

KU on Wheels

ROUTE 30

Bob Billings & Kasold to KU

SERVICE DESIGN

Route 30 is a KU on Wheels route that operates between the Kansas Union and the intersection of 14th Street and Apple Lane. The route travels primarily along Jayhawk Boulevard, 15th Street, and Bob Billings Parkway (Figure 1). Route 30 connects the KU Main Campus to apartment complexes and shopping centers just north of Bob Billings Parkway.

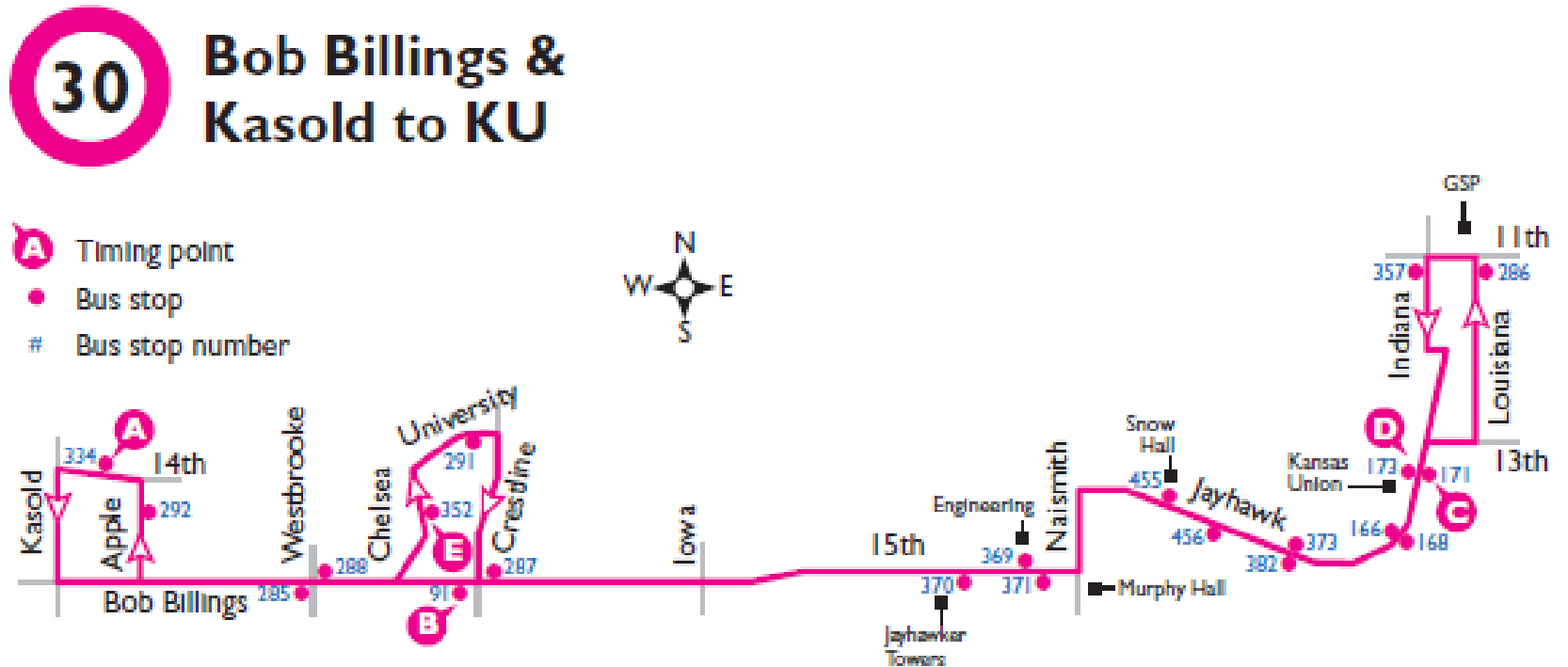
ALIGNMENT/SERVICE PATTERNS

Route 30 has a single consistent service pattern for weekday service. Departing outbound from the Kansas Union, Route 30 travels southwest on Jayhawk Boulevard, turns left on Naismith Drive, right on 15th Street, and then continues straight across Iowa Street to Bob Billings Parkway. The route then loops through the Meadowbrook Apartments by turning right on Chelsea Place, right on University Drive, right on Crestline Drive, and then right to return to Bob Billings Parkway. Route 30 then turns right on Apple Lane before terminating at the intersection with 14th Street.

Returning inbound from 14th Street and Apple Lane, Route 30 turns left on 14th Street, left on Kasold Drive, left on Bob Billings Parkway, and then bypasses the Meadowbrook Apartments loop before continuing to the Kansas Union. After serving the Kansas Union, Route 30 completes a turnaround loop by turning right on 13th Street, left on Louisiana Street, left on 11th Street, left on Indiana Street, left on 12th Street, right on Oread Avenue and then ending service at the Kansas Union.

The first two outbound trip begin at Chelsea Place rather than at the Kansas Union, and then continues towards 14th Street and Apple Lane along the regular alignment.

Figure 1 | Route Map



Source: Lawrence Transit: August 2015-August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 30 and several Lawrence Transit and KU on Wheels routes at the Kansas Union. There are also transfer opportunities at several other points along the route, including along 15th Street (Route 10 and Route 43), and at 11th Street and Louisiana Street (Route 10, Route 11, Route 29) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Jayhawk Boulevard (Kansas Union and Snow Hall)	Kansas Union: Routes 11, 29, 30, 36, 38, and 43; Snow Hall: All routes at Union plus Route 27, 41, and 42
11th Street and Louisiana Street	Route 10, Route 11, Route 29
Jayhawker Towers (15th Street and Burdick Drive)	Route 10, Route 29, Route 43

SERVICE SCHEDULE

Route 30 operates from Monday-Friday when KU is in session (Figure 3). On weekdays, the route runs every 20 minutes from 7:10 AM to 5:57 PM. Route 30 does not run on Saturdays, Sundays, or when KU is not in session.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	7:10 AM – 5:57 PM	20	33/31
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 30 ranks third of six KU on Wheels routes in terms of weekday ridership and third of six in terms of ridership per trip (Figure 4). On average, the route carries 1,278 passengers, or 20 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

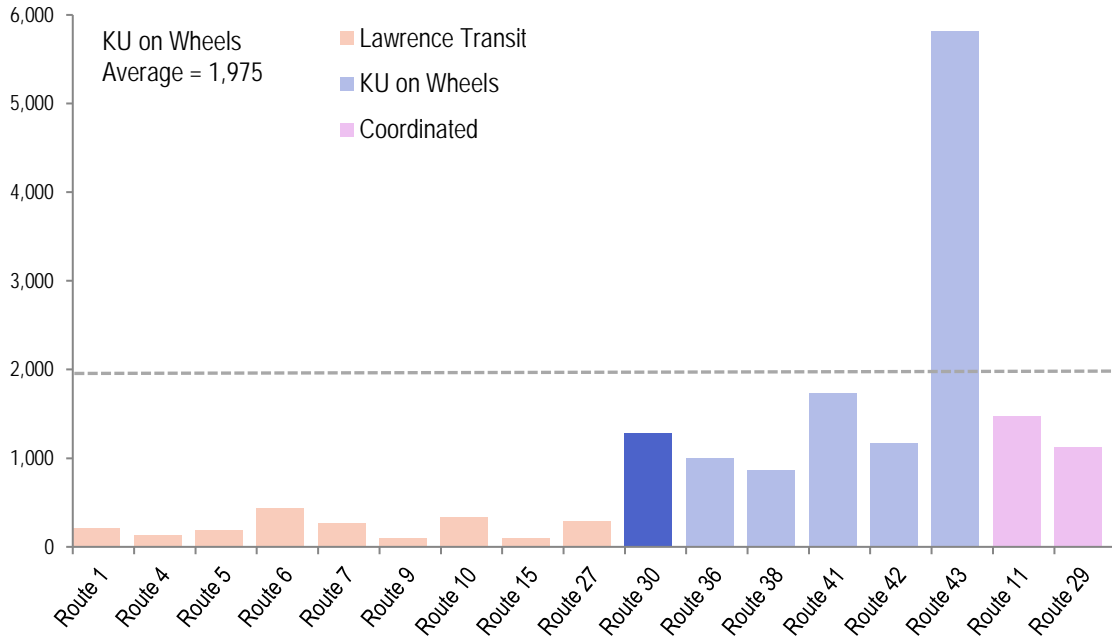
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TYPICAL DAILY TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	1,278	64	20.00	22.8	3 of 6

Source: Lawrence Transit, 2016

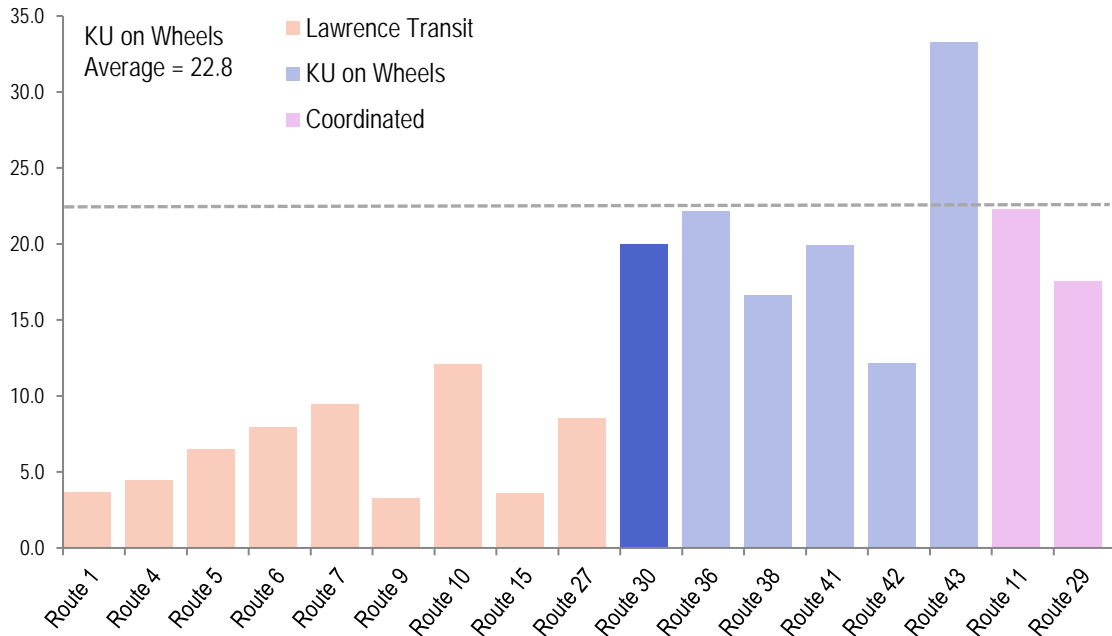
ROUTE EVALUATION | ROUTE 30
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stop traveling in the inbound direction is Budig Hall, on KU’s main campus: on average the stop generates 543 combined daily boardings and alightings. Stops at 15th Street and Green Hall and at the Kansas Union each average over 200 boardings and alightings, while stops at Jayhawk Boulevard and Fraser Hall, Bob Billings and Crestline Drive, and 11th Street and Indiana Street generate more than 100 average daily boardings and alightings (Figure 7).

Stops with the highest weekday outbound ridership on Route 30 are located on KU’s campus and near off-campus housing. Stops at Snow Hall and Chelsea Place (off Bob Billings Parkway) each generate more than 200 combined daily boardings and alightings. Additionally, stops at Bailey Hall, University Drive at Crestline Drive, the Engineering Department, and Apple Lane generate more than 100 daily boardings and alightings. These stops serve dense off-campus residential areas and KU’s main campus; the stop at Apple Lane is one block from several local and retail stores. All other stops serve fewer than 90 boardings and alightings (Figure 8-Figure 11).

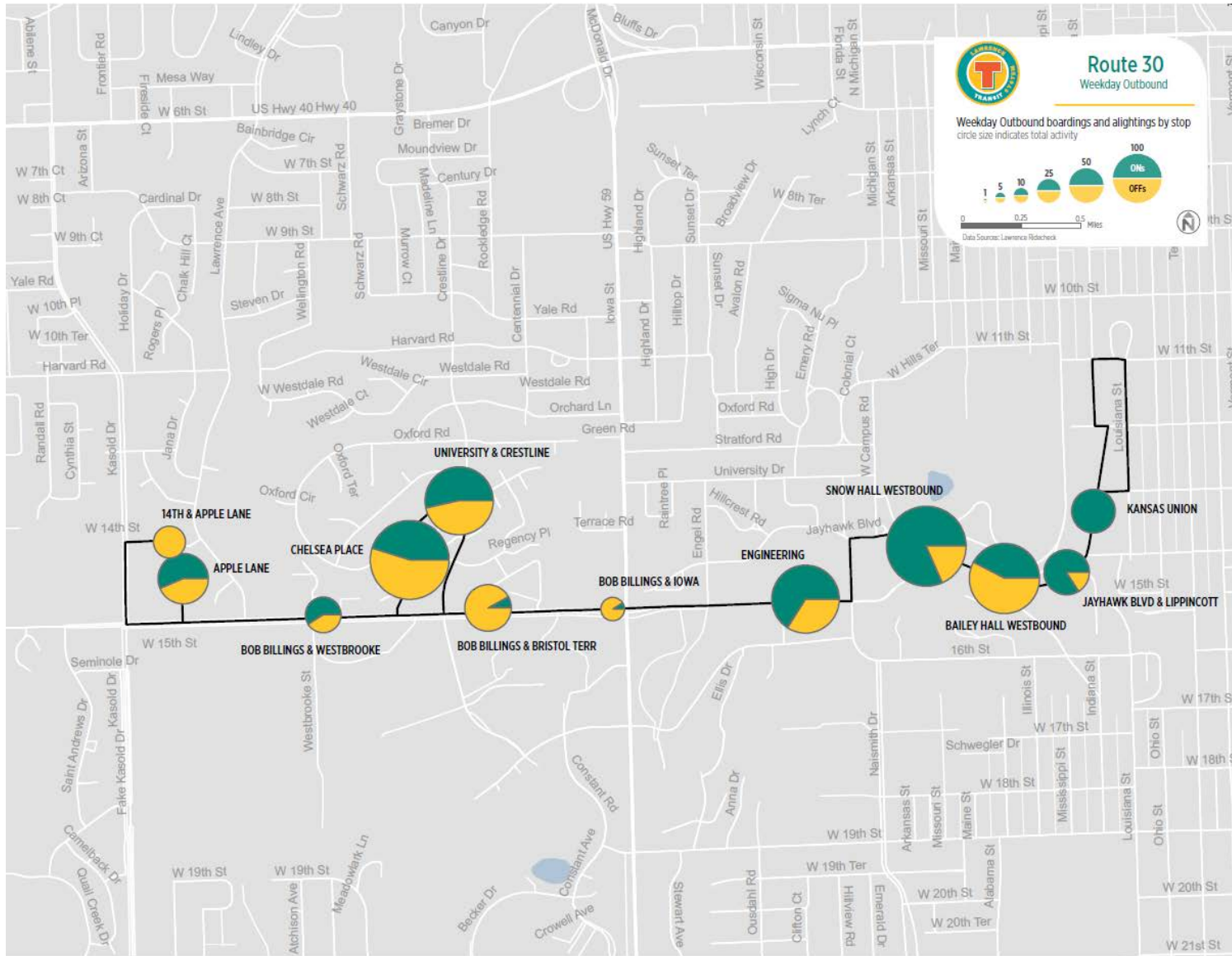
Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Budig Hall	543	Budig Hall, KU’s main campus
Kansas Union	235	Kansas Union, KU’s main campus
15th Street / Green Hall	232	Engineering Department, KU’s main campus
Bob Billings / Crestline	176	Off-campus residential communities; KU Public Safety Office
Jayhawk Boulevard / Fraser Hall	183	Fraser Hall, KU’s main campus

*Weekday Inbound ridership (boardings and alightings) for Route 30 only

ROUTE EVALUATION | ROUTE 30
KU on Wheels

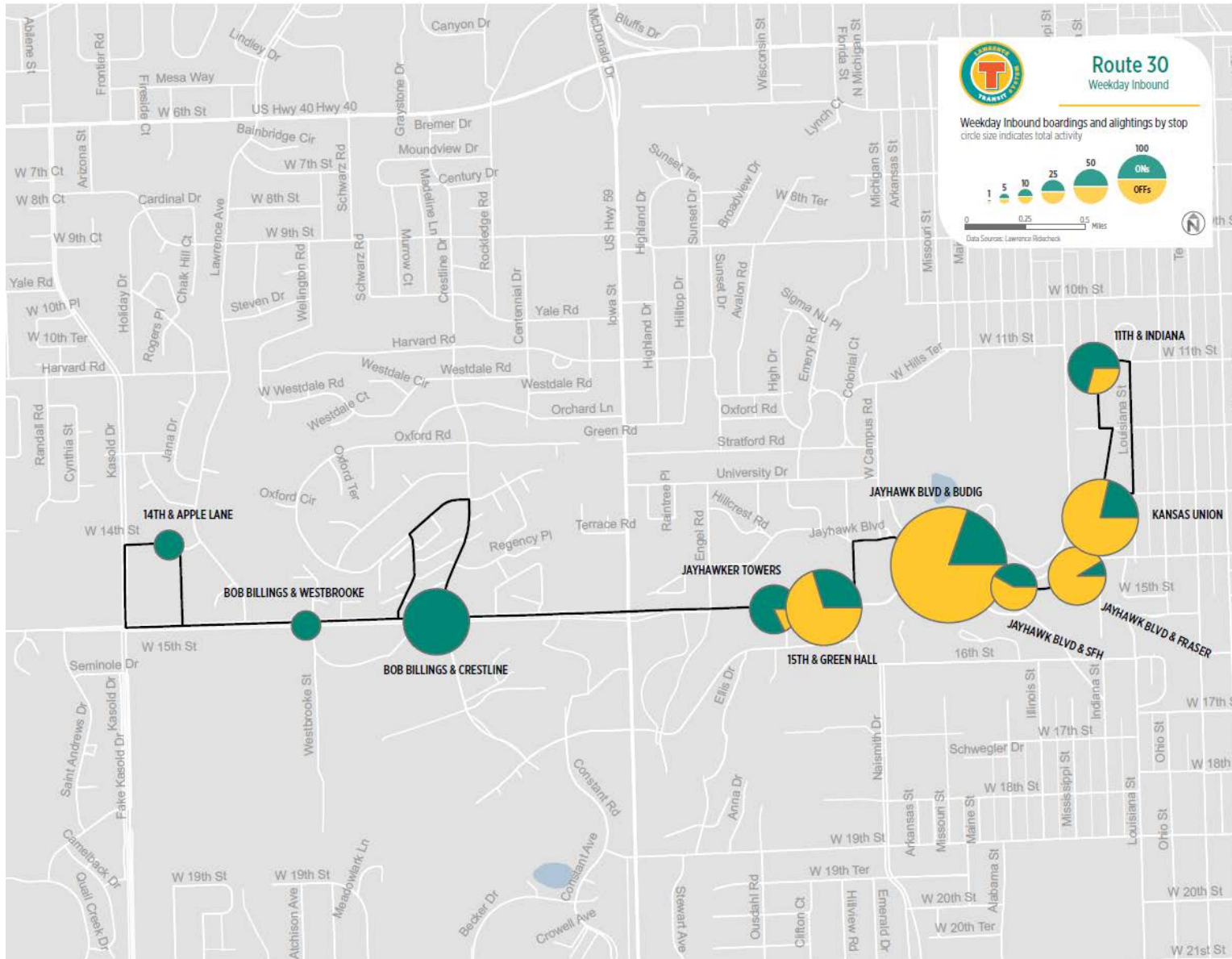
Figure 8 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 30
KU on Wheels

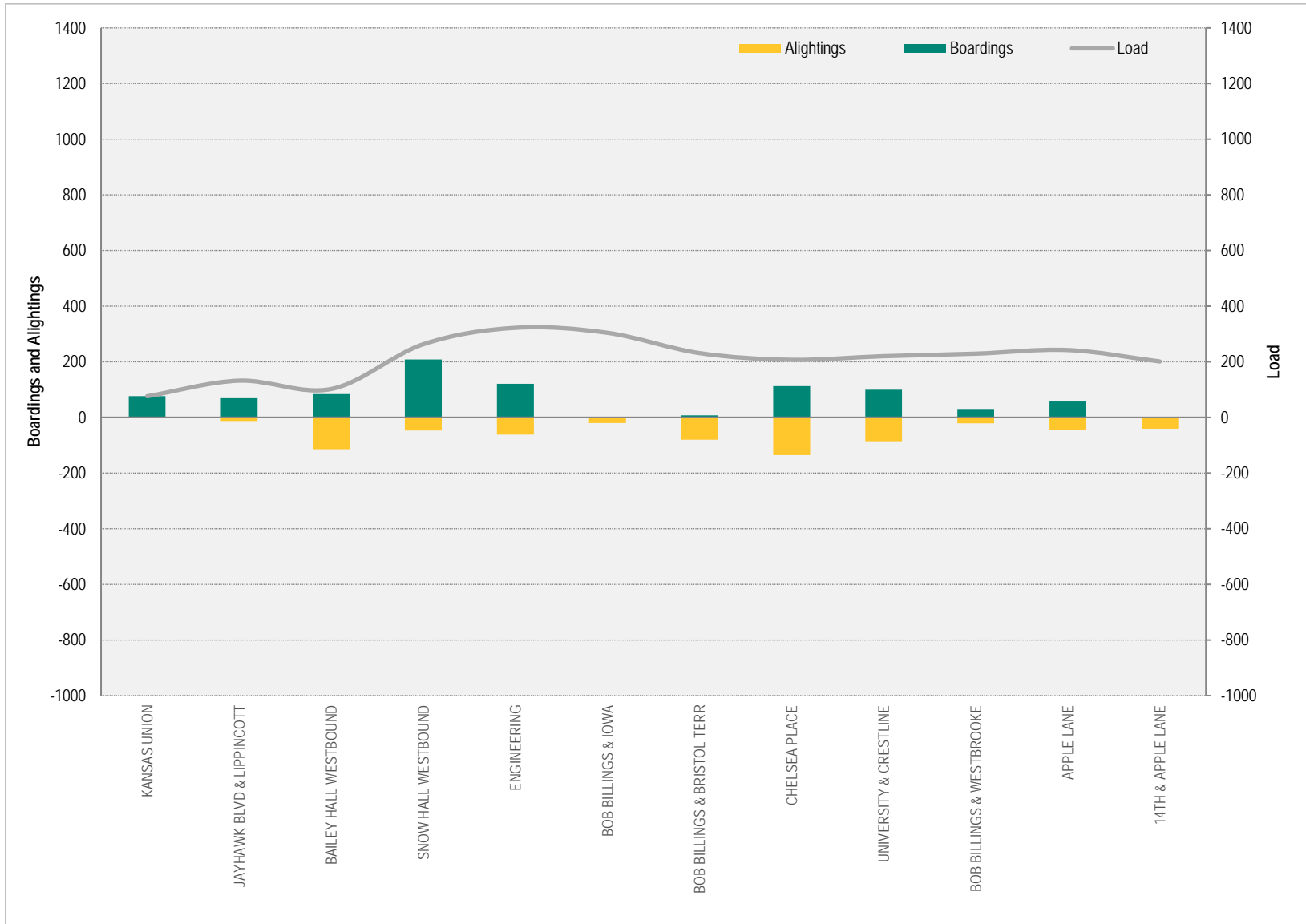
Figure 9 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 30
 KU on Wheels

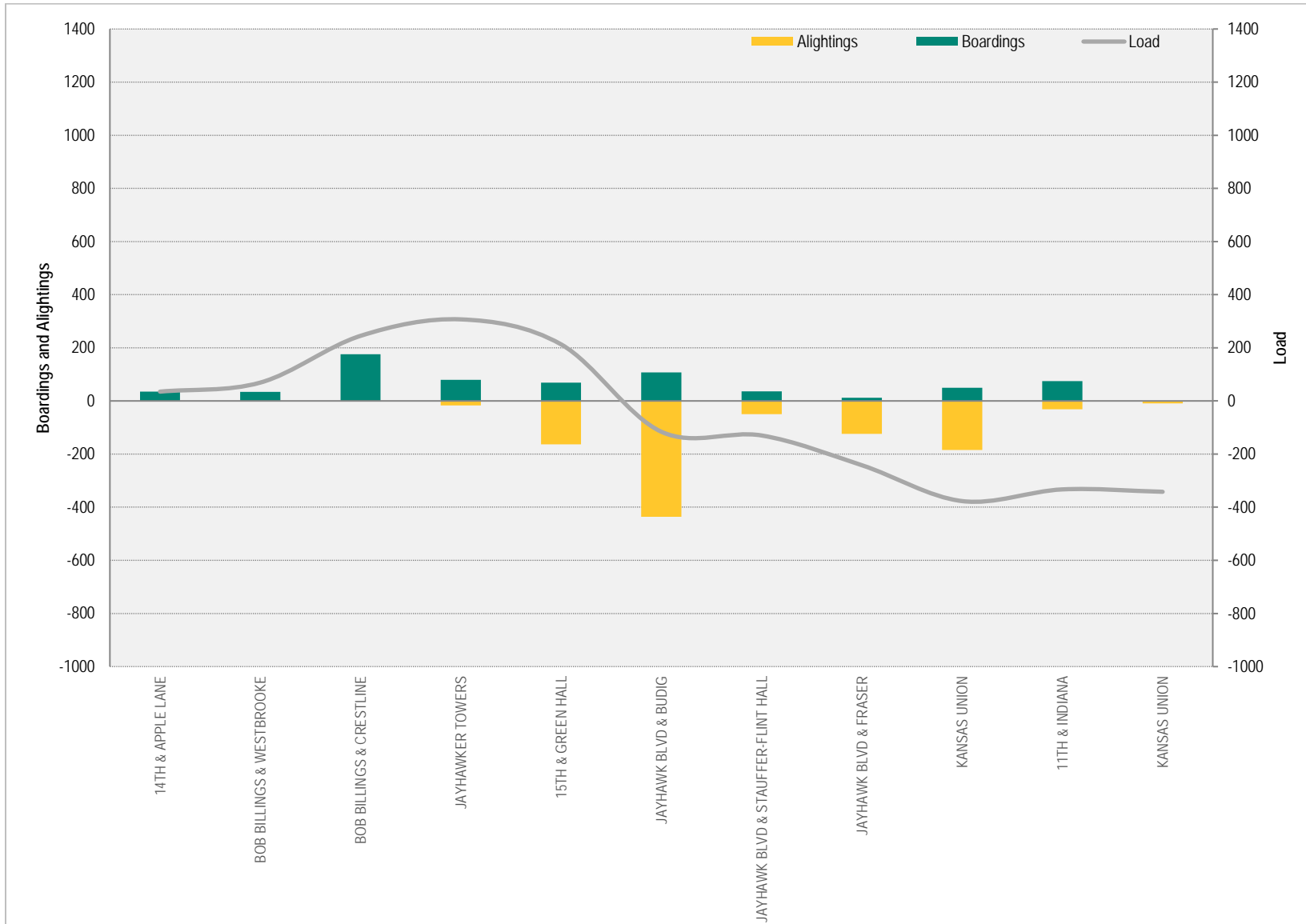
Figure 10 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 30
KU on Wheels

Figure 11 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

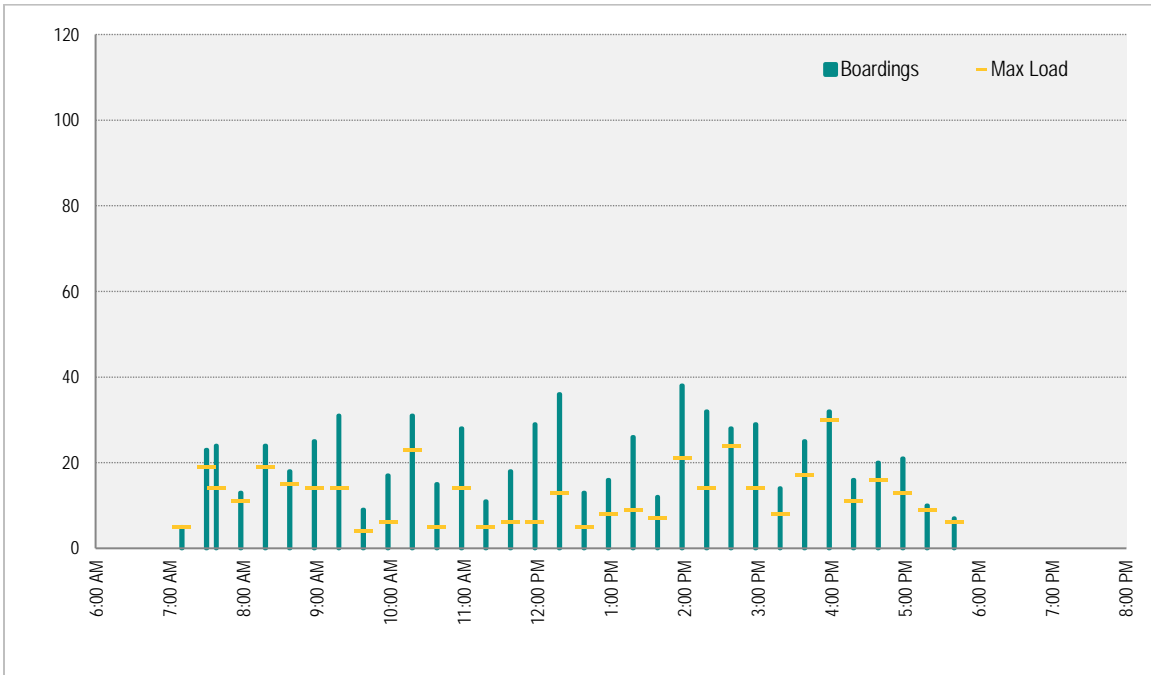
RIDERSHIP BY TRIP

On weekdays, Route 30 ridership is highest during the mid-morning and mid-afternoon service periods (Figure 12 and Figure 13). Traveling outbound, ridership on Route 30 is consistently high throughout the day, peaking at 2:00 PM, with 38 boardings. Over 50% of all inbound trips on Route 30 record 20 boardings or more. Six inbound trips average more than 30 passengers, while only three trips carry fewer than 10 passengers.

Inbound ridership is highest mid-morning and peaks at 10:35 AM, carrying 45 passengers (Figure 13). A secondary peak occurs between 12:30 and 2:30 PM, when five trips average more than 20 passengers. While five trips average over 30 boardings, nearly 30% of all outbound trips carry fewer than 10 passengers.

Several trips in both directions exceed seated capacity (35-40 passengers), which can lead to passengers standing.

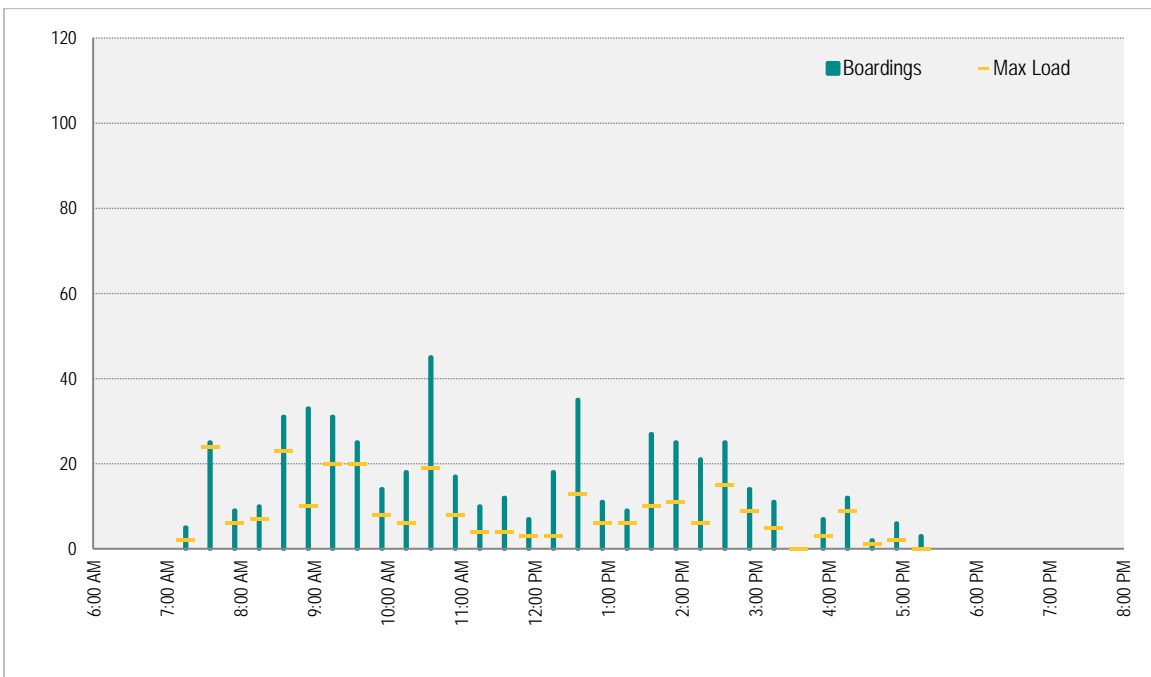
Figure 12 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 13 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016. No data was collected for the 7:30 and 10:18 AM inbound trips.

Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

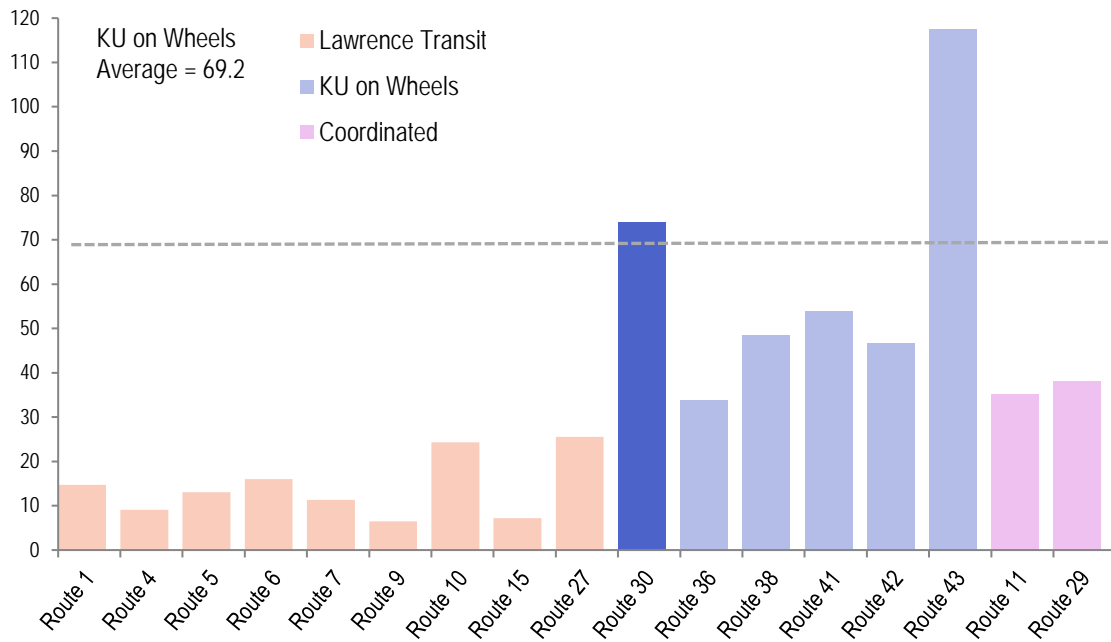
In terms of average passengers per hour, Route 30 is the second most productive KU on Wheels bus route (Figure 14). The route carries 73.9 passengers per hour on weekdays, exceeding the system average by 7% (Figure 15).

Figure 14 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday – Friday	1,278	17.3	73.9	69.2	2 of 6

Source: Lawrence Transit, 2016

Figure 15 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 39.6% of Route 30 time points were served “on-time” during the survey period (Figure 16). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance was affected primarily by late departures, with 57.5% of time points served five minutes or more behind schedule.

Figure 16 | On-Time Performance

WEEKDAY	
On-Time	39.6%
Early	2.8%
Late	57.5%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 30 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Consider Interlining Route 30 with Another Route.** As a very short route (40-minute roundtrip including an 8-minute layover) that originates and terminates at the KU Union, Route 30 could be interlined with another route to create more one seat ride opportunities and connections to other points of interest for students. Currently the route primarily connects the university to off-campus student housing. Interlining Route 30 with another route could also help improve its on-time performance by optimizing cycle time and recovery time.
- **Expand Route to Serve Retail Destinations.** Route 30 is currently designed to connect off-campus apartments to the KU campus. Linking these apartments to near-by retail destinations on 6th Street and/or 9th Street could make transit an attractive option for more trip types, beyond just school trips.
- **Operate 30-Minute Service on Saturdays.** Offering Saturday service on Route 30 would benefit students, enabling connections to the university that would otherwise be difficult to make on weekends. As a direct, high performing route on weekdays, Route 30 is a good candidate for weekend service, especially if additional retail, university, and/or city connections are made on the route.

KU on Wheels

ROUTE 36

6th via Emery to KU

SERVICE DESIGN

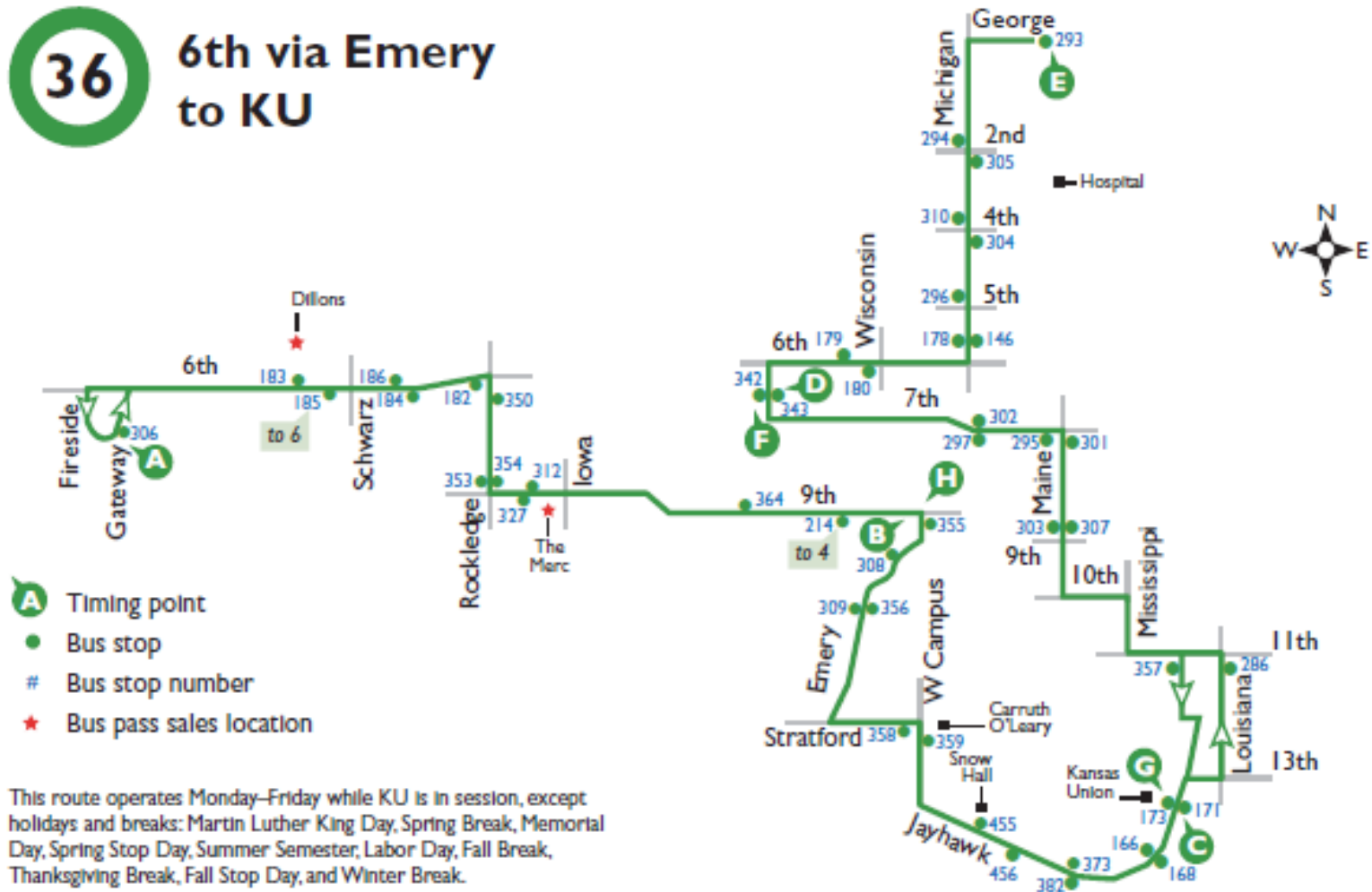
Route 36 is a KU on Wheels route that operates between the Gateway Court Apartments and the Northwind Apartments via the KU Main Campus. The route travels primarily along 6th Street, 8th Street, Emery Road, Jaywalk Boulevard, Maine Street, 7th Street, and Michigan Street (Figure 1). Route 36 provides service to Dillons, Hillcrest Shopping Center, the KU Main Campus, The Oread Hotel, and Lawrence Memorial Hospital.

ALIGNMENT/SERVICE PATTERNS

Route 36 has a single consistent service pattern for weekday service. Departing outbound from the Gateway Court Apartments, Route 36 turns right on 6th Street, right on Rockledge Road, left on 9th Street, right on Emery Road, left on Stratford Road, right on West Campus Road, and right on Jayhawk Boulevard to reach the Kansas Union. From the Kansas Union, outbound service continues right on 13th street, left on Louisiana Street, left on 11th Street, right on Mississippi Street, left on 10th Street, right on Main Street, left on 7th Street, right on 6th Street, left on Michigan Street, and right on George Court before terminating at the Northwind Apartments.

Returning inbound from the Northwind Apartments, Route 36 uses the outbound alignment until the intersection of 11th Street and Indiana Street. The inbound alignment turns right on Indiana Street, left on 12th Street, right on Oread Avenue to reach the Kansas Union. From the Kansas Union, inbound service returns to the outbound alignment before terminating at the Gateway Court Apartments.

Figure 1 | Route Map



Source: Lawrence Transit: August 2015-August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 36 and several Lawrence Transit and KU on Wheels routes at the Kansas Union. There are also transfer opportunities at several other locations along the route, including along 6th Street (Route 6), 9th Street (Route 4), and Michigan Street (Route 6) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Kansas Union	Route 10, Route 11, Route 29, Route 36, Route 38, Route 43
9th Street and Avalon Road	Route 4
Snow Hall	Route 10, Route 11, Route 27, Route 29, Route 30, Route 38, Route 41, Route 42, Route 43
6th Street and Schwarz Road/Lawrence Avenue	Route 6

SERVICE SCHEDULE

Route 36 operates service Monday-Friday when KU is in session (Figure 3). On weekdays, the route runs every 30 minutes from 7:02 AM to 6:27 PM. Route 36 does not run on Saturdays, Sundays, or when KU is not in session.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	7:02 AM – 6:27 PM	30	22/22
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 36 ranks fifth of six KU on Wheels routes in terms of weekday ridership and second of six in terms of ridership per trip (Figure 4). On average, the route carries 998 passengers, or 22.2 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

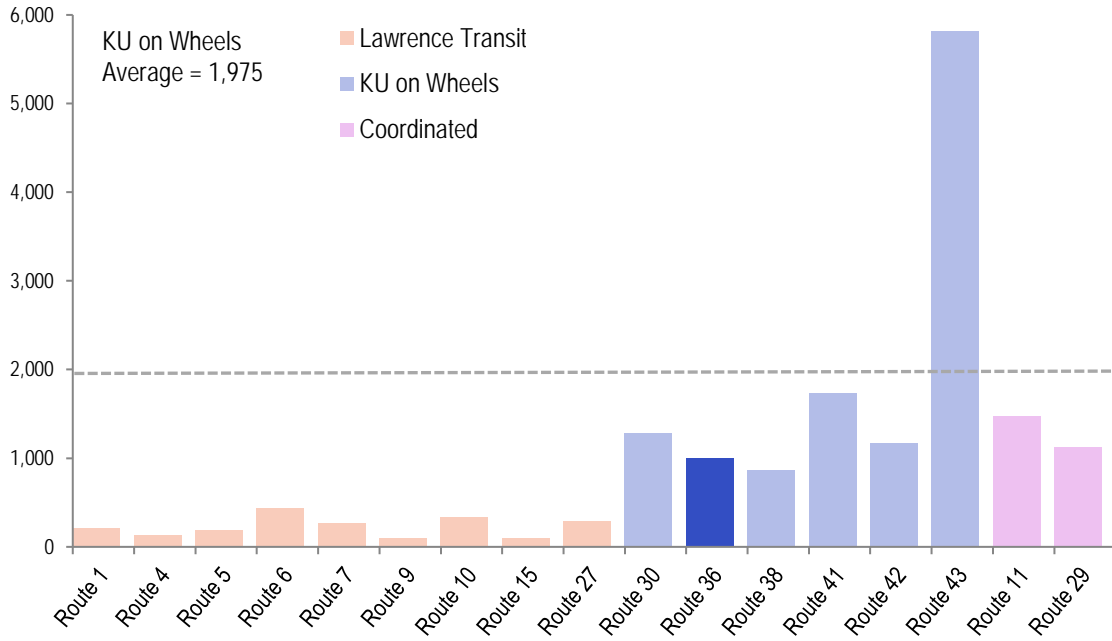
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	998	44	22.2	22.8	2 of 6

Source: Lawrence Transit, 2016

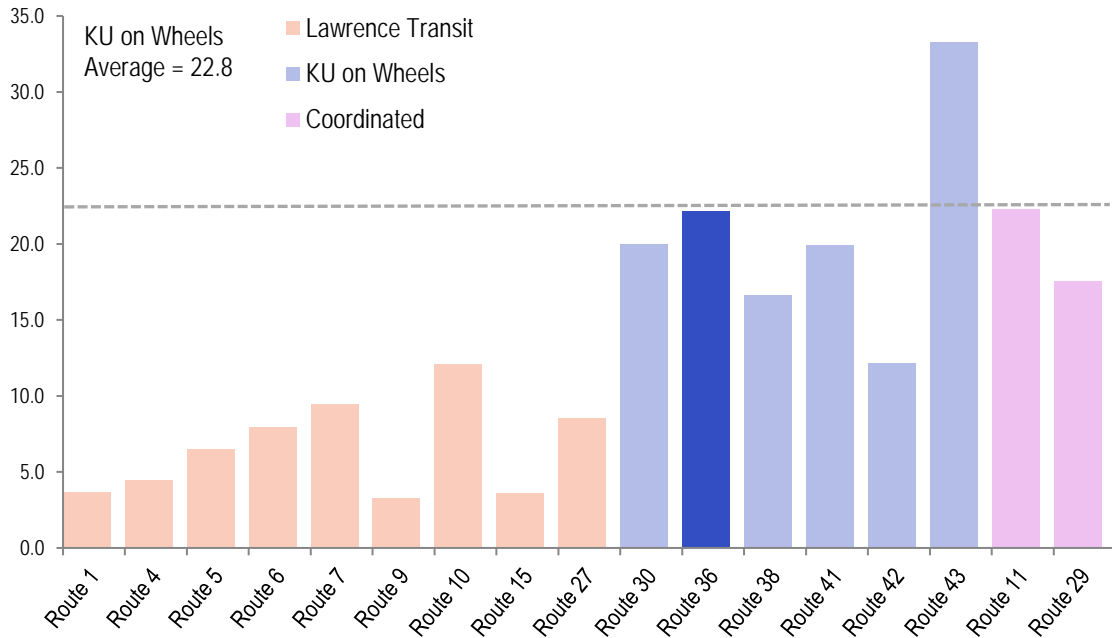
ROUTE EVALUATION | ROUTE 36
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 36 are located on or near the campus of KU. These stops primarily serve KU’s main campus, along with off-campus residential communities (fraternity and sorority houses and apartment buildings). Traveling inbound, the stop with the highest combined boardings and alightings on Route 36 is Snow Hall, followed by Bailey Hall (Figure 7).

In the outbound direction, the stops with the highest combined boardings and alightings are at Jayhawk Boulevard and Budig Hall (350 boardings and alightings), followed by the stop at the Kansas Union (245 boardings and alightings). Other stops with more than 100 average daily boardings and alightings per weekday include: Emery Road at Sigma Nu Place and 9th Street at Emery Road. All other outbound stops serve fewer than 90 boardings and alightings (Figure 8-Figure 11).

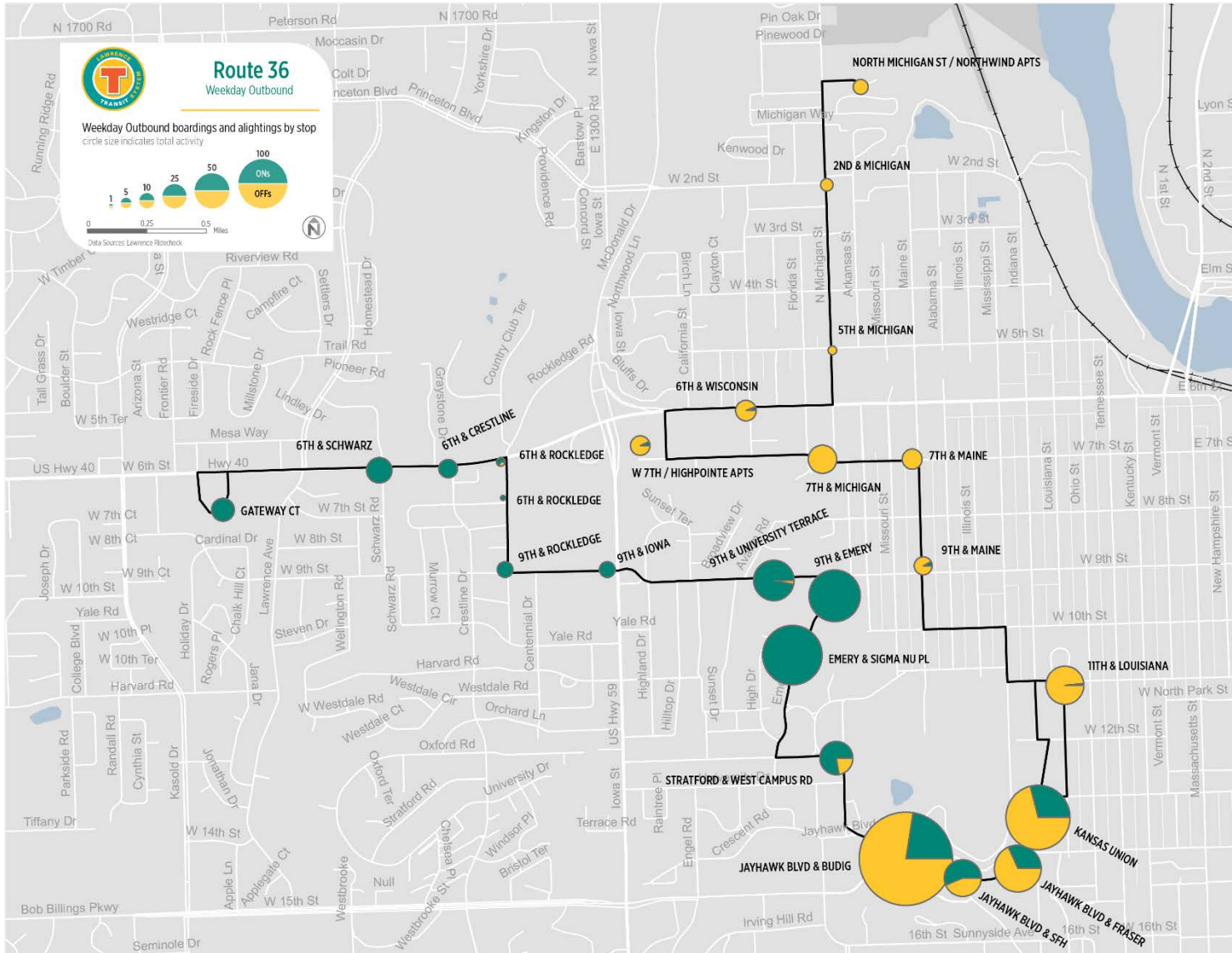
Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Snow Hall	132	Snow Hall, KU campus
Bailey Hall	115	Bailey Hall, KU campus
Kansas Union	68	Kansas Union, KU campus
Emery Road / Sigma Nu Place	39	Off-campus residential communities
7th Street / Michigan Street	38	Off-campus residential communities

*Weekday inbound ridership (boardings and alightings) for Route 36 only

ROUTE EVALUATION | ROUTE 36
 KU on Wheels

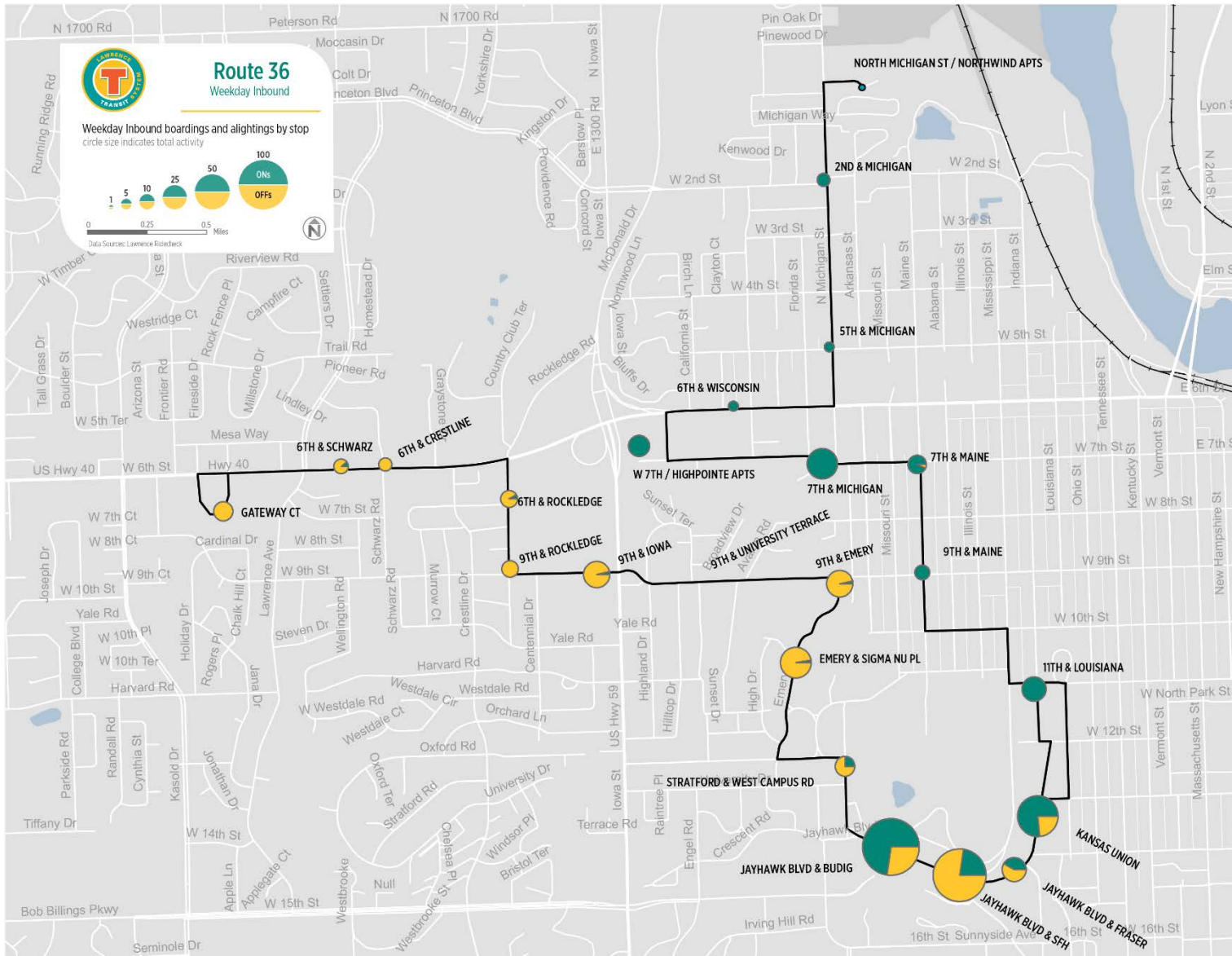
Figure 8 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 36
 KU on Wheels

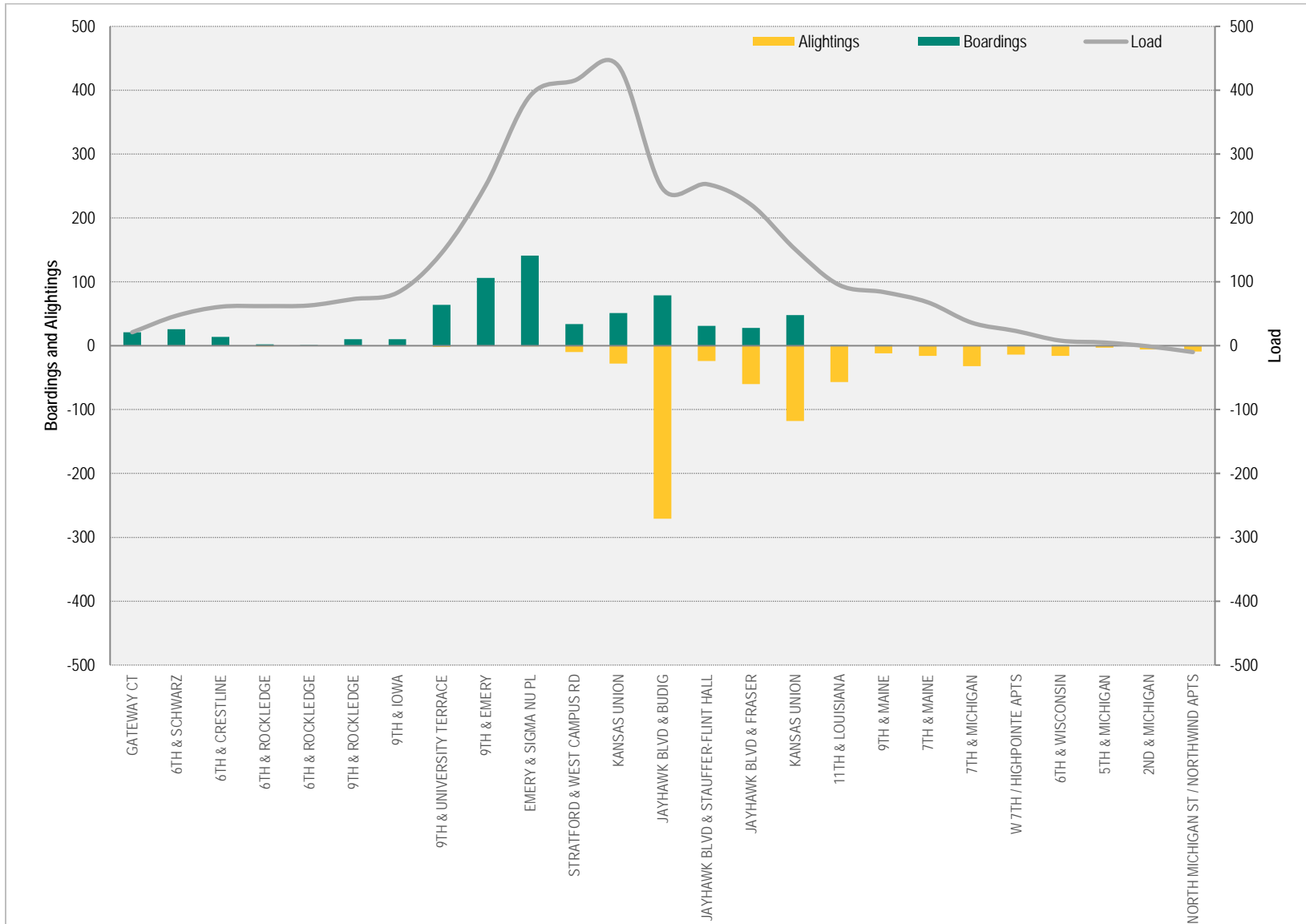
Figure 9 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 36
KU on Wheels

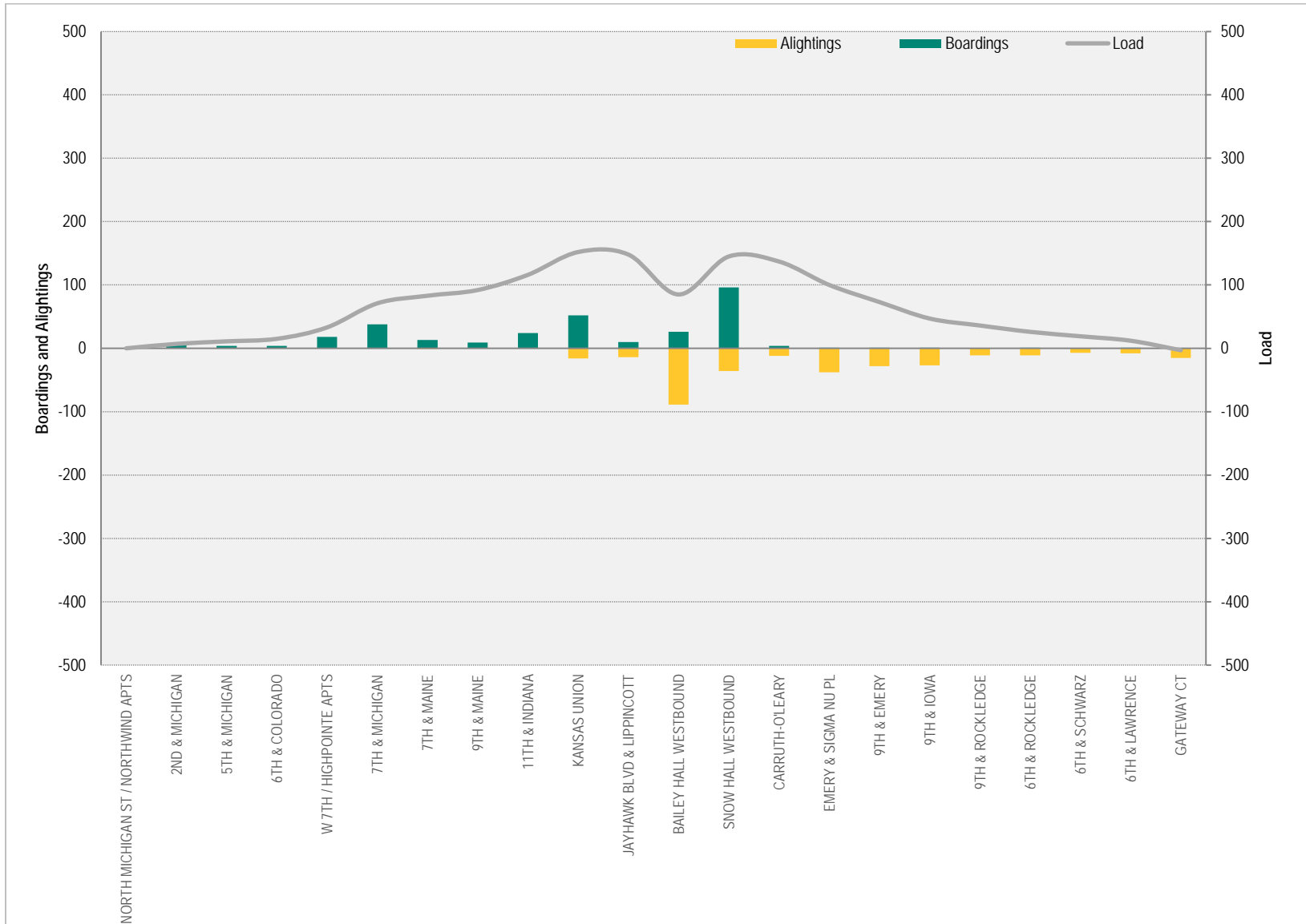
Figure 10 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 36
KU on Wheels

Figure 11 | Weekday Inbound Ridership by Stop Chart



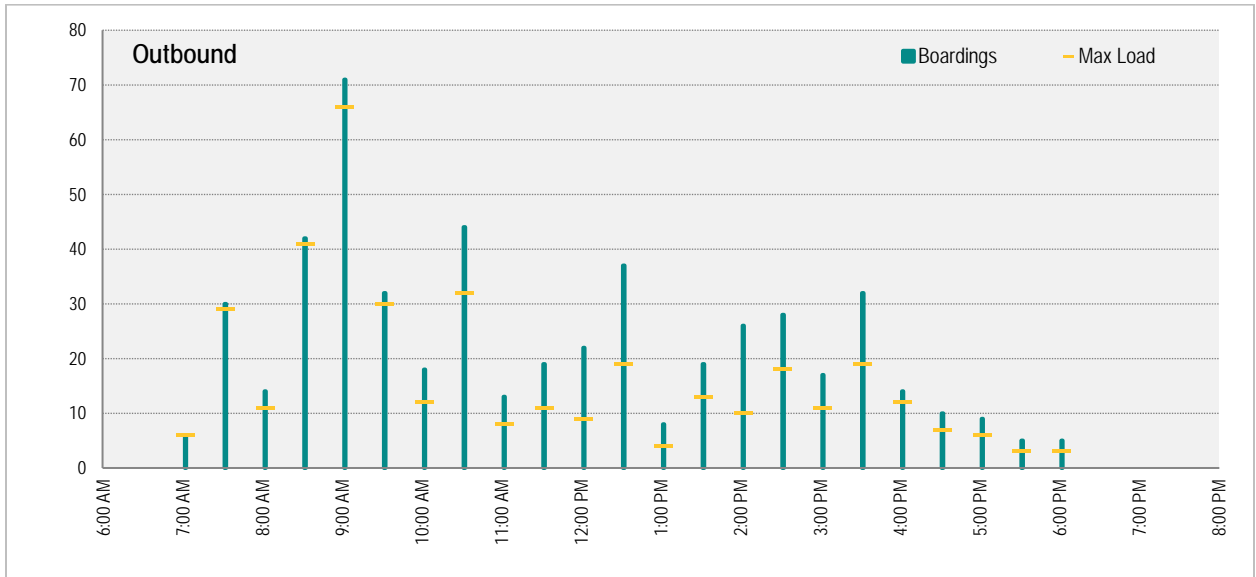
Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

On weekdays, ridership on Route 36 is highest between 7:00 and 11:00 AM (Figure 12 and Figure 13). In the outbound direction, traveling towards campus, ridership is highest from 7:30 and 10:30 AM, when boardings peak at 71 passengers per trip (9:00 AM). In total, seven outbound trips carry 30 passengers or more. Traveling in the inbound direction ridership is more evenly distributed throughout the day: 82% of trips carry 10 passengers or more, but only one trip carries at least 30 passengers (8:50 PM); no trips after 1:30 PM transports more than 20 passengers.

Average passengers per trip is reflective of a route that serves a large population of college students who need to reach classes at a very specific time. Total boardings on several outbound trips exceed seating capacity (35 to 40 passengers); additional service during these periods could help alleviate crush loads.

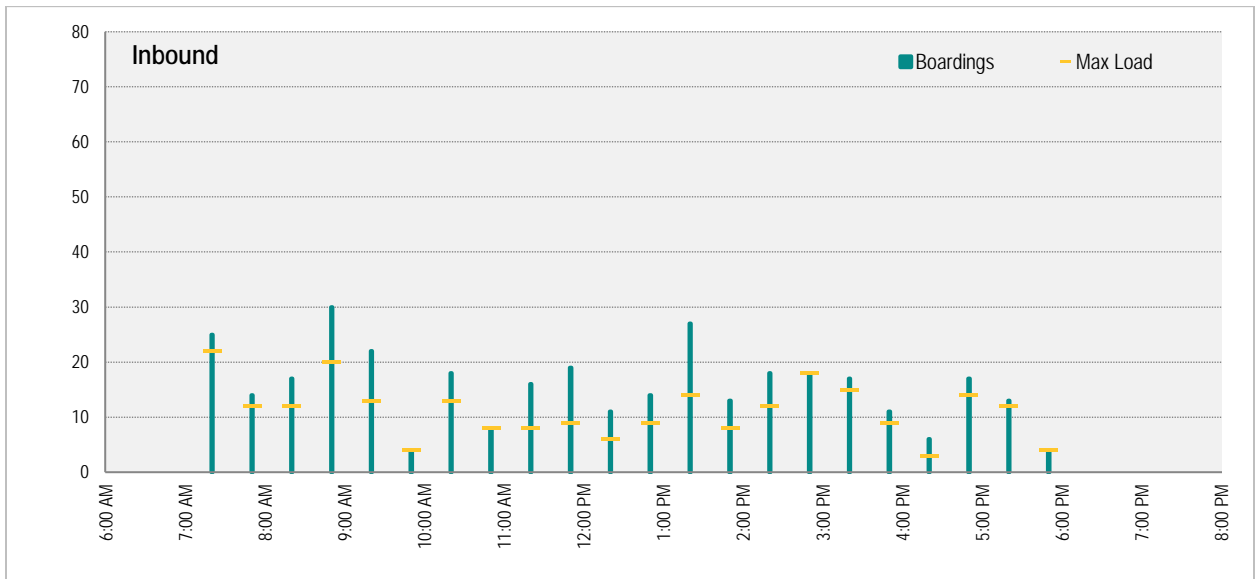
Figure 12 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: No data was collected for the 7:32 AM outbound trip. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 13 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: No data was collected for the 7:20 AM, 11:50 AM, and 1:50 PM outbound trips. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

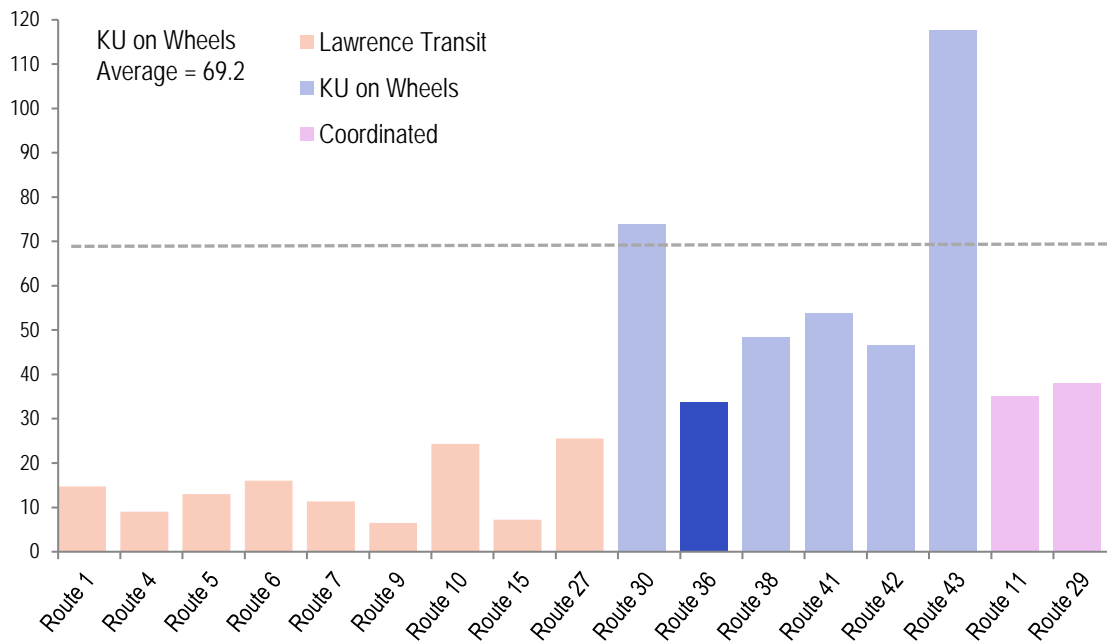
In terms of average passengers per hour, Route 36 is the least productive KU on Wheels bus route (Figure 14). The route carries 33.8 passengers per hour on weekdays, 52% less than the system average (Figure 15).

Figure 14 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	998	29.5	33.8	69.2	6 of 6

Source: Lawrence Transit, 2016

Figure 15 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 47.5% of Route 36 time points were served “on-time” during the survey period (Figure 16). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance was affected primarily by late departures, with 39% of time points served five minutes behind schedule or more.

Figure 16 | On-Time Performance

WEEKDAY	
On-Time	47.5%
Early	13.5%
Late	39%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 36 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Terminate Route at Highpointe Apartments.** Route 36 is most productive in the core campus area, with a majority of ridership occurring along the loop on Jawhawk Drive and Emery Road. These segments include many KU sororities, fraternities, and dormitories. Route 36 becomes much less productive on the north-south and east-west “legs” of the route away from campus. Ridership north of 6th Street is particularly light. Terminating the route at the Highpointe Apartments would improve the route in several important ways. The current route alignment is relatively long, with a round-trip time (not including layover/recovery) of around 63 minutes. This makes scheduling on a 30-minute headway difficult. Shortening the route by removing the north-south leg north of W. 6th Street would allow for more efficient operations, focus the route along the most productive segments, and allow KU on Wheels to reallocate resources elsewhere. This approach would also create a terminal loop along 7th Street, the Highpointe Apartments internal drive, 6th Street, and Maine Street, thus eliminating the unsignalized left turn from 6th Street into the Highpoint Apartments.
- **Operate Service Along Michigan Street, Emery Road, and Jawhawk Boulevard.** A more sweeping redesign to straighten the route and improve performance includes creating a north-south corridor along Michigan Street and Emery Road (with small jogs on W. 7th Street and W. 9th Street to stay on Michigan Street), continuing onto Jawhawk Boulevard, and completing a terminating loop on the current alignment of Louisiana Street. This alignment creates a direct connection between the KU Union, student residential areas around campus, and the residential areas north of W. 6th Street. The KU Union would act as an anchor on the southern end of the route. Timed transfers with routes along W. 6th Street and possibly W. 9th Street would maintain service to additional off-campus residential areas for students.
- **Operate Service Along Maine Street, Jawhawk Boulevard, and Emery Road.** Similarly, a redesign that utilizes Maine Street, Jawhawk Boulevard, and Emery Road would also straighten the route and improve performance. While this option could weaken direct connections between student residential areas as compared to service operated along Michigan Street, connections between residential areas and the campus would remain very strong. This option also creates a direct link between the front doors of Lawrence Memorial Hospital and the KU campus. Timed transfers with routes along W. 6th Street and possibly W. 9th Street would maintain service to additional off-campus residential areas for students.
- **Increase Service Frequency to Every 20 Minutes during Peak Hours.** High ridership per trip during peak hours, with little alighting activity along the route until the final stops, appears to have created overcrowding on a few Route 36 trips. Improving the frequency to every 20 minutes during peak hours would help alleviate this issue and potentially attract new users. At 20-minute headways, riders will have to worry less about missing their bus and carrying or looking up the schedule because the wait time is always relatively short.

KU on Wheels

ROUTE 38

25th & Melrose to KU

SERVICE DESIGN

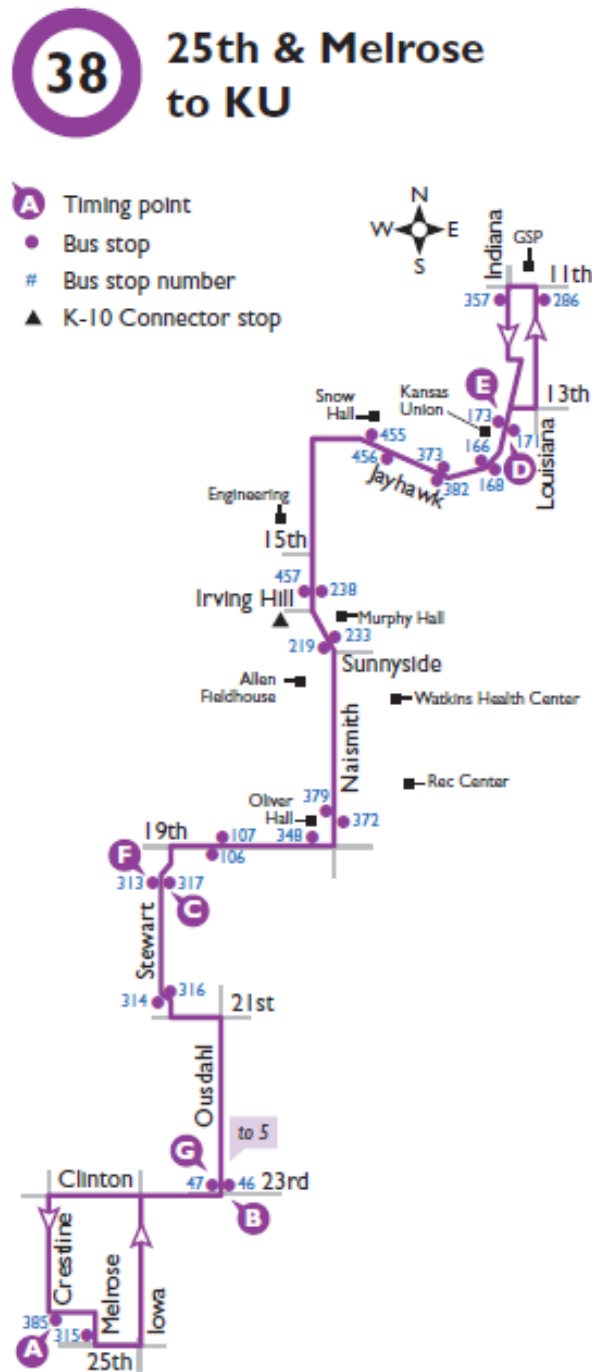
Route 38 is a KU on Wheels route that operates between the Kansas Union and the intersection of 25th Street and Melrose Lane. The route travels primarily along Jayhawk Boulevard, Naismith Drive, 19th Street, Stewart Avenue, Ousdahl Road, and Clinton Parkway (Figure 1). Route 38 connects the KU Main Campus to apartment complexes and shopping centers near the intersection of Clinton Parkway and Iowa Street.

ALIGNMENT/SERVICE PATTERNS

Route 38 has a single consistent service pattern for weekday and Saturday service. Departing outbound from the Kansas Union, Route 38 travels southwest on Jayhawk Boulevard, turns left on Naismith Drive, turns right to continue on Naismith Drive, and then turns right on 19th Street to exit the KU Main Campus. The route then turns left on Stewart Avenue, left on 21st Street, right on Ousdahl Road, right on Clinton Parkway, left on Crestline Drive, and right on Melrose Lane before terminating at the intersection with 25th Street.

Returning inbound, Route 38 turns right on 25th Street, left on Iowa Street, and then right on Clinton Parkway to return to the outbound alignment towards the Kansas Union. After serving the Kansas Union, Route 38 completes a turnaround loop by turning right on 13th Street, left on Louisiana Street, left on 11th Street, left on Indiana Street, left on 12th Street, right on Oread Avenue and then ending service at the Kansas Union.

Figure 1 | Route Map



This route operates Monday–Friday while KU is in session, except holidays and breaks: Martin Luther King Day, Spring Break, Memorial Day, Spring Stop Day, Summer Semester, Labor Day, Fall Break, Thanksgiving Break, Fall Stop Day, and Winter Break.

Source: Lawrence Transit: August 2015 – August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 38 and several Lawrence Transit and KU on Wheels routes at the Kansas Union. There are also transfer opportunities at several other points along the route, including at 23rd Street and Ousdahl Road (Route 5), along 19th Street (Route 11), and along Naismith Drive (Route 27) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Kansas Union	Route 10, Route 11, Route 29, Route 30, Route 36, Route 43
Snow Hall	Route 10, Route 11, Route 27, Route 29, Route 30, Route 36, Route 41, Route 42, Route 43
23rd Street and Ousdahl Road	Route 5

SERVICE SCHEDULE

Route 38 operates service Monday-Friday when KU is in session (Figure 3). On weekdays, the route runs every 20 to 30 minutes from 7:15 AM to 6:53 PM. Route 38 does not run on Saturdays, Sundays, or when KU is not in session.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	7:15 AM – 6:53 PM	20-30	26/26
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 38 ranks last of six KU on Wheels routes in terms of weekday ridership and fifth of six in terms of ridership per trip (Figure 4). On average, the route carries 863 passengers, or 16.6 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

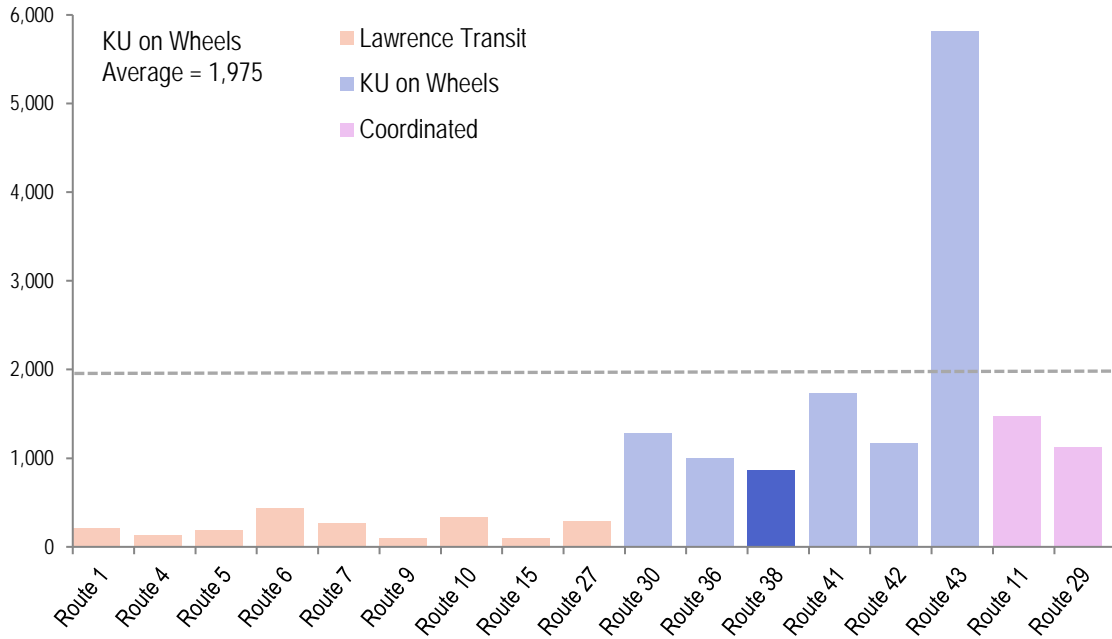
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	863	52	16.6	22.8	5 of 6

Source: Lawrence Transit, 2016

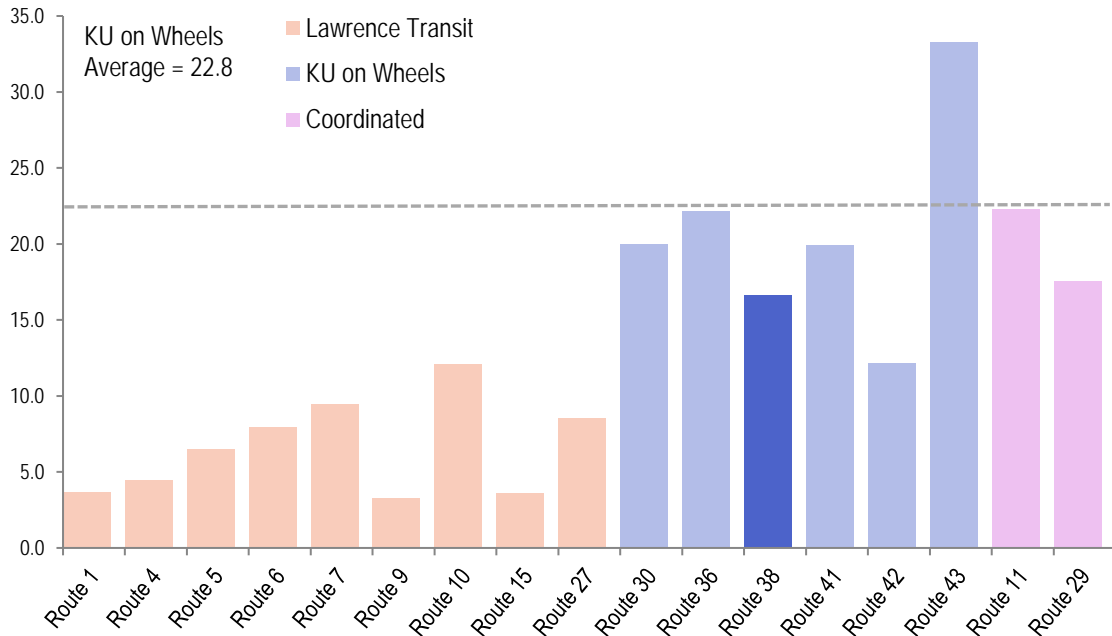
ROUTE EVALUATION | ROUTE 38
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 38 are located on or near KU’s campus, including Budig Hall and the Kansas Union, and off-campus residential communities (Figure 7). The stop at Jayhawker Boulevard and Budig Hall generates an average of 135 daily boardings and alightings. Additionally, stops at the Kansas Union, 25th Street at Melrose Lane, 19th Street at Naismith Street, and Naismith Drive (west of Murphy Hall), each generate over 50 combined riders. All other stops serve fewer than 50 boardings and alightings (Figure 8-Figure 11). The passenger load on inbound trips peaks at Naismith Drive (west of Murphy Hall), at 131 passengers.

Traveling outbound, the following stops feature the highest combined boardings and alightings: the Kansas Union, Bailey Hall, Snow Hall, Naismith Drive at Oliver Hall, and Naismith Drive (west of Murphy Hall). No other outbound stops generate more than 50 combined boardings and alightings.

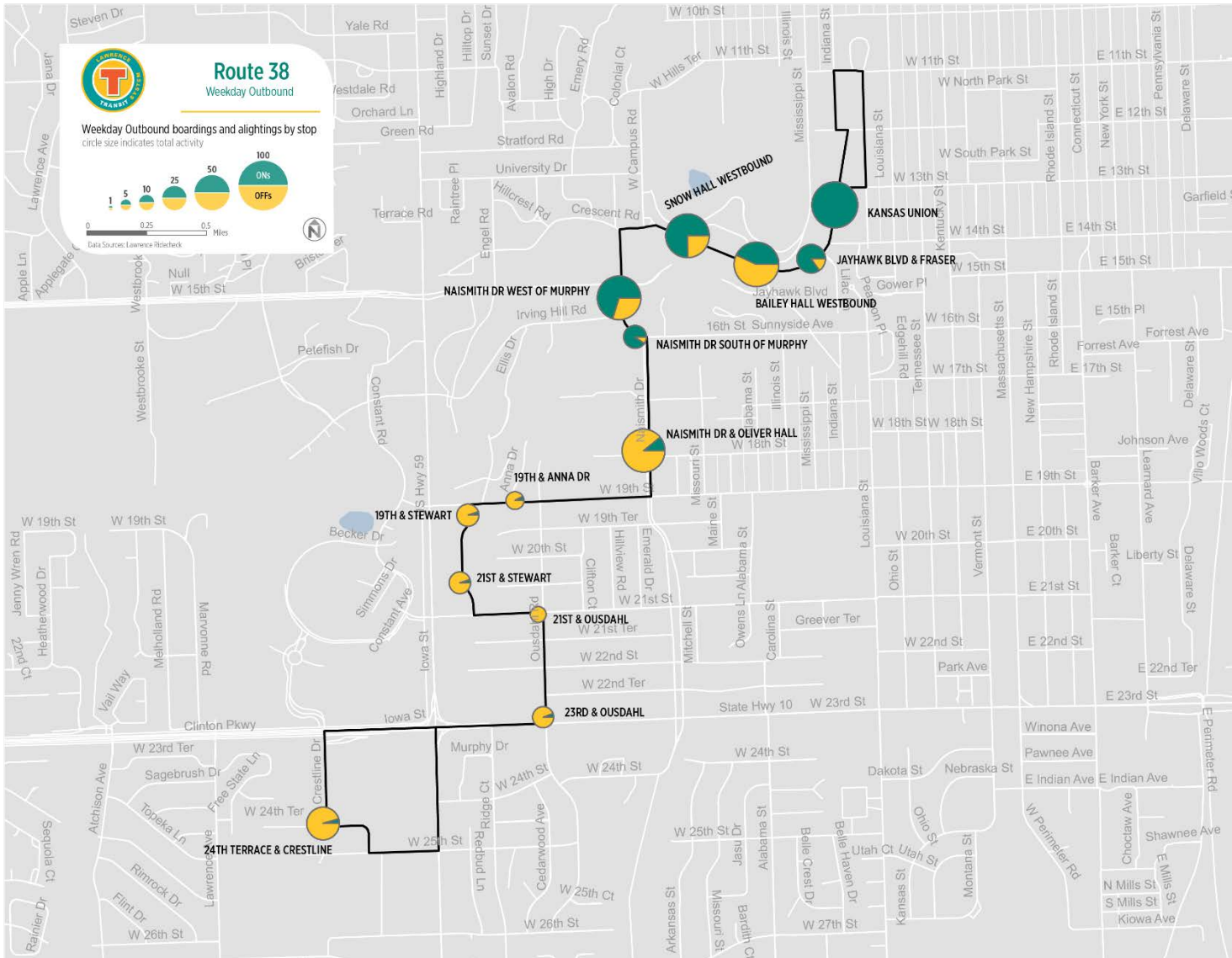
Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Jayhawker Boulevard / Budig Hall	135	Budig Hall, KU campus
Kansas Union	102	Kansas Union, KU campus
25th Street / Melrose Lane	82	Off-campus residential communities; Holcom Park Recreation Center; Local retail options
19th Street / Naismith Street	66	Oliver Hall; Naismith Hall; KU campus
Naismith Drive (west of Murphy Hall)	52	Crafton-Preyer Theater; KU campus

*Weekday inbound ridership (boardings and alightings) for Route 38 only

ROUTE EVALUATION | ROUTE 38
 KU on Wheels

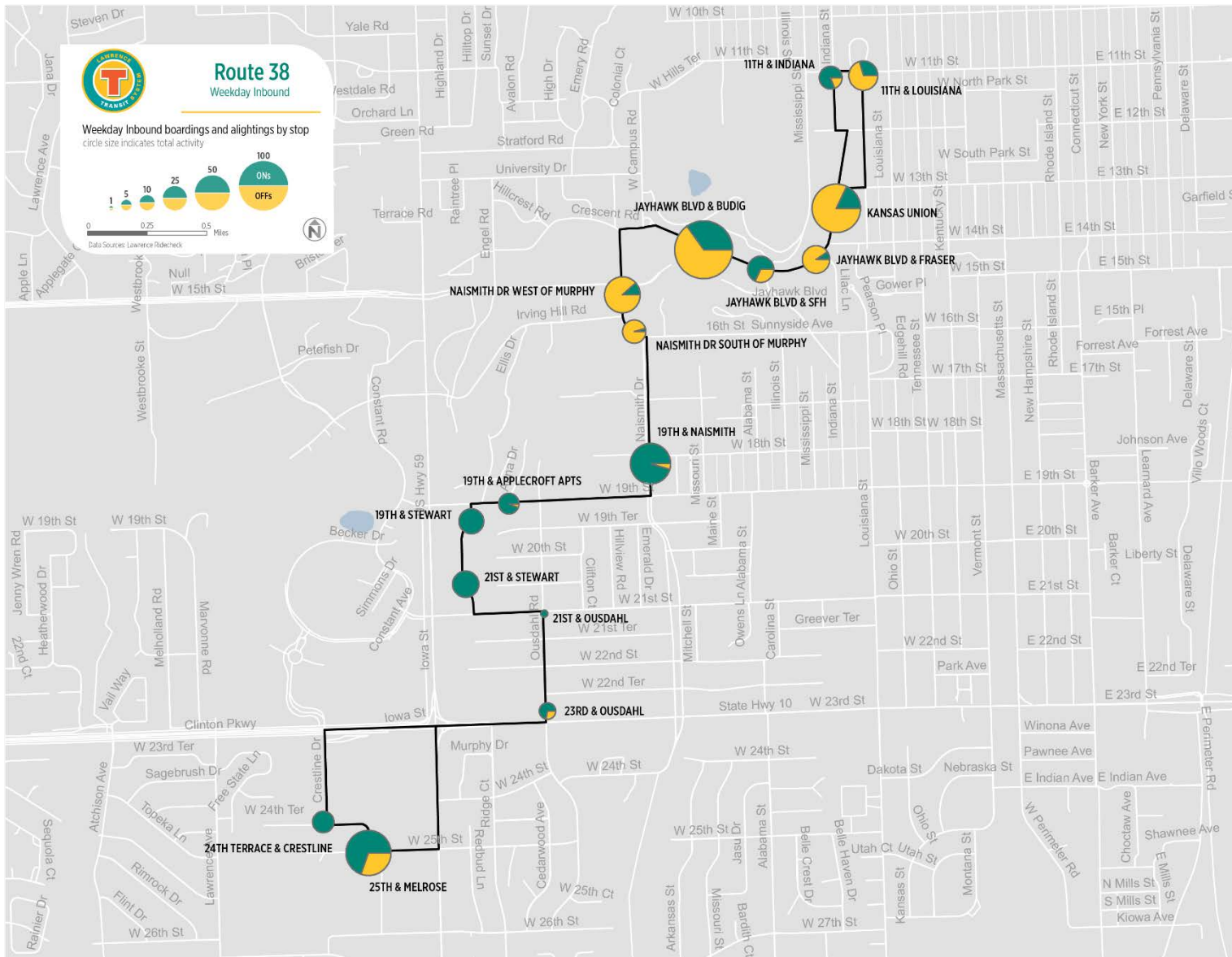
Figure 8 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 38
 KU on Wheels

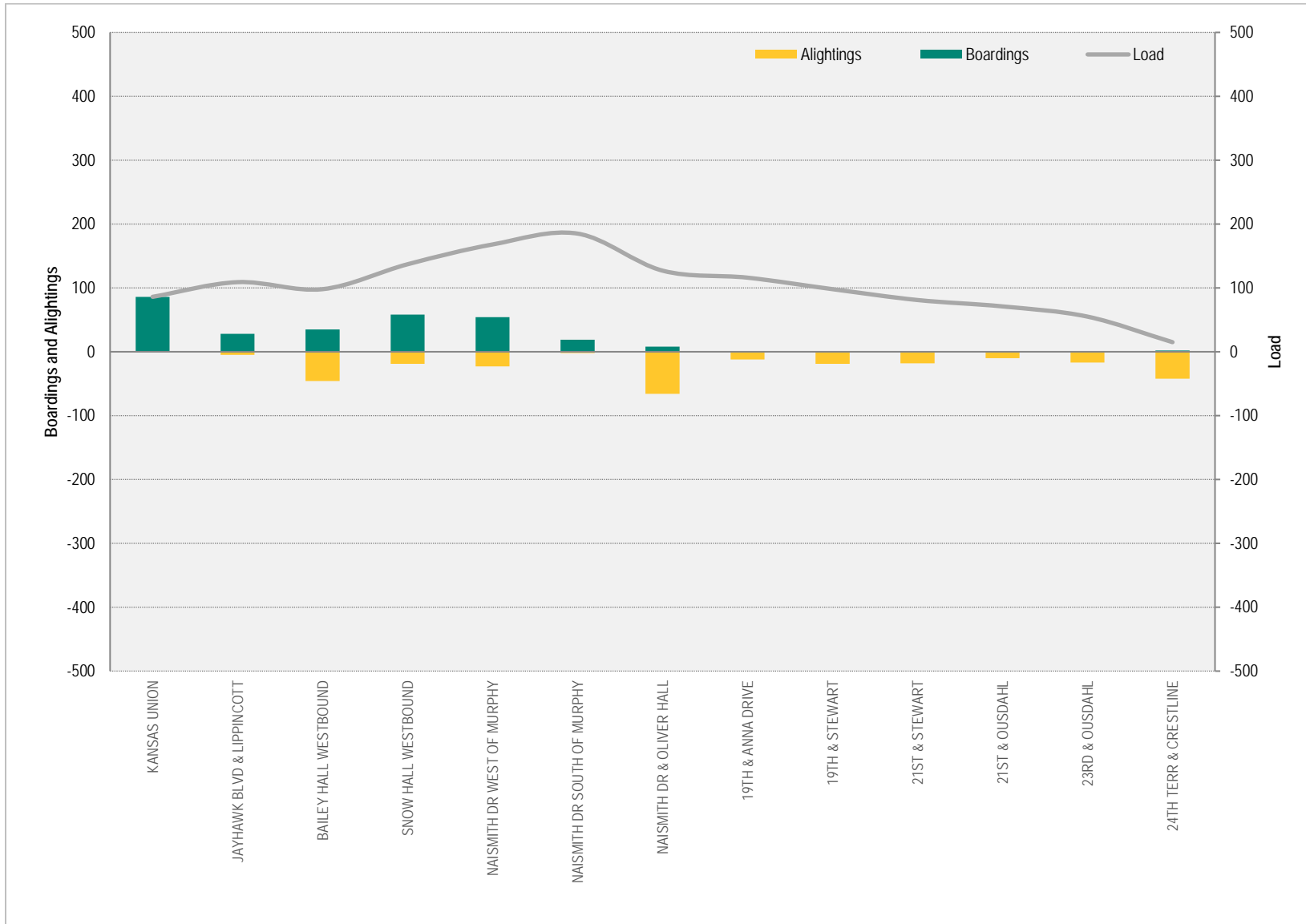
Figure 9 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 38
KU on Wheels

Figure 10 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 38
 KU on Wheels

Figure 11 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

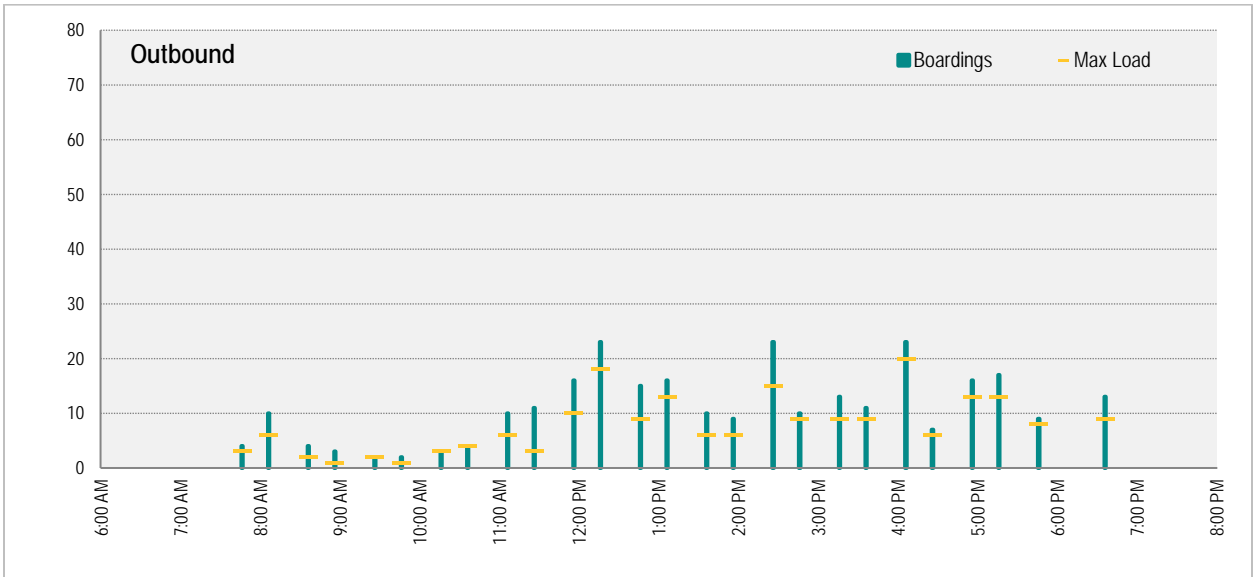
On weekdays, Route 38 ridership is highest during the morning service period traveling in the inbound direction (Figure 12 and Figure 13). Inbound, four trips carry more than 30 passengers, peaking at 10:35 AM (34 passengers); a second ridership spike occurs at 1:55 PM (32 passengers), likely corresponding with students traveling to campus for classes.

Outbound ridership is lighter, with only three trips averaging more than 20 passengers over the course of the service day. This suggests that riders may be using Route 38 interchangeably with other routes, particularly on and near campus, where the route overlaps with several other routes, including Route 27 and Route 42.

Ridership on Route 38 is highest from noon to 6:00 PM, and peaks at 4:06 PM (23 passengers). Outbound ridership is lowest during the morning period, when only four trips carry more than 10 passengers. Passengers per trip does not exceed seating capacity (35 to 40 passengers) on any outbound or inbound trips.

ROUTE EVALUATION | ROUTE 38
 KU on Wheels

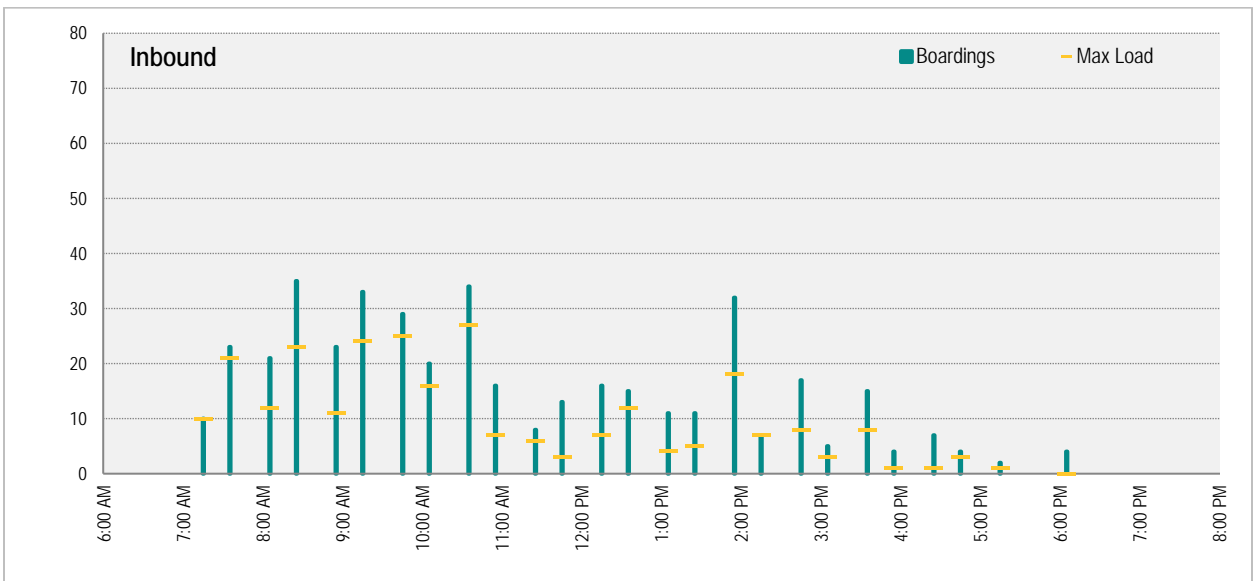
Figure 12 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: No data was collected for the 7:46 AM, 8:06 AM, and 11:56 AM outbound trips. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 13 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

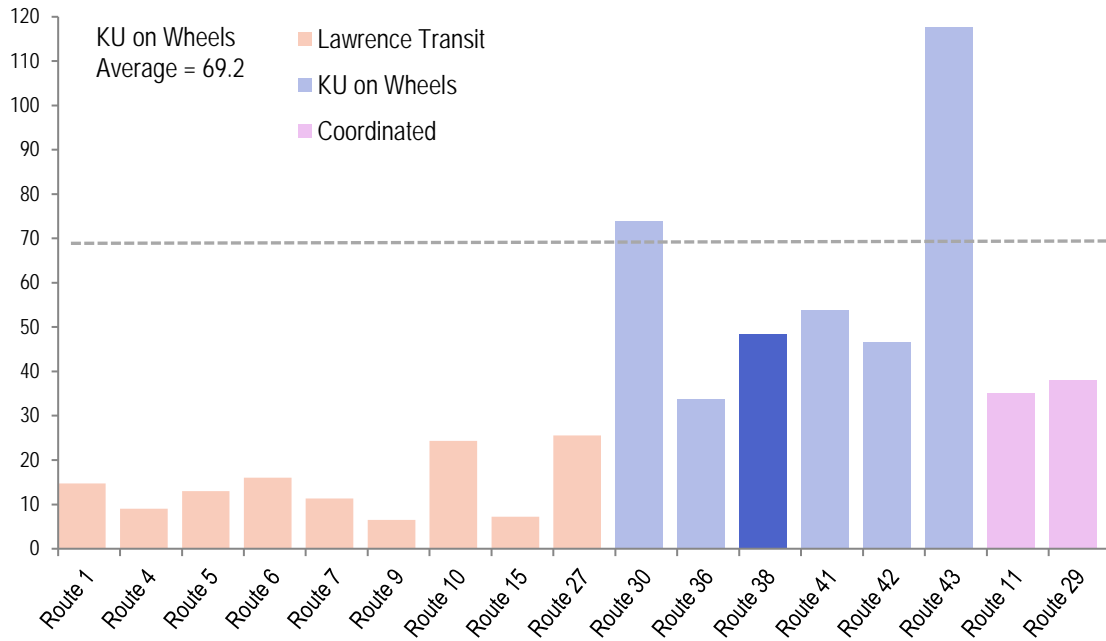
In terms of average passengers per hour, Route 38 is the fourth most productive KU on Wheels bus route (Figure 14). The route carries 48.5 passengers per hour on weekdays, 30% less than the system average (Figure 15).

Figure 14 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	863	17.8	48.5	69.2	4 of 6

Source: Lawrence Transit, 2016

Figure 15 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 66.4% of Route 38 time points were served “on-time” during the survey period (Figure 16). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance is affected by early departures, which account for 24.7% of time points served. Late departures represent only 8.9% of time points served.

Figure 16 | On-Time Performance

WEEKDAY	
On-Time	66.4%
Early	24.7%
Late	8.9%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 38 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Operate on a Consistent 20-minute Headway During Peak Periods.** Currently, Route 38 alternates between a 20-minute and 30-minute headway, creating a somewhat confusing schedule. While the route still primarily serves students, ridership patterns show some similarity to traditional commuter routes because it serves off-campus residential areas that are a 30-45 minute walk to the core campus. Many students are traveling to campus in the morning and staying through at least the lunch hour. A consistent 20-minute frequency during peak hours (approximately 7:30-10:30 AM and 2:30-5:30 PM), and a consistent 30-minute frequency otherwise, would make the route more legible and easier-to-use.
- **Combine with Route 41.** According to on-board surveys, Route 38 ridership is nearly evenly split between students and non-students. This suggests that some riders, particularly south of Clinton Parkway, may be less interested in traveling to the KU campus than riders north of Clinton Parkway. This is further validated by the relatively high rate of transfers between Route 38 and Route 11 serving downtown Lawrence. Combining Route 41 and 38 would create a loop linking the West Campus with the Main Campus via 19th Street and Irving Hill Road (assuming buses operate bi-directionally). Neighborhoods south of Clinton Parkway could then be more directly linked to downtown Lawrence, perhaps with a modification to Route 7.
- **Consider Interlining Route 38 with Another KU on Wheels Route.** Route 38 is a relatively short route that completes a full round-trip including layover time in about 50 minutes. Interlining Route 38 with another KU on Wheels route could facilitate more efficient operations and creating one seat ride opportunities. Interlining Route 38 with another route could also help improve its on-time performance by optimizing cycle time and recovery time.

KU on Wheels

ROUTE 41

Campus Circulator (Yellow)

SERVICE DESIGN

Route 41 is a KU on Wheels circulator route that operates service on the campus of the University of Kansas. The route travels primarily along Jayhawk Boulevard, Irving Hill Road, Becker Drive, and Sunnyside Avenue (Figure 1). Route 41 provides service to numerous on-campus destinations, including academic buildings, residence halls, and recreation facilities.

ALIGNMENT/SERVICE PATTERNS

Route 41 has a single consistent service pattern for weekday service. Departing outbound from the Park and Ride Stop #4 on Becker Drive, Route 41 starts on Becker Drive, turns right on Constant Avenue, right on Irving Hill Road, right on Naismith Drive, and continues to Sunnyside Avenue. From Sunnyside Avenue, Route 41 turns left on Sunflower Road and left on Jayhawk Boulevard, serving Bailey Hall before terminating at Snow Hall.

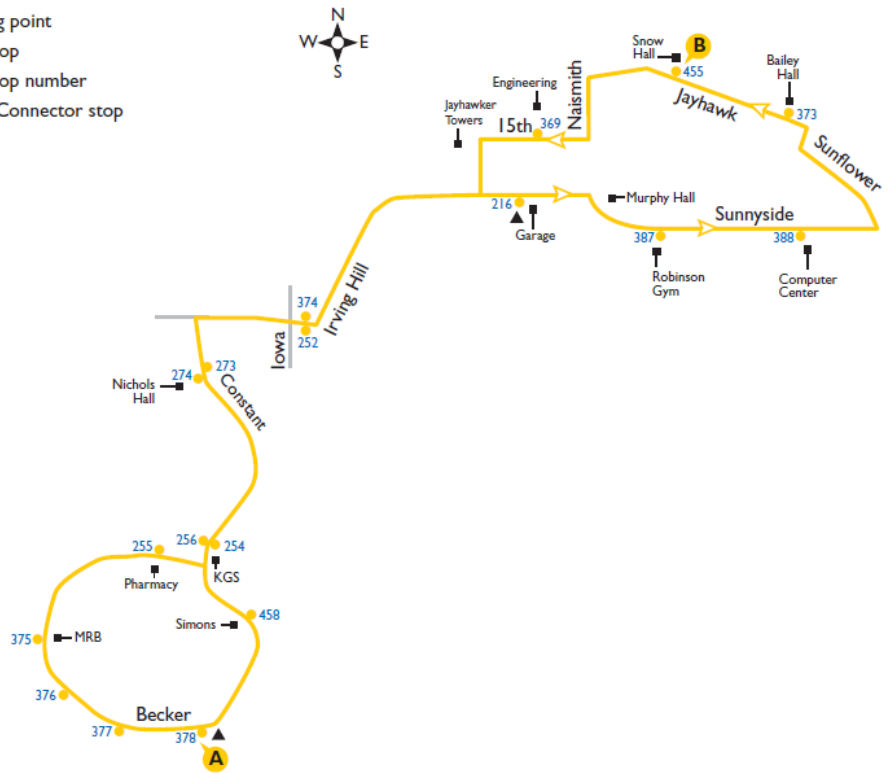
Returning inbound from Snow Hall, Route 41 begins on Jayhawk Boulevard, travels around the traffic circle onto Crescent Road, turns left on Naismith Drive, right on 15th Street, and left on Burdick Road. From Burdick Road Route 41 turns right on Irving Hill Road, left on Constant Avenue, and right on Becker Drive, terminating at the Park and Ride Stop #4.

ROUTE EVALUATION | ROUTE 41
 KU on Wheels

Figure 1 | Route Map

41 Campus Circulator
 (Yellow)

- A** Timing point
- Bus stop
- # Bus stop number
- ▲ K-10 Connector stop



This route operates Monday–Friday while KU is in session, except holidays and breaks: Martin Luther King Day, Spring Break, Memorial Day, Spring Stop Day, Summer Semester, Labor Day, Fall Break, Thanksgiving Break, Fall Stop Day, and Winter Break.

Source: Lawrence Transit; August 2015 – August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 41 and several Lawrence Transit and KU on Wheels routes at the Snow Hall. There are also transfer opportunities at several other points along the route, including along Irving Hill Road (Route 11); transfers to the K-10 Connector, operated by Johnson County Transit, are also available on Irving Hill Road (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Snow Hall	Route 10, Route 11, Route 27, Route 29, Route 30, Route 36, Route 38, Route 42, Route 43
Irving Hill Road and Engel Road	Route 11, Route 43

SERVICE SCHEDULE

Route 41 operates service Monday-Friday when KU is in session (Figure 3). On Monday–Thursday, the route runs every eight to 30 minutes from 6:30 AM to 10:30 PM during KU’s fall and spring semesters. On Fridays during KU’s fall and spring semesters Route 41 runs every eight to 20 minutes from 6:30 AM to 7:00 PM. During the summer session, or when KU is on break, Route 41 runs every 30 minutes from 6:30 AM to 6:30 PM. Route 41 does not operate on Saturdays or Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Thursday	6:30 AM – 10:30 PM	8-30	--
Friday	6:30 AM – 7:00 PM	8-20	--
Monday-Friday (KU on break)	6:30 AM – 6:30 PM	30	--
Saturday-Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 41 ranks second of six KU on Wheels routes in terms of weekday ridership and fourth of six in terms of ridership per trip (Figure 4). On average, the route carries 1,730 passengers, or 19.9 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

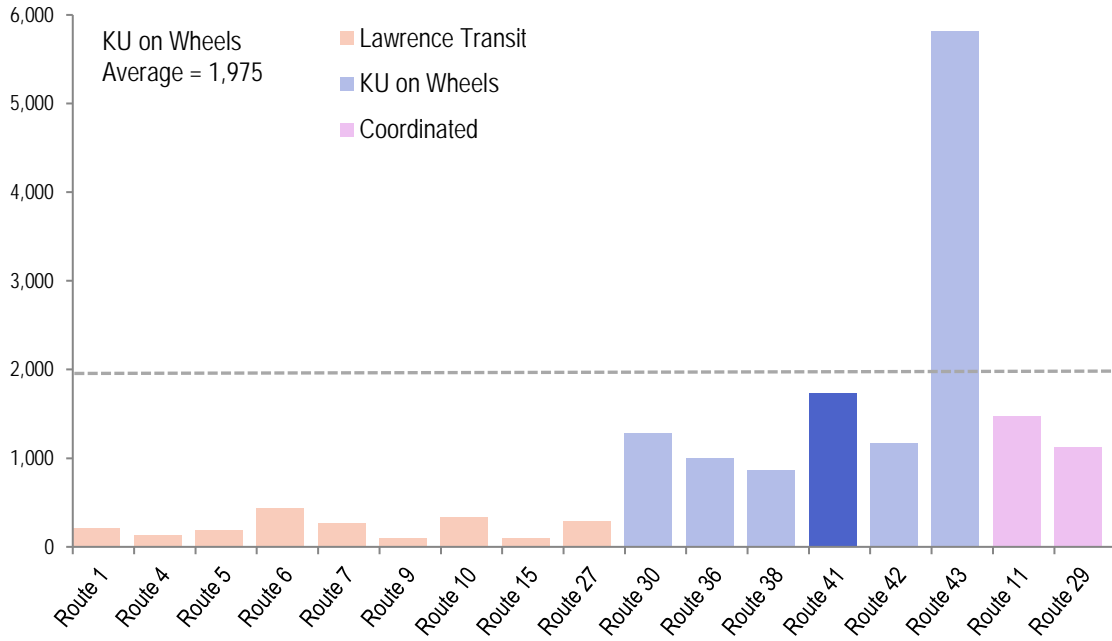
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TYPICAL DAILY TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	1,730	87	19.9	22.8	4 of 6

Source: Lawrence Transit, 2016

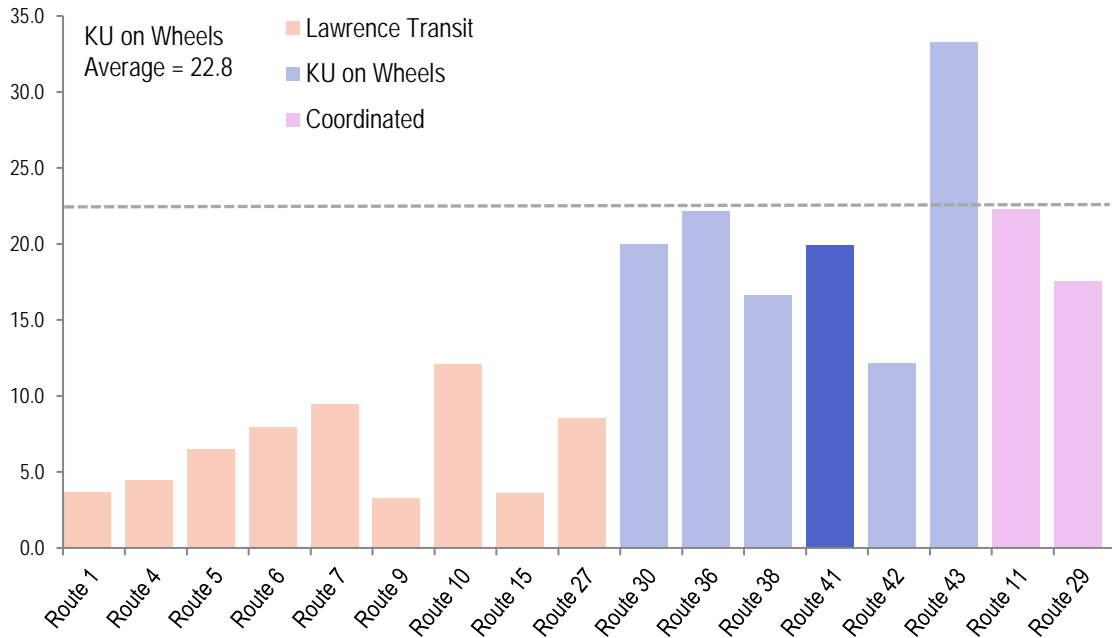
ROUTE EVALUATION | ROUTE 41
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 41 are located on KU’s campus, near academic buildings and on-campus student housing (Figure 7). The highest ridership stop is at Irving Hill Road and Engel Road West, which generates an average of 475 daily boardings and alightings. Other stops with more than 100 boardings and alightings per weekday include: Snow Hall Westbound, Bailey Hall Westbound, Robinson Gym, Irving Hill Road and Engel Road East, and Becker Drive Stop #4. These stops primarily serve academic buildings, including Snow Hall, Bailey Hall, and Oswald Hall, on-campus student housing, and commuter parking lots. All other stops serve fewer than 87 boardings and alightings (Figure 8-Figure 9).

Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday)

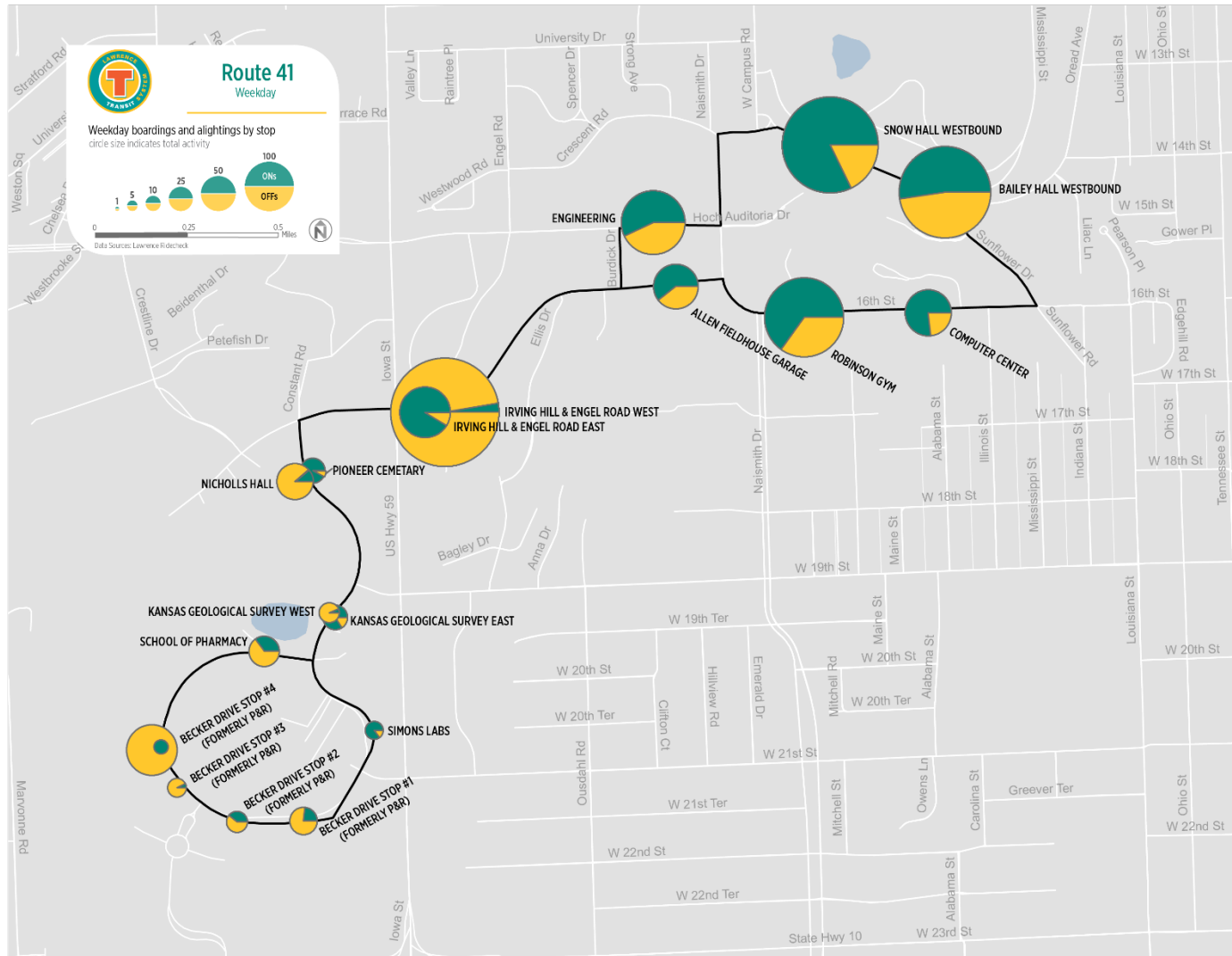
BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Irving Hill Road / Engel Road West	475	Oswald Hall; on-campus student housing; Lied Center of Kansas
Snow Hall Westbound	371	Snow Hall, KU campus
Bailey Hall Westbound	338	Bailey Hall, KU campus
Robinson Gym	252	Allen Fieldhouse, School of Business, KU campus
Becker Drive Stop #4	112	Commuter parking; Multidisciplinary Research Building

*Weekday ridership (boardings and alightings) for Route 41 only

ROUTE EVALUATION | ROUTE 41

KU on Wheels

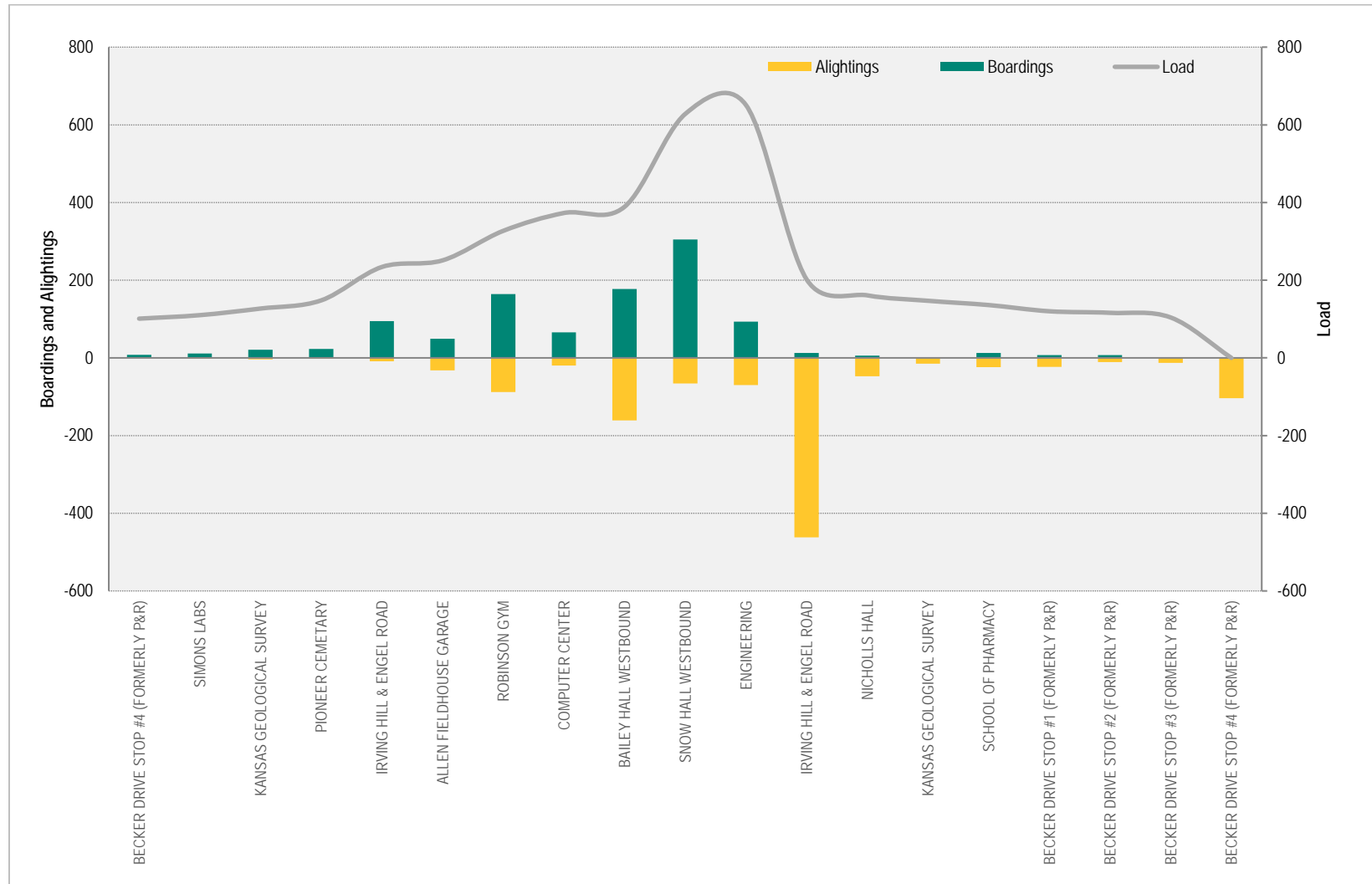
Figure 8 | Weekday Loop Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 41
 KU on Wheels

Figure 9 | Weekday Loop Ridership by Stop Chart

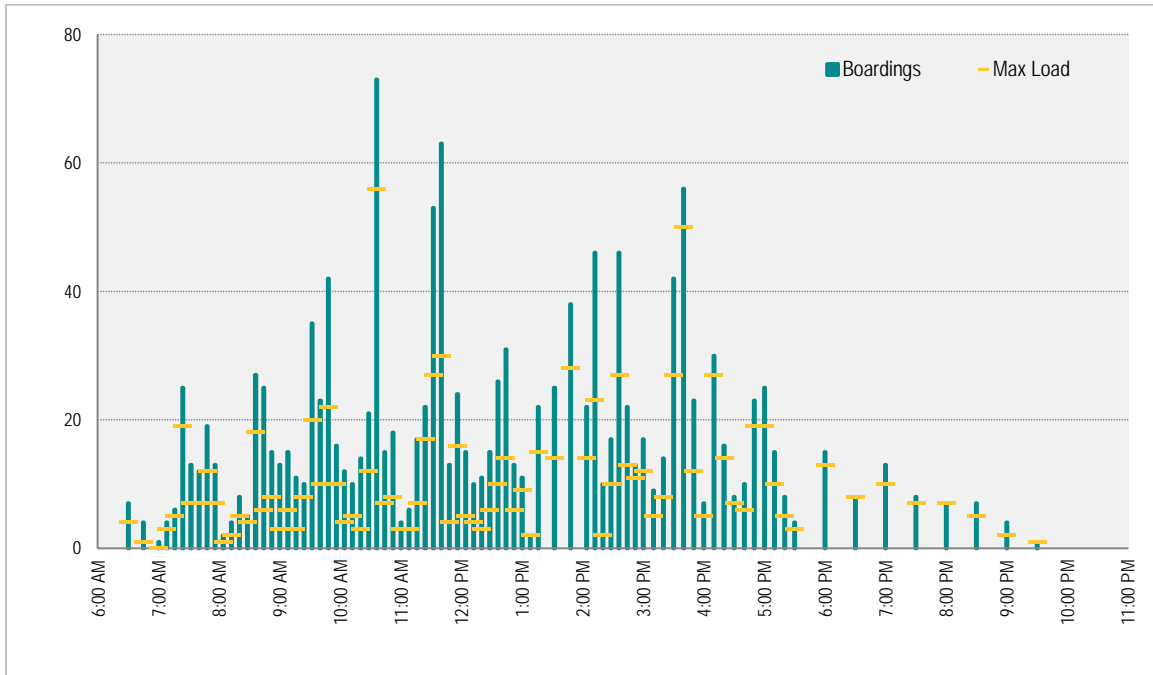


Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

Weekday ridership trends are cyclical, and likely align with KU's class schedule. On weekdays, Route 41 ridership is highest during the mid-morning and afternoon service periods (Figure 10). During these periods ridership regularly exceeds 40 passengers per trip. Ridership peaks at 10:36 AM, averaging 73 passengers per trip. Secondary peaks occur at 11:32 AM (53 passengers), 11:40 AM (63 passengers), and 3:40 PM (56 passengers). Overall, 33% of all trips carry 20 or more passengers, and 10% of all trips carry over 40 passengers. Ridership declines during the evening service period; no trips after 5:00 PM average more than 15 passengers.

Figure 10 | Weekday Loop Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: No data recorded for the 1:24, 1:40, or 1:56 PM trips. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

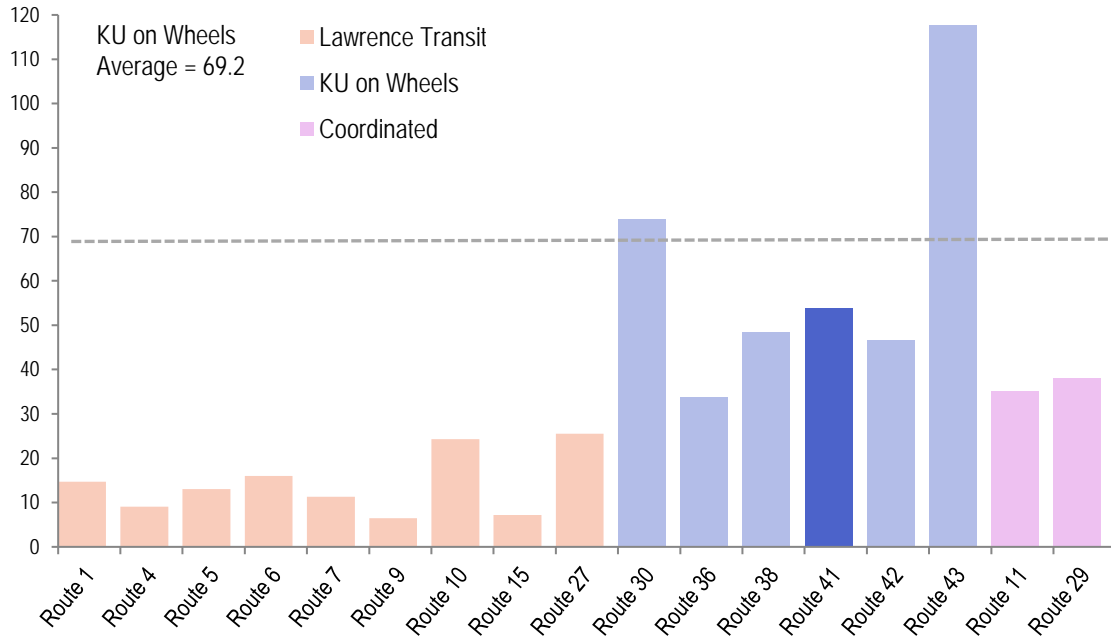
In terms of average passengers per hour, Route 41 is the third most productive KU on Wheels bus route (Figure 11). The route carries 53.9 passengers per hour on weekdays, 23% less than the system average (Figure 12).

Figure 11 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	1,730	32.1	53.9	69.2	3 of 6

Source: Lawrence Transit, 2016

Figure 12 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 31.5% of Route 41 time points were served “on-time” during the survey period (Figure 13). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance was affected equally by early and late departures: 37.5% of time points were served early, while 31% of time points were impacted by late departures.

Figure 13 | On-Time Performance

WEEKDAY	
On-Time	31.5%
Early	37.5%
Late	31.0%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 41 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Combine with Route 38.** Overall, Route 41 is a productive, high-ridership route that connects students to computer labs, recreational centers, housing, classrooms, and research labs. Potential opportunities exist, though, to make additional connections to off-campus housing and retail locations. Combining Route 38 and 41 would create a loop linking West Campus with the Main Campus via 19th Street and Irving Hill Road (assuming buses operate bi-directionally), as well as neighborhoods to the south and east of campus.
- **Shift 8-Minute Frequency to Between 9:00 AM and 5:00 PM.** Route 41 has minor overcrowding issues at various times of day, including between 3:00 and 4:00 PM. Currently, the bus runs every eight minutes from 7:00 AM to 3:00 PM, and every ten minutes from 3:00 PM to 5:30 PM. Ridership on Route 41 peaks between 9:00 AM and 5:00 PM, so running the bus more frequently during this period could help the afternoon overcrowding.
- **Simplify Schedule Headways.** The current schedule has four different headways on Route 41 depending on the time of day. Though all but the evening headway of 30-minutes are short enough that riders do not need to look at or remember a schedule at all, a simpler schedule would make the service even easier to use and could potentially spur ridership after 6:00 PM. For example, a headway of every 20 minutes from 6:30 AM – 9:00 AM, every 8 minutes from 9:00 AM – 5:00 PM, and every 20 minutes again from 5:00 PM – 10:30 PM would maintain the current number of daily trips on the route but make the schedule much easier to remember.
- **End Service at 8:00 PM.** Evening service on Route 41 tends to be unproductive, and after approximately 9:30 PM, the route has no riders. Ending service around 8:00 PM makes resources available to devote elsewhere on the system and makes the schedule more consistent with other routes in the system.
- **Add Saturday Service on Route 41.** Ridership is strong during the weekday on Route 41, indicating that additional weekend service could also be successful. Route 41 is also a short trip for students and makes many advantageous connections on campus; Saturday service would benefit students, especially in inclement weather and during exam times.

KU on Wheels

ROUTE 42

Campus Circulator (Blue/Orange)

SERVICE DESIGN

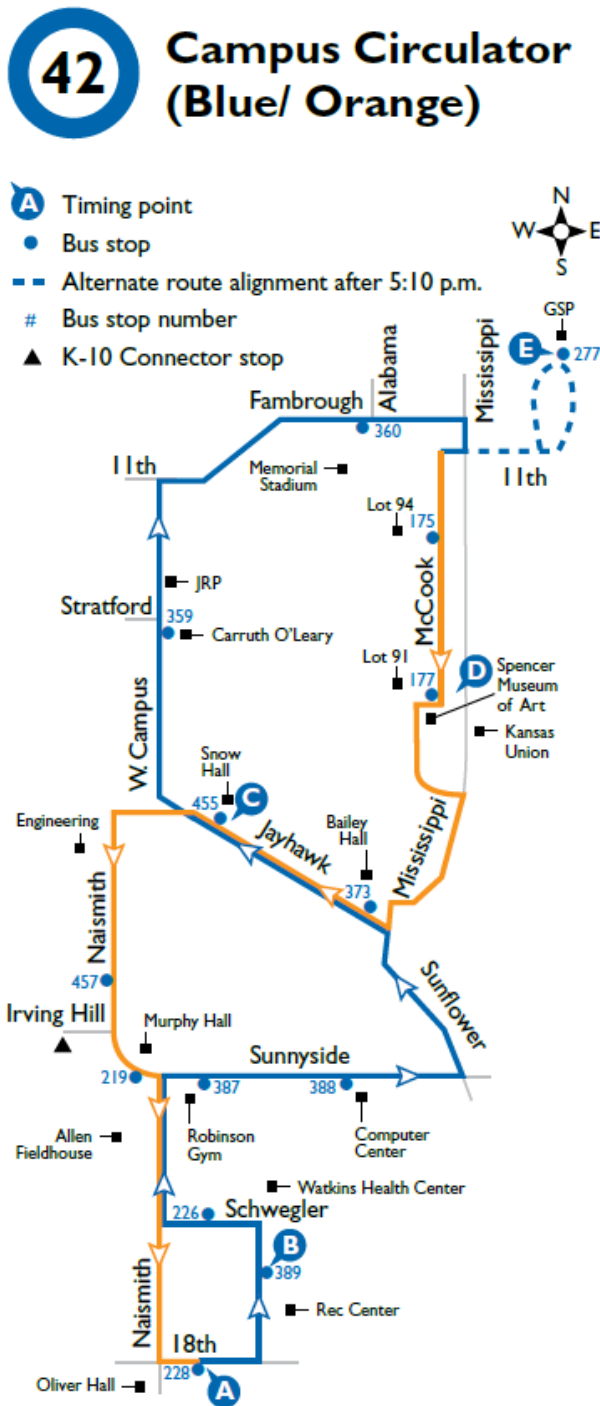
Route 42 is a KU on Wheels circulator route that operates two service alignments on the campus of the University of Kansas. The route travels primarily along Naismith Drive, Sunnyside Avenue, W. Campus Road, McCook Street, Mississippi Street, and Jayhawk Boulevard (Figure 1). Route 42 provides service to numerous on-campus destinations, including academic buildings, residence halls, recreation facilities, Memorial Stadium, and Spencer Museum of Art.

ALIGNMENT/SERVICE PATTERNS

Route 42 operates two distinct service patterns for inbound and outbound weekday service, with an alternate inbound route alignment extending service to the Gertrude Sellards Pearson (GSP) Residence Hall from 5:10 p.m. to 10:25 p.m., when service concludes. Departing inbound from the bus stop at 18th Street and Naismith Drive, Route 42 turns left at Watkins Center Drive, serving the KU Student Center. The route turns left on Schwegler Drive, right on Naismith Drive, right on Sunnyside Avenue, left on Sunflower Road, and follows Jayhawk Boulevard through main campus, before turning right on W. Campus Road. From W. Campus Road Route 42 turns right on 11th Street, right on Mississippi Street, and terminates service at Lot 94. From 5:10 p.m. to 10:25 p.m., Route 42 turns left on 11th Street, right on College Drive, serves the GSP, turns right back onto 11th Street, and terminates at Lot 94.

Traveling outbound from Lot 94, Route 42 serves the Spencer Museum of Art, turns right on Mississippi Street, left on Sunflower Road, and right on Jayhawk Boulevard. From Jayhawk Boulevard Route 42 travels around the traffic circle onto Crescent Road, turns left on Naismith Drive and follows Naismith until turning left on 18th Street and completing the route.

Figure 1 | Route Map



This route operates Monday–Friday while KU is in session, except holidays and breaks: Martin Luther King Day, Spring Break, Memorial Day, Spring Stop Day, Summer Semester, Labor Day, Fall Break, Thanksgiving Break, Fall Stop Day, and Winter Break.

Source: Lawrence Transit; August 2015 – August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 42 and several Lawrence Transit and KU on Wheels routes at the Snow Hall. There are also transfer opportunities at several other points along the route, including along Sunnyside Drive (Route 27 and Route 41), Jayhawk Boulevard, and Naismith Drive (Route 11, Route 27, Route 38); transfers to the K-10 Connector, operated by Johnson County Transit, are also available on nearby Irving Hill Road (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Snow Hall	Route 10, Route 11, Route 27, Route 29, Route 30, Route 36, Route 38, Route 41, Route 43

SERVICE SCHEDULE

Route 42 operates service Monday-Friday when KU is in session (Figure 3). On Monday-Thursday, the route runs every 15 to 30 minutes from 7:10 AM to 10:26 PM. On Fridays, Route 42 runs every 15 minutes from 7:10 AM to 5:55 PM. Route 42 does not operate on Saturdays or Sundays, or when KU is not in session.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Thursday	7:10 AM – 10:26 PM	15-30	52/53
Friday	7:10 AM – 6:00 PM	15	42/43
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 42 ranks fourth of six KU on Wheels routes in terms of weekday ridership and last of six in terms of ridership per trip (Figure 4). On average, the route carries 1,166 passengers, or 12.1 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

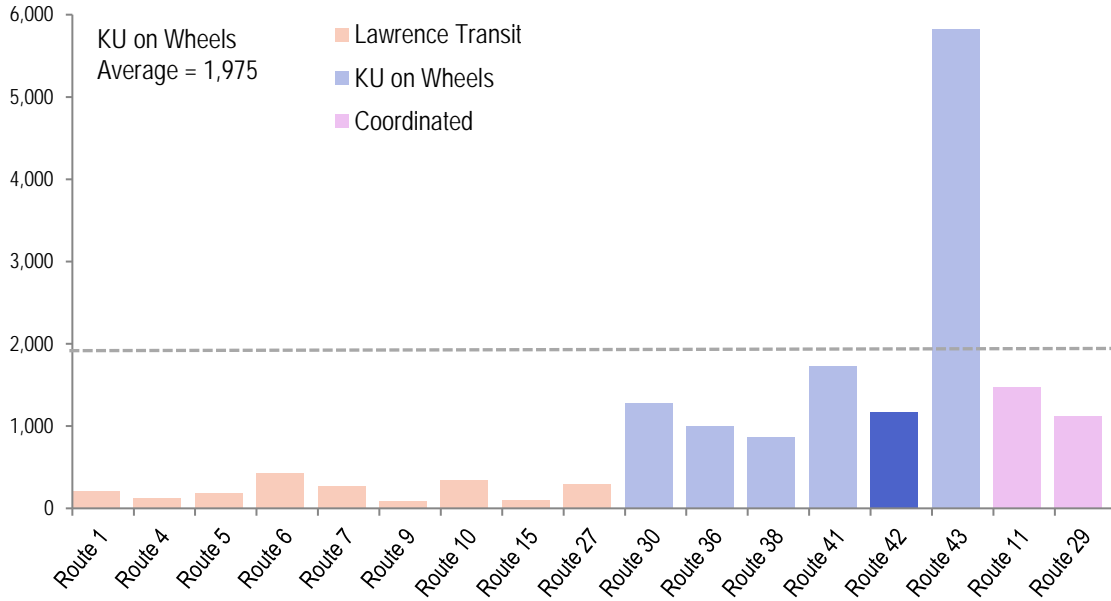
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	1,166	96	12.1	22.8	6 of 6

Source: Lawrence Transit, 2016

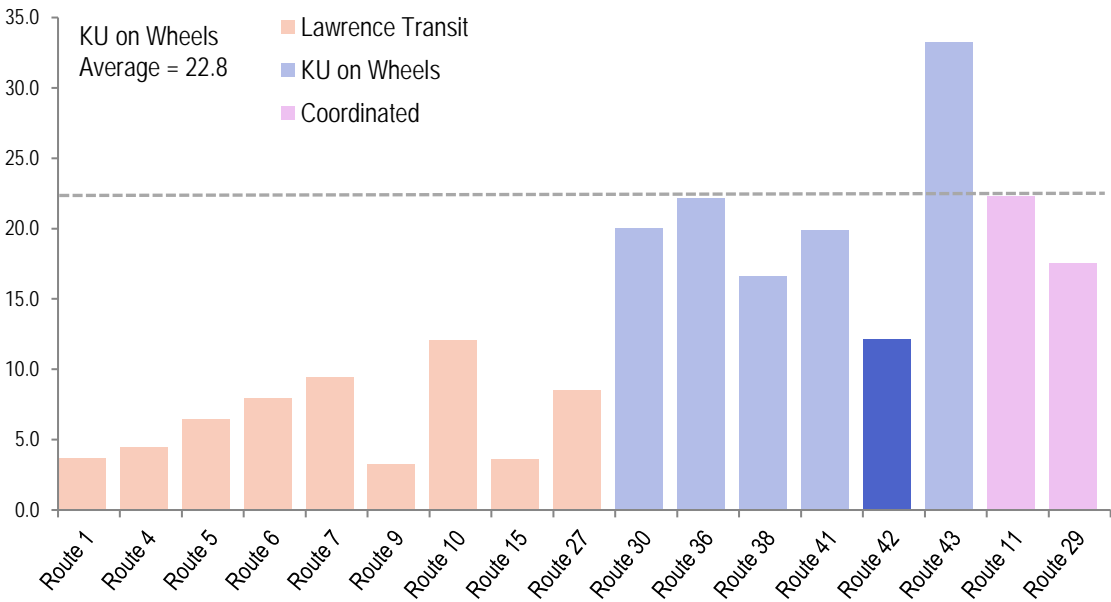
ROUTE EVALUATION | ROUTE 42
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday inbound ridership stops on Route 42 are located on KU’s campus near academic buildings and recreational facilities (Figure 7). Ridership is highest at Bailey Hall Westbound, averaging 428 combined daily boardings and alightings. Other stops with more than 100 boardings and alightings per weekday include: Ambler Student Recreation & Fitness Center, Snow Hall Westbound, and Fambrough Street & Alabama Drive. These stops serve academic buildings, such as Bailey Hall, and Snow Hall, but also provide access to key recreational facilities, including Allen Fieldhouse, Memorial Stadium, and the Ambler Student Recreation & Fitness Center. All other stops serve fewer than 92 daily boardings and alightings (Figure 8-Figure 11).

Traveling in the outbound direction, weekday ridership is highest at 18th Street and Naismith, generating 153 combined daily boardings and alightings.

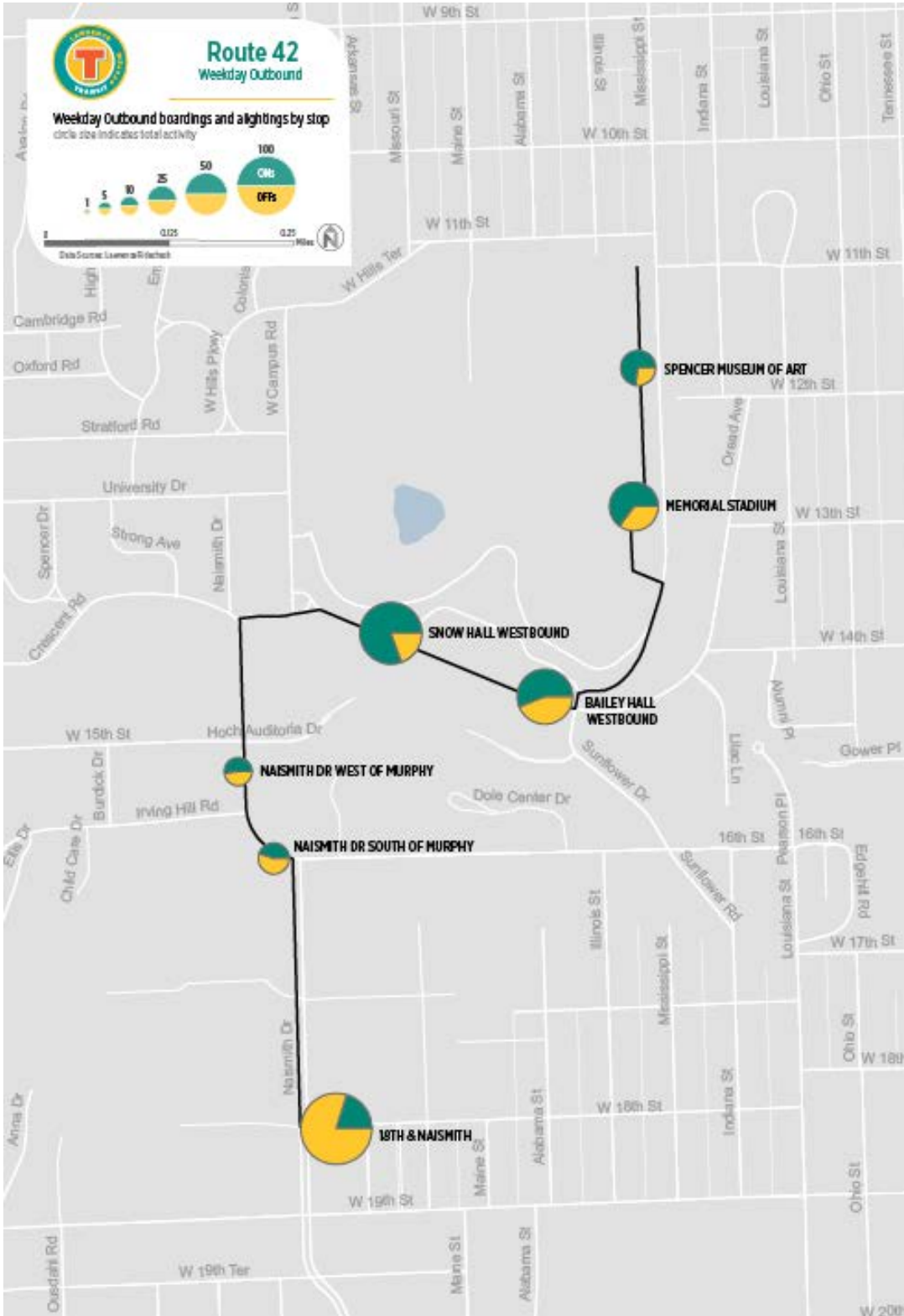
Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Bailey Hall Westbound	428	Bailey Hall; KU campus
Ambler Student Recreation & Fitness Center	221	Ambler Student Recreation & Fitness Center
Snow Hall Westbound	171	Snow Hall; KU campus
Fambrough Drive / Alabama Street	104	Memorial Stadium; off-campus student housing
Robinson Gym	91	School of Business; Allen Fieldhouse; KU campus

*Weekday inbound ridership (boardings and alightings) for Route 42 only

ROUTE EVALUATION | ROUTE 42
 KU on Wheels

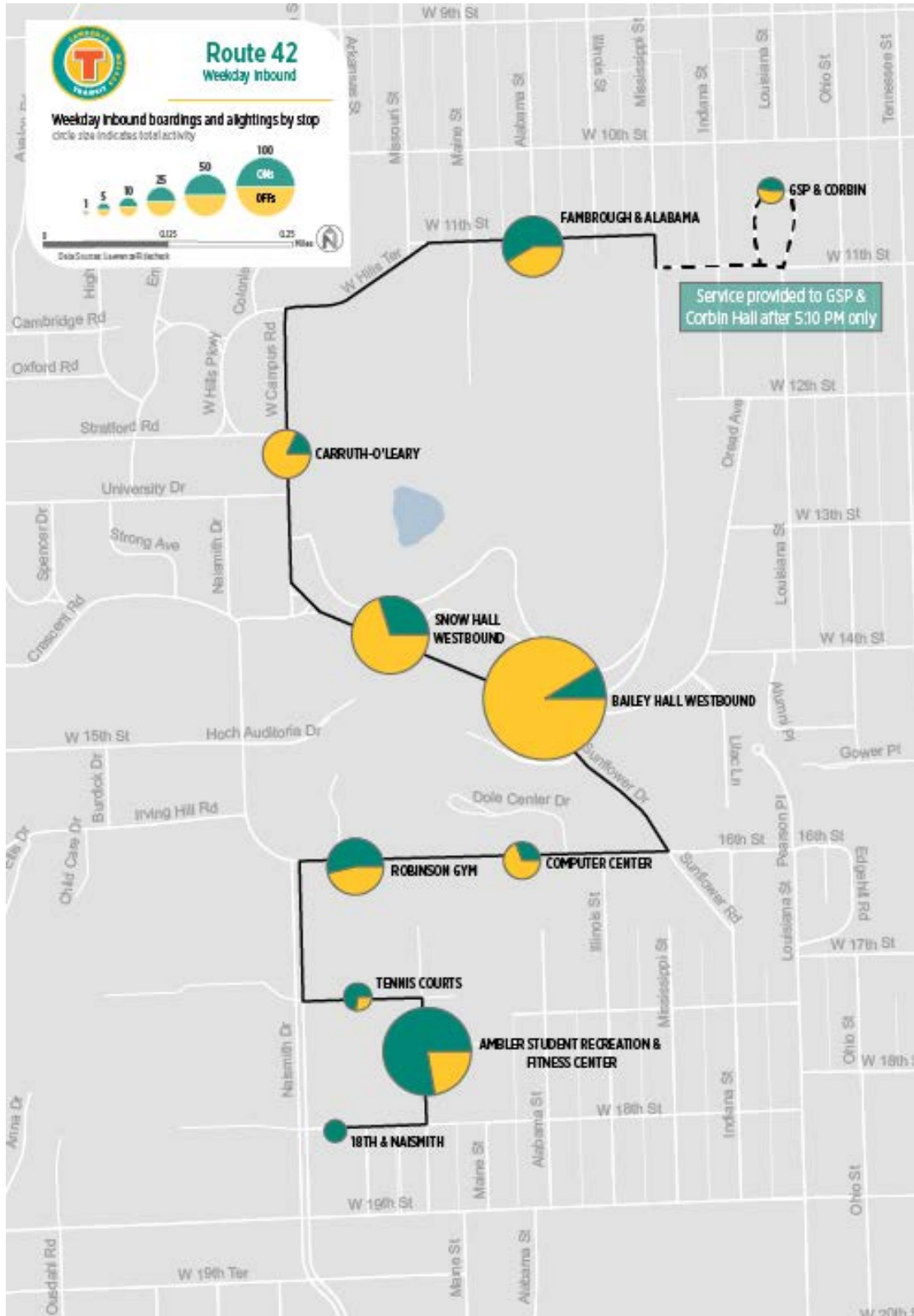
Figure 8 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 42
 KU on Wheels

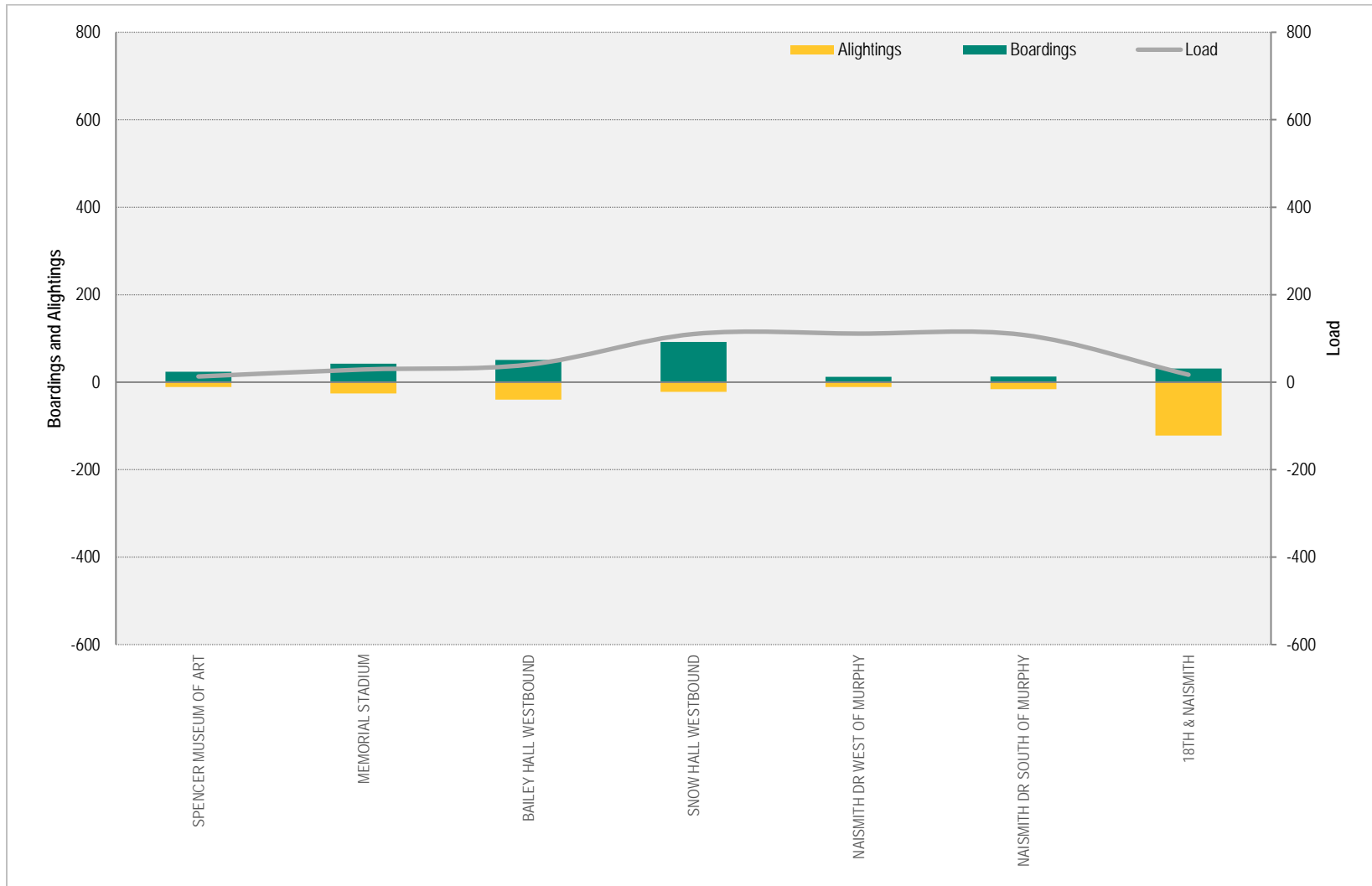
Figure 9 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 42
 KU on Wheels

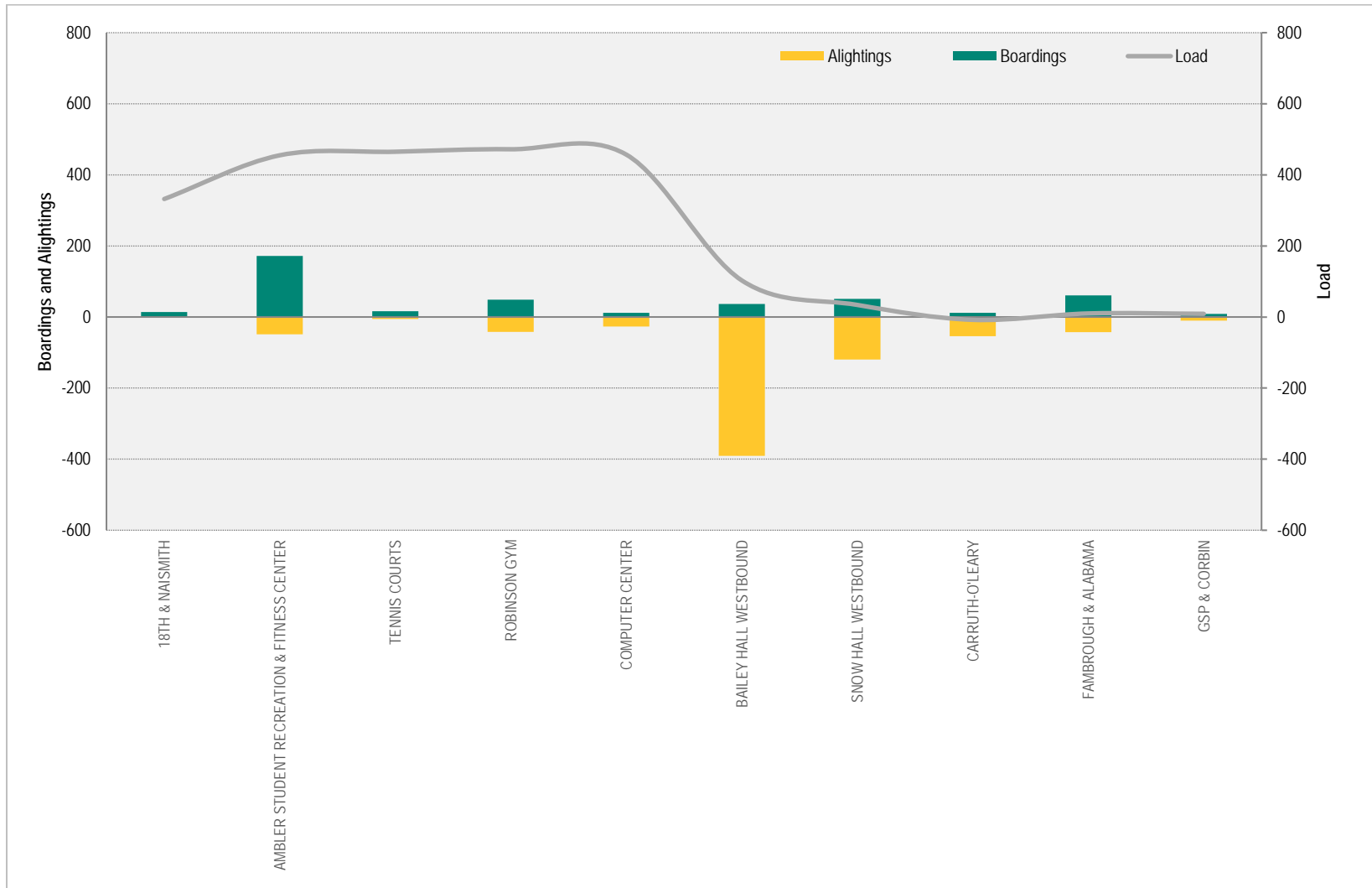
Figure 10 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 42
 KU on Wheels

Figure 11 | Weekday Inbound Ridership by Stop Chart



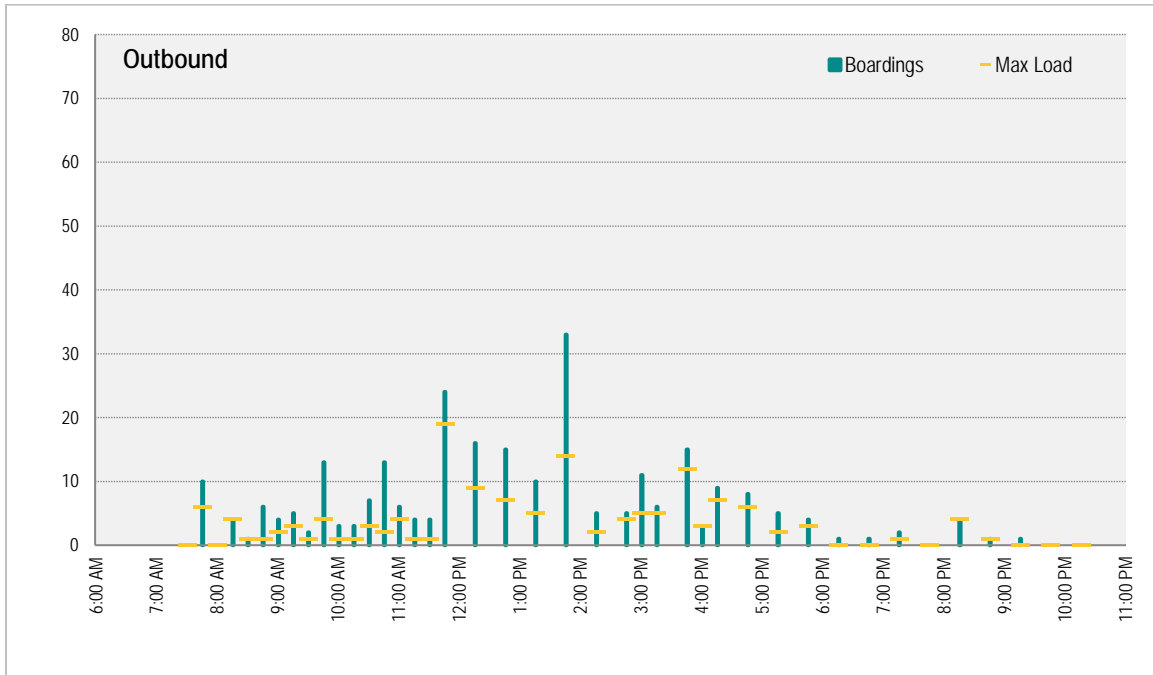
Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

On weekdays, Route 42 ridership is highest traveling in the inbound direction during the mid-morning service period (Figure 13). During this period (8:30 to 11:00 AM), ridership per trip ranges from 15 passengers to the peak of 40 passengers, at 9:10 AM. Ridership declines precipitously after 12:00 PM, and no inbound trips carry more than 11 passengers after 4:00 PM. Overall, 21% of inbound trips carry 20 or more passengers, and three inbound trips carry over 30 passengers per trip.

Weekday ridership in the outbound direction peaks at 1:46 PM, averaging 33 passengers per trip (Figure 12). The majority of outbound trips (76%) carry 10 or fewer passengers, and only two outbound trips carry more than 20 passengers.

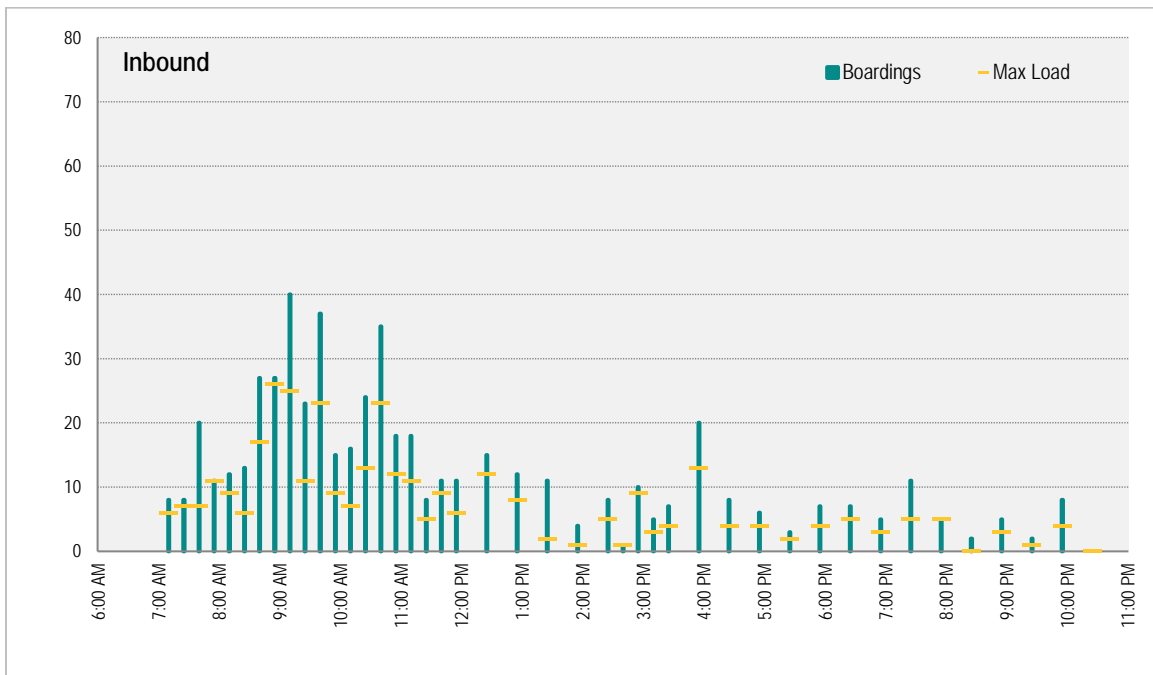
Figure 12 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: Missing data for trips at 0:01 and 0:31 past the hour between 12:01-6:01 PM, except at 3:01 and 4:01 PM; a total of 11 trips are missing. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 13 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

Note: Missing data for trips at 0:10 and 0:40 past the hour between 12:10-2:10 PM and 3:40-5:40 PM; a total of 10 trips are missing. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

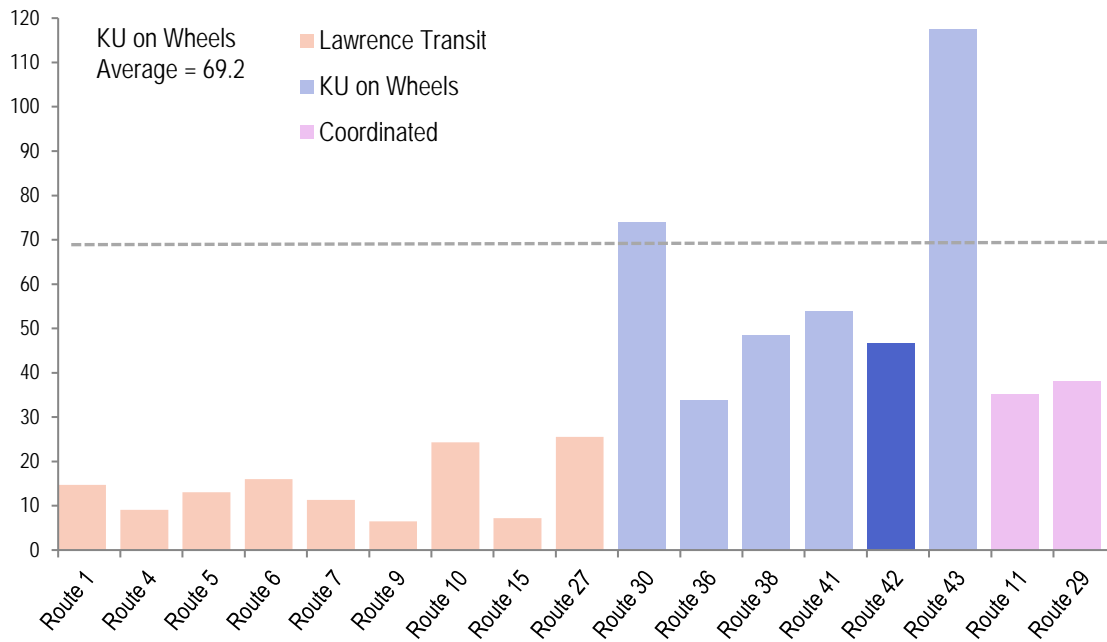
In terms of average passengers per hour, Route 42 is the fifth most productive KU on Wheels bus route (Figure 14). The route carries 46.6 passengers per hour on weekdays, 33% less than the system average (Figure 15).

Figure 14 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	1,166	25.0	46.6	69.2	5 of 6

Source: Lawrence Transit, 2016

Figure 15 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 57.1% of Route 42 time points were served “on-time” during the survey period (Figure 16). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance was affected primarily by late departures, with over one-quarter of time points served late; 15.9% of time points were impacted by early departures.

Figure 16 | On-Time Performance

	WEEKDAY
On-Time	57.1%
Early	15.9%
Late	26.9%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 42 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Reduce One-Way Service.** Route 42 allows riders to travel from the recreation and fitness center, and adjacent parking lot, to academic destination along Sunnyside Avenue, but the one-way alignment of the route requires significant out-of-direction travel to return to the parking lot or rec center. Bi-directional service along Sunnyside Avenue would make the route more user-friendly.
- **Reduce Frequency to Every 20 Minutes.** Ridership is relatively strong on Route 42 overall, but on a per trip basis, the route is weak compared to other KU on Wheels routes. A slightly lower headway of 20 minutes may be more appropriate for the route.
- **Combine with Route 43.** Route 42's strongest ridership segments are along Jayhawk Boulevard and south to the recreational areas, labs, and academic buildings. Creating a one-seat connection between the student housing on Daisy Hill and these areas on Route 42 would provide a more useful service to students and potentially improve the route's performance. Modifications to other routes, such as Route 36 for example, could help provide service around Memorial Stadium.

KU on Wheels

ROUTE 43

Campus Circulator (Red)

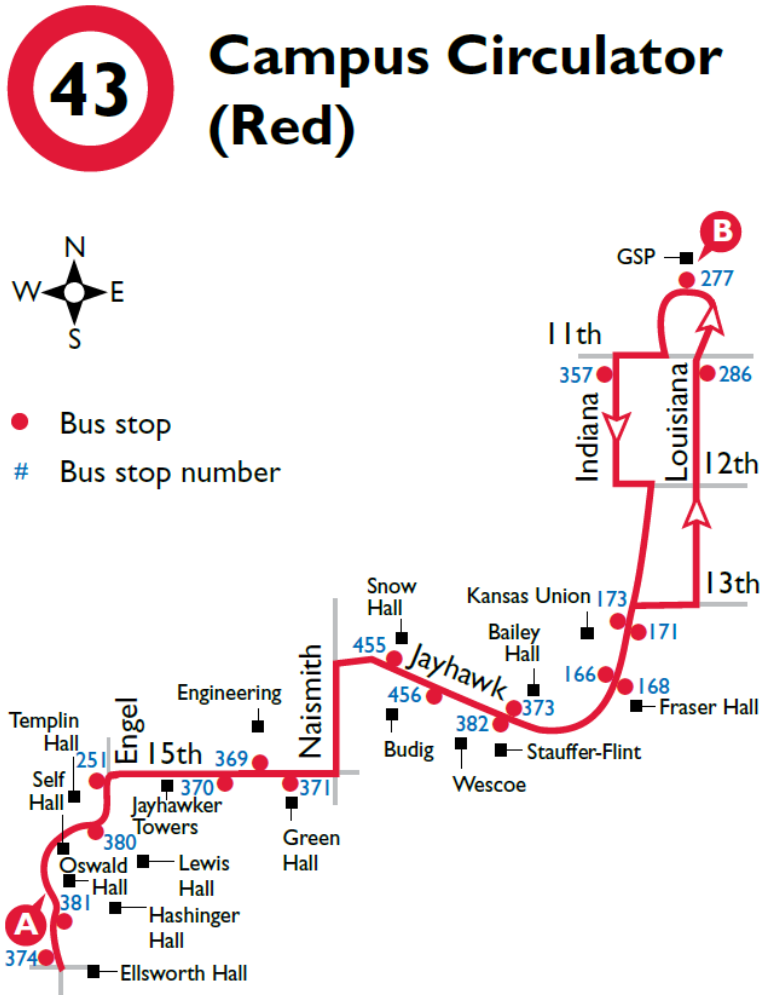
SERVICE DESIGN

Route 43 is a KU on Wheels circulator route that operates service on the campus of the University of Kansas. The route travels primarily along Irving Hill Road, Engel Road, 15th Street, Jayhawk Boulevard, Louisiana Street, and Indiana Street (Figure 1). Route 43 provides service to numerous on-campus destinations, including academic buildings, residence halls, and recreation facilities.

ALIGNMENT/SERVICE PATTERNS

Route 43 has a single consistent service pattern for weekday service. Departing outbound from the Gertrude Sellards Pearson (GSP) Residence Hall, Route 43 starts on College Drive, turns right on 11th Street, left on Indiana Street, left on 12th Street, and right on Jayhawk Boulevard, serving the Kansas Union and multiple academic buildings. From Jayhawk Boulevard Route 43 travels around the traffic circle onto Crescent Road, turns left on Naismith Drive, right on 15th Street, and left on Burdick Road, serving the Jayhawker Towers and the KU School of Law. From Burdick Road Route 43 turns right on Irving Hill Road, right on Engel Road, and right on 15th Street, returning inbound to main campus. At Naismith Drive Route 43 turns left, then right onto Crescent Road, and travels back onto Jayhawk Boulevard before turning right on 13th Street, making a final left turn on Louisiana Street, and following Louisiana back to GSP Residence Hall.

Figure 1 | Route Map



Source: Lawrence Transit: August 2015 – August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 43 and several Lawrence Transit and KU on Wheels routes at the Kansas Union. There are also transfer opportunities at several other points along the route, including along 15th Street (Route 10, Route 29, and Route 30) and Louisiana Street (Route 10, Route 11, Route 29, Route 36, and Route 38 (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Kansas Union	Route 10, Route 11, Route 29, Route 30, Route 36, Route 38
Snow Hall	Route 10, Route 11, Route 27, Route 29, Route 30, Route 36, Route 38, Route 41, Route 42

SERVICE SCHEDULE

Route 43 operates service Monday-Friday (Figure 3). On weekdays, the route runs every six to nine minutes from 7:20 AM to 5:30 PM. Route 43 does not operate on Saturdays or Sundays, or when KU is not in session.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	7:20 AM – 5:30 PM	6-9	--
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 43 ranks first of six KU on Wheels routes in terms of weekday ridership and first of six in terms of ridership per trip (Figure 4). On average, the route carries 5,818 passengers, or 33.2 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). The route averages 117.5 passengers per revenue hour, by far the highest among KU on Wheels routes.

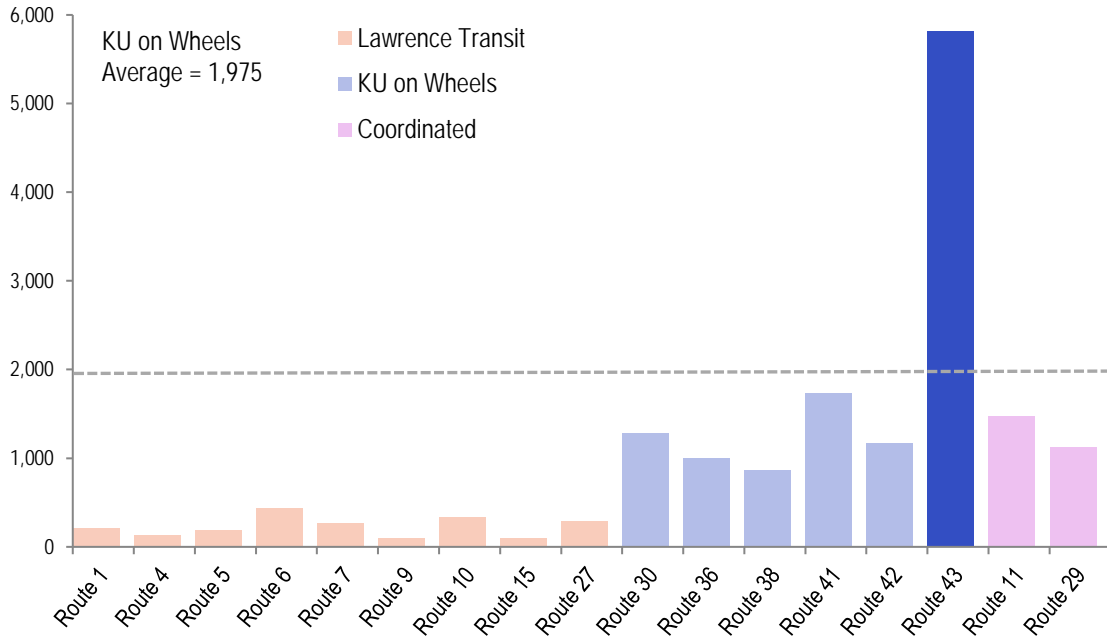
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	KU ON WHEELS AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	5,818	175	33.2	22.8	1 of 6

Source: Lawrence Transit, 2016

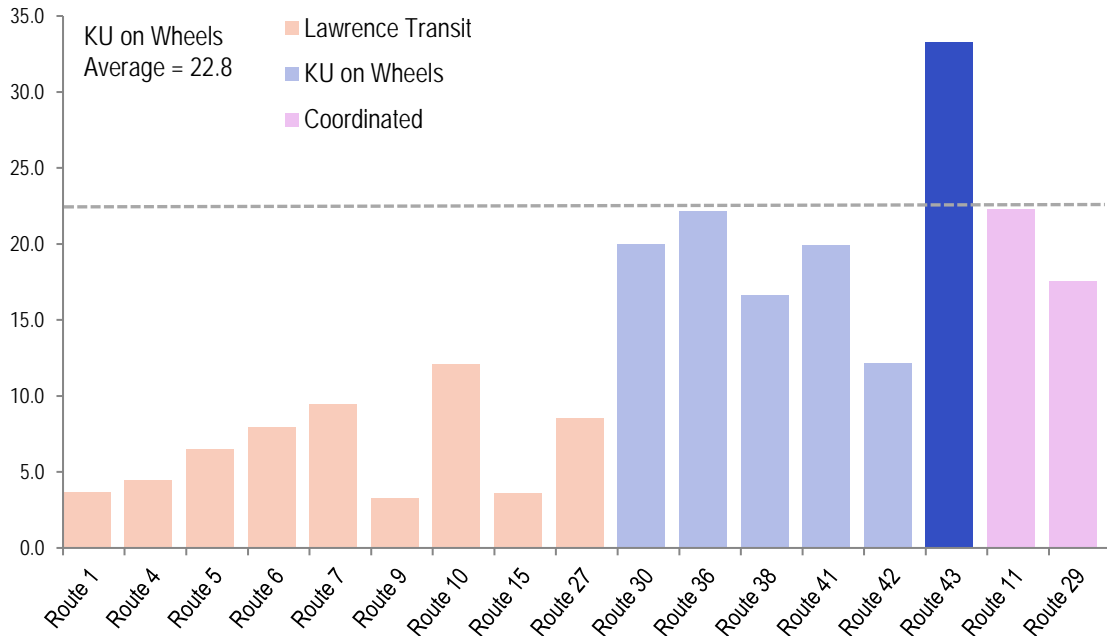
ROUTE EVALUATION | ROUTE 43
 KU on Wheels

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest inbound weekday ridership stops on Route 43 are located on KU’s campus (Figure 7). The stop at Jayhawk Boulevard and Budig Hall features the highest ridership, generating 1,245 combined daily boarding and alightings (Figure 8-Figure 11). Six additional stops generate more than 400 combined daily boardings and alightings: Gertrude Sellards Pearson & Corbin Hall, Hashinger Hall, McCollum Hall, Kansas Union, and 15th Street and Green Hall. The remaining inbound stops generate between 140 and 301 daily passengers. McCollum Hall was demolished in late 2015, but the stop still serves students living at Ellsworth Residence Hall.

Traveling outbound, weekday ridership is highest at Bailey Hall, which generates 816 combined daily boardings and alightings. Other stops with more than 500 boardings and alightings per weekday include: Snow Hall Westbound, McCollum Hall, and Gertrude Sellards Pearson, the Engineering Department and the Kansas Union. These stops primarily serve academic buildings and residential halls. All inbound stops serve more than 250 combined daily boardings and alightings.

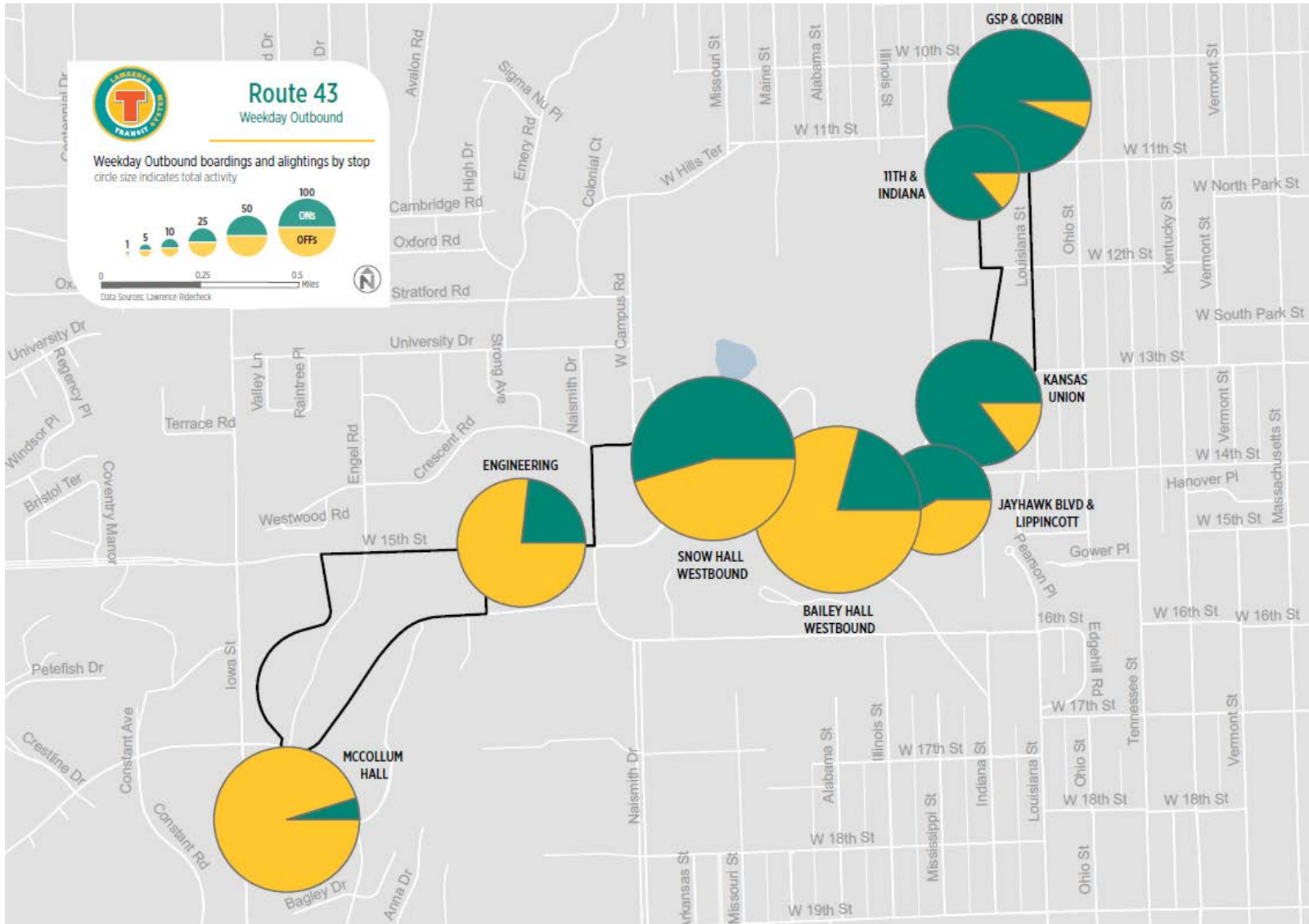
Figure 7 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Jayhawk Boulevard / Budig Hall	1,245	Budig Hall; KU’s campus
GSP / Corbin Hall	511	Corbin Hall; On-campus student housing
Hashinger Hall	439	On-campus student housing
McCollum Hall	425	Ellsworth Residence Hall
Kansas Union	420	Kansas Union; KU’s campus

*Weekday inbound ridership (boardings and alightings) for Route 43 only

ROUTE EVALUATION | ROUTE 43
 KU on Wheels

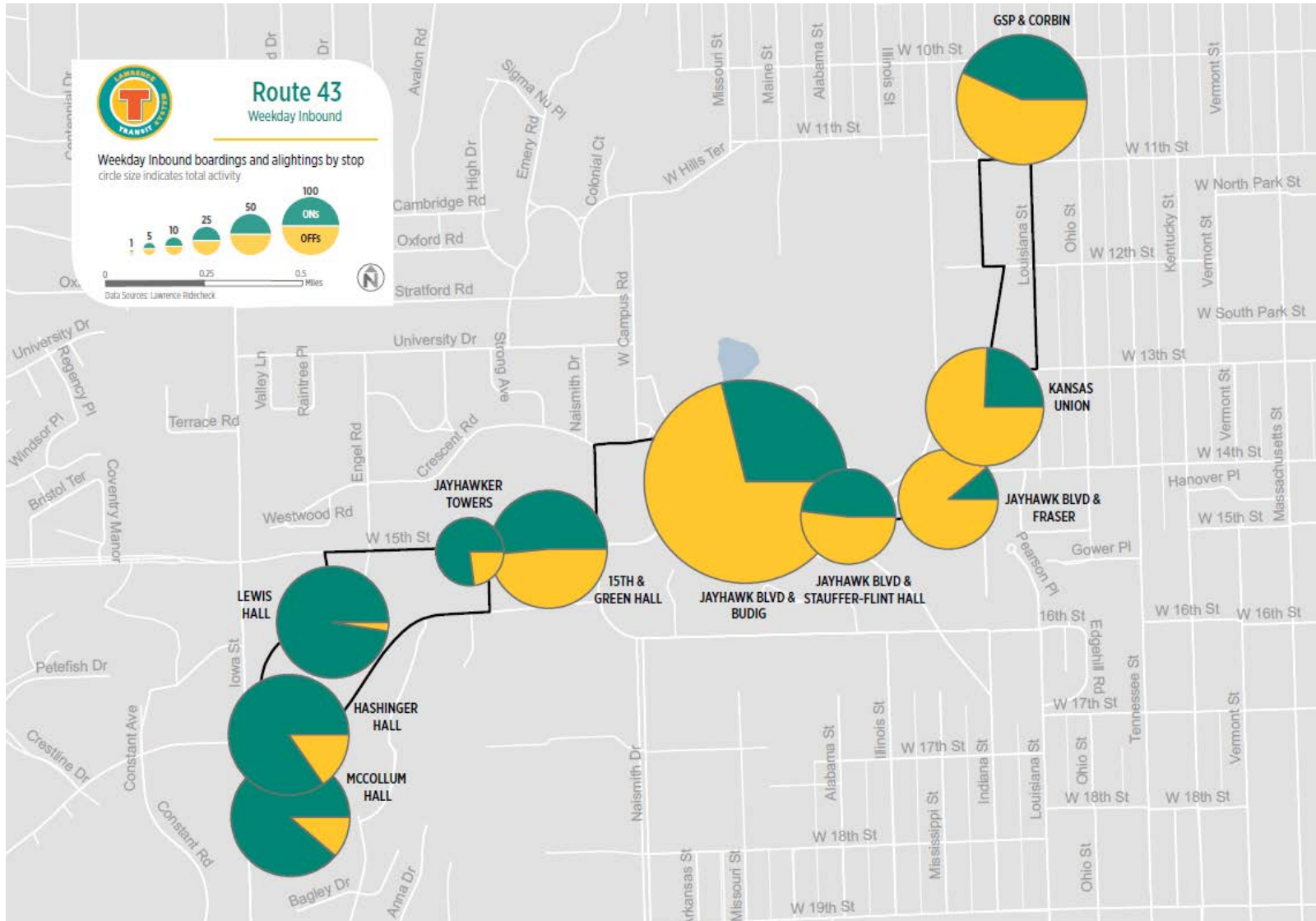
Figure 8 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 43
 KU on Wheels

Figure 9 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 43
 KU on Wheels

Figure 10 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 43
KU on Wheels

Figure 11 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

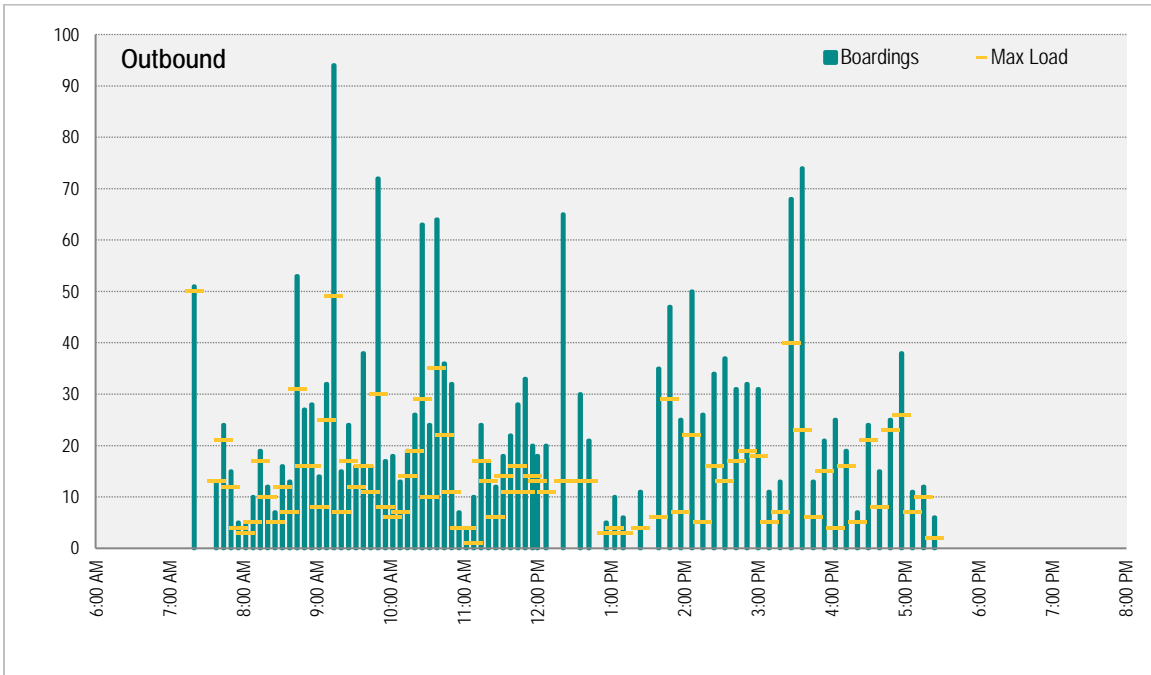
On weekdays, Route 43 ridership is highest during the late morning and early afternoon service periods (Figure 12 and Figure 13). Route 43 operates high frequency through KU's central campus, and the route is predominantly used by students traveling from residence halls to academic buildings, and vice versa. Highest ridership likely aligns with class schedules, which results in cyclical ridership trends.

Outbound ridership peaks at 9:14 AM, at 94 passengers per trip. Ridership is consistently highest from 1:30 and 3:00 PM, when all 10 trips record more than 20 passengers, and eight trips carry more than 30 passengers. Two back-to-back trips at 3:27 and 3:36 PM each record more than 60 passengers, indicating the need for an additional trip during this period. Overall, 53% of outbound trips carry 20 passengers or more.

Inbound ridership is highest between 10:00 and 11:00 AM and 12:00 and 1:00 PM. Ridership peaks at 10:32 AM, at 84 passengers per trip. From 10:00 to 11:00 AM four trips carry more than 50 passengers, and four trips between 12:00 and 1:00 PM carry more than 60 passengers. Ridership is also relatively high from 1:30 to 3:30 PM. Overall, 50% of inbound trips carry 20 or more passengers and 16% of trips carry more than 50 passengers.

ROUTE EVALUATION | ROUTE 43
 KU on Wheels

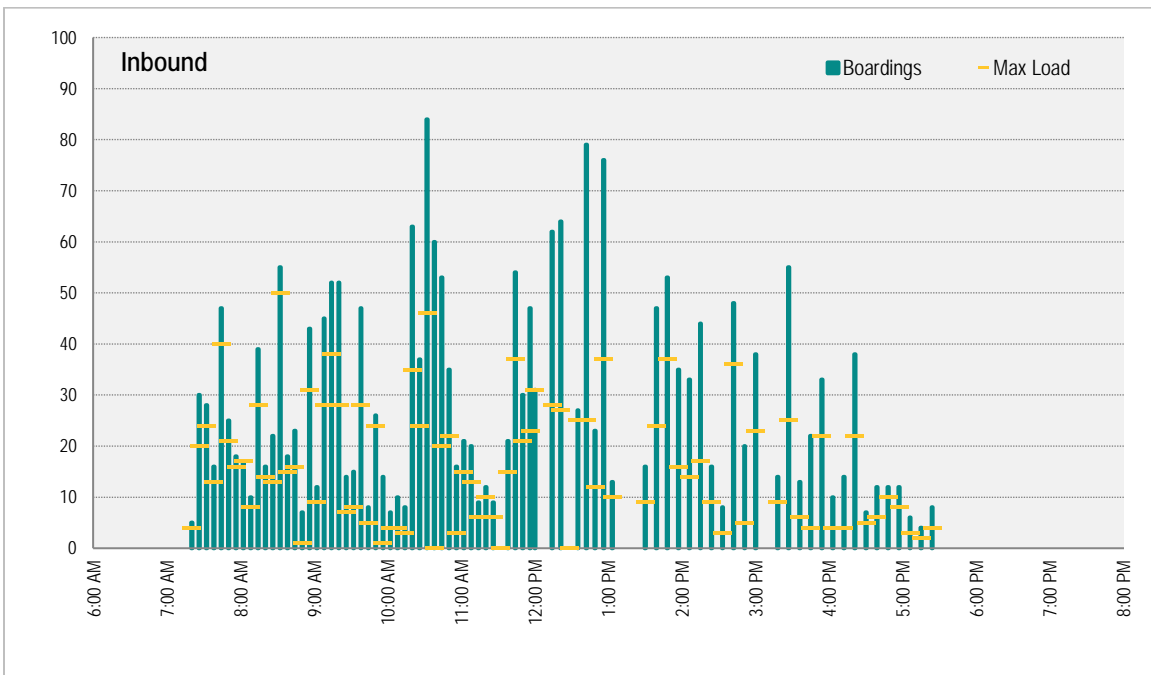
Figure 12 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

Note: Missing data for 5 trips – 12:00, 12:07, 1:12, 1:21, and 3:18 PM. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 13 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

Note: Missing data for 9 trips – 7:26, 7:32, and 11:38 AM; 12:14, 12:28, 12:49, 1:12, 1:21, and 1:30 PM. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

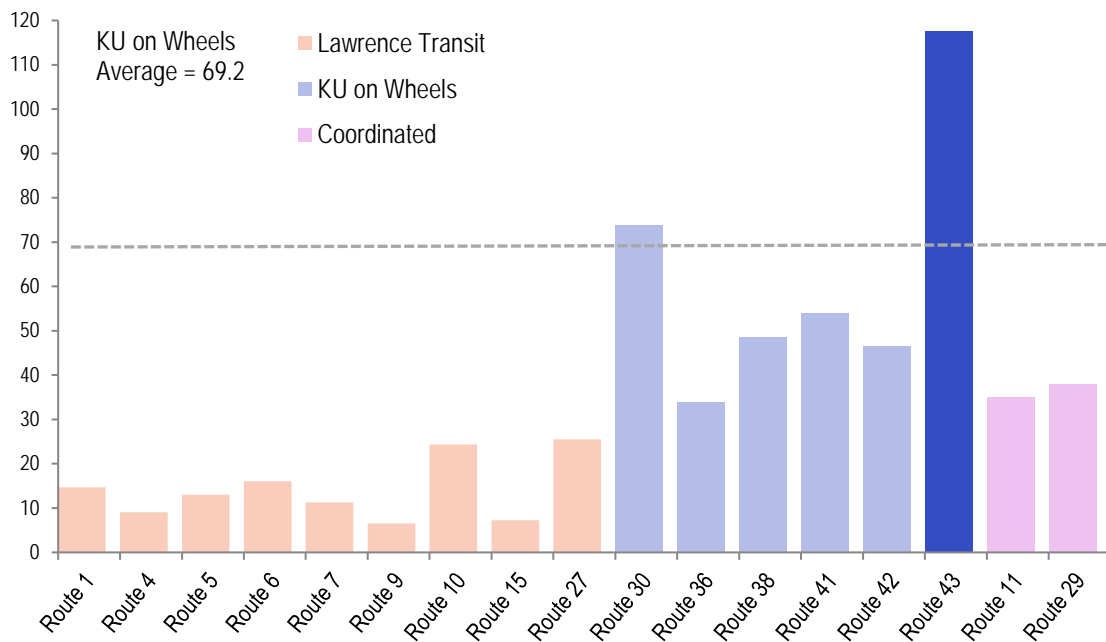
In terms of average passengers per hour, Route 43 is the most productive KU on Wheels bus route (Figure 14). The route carries 117.5 passengers per hour on weekdays, exceeding the system average by 70% (Figure 15). The route provides a short and direct connection between several KU residence halls (Hashinger, Lewis, Oswald, and Templin) and the main academic along Jayhawk Boulevard.

Figure 14 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	KU ON WHEELS AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	5,819	49.5	117.5	69.2	1 of 6

Source: Lawrence Transit, 2016

Figure 15 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 19.5% of Route 43 time points were served “on-time” during the survey period (Figure 16). Buses are considered early when they depart a time point before their scheduled departure time. Buses are considered late when they depart a time point more than five minutes behind schedule.

Weekday on-time performance was equally affected by both early and late departures. Buses departed approximately 37% of time points early, while 43.5% of time points were served more than five minutes behind schedule.

Figure 16 | On-Time Performance

	WEEKDAY
On-Time	19.5%
Early	37.0%
Late	43.5%

Note: Total may not sum to 100% due to rounding.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 43 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Simplify Schedule and Increase Service Frequency to Every 5 Minutes During Peak Periods.** Route 43 has some problems with overcrowding around class change times. The current schedule has three different headways on Route 43 depending on the time of day, with a 9-minute frequency after 1:30 PM, down from every 6 or 7 minutes before 1:30 PM. Though all the headways are short enough that riders do not need to look at or remember a schedule, a more-frequent simpler schedule would make the service even easier to use and would encourage riders who board and alight along Jayhawk Boulevard and W. 15th Street to take Route 43 instead of another route. This change could also be accomplished without a large investment in resources and will help alleviate the overcrowding on Route 11 headed southbound in the afternoon. For example, a headway of every 5 minutes from 8:30 AM to 3:30 PM, and a headway of every 10 minutes at other times would create about 100 one-way trips during the day versus about 90 one-way trips currently. The peak period on Route 43 according to current ridership patterns is between 8:30 AM and 3:30 or 4:30 PM.
- **Extend Service Later than 5:30 PM.** Ridership on Route 43 does begin to drop around 4:30 PM as classes end for the day, but there may be demand for service after dinner time to reach study or recreational areas based on ridership on other routes and typical campus circulation patterns at other universities. With limited service during this time on traditional KU routes, the demand for transit is somewhat unknown. But, with additional campus connections, and strong existing ridership on Route 43, providing later service on this route may prove popular with students who would otherwise have a difficult time navigating campus after about 5:30 or 6:00 PM.
- **Combine with Route 42.** Route 42's strongest ridership segments are along Jayhawk Boulevard and south to the recreational areas, labs, and academic buildings. Creating a one-seat connection between the student housing on Daisy Hill currently served by Route 43, and these areas on Route 42 would provide a more useful service to students and potentially improve the route's performance. Modifications to other routes, such as Route 36 for example, could help provide service around Memorial Stadium.