtown	Bob Billings Hub	Renamed to Route 100 to convey unique significance of the route. Truncated at Bob Billings Hub instead of Orchard Corners/Apple Lane Apartments; extended to downtown	Primary link between downtown, KU, and Bob Billings Hub; Orchard Corners served by Route 10; Meadowbrook Apartments served from Bob Billings Pkwy only
34	W 7th Street	W 25th Street	Consolidates Routes 34, 41, and 38	Longer route creates more scheduling flexibility
36	Trail Road @ Kasold	Kansas Union	Terminus moved from Gateway Court to Trail Road	Serves The Frontier West Lawrence apartment community
38	Bob Billings Hub	Reserve on West 31st	Truncated at Bob Billings Hub instead of downtown; extended south to Walmart	Interlined with Route 11 at the Reserve and Bob Billings Hub to create bi-directional circulator and reduce redundancy
41	Becker Drive	Sunflower Road	Shifted from Irving Hill Road to Naismith Drive to serve Stewart Ave and Rec Center	Irving Hill Road service picked up by Route 43
42	Bob Billings Hub	Sunflower Road	Restructured as a bi-directional route linking Rec Center to both Jayhawk Blvd/Sunnyside Ave and Daisy Hill/Bob Billings Hub	Connection opportunities at Jayhawk Blvd
43	GSP	Daisy Hill	Unchanged	
44	N/A	N/A	Replaced with microtransit service	

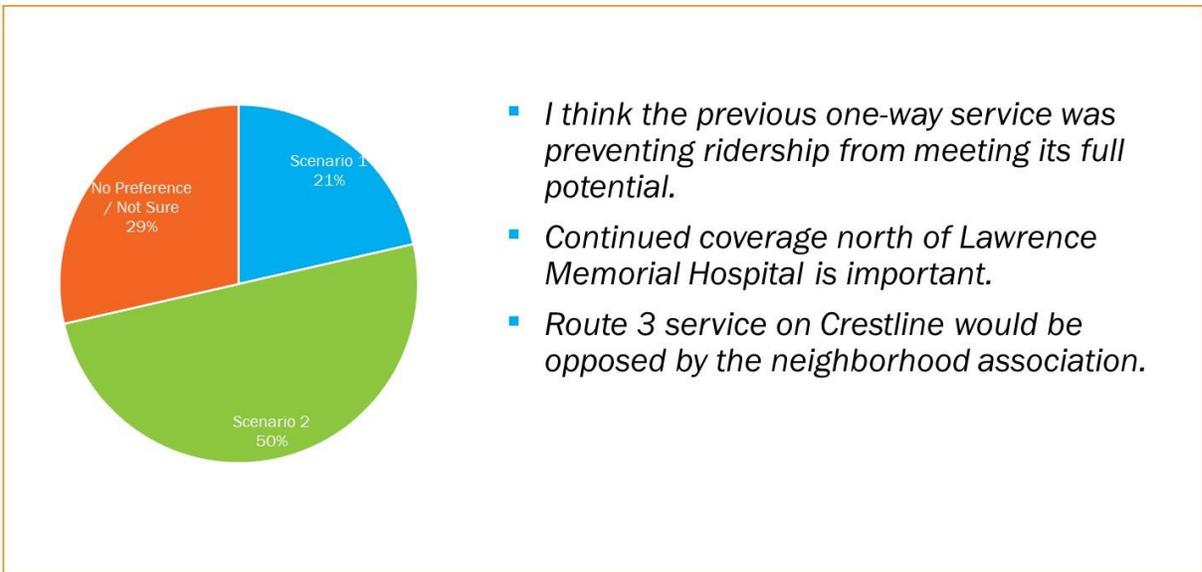
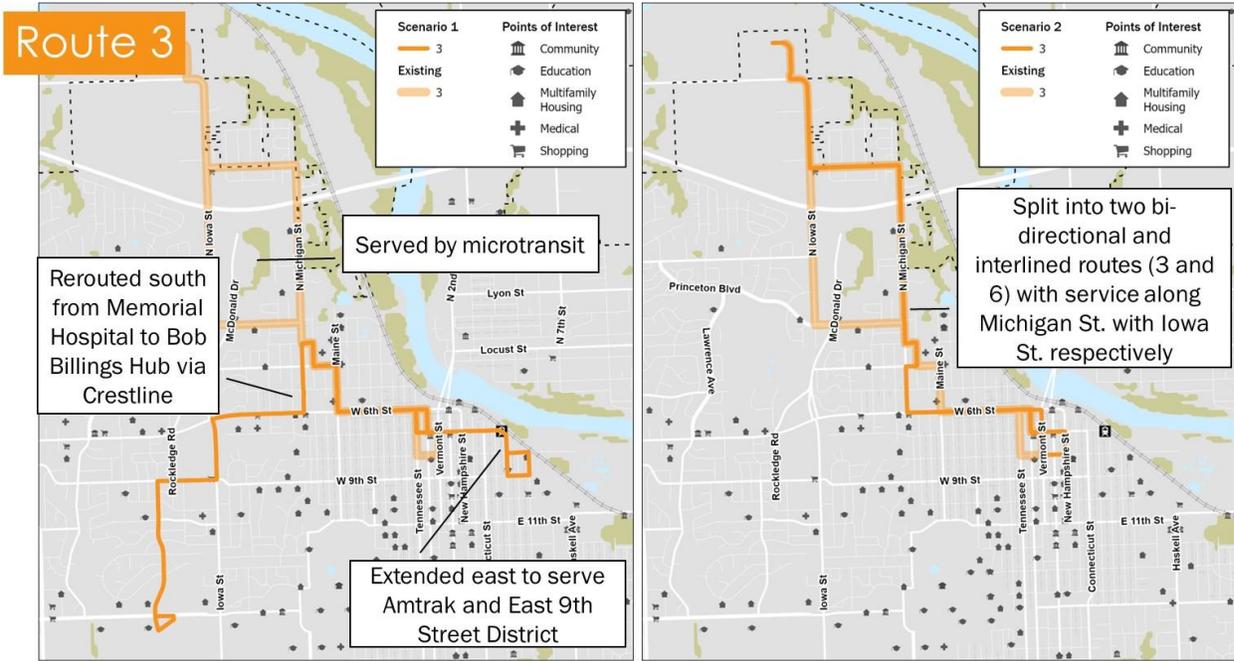
7.2. Stakeholder Reactions

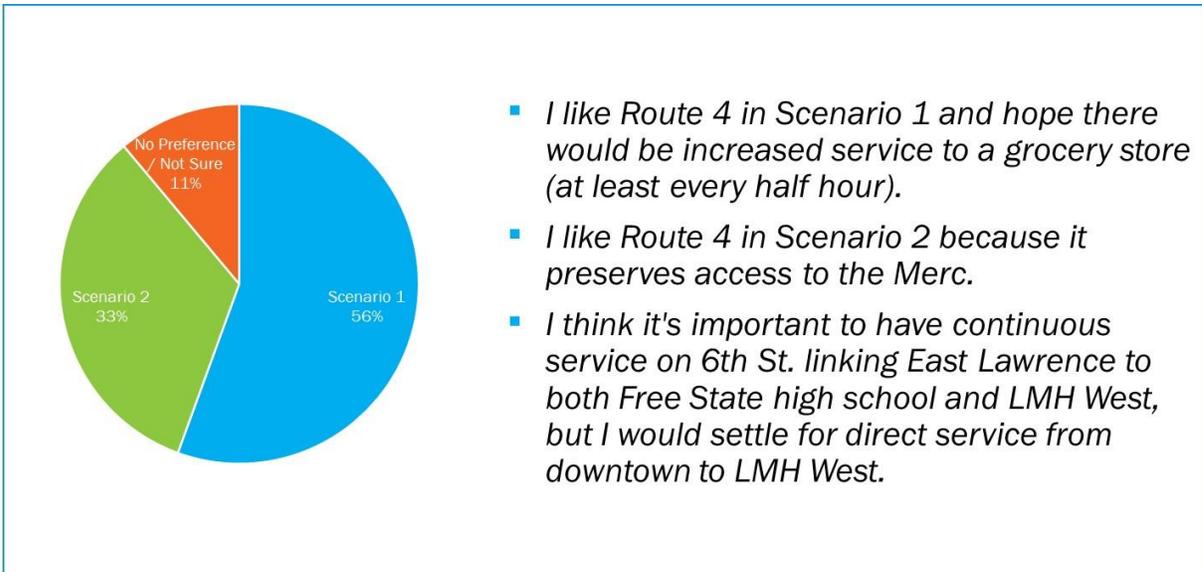
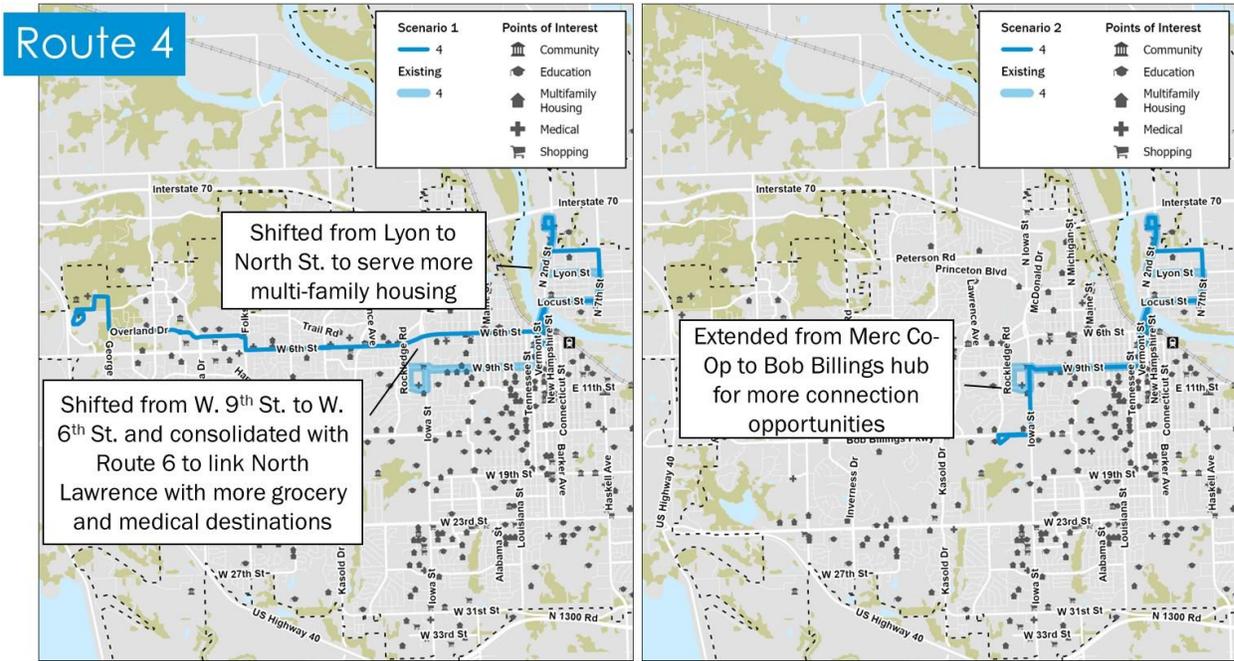
In October and November 2021, a series of virtual public meetings and in-person pop-up events were held at locations around Lawrence to present the two preliminary service improvement scenarios and collect stakeholder feedback. An online survey was developed to allow meeting attendees, as well as those who could not attend one of the outreach events, to provide feedback on the preliminary scenarios. The online survey was administered through the Lawrence Listens web portal and included scenario maps and descriptions for survey participants to refer to when needed.

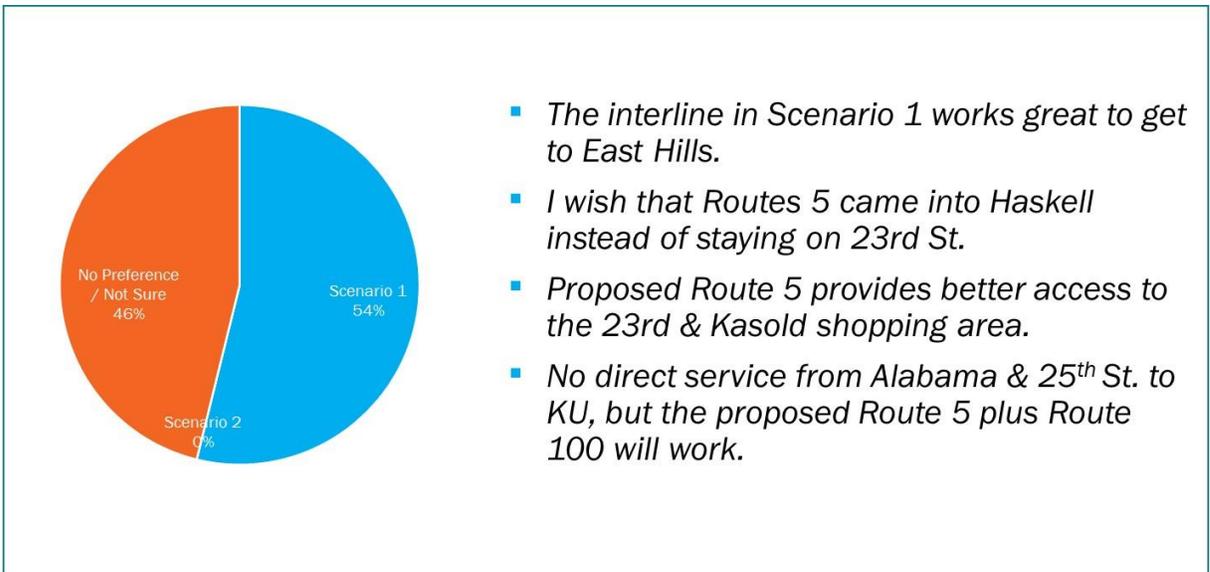
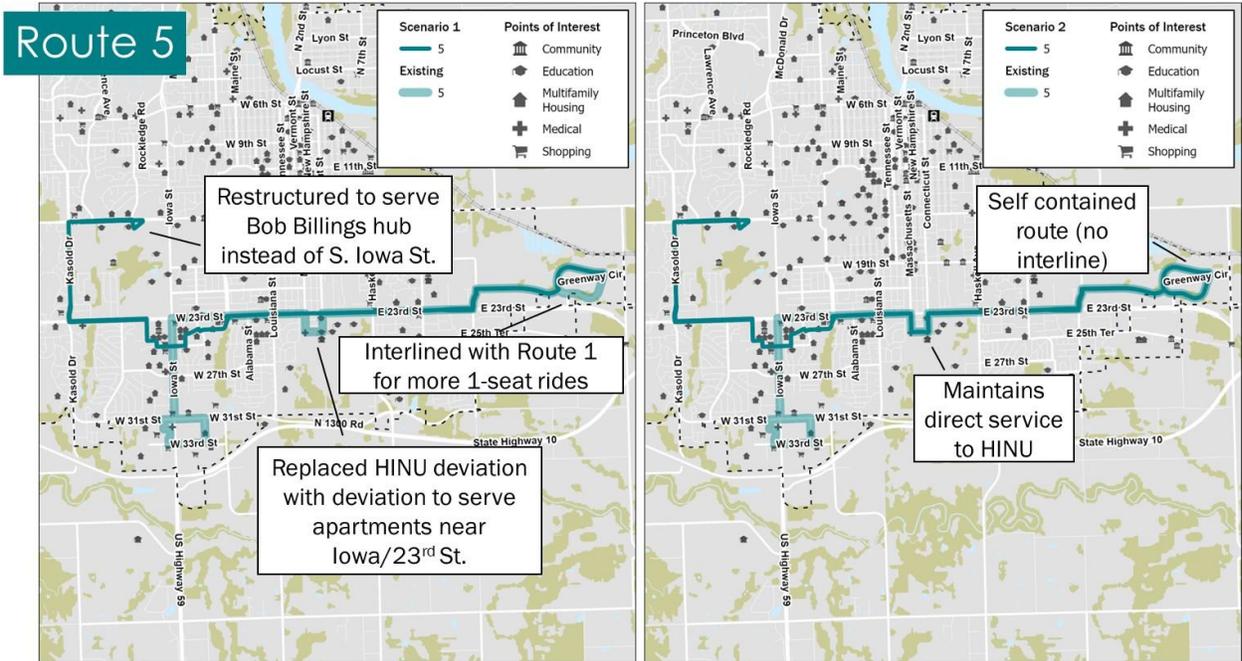
245 surveys were submitted between October 19th and November 24th, 2021. Below is a summary of the key talking points that were used to describe each route in the two scenarios, and the reactions of survey participants. Survey participant reactions are presented in the form of a pie chart indicating which version of each route was most popular, followed by an indicative sample of comments submitted in reference to each route.



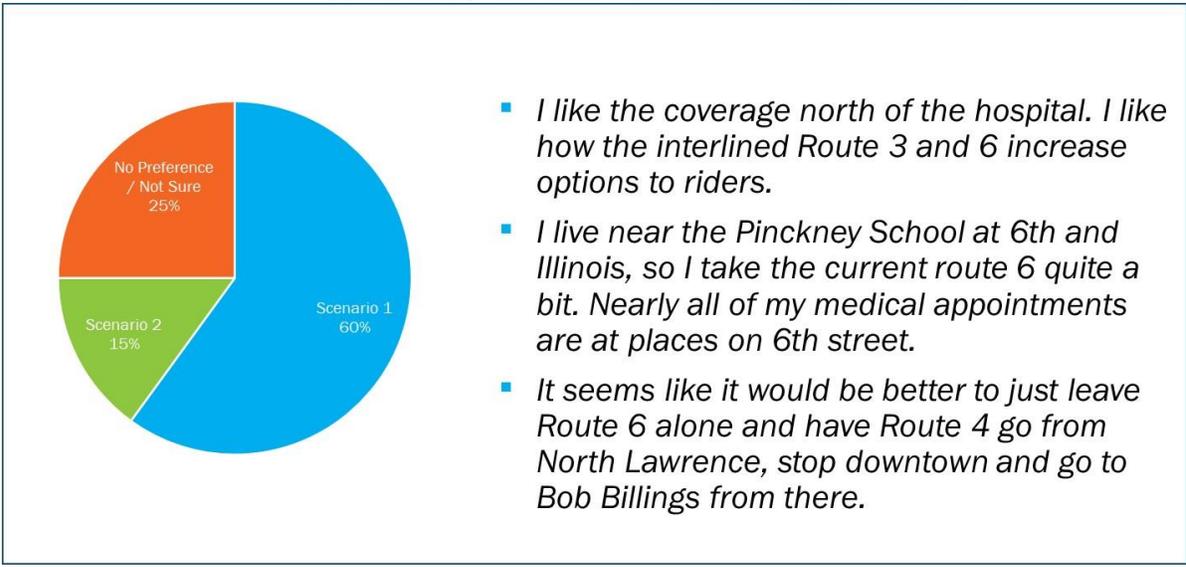
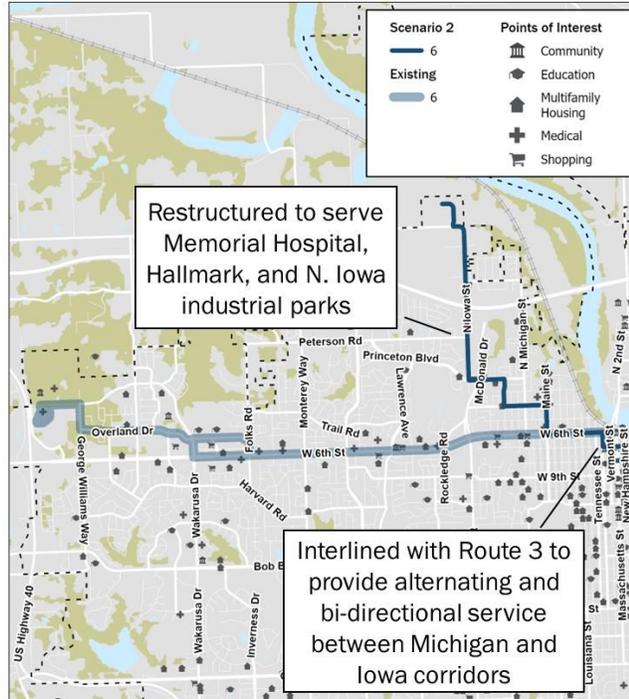


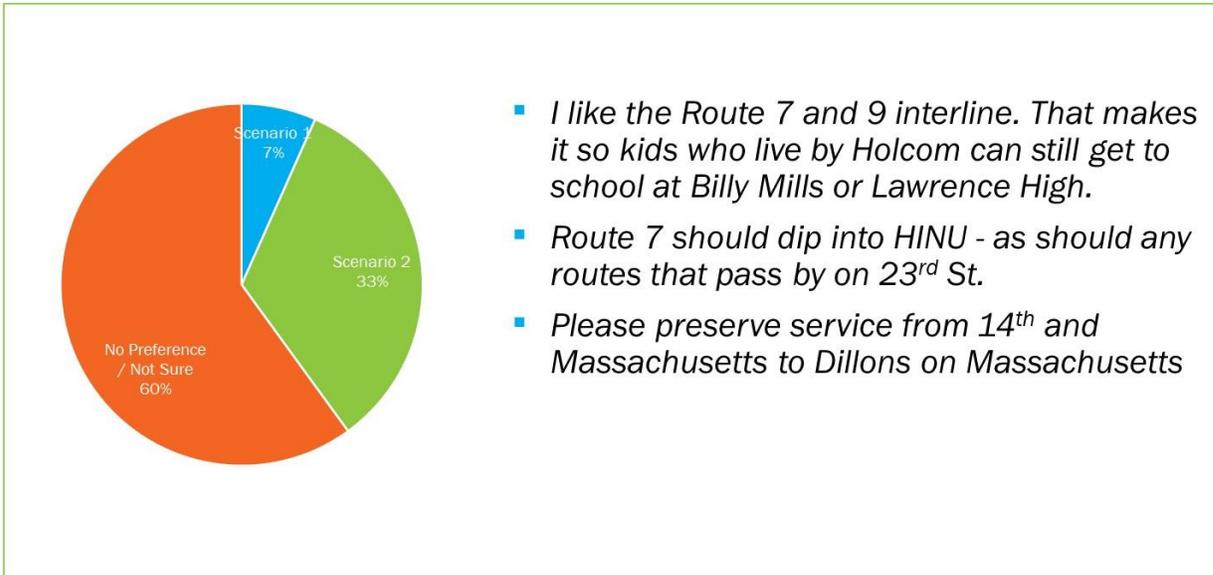
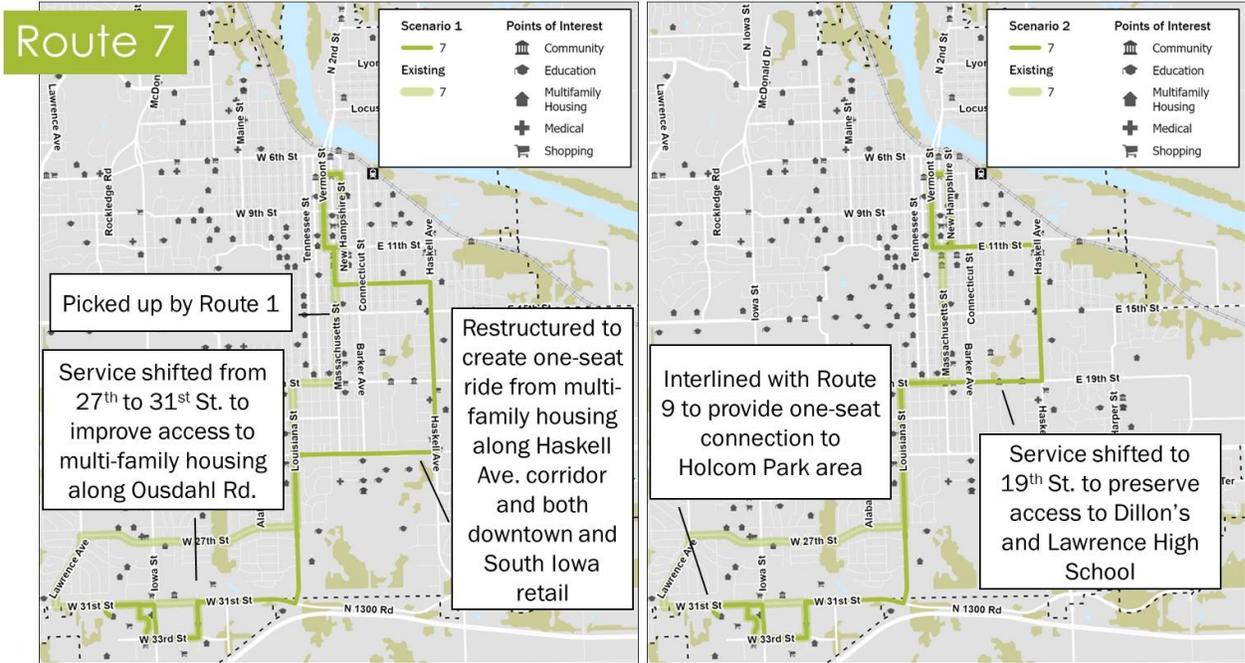


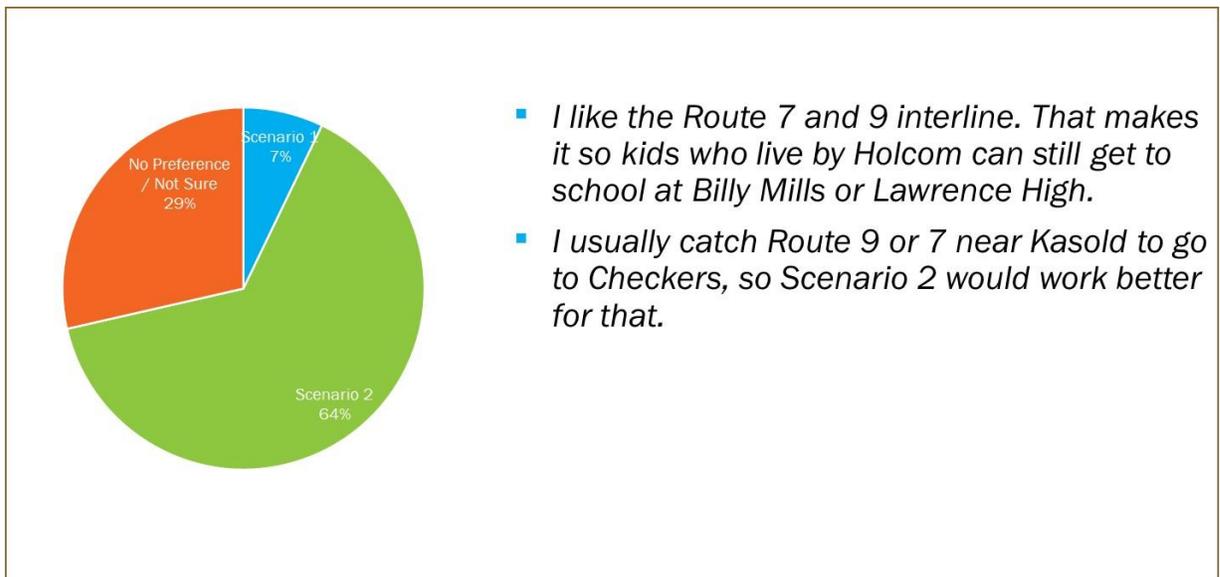
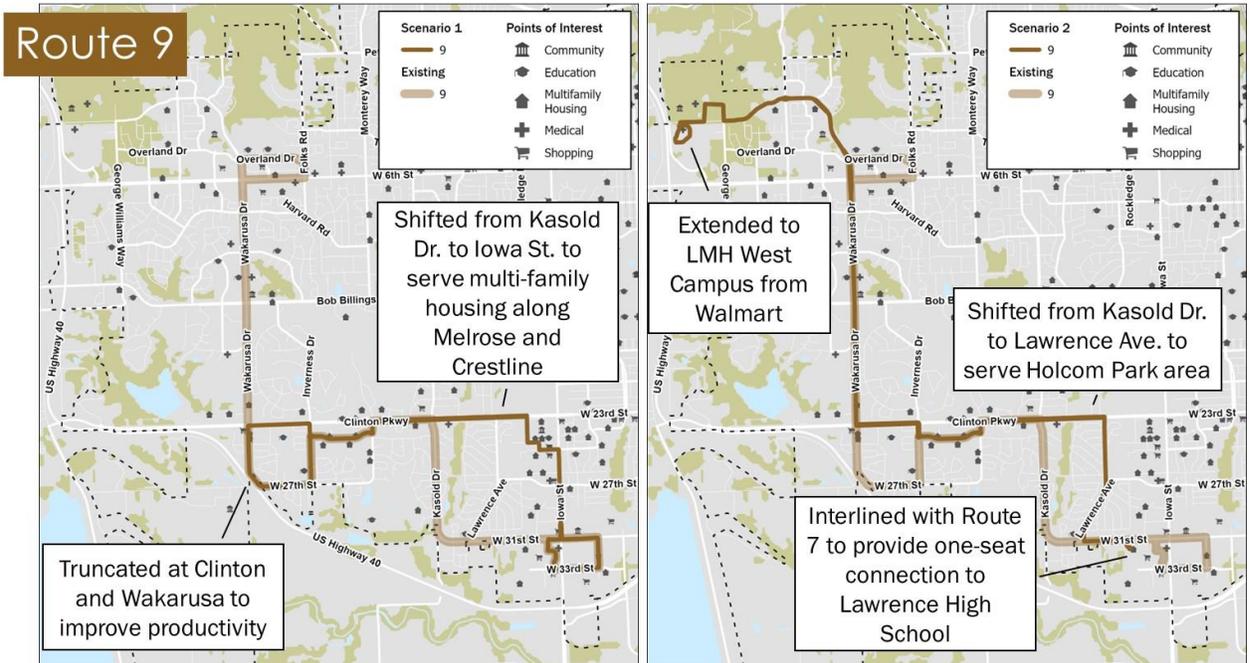


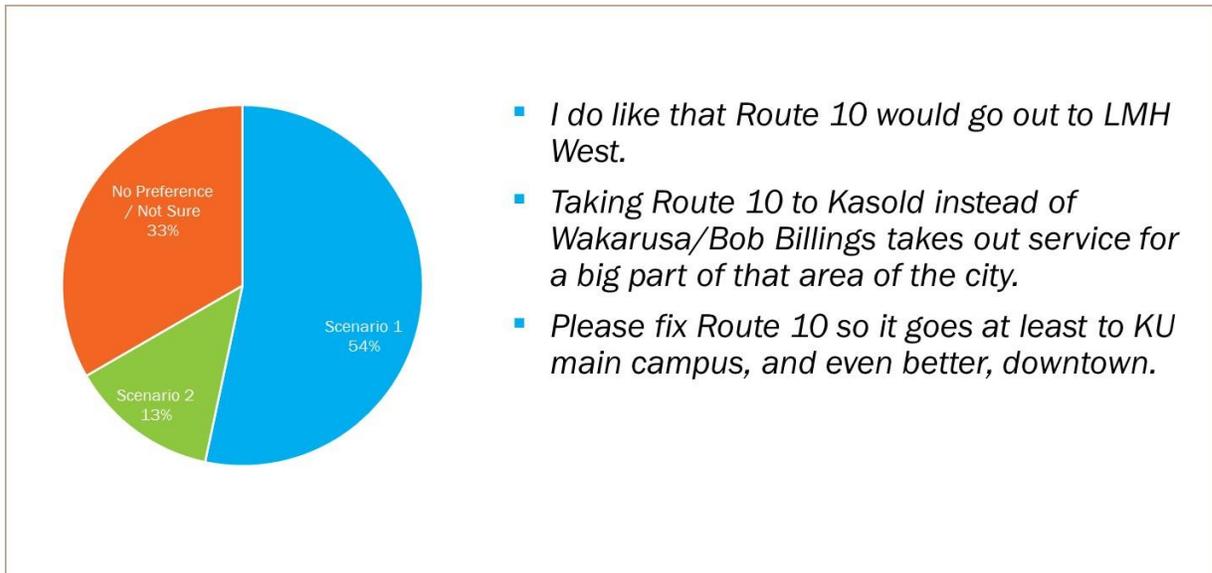
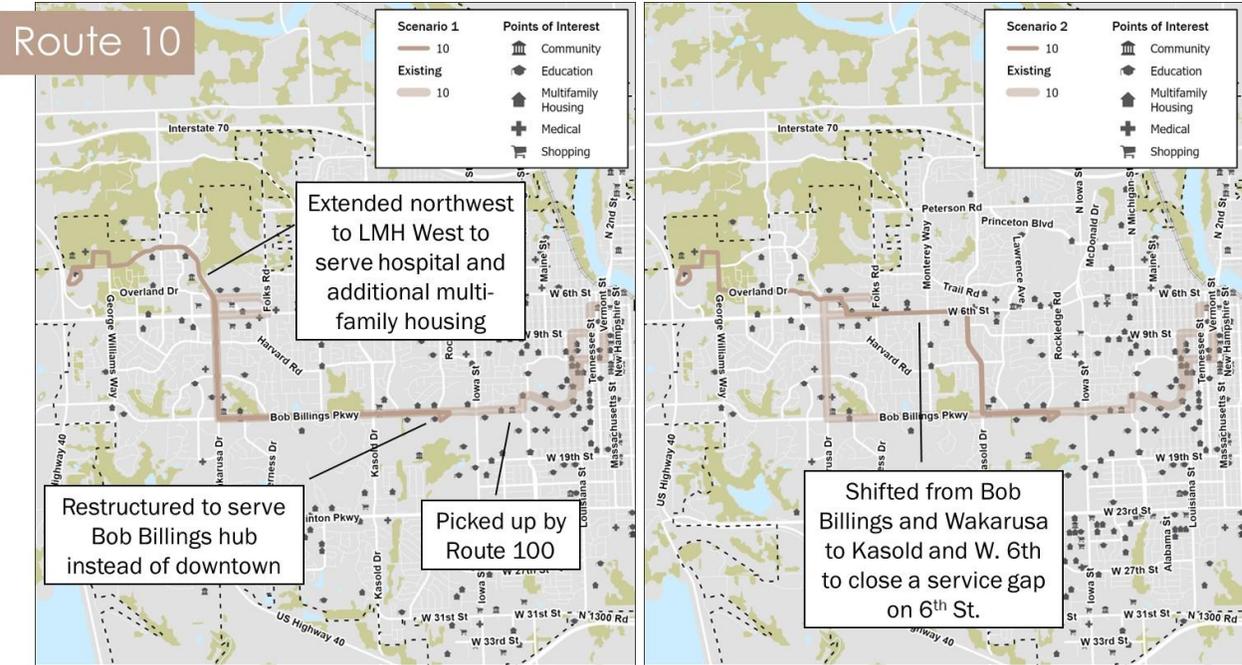


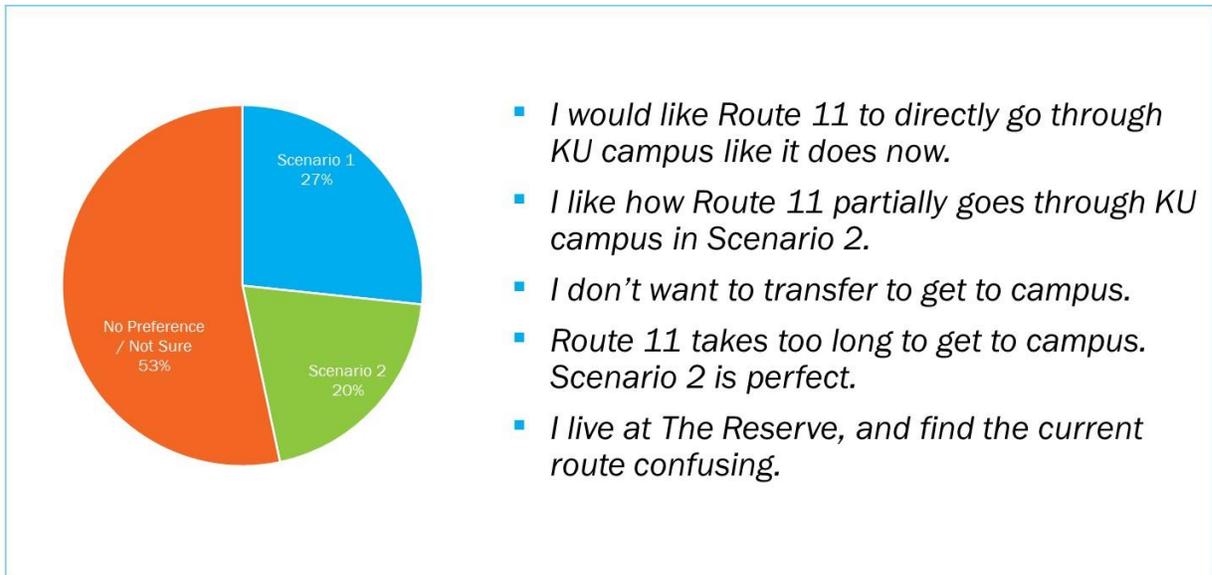
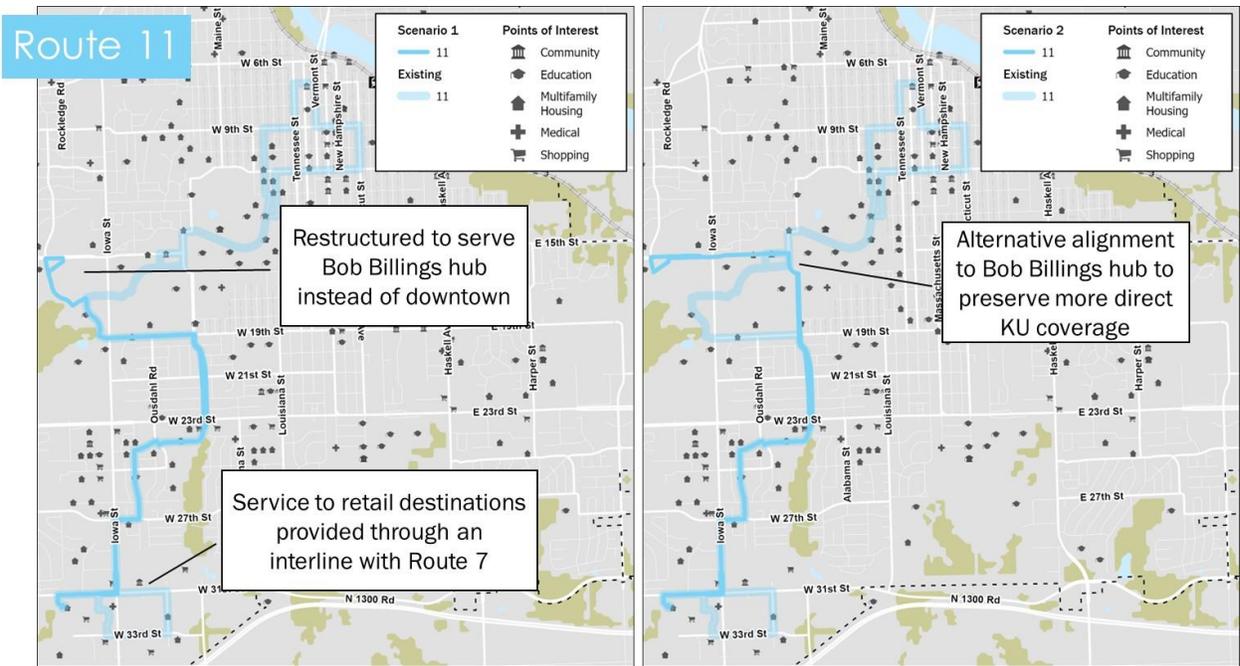
Route 6

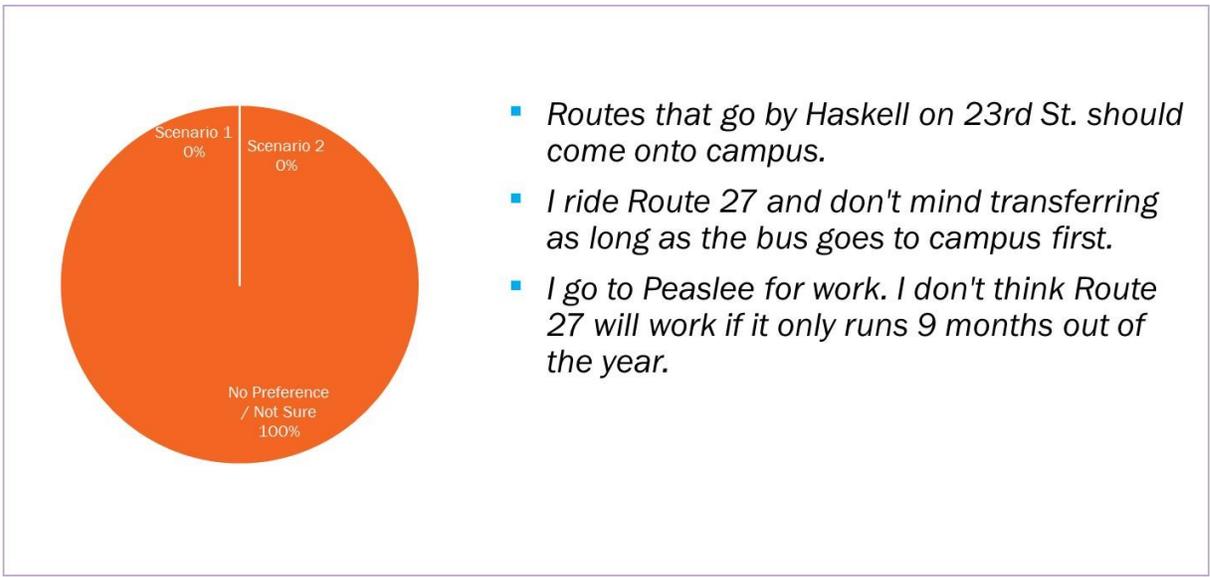


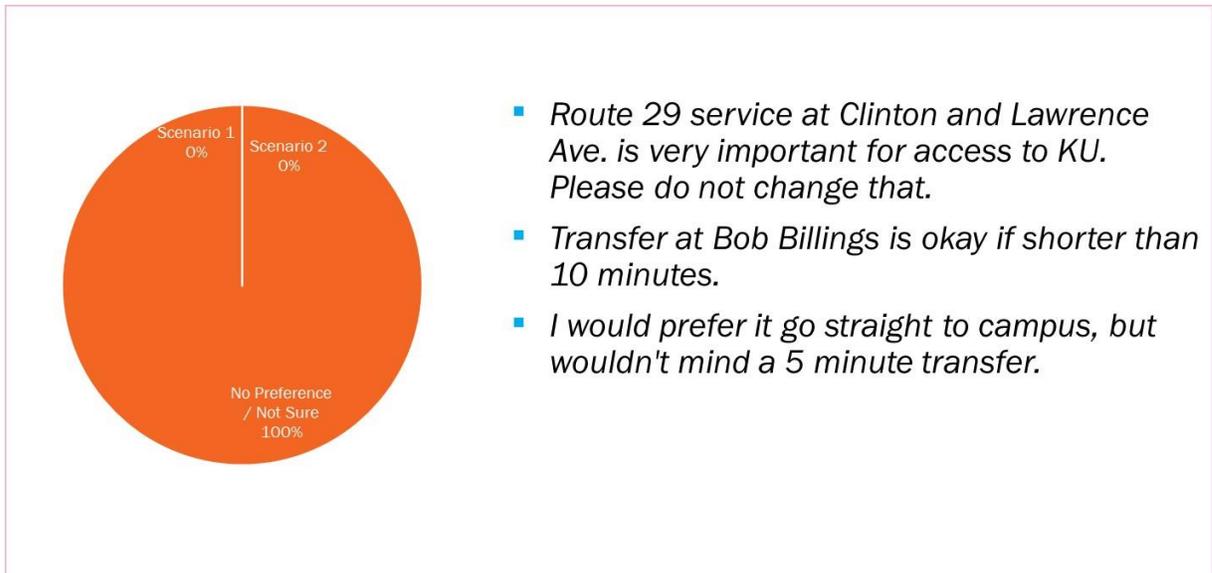
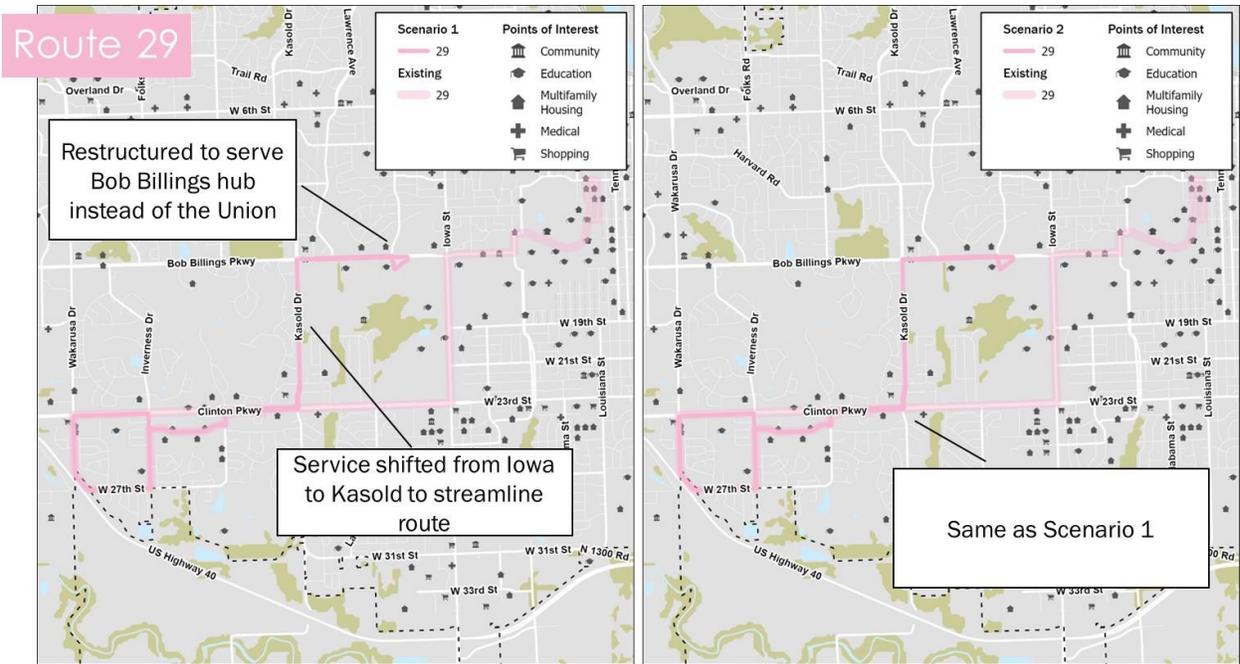


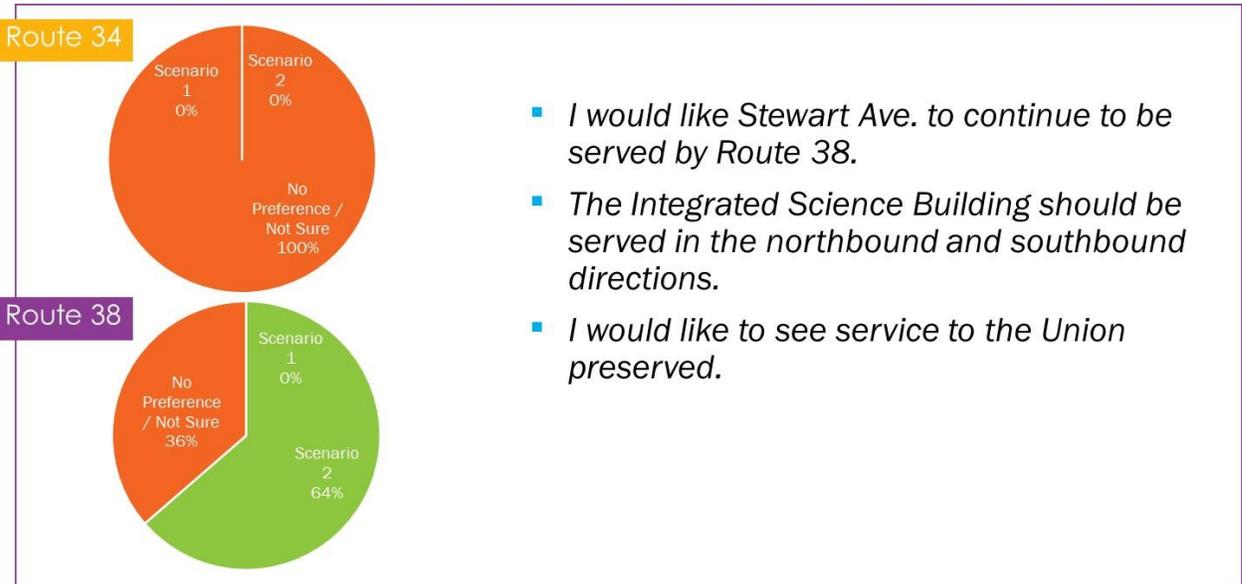
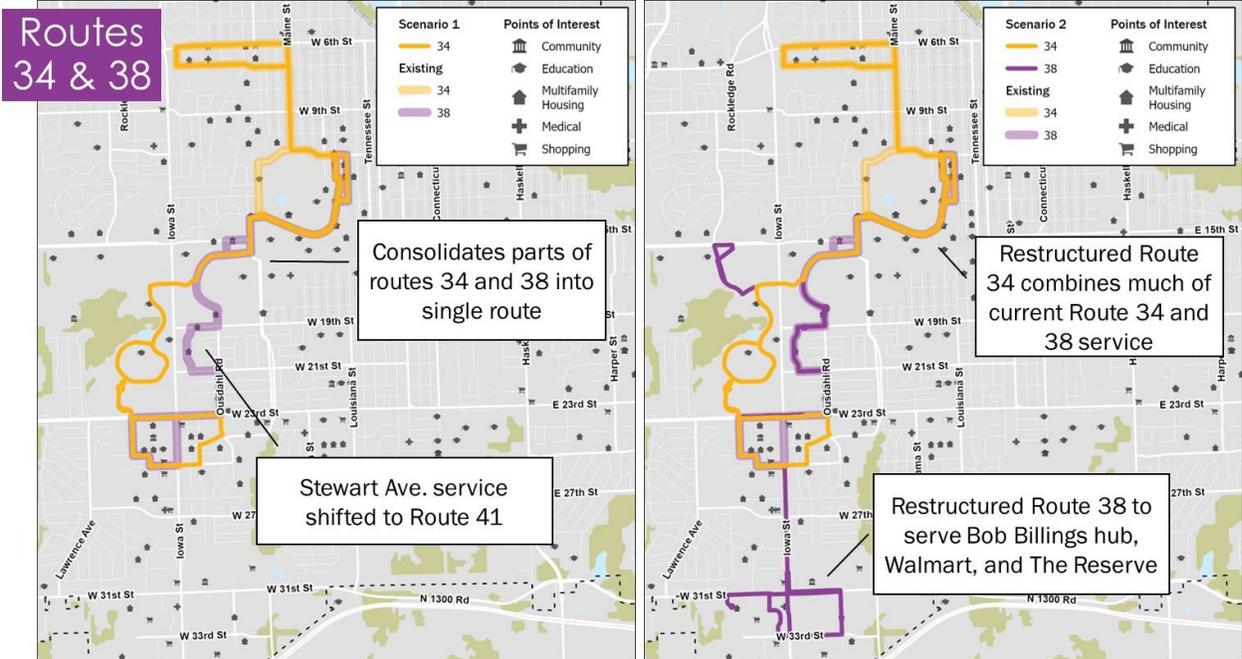


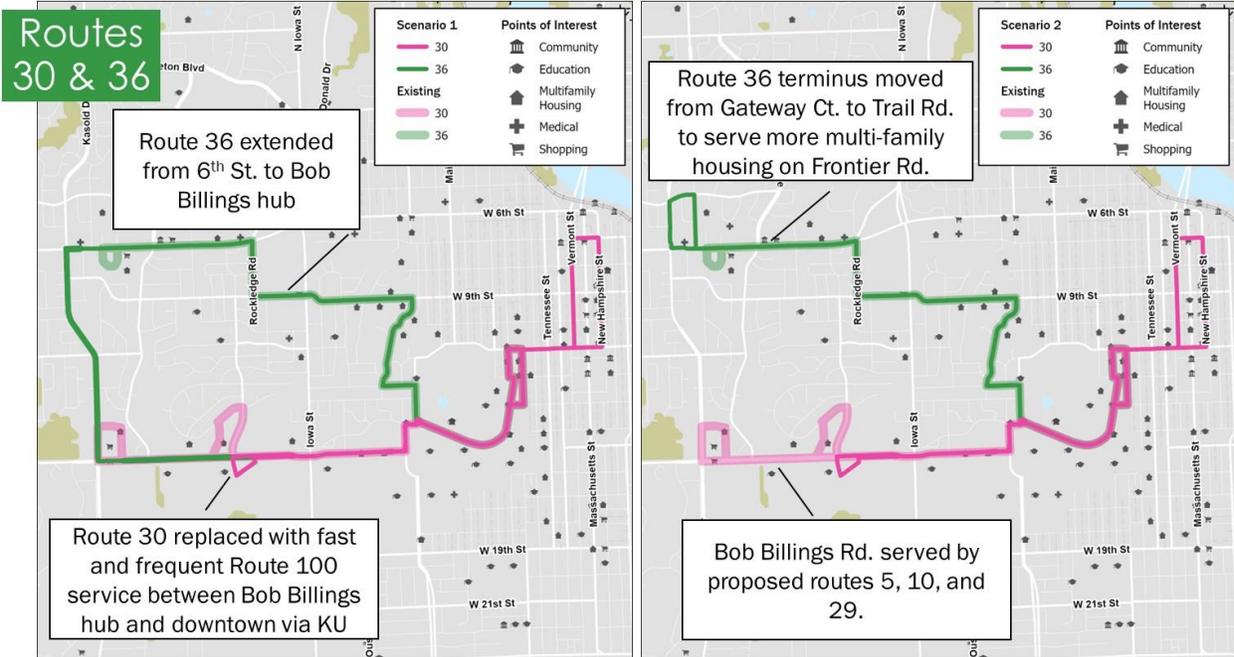




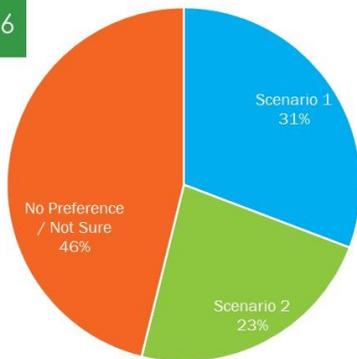








Route 36



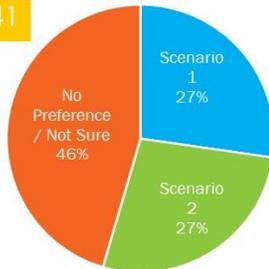
- Extension of Route 36 west to Kasold/Trail is a nice improvement.
- I park near Kasold & 14th, and then ride Route 30 to campus. With Route 30 gone, I would need to walk to stops near Bob Billings and Kasold to catch the bus.
- I go downtown to campus. Route 100 would be great if every 15 minutes.



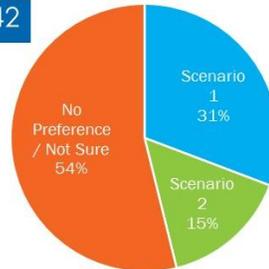
Routes 41 & 42



Route 41



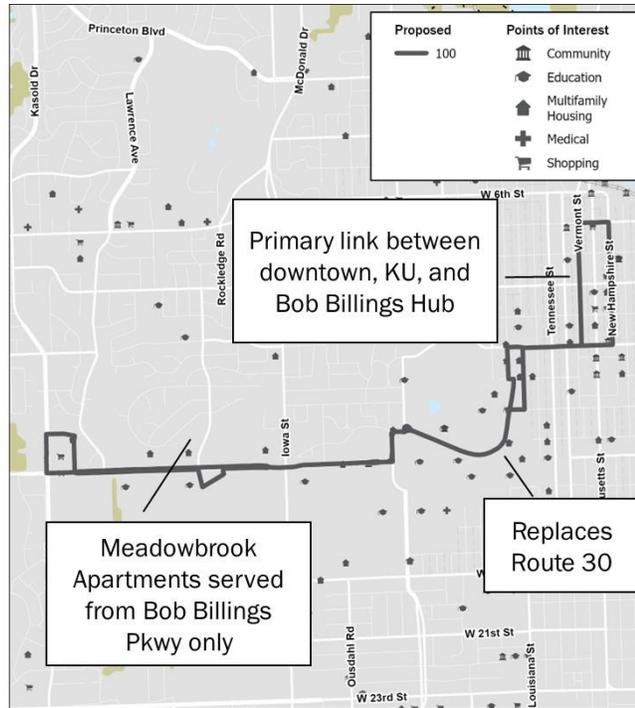
Route 42



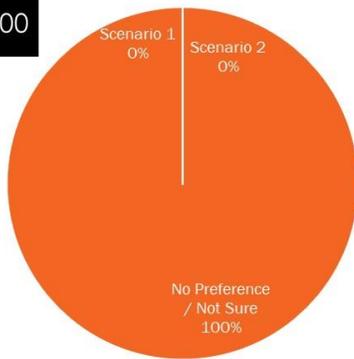
- The current Route 38 serves the Integrated Science Building, Wescoe, and the Union. The proposed Route 41 excludes ISB on the northbound trip and I would like to see this changed.
- Important to serve Stewart Ave, not just 19th St.



Route 100



Route 100



- *Route 100 to replace 10/11 would be great if service is every 15 min or more frequent.*
- *Route 100 could work if it went on 9th street.*
- *I ride Route 1, 11, 10. Route 100 would provide coverage I need.*
- *I like the 100 concept and the redesigned 27.*



8. FINAL RECOMMENDATIONS

Based on the feedback received online and at public meetings held in October and November of 2021, the study team developed a set of final recommendations for improving transit service in Lawrence. The recommendations incorporate elements from both of the preliminary service scenarios, and also include new concepts that are meant to address public and stakeholder reactions to the two initial scenarios.

At the suggestion of Lawrence Transit staff, several route numbers were updated in the final recommendations to fill gaps in the route numbering sequence and, in some cases, to better reflect the role of the respective routes in the final network. The revised route numbers include the following:

- Route 4, operating from North Lawrence to LMH Health West Campus, via 9th and 6th Street, has been renamed to Route 6.
- Route 6, serving Memorial Hospital, Hallmark, and the North Iowa industrial parks, has been renamed to Route 2.
- Route 100, linking downtown Lawrence with KU and the new Central Station on Bob Billings Parkway, has been renamed to Route 4.
- Route 27, connecting the Peaslee Center with Lawrence High School, KU, HINU, and the new Central Station, has been renamed to Route 8.
- Route 29, operating between neighborhoods near Clinton Parkway and Wakarusa Drive, and the new Central Station, has been renamed to Route 12.

8.1. Summary of Recommendations

Overall, the final recommendations aim to create a more efficient and effective transit network that incorporates the new Central Station at Bob Billings Parkway and Crestline Drive, and allows for maximum flexibility in terms of future schedule adjustments in response to any changes in funding availability. In addition, the recommendations include, for the first time, Sunday service throughout the City of Lawrence in the form of microtransit service.

Figure 48 shows a system map of the final recommended network. This is followed by more detailed illustrations of the recommended schedules and alignments for each individual route or route pair (in the case of interlined routes). Schedules are shown by service day types, as defined by the KU academic calendar.



FIGURE 48: FINAL RECOMMENDED FIXED-ROUTE NETWORK

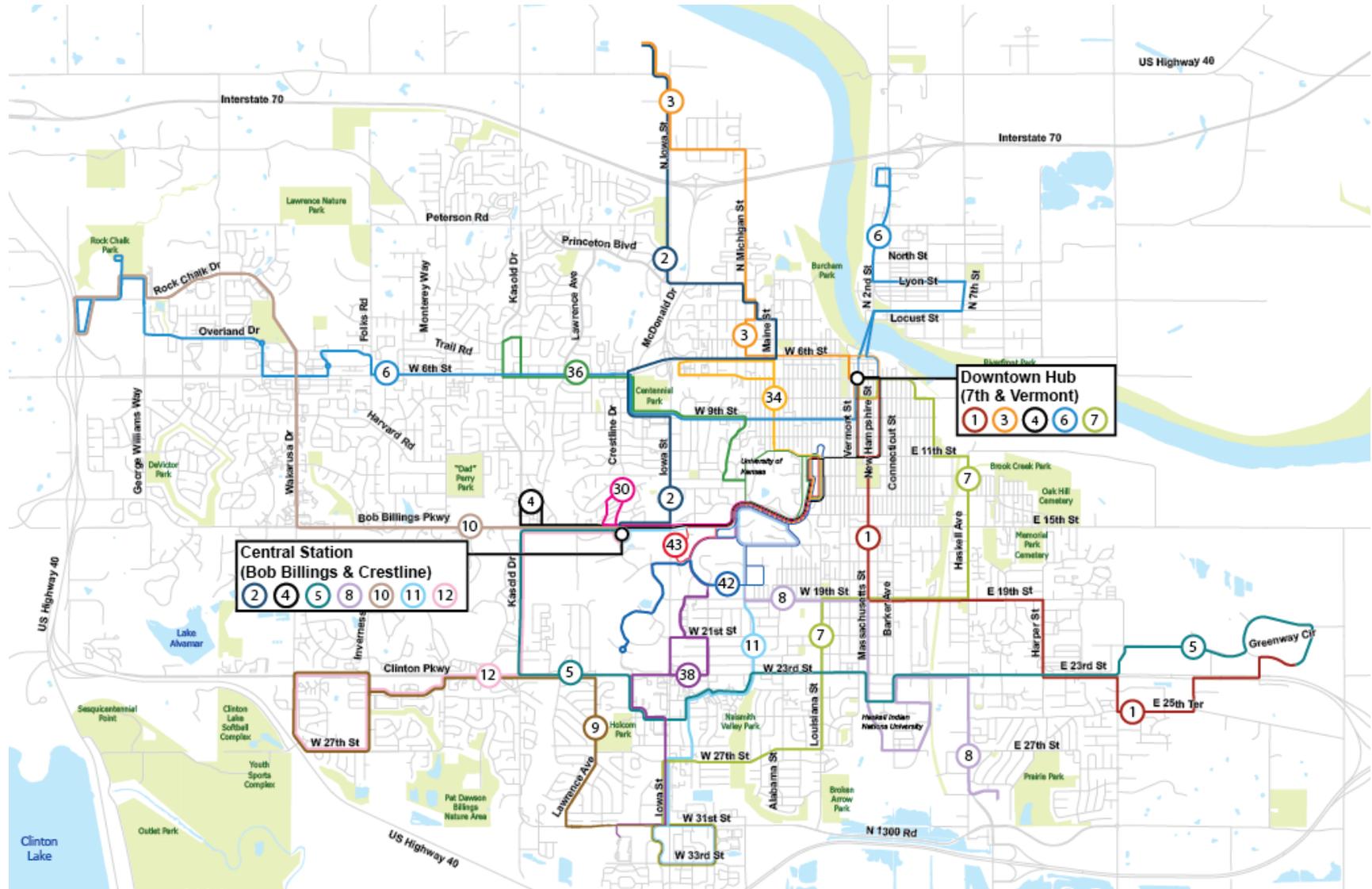


FIGURE 49: FINAL RECOMMENDATIONS FOR INTERLINED ROUTES 1 AND 5

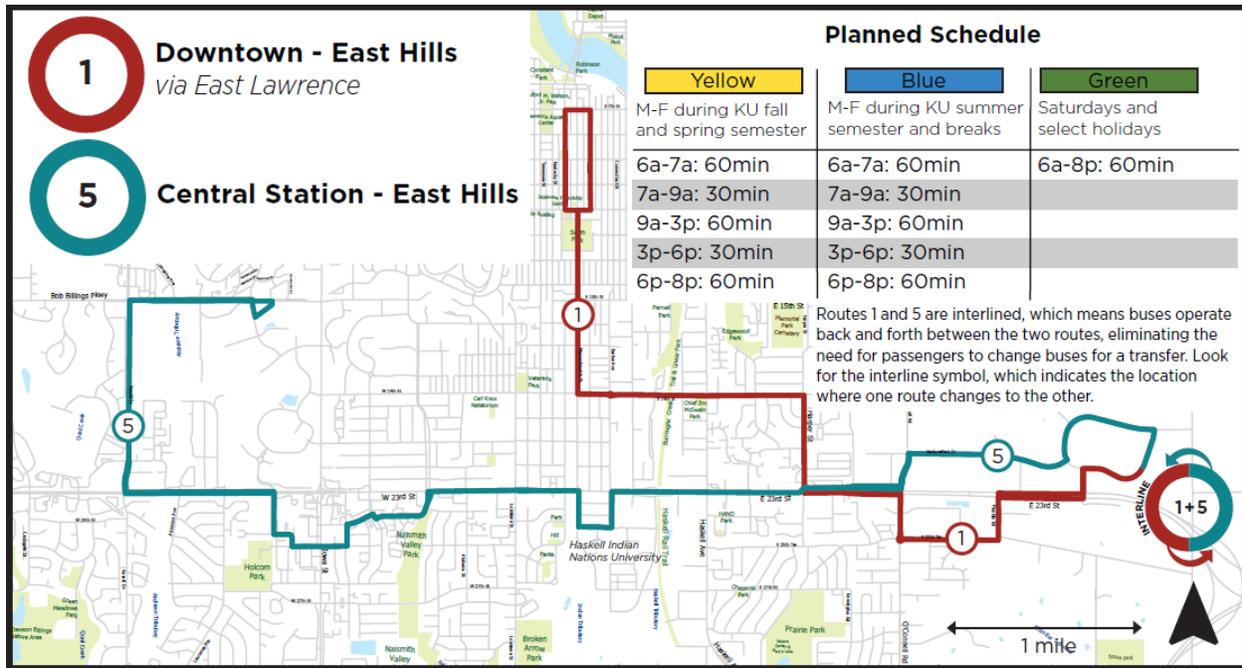


FIGURE 50: FINAL RECOMMENDATIONS FOR INTERLINED ROUTES 2 AND 3

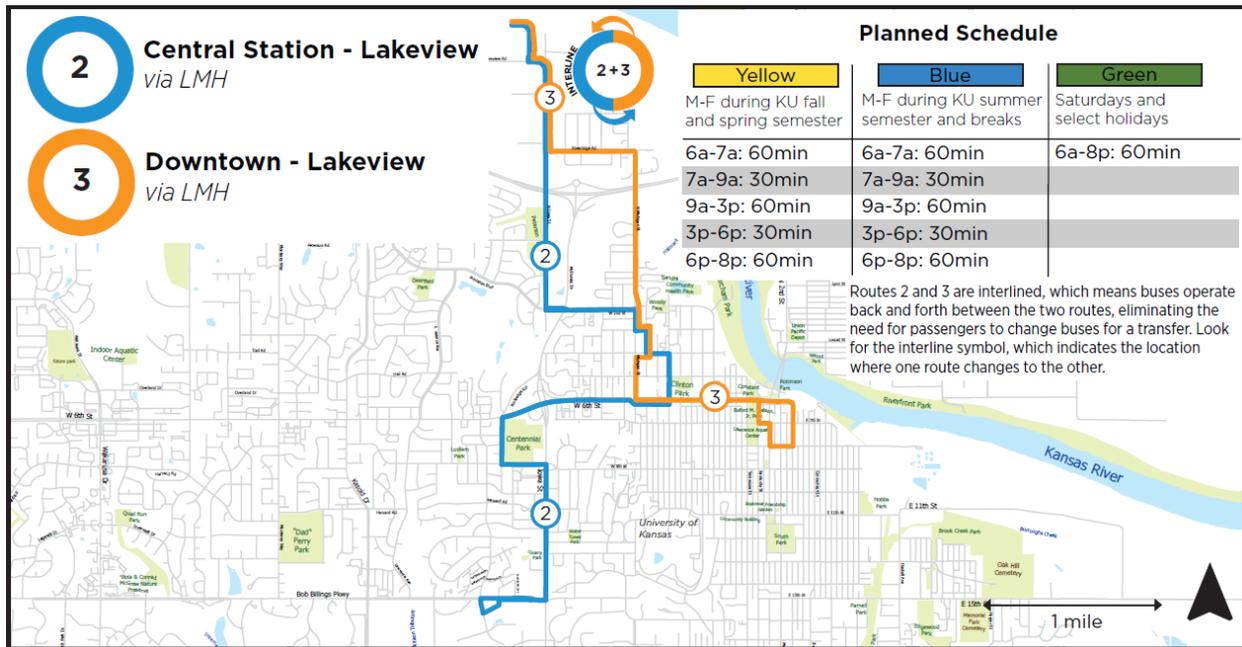


FIGURE 51: FINAL RECOMMENDATIONS FOR ROUTE 4

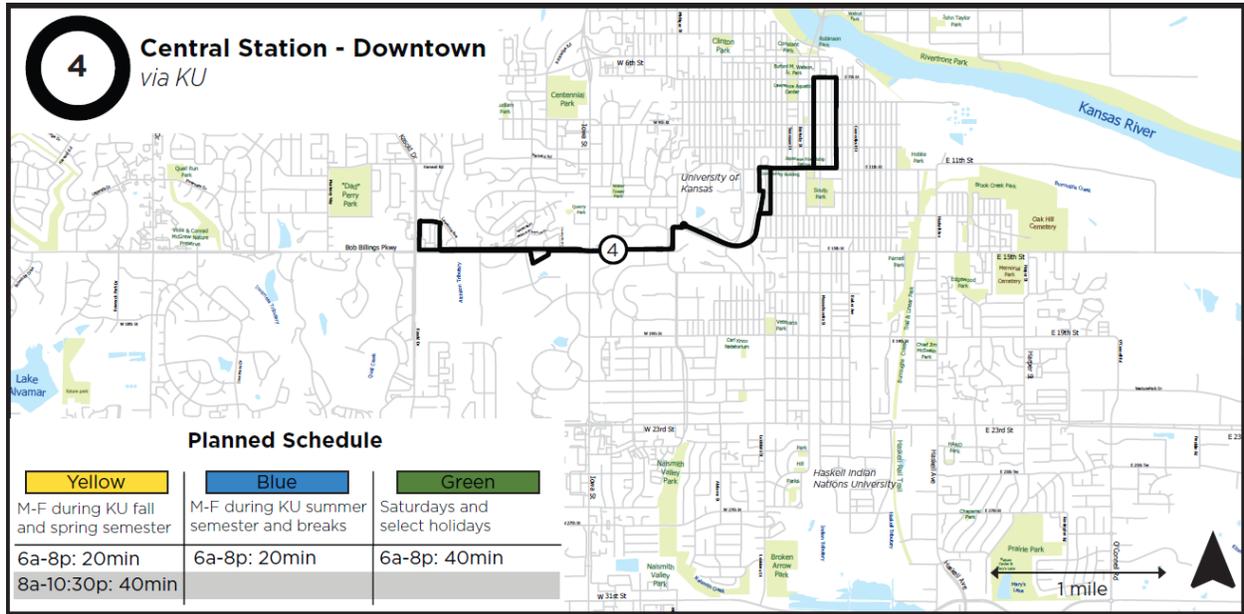


FIGURE 52: FINAL RECOMMENDATIONS FOR ROUTE 6

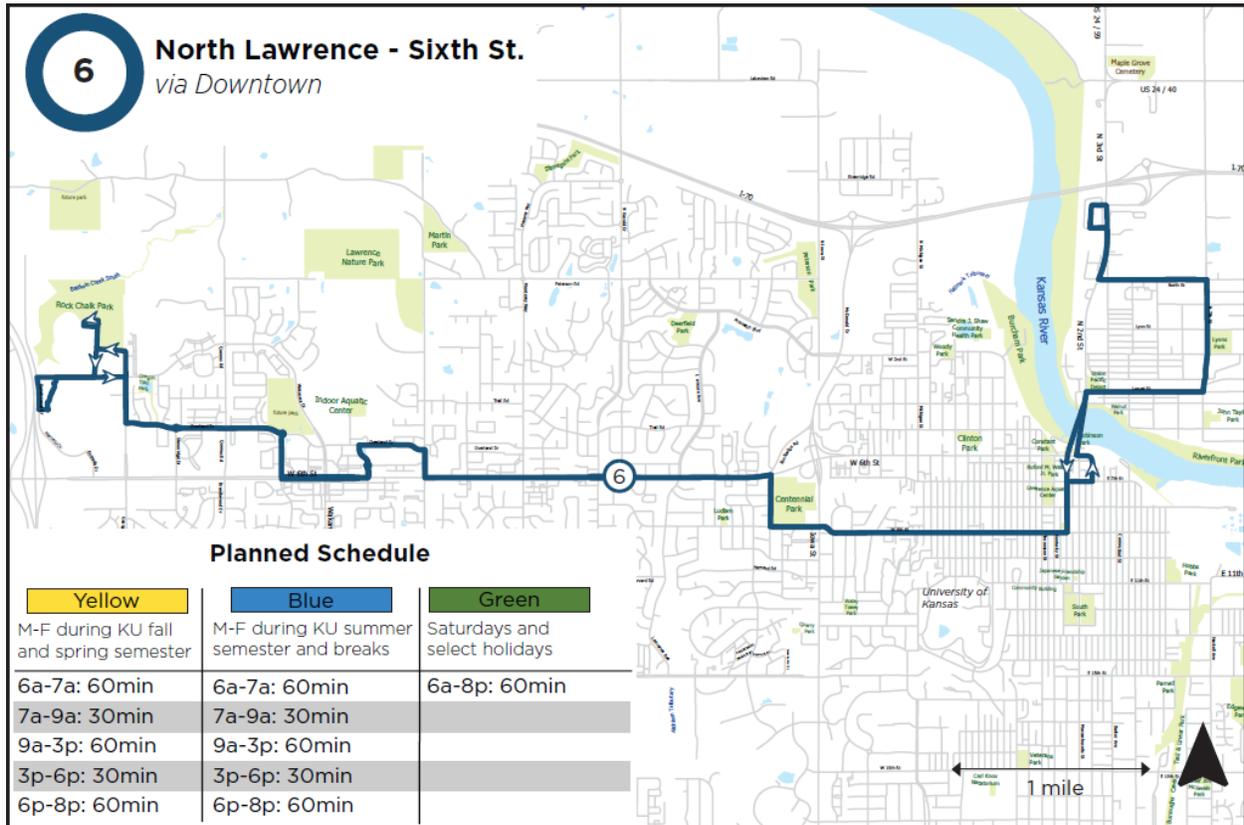


FIGURE 53: FINAL RECOMMENDATIONS FOR INTERLINKED ROUTES 7 AND 9

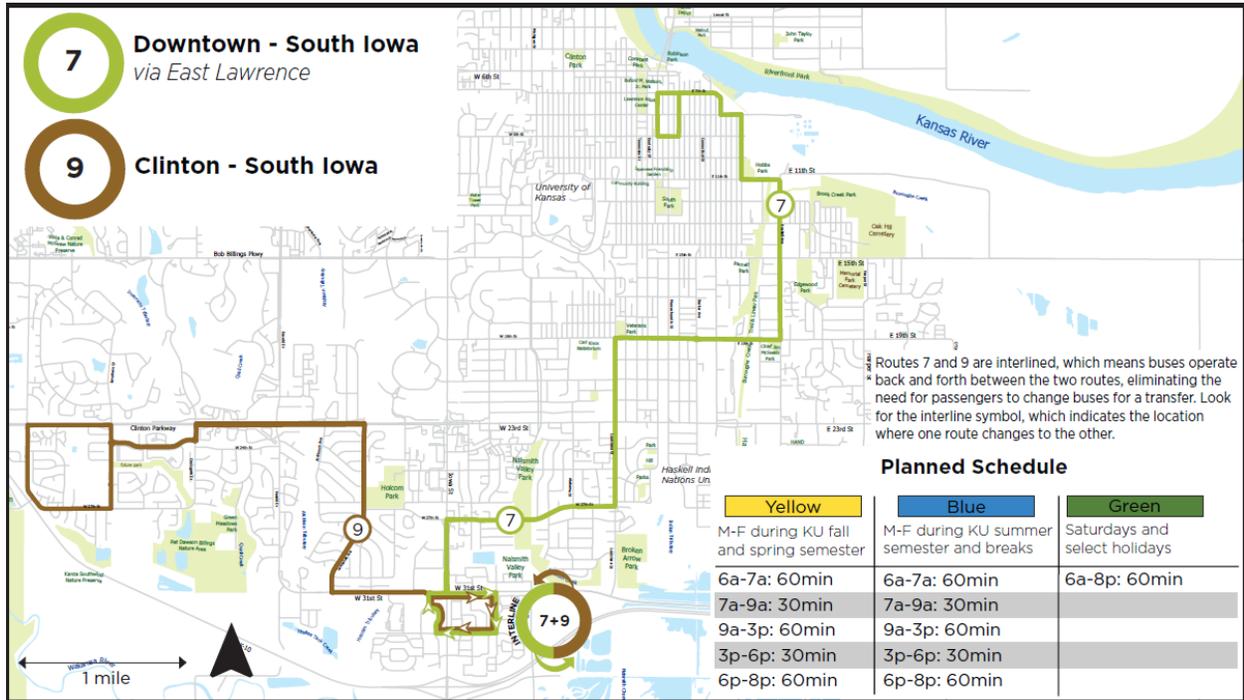


FIGURE 54: FINAL RECOMMENDATIONS FOR INTERLINKED ROUTES 8 AND 10

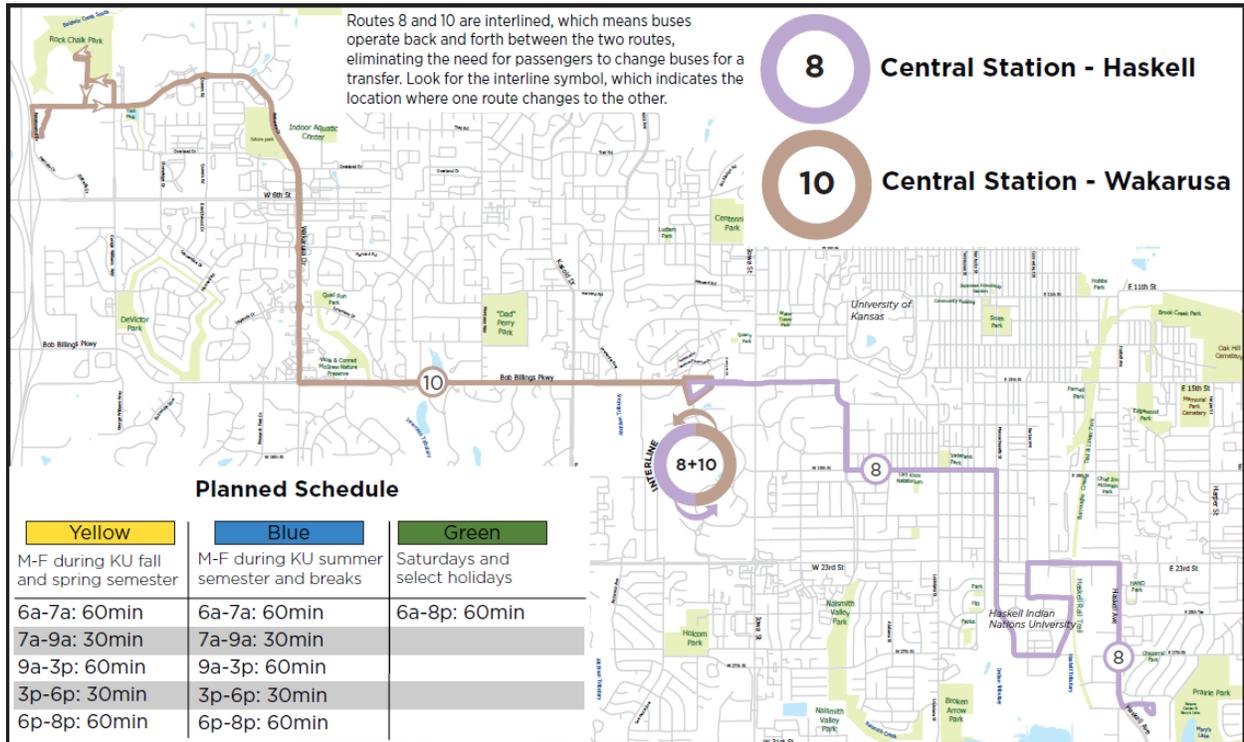


FIGURE 55: FINAL RECOMMENDATIONS FOR INTERLINED ROUTES 11 AND 12

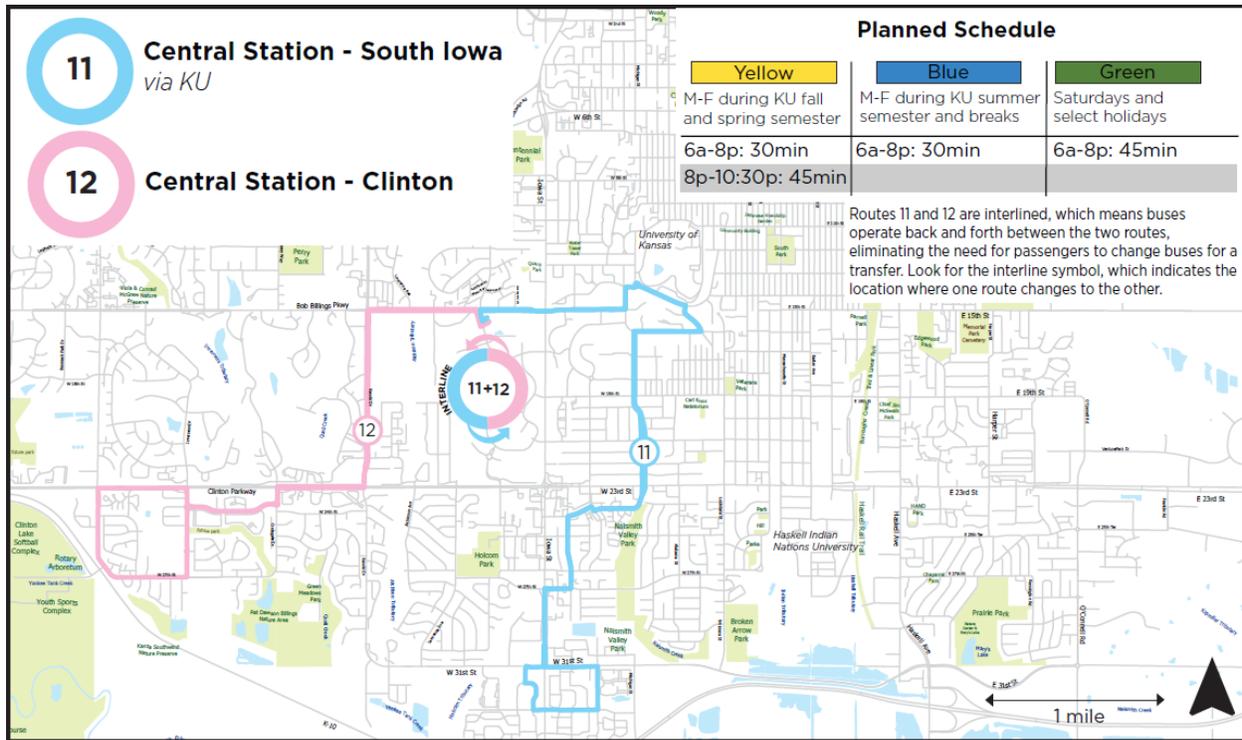


FIGURE 56: FINAL RECOMMENDATIONS FOR INTERLINED ROUTES 30 AND 36

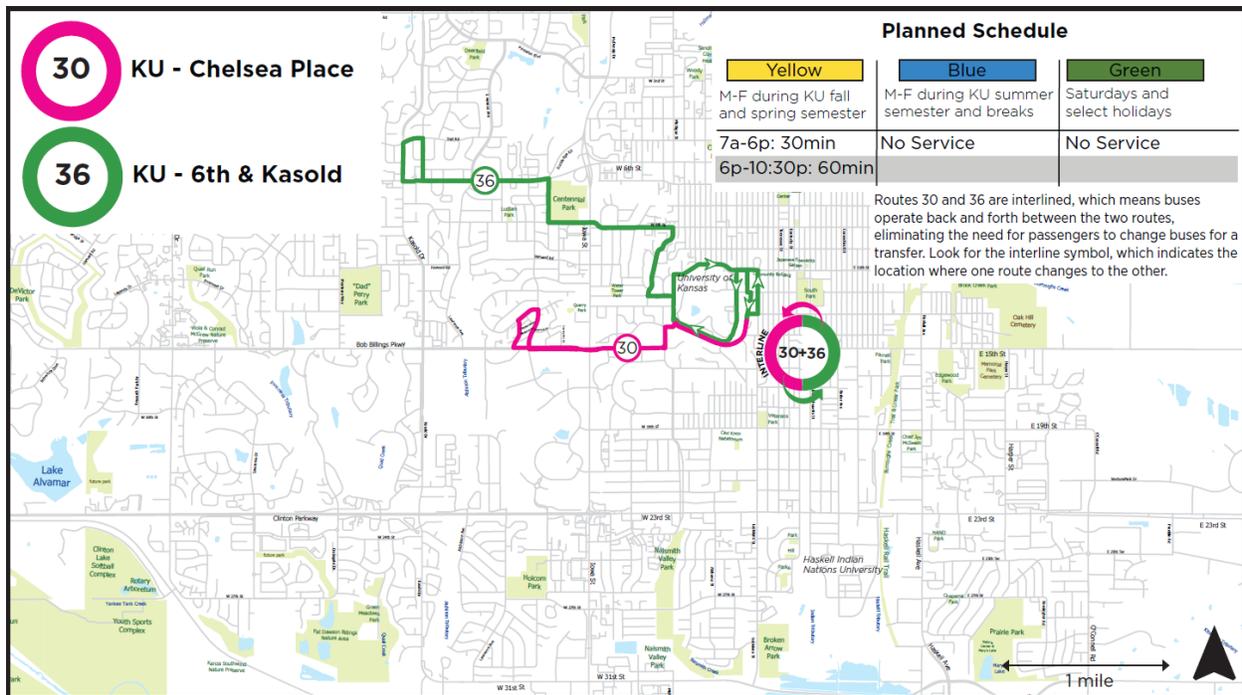


FIGURE 57: FINAL RECOMMENDATIONS FOR INTERLINED ROUTES 34 AND 38

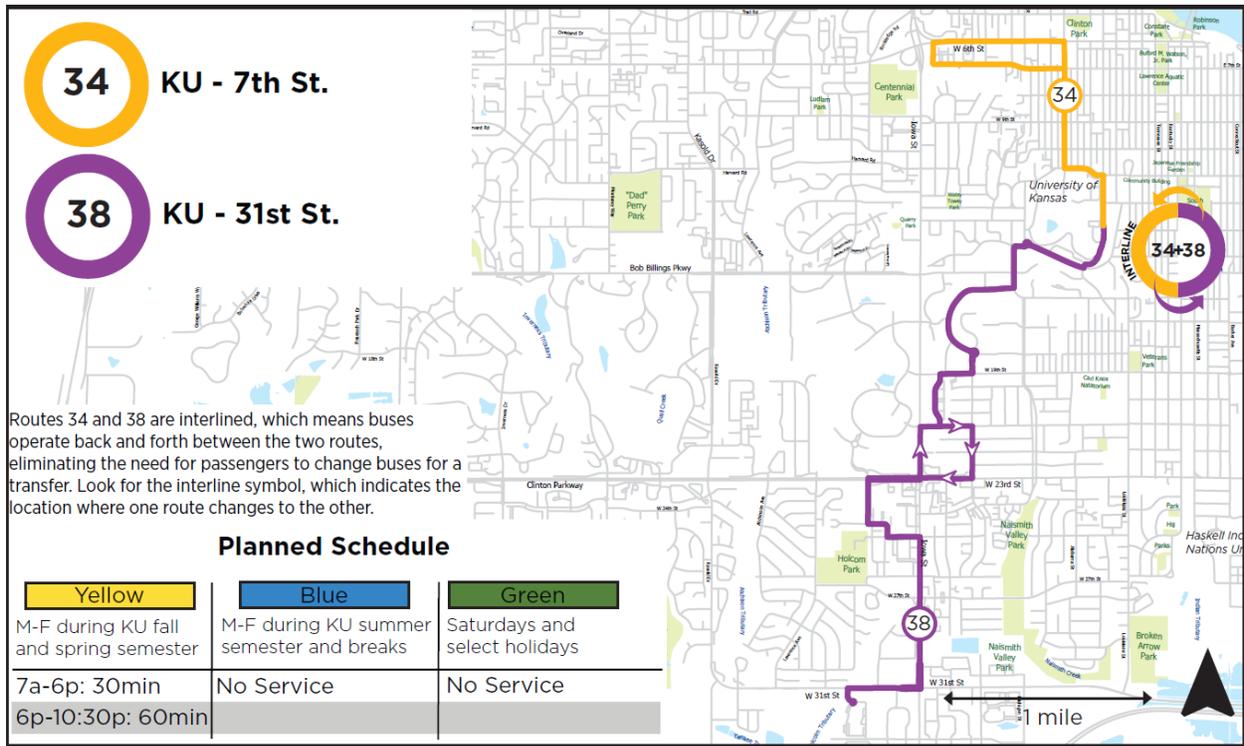


FIGURE 58: FINAL RECOMMENDATIONS FOR ROUTE 42

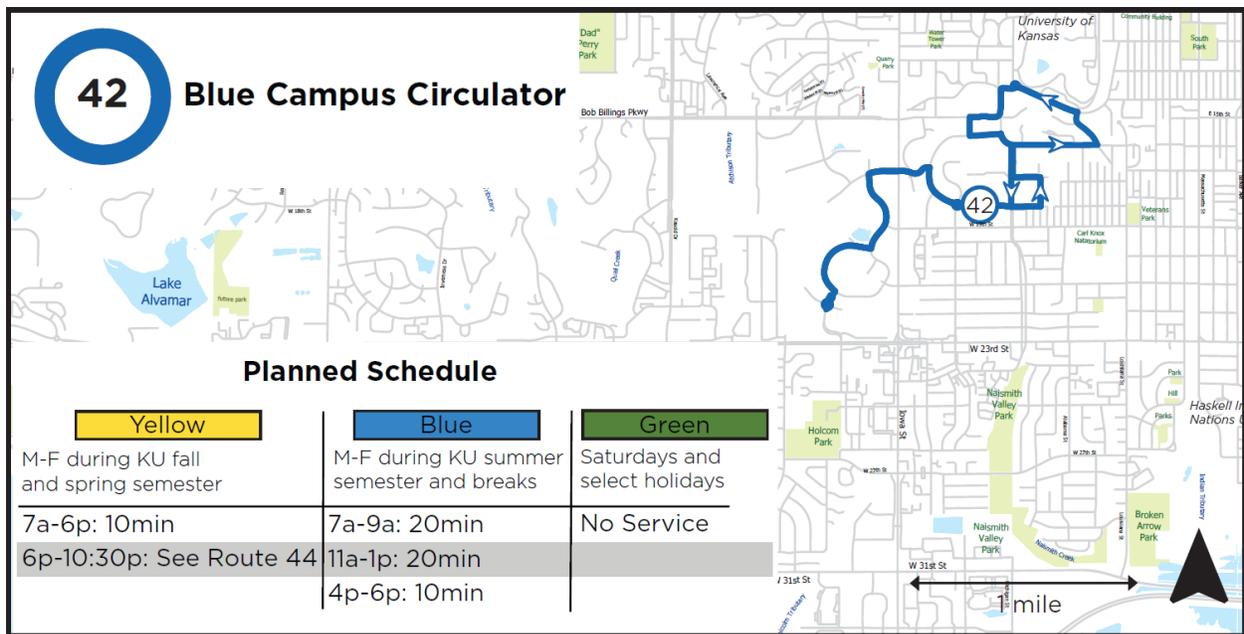


FIGURE 59: FINAL RECOMMENDATIONS FOR ROUTE 43 (UNCHANGED FROM CURRENT)

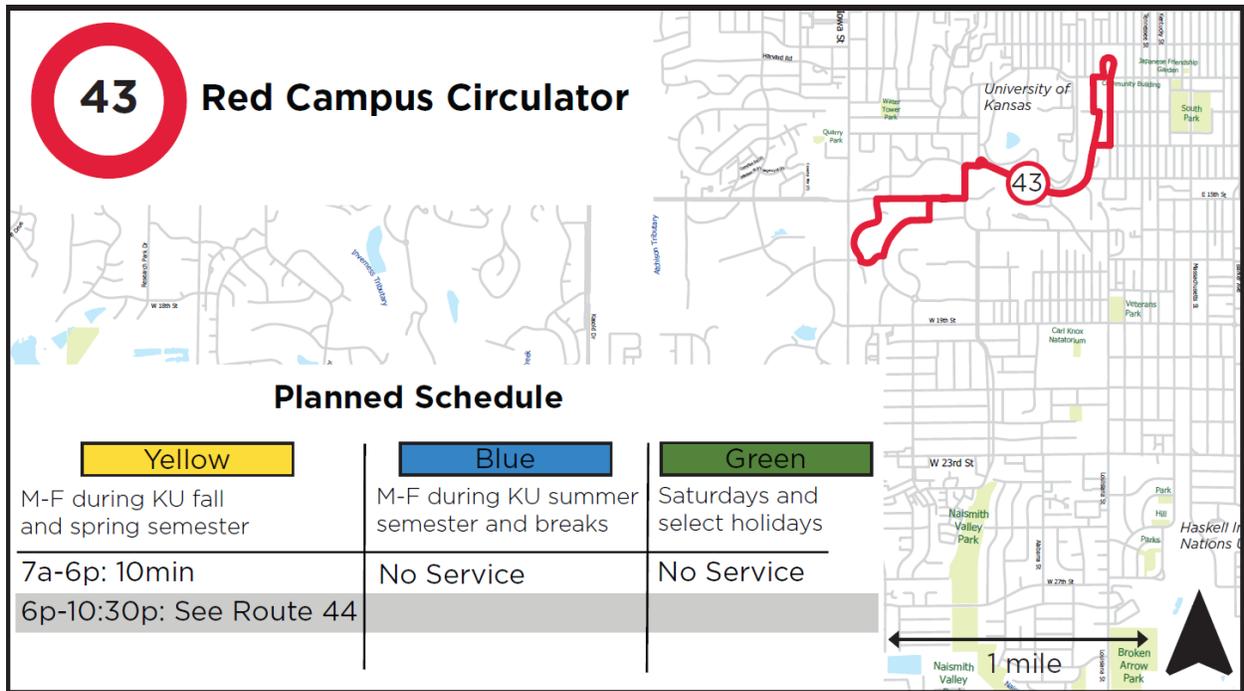
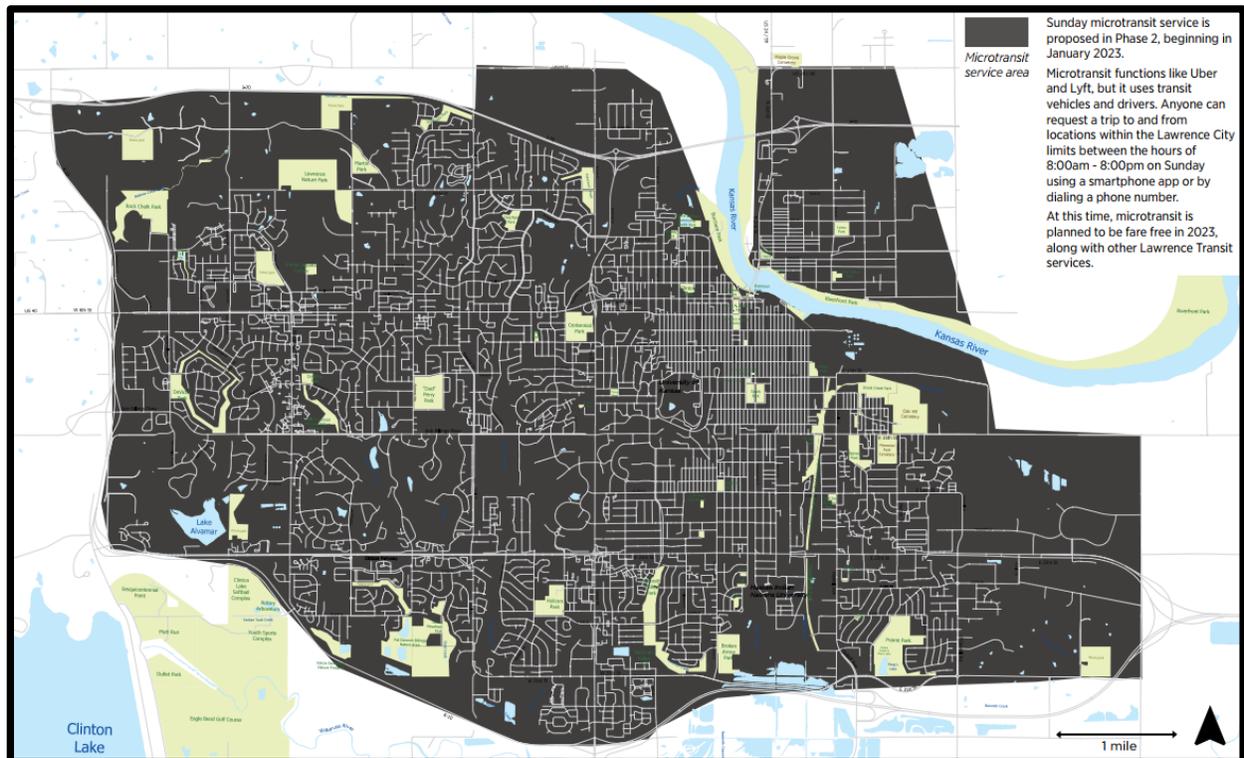


FIGURE 60: FINAL RECOMMENDATIONS FOR SUNDAY MICROTRANSIT SERVICE



8.2. Equity Impact of Recommendations

The recommended transit network is designed to operate within the existing resources available to Lawrence Transit and the University of Kansas. In February 2022, KU Transportation Services staff requested a transit operations fee increase of \$13.50 per student, per semester. Instead, the KU Student Senate made the decision to reduce the transit fee \$4.00 from \$56.25 per student per semester to \$52.25 per student per semester. As a result of this reduction in transit funding, the target number of annual revenue hours for KU on Wheels service was reduced from 64,000 to 45,000.

The recommended transit network reduces the total number of round-trips available to passengers on a typical weekday (when KU class are in session) from 700 to 528. This is due to a reduction in frequency on KU-funded routes, and a redistribution of service hours on Lawrence Transit. Historically, Lawrence Transit routes have operated with a consistent frequency throughout the service day. The recommended network features peak and off-peak frequencies for most routes in order to reduce off-peak operating costs and better align service supply with demand. The savings achieved through this change allow Lawrence Transit to invest in new and innovative services such as Sunday microtransit service and frequent service connecting the system's two transit hubs (Vermont Street and Bob Billings Parkway).

FIGURE 61: CHANGE IN WEEKDAY SERVICE AVAILABILITY BY BLOCK GROUP

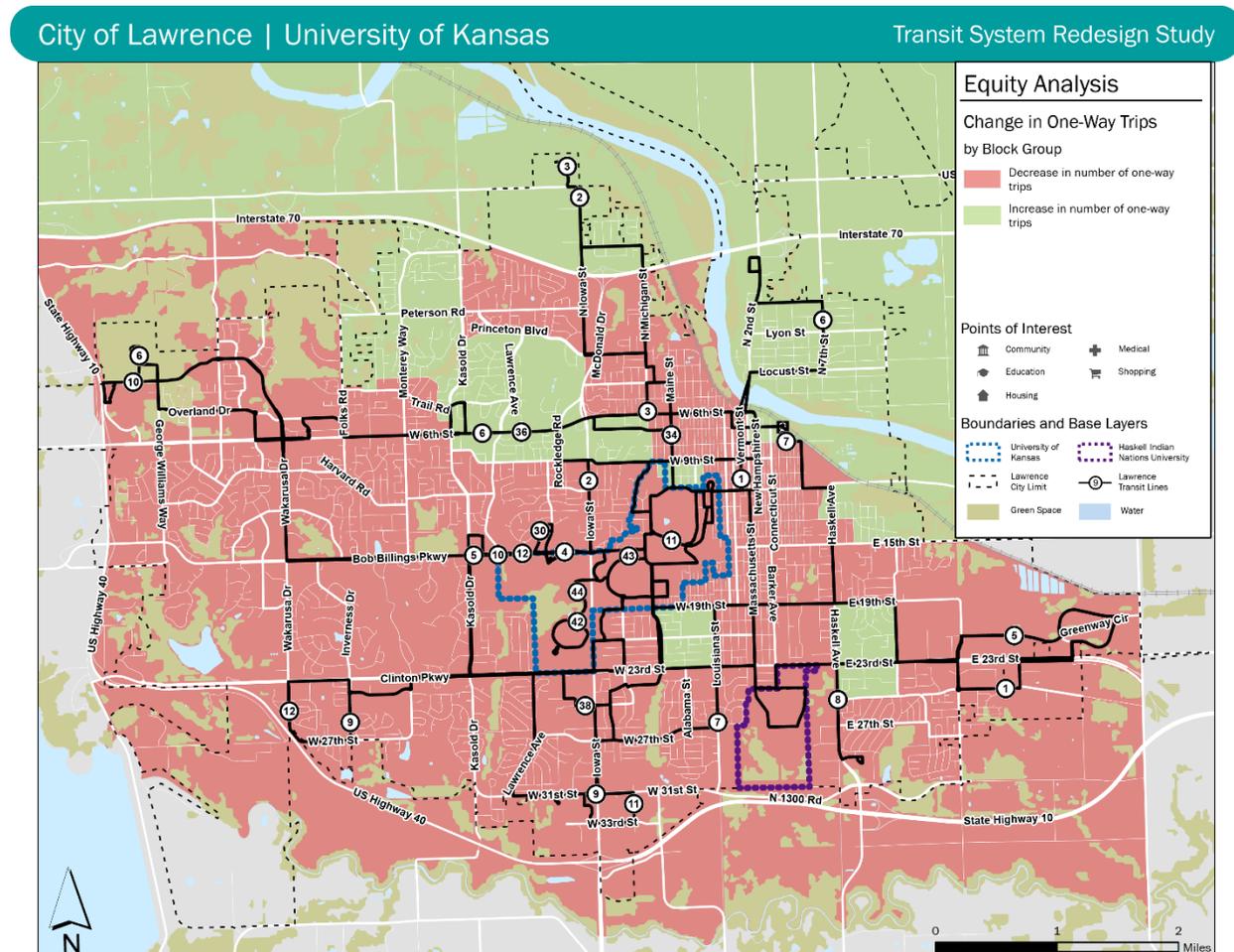


Figure 61 shows that the reduction in weekday service availability, as measured by total scheduled one-way trips available to residents of a particular Census Block Group, occurs throughout the service area. Two notable exceptions are North Lawrence and the West 6th Street corridor. North Lawrence is currently served hourly by Route 4, while the recommended network includes 30-minute peak and hourly off-peak



service by Route 6 in North Lawrence. The primary driver of the increased service availability along the West 6th Street corridor is the extension of Route 36 to Trail Drive, north of 6th Street.

From an equity standpoint, it is important to consider whether service reductions disproportionately impact transportation disadvantaged populations, which the City of Lawrence defines as follows:

- **Low-moderate income households** – People who have low-moderate income may not have the resources to own/maintain a personal vehicle, which on average costs \$6,060 – \$8,743 per year, and need to rely on public transit or others to provide rides. (AAA, 2019)
- **Minorities** – There is a link between ethnicity and pedestrian deaths. Minority populations are less likely to own a vehicle and more likely to walk, bicycle and/or use public transportation, resulting in greater exposure to the dangers of the street. (Surface Transportation Policy Project, 2002)
- **Households with an individual with a mobility disability** – There is a legacy of infrastructure and systems that do not accommodate people with impaired mobility, thus causing people to have to expend more energy, time, and money to access services. (Natural Resources Services – A Division of Redwood Community Action Agency, 2006)
- **People who have less than a high school education** – Having less than a high school education is linked to a variety of negative health impacts, including limited employment prospects, low wages, and poverty. (Office of Disease Prevention and Health Promotion, 2020).
- **Single parent households** – Single parent households typically earn significantly less than two parent households and children in single parent households are more likely to live in poverty. Further, 33% of single parent families in 2013 were “food insecure”. (The rise of single parent households, 2019).
- **Households without vehicles** – When people do not have a personal vehicle they must walk, bike, use public transportation, or obtain a ride from others. This puts people in potential conflict with auto drivers unless the proper infrastructure is provided.
- **Youth (under 18) and Senior citizens (65+)** – One of the most significant non-driving populations are those who are too young to be licensed to drive. Even being old enough to obtain a driver’s license does not guarantee access to a vehicle, especially for youth from low-income families. Low-income children face an increased exposure to many risk factors since affordable housing is often located along high-speed, high-volume streets, in neighborhoods that lack parks, playgrounds and access to other safe places to play. The number of people over 65 is continually growing. Alternatives to driving are necessary for seniors as they lose the ability to drive due to either sight or mobility losses. (Natural Resources Services – A Division of Redwood Community Action Agency, 2006)

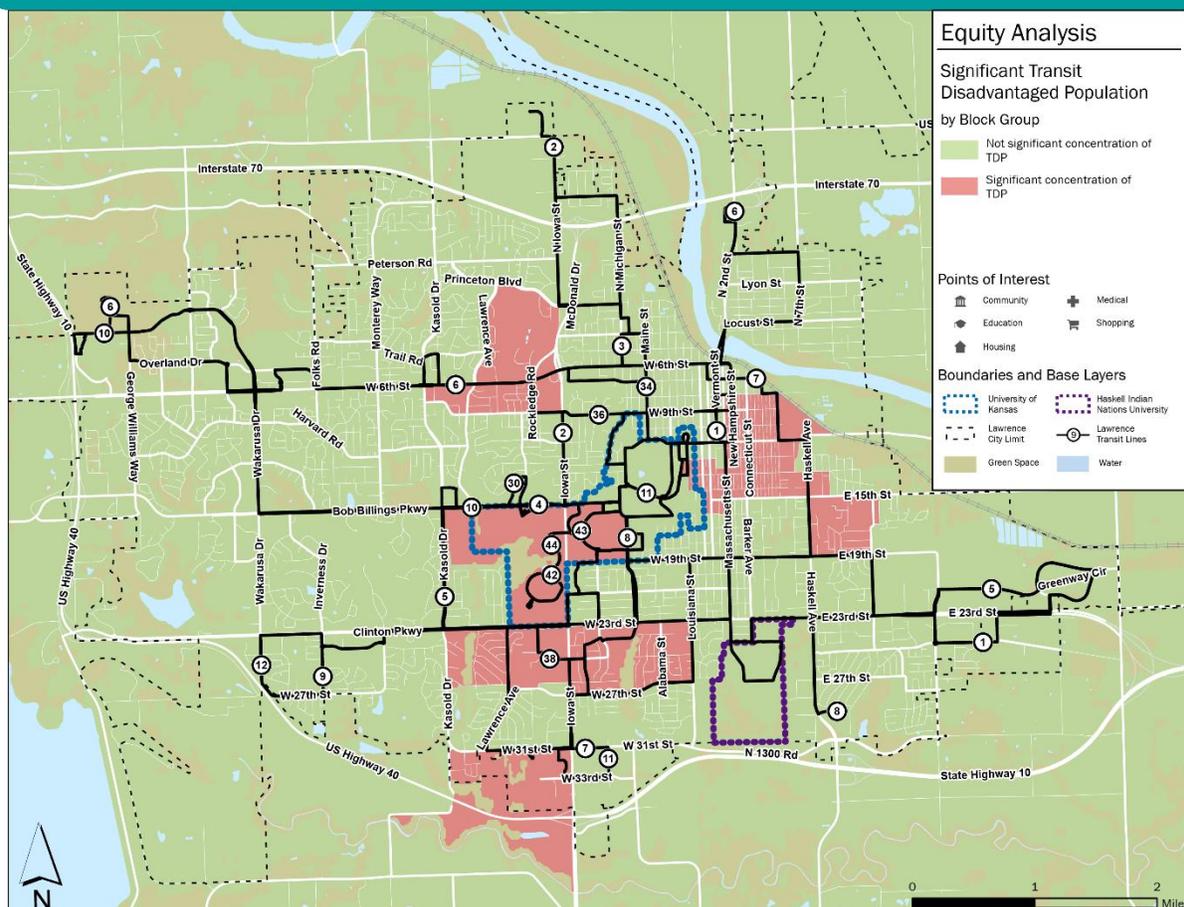
Figure 62 shows the Census Block Groups that have high concentrations of transportation disadvantaged populations. This designation was determined by calculating a cumulative score for each Block Group, where one point was assigned if the Block Group was equal to or 20 percent higher than the Lawrence average for a particular indicator of transportation disadvantage; two points were attributed if the block group was 20 percent to 40 percent of the Lawrence average; and three points were assigned if the block group was greater than 40 percent higher than the Lawrence average for the indicator. Block Groups with a cumulative score greater than six were designated as transit disadvantaged. Many of the transportation disadvantaged Block Groups are located near the KU campus or include off-campus housing that is popular with university students.



FIGURE 62: SIGNIFICANT CONCENTRATIONS OF TRANSIT DISADVANTAGED POPULATIONS

City of Lawrence | University of Kansas

Transit System Redesign Study



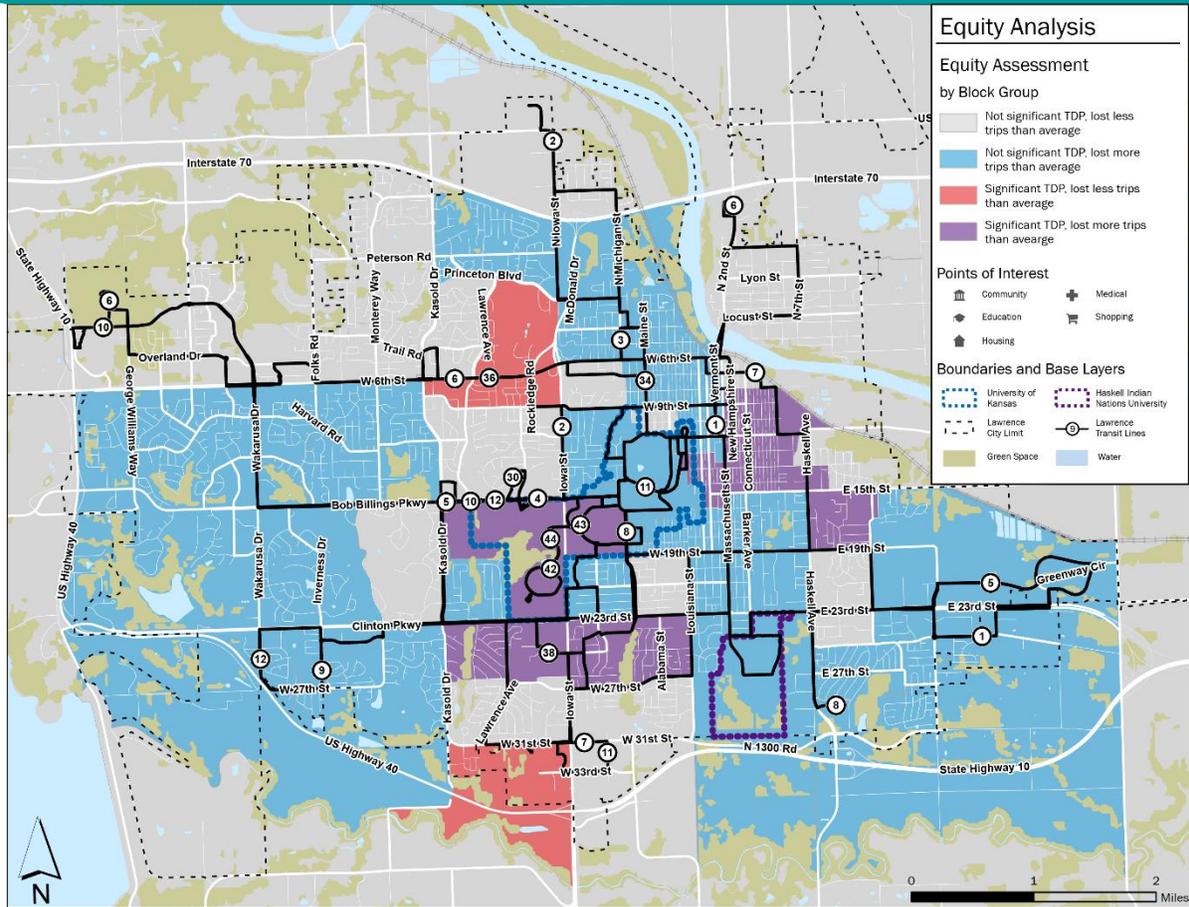
The Census Block Groups shaded in purple in **Figure 63** are those Block Groups that are both transportation disadvantaged (based on their demographics) and will see a reduction in service greater than the average service reduction (measured in one-way trips per day) for the service area. These Block Groups are of greatest concern from an equity standpoint.

The most significant equity impact of the service recommendations, that is not associated with the reduction of KU service frequencies due to funding reductions, is found in neighborhoods just south of downtown Lawrence. This is due to the elimination of Route 15 from the Connecticut Street corridor (due to low ridership) and the adjustment of service along the Haskell Avenue corridor from 30-minutes all day on the current Route 7 to 30/60 peak/off-peak service on the recommended Route 1.

While transit disadvantaged populations in these corridors will have fewer weekday trips available to them with the recommended network, they will benefit from other service improvements in exchange. For example, residents of apartment communities along Haskell Avenue will have direct one-seat access to grocery stores, which they can currently only reach via a transfer. In addition, residents of these neighborhoods will also have access to transit service on Sundays, in the form of microtransit service, which they currently do not have.

FIGURE 63: EQUITY ASSESSMENT OF SERVICE RECOMMENDATIONS

City of Lawrence | University of Kansas Transit System Redesign Study



9. IMPLICATIONS OF ZERO-FARE TRANSIT

The equity of transit service can also be measured by its cost-impact on various populations. For lower-income populations, transit fares may account for a larger percentage of monthly expenses than for higher-income transit riders. To address this disproportionate impact, zero-fare transit service has been considered by many transit agencies in recent years, especially since the start of the COVID-19 pandemic. The shift to zero-fare service was an early response to the pandemic for some agencies, and a subset of agencies are now considering the possibility of extending zero-fare service. While zero-fare transit is still fairly uncommon in the United States, a handful of agencies have now implemented zero-fare service and many others have explored similar policies as well. Lawrence Transit has evaluated the feasibility and financial implications of implementing zero-fare service and will implement a zero-fare pilot program in 2023⁴.

9.1. Considerations

There are several important factors to consider in weighing the benefits and potential drawbacks of zero-fare service.

- **Equity** – Many transit riders are low-income. A 2017 study from the American Public Transportation Association (APTA) found that 30 percent of bus riders reported annual household incomes of less than \$15,000, and 16 percent earned between \$15,000 and \$24,999.⁵ Zero-fare bus service reduces travel costs for low-income households, leaving them in a better position to purchase other essentials (e.g., shelter, food, health care) as well as providing a stimulus effect to the local economy. Compared to fare discount or subsidy programs, zero-fare is an easier way to make transit affordable to larger numbers of people, including those who may not qualify for public benefits such as the federal Supplemental Nutrition Assistance Program (SNAP), but still struggle to cover basic living expenses like transportation.⁶
- **Ridership growth** – Ridership at many transit agencies is still well below pre-pandemic levels even though the latest APTA Quarterly Ridership indicates that all modes of public transportation have experienced year over year growth since 2020.⁷ Zero-fare service is one way that agencies can more productively utilize service they are already providing as well as help their riders afford to meet all their travel needs.
- **Costs** – Going zero-fare impacts agency revenues in a few ways:
 - Operating with zero fares results in foregone fare revenues. Absent another funding source to cover these revenue declines, this can result in an agency offering less service than might be offered if fare revenues were generated.
 - Relative dependence on fares for revenue – Some agencies may rely more significantly on fares as a major source of revenue. A transition to zero-fare service is generally easier for agencies for whom farebox revenues constitute a smaller part of their budget. This is because economies of scale mean the cost of collecting fares can be high for these agencies relative to the farebox revenues collected.

⁴ Lawrence Transit Fare Free Pilot Program project page: <https://lawrencetransit.org/projects/fare-free/>

⁵ APTA. "Who Rides Public Transportation?" January 2017. <https://www.apta.com/wp-content/uploads/Resources/resources/reportsandpublications/Documents/APTA-Who-Rides-Public-Transportation-2017.pdf>.

⁶ SNAP eligibility is commonly used as a prerequisite for fare subsidies in low-income fare discount or waiver programs.

⁷ APTA. "Public Transportation Ridership Report Q1 2022." June 16, 2022. <https://www.apta.com/wp-content/uploads/2022-Q1-Ridership-APTA.pdf>.



- Cost savings from not collecting fares – Collecting fares costs money. Common costs for fare collection include fare enforcement, staff time and labor spent processing cash payments, mobile application fare fees, and the installation and maintenance of fareboxes.
- Longer-term, capital costs – In addition to ongoing operational costs, agencies that charge fares also have additional capital expenditures in the longer-term. Farebox replacement is a significant expense. The cost of replacing fare equipment is sizable (estimated at \$750,000 for Lawrence Transit).

■ **Operational impacts (and potential cost implications):**

- Potential on-time performance improvements – Vehicles spend time idling while riders pay their fares when boarding, especially when they make cash payments. Vehicle idling time and delays due to collecting fares may be eliminated through zero-fare service.
- Ridership increases and crowding – An increase in ridership may result in crowded conditions at existing service levels. Depending on the extent to which ridership increases in response to zero-fare service, agencies may experience crowding on vehicles that necessitates additional service.

■ **Ancillary benefits**

- Fewer operator-rider conflicts related to fare payment – Many agencies have policies that reduce or eliminate the role of the operator in fare enforcement. Removing fares is another method to eliminate potential operator-rider conflicts related to fares, which could be particularly beneficial at a time when the transportation industry as a whole is facing operator shortages.
- Other positive impacts – The current labor shortage means that reducing the amount of staff time required to manage fare collection is even more advantageous, as vehicles and routes can be run more efficiently.
- Health and safety – To the extent that operators' health and safety is compromised by having to interact with customers closely to collect fares, not collecting fares reduces such risks to them.

Estimates of the impact of providing zero-fare service need to examine what percentage of the riders currently pay fares (either full, reduced, or transfers) as well as potential riders that are not currently using the service but may shift some travel to zero-fare modes. In the case of Lawrence Transit, a majority of riders already ride without paying fares, either by using student and faculty passes from the University of Kansas or otherwise qualifying for zero-fare rides. In 2019, over 54 percent of the total Lawrence Transit fixed-route ridership used a University of Kansas student ID and another 4 percent of trips were otherwise zero-fare. Eleven (11) percent of trips were made by riders paying full fares, and 5 percent were at reduced fares. Eight (8) percent of trips were transfers and 18 percent were made by pass-holders. In 2019, the average fare per trip for demand response service was \$1.77 and \$0.27 for fixed-route buses.

Table 8: Total Fare Revenue and Farebox Recovery, Lawrence Transit shows fare revenue, operating costs, and the fare recovery percentage for Lawrence Transit in 2020 and 2021.

TABLE 8: TOTAL FARE REVENUE AND FAREBOX RECOVERY, LAWRENCE TRANSIT

	2020	2021
Fare Revenue		
Demand Response	\$ 80,838	\$ 88,771
Bus	\$ 168,166	\$ 205,237
Non-Added Revenues		\$ 5,950
Operations Fare Revenue Subtotal	\$ 249,004	\$ 299,958
Total Operating Costs	\$ 7,207,740	\$ 8,030,816
Fare Recovery Percentage	3%	4%

Compared to peer agencies and other similarly-sized operators in the U.S., who typically average around 7 percent farebox recovery for demand response and 20 percent for fixed-route bus service, Lawrence Transit's farebox recovery rate is very low.



9.2. Findings from Literature and Recent Programs

As a result of the rise in zero-fare transit service and the data from these case studies, agencies can conduct analyses of feasibility and estimate ridership increases with greater confidence. This section includes a summary of findings from recent zero-fare transit initiatives.

Ridership increase estimates for fixed-route services are available from several reports that were all completed within the last few years. A study for the Regional Transportation Alliance in Raleigh, North Carolina estimated a 20-30 percent ridership increase with zero fares based on local agency and peer agency interviews, a literature review, and a ridership and economic analysis.⁸ A white paper for the Northern Virginia Transportation Commission (NVTC) cites potential increases of 20-85 percent.⁹ A study for Ride On in Montgomery County, Maryland estimated a 14.9 percent increase in ridership under a zero-fare scenario.¹⁰

Zero-fare pilots are already in-progress in several places, covering both fixed-route and paratransit service. A summary report by the Massachusetts Bay Transportation Authority (MBTA) found that after six months of a zero-fare pilot project on MBTA Route 28, ridership increased 38 percent. 15 percent of surveyed riders indicated that they were new to Route 28.¹¹ In addition, paratransit ridership in the pilot zero-fare zone increased 29 percent.

In Albuquerque, New Mexico, ABQ Ride's fixed-route and paratransit services will be zero-fare throughout the 2022 calendar year. In the first of four quarterly reports (covering January-March 2022), ABQ Ride found a ridership increase of 17 percent across all fixed-routes.¹² Reservations on Sun Van, Albuquerque's paratransit provider, increased 40 percent over the same period. Neither agency indicated that zero-fare service necessitated the increased service.

There are limited studies that examine the impact of zero-fare paratransit service. One such study from 2012 estimated an increase of 121 to 171 percent for zero-fare, complementary Americans with Disabilities (ADA) service in the Chicago, Illinois area.¹³ Another report from the Transit Cooperative Research Program (TCRP) referenced a study that estimated a 48 percent ridership increase for zero-fare paratransit service for the San Francisco Municipal Transportation Agency's (SFTMA) Muni.¹⁴

9.3. Zero-Fare Case Studies

It is reasonable to assume that switching to zero-fare service among fixed-route and paratransit modes will increase ridership. This section includes two case studies of agencies that have transitioned to zero-fare service and its impact.

9.3.1. DASH

DASH in Alexandria, VA combined zero-fare service with the rollout of a system redesign. Prior to switching to zero-fare service, DASH conducted a fare study to understand fare options for making bus

⁸ RTA. "Zero Fare for Everyone Pilot Study." August 4, 2020. https://letsgetmoving.org/wp-content/uploads/2020/08/FINAL-Zero-Fare-ppt-RTA-Bkfast-Au-4_20.pdf.

⁹ NVTC. "Zero-Fare and Reduced-Fare Options for Northern Virginia Transit Providers." September 2, 2021. <https://novatransit.org/uploads/studiesarchive/Zero-Fare%20and%20Reduced-Fare%20White%20Paper%20Final%202021-08-30.pdf>.

¹⁰ IBI Group. "Ride On Zero & Reduced Fare Study." September 21, 2021.

<https://www.montgomerycountymd.gov/DOT-Transit/Resources/Files/Ride%20On%20Zero%20and%20Reduced%20Fare%20Study%20Report%20Final.pdf>.

¹¹ City of Boston. "Route 28 Fare-Free Pilot Evaluation." March 2022.

https://www.boston.gov/sites/default/files/file/2022/03/Route28_Report_FINAL.pdf.

¹² ABQRide. "The Zero Fares Pilot Program Quarterly Report, January-March 2022."

<https://www.cabq.gov/transit/documents/zero-fares-1st-quarterly-report-final.pdf>.

¹³ Metaxatos, Paul and Lise Dirks. "Cost Estimation of Fare-Free ADA Complementary Paratransit Service in Illinois." Journal of Public Transportation, Volume 15, Number 4, 2012.

<https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.885.1179&rep=rep1&type=pdf>.

¹⁴ TCRP Synthesis 101. "Implementation and Outcomes of Fare-Free Transit Systems." 2012. <https://cvtdbus.org/wp-content/uploads/2018/09/2012-07-TCRP-fare-free-report.pdf>.



fares more affordable for low-income riders. This study analyzed the impact of zero-fare service for all riders; zero fares for low-income riders; and reduced fares for low-income riders.¹⁵ The agency ultimately decided to provide zero-fare service for all riders. In the case of DASH, the analysis indicated that zero-fares for all would have the largest impact in terms of the number of riders that would benefit and would also be the most cost-effective (since other options required staff hours to verify eligibility for a means-tested program.)

Since zero-fare service and the redesigned routes were implemented in September 2021, DASH ridership has increased to near pre-pandemic levels. October 2021 ridership was 72 percent of pre-pandemic ridership and in one part of the city, exceed pre-pandemic numbers.¹⁶ By April 2022, DASH had reached 95 percent of pre-pandemic ridership, with the highest amount of ridership increases during middays and weekends, thanks to a new schedule that increased off-peak service in some areas.¹⁷

9.3.2. Chapel Hill Transit

Chapel Hill Transit, which serves the Town of Chapel Hill, the Town of Carrboro, and the University of North Carolina Chapel Hill (UNC) has provided zero-fare service since 2002. These three partners had discussions about traffic congestion and roadway expansion and decided to move to zero-fare transit service.¹⁸ At the time that zero-fare service was enacted, UNC students already received zero-fare service through their university. Ridership went from just under 3 million in 2002 to 7 million prior to the pandemic. The shift to zero-fare service required expanding service and adding routes but has helped the towns and university meet sustainability goals and address equity in the community.¹⁹

¹⁵ Foursquare ITP. "City of Alexandria Low-Income Fare Pass Assessment." May 5, 2021. https://www.mwco.org/assets/1/6/MWCOG_TLC_Alexandria_Low_Income_Fare_Pass_Assessment_Final_Report.pdf.

¹⁶ Miles, Vernon. "DASH ridership inching back toward pre-pandemic levels." January 7, 2022. <https://www.alxnow.com/2022/01/07/dash-ridership-inching-back-toward-pre-pandemic-levels/>.

¹⁷ Miles, Vernon. "DASH bus ridership rebounds in Alexandria." April 14, 2022. <https://www.alxnow.com/2022/04/14/dash-bus-ridership-rebounds-in-alexandria/>.

¹⁸ McConnell, Brighton. "Chapel Hill Transit Marks 20th Anniversary of Fare-Free Service." January 10, 2022. <https://chapelboro.com/news/news-transit/chapel-hill-transit-marks-20th-anniversary-of-fare-free-service>.

¹⁹ Ibid.



10. FINANCIAL PLAN

Implementation of the service recommendations in the Route Redesign Study will have significant financial implications, particularly with respect to the agency's operating expenses. This financial plan shows the expected operating expense impacts of two scenarios: a scenario in which the fare policy does not change and a scenario in which zero-fare service (across all modes offered by Lawrence Transit) is implemented. This financial plan does not address capital expenses.

It is important to note this plan is not a budget document; rather, it reflects a financial snapshot in time. The information contained in this chapter will change year-to-year based on dynamic needs and the most current conditions.

10.1. Data Sources

The following sources of data were utilized as the input of the financial plan:

- City of Lawrence, 2021. Sources of Funds - Funds Expended & Funds Earned (National Transit Database (NTD) table F-10), Revision 2.
- City of Lawrence, Jan 11, 2022, First Amendment to Professional Service Agreement between City of Lawrence and First Transit Inc.
- Lawrence Transit, June 5, 2022. Fare Free Pilot Policy January 2023 – December 2023.

The financial plan utilizes the FY 2021 Fund Report (NTD table F-10, 2021) as the baseline for fare and funding revenue figures, referring to FY 2020 to adjust the escalation assumptions. Lawrence Transit's most recent contract with First Transit (First Amendment to Professional Services Agreement, Jan 11, 2022) was used to establish the baseline for direct operating expenses.

10.2. Regular Fare Scenario

The financial plan base year is set as FY 2023, utilizing FY 2020 and FY 2021 revenues and expenses as reference points, and making future year projections, out to FY 2032, based on cost escalation assumptions discussed throughout this chapter.

10.2.1. Operating Revenue Sources

Lawrence Transit's operating revenue comes from federal funds, state funds, local sales tax, fares, and non-added revenue from the sale and disposal of assets. Federal funding is made available to the City of Lawrence each year under the federal programs shown in **Table 9**. These funds are available to be programmed by Lawrence Transit for either capital or operating uses.

TABLE 9: FEDERAL FUNDING SOURCES

Federal Program	2021 Funds Earned
FTA Urbanized Area Formula Program	\$1,452,320
CARES Act Urbanized Area Program Funds	\$1,913,876
FTA Bus and Bus Facilities	\$104,000
Total	\$3,470,196

The State of Kansas provides funding for operations to public transit agencies. Reimbursement rates are estimated, and funds distributed throughout the year, with reconciliations and adjustments made in future periods. Final reimbursement amounts are a function of the annual appropriation process and the level of eligible expenditures of all transit agencies statewide. For FY 2021, the State funding received by Lawrence Transit was \$1,046,185.



Local contributions are received on an annual basis from the City's sales tax. For FY 2021, the funding from local tax revenue was \$3,396,681. The non-added revenues in FY 2021 were from Sales and Disposals of Assets (\$5,950) and were a one-time revenue source that is not assumed to continue in future years. An additional \$500,000 in federal funding from the Bipartisan Infrastructure Law was added in 2022 and assumed to carry forward into subsequent years.

Fare revenue assumptions build on fare revenues by mode from previous years. However, the new microtransit service isn't reflected in prior year data. For the purpose of this document, fare revenue per trip for microtransit service is assumed to match the figure for paratransit service. Ridership estimates for microtransit service are based on passenger-per-revenue hour assumptions, as described below.

Assumptions

- Federal, state, and local funding will increase at an average of two percent per year.
- The financial plan excludes new federal funding from Bipartisan Infrastructure Law in 2023 for operating expenses; it is assumed that this funding, if any, will go toward capital expenses.
- The non-added revenues are not included in future operating budgets.
- 2023 ridership estimates for fixed route and paratransit service are based on assumed ratios relative to the 2019 ridership for each mode, as shown in **Table 10**.

TABLE 10: RIDERSHIP ASSUMPTIONS – 2023 RELATIVE TO 2019 BY MODE (REGULAR FARE SCENARIO)

	Year 2023 Ridership / Year 2019 Ridership
DR – Paratransit	80%
MB – Fixed Route	70%

- The Regular Fare Scenario assumes paratransit ridership will grow more aggressively than fixed-route service, with an average growth rate of four percent per year, compared to one percent per year for fixed-route service.
- Passengers-per-Revenue Hour assumptions for microtransit service area shown in Table 11.

TABLE 11: ASSUMED MICROTRANIT PASSENGERS PER REVENUE HOUR

2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
3	4	5	4	4	5	4	4	5	5

Operating Expenses

The operating expenses in the ten-year Financial Plan can be broken into three main categories – fixed expenses as outlined in the service provider contract, variable expenses as outlined in the service provider contract, and the city's operational expenses.

Fixed operating expenses from the service provider contract are calculated based on the fixed monthly service rate and fixed technology annual cost. The fixed monthly service rate used for 2023 comes from the service provider contract (with First Transit, Inc.). However, within the fixed operating expenses, a portion of the cost is designated for fare collection service. To account for this expense that is only part of the scenario in which fares continue to be collected, the fixed operating expenses are broken down into fare-related cost and other fixed costs. The escalation of the fixed operating expenses is assumed to be 3.1 percent annually.

Variable operating expenses are based on the rate per revenue hour from the service provider contract and the proposed revenue hours. The 2023 rates per revenue hour are based on the service provider contract. Revenue hours are calculated based on the recommendations in the study. To reflect the additional demand-response service vehicles in future years, the revenue hour assumptions are shown as the **Table 12** below.



TABLE 12: REVENUE HOURS ASSUMPTIONS (REGULAR FARE SCENARIO)

Revenue Hour Assumption	2023 (Base Year)	2026 (Future Year 1)	2029 (Future Year 2)
Weekdays and Saturdays Microtransit Vehicle	0	4	8
Sundays Microtransit Vehicle	4	4	5
Annual Total Paratransit Revenue Hours	39,393	44,312	49,845
Annual Total Microtransit Revenue Hours	16,904	32,200	48,132
Annual Total Fixed-Route Revenue Hours	60,700	60,700	60,700
Annual Total Revenue Hours	116,997	137,212	158,677

Lawrence Transit's operating expenses are based on the 2020 Annual Financial Expenditure Reports document, including general expenses needed to maintain the City's operations (employee salaries, health insurance, professional services, leasing expenses, IT services, utilities, etc).

Assumptions

- The assumed annual escalation for contract fixed costs is 3.1 percent.
- The assumed annual escalation for contract variable costs is 4.1 percent.
- The assumed annual escalation for operating expenses related to City staff is 4.1 percent.
- Fixed route revenue hours remain constant over the life of the plan, while paratransit revenue hours increase by four percent per year, and microtransit revenue hours grow as shown on **Table 12**.



The operating budget estimate has been developed as shown in **Table 13** below.

TABLE 13: OPERATING BUDGET ESTIMATE (REGULAR FARE SCENARIO)

Fiscal Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Revenue													
Fare Revenue Subtotal	\$249,004	\$294,008	\$299,611	\$412,029	\$448,585	\$485,346	\$570,657	\$578,009	\$642,444	\$705,931	\$714,000	\$807,308	\$815,901
Federal/State Formula Funds	\$3,782,114	\$4,516,381	\$5,106,709	\$5,208,843	\$5,313,020	\$5,419,280	\$5,527,666	\$5,638,219	\$5,750,983	\$5,866,003	\$5,983,323	\$6,102,990	\$6,225,049
Sales Tax Revenue	\$3,648,856	\$3,214,476	\$4,660,000	\$4,893,000	\$4,990,860	\$5,090,677	\$5,192,491	\$5,296,341	\$5,402,267	\$5,510,313	\$5,620,519	\$5,732,929	\$5,847,588
Stimulus Funds (CARES, ARP)	\$11,638,111												
Non-Added Revenues		\$5,950											
Revenue Total	\$19,318,085	\$8,030,815	\$10,066,320	\$10,513,872	\$10,752,464	\$10,995,304	\$11,290,814	\$11,512,569	\$11,795,695	\$12,082,247	\$12,317,842	\$12,643,227	\$12,888,539
Expense													
Fixed Contracted Operating Costs Subtotal	\$1,536,760	\$1,565,869	\$1,687,322	\$1,725,906	\$1,779,409	\$1,834,570	\$1,891,442	\$1,950,077	\$2,010,529	\$2,072,856	\$2,137,114	\$2,203,365	\$2,271,669
Variable Contracted Operating Costs Subtotal	\$4,077,031	\$4,805,647	\$3,715,405	\$5,739,873	\$6,055,682	\$6,391,090	\$7,594,009	\$8,007,483	\$8,446,348	\$9,907,067	\$10,442,844	\$11,011,297	\$11,614,650
City Staff-Related Operating Expenses	\$1,593,948	\$1,659,300	\$1,727,332	\$1,798,152	\$1,871,876	\$1,948,623	\$2,028,517	\$2,111,686	\$2,198,265	\$2,288,394	\$2,382,218	\$2,479,889	\$2,581,565
Total Operating Costs	\$7,207,740	\$8,030,816	\$7,130,058	\$9,263,931	\$9,706,967	\$10,174,283	\$11,513,968	\$12,069,246	\$12,655,143	\$14,268,317	\$14,962,176	\$15,694,551	\$16,467,884
Funds Remaining	\$12,110,345	\$(1)	\$2,936,261	\$1,249,942	\$1,045,497	\$821,020	\$(223,154)	\$(556,677)	\$(859,448)	\$(2,186,070)	\$(2,644,334)	\$(3,051,323)	\$(3,579,345)
Fare Recovery %	3%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%



10.3. Zero-Fare Scenario

The financial plan base year and assumptions under the Zero-Fare Scenario are the same as the previous scenario, with a few exceptions:

1. Farebox revenue is assumed as zero dollars starting in FY 2023.
2. Fare collection-related expenses (i.e. \$16,000 Fare Collection Machine Operation and Maintenance Cost) will drop to zero in FY 2023.
3. Microtransit and Paratransit revenue hours are assumed to be eight percent higher in the Zero-Fare Scenario than in the Regular Fare Scenario.
4. The increase in demand from zero-fare service will not lead Lawrence Transit to increase its level of fixed-route service.

TABLE 14: REVENUE HOURS ASSUMPTIONS (ZERO-FARE SCENARIO)

Revenue Hour Assumption	2023 (Base Year)	2026 (Future Year 1)	2029 (Future Year 2)
Weekdays and Saturdays Microtransit Vehicle	0	4	8
Sundays Microtransit Vehicle	4	4	5
Annual Total Paratransit Revenue Hours	42,544	49,251	57,014
Annual Total Microtransit Revenue Hours	18,256	34,776	51,983
Annual Total Fixed-Route Revenue Hours	60,700	60,700	60,700
Annual Total Revenue Hours	78,956	95,476	112,683

5. 2023 ridership estimates for fixed route and paratransit service are based on assumed ratios relative to the 2019 ridership for each mode, as shown in **Table 15**. Only 42 percent of Lawrence Transit's ridership comes from customers who pay fares (most others ride for no additional cost by showing a KU ID). Therefore, a 30 percent ridership increase assumption based on zero fares was only applied to this segment of Lawrence Transit's ridership.

TABLE 15: RIDERSHIP ASSUMPTION – 2023 RELATIVE TO 2019 BY MODE (ZERO-FARE SCENARIO)

	Year 2023 Ridership / Year 2019 Ridership
DR – Paratransit	100%
MB – Fixed Route	108%

Table 16 shows the financial implications of implementing the Zero Fare Scenario. Under both the Regular Fare Scenario and the Zero Fare Scenario, Lawrence Transit would face a budget deficit beginning in 2026 with projected funding levels. While the deficit would be larger with the Zero Fare Scenario, the Regular Fare Scenario will not eliminate the need for additional funding to support the service recommendations presented in this document. Thus, the decision to provide zero-fare service, or not, will not be a financial decision alone. Other factors will need to be considered including the customer experience and community values and priorities.



TABLE 16: OPERATING BUDGET ESTIMATE WITH ZERO-FARE SERVICE

Fiscal Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Revenue													
Fare Revenue Subtotal	\$249,004	\$294,008	\$300,499	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Federal/State Formula Funds	\$3,782,114	\$4,516,381	\$5,106,709	\$5,208,843	\$5,313,020	\$5,419,280	\$5,527,666	\$5,638,219	\$5,750,983	\$5,866,003	\$5,983,323	\$6,102,990	\$6,225,049
Sales Tax Revenue	\$3,648,856	\$3,214,476	\$4,660,000	\$4,893,000	\$4,990,860	\$5,090,677	\$5,192,491	\$5,296,341	\$5,402,267	\$5,510,313	\$5,620,519	\$5,732,929	\$5,847,588
Non-Added Revenues		\$5,950											
Stimulus Funds (CARES, ARP)	\$11,638,111												
Revenue Total	\$19,318,085	\$8,030,815	\$10,067,208	\$10,101,843	\$10,303,880	\$10,509,957	\$10,720,156	\$10,934,560	\$11,153,251	\$11,376,316	\$11,603,842	\$11,835,919	\$12,072,637
Expenses													
Existing Operation Fixed Cost Subtotal	\$1,536,760	\$1,565,869	\$1,687,322	\$1,725,906	\$1,779,409	\$1,834,570	\$1,891,442	\$1,950,077	\$2,010,529	\$2,072,856	\$2,137,114	\$2,203,365	\$2,271,669
Existing Operation Variable Cost Subtotal	\$4,077,031	\$4,805,647	\$3,715,405	\$5,960,827	\$6,313,862	\$6,691,479	\$8,009,913	\$8,480,196	\$8,982,963	\$10,595,074	\$11,214,753	\$11,877,079	\$12,585,406
City's Operation Expenses	\$1,593,948	\$1,659,300	\$1,727,332	\$1,782,152	\$1,855,220	\$1,931,284	\$2,010,467	\$2,092,896	\$2,178,705	\$2,268,032	\$2,361,021	\$2,457,823	\$2,558,594
Total Operating Costs	\$7,207,740	\$8,030,816	\$7,130,058	\$9,468,885	\$9,948,491	\$10,457,334	\$11,911,822	\$12,523,169	\$13,172,197	\$14,935,961	\$15,712,888	\$16,538,267	\$17,415,668
Funds Remaining	\$12,110,345	\$(1)	\$2,937,149	\$632,958	\$355,389	\$52,623	\$(1,191,666)	\$(1,588,610)	\$(2,018,946)	\$(3,559,645)	\$(4,109,046)	\$(4,702,348)	\$(5,343,031)
Fare Recovery %	3%	4%	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Regular Fare Scenario (Shown for Comparison)													
Funds Remaining	\$12,110,345	\$(1)	\$2,936,261	\$1,249,942	\$1,045,497	\$821,020	\$(223,154)	\$(556,677)	\$(859,448)	\$(2,186,070)	\$(2,644,334)	\$(3,051,323)	\$(3,579,345)
Fare Recovery %	3%	4%	4%	4%	5%	5%	5%	5%	5%	5%	5%	5%	5%

