

Lawrence Transit System

ROUTE 1

Downtown to Prairie Park

SERVICE DESIGN

Route 1 is a Lawrence Transit route that operates between the downtown transit hub and Prairie Park. The route travels primarily along Connecticut Street, 11th Street, Haskell Avenue, 19th Street, Harper Street, and 27th Street (Figure 1). Route 1 provides service to Downtown Lawrence and multiple social service agencies: Lawrence Municipal Court, the Department of Children and Families, and the Lawrence-Douglas County Housing Authority.

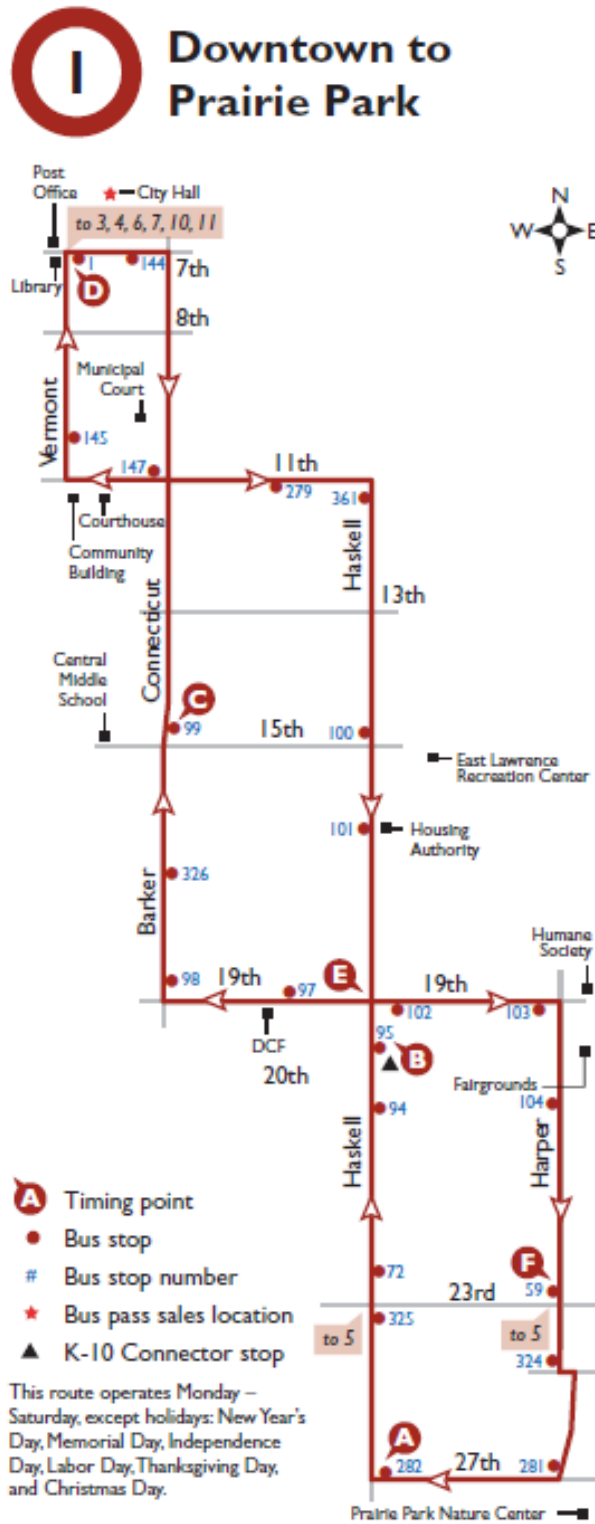
ALIGNMENT/SERVICE PATTERNS

Route 1 has one service pattern for weekday and Saturday service. Departing outbound from the intersection of 7th Street and Vermont Street in Downtown Lawrence, Route 1 turns right on 7th Street, right on Connecticut Street, left on 11th Street, and then right on Haskell Avenue. Outbound service continues south on Haskell Avenue, and then left on 19th Street, right on Harper Street, right on 27th Street, and terminates at the intersection of 27th and Haskell Avenue.

Returning inbound from 27th Street and Haskell Avenue, Route 1 turns right on Haskell Avenue, left on 19th Street, and right on Barker Avenue, which becomes Connecticut Street after crossing 15th Street. Route 1 continues on Connecticut Street, and then turns left of 11th Street, right on Vermont Street, and terminates near the intersection of 7th Street and Vermont Street.

As of August 1st, 2016, Route 1 serves the Lawrence Community Shelter and no longer loops to serve Connecticut Street and Barker Avenue, or Haskell Avenue south of 19th Street.

Figure 1 | Route Map



Source: Lawrence Transit, August 2015-July 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 1 and several Lawrence Transit routes at the downtown transit hub. There are also transfer opportunities at several other points along the route, including along 23rd Street (Route 5); transfers to the K-10 Connector, operated by Johnson County Transit, are available on Haskell Avenue (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Downtown Transit Hub	Route 3, Route 4, Route 6, Route 7, Route 10, Route 11, Route 15
Haskell Avenue & 23rd Street	Route 5, Route 15
Haskell Avenue & 19th Street	K-10 Connector
Harper Street & 23rd Street	Route 5, Route 15

SERVICE SCHEDULE

Route 1 operates service Monday-Saturday (Figure 3) year round. On weekdays and Saturdays the route runs every 30 minutes from 6:03 AM to 7:59 PM. Route 1 does not operate on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:03 AM – 7:59 PM	30	28/28
Saturday	6:03 AM – 7:59 PM	30	28/28
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 1 ranks fifth of nine Lawrence Transit routes in terms of weekday ridership and seventh of nine in terms of ridership per trip (Figure 4). On average, the route carries 205 passengers, or 3.7 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, Route 1 carries 148 passengers, or 2.6 per trip.

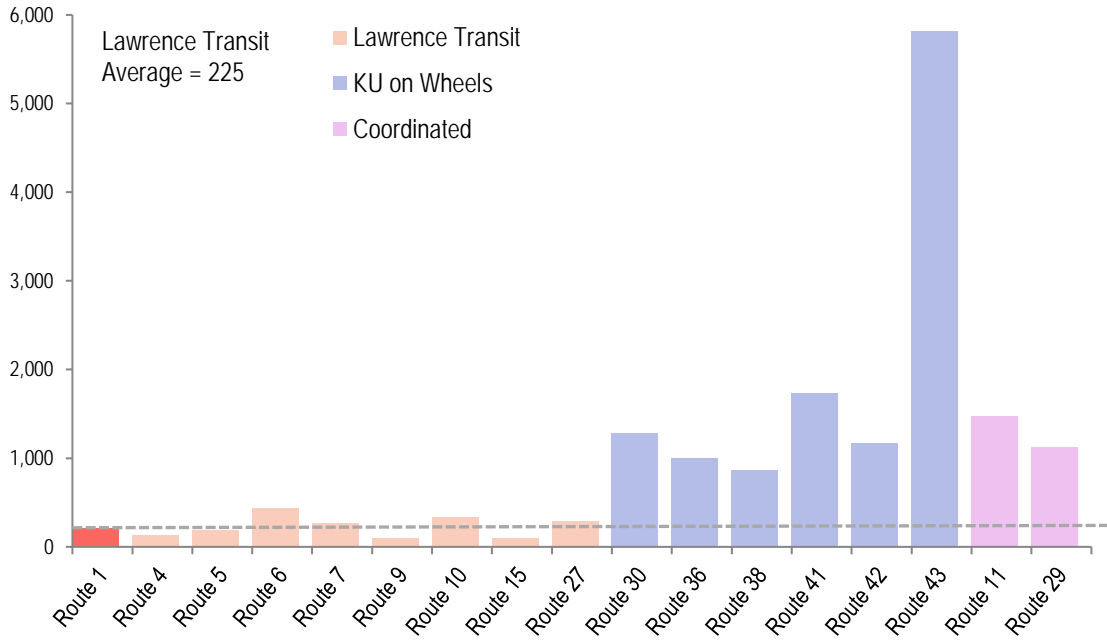
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	205	56	3.7	6.5	7 of 9
Saturday	148	56	2.6	4.7	7 of 8

Source: Lawrence Transit, 2016

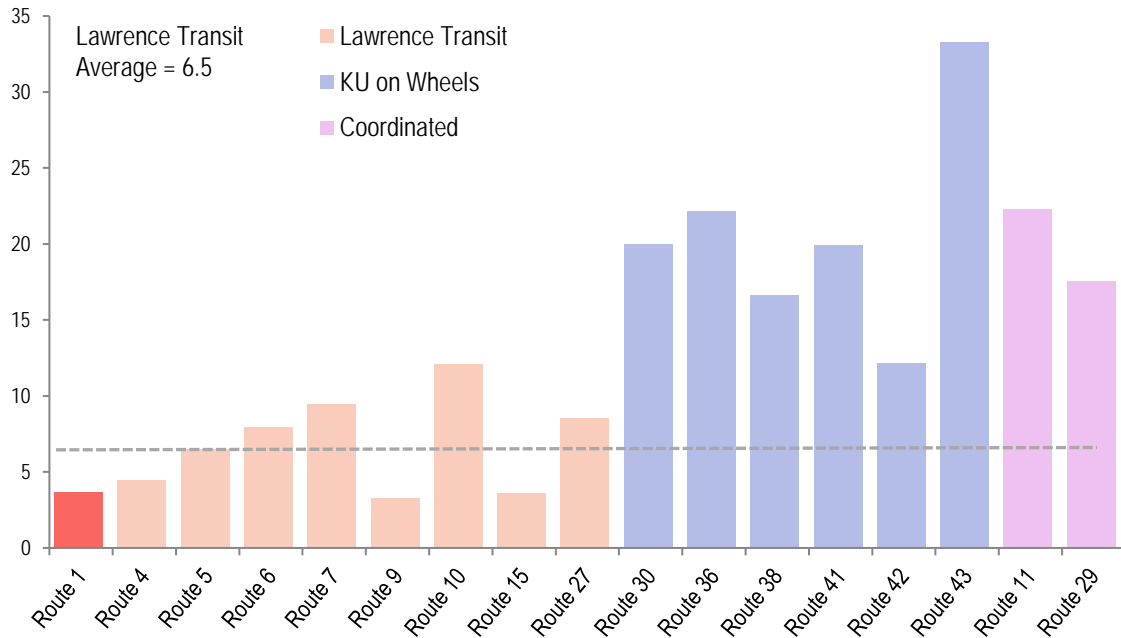
ROUTE EVALUATION | ROUTE 1
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

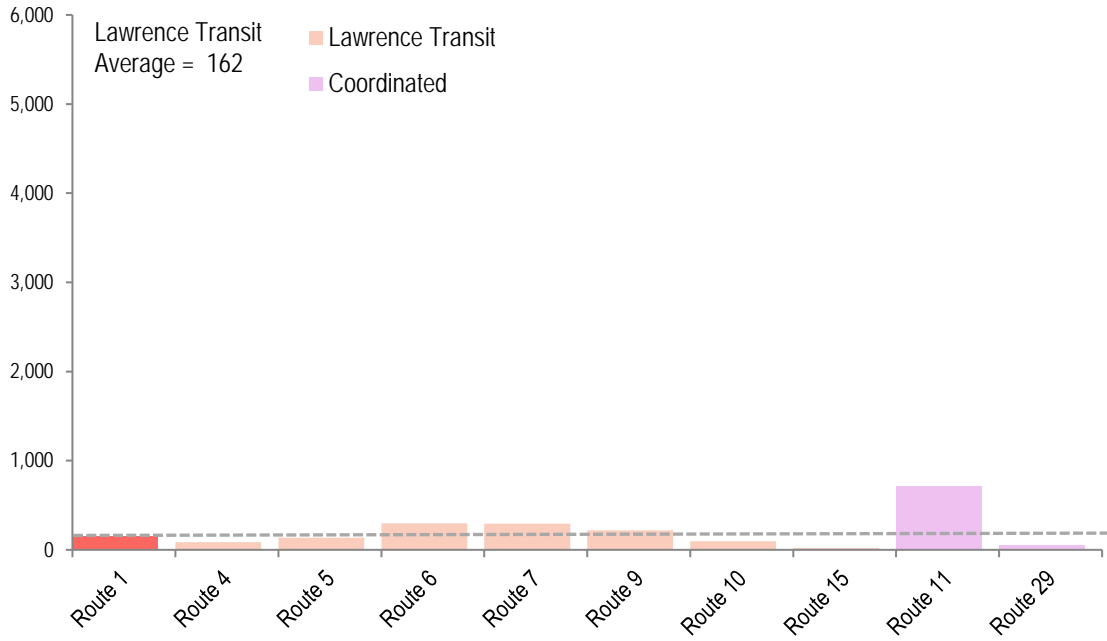
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

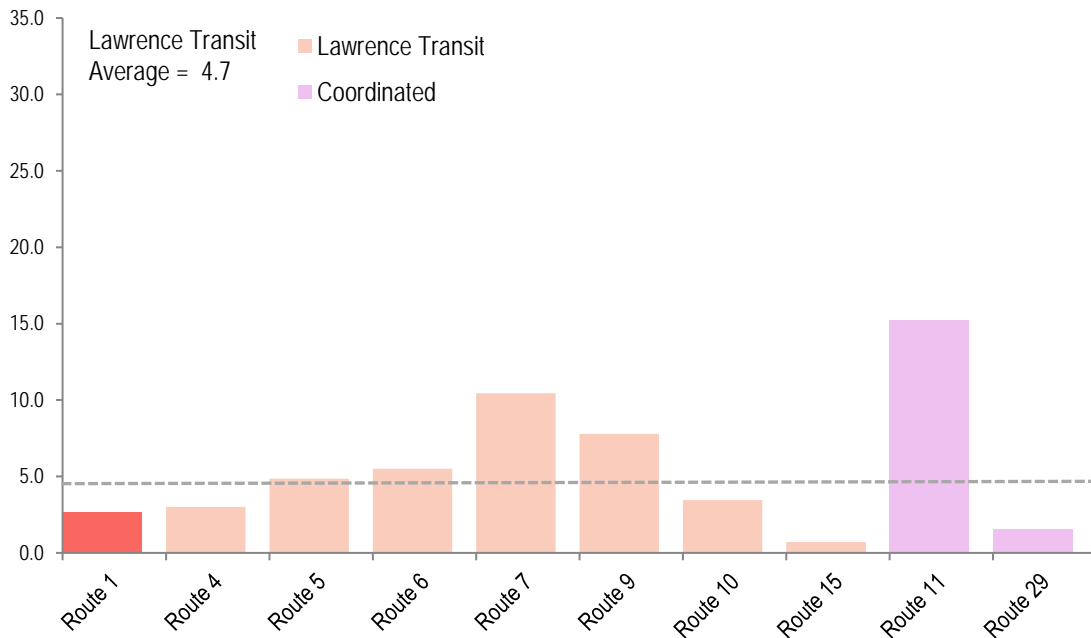
ROUTE EVALUATION | ROUTE 1
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 1 are located along Haskell Avenue and in Downtown Lawrence (Figure 9). Combined boardings and alightings peak at the terminating stop at 7th Street and Vermont Street, with 81 alightings. Other stops with more than 10 boardings and alightings per weekday include: 23rd Street and Haskell Avenue, Haskell Avenue and Pinecone Drive, 19th Street and Delaware Street, 10th Street and Vermont Street, and 11th Street and Connecticut Street. These stops serve residential areas (Pine Tree Townhouses), retail locations along Haskell Avenue, and Downtown Lawrence. All other stops serve fewer than 10 boardings and alightings (Figure 10-Figure 13).

Saturday ridership patterns are similar to weekday patterns, but with significantly lower volumes (Figure 18-Figure 21). Ridership activity on Saturday is concentrated at the final two stops, 10th Street and Vermont Street and 7th Street and Vermont Street.

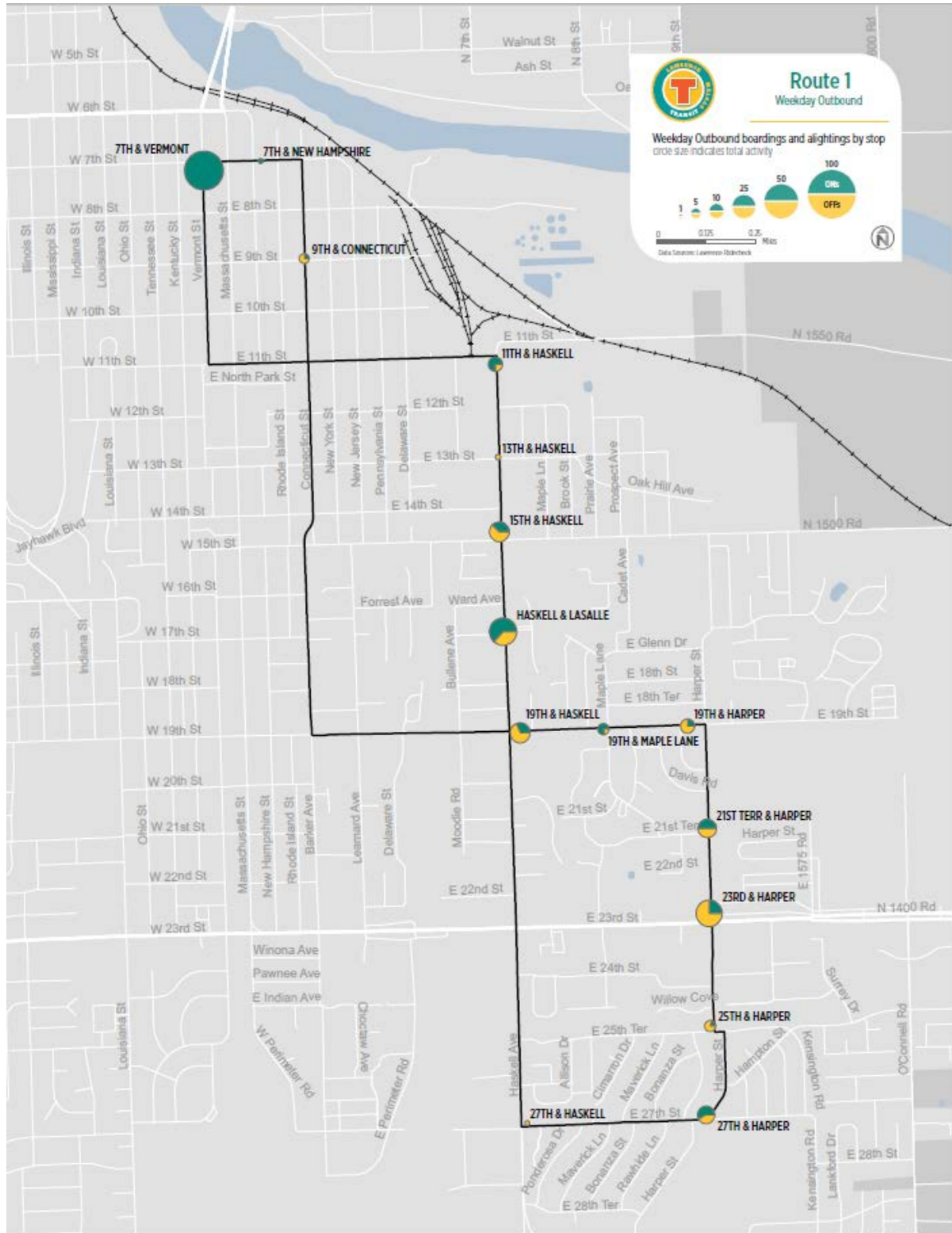
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
23rd Street / Haskell Avenue	33	Local retail stores; Haskell Indian Nations University
Haskell Avenue / Pinecone Drive	19	Residential neighborhood, including Pine Tree Townhouses
19th Street / Delaware Street	18	Residential neighborhoods; Social and Rehabilitation Services
10th Street / Vermont Street	18	Downtown Lawrence; Local retail stores
7th Street / Vermont Street	81	Downtown Lawrence; Lawrence Public Library; Buford M. Watson Jr. Park

*Weekday inbound ridership (boardings and alightings) for Route 1 only.

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

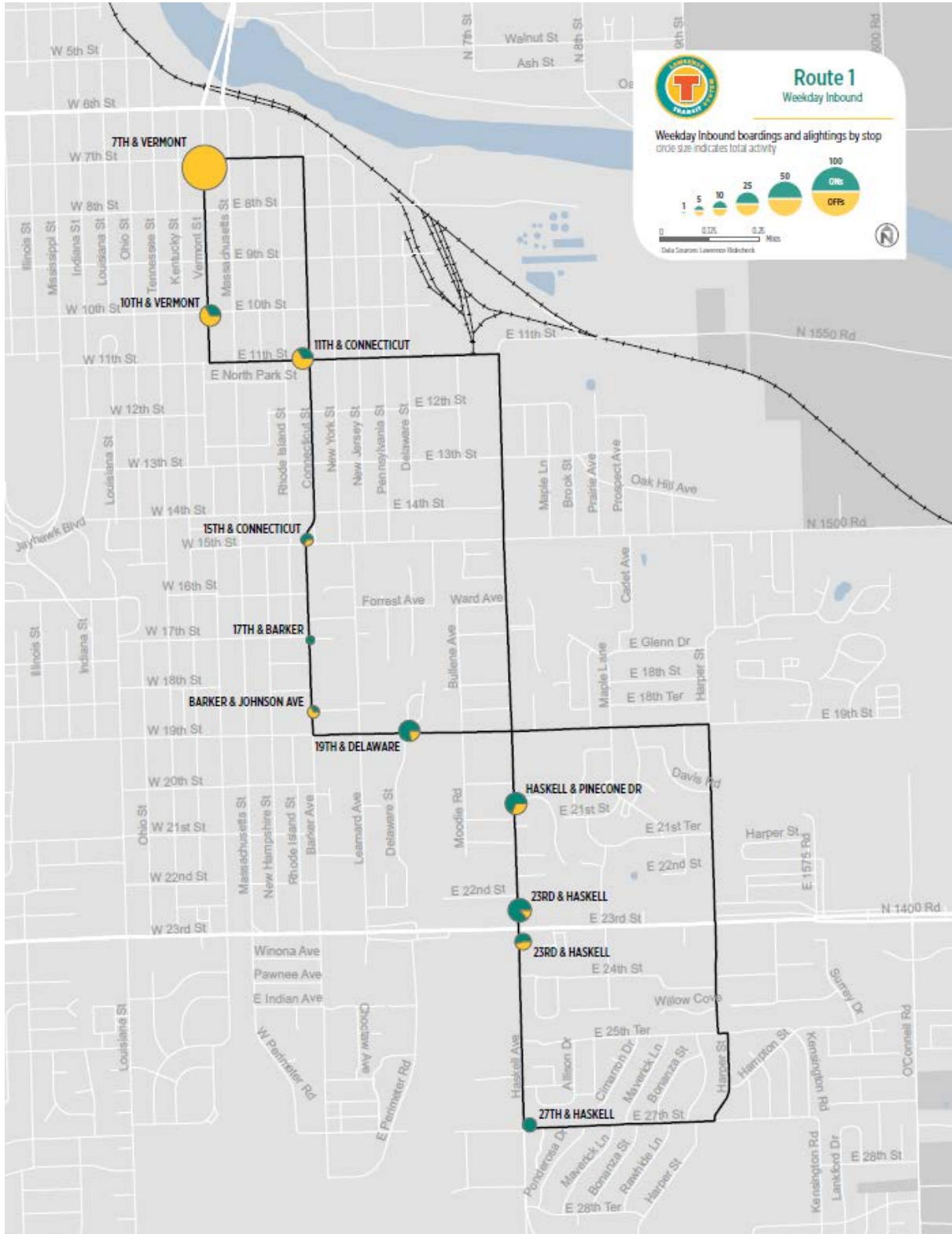
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

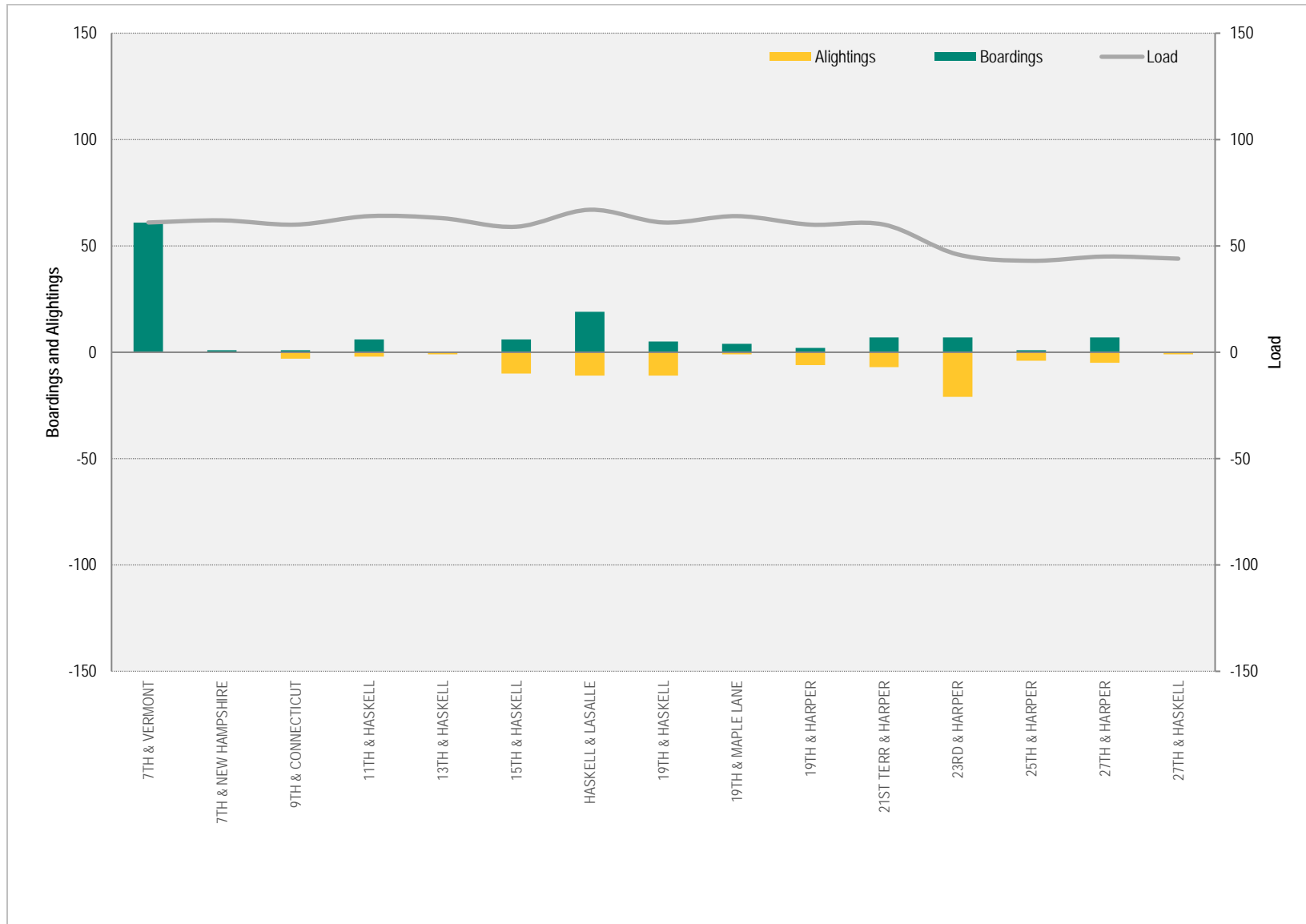
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

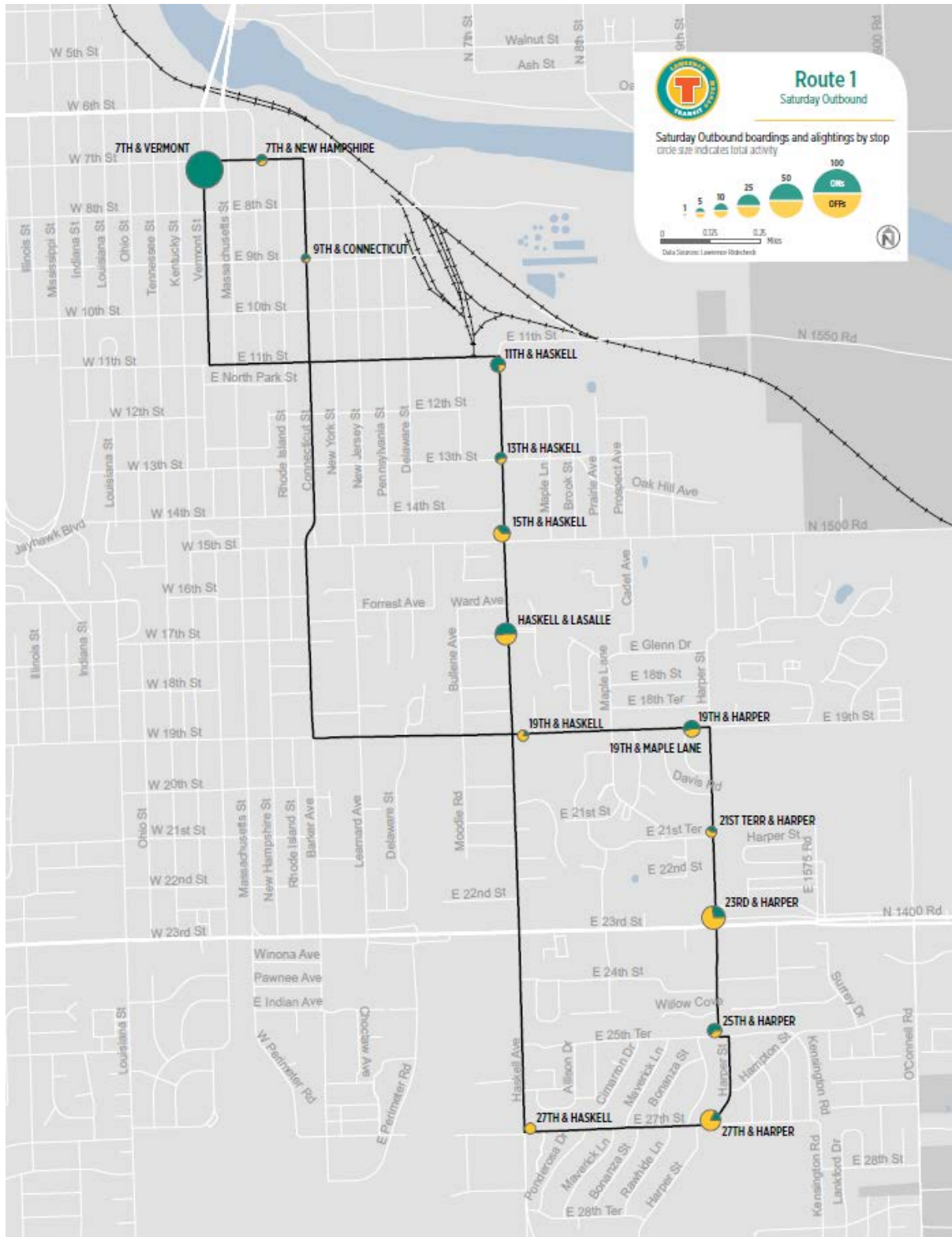
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

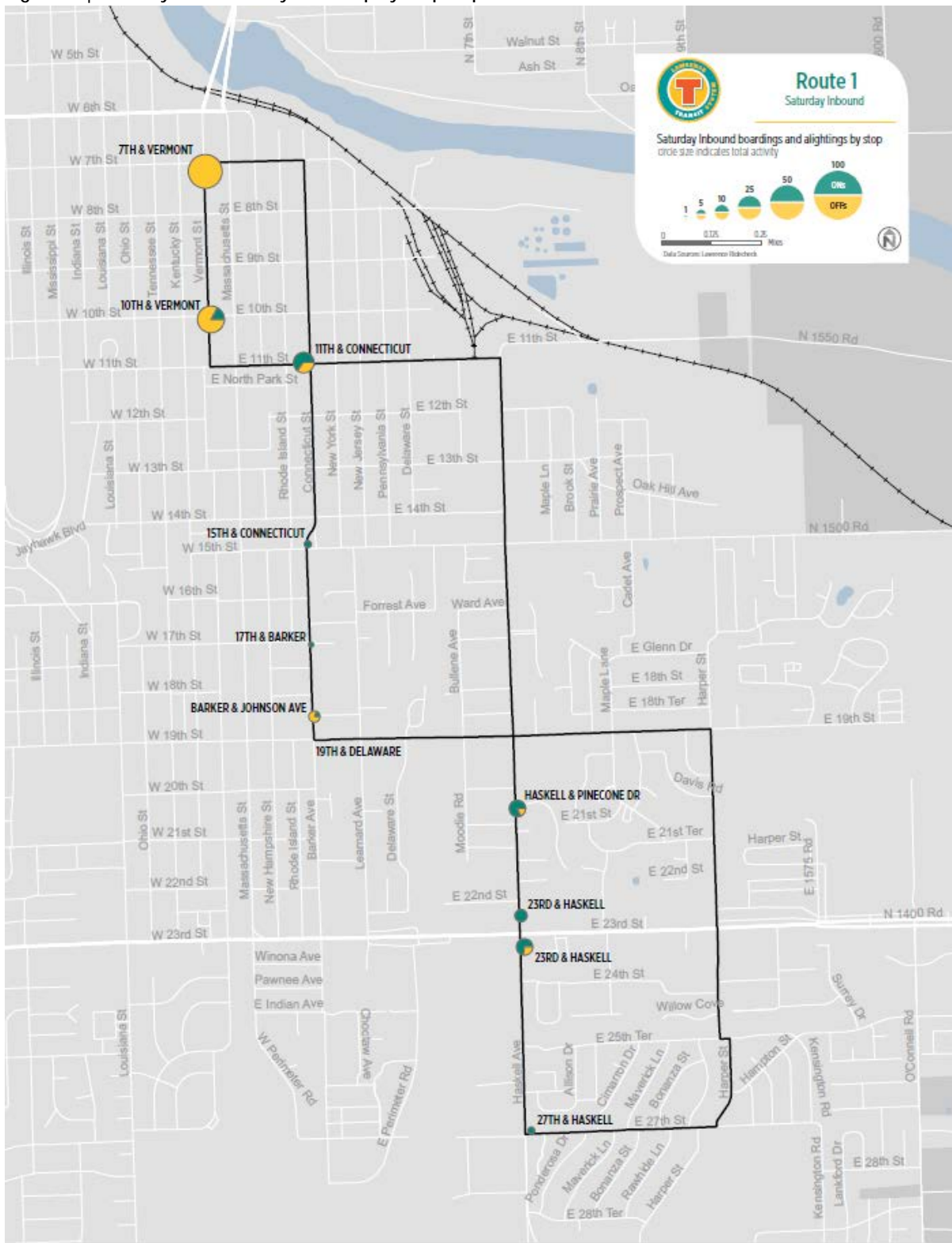
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

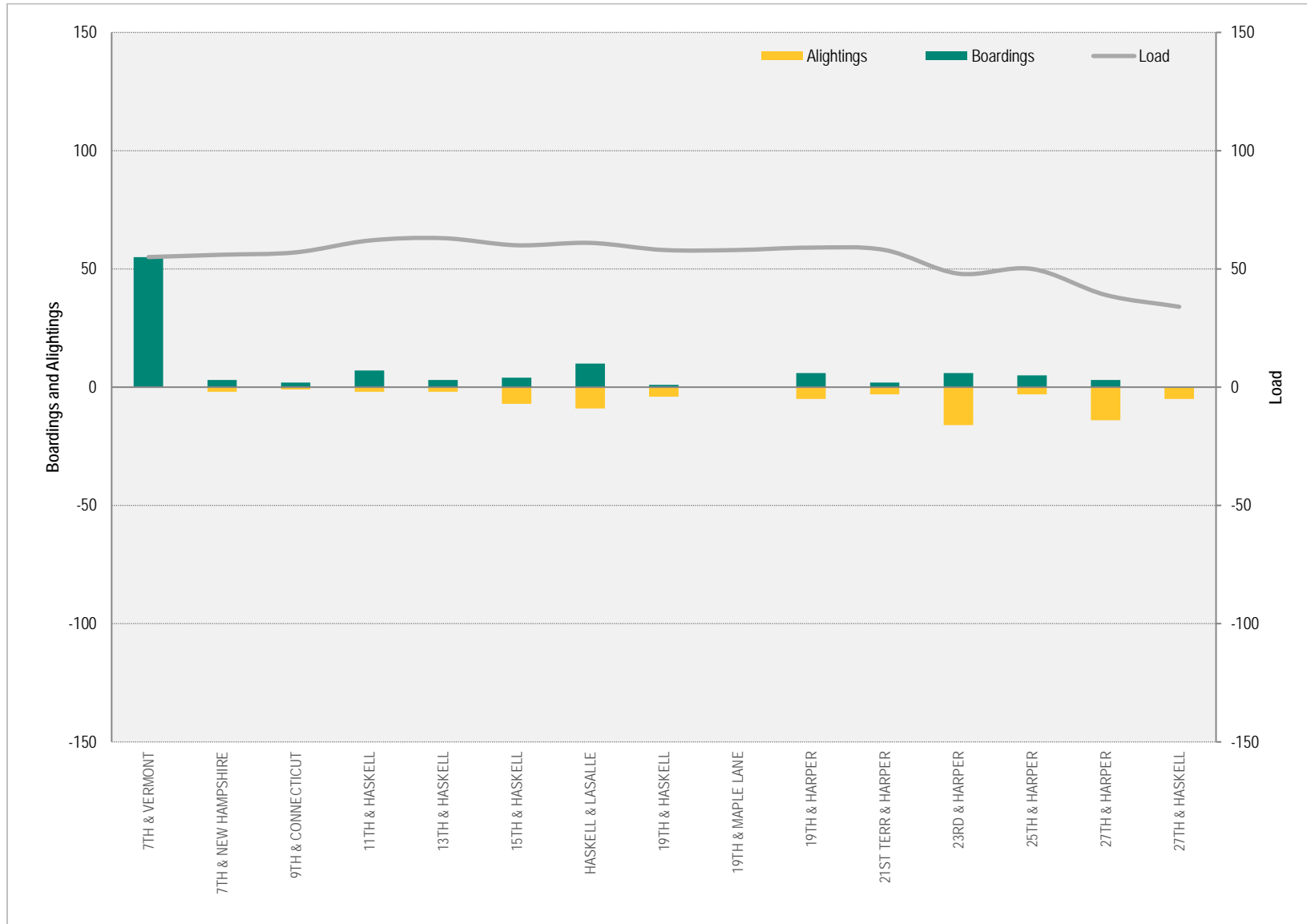
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

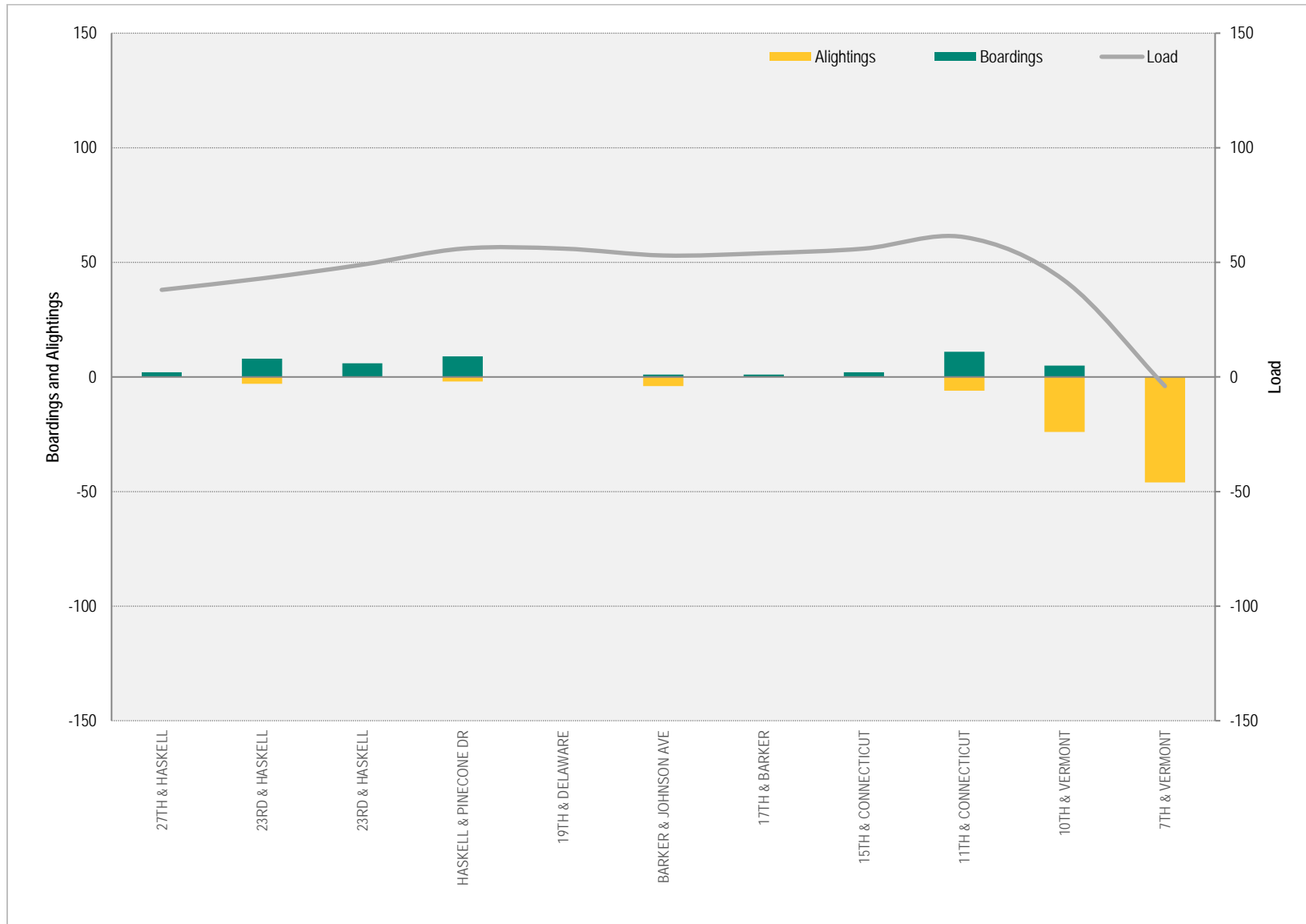
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

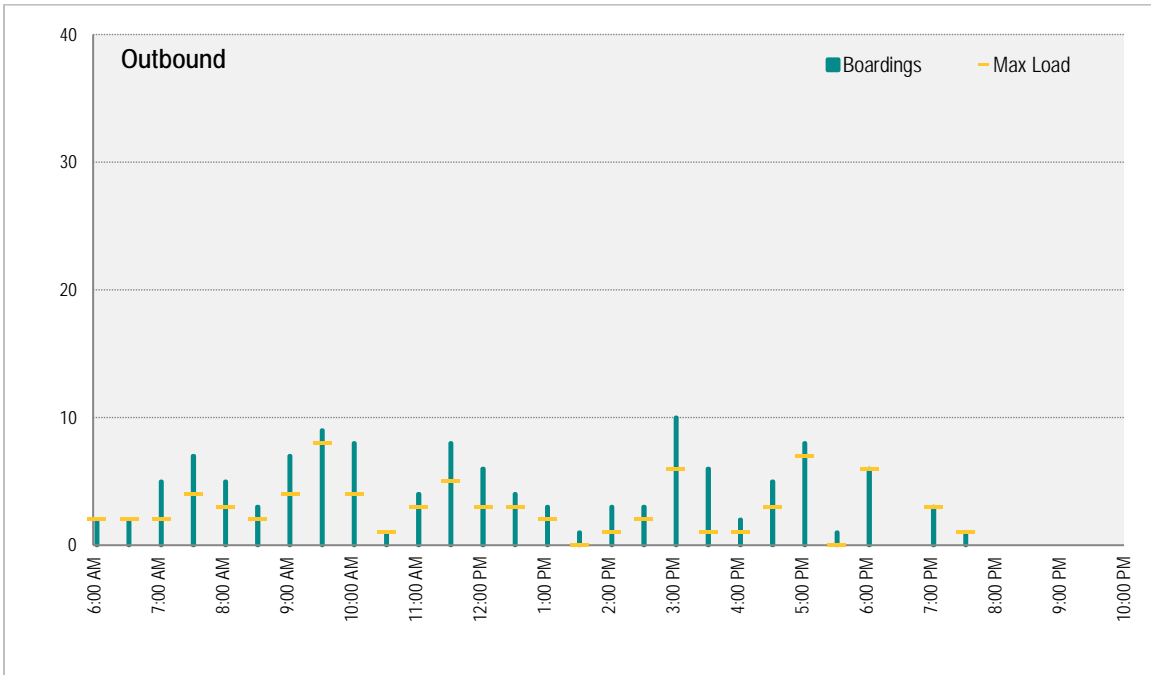
RIDERSHIP BY TRIP

Ridership by trip on Route 1 is generally low, with few trips carrying more than 10 passengers. On weekdays, Route 1 ridership on outbound service peaks at 3:00 PM, and is relatively high from 9:00 AM to 12:00 PM and 5:00 PM to 6:00 PM. Inbound ridership peaks at 7:19 AM and features minor periodic spikes in ridership between 1:00 and 7:00 PM (Figure 18 and Figure 19).

On Saturdays, Route 1 ridership is highest outbound between 1:30 and 2:00 PM. Saturday inbound ridership is highest between 1:00 and 3:30 PM; no Saturday inbound trips carry more than 10 passengers (Figure 20 and Figure 21).

ROUTE EVALUATION | ROUTE 1
Lawrence Transit

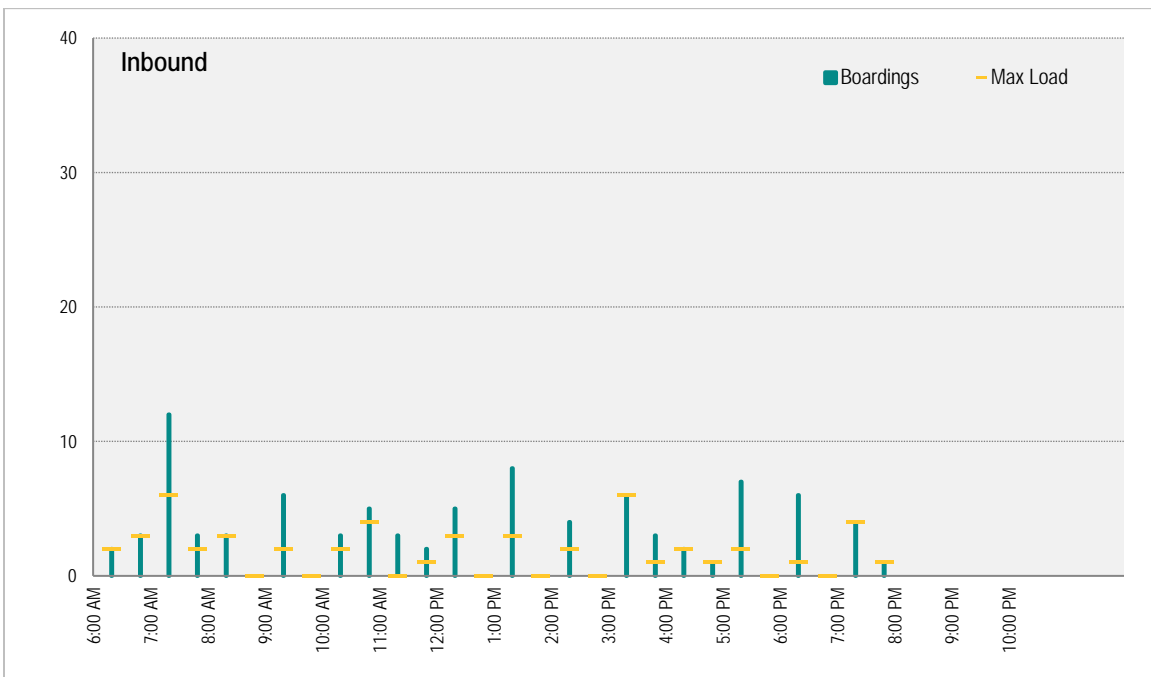
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

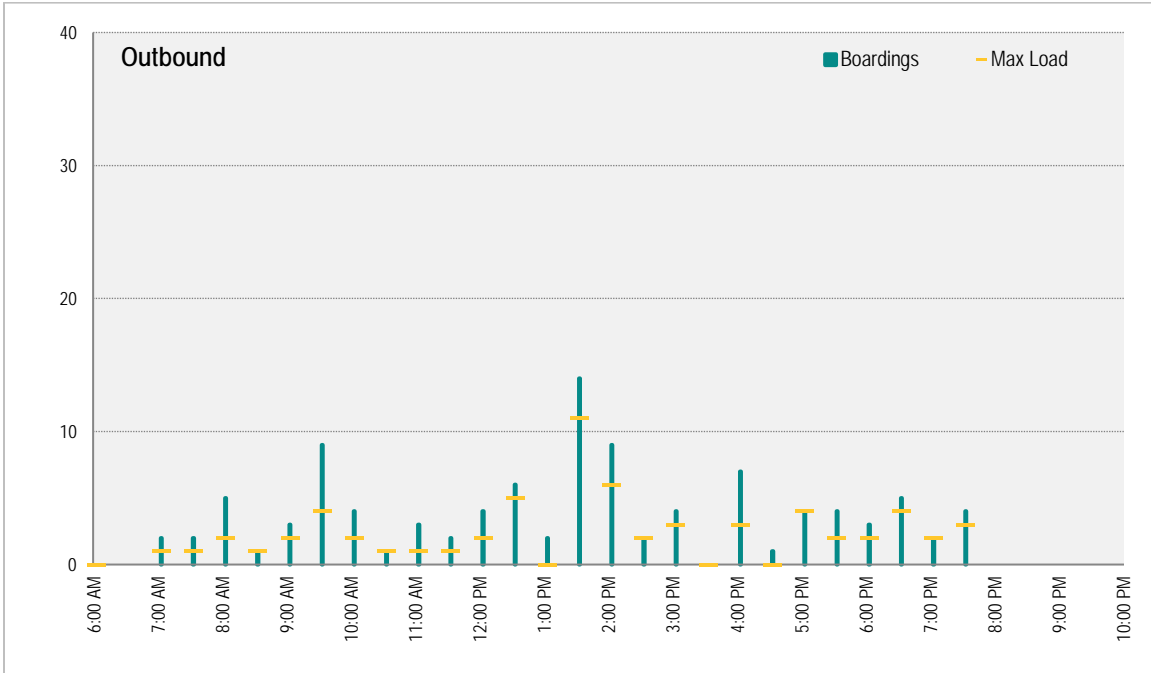


Source: Ride Check, April and May 2016

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

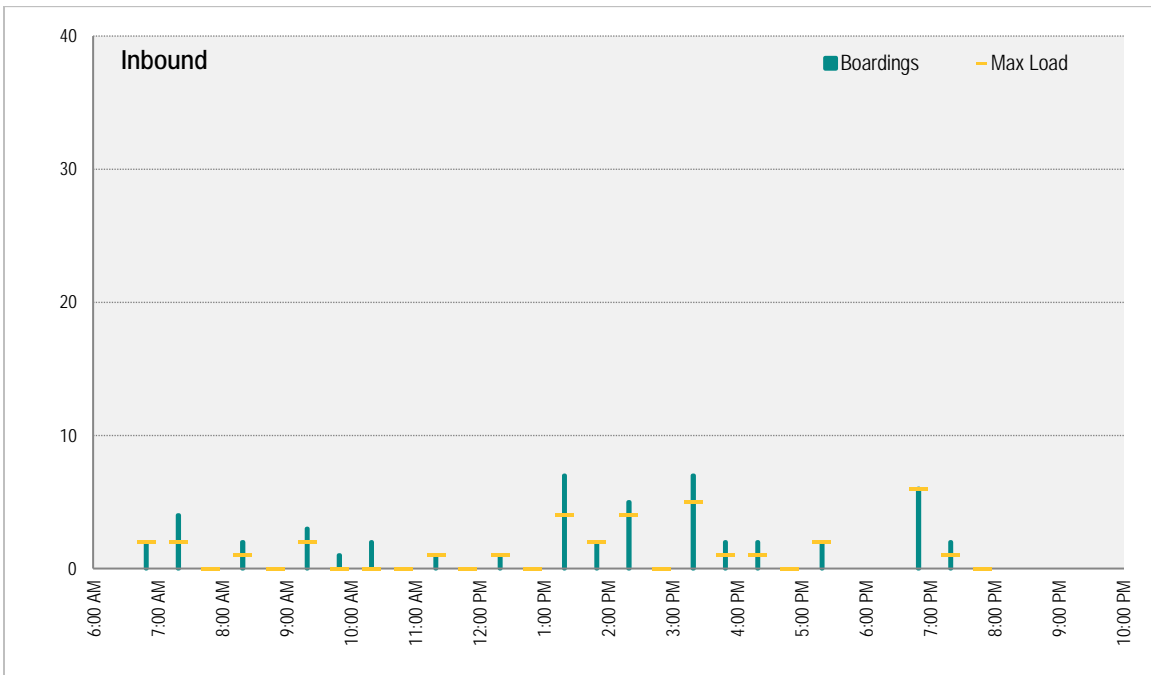
ROUTE EVALUATION | ROUTE 1
Lawrence Transit

Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016. No data was collected for the 6:33 AM outbound trip.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 21 | Saturday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016. No data was collected for the 6:19 AM inbound trip.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

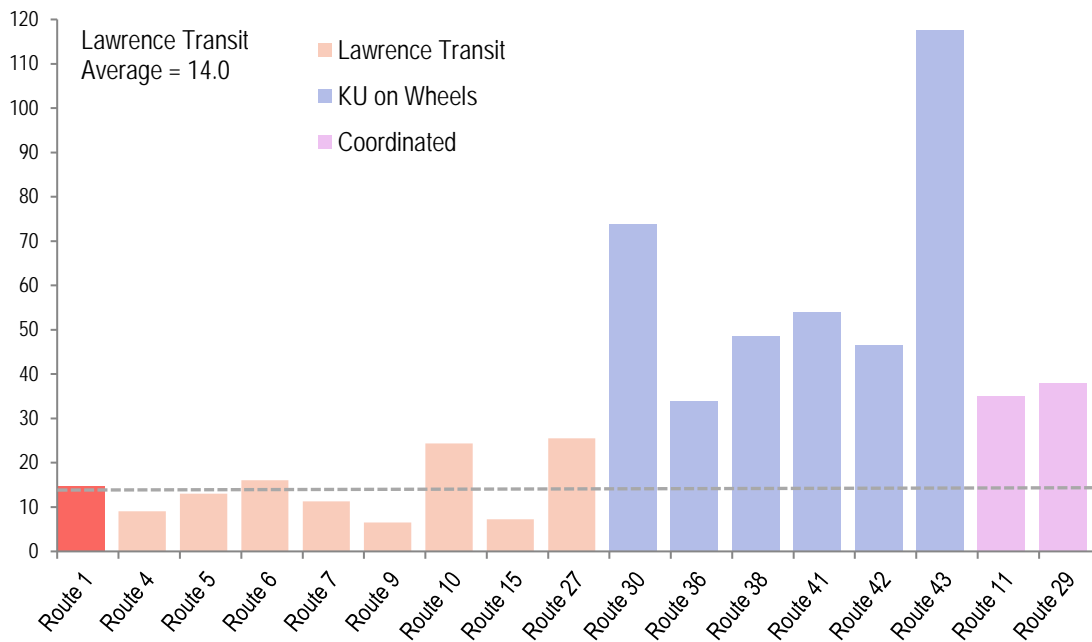
In terms of average passengers per hour, Route 1 is the fourth most productive Lawrence Transit bus route (Figure 22). The route carries 14.7 passengers per hour on weekdays, exceeding the system average by 5% (Figure 23). Route 1 carries 10.6 passengers per hour on Saturdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	205	13.9	14.7	14.0	4 of 9
Saturday	148	14.0	10.6	9.7	4 of 8

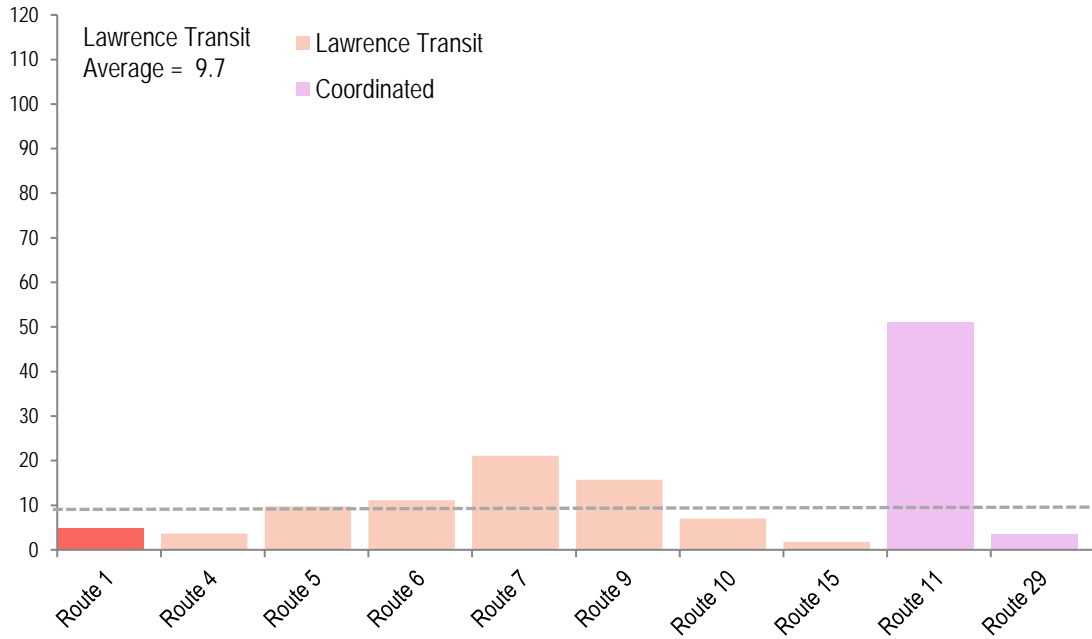
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 67% of Route 1 time points were served “on-time” during the survey period (Figure 25). 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. On Saturdays, approximately 75% of Route 1 time points were served “on-time” during the survey period.

Weekday on-time performance was affected by a high rate of late departures, with nearly 22% of time points served later than scheduled. On both weekdays and Saturdays, 11% of time points are served early, with buses departing before their scheduled departure time.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	66.9%	75.4%
Early	11.5%	11.1%
Late	21.5%	13.5%

Note: Trip data does not include all time points per trip.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 1 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route. Route 1 serves as a coverage route for the eastern half of Lawrence, with three connected loops serving mostly residential areas. As a coverage route, Route 1 serves a general purpose with no clear commute pattern, and its performance remains average or below average across most measures.

- **Remove one-way loops.** Most ridership on Route 1 occurs in downtown along Vermont Street, and along Haskell Avenue and Harper Street. One-way loops tend to make service less useful to riders, and less effective overall, because trips are only convenient in one direction. To simplify Route 1, service can be provided bi-directionally along one of its current directional alignments.

As of August 1st, 2016, Route 1 serves the Lawrence Community Shelter and no longer has the two large southern loops outside of downtown. The route now steps through eastern Lawrence, providing two-way service along 11th Street, Haskell Avenue, 19th Street, Harper Street, and 23rd Street between downtown and the Lawrence Community Shelter.

- **Reduce redundancy.** Route 1 has significant overlap with Route 15, with both routes operating outbound along Connecticut Street and Haskell Avenue, and inbound along Barker Avenue and Vermont Street. Splitting this alignment, so that one route operates bi-directionally along one set of streets and the other operates bi-directionally along the other set of streets will simplify both routes, reduce redundancy, and make transit service more appealing to riders along corridors that are currently served in one direction only.

The recent changes to Route 1 has reduced redundancy with Route 15, with each route now operating bi-directionally along a unique set of streets.

- **Begin Service at 7:03 AM; End Service after the 7:33 PM Departure.** Service on Route 1 currently begins at 6:03 AM and ends at 7:59 PM (last departure at 7:49 PM). Low ridership on departures before 7:00 AM and after 7:33 PM indicate that the resources necessary to operate that service could be better spent elsewhere. As a result, reducing the service span to approximately 7:00 AM to 7:30 PM would benefit users in some other way or on some other part of the system.
- **Operate Saturday Service Every 60 Minutes.** Trips on Route 1 on Saturday rarely have more than 10 passengers onboard. Offering service every 60 minutes instead of every 30 would save resources and allow for improvements on other aspects of the system.

Lawrence Transit System

ROUTE 4

North Lawrence to 9th and Iowa

SERVICE DESIGN

Route 4 is a Lawrence Transit route that operates between North Lawrence and the Hillcrest Shopping Center. The route travels primarily along 2nd Street, Vermont Street, and 9th Street (Figure 1). Route 4 provides service to the I-70 Business Park, downtown Lawrence, and the Hillcrest Shopping Center.

ALIGNMENT/SERVICE PATTERNS

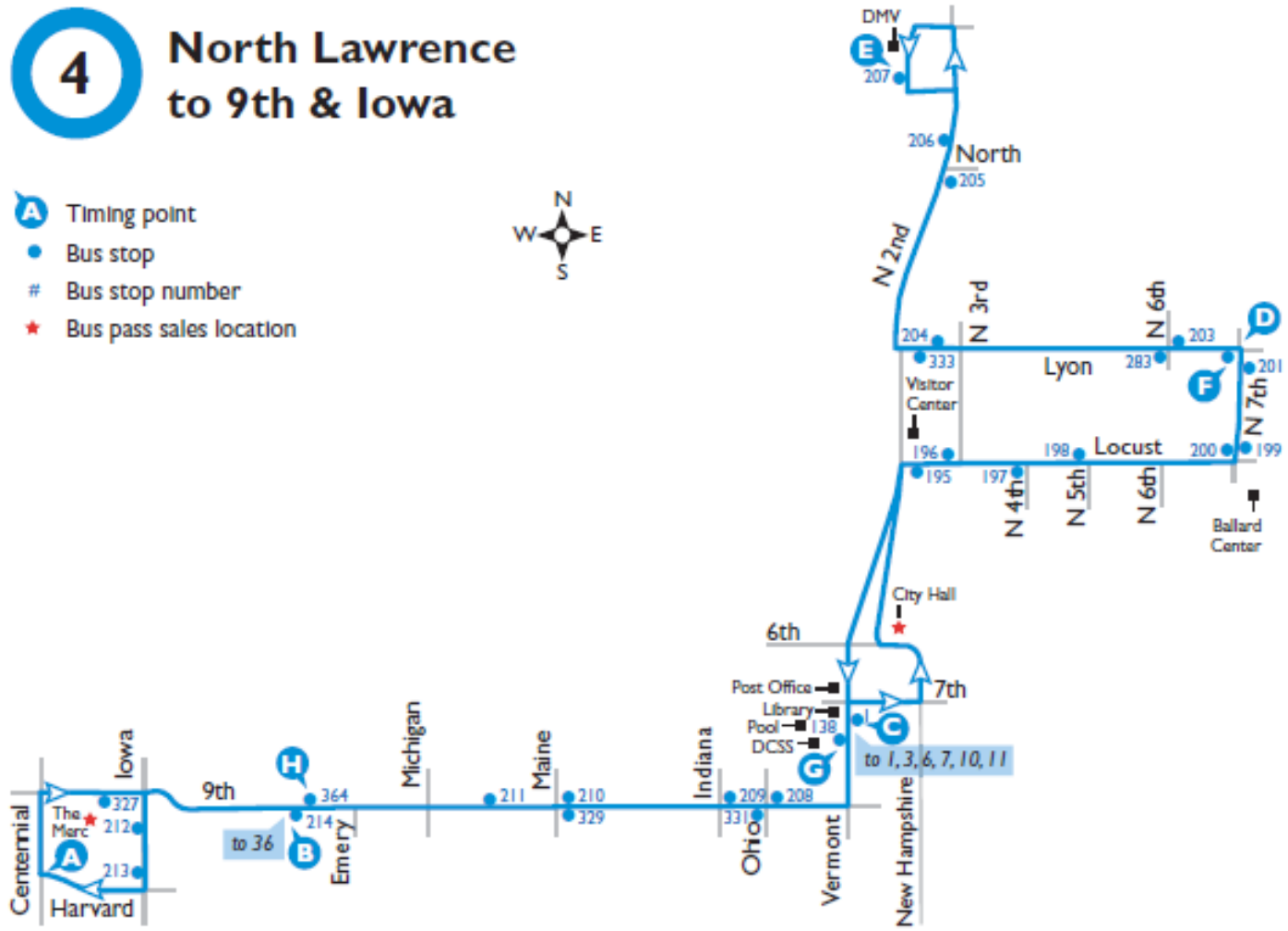
Route 4 has one primary service pattern for weekday and Saturday service. Departing outbound from the DMV on 2nd Street in North Lawrence, Route 4 travels south on 2nd Street, turns left on Lyon Street, right on 7th Street, right on Locust Street, and left on 2nd Street, which becomes Vermont Street after crossing the Kansas River. Route 4 then continues on Vermont Street, before turning right on 9th Street, left on Iowa Street, right on Harvard Road, and terminating at the intersection of Harvard Road and Centennial Drive.

Returning inbound from Harvard Road and Centennial Drive, Route 4 turns right on Centennial Drive, right on 9th Street, left on Vermont Street, right on 7th Street, and then left on New Hampshire Street, a right on 6th Street, and a right on Massachusetts Street, which becomes 2nd Street after crossing the Kansas River. After crossing the river, Route 4 continues along the inbound alignment to reach the terminus at the DMV on 2nd Street.

On weekdays and Saturdays, the first inbound trip begins near the intersection of 7th Street and Vermont Street in downtown Lawrence, rather than at the DMV, and then continues towards Harvard Road and Centennial Drive along the regular alignment.

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

Figure 1 | Route Map



Source: Lawrence Transit: August 2015 - September 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 4 and several Lawrence Transit routes at the downtown transit hub. There are also transfer opportunities at several other points along the route, including along 9th Street (Route 36) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Downtown Transit Hub	Route 1, Route 3, Route 6, Route 7, Route 10, Route 11, Route 15
University Terrace Apartments (9th Street)	Route 36

SERVICE SCHEDULE

Route 4 operates service Monday-Saturday year round (Figure 3). On weekdays and Saturdays, the route runs every 60 minutes from 6:03 AM to 7:45 PM. Route 4 does not operate on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:03 AM to 7:45 PM	60	14/14
Saturday	6:03 AM to 7:45 PM	60	14/14
Sunday	No service	—	—

Source: Lawrence Transit

RIDERSHIP

Route 4 ranks seventh of nine Lawrence Transit routes in terms of weekday ridership and sixth of nine in terms of ridership per trip (Figure 4). On average, the route carries 124 passengers, or 4.4 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, Route 4 carries 85 passengers, or 3.0 per trip.

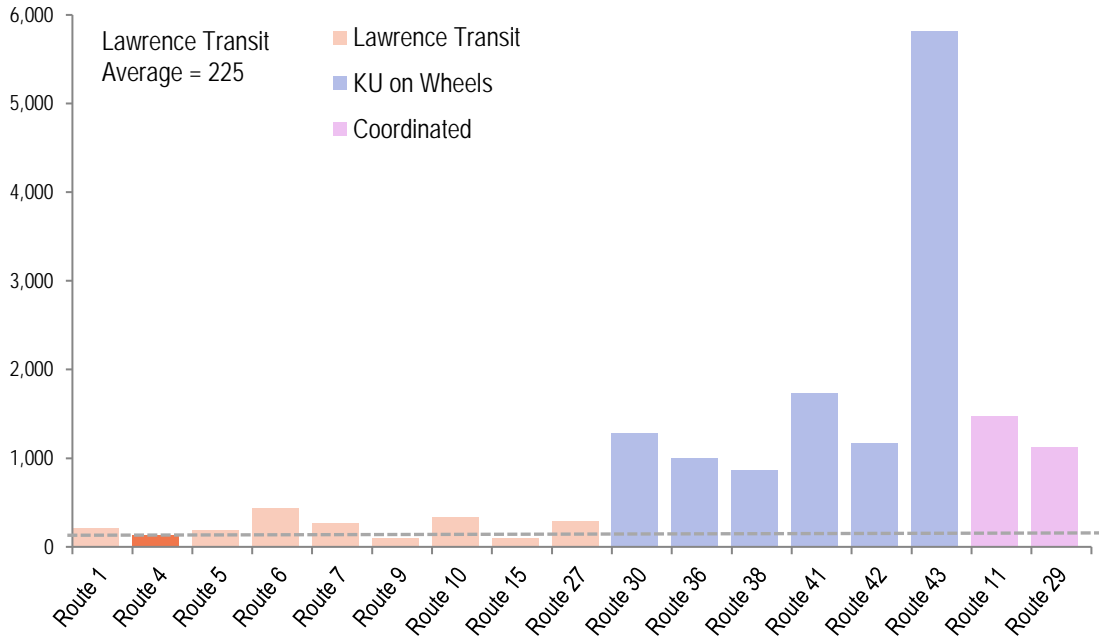
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	124	28	4.4	6.5	6 of 9
Saturday	85	28	3.0	4.7	6 of 8

Source: Lawrence Transit, 2016

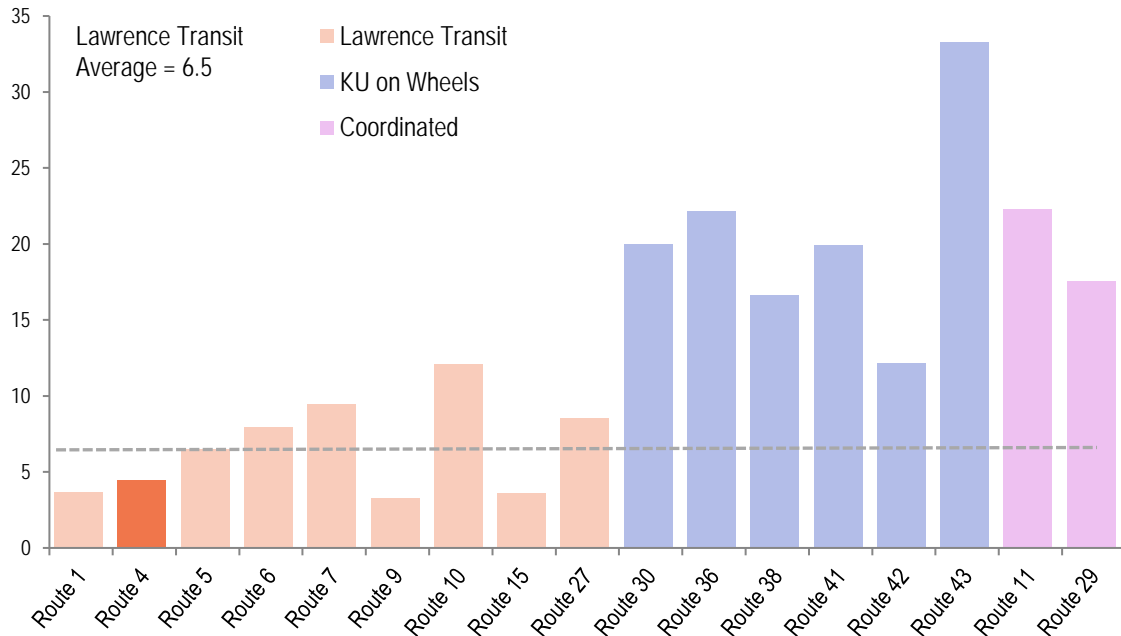
ROUTE EVALUATION | ROUTE 4
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

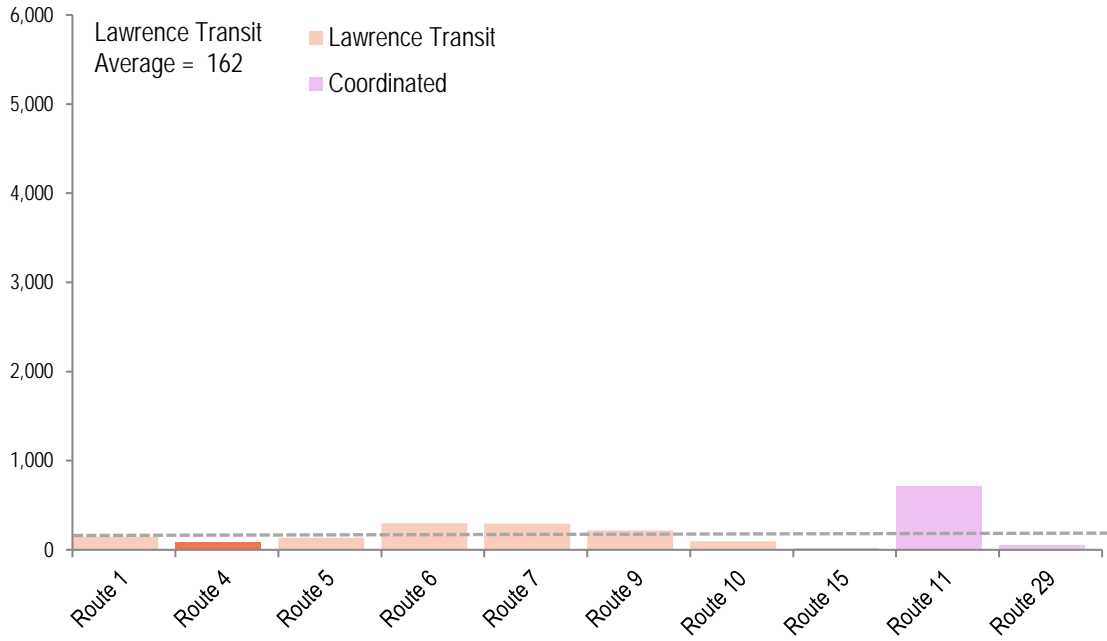
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

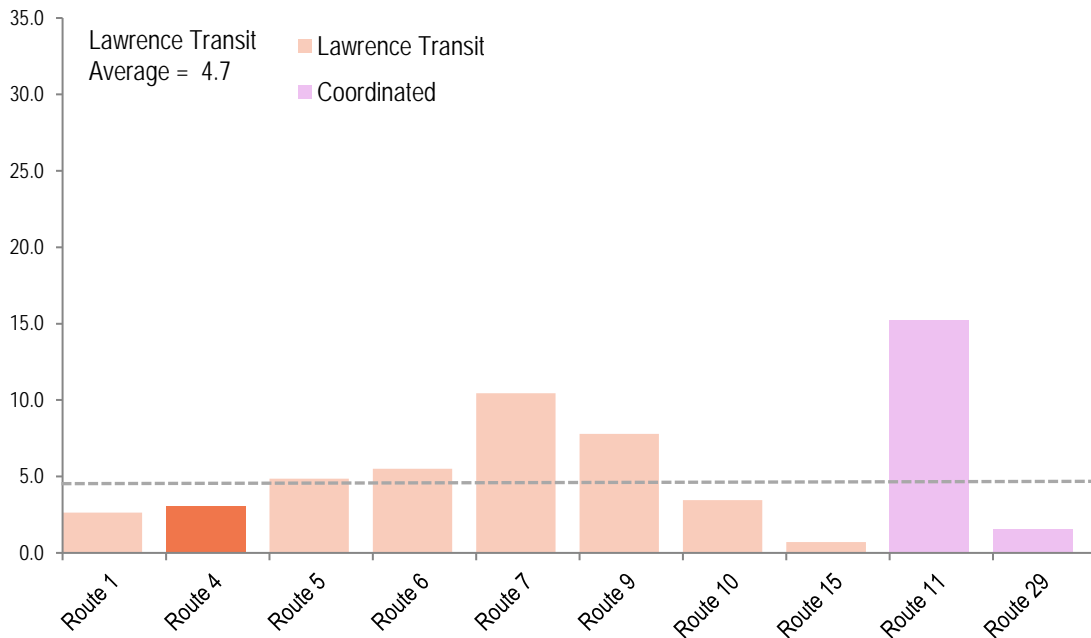
ROUTE EVALUATION | ROUTE 4
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

For weekday inbound service, the highest ridership stops on Route 4 are located in downtown Lawrence and at the I-70 Business Center. Ridership generated at these destinations ranges from 50 to 66 daily passengers. Other stops with more than 10 boardings and alightings per weekday include: 9th Street and University Terrace and 4th Street and Locust (Figure 9). These stops serve a mix of residential neighborhoods and retail destinations. All other stops serve fewer than eight combined boardings and alightings (Figure 10-Figure 13).

Traveling outbound, weekday ridership is highest in downtown Lawrence and in North Lawrence. Two stops generate more than 20 combined daily boardings and alightings: Visitor’s Center (23 passengers) and 8th Street and Vermont Street (22 passengers).

Saturday ridership patterns closely resemble weekday patterns, but feature significantly lower ridership volumes (Figure 14-Figure 17). Only two stops generate more than 10 combined boardings and alightings on Saturdays: 7th Street and Vermont Street and 8th Street and Vermont Street.

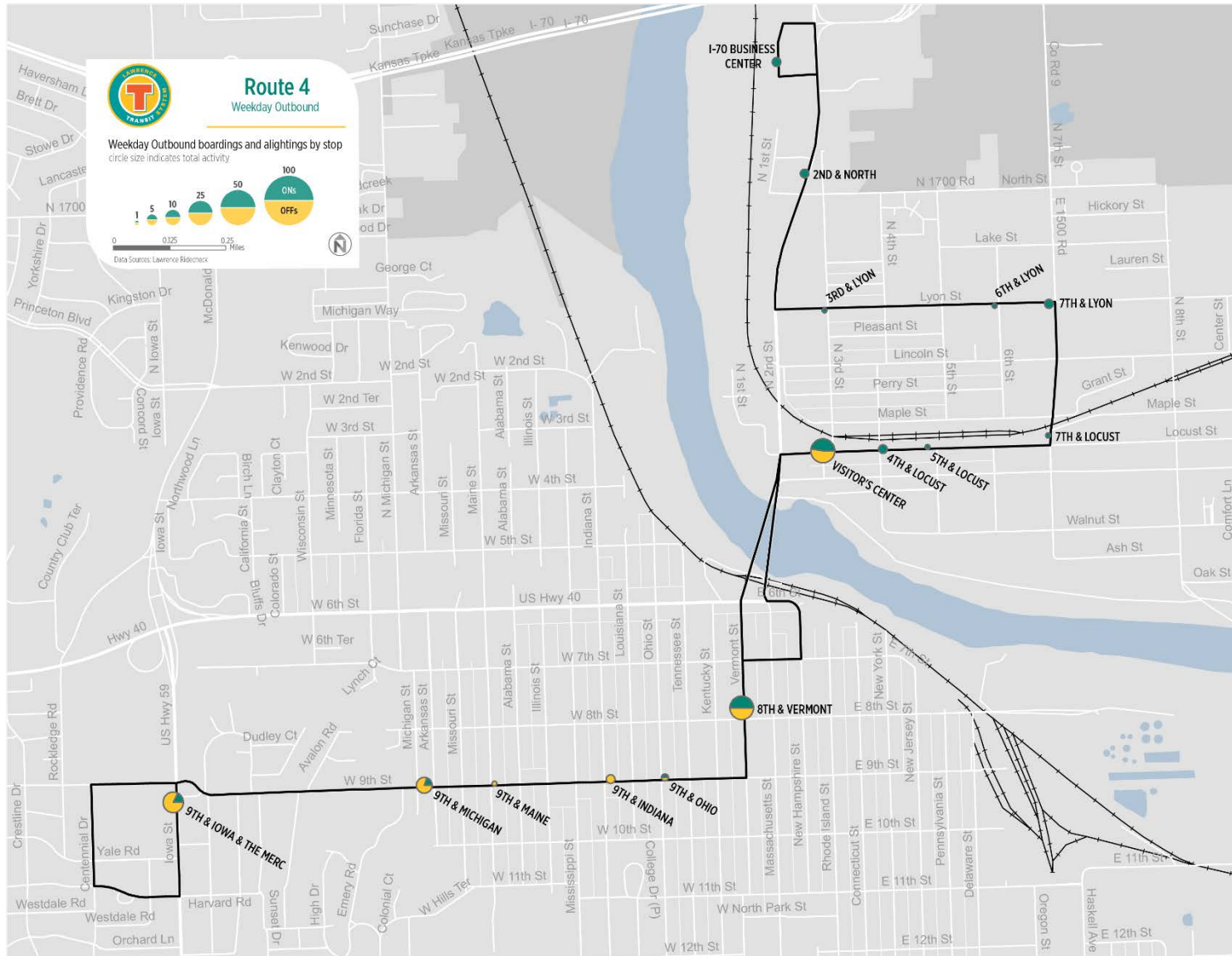
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
7th Street / Vermont Street	66	Downtown Lawrence
I-70 Business Center	50	I-70 Business Center; national retail stores
9th Street / University Terrace	19	Off-campus student housing; residential neighborhoods
4th Street / Locust Street	13	Residential neighborhoods; Union Pacific Depot
Harvard Road / Iowa Street	8	Hillcrest Shopping Center

*Weekday inbound ridership (boardings and alightings) for Route 4 only

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

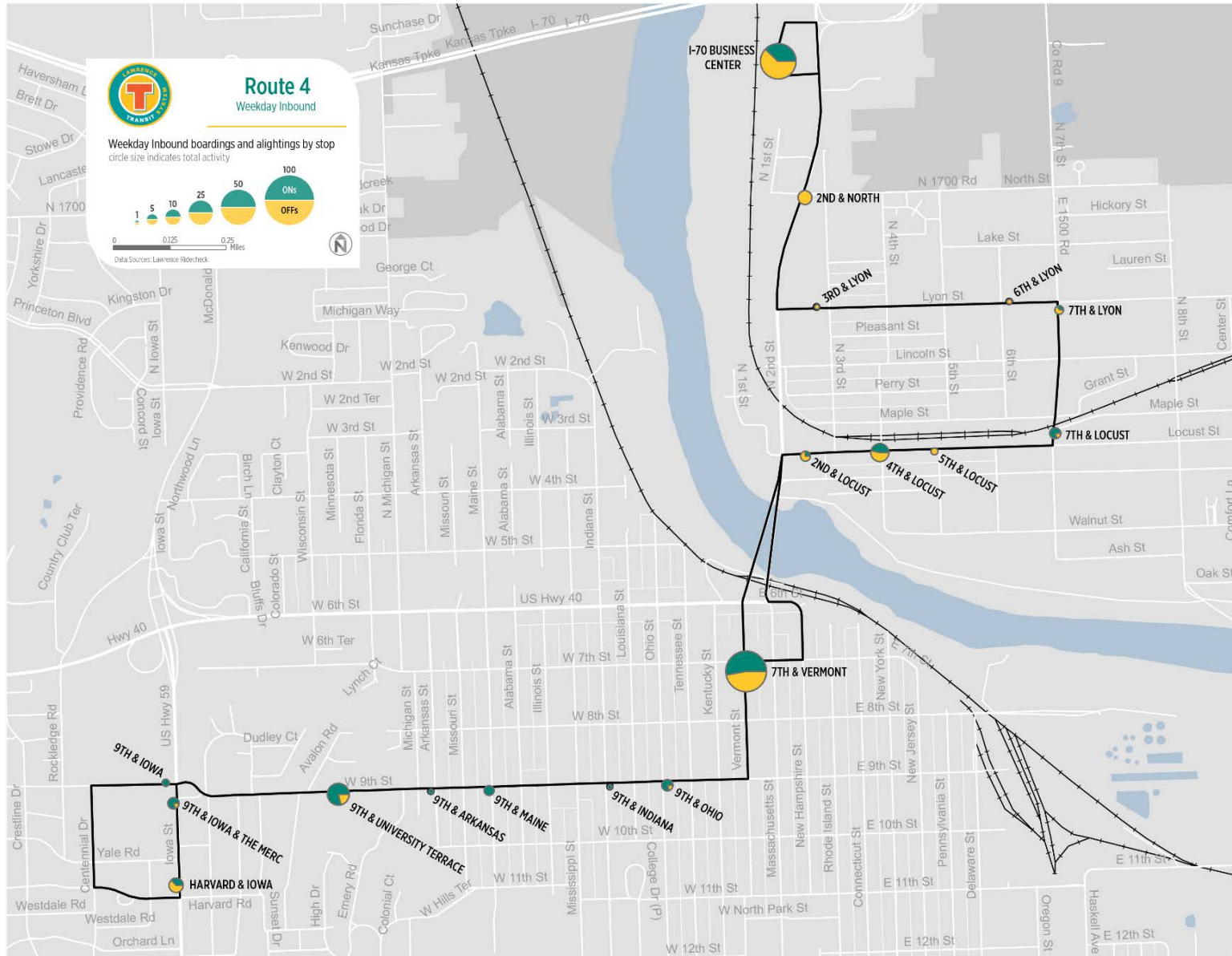
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

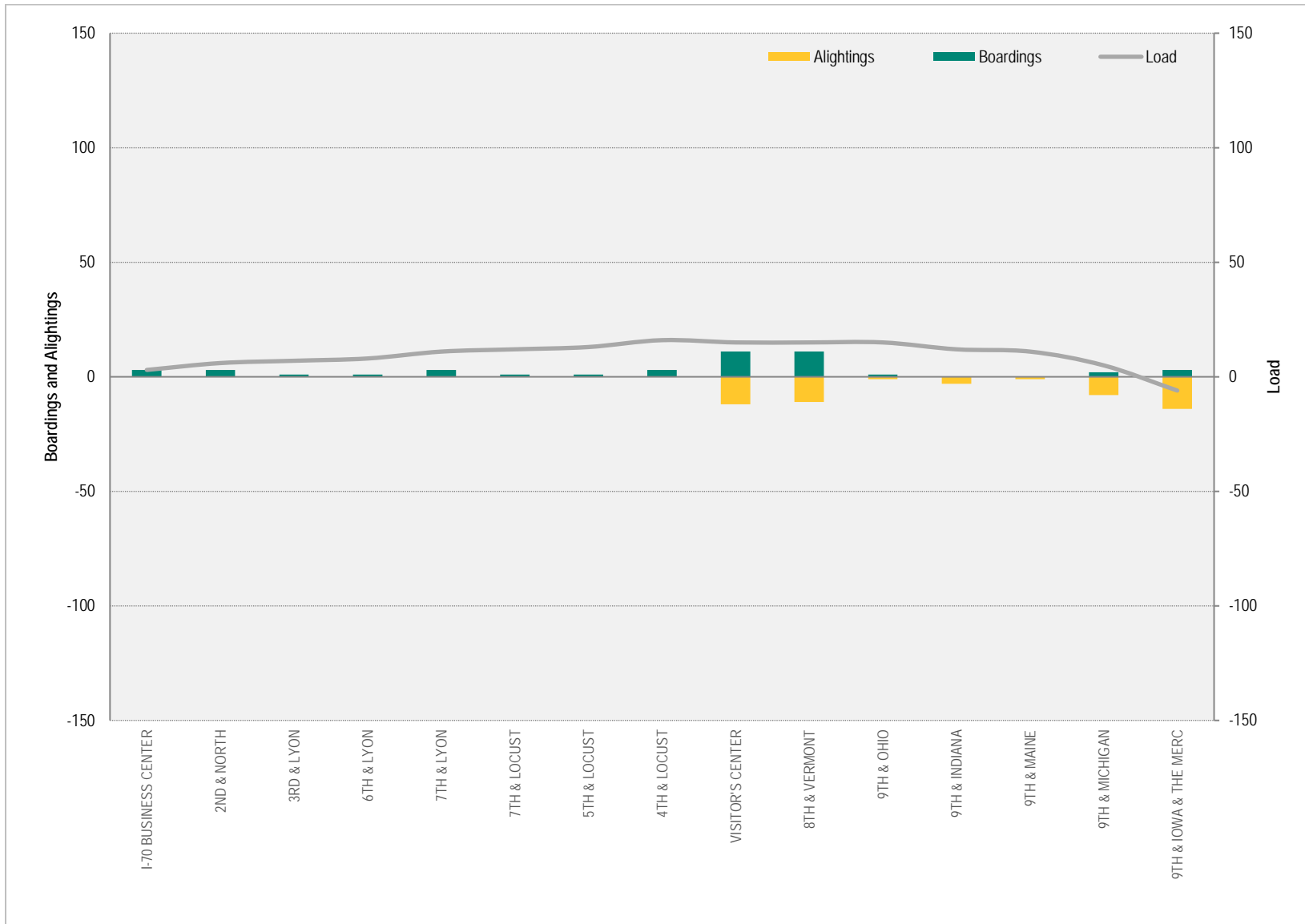
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

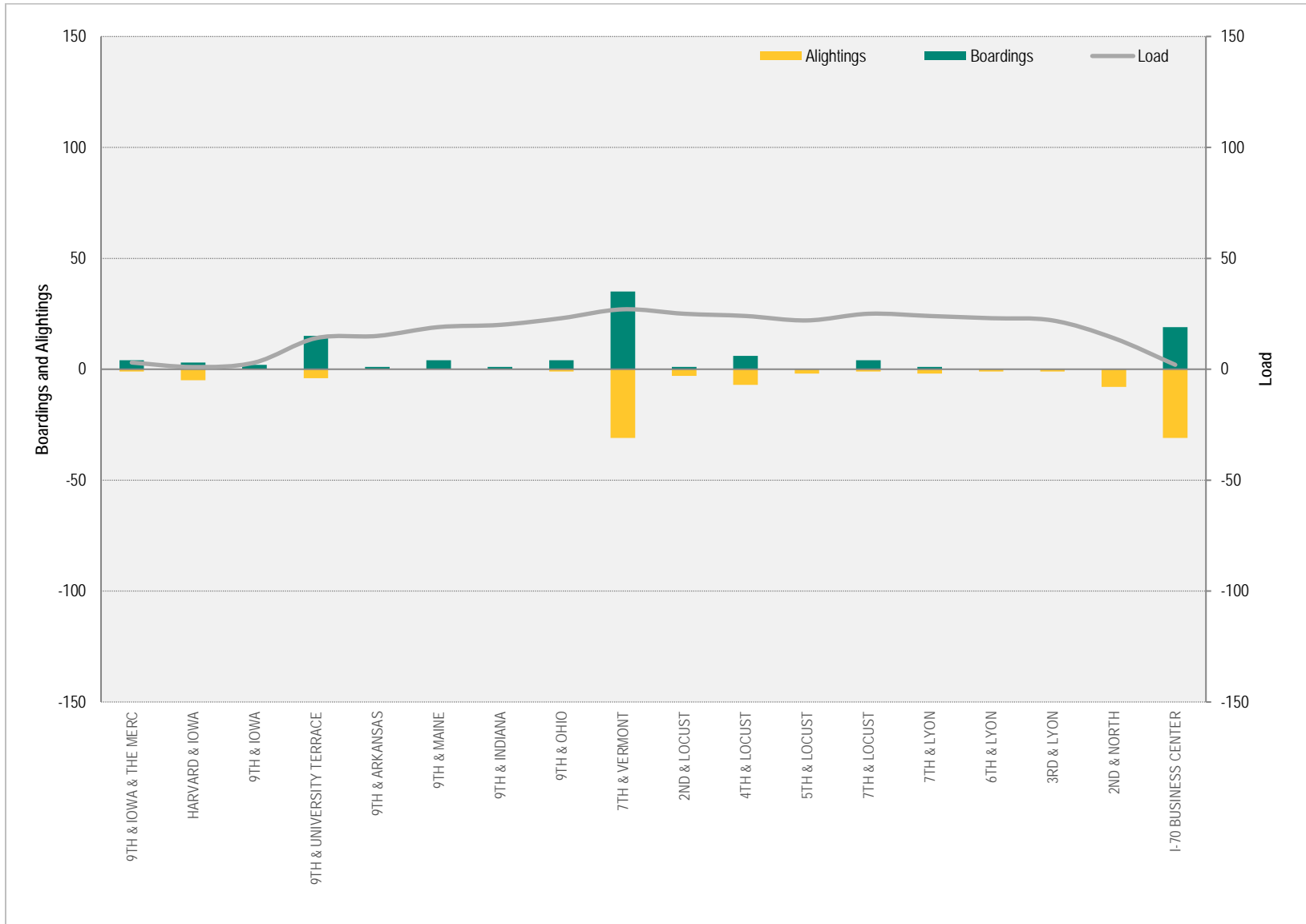
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

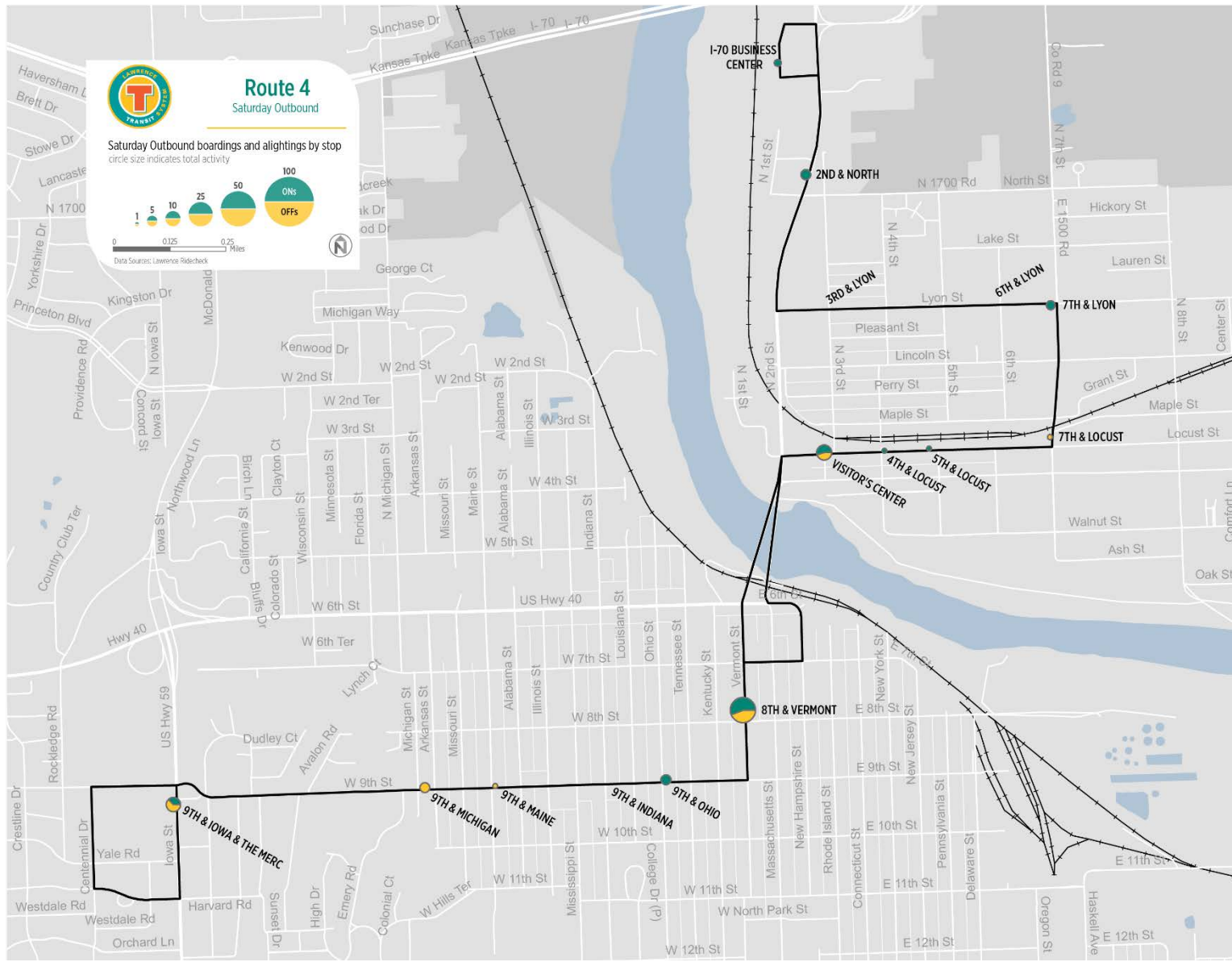
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

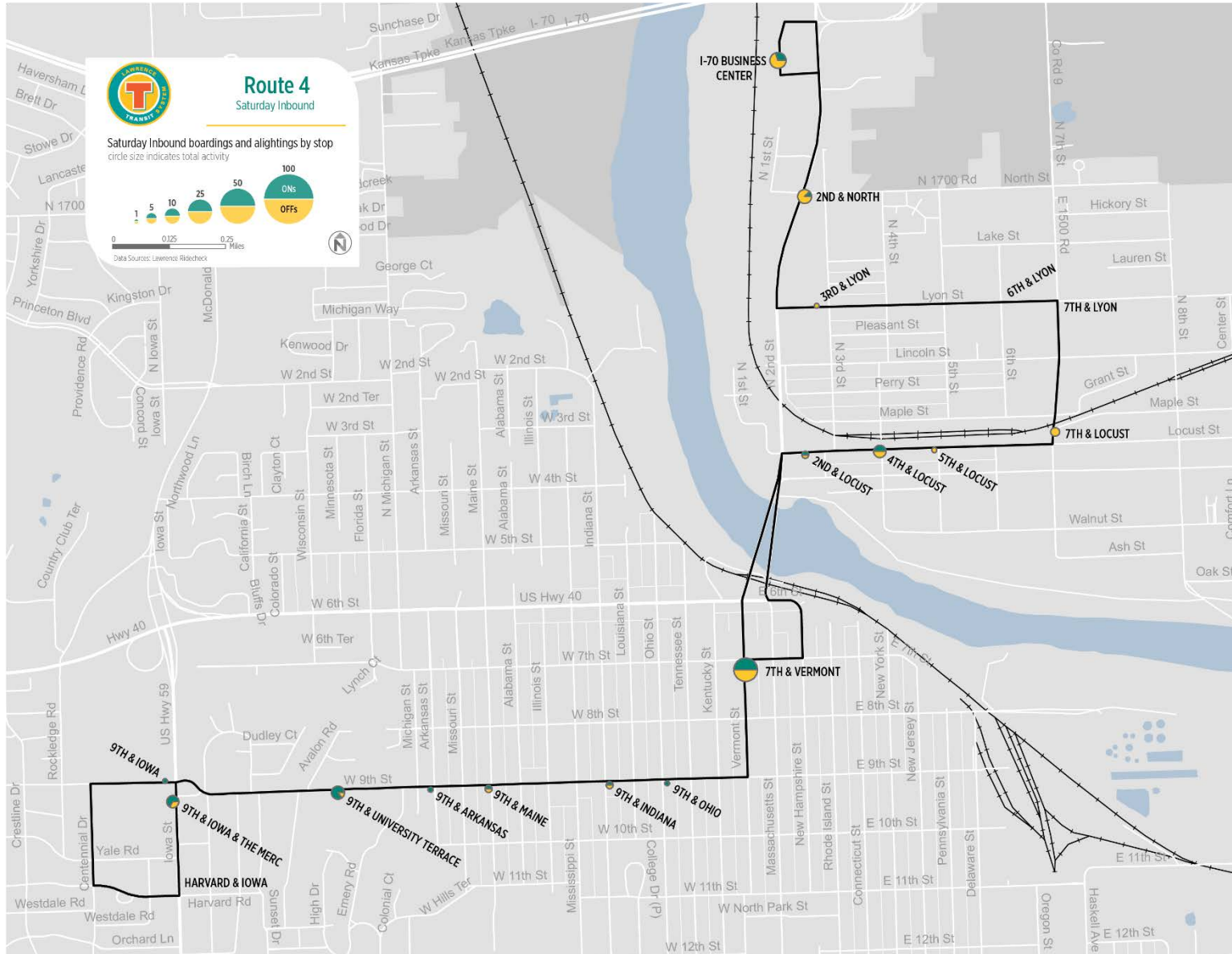
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

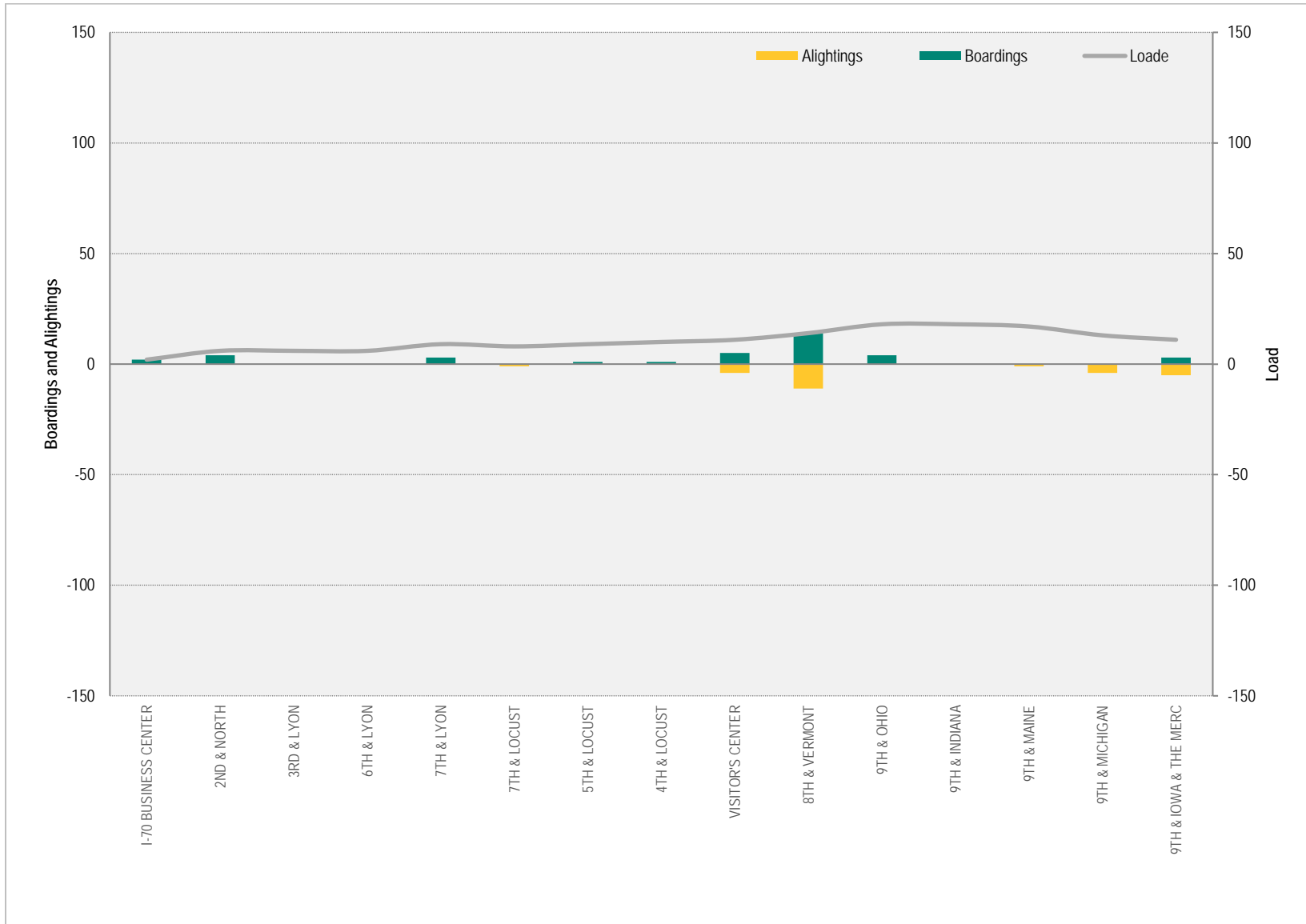
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

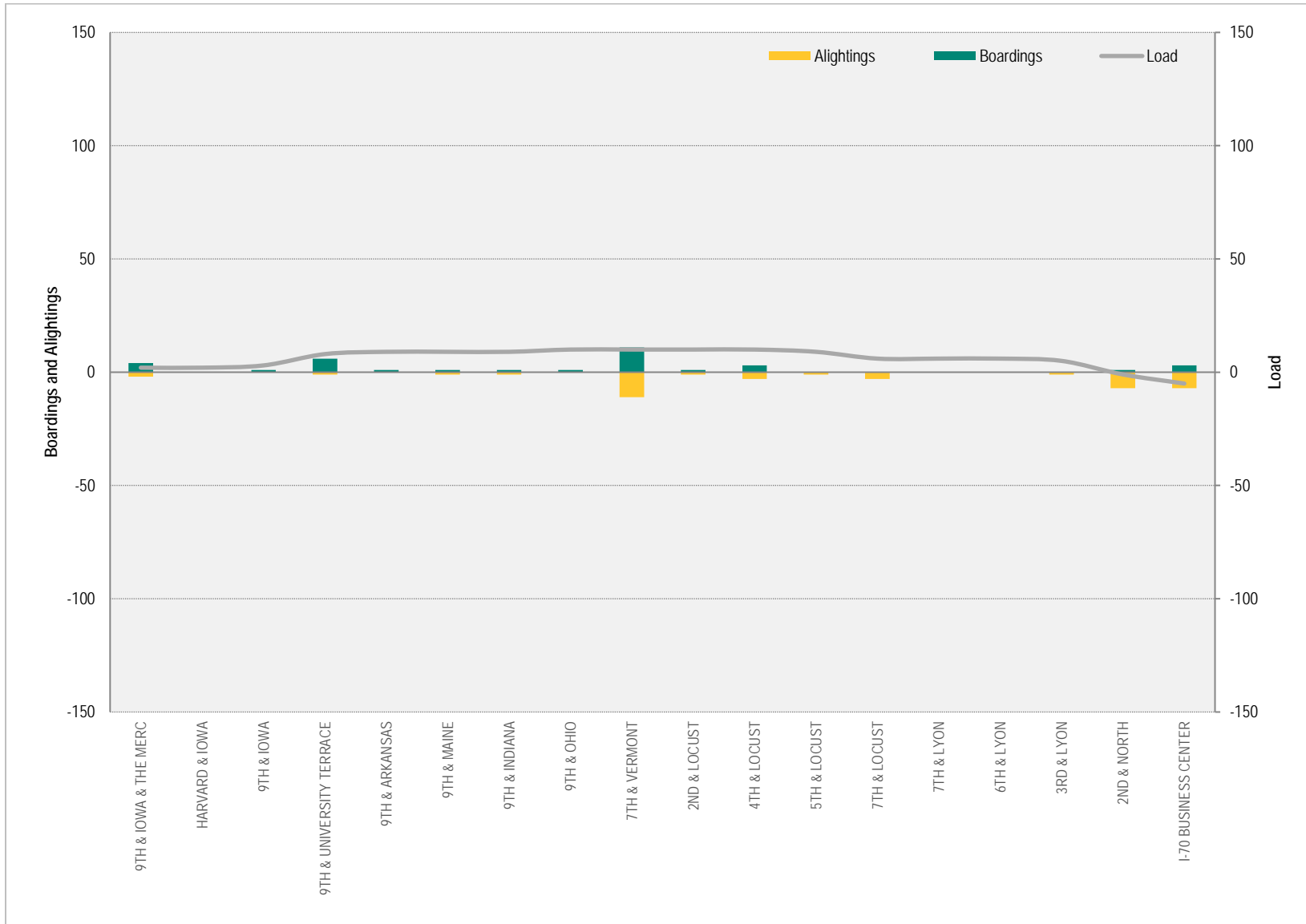
16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

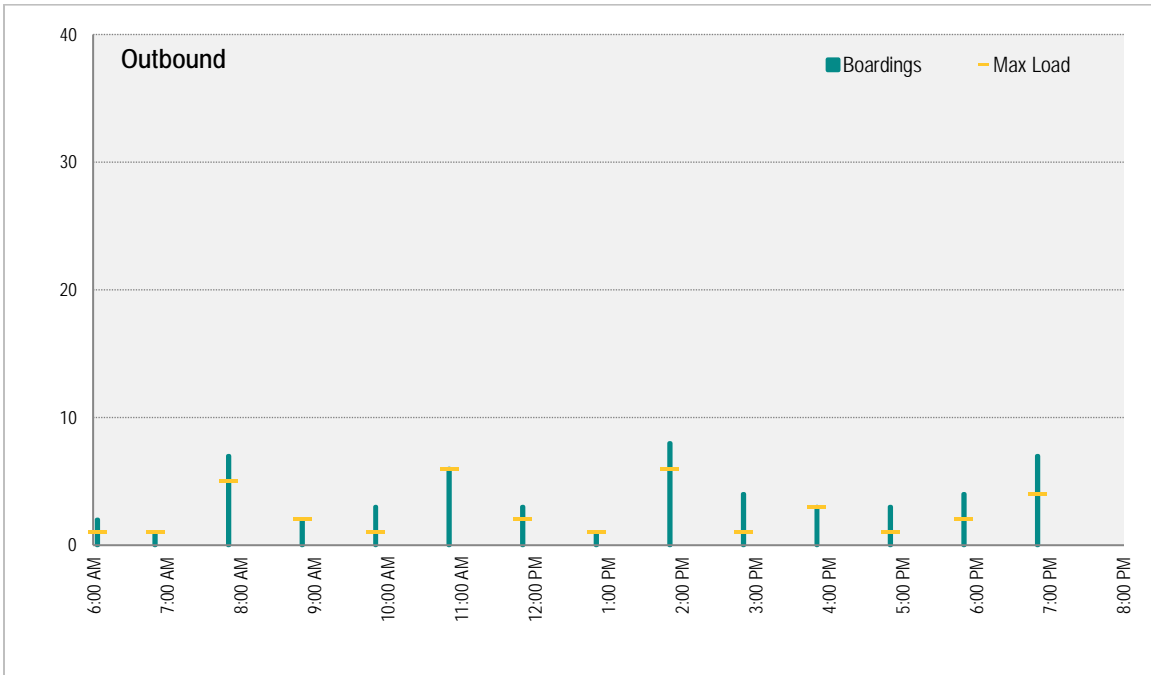
RIDERSHIP BY TRIP

On weekdays, Route 4 ridership is highest traveling in the inbound direction, recording three trips with 10 or more passengers (Figure 18). Ridership in the inbound direction peaks at 7:13 AM, at 12 passengers. A secondary peak exists between 2:00 and 4:15 PM, when two trips record 10 passengers each. Outbound ridership is inconsistent throughout the day, with no outbound trips carrying more than eight passengers (Figure 19).

On Saturdays, Route 4 ridership is highest traveling outbound at 2:50 PM, at 11 passengers. Traveling inbound, no trips carry more than seven passengers (Figure 20 and Figure 21).

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

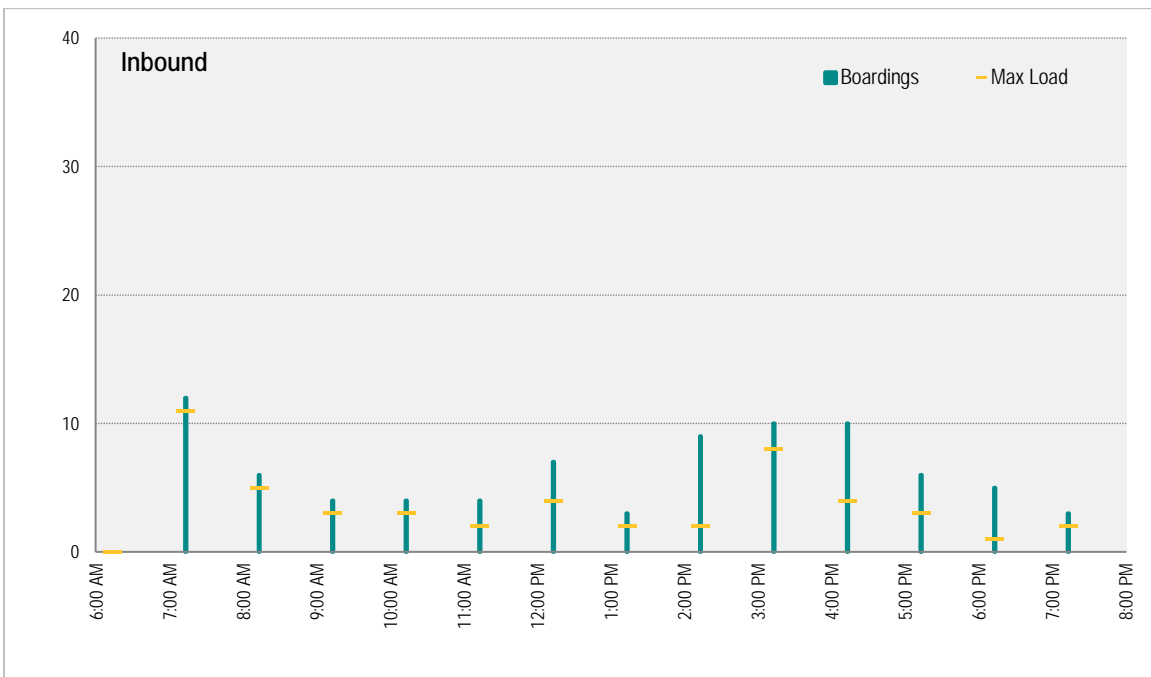
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

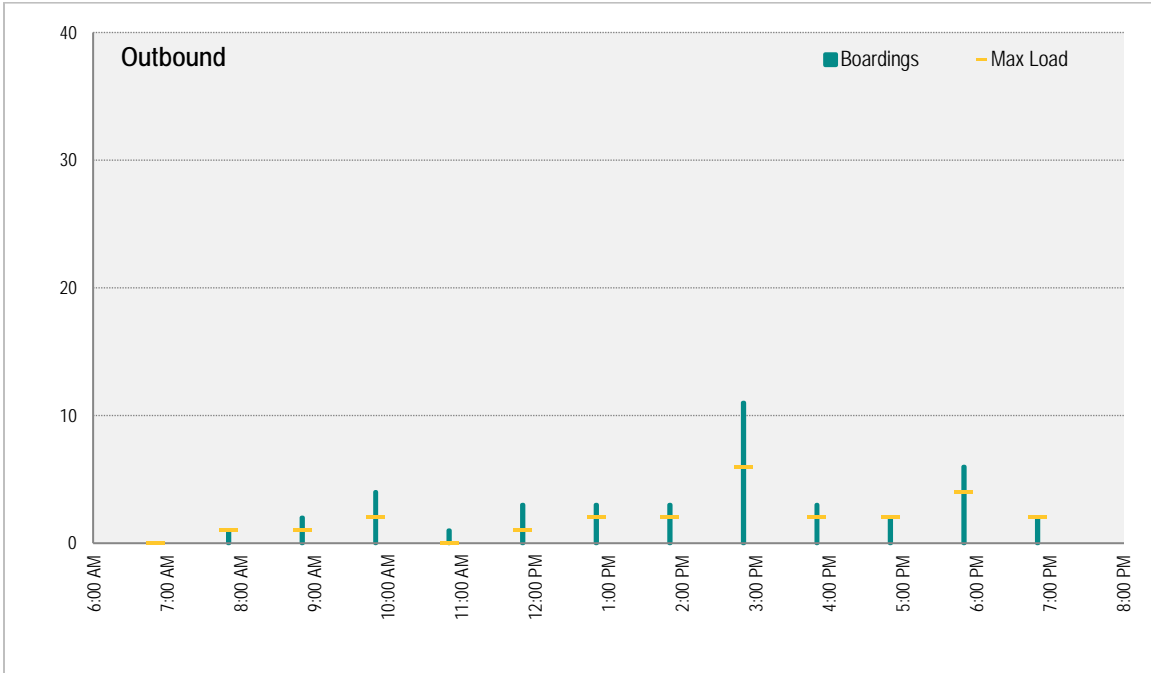


Source: Ride Check, April and May 2016.

Note: No data recorded for the 7:13 PM trip. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

ROUTE EVALUATION | ROUTE 4
Lawrence Transit

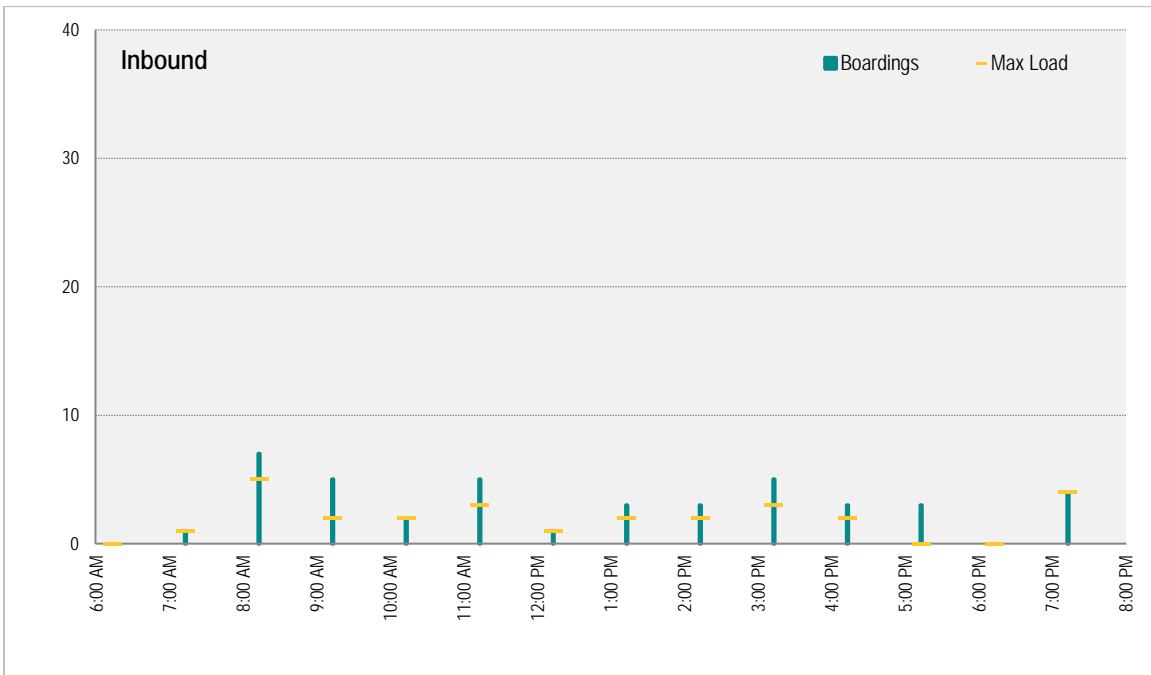
Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

Note: No data recorded for the 6:03 AM trip. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 21 | Saturday 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

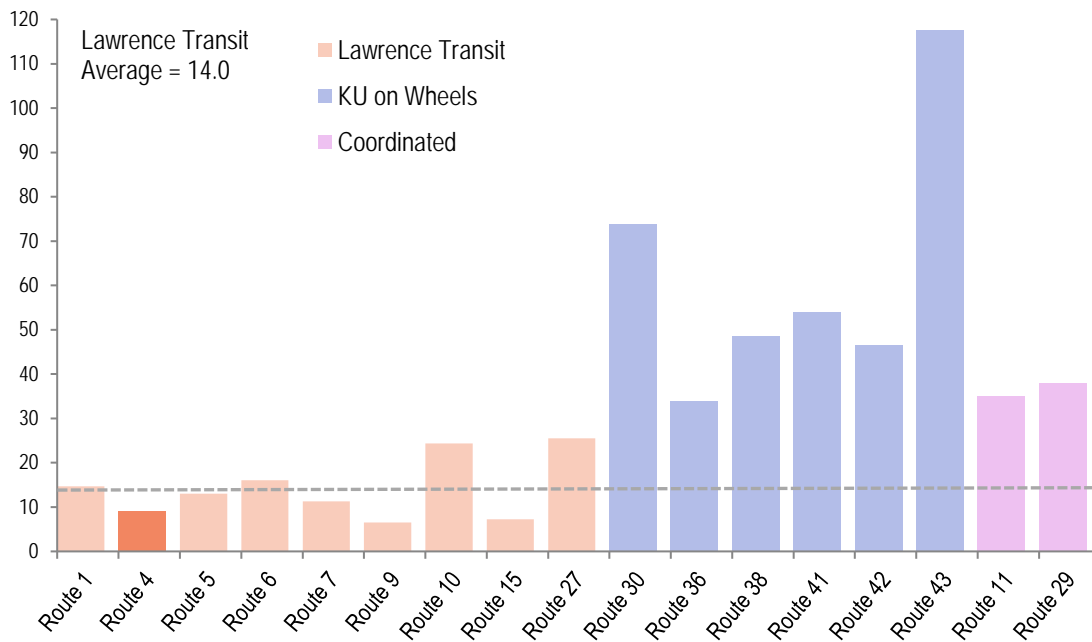
In terms of average passengers per hour, Route 4 is the seventh most productive Lawrence Transit bus route (Figure 22). The route carries 9.1 passengers per hour on weekdays, 35% less than the system average (Figure 23). Route 4 carries 6.2 passengers per hour on Saturdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	124	13.7	9.1	14.0	7 of 9
Saturday	85	13.7	6.2	9.7	7 of 8

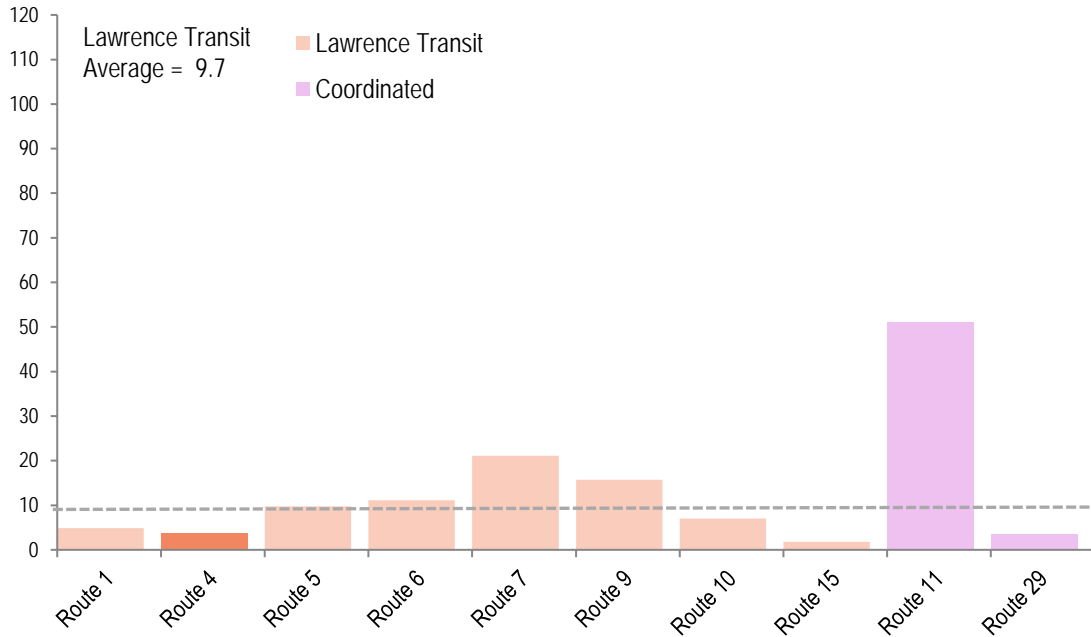
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 54% of Route 4 time points were served “on-time” during the survey period (Figure 25). On Saturdays, approximately 56% of Route 4 time points were served “on-time” during the survey period.” 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 by a roughly equal number of early and late departures. Saturday on-time performance was affected primarily by early departures (about a third of all time points were served early).

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	53.8%	55.8%
Early	26.9%	32.7%
Late	19.2%	11.5%

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

- **Discontinue Service on 9th Street.** Route 4 connects North Lawrence and 9th Street to downtown but otherwise does not offer strong connections along the route to city services and other retail or employment locations. In addition, there are likely few through-riders between North Lawrence and 9th Street, as those areas are primarily residential and low-density residential/commercial, respectively. Service along 9th Street shows especially low productivity, and residents in North Lawrence have few options for shopping and making other daily trips without a car. By discontinuing service on 9th Street and reallocating those resources, better connections can be made between North Lawrence and necessary goods and services in Lawrence.
- **Discontinue Saturday Service.** Saturday service has fewer than 100 passengers per day and about 6 riders per hour in service. While maintaining a regular schedule that is similar to other routes in the system has many benefits, the productivity on Route 4 does not warrant Saturday service currently. Eliminating the route would allow for the resources to be allocated elsewhere. To maintain weekend connections to North Lawrence, a Saturday flex or similar service could be offered.
- **Improve Frequency to Every 30-Minutes.** Route 4 currently has fewer than 10 riders per hour in service but offers the only transit connection between North Lawrence and Lawrence. Improving frequency typically spurs ridership, and with better connections, the performance of Route 4 could improve greatly.
- **Begin Service at 7:13 AM; End Service after the 6:50 PM Departure.** Service on Route 4 currently begins at 6:03 AM and ends at 7:45 PM (last departure at 7:13 PM). Low ridership on departures before 7:13 AM and after 6:50 PM indicate that the resources necessary to operate that service could be better spent elsewhere. As a result, reducing the service span to approximately 7:13 AM to 7:13 PM would benefit users in some other way or on some other part of the system.

Lawrence Transit System

ROUTE 5

31st & Iowa to East Hills Business Park

SERVICE DESIGN

Route 5 is a Lawrence Transit route that operates between Pine Ridge Plaza and East Hills Business Park. The route travels primarily along Iowa Street, 23rd Street, and Venture Park Drive (Figure 1). Route 5 provides service to East Hills Business Park, Lawrence Community Shelter, Haskell Indian Nations University, and Pine Ridge Plaza.

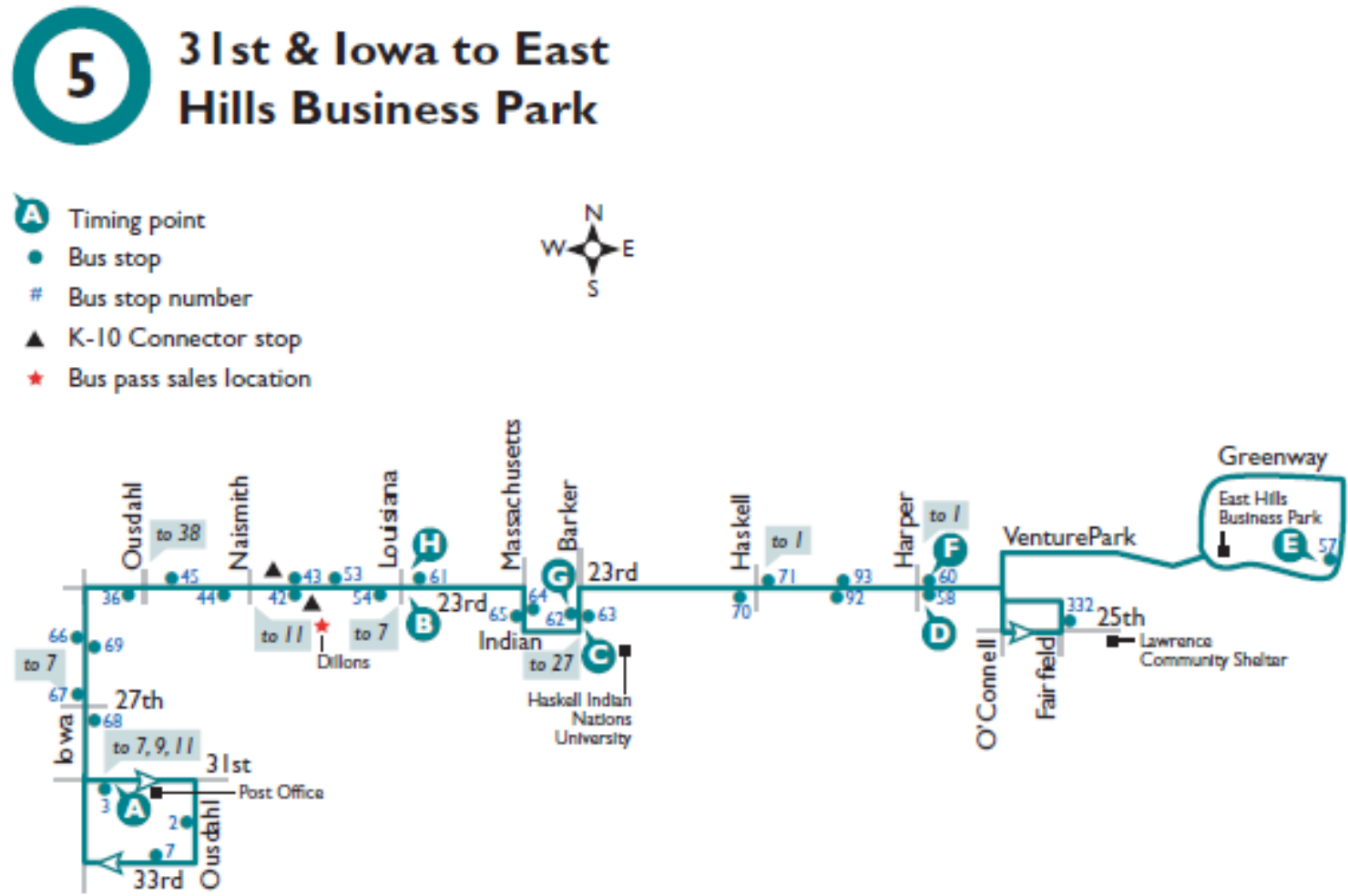
ALIGNMENT/SERVICE PATTERNS

Route 5 has one service pattern for weekday and Saturday service. Departing outbound from the intersection of 31st Street and Iowa Street, Route 5 turns right on Ousdahl Road, right on 33rd Street, right on Iowa Street, right on 23rd Street, right on Massachusetts Street, and left on Indian Avenue to reach Haskell Indian Nations University. Route 5 then turns left on Barker Avenue, right on 23rd Street, right on Franklin Road, right on 25th Terrace, right on O'Connell Road, right on Venture Park Drive, left on Greenway Circle, right on Greenway Drive, and then terminates across from General Dynamics.

Returning inbound from General Dynamics, Route 5 continues on Greenway Circle, and then turns left on Venture Park Drive and left on O'Connell Road, before returning to 23rd Street. Route 5 then continues along the inbound alignment until the intersection of Iowa Street and 31st street, where the route turns left and terminates.

As of August 1st, 2016, Route 5 was realigned and no longer serves the Lawrence Community Shelter.

Figure 1 | Route Map



Source: Lawrence Transit, August 2015-July 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 5 and several Lawrence Transit routes at 31st Street and Iowa Street (Pine Ridge Plaza). There are also transfer opportunities at several other points along the route, particularly along 23rd Street (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Pine Ridge Plaza	Route 7, Route 9, Route 11
Barker Avenue and Indian Avenue	Route 27
Haskell Avenue and 23rd Street	Route 1
Ousdahl Road and 23rd Street	Route 38
Harper Street and 23rd Street	Route 1
East Hills Business Park	Route 15

SERVICE SCHEDULE

Route 5 operates service Monday-Saturday (Figure 3) year round. On weekdays and Saturdays, the route runs every 60 minutes from 6:30 AM to 7:58 PM. Route 5 does not operate on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:30 AM – 7:58 PM	60	14/14
Saturday	6:30 AM – 7:58 PM	60	14/14
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 5 ranks sixth of nine Lawrence Transit routes in terms of weekday ridership and fifth of nine in terms of ridership per trip (Figure 4). On average, the route carries 181 passengers, or 6.5 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, the route carries 136 passengers, or 4.9 per trip.

Figure 4 | Ridership Statistics

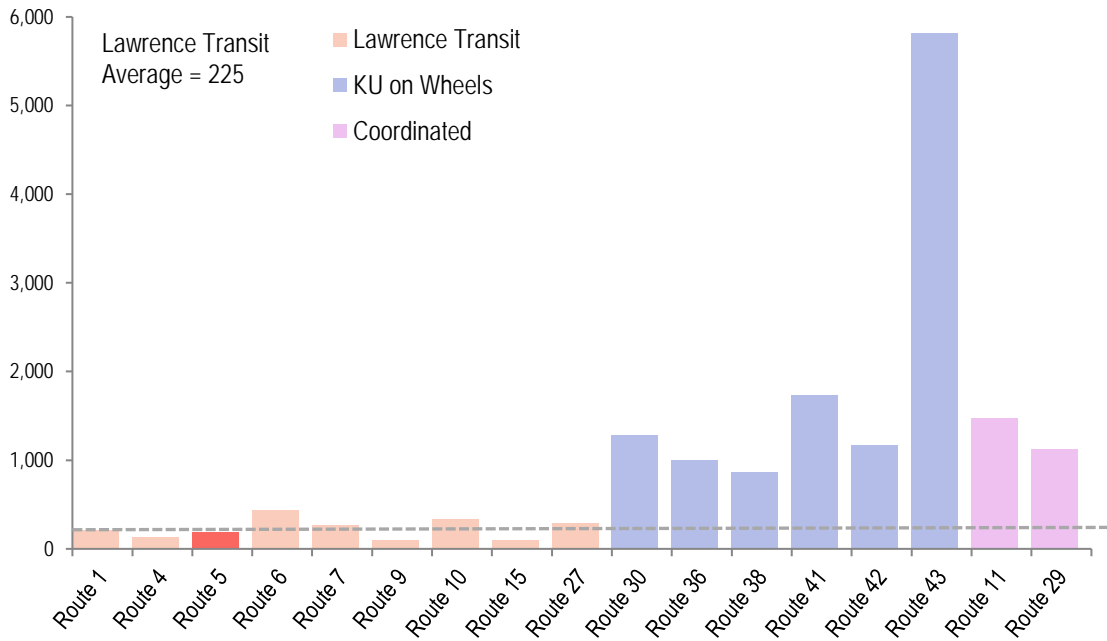
SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	181	28	6.5	6.5	5 of 9
Saturday	134	28	4.9	4.7	4 of 8

Source: Lawrence Transit, 2016

ROUTE EVALUATION | ROUTE 5

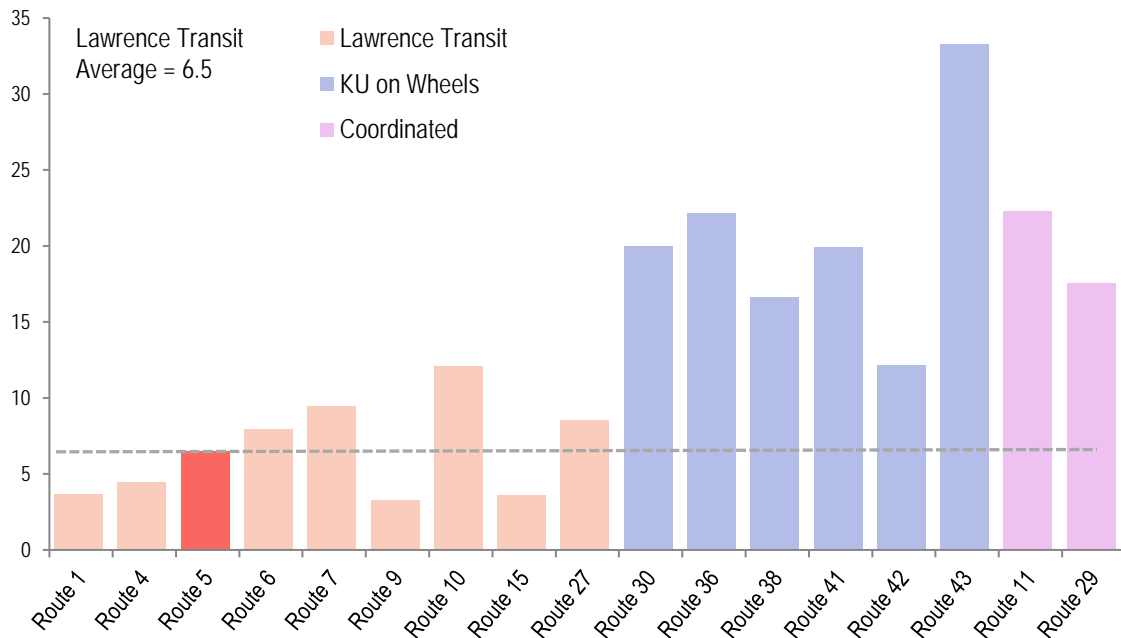
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

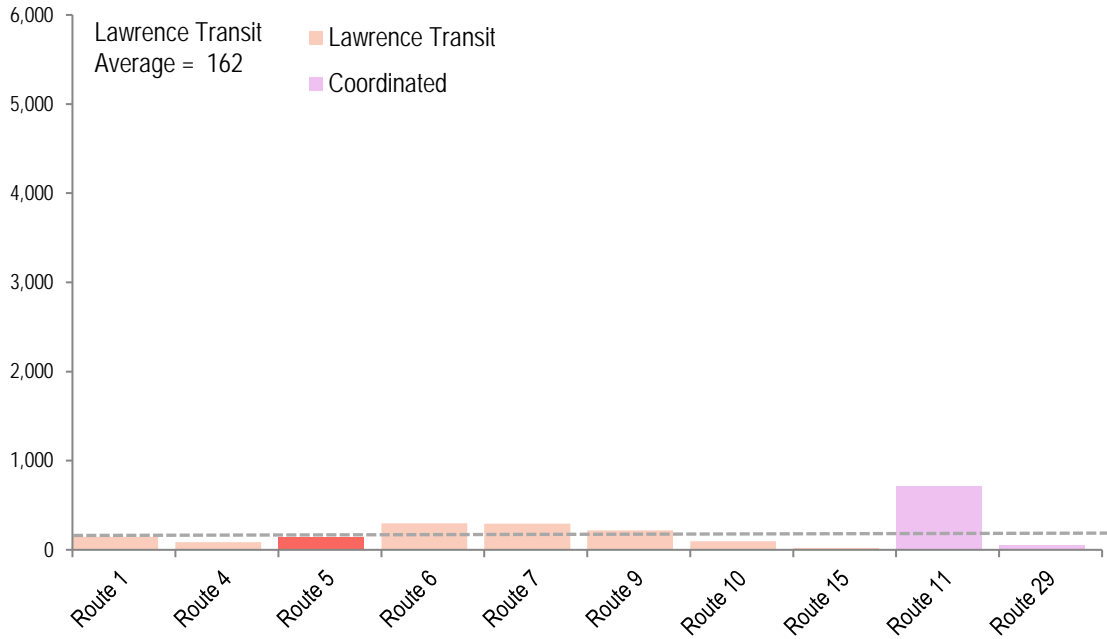
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

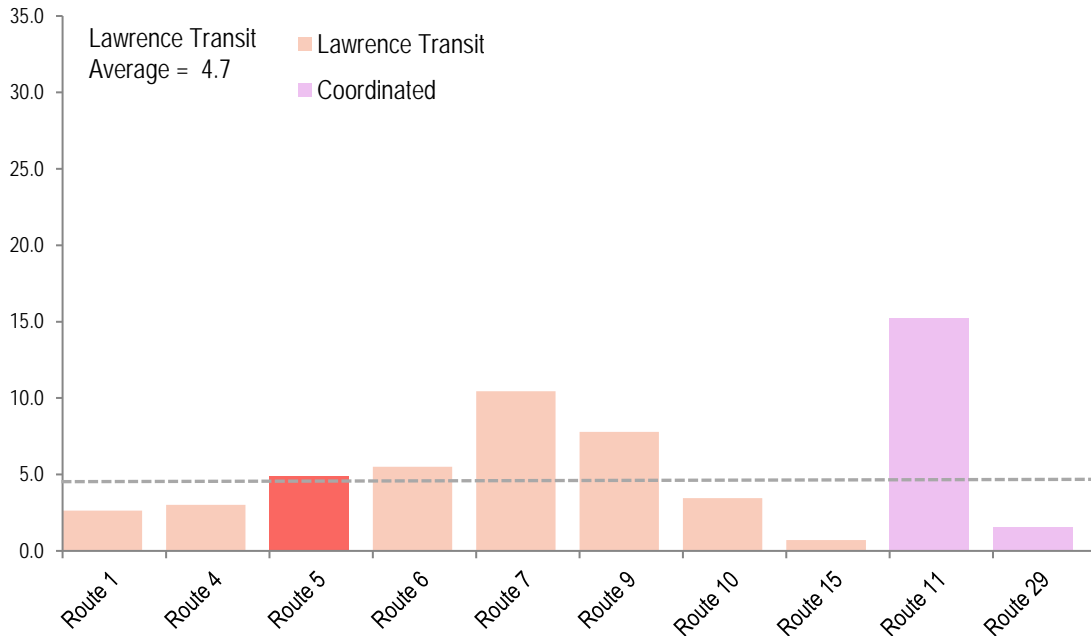
ROUTE EVALUATION | ROUTE 5
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 5 are located at the beginning and end of the route, at the East Hills Business Park and the stop at 31st Street and Iowa Street (Figure 9). With 27 total boardings, East Hills Business Park records the highest number of combined inbound boardings and alightings on Route 5. Aside from East Hills Business Park, 23rd Street and Haskell Avenue, and 31st Street and Iowa Street, no stops generate more than 10 inbound boardings and alightings per weekday. Stops at 31st Street and Iowa Street, and along 23rd Street (University Bookstore) serve numerous national and local commercial and retail stores. On weekday outbound service the stop East Hills Business Park handles 31 alightings.

Saturday inbound ridership patterns on Route 5 are similar to weekday patterns, but with significantly lower volumes (Figure 14-Figure 17). Only two inbound stops generate more than 10 combined boardings and alightings: 25th Street and Iowa Street, and 31st Street and Iowa Street. Outbound, the stop 25th and Franklin Street, near the Douglas County Jail, generates 39 combined boardings and alightings on Saturday.

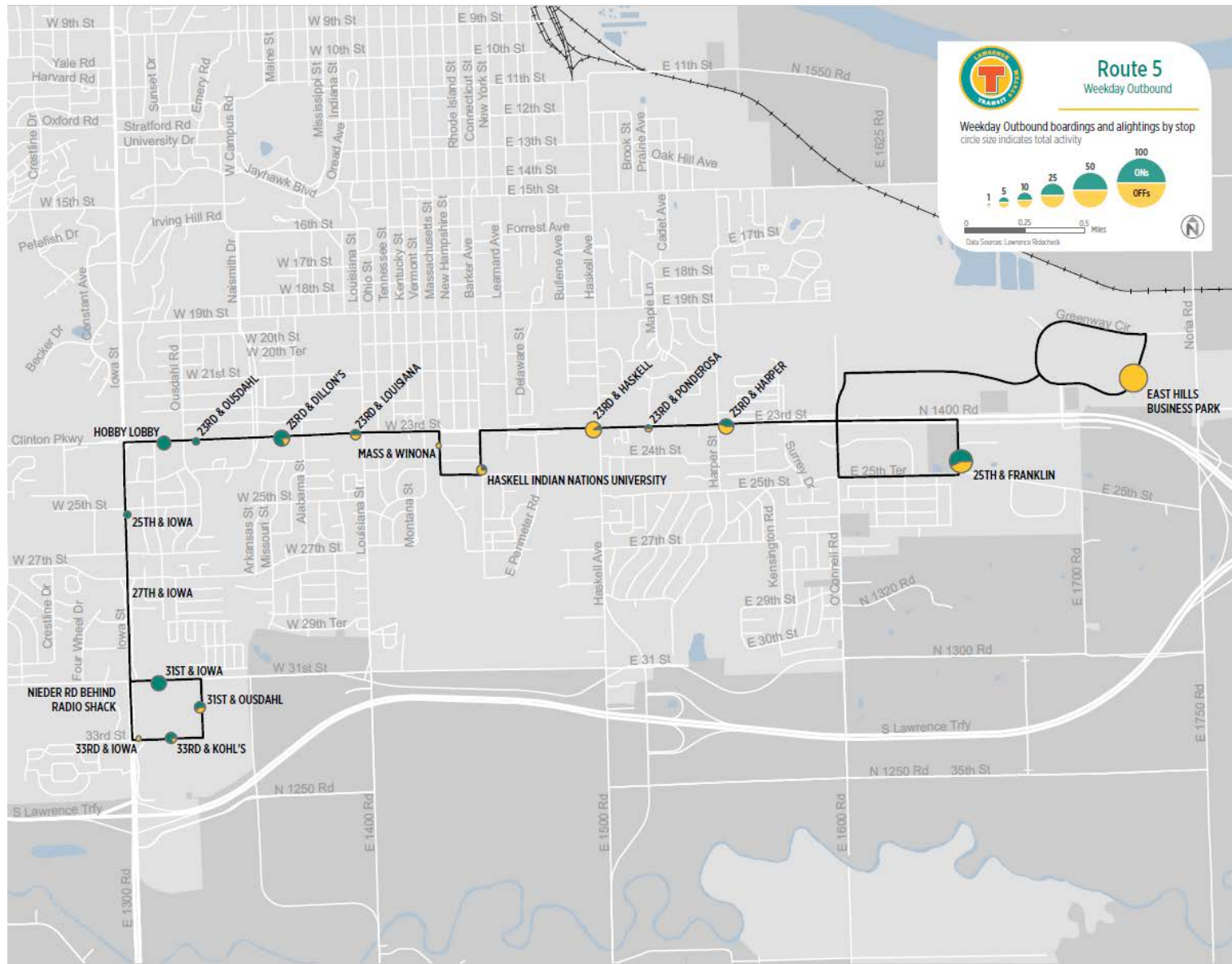
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
East Hills Business Park	27	East Hills Business Park
23rd Street / Haskell Avenue	10	Local retail stores; Haskell Indian Nations University
University Bookstore	6	Dillons
27th Street / Iowa Street	6	Local and national retail stores
31st Street / Iowa Street	14	Pine Ridge Plaza; multiple national retail stores

*Weekday outbound ridership (boardings and alightings) for Route 5 only.

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

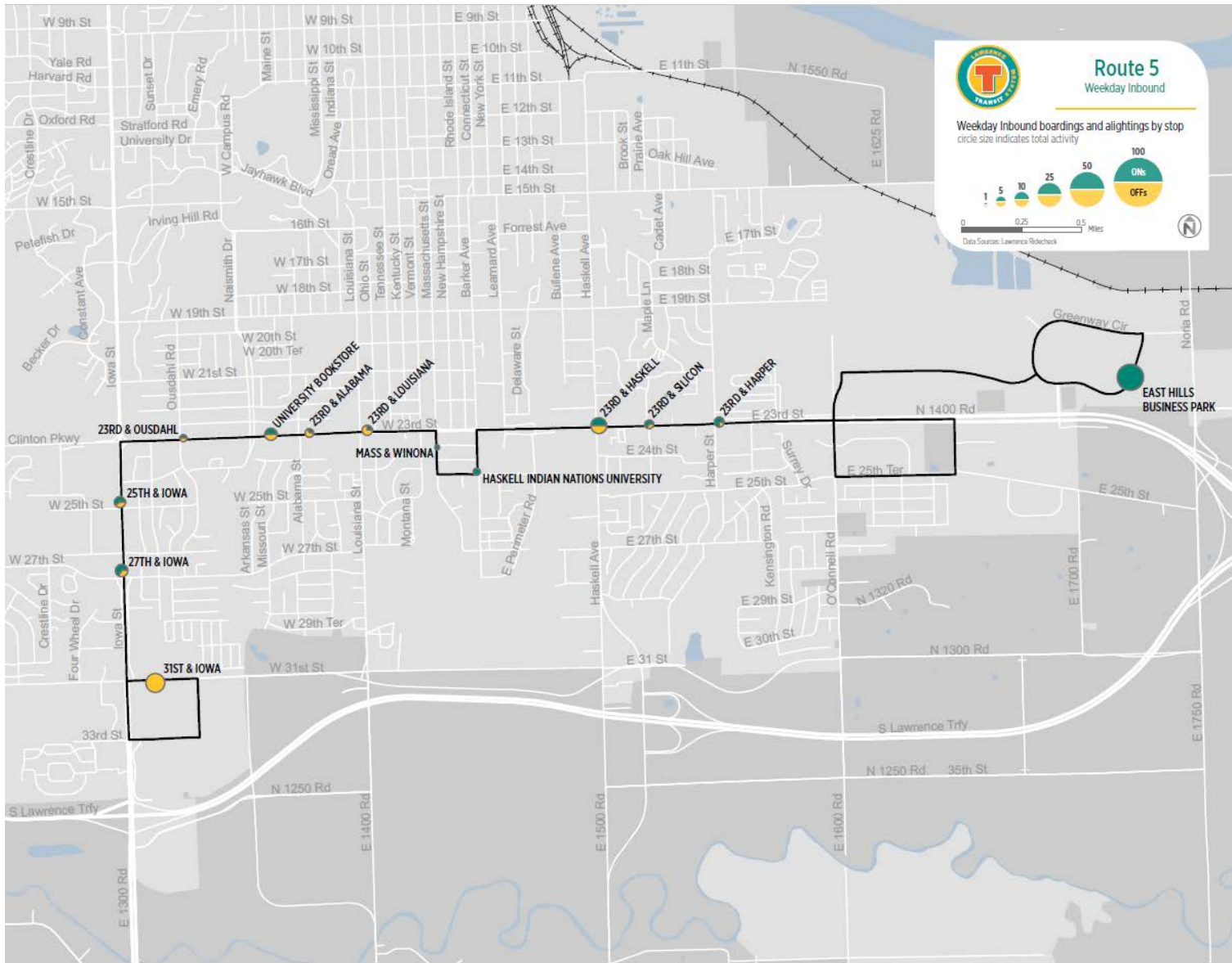
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

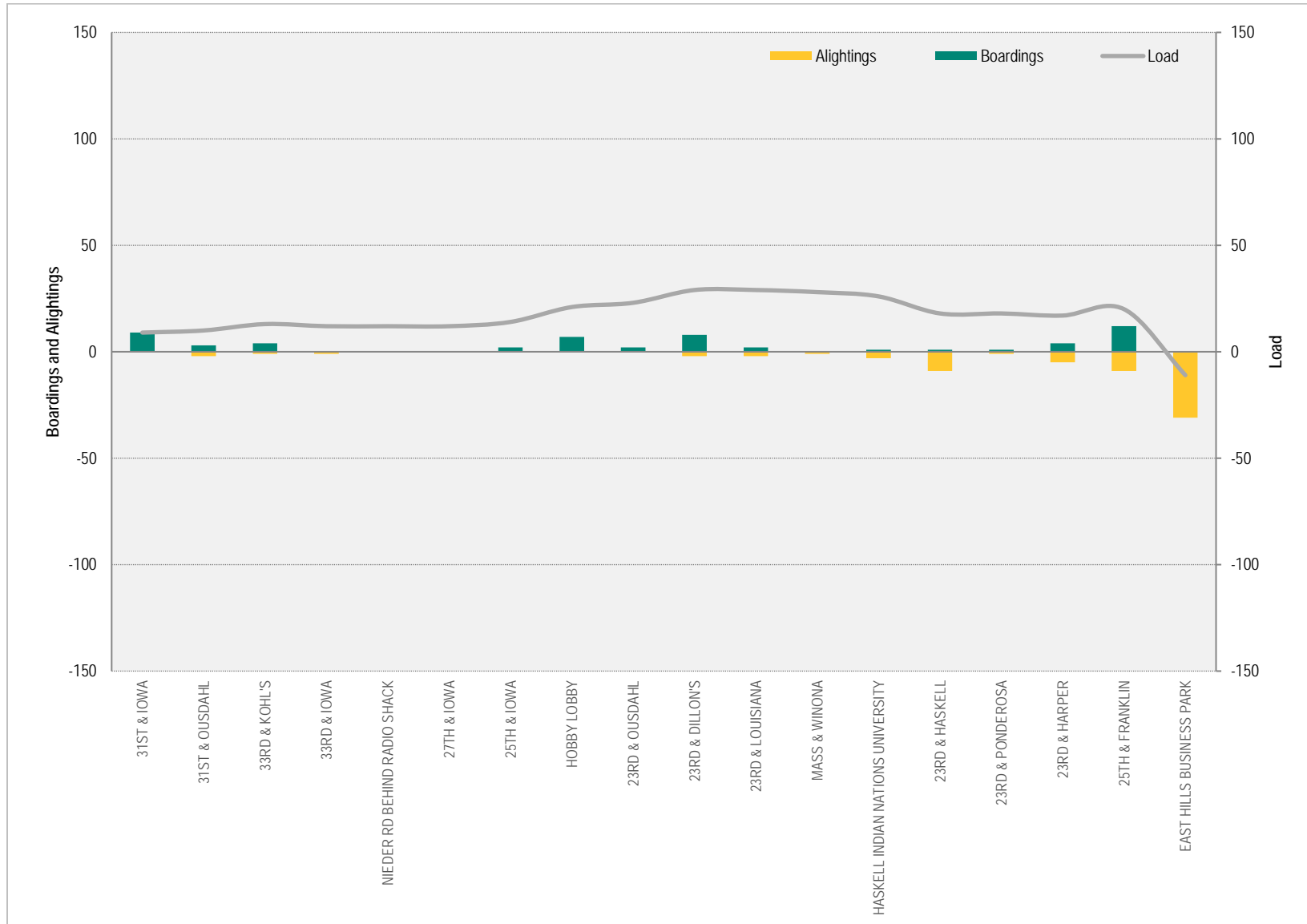
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

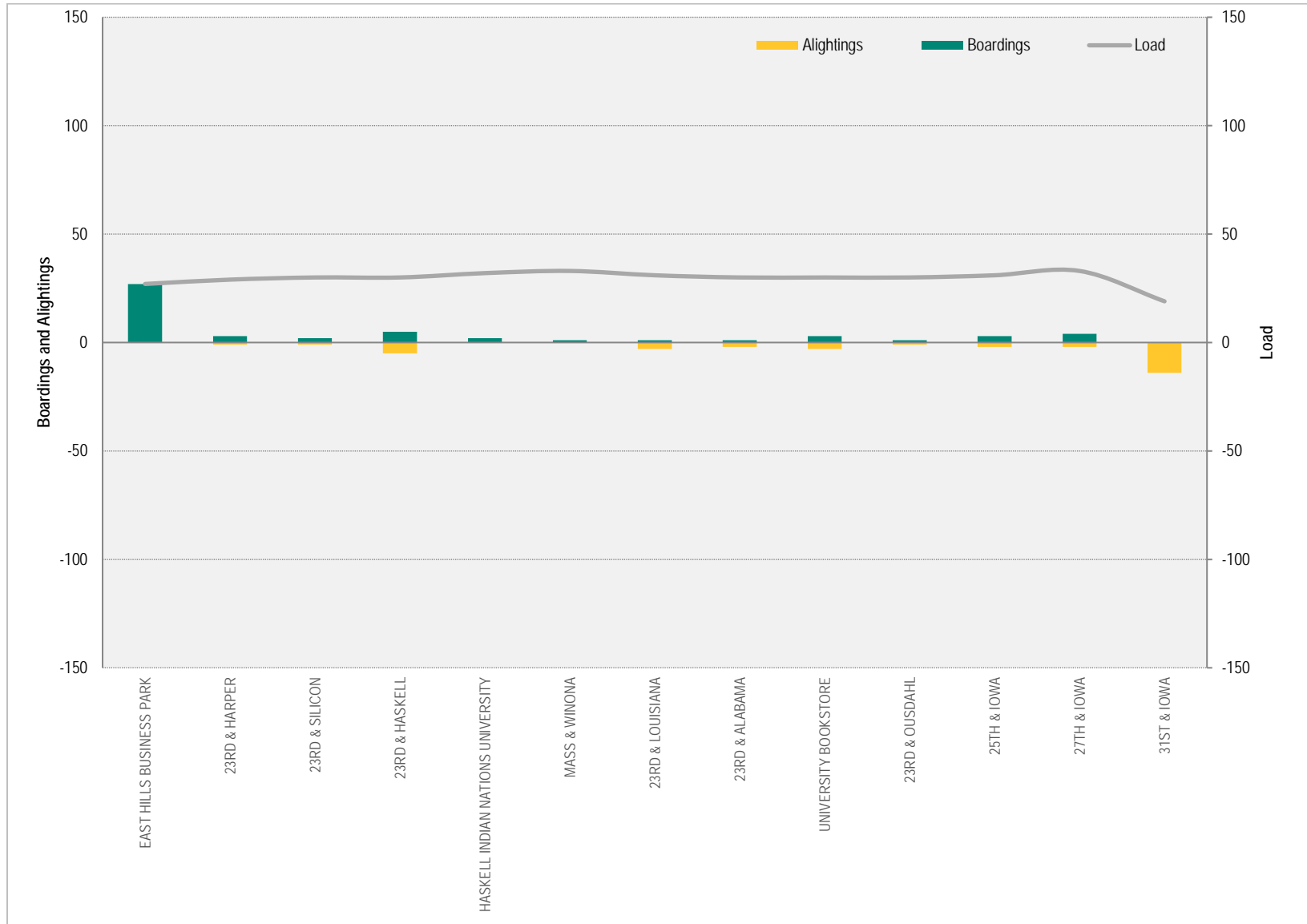
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

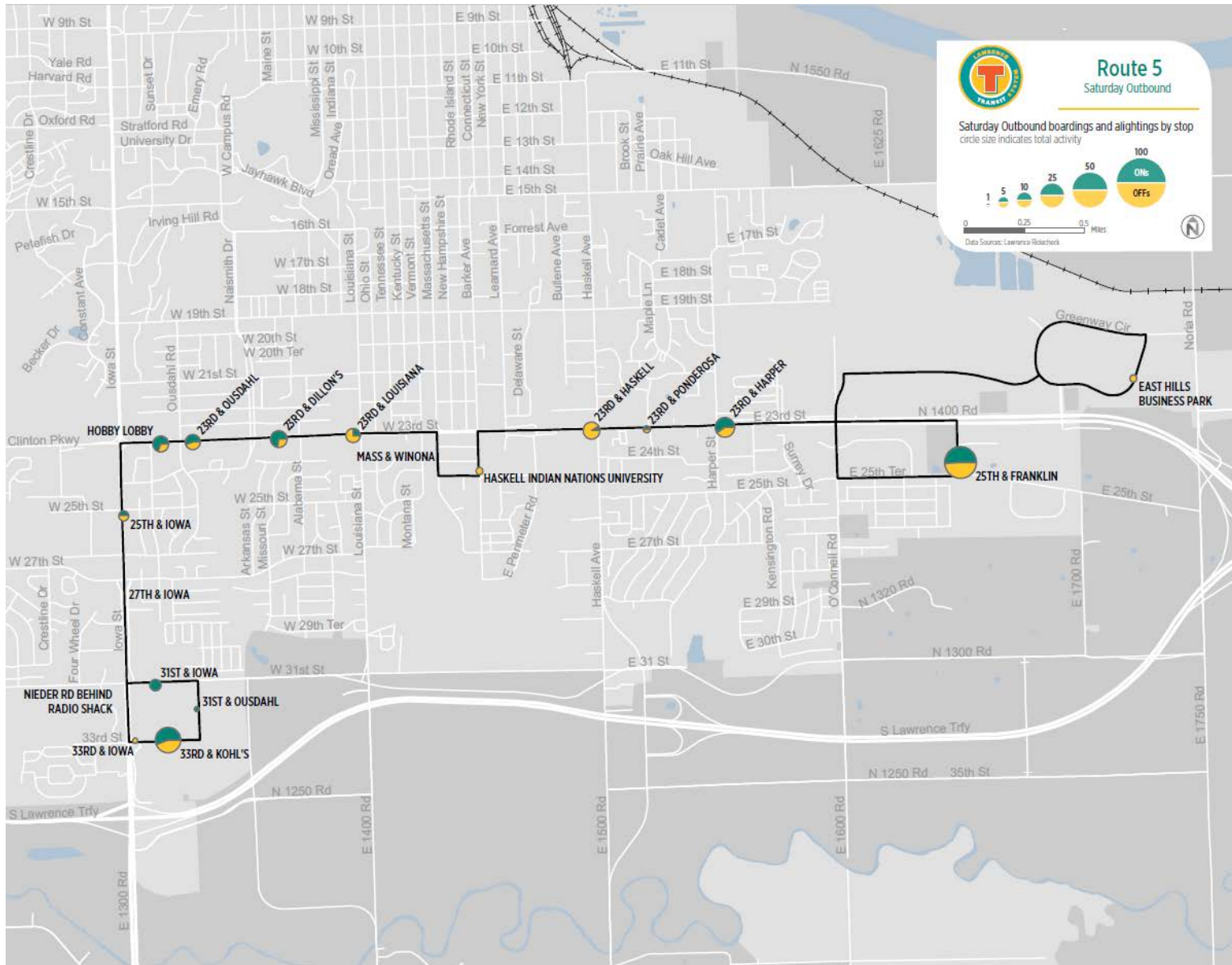
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

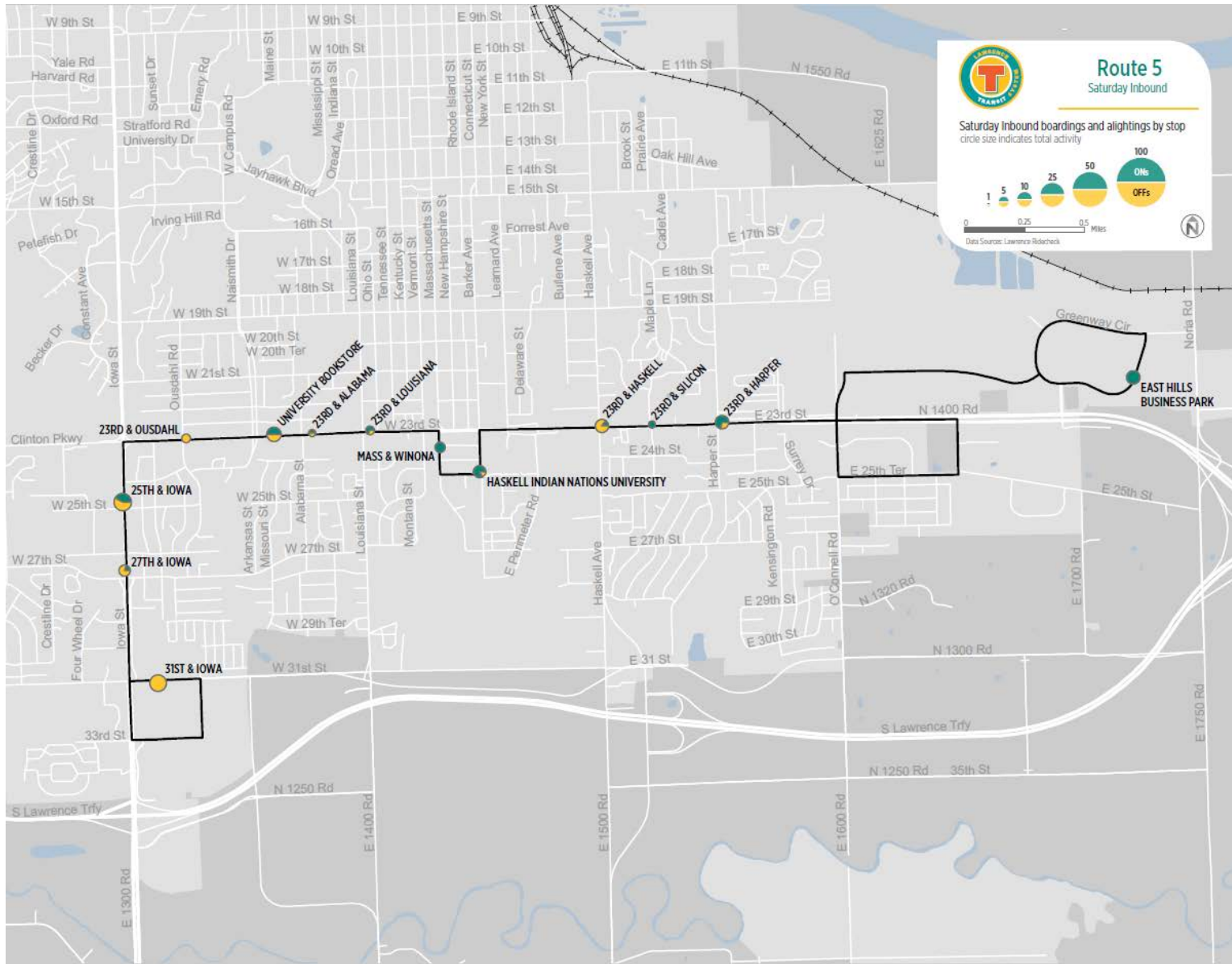
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

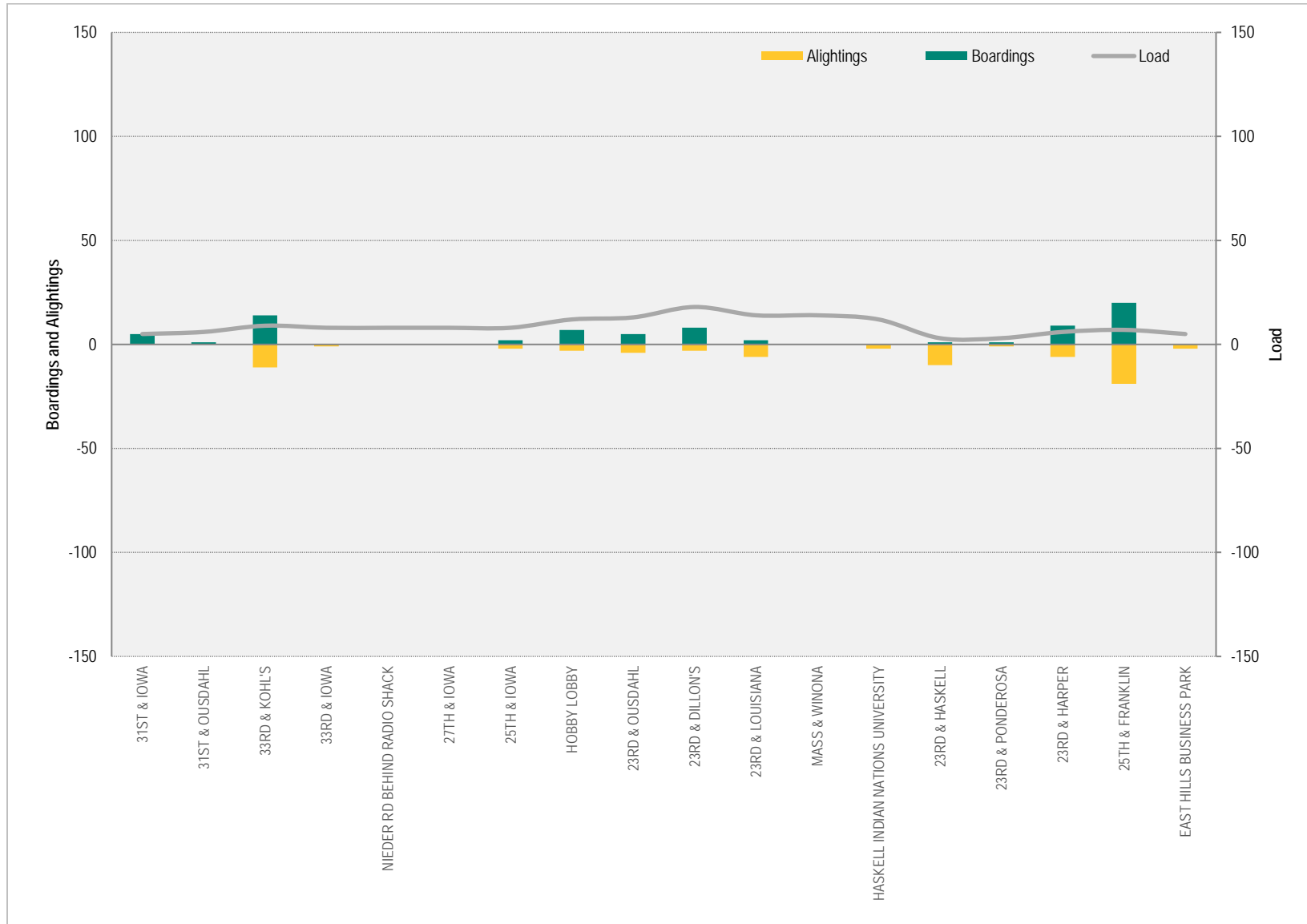
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

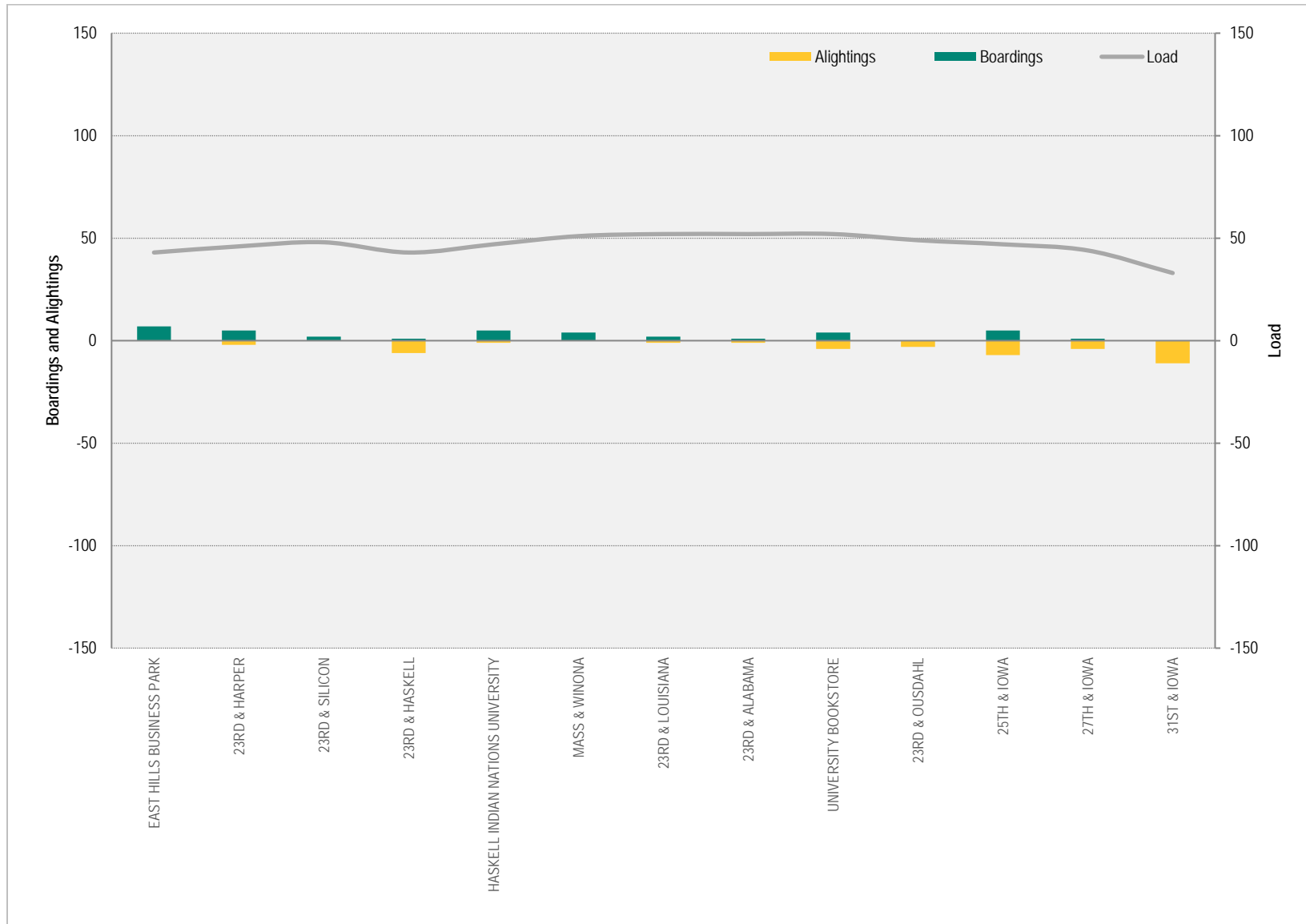
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

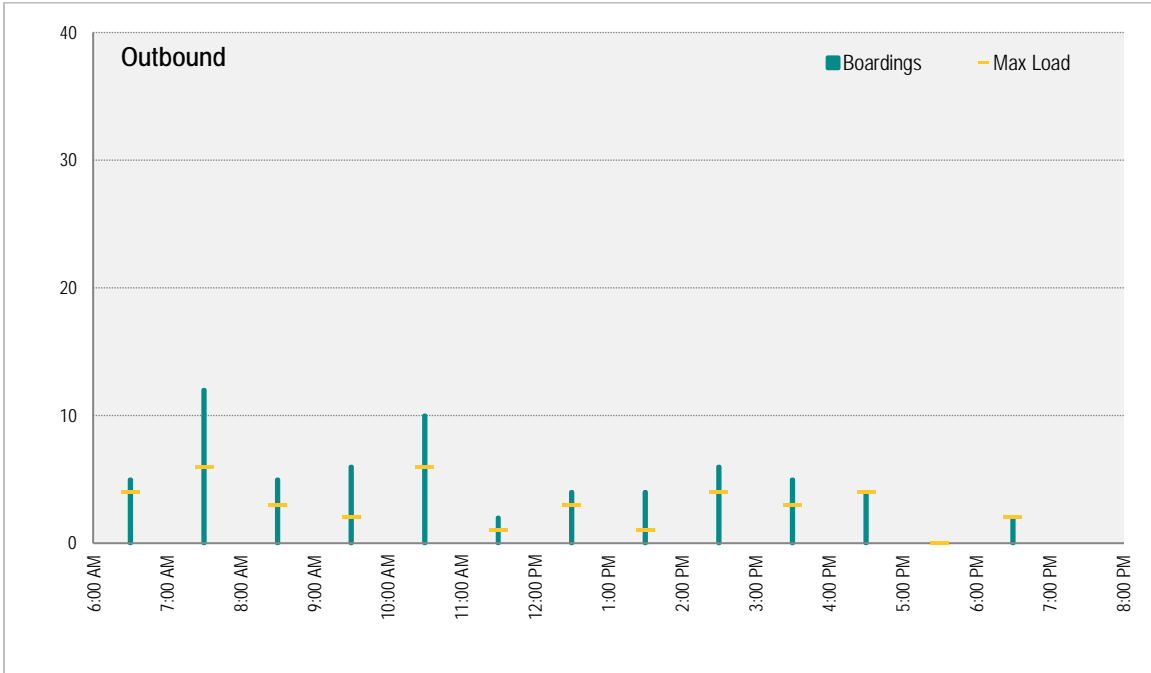
RIDERSHIP BY TRIP

On weekdays, Route 5 ridership is highest in the outbound direction between 7:00 and 11:00 AM. During this period, trips average eight boardings, and two trips carrying 10 passengers or more. Inbound ridership is low throughout the day, with no trips carrying more than five passengers (Figure 18 and Figure 19).

On Saturday, outbound Route 5 ridership peaks at 7:30 AM, carrying 12 passengers. Traveling in the inbound direction, no trips exceed six passengers (Figure 20 and Figure 21).

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

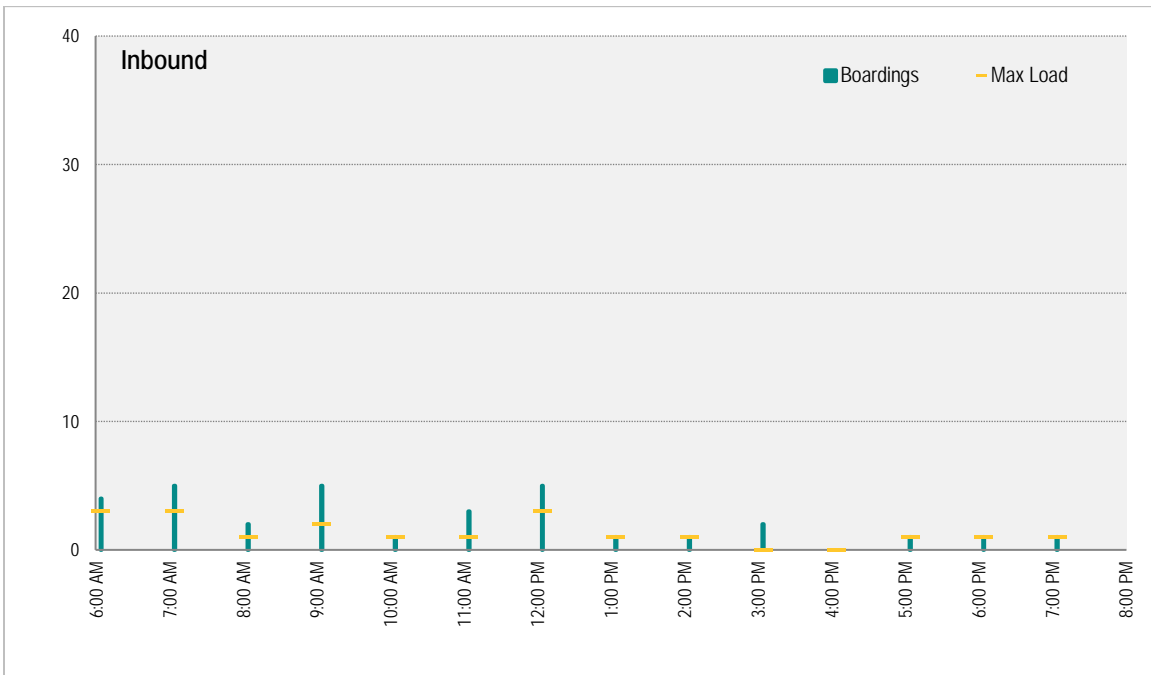
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016. No data was collected for the 7:30 PM outbound trip.

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

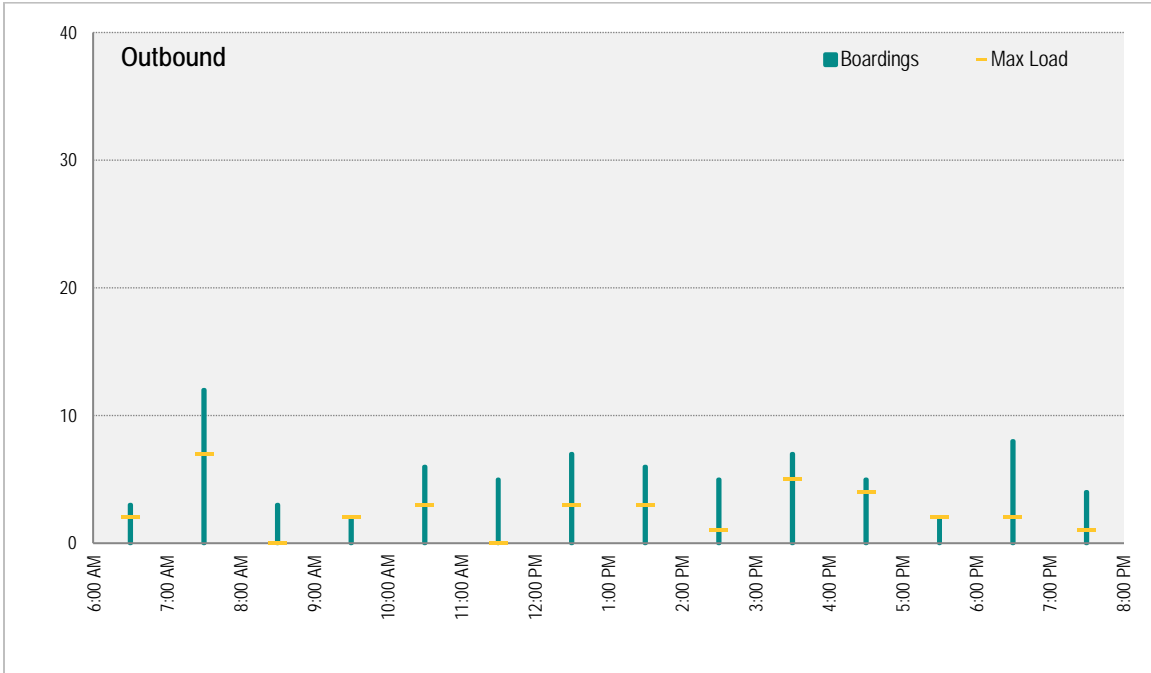


Source: Ride Check, April and May 2016

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

ROUTE EVALUATION | ROUTE 5
Lawrence Transit

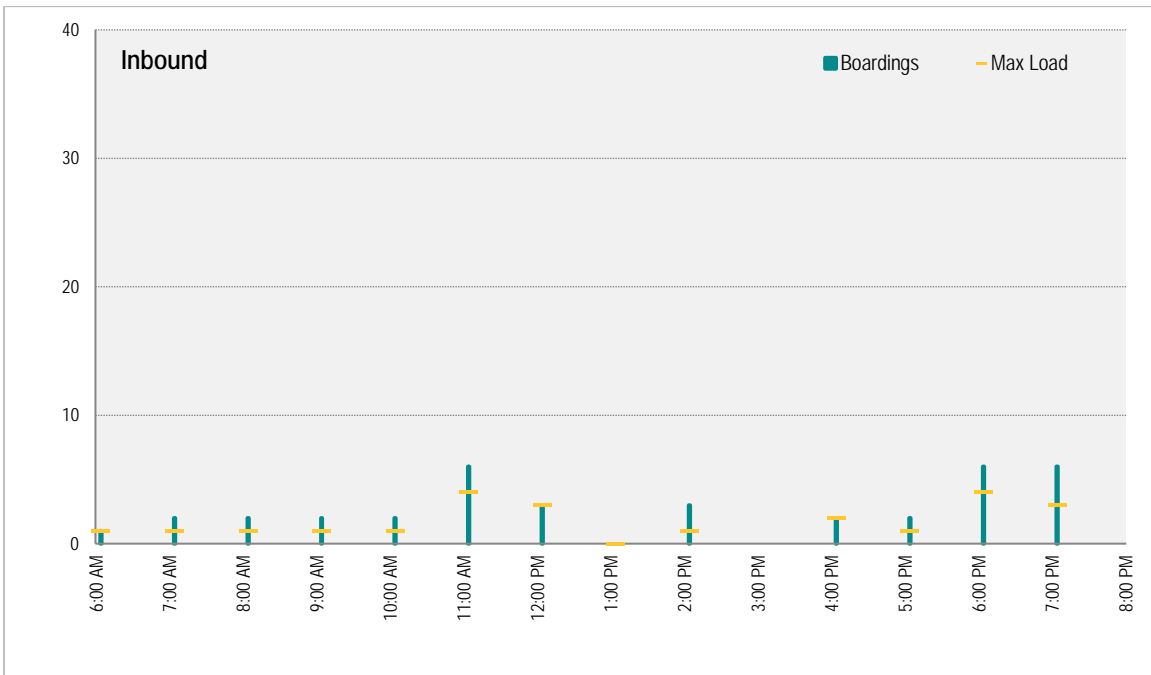
Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

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

Figure 21 | Saturday 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

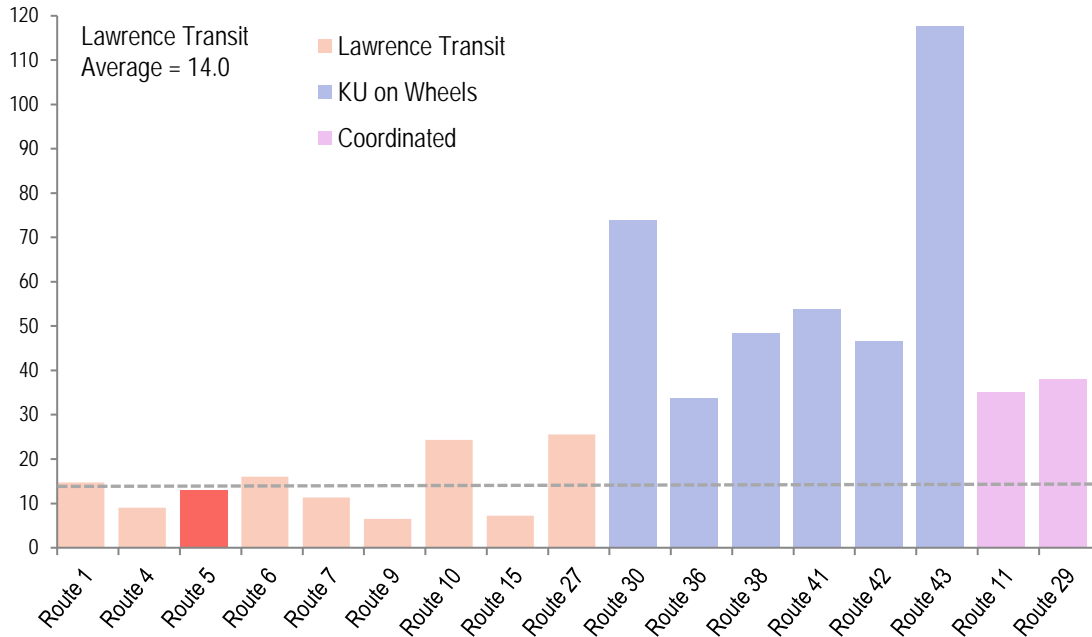
In terms of average passengers per hour, Route 5 is the fifth most productive Lawrence Transit bus route (Figure 22). The route carries 13.0 passengers per hour on weekdays, 9% less than the system average (Figure 23). Route 5 carries 9.8 passengers per hour on Saturdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	181	13.9	13.0	14.0	5 of 9
Saturday	136	13.9	9.8	9.7	5 of 8

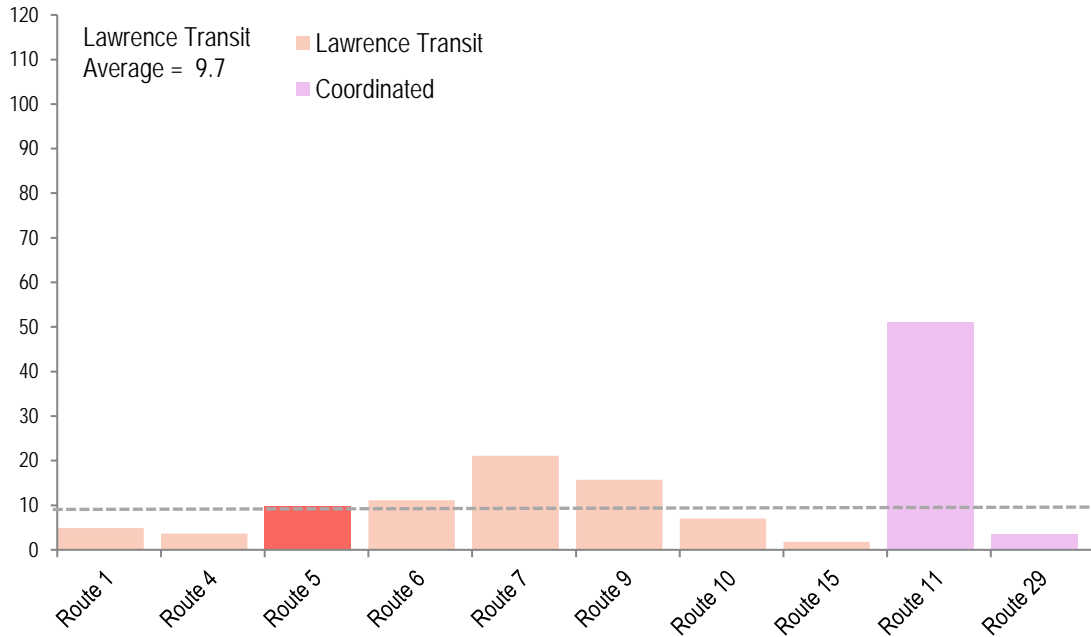
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 48% of Route 5 time points were served “on-time” during the survey period (Figure 25). 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. On Saturdays, approximately 51% of Route 5 time points were served “on-time” during the survey period.

Both weekday and Saturday on-time performance was affected by a high rate of late departures, with nearly 44% of weekday trips and approximately 30% of Saturday trips departing stops late. On Saturdays, approximately 20% of time points are served early, with buses departing before their scheduled departure time.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	48.4%	50.7%
Early	7.8%	19.6%
Late	43.8%	29.7%

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

- **Streamline Route by Reducing Redundancy.** Route 5 has an on-time performance of less than 50%, with a significant number of late trips. Streamlining the route could help improve on-time performance. Currently Route 5 and Route 15 follow the same alignment between Haskell Avenue and East Hills Business Park. Both also serve the Lawrence Community Shelter. If Route 5 were to bypass the shelter, connections to Route 15 could be made at several stops that the two routes would still have in common.

As of August 1st, 2016, Route 5 was realigned and no longer serves the Lawrence Community Shelter. Route 1 currently serves the shelter.

- **Consolidate Mid-Route Outbound Stops to Streamline Service.** Route 5 has several closely spaced bus stops that could likely be consolidated to speed up service and improve on-time performance. For example, there are three westbound stops along 23rd Street, between Ohio Street and Naismith Drive. Similarly, there are three stops in the eastbound direction on 23rd Street between the Haskell Avenue and Harper Street intersections. In both cases, two stops would be sufficient.
- **Improve Frequency on Weekdays.** Route 5 appears to serve a large percentage of commuters traveling to the East Hills Business Park. Hourly service is not frequent enough to attract users who have other transportation options, or users with non-traditional work schedules. While Route 5 does not demonstrate high average ridership currently, Lawrence Transit has had a goal of improving most routes in the system to a frequency of 30 minutes or less, and Route 5 ridership could benefit from this change.

As of August 1st, 2016, Route 5 operates on a 30-minute frequency. Data collected as part of this study supports the change in frequency.

- **Begin Service at 7:04 AM; End Service after the 7:04 PM Departure.** Service on Route 5 currently begins at 6:04 AM and ends at 7:58 PM (last departure at 7:30 PM). On weekdays, fewer than 10 combined inbound and outbound passengers board Route 5 before 7:00 AM. Low weekday and Saturday ridership on departures before 7:00 AM and after 7:00 PM indicates that the resources necessary to operate that service could be better spent elsewhere.
- **Begin and End Saturday Service at 25th Street and Franklin Road.** The stop at East Hills Business Park generates fewer than 10 combined boardings and alightings on Saturdays. Conversely, traveling outbound, 27% of combined passenger boardings and alightings occur at the 25th Street at Franklin Road stop, adjacent to the Douglas County Jail. Shortening Route 5 will reduce the route's cycle time while impacting few existing passengers.

Lawrence Transit System

ROUTE 6

Downtown to 6th & Wakarusa

SERVICE DESIGN

Route 6 is a Lawrence Transit route that operates between the downtown transit hub and 6th Street and Wakarusa Drive. The route travels primarily along 6th Street (Figure 1). Route 6 provides service to downtown Lawrence, Lawrence Memorial Hospital, and Free State High School.

ALIGNMENT/SERVICE PATTERNS

Route 6 has one service pattern for weekday and Saturday service. Departing outbound from the intersection of 6th Street and Wakarusa Drive, Route 6 turns left on 7th Street, right on Kentucky Street, left on 6th Street, right on Maine Street, left on 4th Street, right on Arkansas, left on 3rd Street, left on Michigan Street, and right on 6th Street. Following 6th Street, Route 6 then turns right on Folks Road, and left on Overland Drive, terminating at the intersection of Overland and Wakarusa Drive.

Returning inbound, Route 6 turns left on 6th Street, left on Michigan Street, right on 3rd Street, right on Arkansas Street, left on 4th Street, and right on Maine Street. From Maine Street, Route 6 turns left back onto 6th Street, right on New Hampshire, right on 9th Street, and right on Vermont Street, terminating at the downtown transit hub.

As of August 1st, 2016, Route 6 serves Rock Chalk Park and Sports Pavilion Lawrence and no longer serves Lawrence Memorial Hospital.

Figure 1 | Route Map



Source: Lawrence Transit; August 2015 – August 2016
 New route alignment effective as of August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 6 and several Lawrence Transit routes at the Downtown Transit Hub. There are also transfer opportunities at several other points along the route, including at Wakarusa Drive and Overland Drive (Route 9 and Route 10) and on 6th Street (Route 36) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Downtown Transit Hub	Route 1, Route 3, Route 4, Route 7, Route 10, Route 11, Route 15
Wakarusa Drive and Overland Drive	Route 9, Route 10
W 6 th Street and Schwarz Road	Route 36

SERVICE SCHEDULE

Route 6 operates service Monday-Saturday year round (Figure 3). On weekdays and Saturdays, the route runs every 30 minutes from 6:03 AM to 7:57 PM. Route 6 does not operate on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:03 AM – 7:57 PM	30	27/27
Saturday	6:03 AM – 7:57 PM	30	27/27
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 6 ranks first of nine Lawrence Transit routes in terms of weekday ridership and fourth of nine in terms of ridership per trip (Figure 4). On average, the route carries 429 passengers, or 8.0 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, Route 6 carries 298 passengers, or 5.5 passengers per trip.

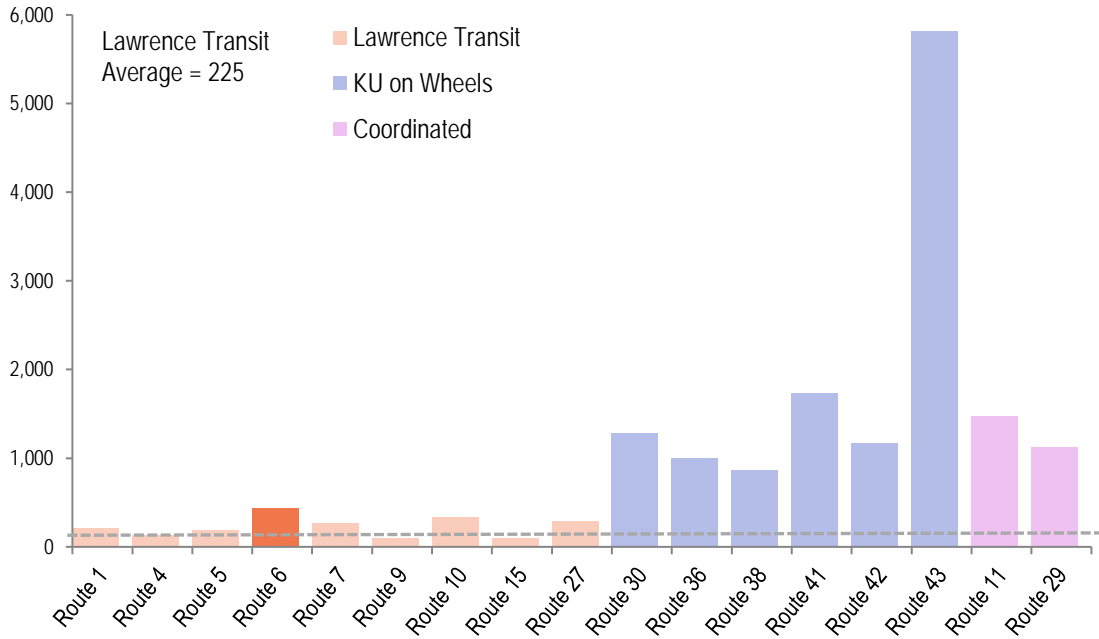
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	429	54	8.0	6.5	4 of 9
Saturday	298	54	5.5	4.7	3 of 8

Source: Lawrence Transit, 2016

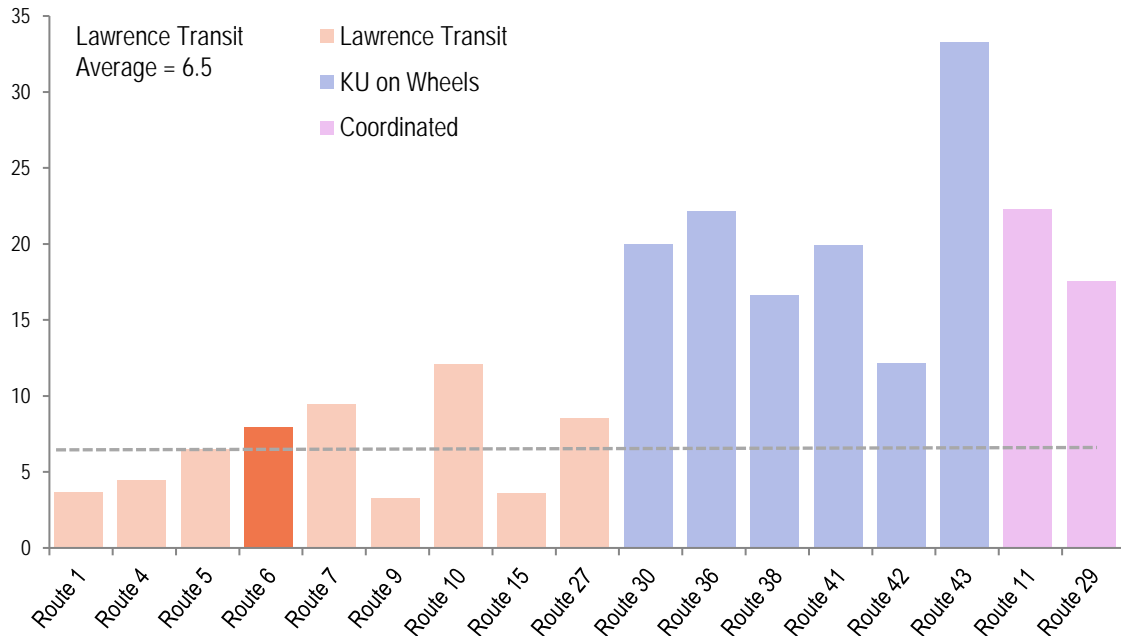
ROUTE EVALUATION | ROUTE 6
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

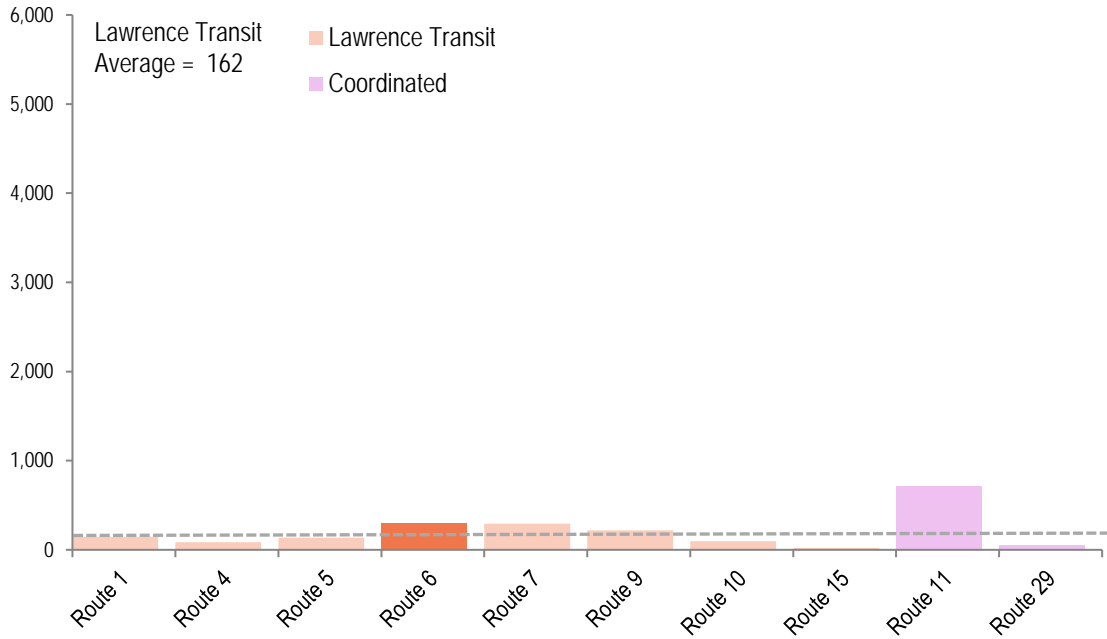
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

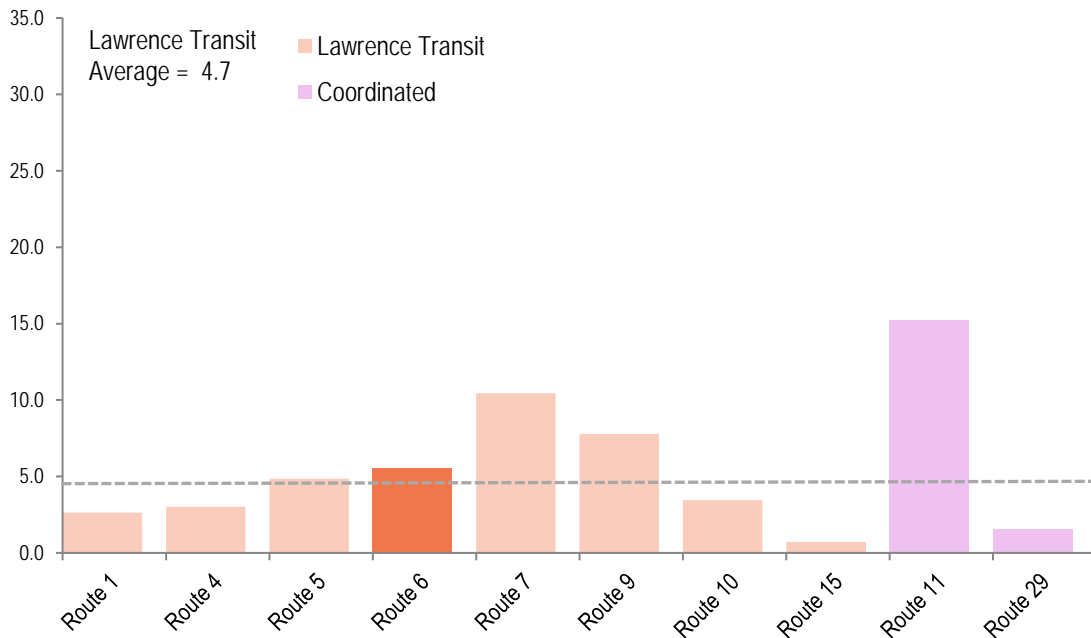
ROUTE EVALUATION | ROUTE 6
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest inbound weekday ridership stops on Route 6 are located in downtown Lawrence, and near Free State High School and the intersection of Wakarusa Drive and Overland Drive (Figure 9). Ridership activity at these stops ranges from 39 to 80 boardings and alightings. Other stops with more than 15 combined boardings and alightings per weekday in the inbound direction include: 6th Street and Maine Street, 6th Street and Crestline Drive, 6th Street and Colorado Street, and 6th Street and Lawrence Avenue. These stops serve residential neighborhoods, retail locations, and educational destinations. All other stops serve fewer than 13 combined boardings and alightings (Figure 10-Figure 13).

The highest ridership on weekdays traveling in the outbound direction is the stop at 7th Street and Vermont Street, which records 140 combined daily boardings and alightings. The following stops generate more than 15 daily boardings and alightings: Wakarusa Drive and Overland Drive, 6th Street and Kasold Drive, and 6th Street and Schwarz Road.

Saturday ridership patterns are similar to weekday patterns. However, ridership volume traveling outbound is equal to weekday ridership volumes, while inbound ridership is approximately two-thirds weekday inbound activity (Figure 14-Figure 17).

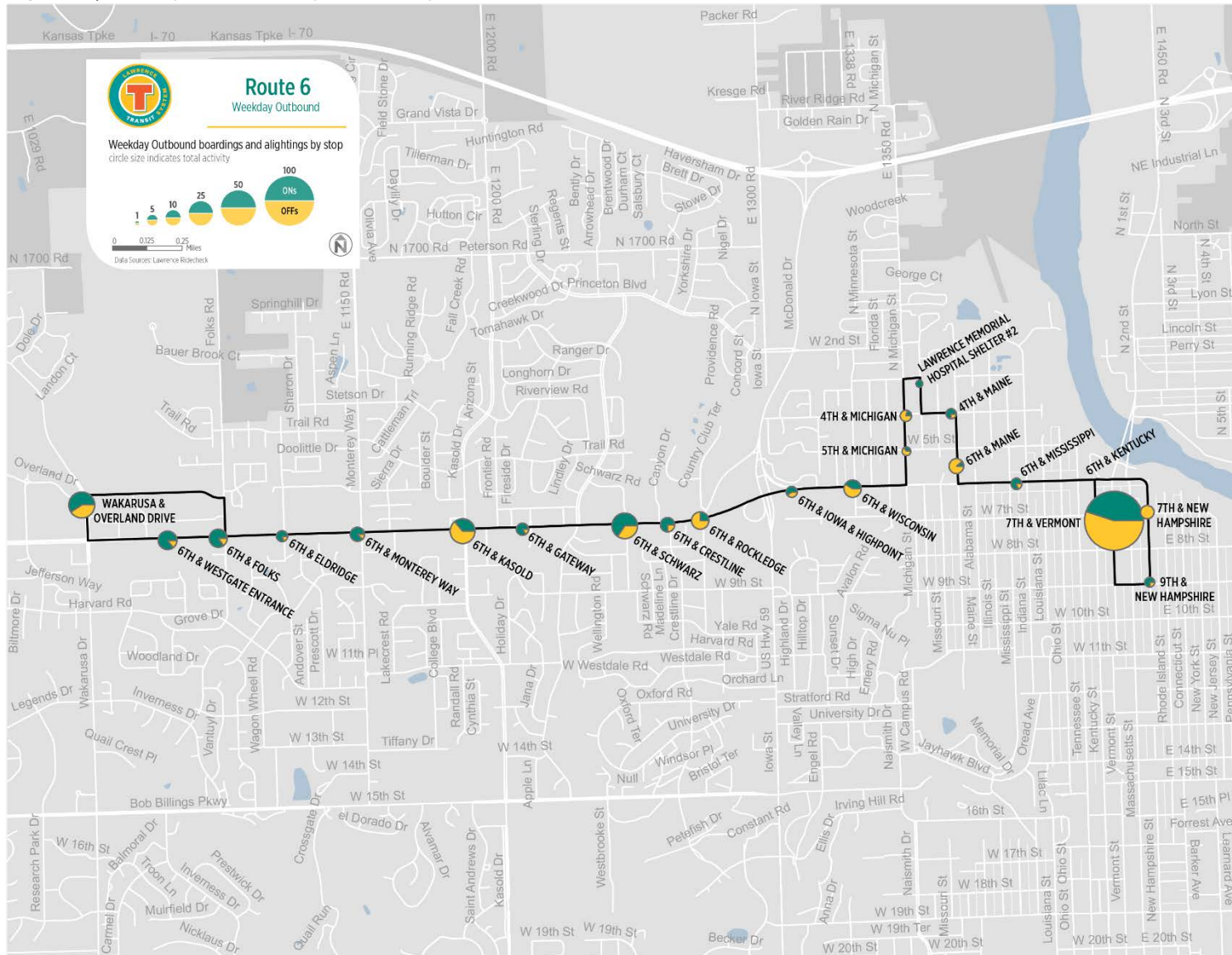
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
7th Street / Vermont Street	80	Downtown Lawrence; retail locations; Lawrence Public Library
Overland Drive / Free State High School	63	Free State High School; retail locations
Wakarusa Drive / Overland Drive	39	Walmart Supercenter; retail locations; residential complexes
6th Street / Maine Street	34	Residential neighborhoods; retail locations
6th Street / Crestline Drive	18	Residential complexes; Centennial Park

*Weekday inbound ridership (boardings and alightings) for Route 6 only

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

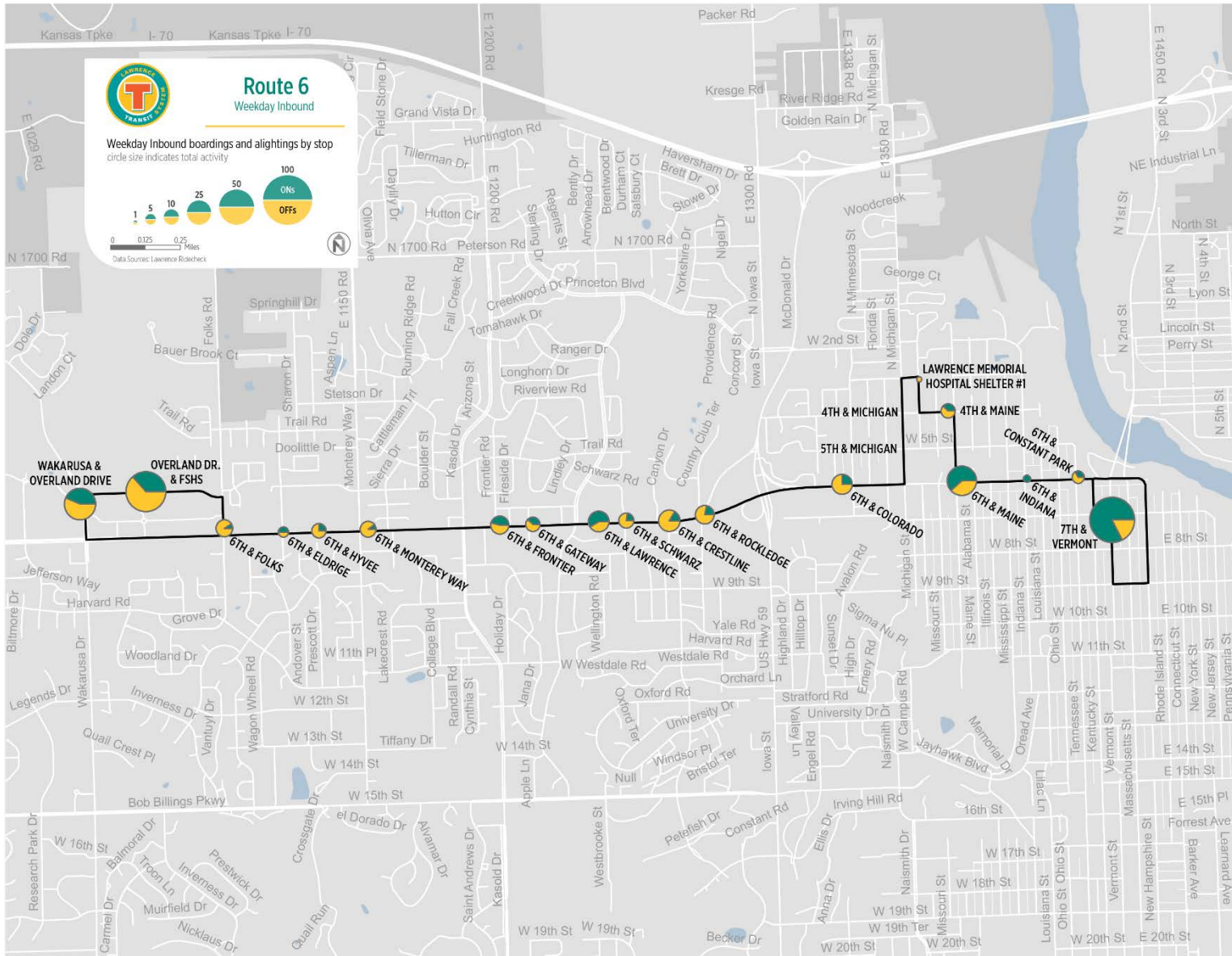
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

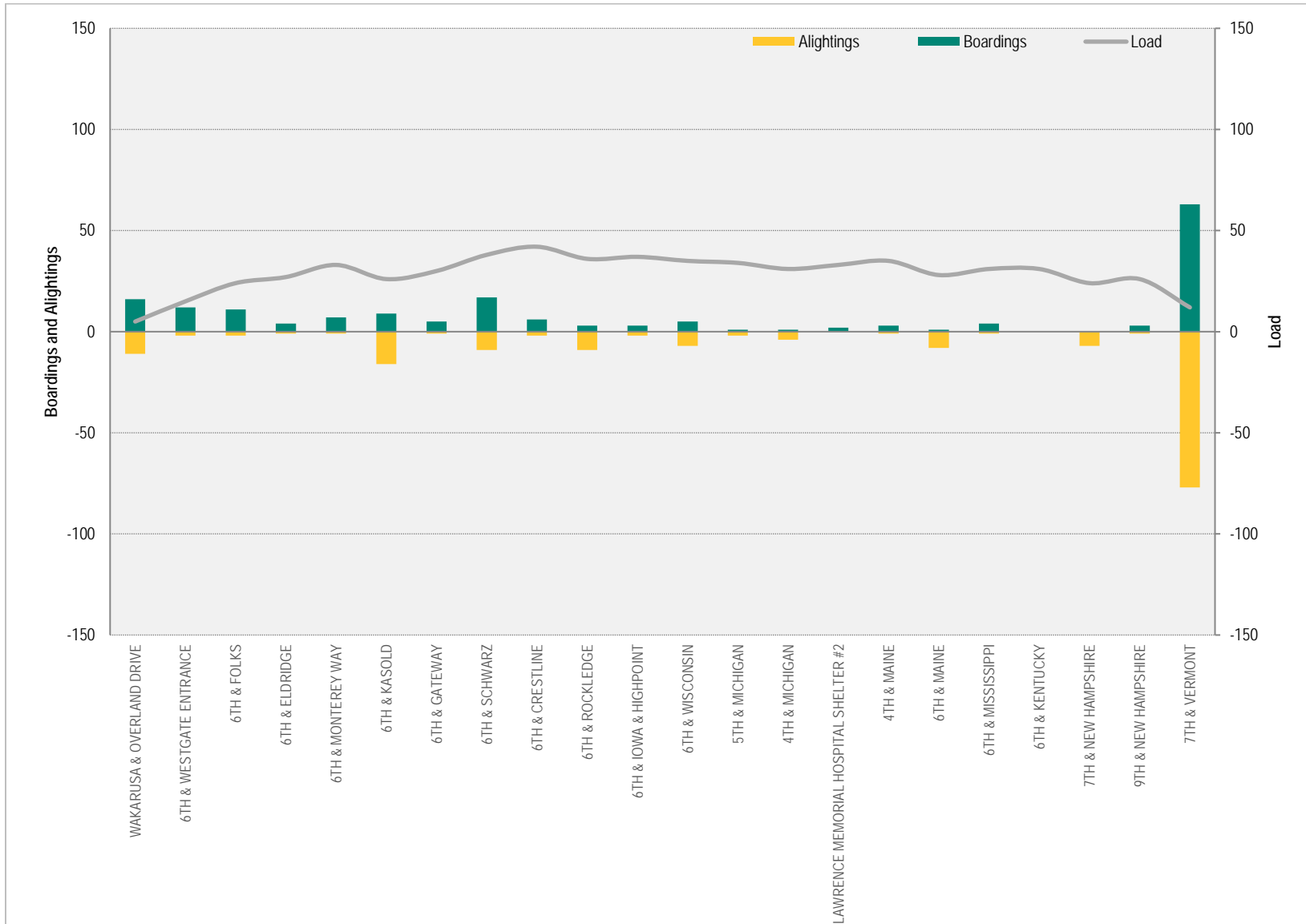
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

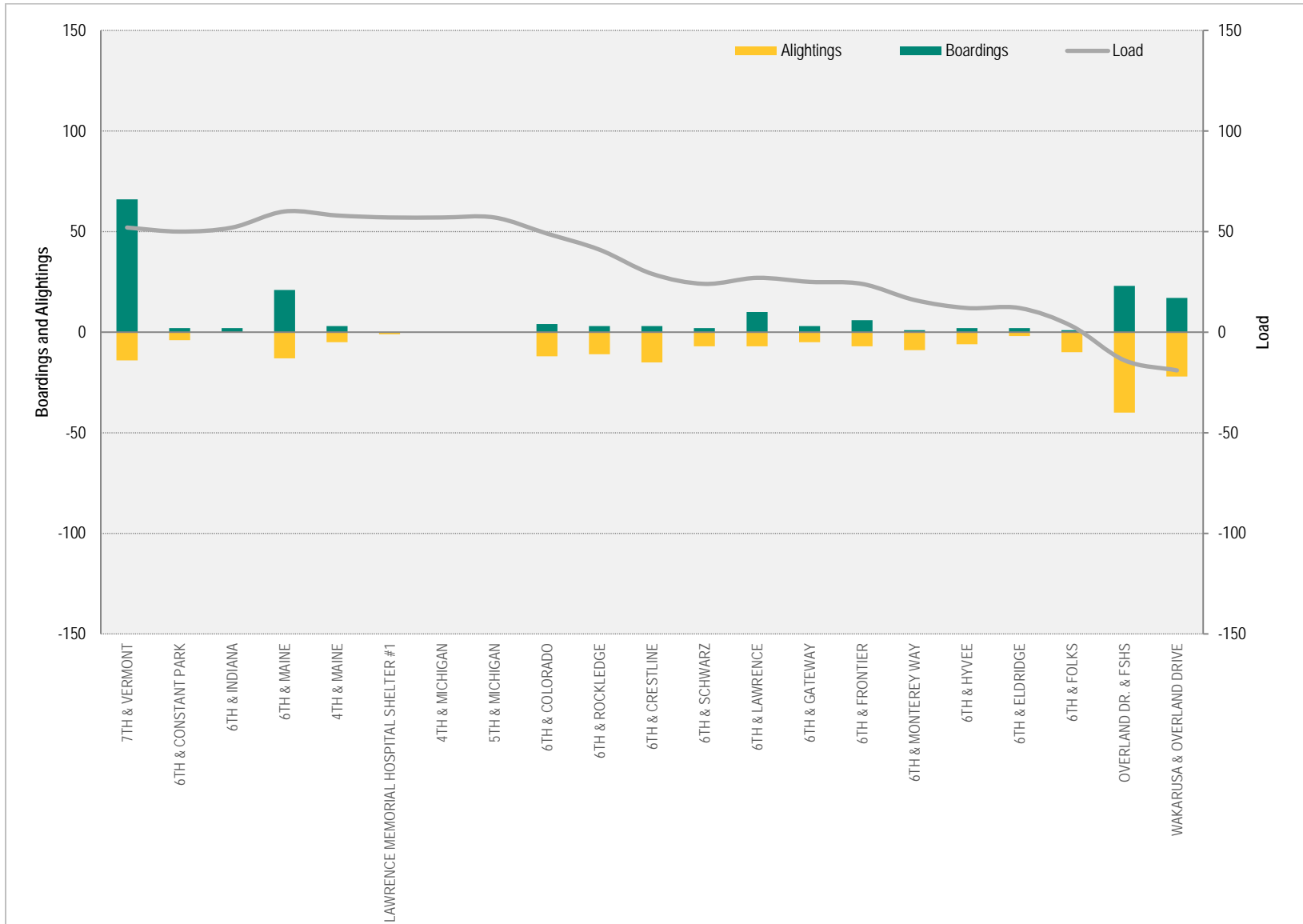
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

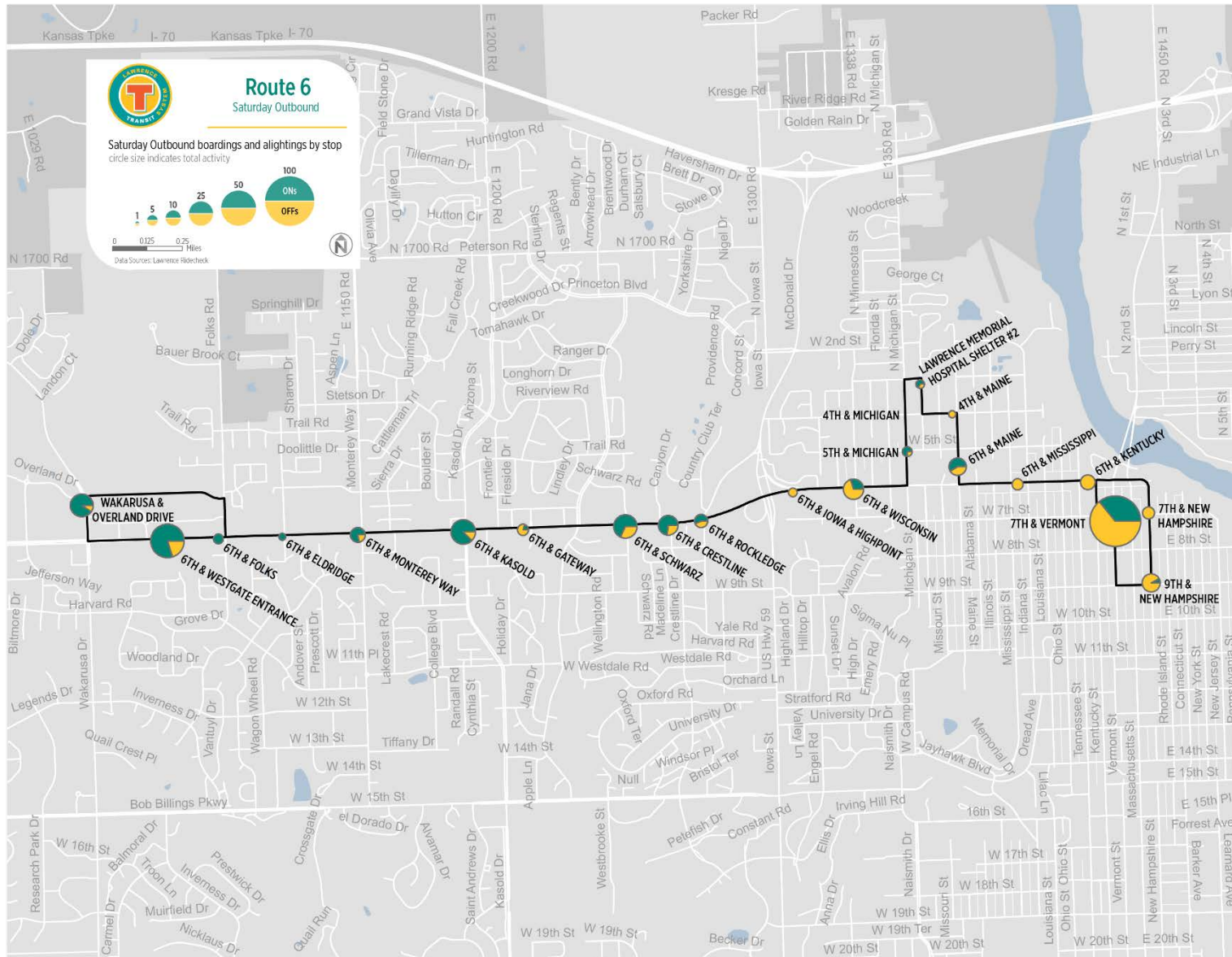
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

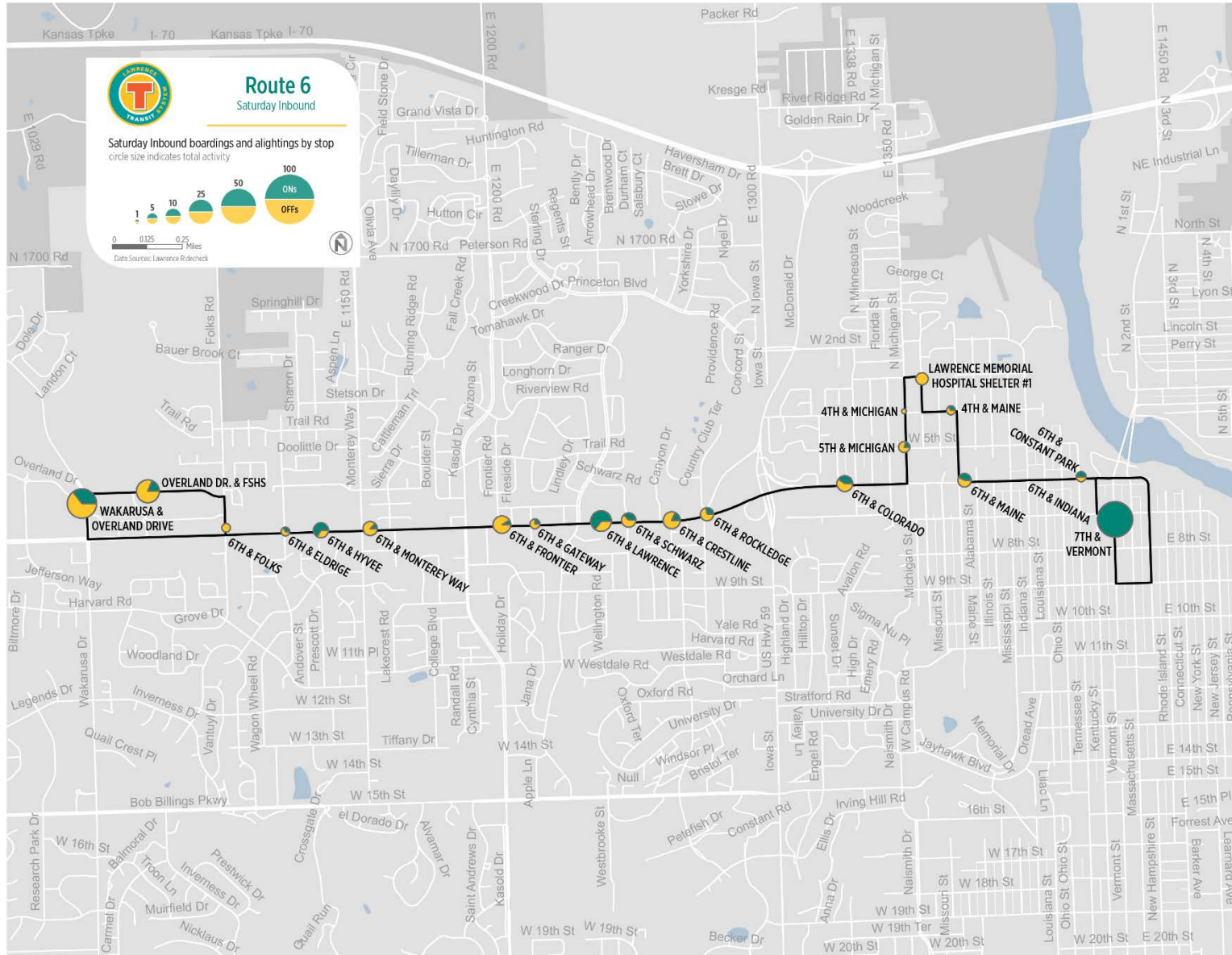
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

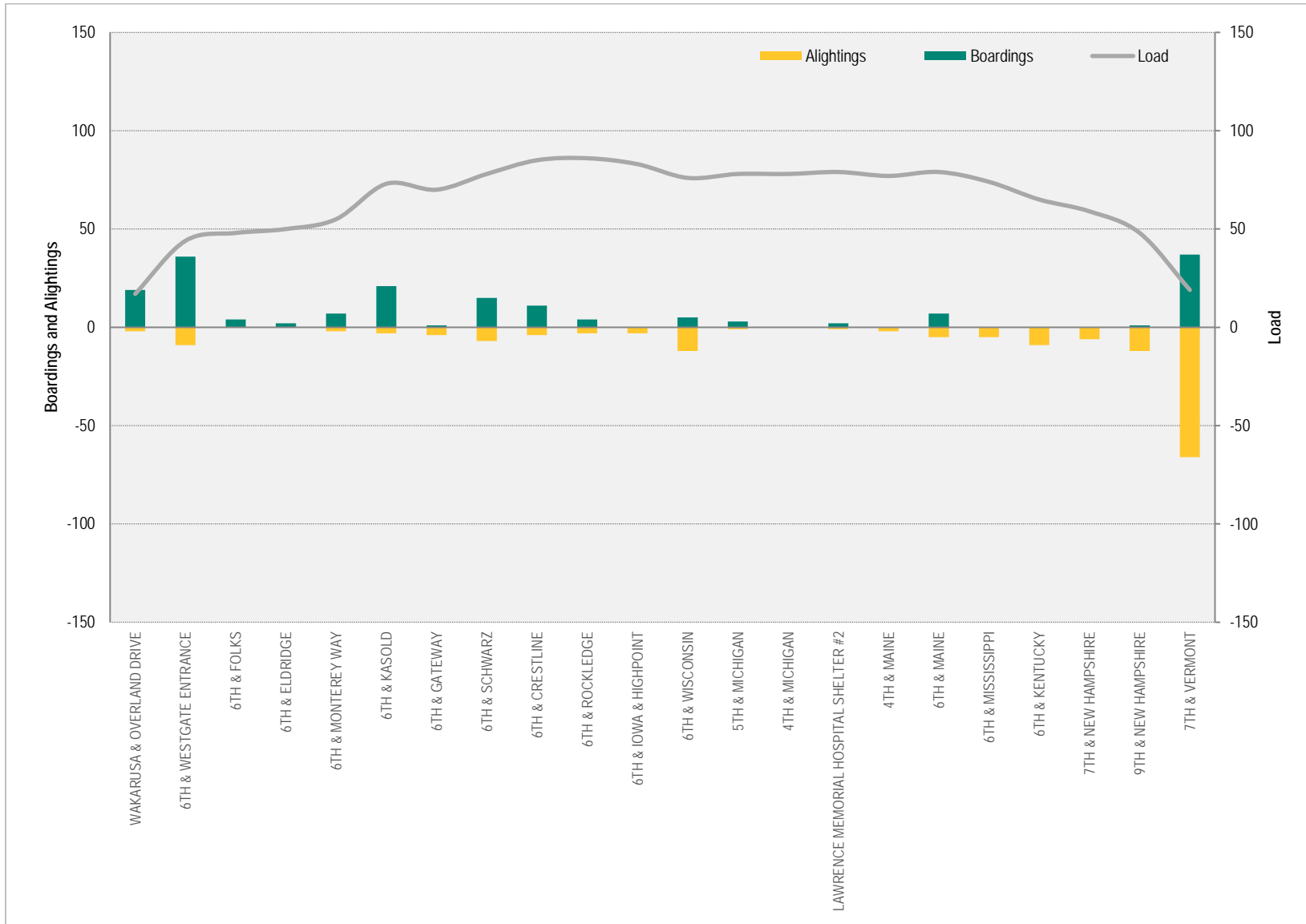
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

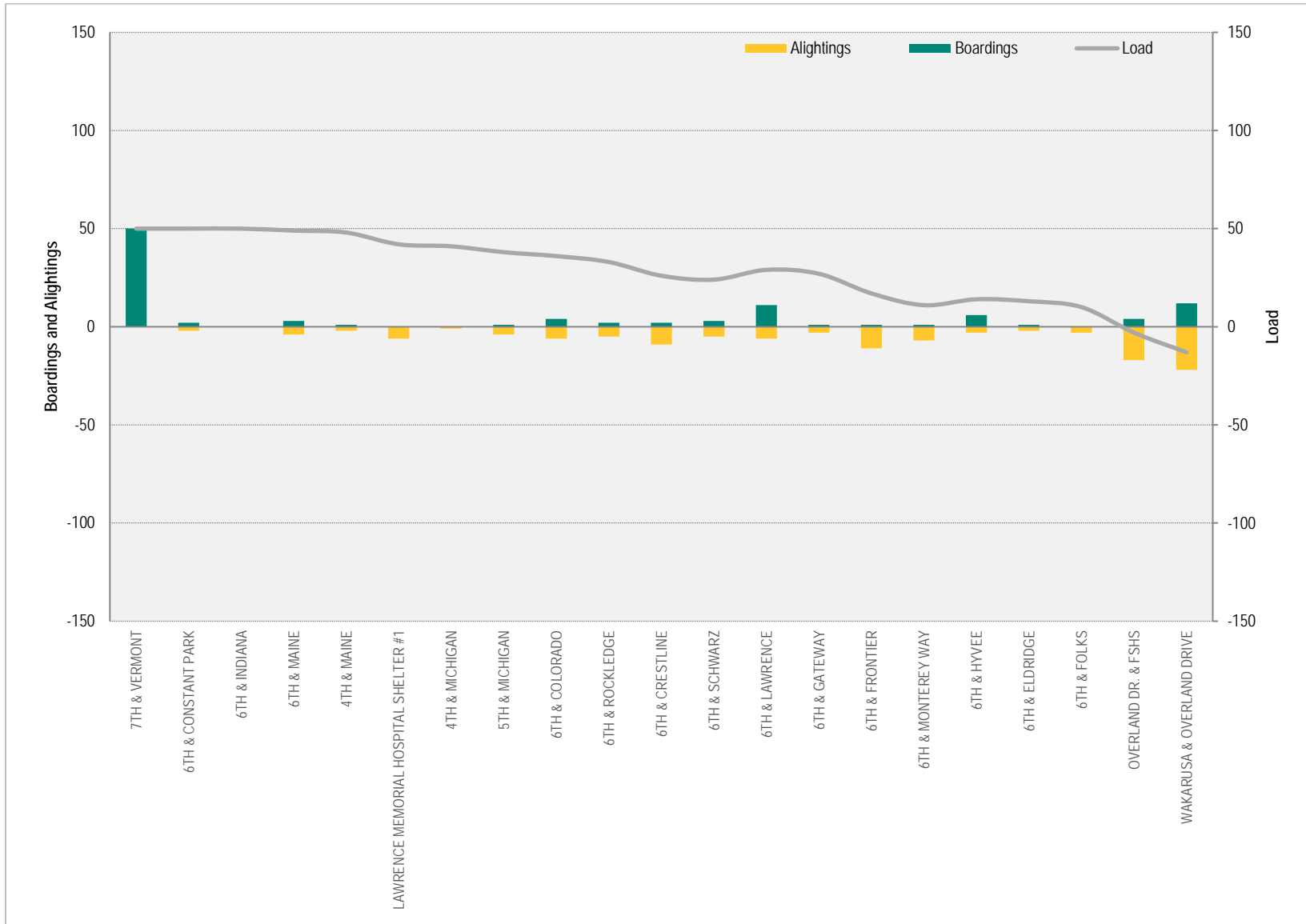
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

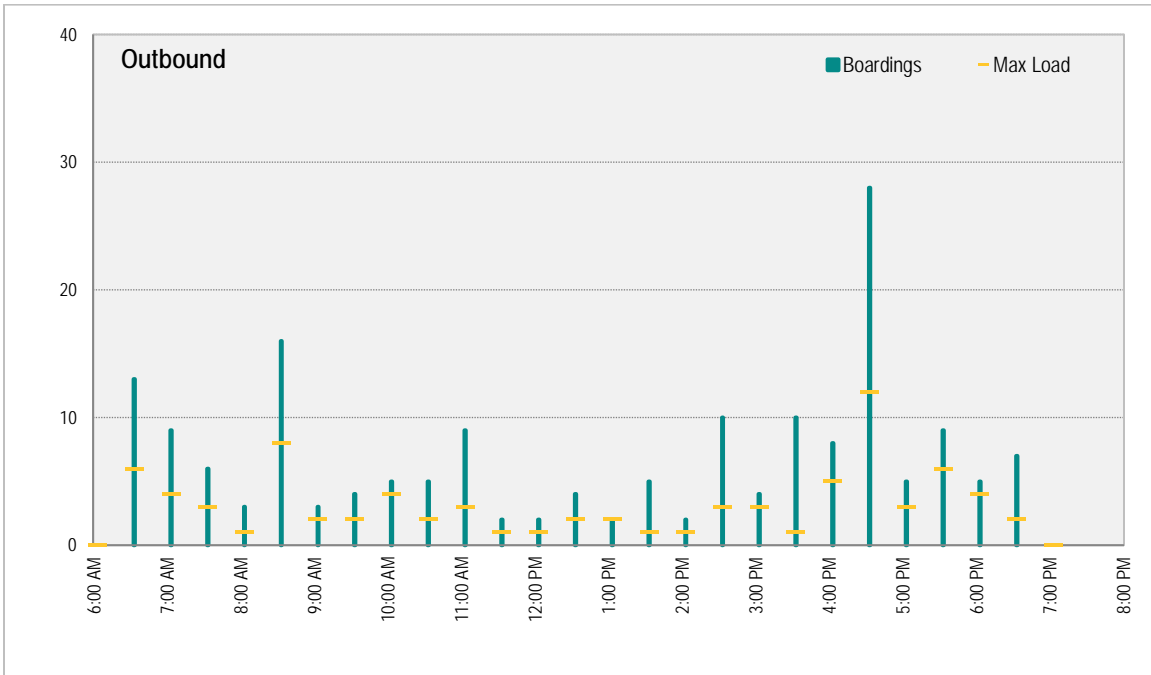
RIDERSHIP BY TRIP

On weekdays, Route 6 ridership is highest during the early morning and late afternoon periods (Figure 18 and Figure 19). Traveling in the outbound direction, ridership peaks at 4:33 PM, at 28 passengers; two morning trips record 13 passengers or more each; no trips between 9:00 AM and 2:00 PM record more than nine passengers. Traveling inbound, ridership peaks at 3:35 PM, carrying 21 passengers. Ridership is also strong from 6:30 to 7:30 AM, with each trip recording between nine and 14 passengers. Five inbound trips carry 10 passengers or more, compared to three outbound trips.

On Saturdays, Route 6 ridership is highest during the midday and evening service periods (Figure 20 and Figure 21). Ridership in the outbound direction peaks at 11:03 AM and 3:33 PM, with 14 passengers on each trip. Three additional trips between 1:30 and 4:33 PM carry a minimum of 10 passengers. Saturday inbound ridership is lower; ridership peaks at 12:35 PM, at 11 passengers.

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

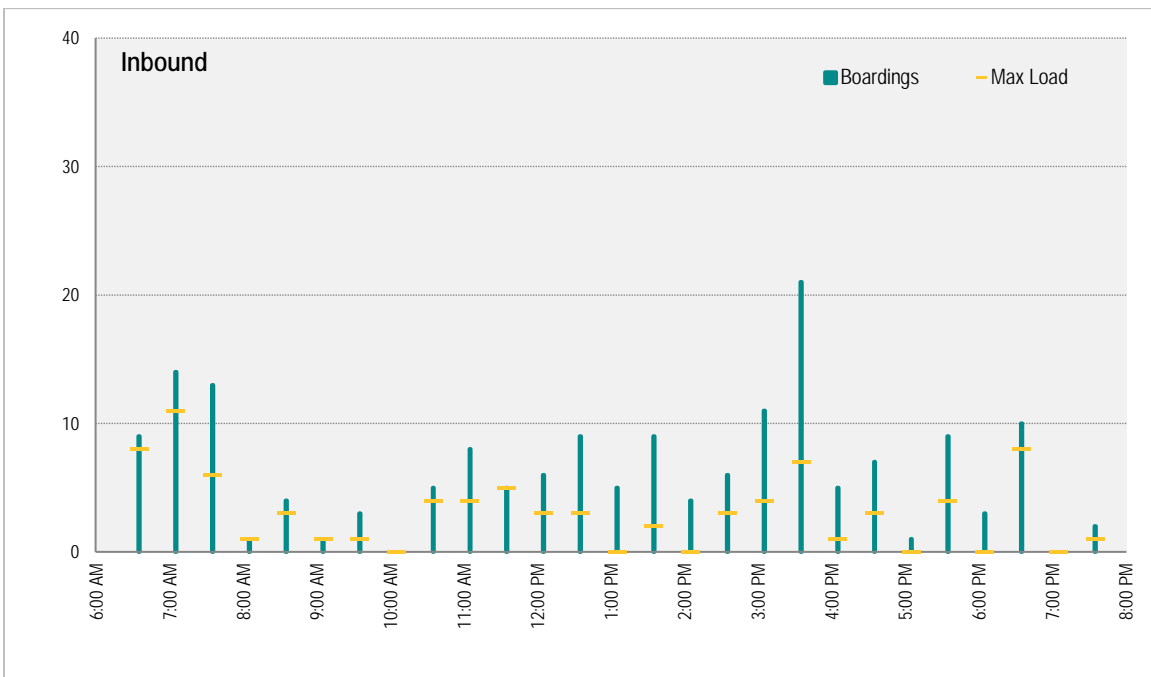
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

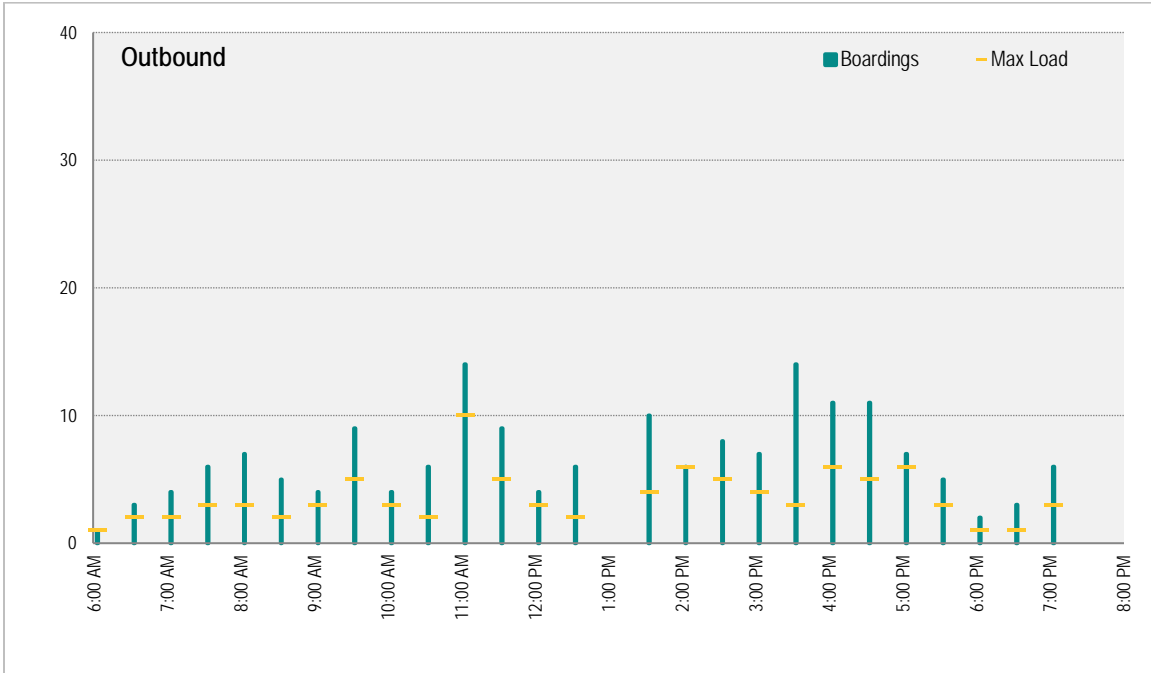


Source: Ride Check, April and May 2016.

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

ROUTE EVALUATION | ROUTE 6
Lawrence Transit

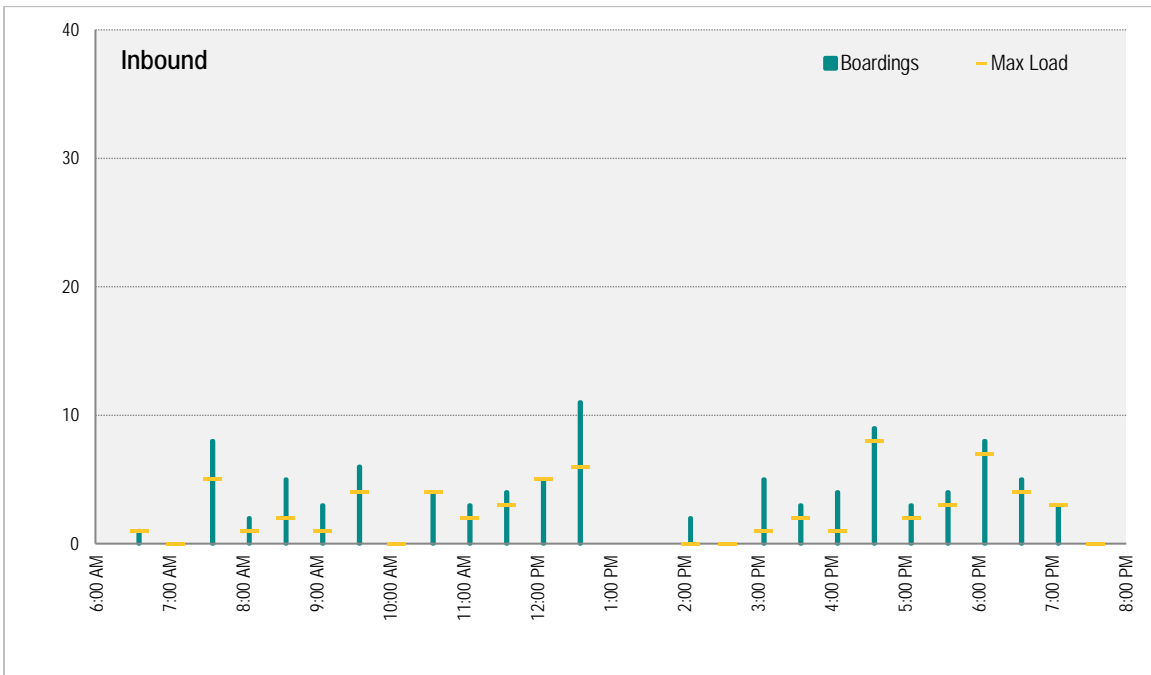
Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

Note: No data recorded for the 1:03 PM trip. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 21 | Saturday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016.

Note: No data recorded for the 1:05 and 1:35 PM trips. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

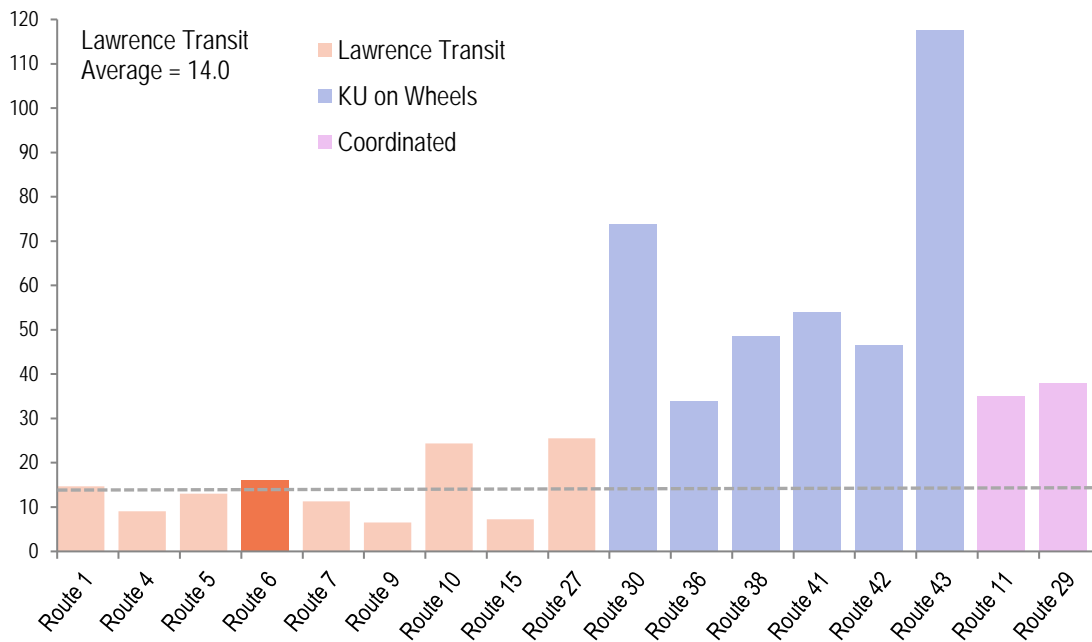
In terms of average passengers per hour, Route 6 is the third most productive Lawrence Transit bus route (Figure 22). The route carries 16.0 passengers per hour on weekdays, exceeding the system average by 14% (Figure 23). Route 6 carries 11.1 passengers per hour on Saturdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	429	26.8	16.0	14.0	3 of 9
Saturday	298	26.8	11.1	9.7	3 of 8

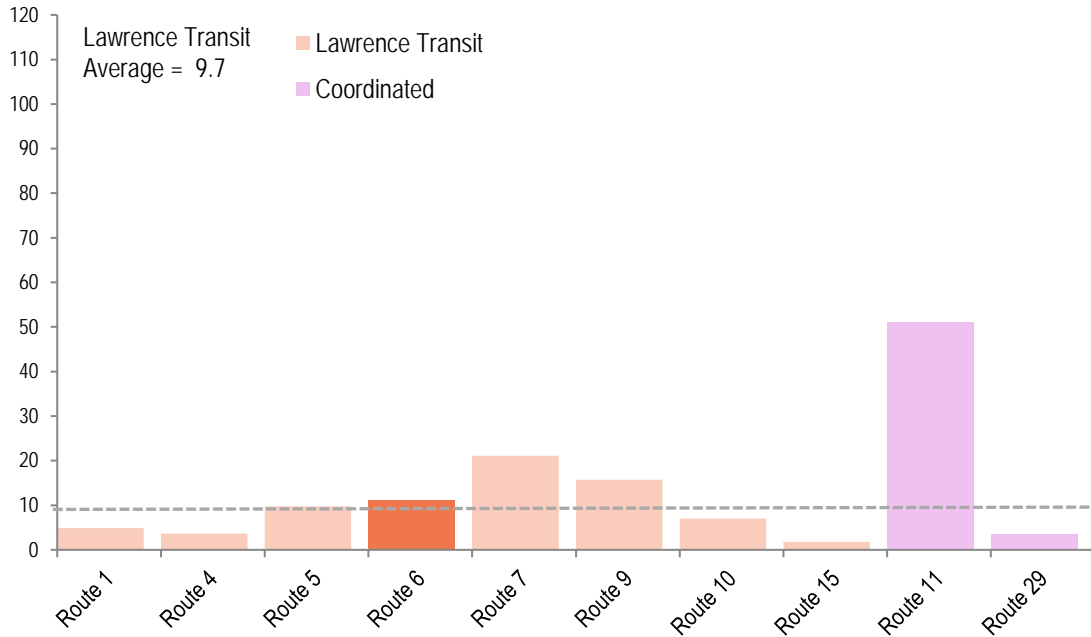
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 50% of Route 6 time points were served “on-time” during the survey period (Figure 25). On Saturdays, approximately 49% of Route 6 time points were served “on-time” during the survey period.” 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 by late departures, with over 41% of time points served late. Saturday shows the opposite; on-time performance was almost entirely affected by early departures. Vehicular traffic on weekdays and lower ridership on Saturdays may be responsible for this pattern.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	50.0%	49.4%
Early	8.8%	47.0%
Late	41.2%	3.6%

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

- **Extend Service Closer to Walmart Supercenter.** 6th Street has a mix of uses and good connections between downtown, residential areas, education, city services, and other retail and commercial uses. However, the connection to the Walmart Supercenter can be improved, making access to the bus less cumbersome with full grocery bags. One possible alignment would be for buses traveling west on 6th Street to stay on 6th until Congressional Drive, and then loop around the Walmart in the clockwise direction using Congressional Drive, Overland Drive, and Wakarusa Drive. This would allow for a bus stop on Overland Drive, giving riders closer access to the Walmart. It would also bring the route closer to a large concentration of high-density housing along Congressional Drive and Overland Drive, thus improving the route's ridership potential.
- **Remove Service from Lawrence Memorial Hospital.** Service to the Lawrence Memorial Hospital shows modest ridership and creates a deviation that inconveniences many other riders on the route. The hospital remains an important origin and destination to serve with transit, but Route 6 would benefit from removing the deviation to the hospital. Route 3 may be a better option to serve the hospital if good opportunities to transfer to other routes in the system are created.

As of August 1st, 2016, Route 6 no longer serves the Lawrence Memorial Hospital, operating entirely along 6th Street between downtown and Folks Road.

- **Serve Rock Chalk Park.** Service to Rock Chalk Park on Route 6 would create more useful connections to the park since Route 6 serves downtown directly and a mixed use corridor along 6th Street. Currently, Route 9 service to Rock Chalk Park primarily benefits those who live and work south of Clinton Parkway/23rd Street.

As of August 1st, 2016, Route 6 serves Rock Chalk Park instead of Route 9.

- **Begin Service at 6:33 AM; End Service after the 6:35 PM Departure.** Service on Route 6 currently begins at 6:03 AM and ends at 7:57 PM (last departure at 7:35 PM). Low ridership on departures before 6:33 AM and after 6:35 PM indicate that the resources necessary to operate that service could be better spent elsewhere. As a result, reducing the service span to approximately 6:30 AM to 7:00 PM would benefit users in some other way or on some other part of the system.

Lawrence Transit System

ROUTE 7

Downtown to 31st & Iowa

SERVICE DESIGN

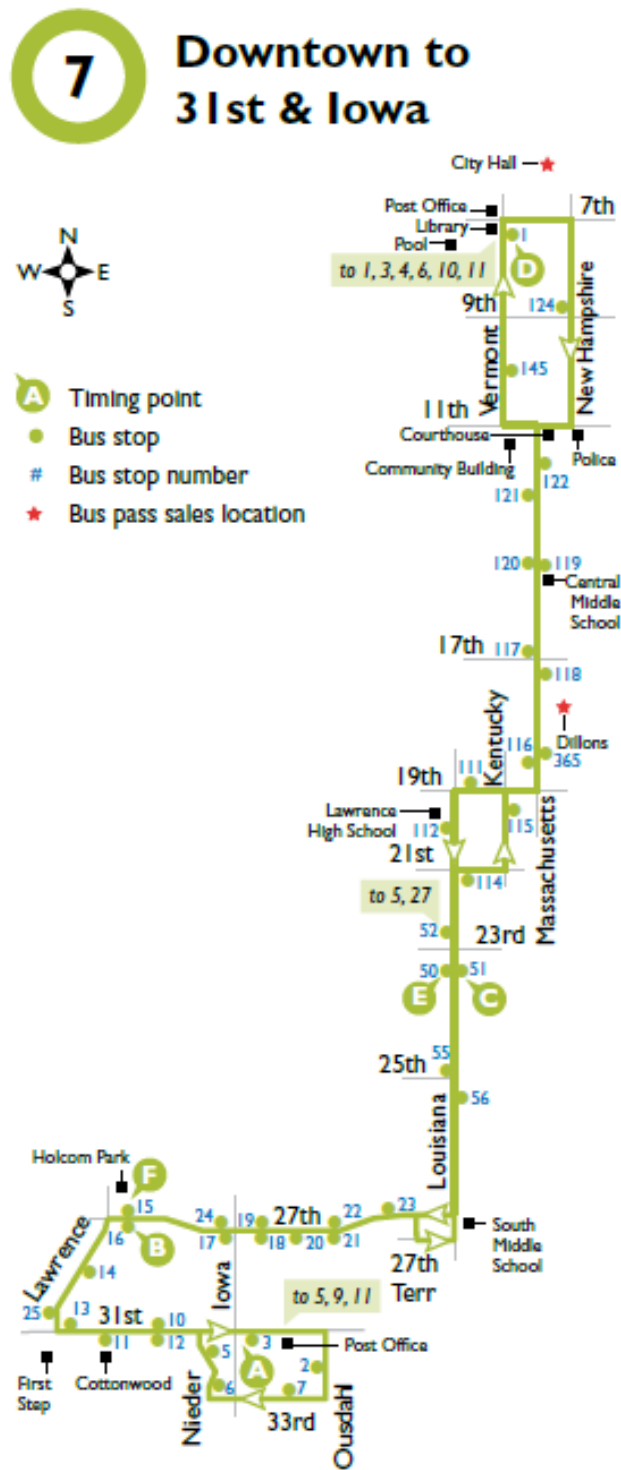
Route 7 is a Lawrence Transit route that operates between the Downtown Transit Hub and Pine Ridge Plaza. The route travels primarily along Massachusetts Street, Louisiana Street, 27th Street, and 31st Street (Figure 1). Route 7 provides service to downtown Lawrence, Lawrence High School, and Pine Ridge Plaza.

ALIGNMENT/SERVICE PATTERNS

Route 7 has one service pattern for weekday and Saturday service. Departing outbound from the intersection of 31st Street and Iowa Street, Route 7 turns right on Ousdahl Road, right on 33rd Street, right on Nieder Road, left on 31st Street, right on Lawrence Avenue, and right on 27th Street. Traveling east on 27th Street, Route 7 then turns right on Belle Haven Drive, left on 27th Terrace, left on Louisiana Street, right on 21st Street, left on Kentucky Street, right on 19th Street, left on Massachusetts Street, left on 11th Street, right on Vermont Street, and terminates at the downtown transit hub.

Returning inbound, Route 7 turns right on 7th Street, right on New Hampshire Street, right on 11th Street, left on Massachusetts Street, right on 19th Street, left on Louisiana Street, right on 27th Street, right on Lawrence Avenue, left on 31st Street, and terminates at the intersection of 31st Street and Iowa Street.

Figure 1 | Route Map



This route operates Monday–Saturday, except holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day

Source: Lawrence Transit, August 2015–July 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 7 and several Lawrence Transit routes at the downtown transit hub and at 31st Street and Iowa Street (Pine Ridge Plaza). There are also transfer opportunities at several other points along the route, including along Louisiana Street (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Downtown Transit Hub	Route 1, Route 3, Route 4, Route 6, Route 10, Route 11, Route 15
Pine Ridge Plaza	Route 5, Route 9, Route 11
23rd Street and Louisiana Street	Route 5, Route 27

SERVICE SCHEDULE

Route 7 operates service Monday-Saturday (Figure 3) year round. On weekdays and Saturdays, the route runs every 30 minutes from 6:02 AM to 8:00 PM. Route 7 does not operate on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:02 AM – 8:00 PM	30	28/28
Saturday	6:02 AM – 8:00 PM	30	28/28
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 7 ranks fourth of nine Lawrence Transit routes in terms of weekday ridership and second of nine in terms of ridership per trip (Figure 4). On average, the route carries 264 passengers, or 9.4 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, Route 7 carries 293 passengers, or 10.5 passengers per trip. Within Lawrence Transit, Route 7 features the second largest increase in average ridership between weekdays and Saturdays (29 passengers).

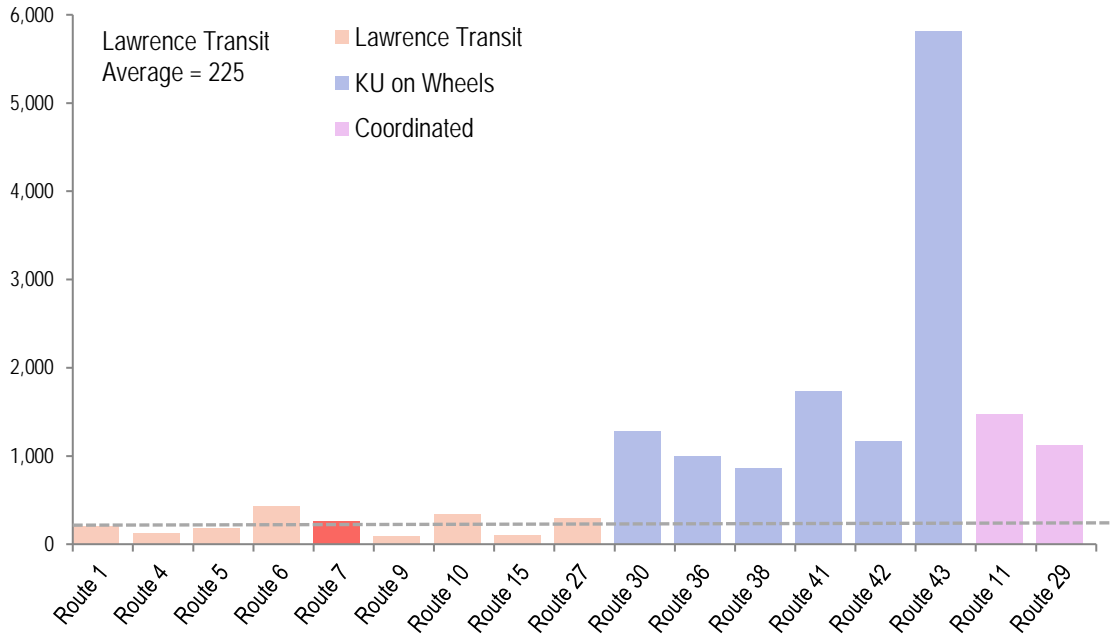
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	264	56	9.4	6.5	2 of 9
Saturday	293	56	10.5	4.7	1 of 8

Source: Lawrence Transit, 2016

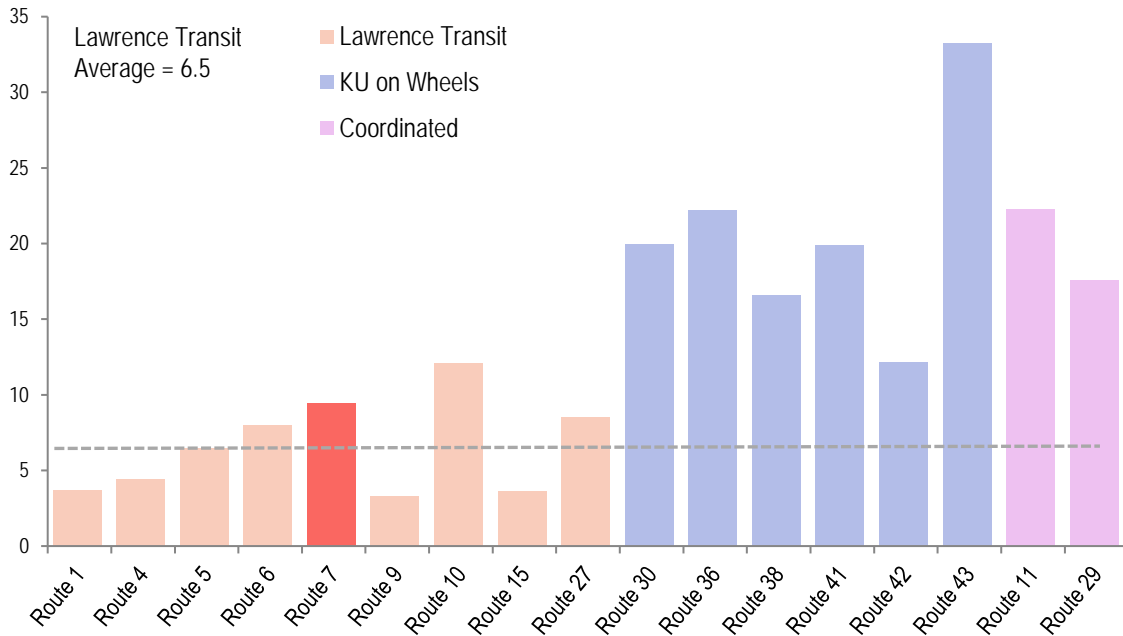
ROUTE EVALUATION | ROUTE 7
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

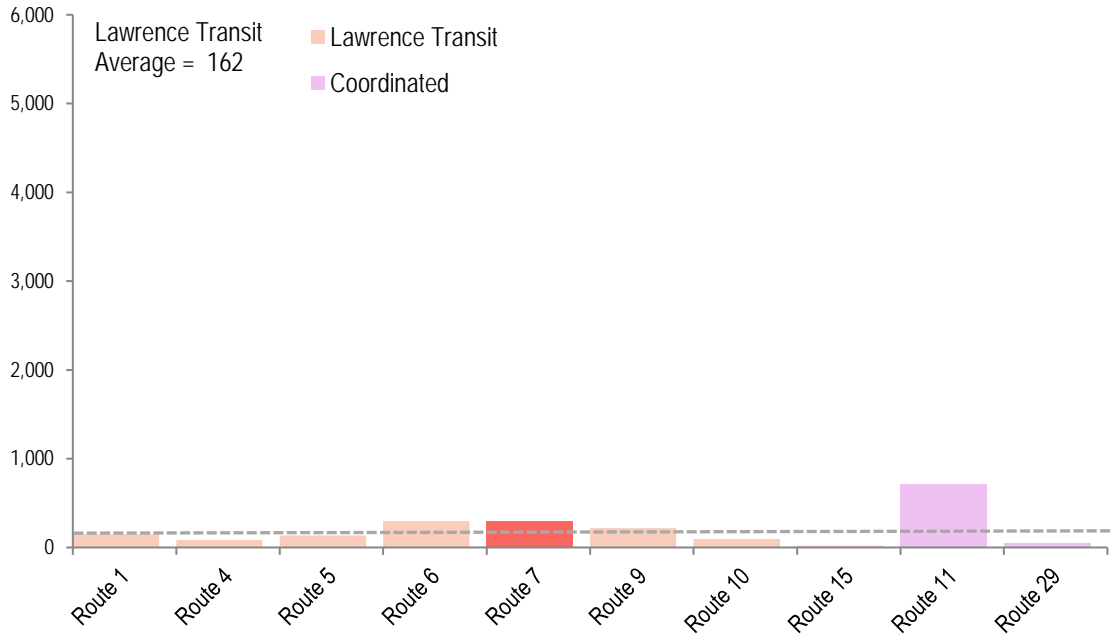
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

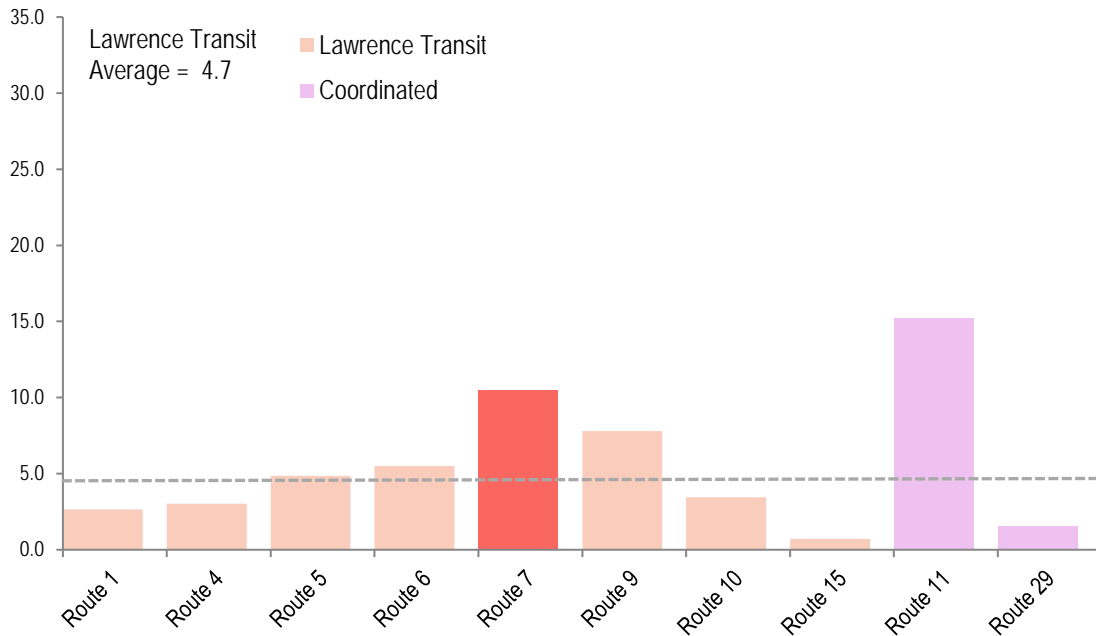
ROUTE EVALUATION | ROUTE 7
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 7 are located near downtown Lawrence, near Pine Ridge Plaza, and near Lawrence High School (Figure 9). Inbound ridership is highest at the terminating stop at 7th Street and Vermont Street in downtown Lawrence, recording 111 alightings.

Other inbound stops with more than 20 combined boardings and alightings per weekday include: Louisiana Street at Checker’s, 33rd Street at Kohl’s, 21st Street at Louisiana Street, 10th Street at Vermont Street, 27th Street at Ousdahl Road, and 31st Street at Iowa Street. These stops primarily serve commercial and retail destinations. All other inbound stops serve fewer than 20 boardings and alightings (Figure 10-Figure 13). Traveling in the outbound direction, the 7th Street at Vermont Street stop generates 77 combined boardings and alightings, the highest among outbound stops.

Saturday ridership patterns are similar to weekday patterns, featuring comparable ridership at multiple stops in both the outbound and inbound directions (Figure 14-Figure 17). Stops in downtown Lawrence, along with the 33rd Street at Kohl’s, Louisiana at Checker’s, and 31st Street at Iowa stops, generate the most combined boardings and alightings.

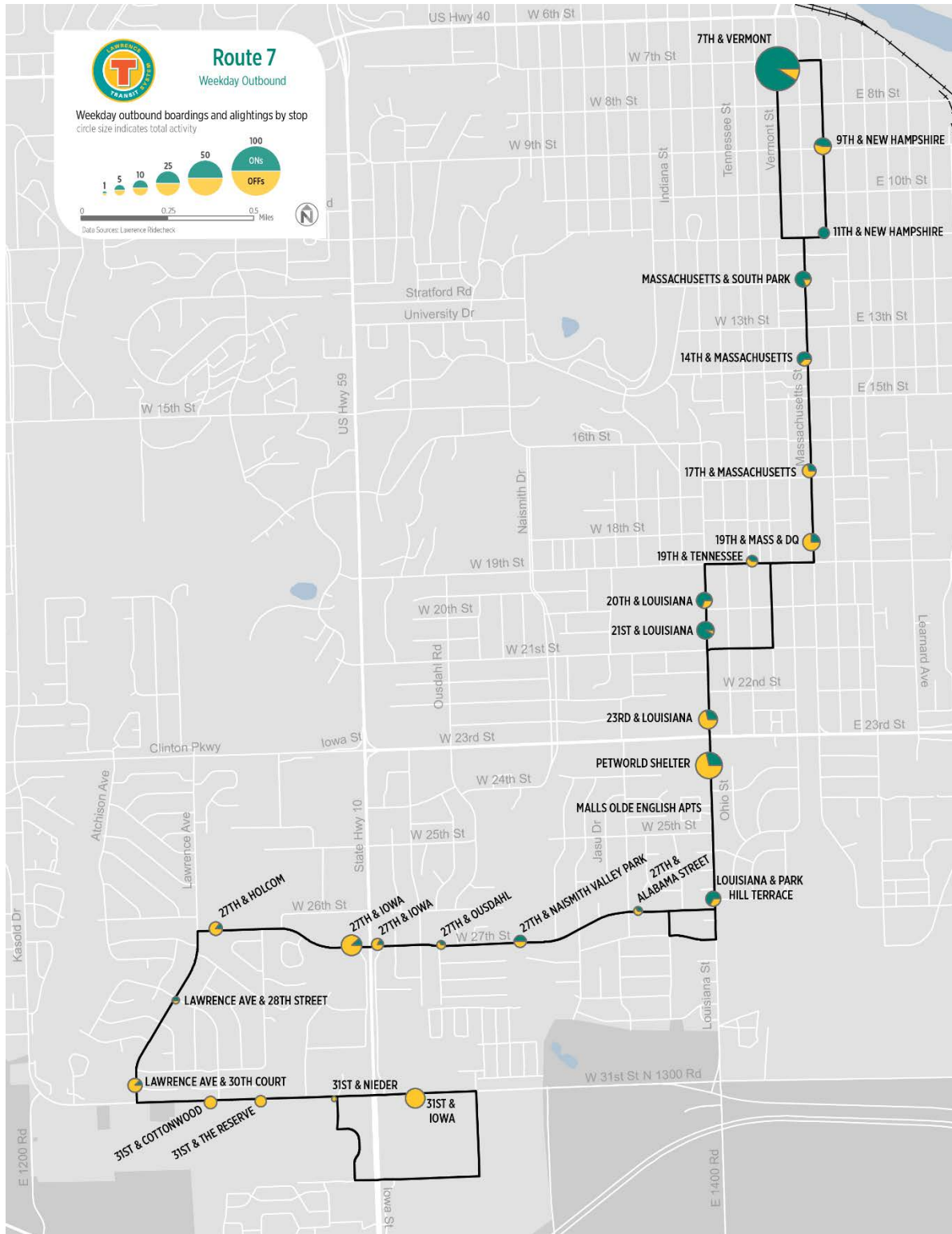
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
7th Street / Vermont Street	111	Downtown Lawrence; Lawrence Public Library; City Hall
Louisiana Street / Checker’s	36	Checker’s; The Malls Shopping Center
33rd Street / Kohl’s	23	Pine Ridge Plaza; multiple local and national retail stores
21st Street / Louisiana Street	24	Lawrence High School; residential neighborhoods
10th Street / Vermont Street	22	Downtown Lawrence; Lawrence Arts Center

*Weekday outbound ridership (boardings and alightings) for Route 7 only.

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

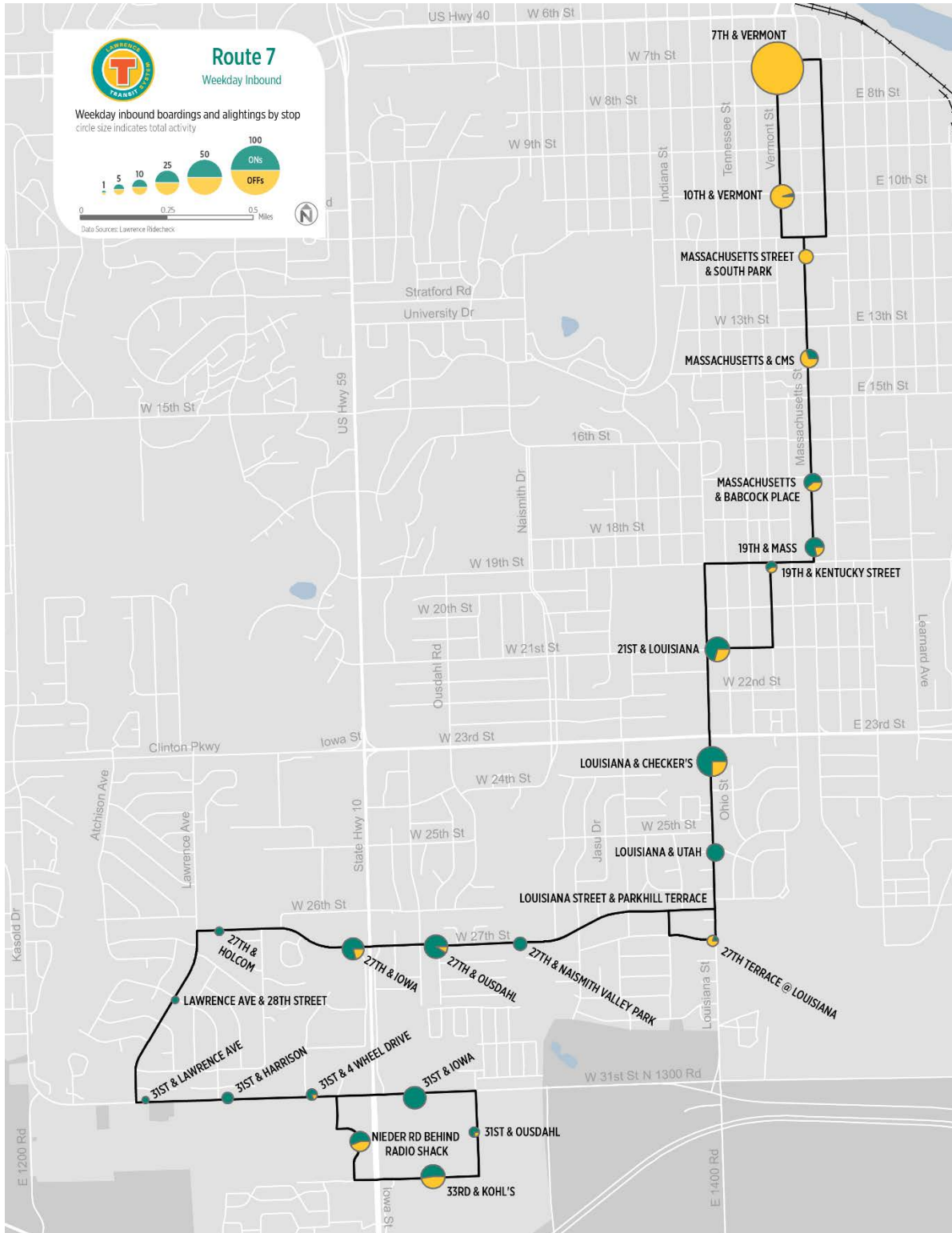
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

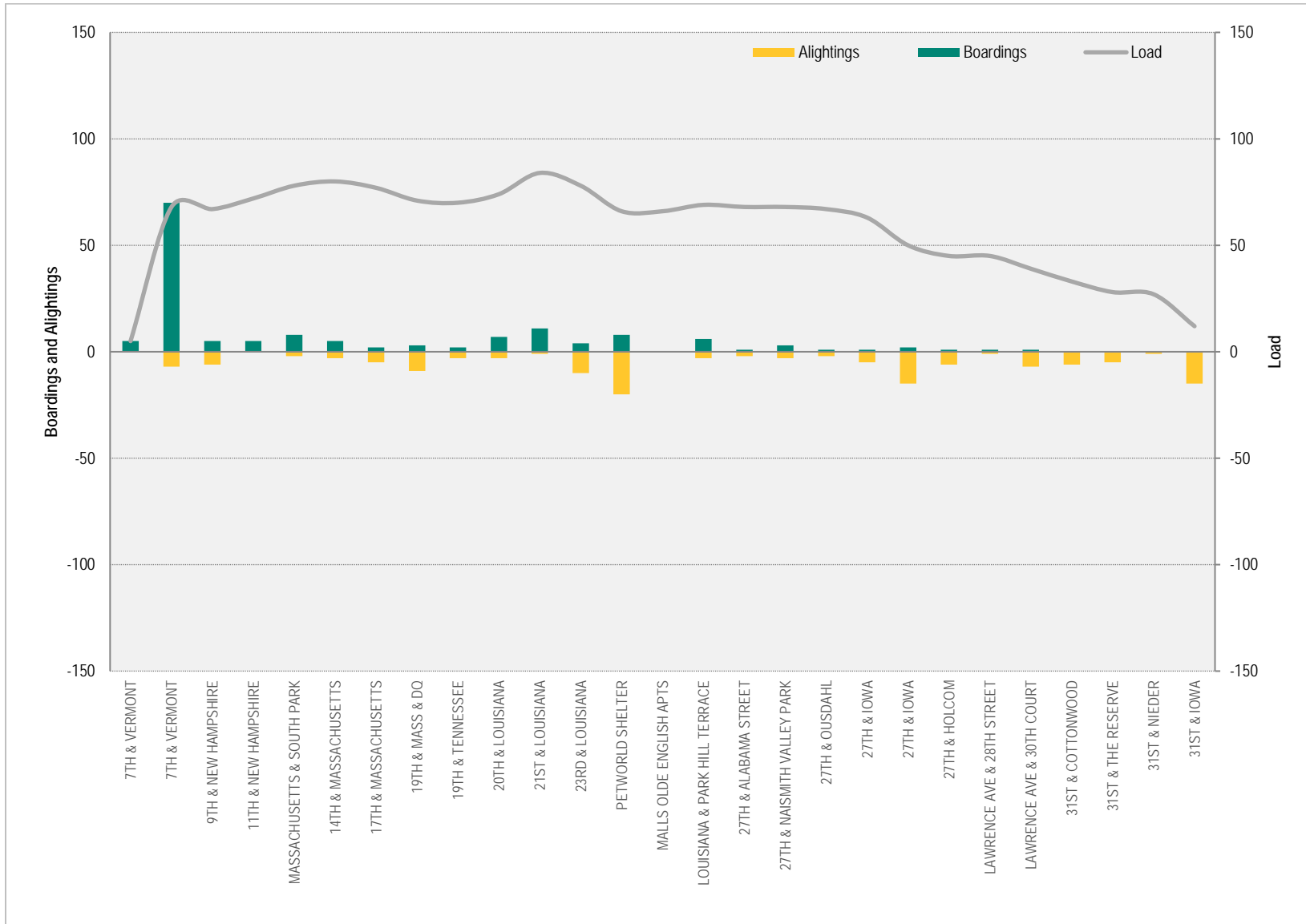
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

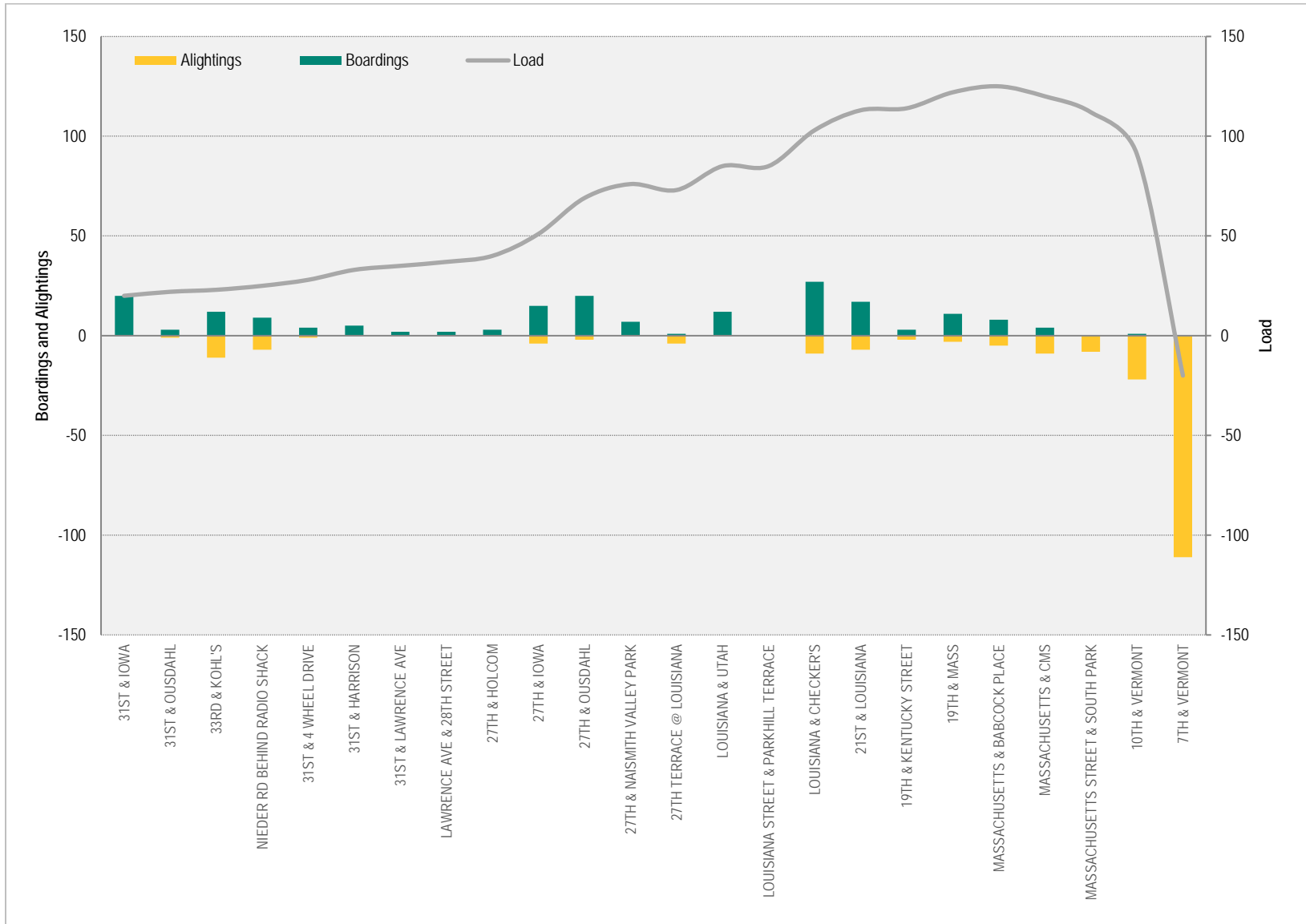
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

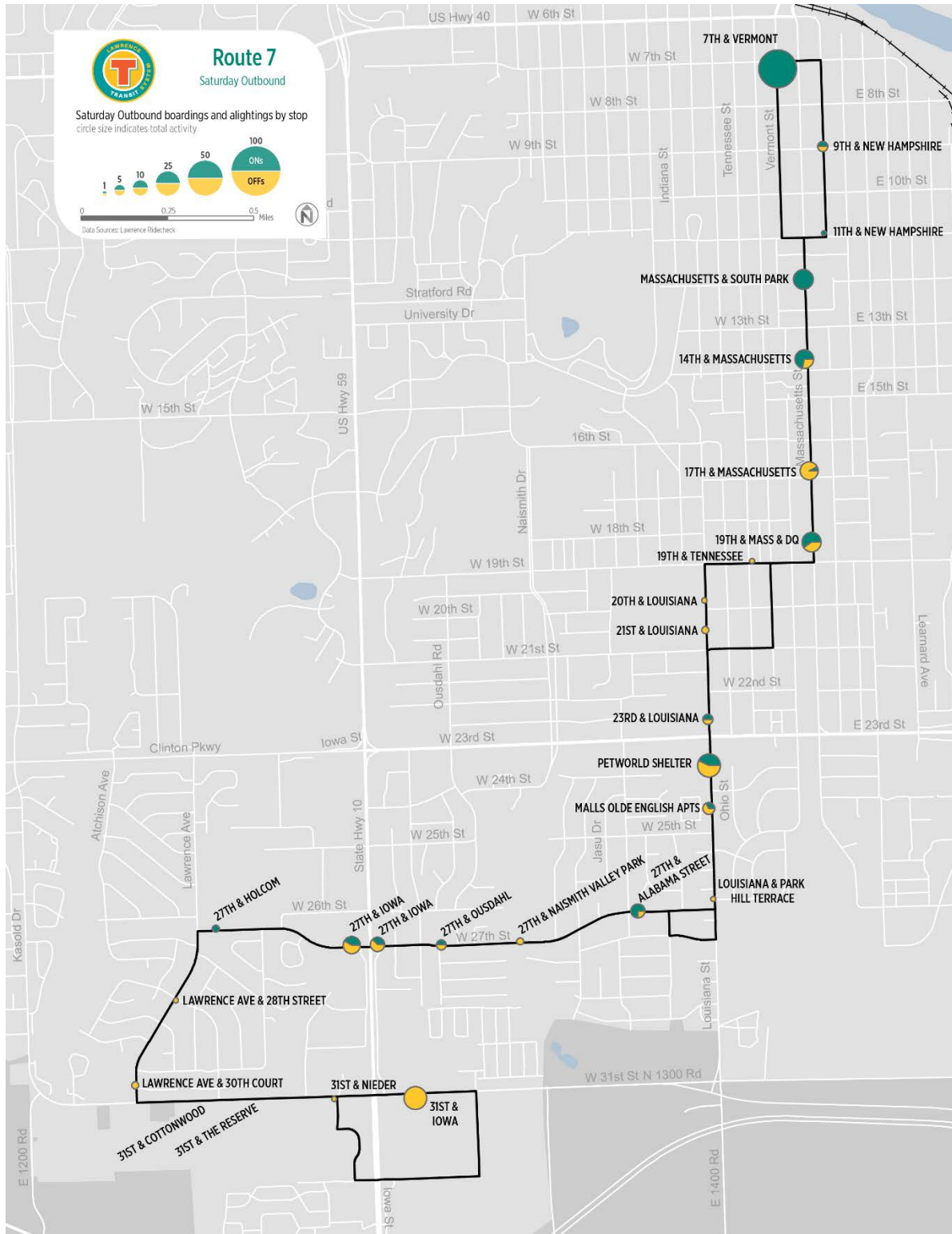
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

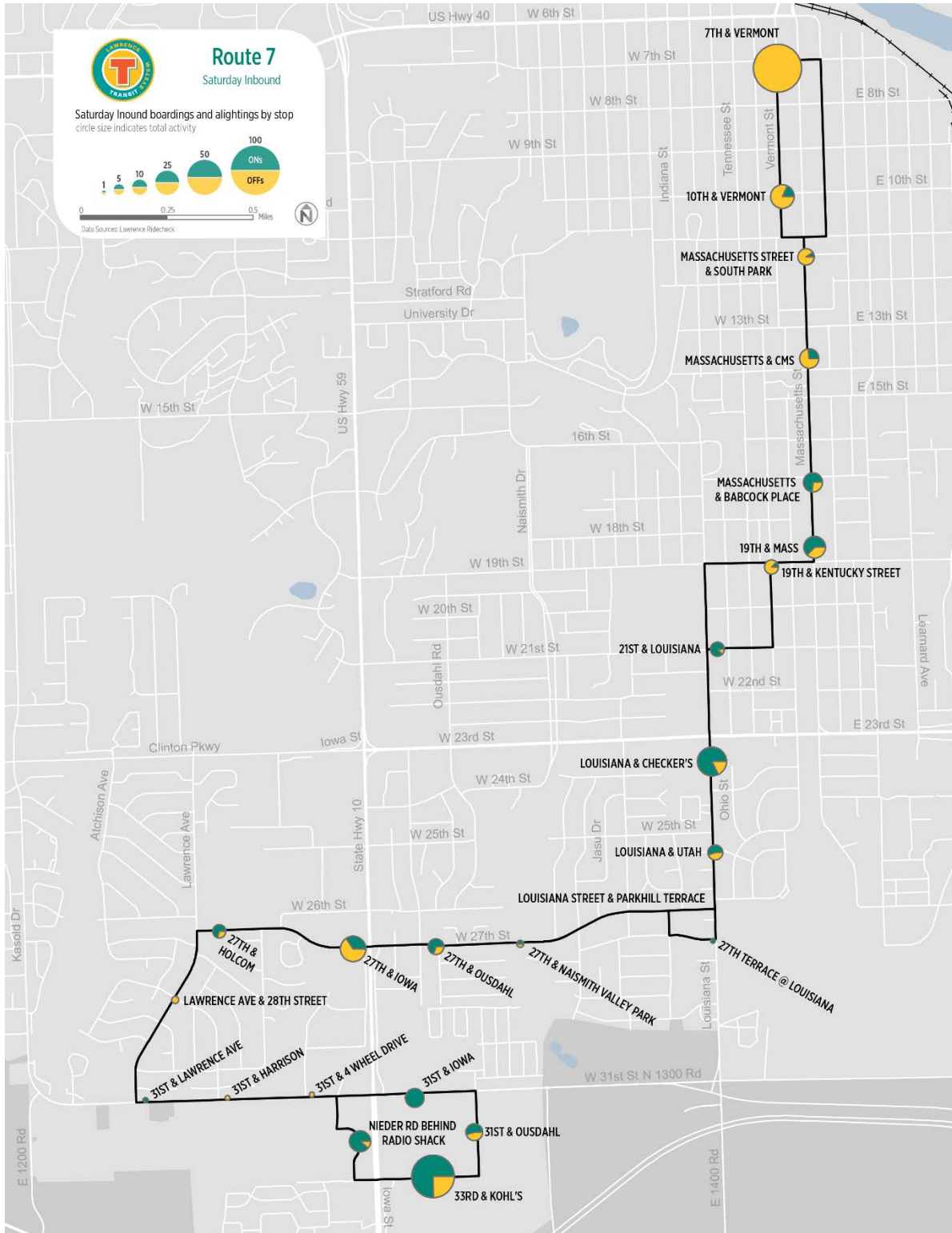
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

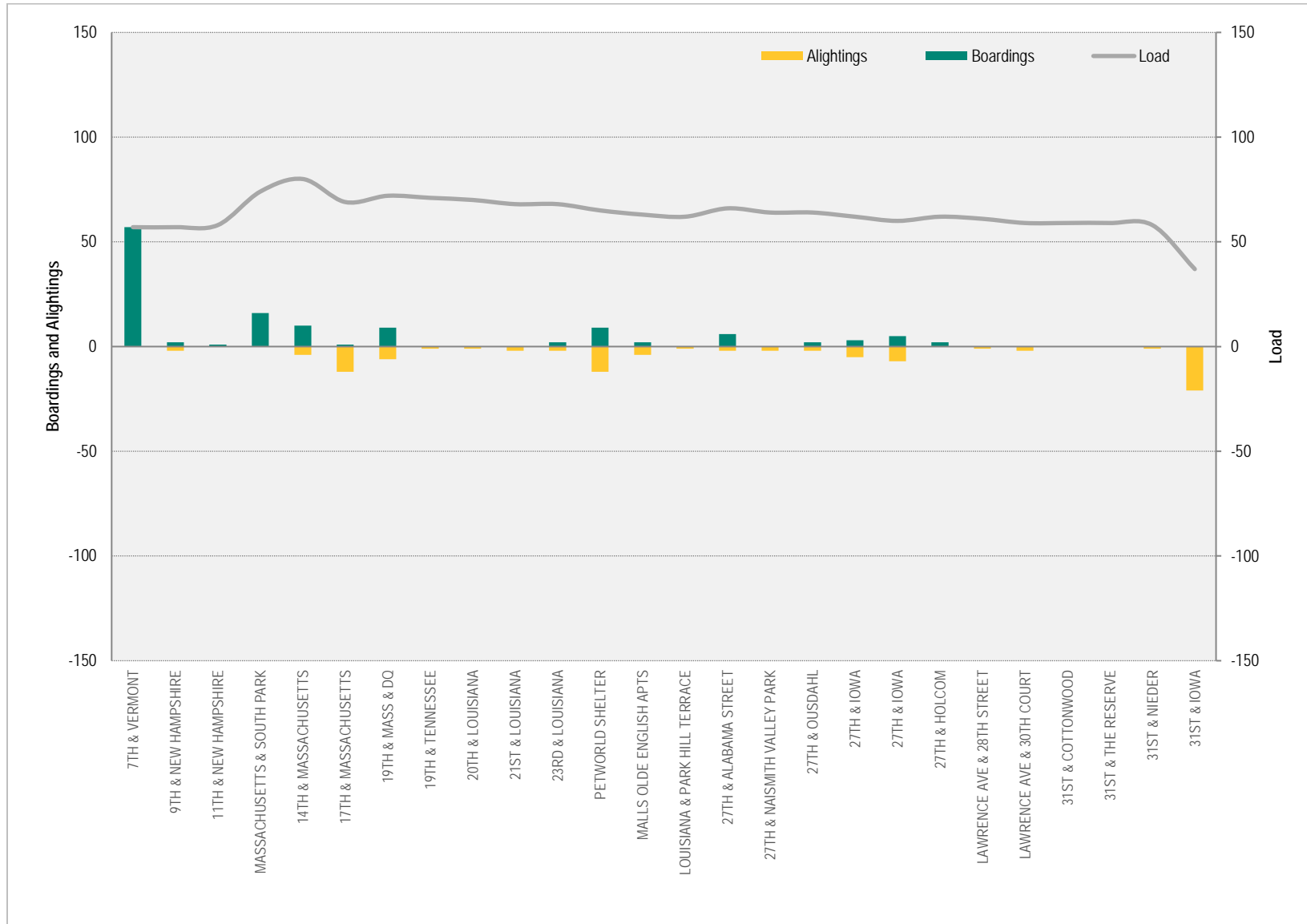
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

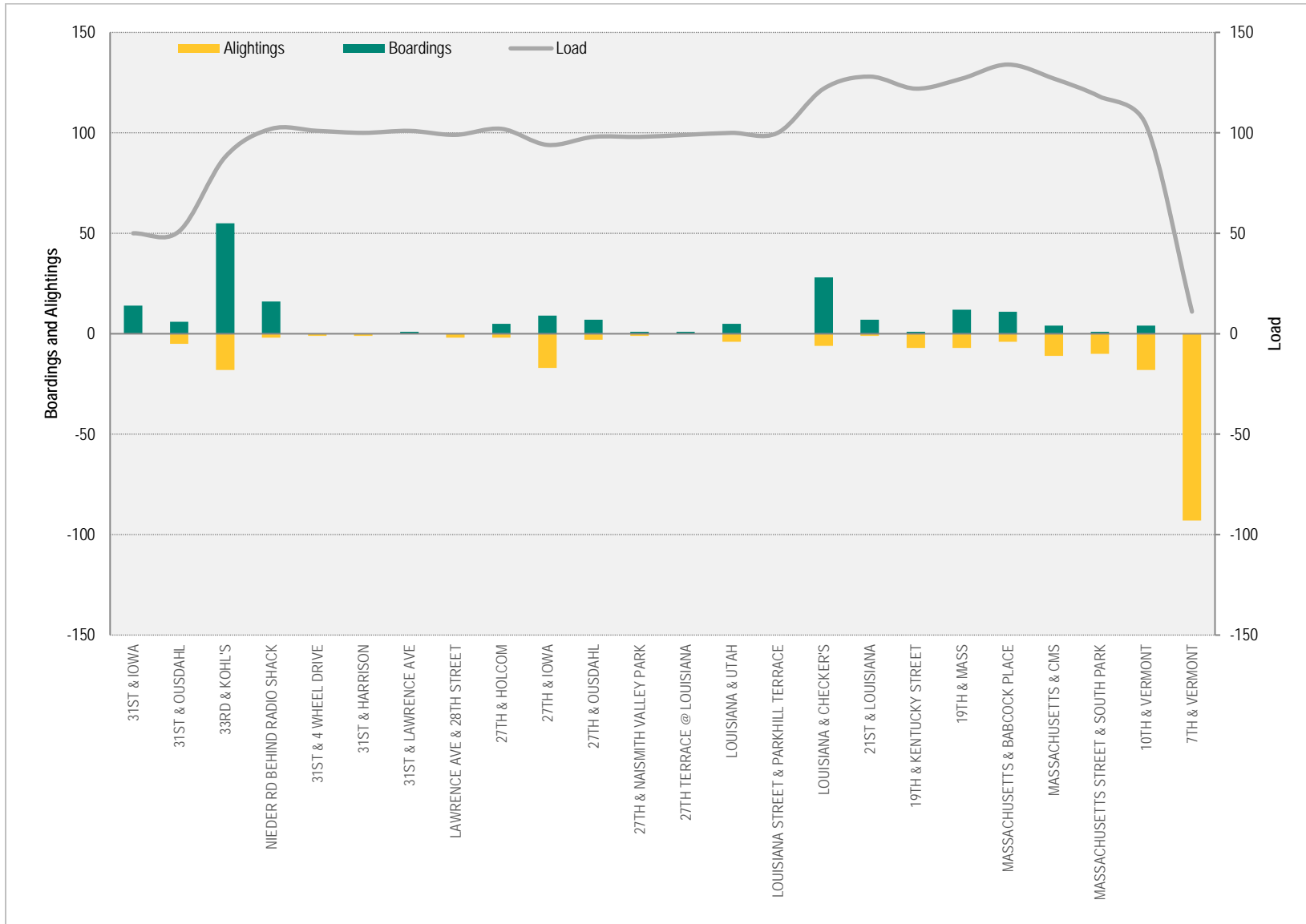
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

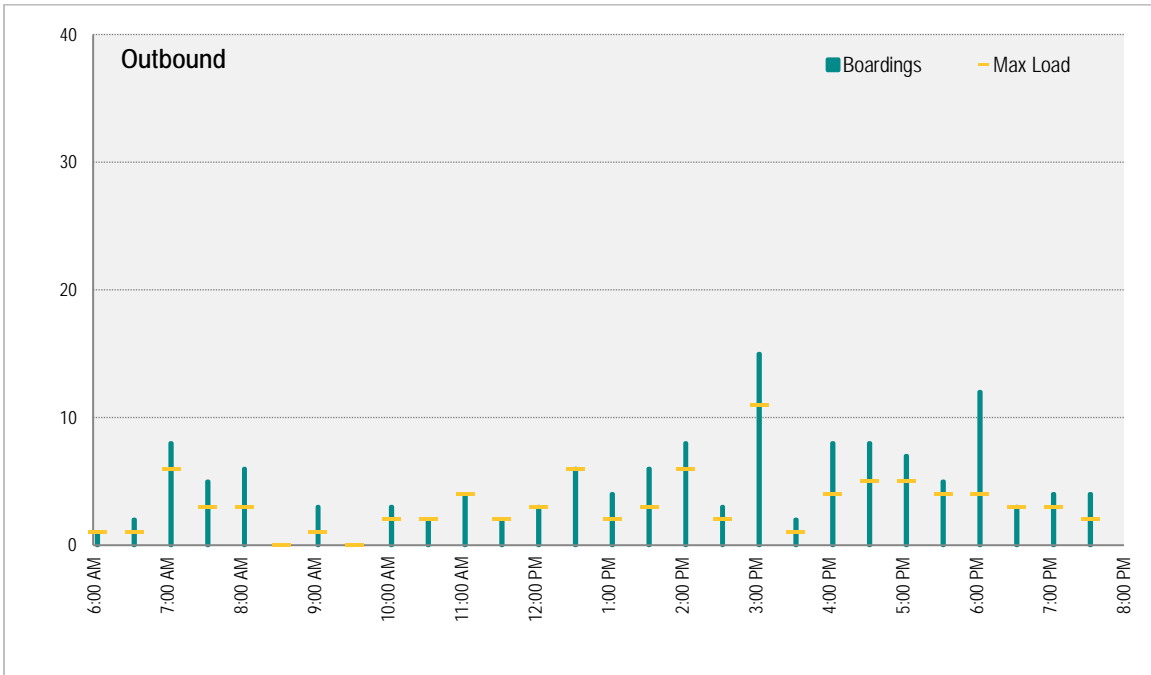
RIDERSHIP BY TRIP

On weekdays, Route 7 ridership peaks at 7:30 AM in the inbound direction with 16 boardings. Ridership traveling inbound remains steady throughout the day, with seven trips carrying 10 passengers or more. Traveling outbound, ridership is highest at 3:00 PM (15 boardings) and between 4:00 and 6:03 PM. During this period, outbound trips average eight passengers (Figure 18 and Figure 19).

On Saturdays, Route 7 ridership is highest in the outbound direction between 5:00 and 6:00 PM, averaging eight passengers per trip. Ridership is highest in the inbound direction from 2:00 to 3:00 PM, peaking at 18 boardings. Seven Saturday inbound trips carry 10 passengers or more, while only two outbound trips reach this level (Figure 20 and Figure 21).

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

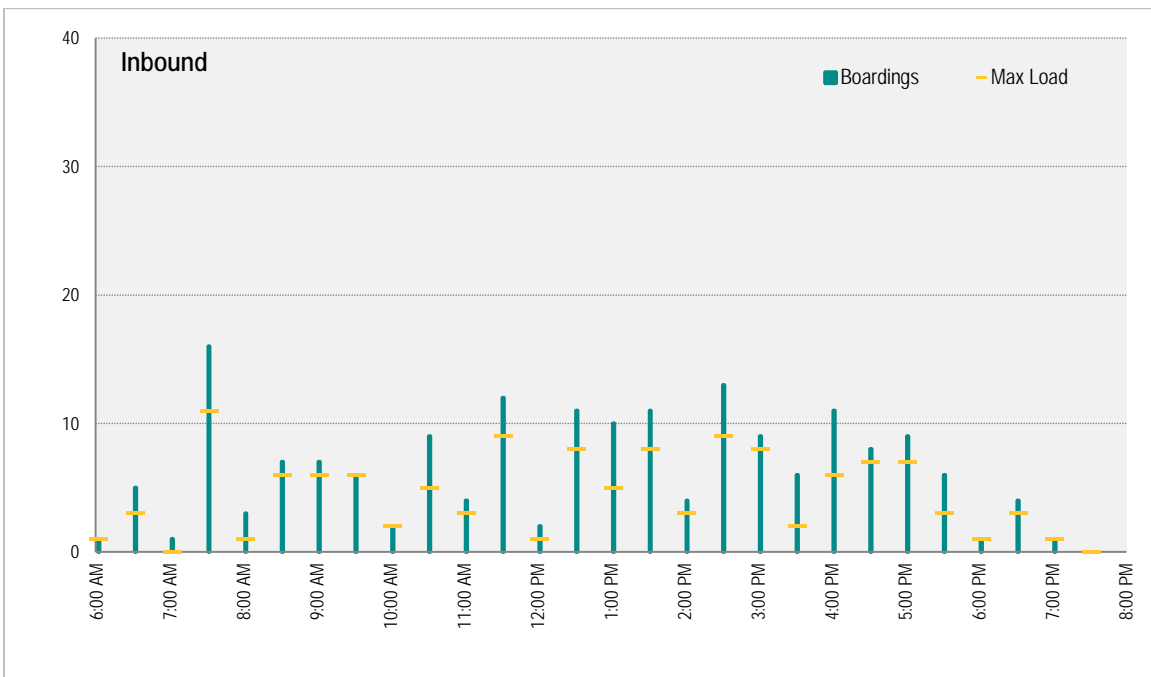
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

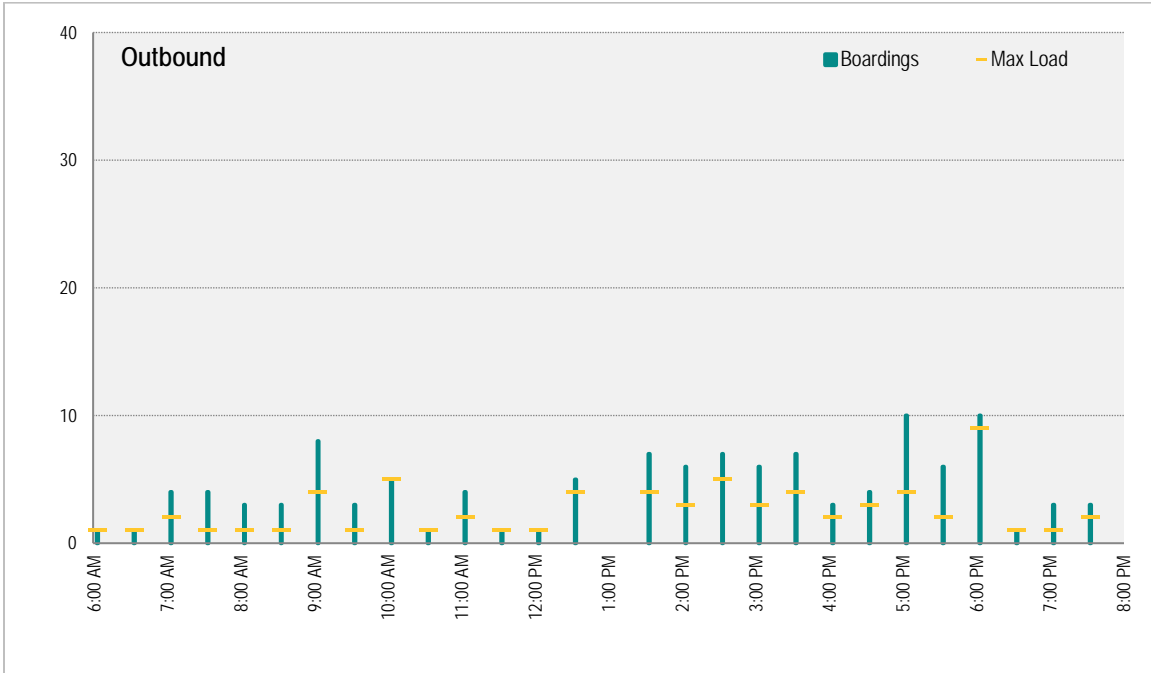


Source: Ride Check, April and May 2016

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

ROUTE EVALUATION | ROUTE 7
Lawrence Transit

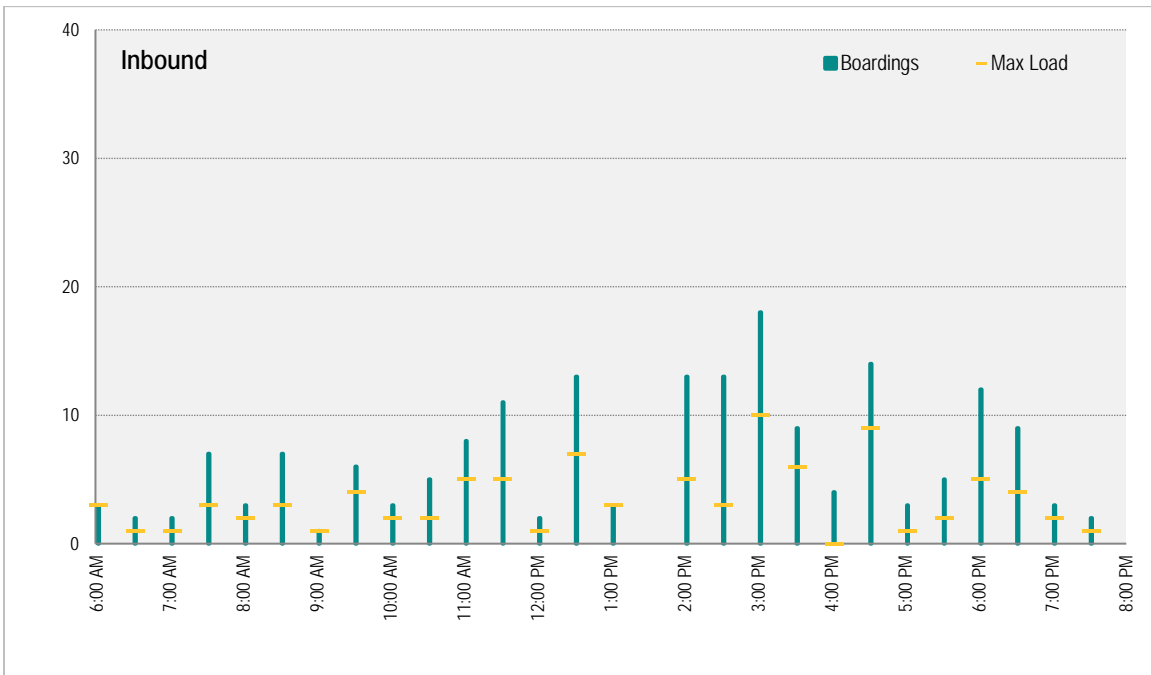
Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016. No data was collected for the 1:03 PM outbound trip.

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

Figure 21 | Saturday 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

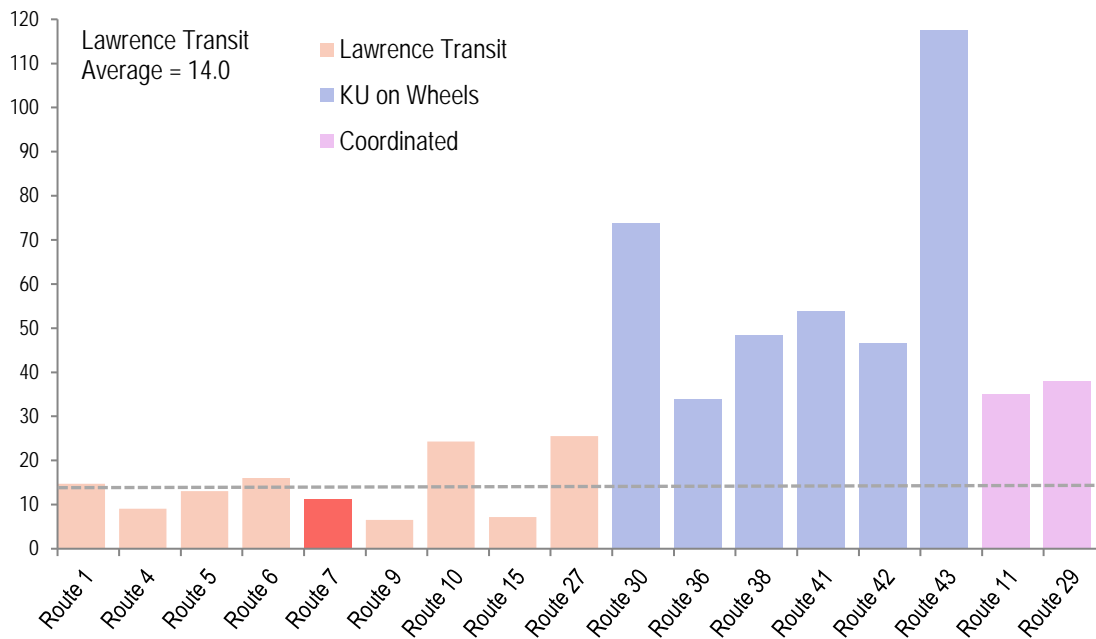
In terms of average passengers per hour, Route 7 is the sixth most productive Lawrence Transit bus route (Figure 22). The route carries 11.3 passengers per hour on weekdays, 19% less than the system average (Figure 23). Route 7 carries 12.6 passengers per hour on Saturdays, and is one of two routes that carries more passengers per hour on Saturdays than on weekdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	264	23.3	11.3	14.0	6 of 9
Saturday	293	23.3	12.6	9.7	2 of 8

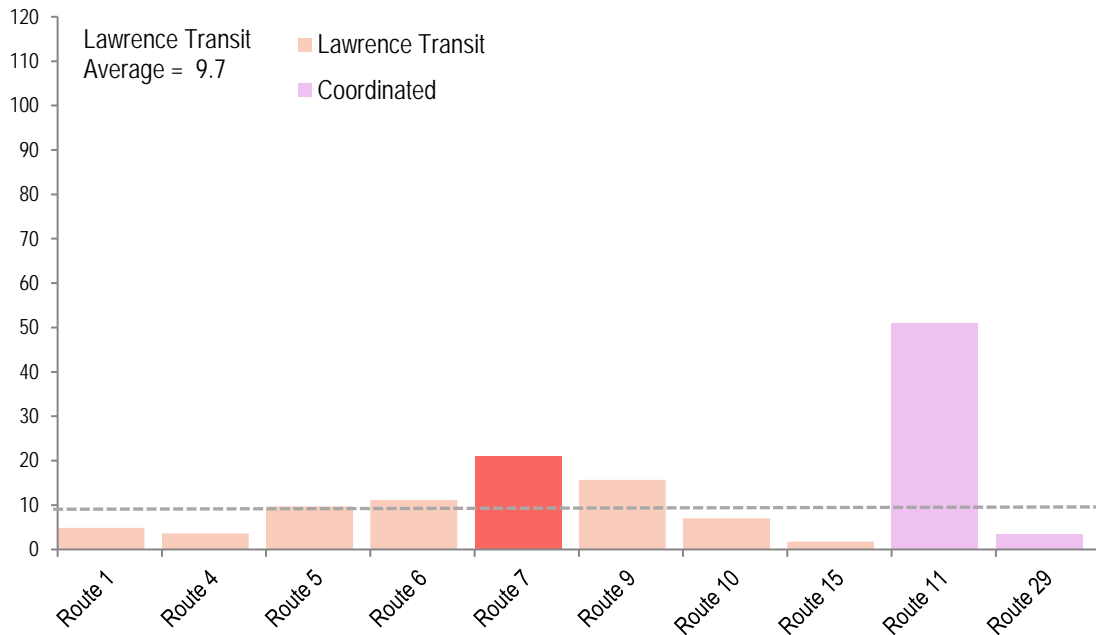
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 55% of Route 7 time points were served “on-time” during the survey period (Figure 25). 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. On Saturdays, approximately 45% of Route 7 time points were served “on-time” during the survey period.

Weekday and Saturday on-time performance was affected by a high rate of early departures, with nearly 28% of weekday trips and 29% of Saturday trips departing stops before scheduled. Approximately 18% of weekday time points were served late, along with nearly 26% of Saturday time points.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	54.6%	45.1%
Early	27.7%	29.3%
Late	17.7%	25.6%

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

- **Reduce Unproductive Deviations.** Currently, Route 7 has different inbound and outbound alignments near Lawrence High School and South Middle School. The deviation at LHS is the result of a poorly designed intersection at 19th Street and Louisiana Street that does not allow for right hand turns; the deviation to South Middle School will be eliminated in August 2016. In both cases, ridership is minimal in the route segments that deviate from the major arterial streets. Operating along consistent alignments in both directions will simplify the route and provide better service for riders who are currently served in one direction only. Given that there are no major ridership generators that justify either deviation, ridership may actually increase if the service is simplified, even if coverage area is slightly reduced.
- **Eliminate service to Lawrence Avenue.** Route 7's lowest sustained ridership, by stop, occurs at the five successive stops on 27th Street (west of Iowa Street), Lawrence Avenue, and 31st Street (west of Iowa Street). On outbound weekday service, these five stops average approximately six combined boardings and alightings. On inbound weekday trips, these five stops average only three combined boardings and alightings. Shifting Route 7 from Lawrence Avenue to Iowa Street would provide a faster, more direct service between downtown and the retail areas. There may be opportunities to serve Lawrence Avenue more effectively with a Lawrence Transit route that operates between south Lawrence and west Lawrence, rather than one serving downtown.

Lawrence Transit System

ROUTE 9

31st & Iowa to 6th & Wakarusa

SERVICE DESIGN

Route 9 is a Lawrence Transit route that operates between Rock Chalk Park and Pine Ridge Plaza. The route travels primarily along Overland Drive, Wakarusa Drive, Kasold Drive, and 31st Street (Figure 1). Route 9 provides service to the 6th Street Walmart Supercenter, Free State High School, Bauer Farm Shopping Center, Dillions, Lawrence Social Security Office, Hy-Vee, Target, Iowa Street Walmart Supercenter, and 31st Street US Post Office.

ALIGNMENT/SERVICE PATTERNS

Route 9 has one primary service pattern for weekday and Saturday service. Departing outbound from Rock Chalk Park, Route 9 turns left on Rock Chalk Drive, right on George Williams Way, left on Overland Drive, right on Wakarusa Drive, straight onto 27th Street, left on Inverness Drive, right on 24th Place, left on Crossgate Drive, right on Clinton Parkway, right on Kasold Drive, straight onto 31st Street, and then terminates outside of Pine Ridge Plaza near the intersection of 31st Street and Iowa Street.

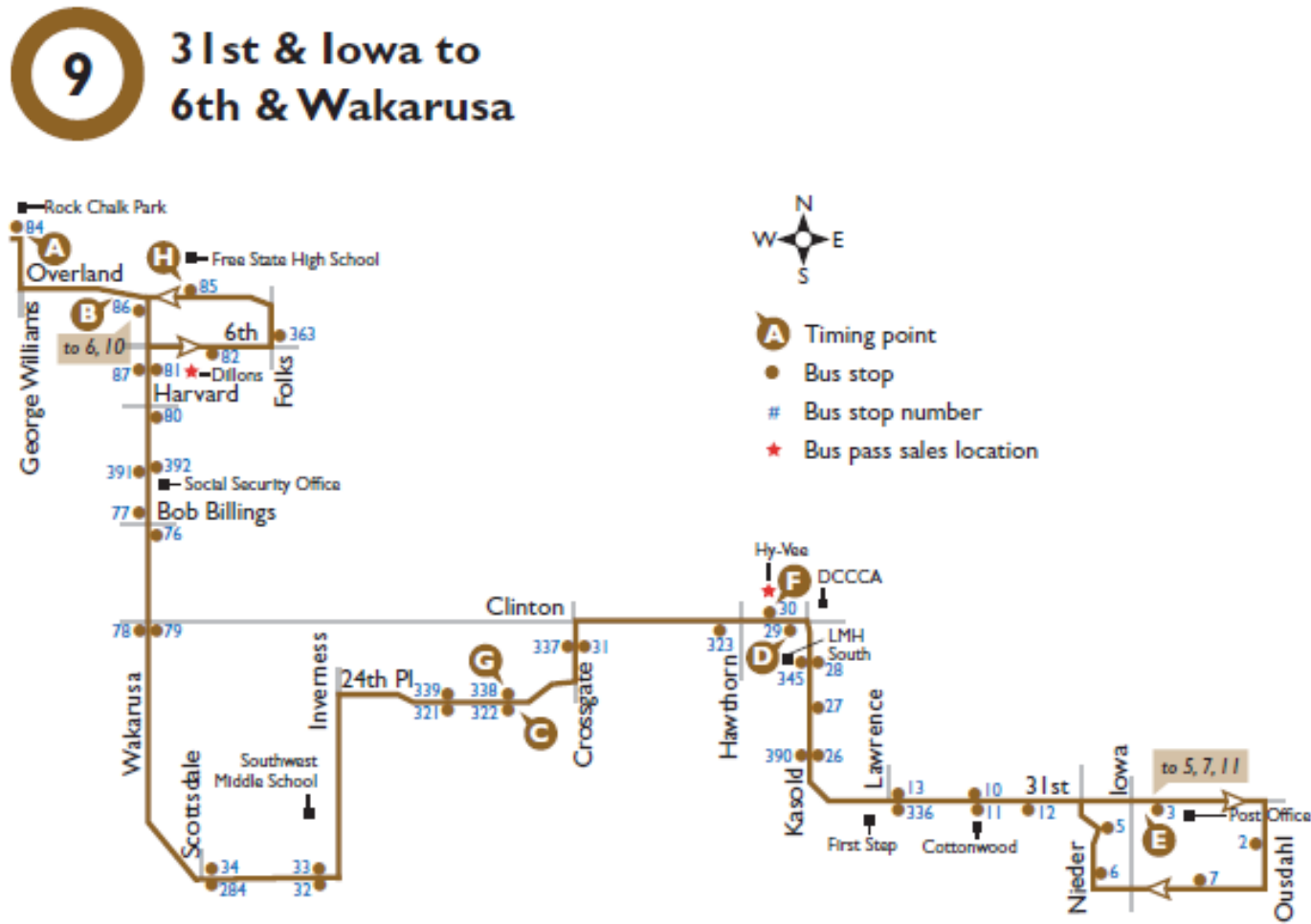
Returning inbound from Pine Ridge Plaza, Route 9 completes a turnaround loop by turning right on Ousdahl Road, right on 33rd Street, right on Nieder Road, and left to return to 31st Street. The route then continues along the outbound alignment until the intersection of 6th Street and Wakarusa Drive. Route 9 inbound service then turns right on 6th Street, left on Folks Road, left on Overland Drive, crosses Wakarusa Drive, and continues along the outbound alignment to Rock Chalk Park

On weekdays, the first outbound trip begins at the intersection of 6th Street and Wakarusa Drive, rather than at Rock Chalk Park, and then continues towards Pine Ridge Plaza along the regular alignment.

As of August 1, 2016, Route 6 now operates service to Rock Chalk Park instead of Route 9.

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

Figure 1 | Route Map



Source: Lawrence Transit; August 2015 – September 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 9 and several Lawrence Transit routes and routes that are coordinated with KU on Wheels at 6th Street and Wakarusa Drive and at 31st Street and Iowa Street. There are also transfer opportunities at several other points along the route, including on Wakarusa Drive (Route 10), 6th Street (Route 6 and 10), 27th Street (Route 29), and on sections of 31st Street and 33rd Street (Route 5, 7, and 11) (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Wakarusa Drive and Overland Drive	Route 6 and Route 10
31 st Street and Iowa Street	Route 5, Route 7, Route 11
24 th Place	Route 29

SERVICE SCHEDULE

Route 9 operates Monday–Saturday year round (Figure 3). On both weekdays and Saturdays, the route runs every 60 minutes from 6:05 AM to 6:10 PM. Route 9 does not run on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday–Friday	6:05 AM – 8:00 PM	60	14/14
Saturday	6:05 AM – 8:00 PM	60	14/14
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 9 ranks ninth of nine Lawrence Transit routes in terms of weekday ridership and ninth of nine in terms of ridership per trip (Figure 4). On average, the route carries 91 passengers, or 3.3 passengers per trip, on Monday-Friday (Figure 5 and Figure 6). On Saturdays, Route 9 carries 218 passengers, or 7.8 passengers per trip (Figure 7 and Figure 8). Route 9 is one of two Lawrence Transit routes that features higher ridership on Saturdays than on weekdays.

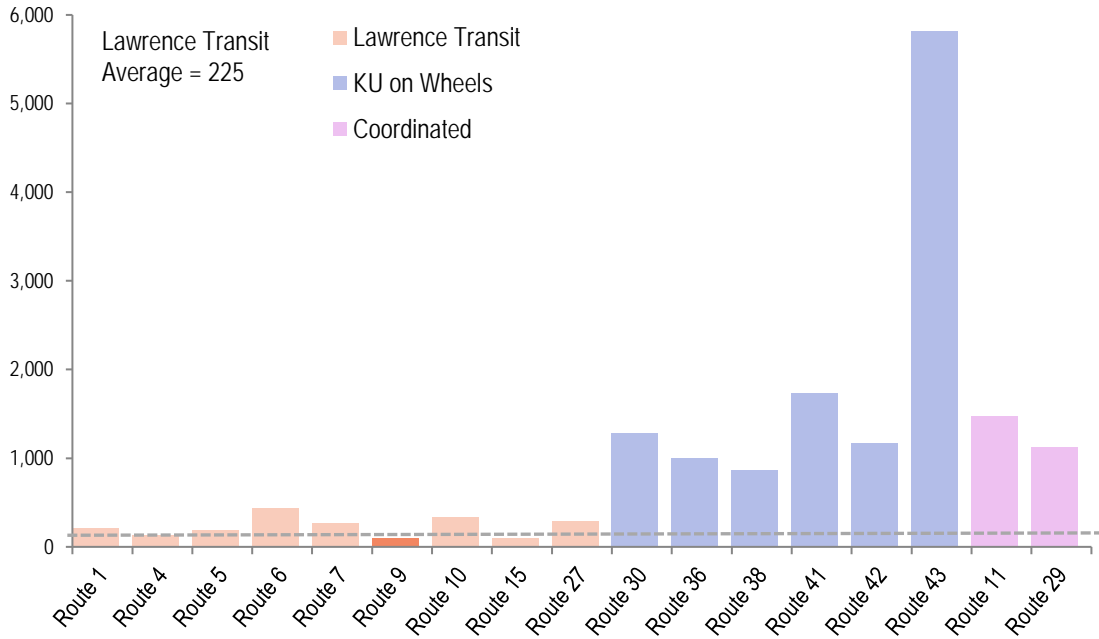
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	91	28	3.3	6.5	9 of 9
Saturday	218	28	7.8	4.7	2 of 8

Source: Lawrence Transit, 2016

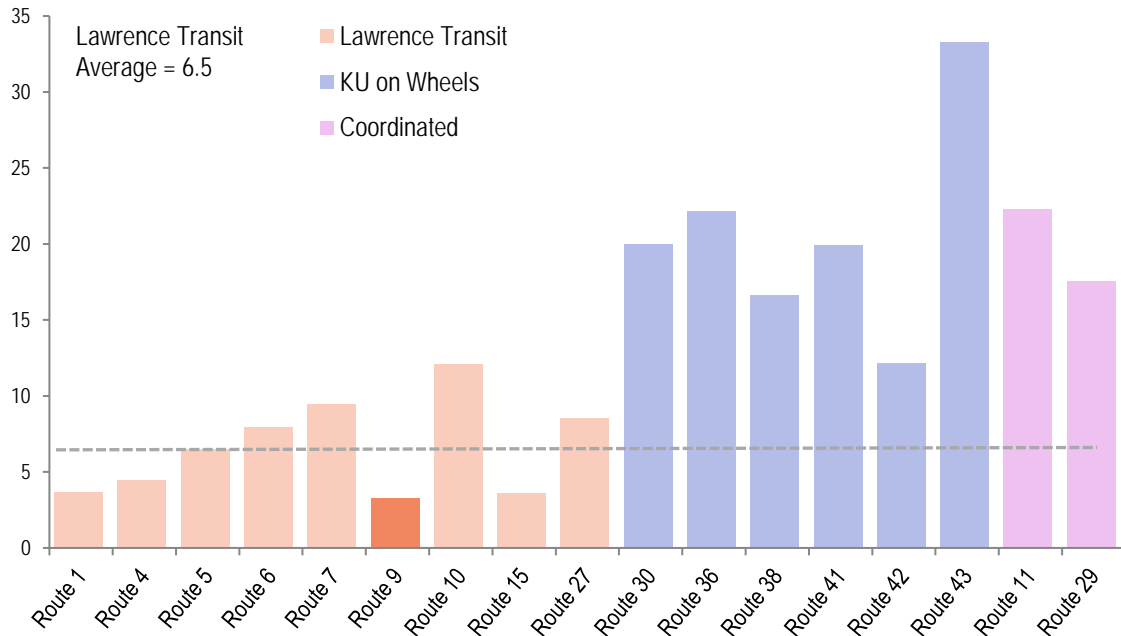
ROUTE EVALUATION | ROUTE 9
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

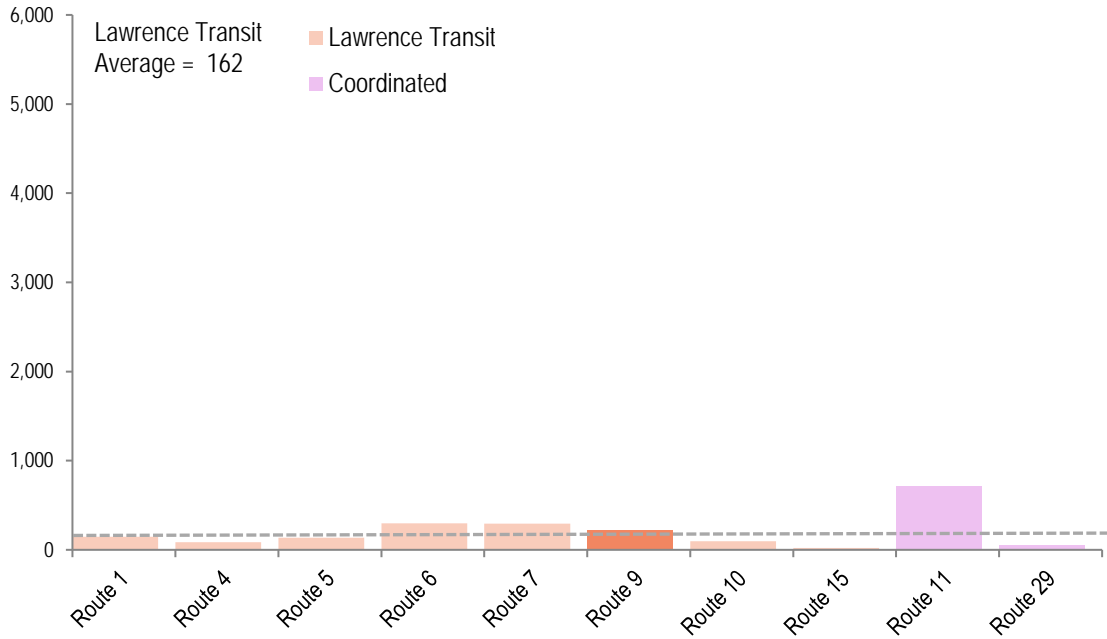
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

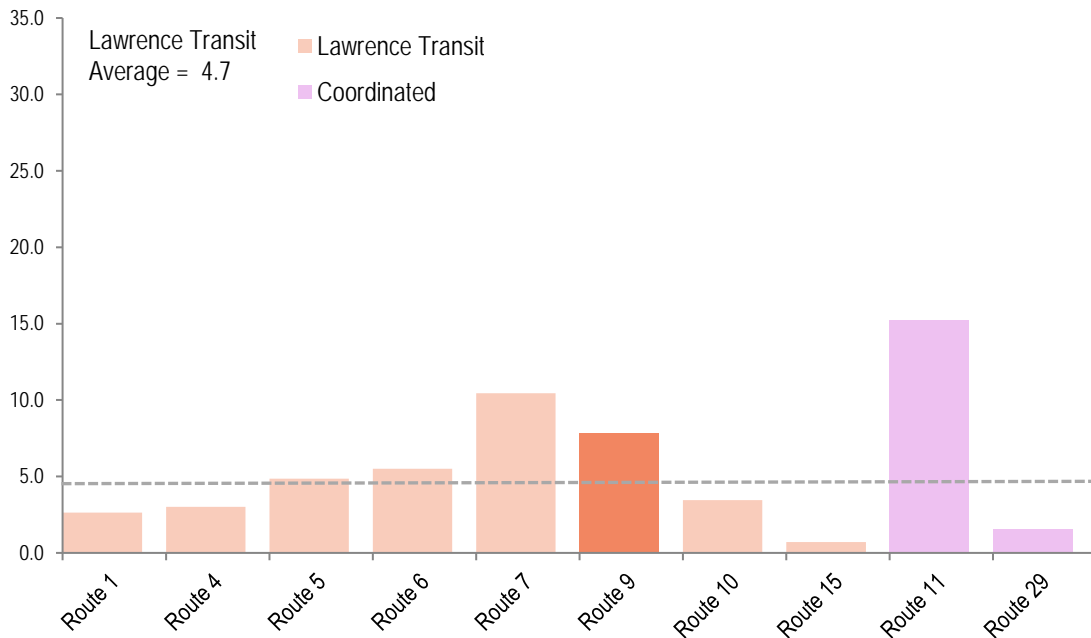
ROUTE EVALUATION | ROUTE 9
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday inbound ridership stops on Route 9 are located at the route’s origin near Pine Ridge Plaza, and close to retail destinations at 6th Street and Wakarusa Drive (Figure 9). However, even at the most active stops, ridership does not exceed 10 combined boardings and alightings. Other stops with five or more boardings and alightings per weekday include: Wakarusa Drive at Bob Billings Parkway, Overland Drive at Free State High School, Wakarusa Drive at Marisco’s, and Wakarusa Drive at Inverness Drive. These stops primarily serve retail, residential, and educational destinations. All other stops serve fewer than five combined boardings and alightings (Figure 10-Figure 13).

Ridership in the outbound direction on weekdays at the stop at 31st Street and Iowa Street generates 16 combined boardings and alightings.

Saturday ridership patterns are similar to weekday patterns, but with slightly higher volumes (Figure 14-Figure 17). Ridership is highest at stops located near retail destinations, including Pine Ridge Plaza, Westgate Center Shops, and Wakarusa Crossroads; Rock Chalk Park also records a relatively high number of alightings on inbound trips.

Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

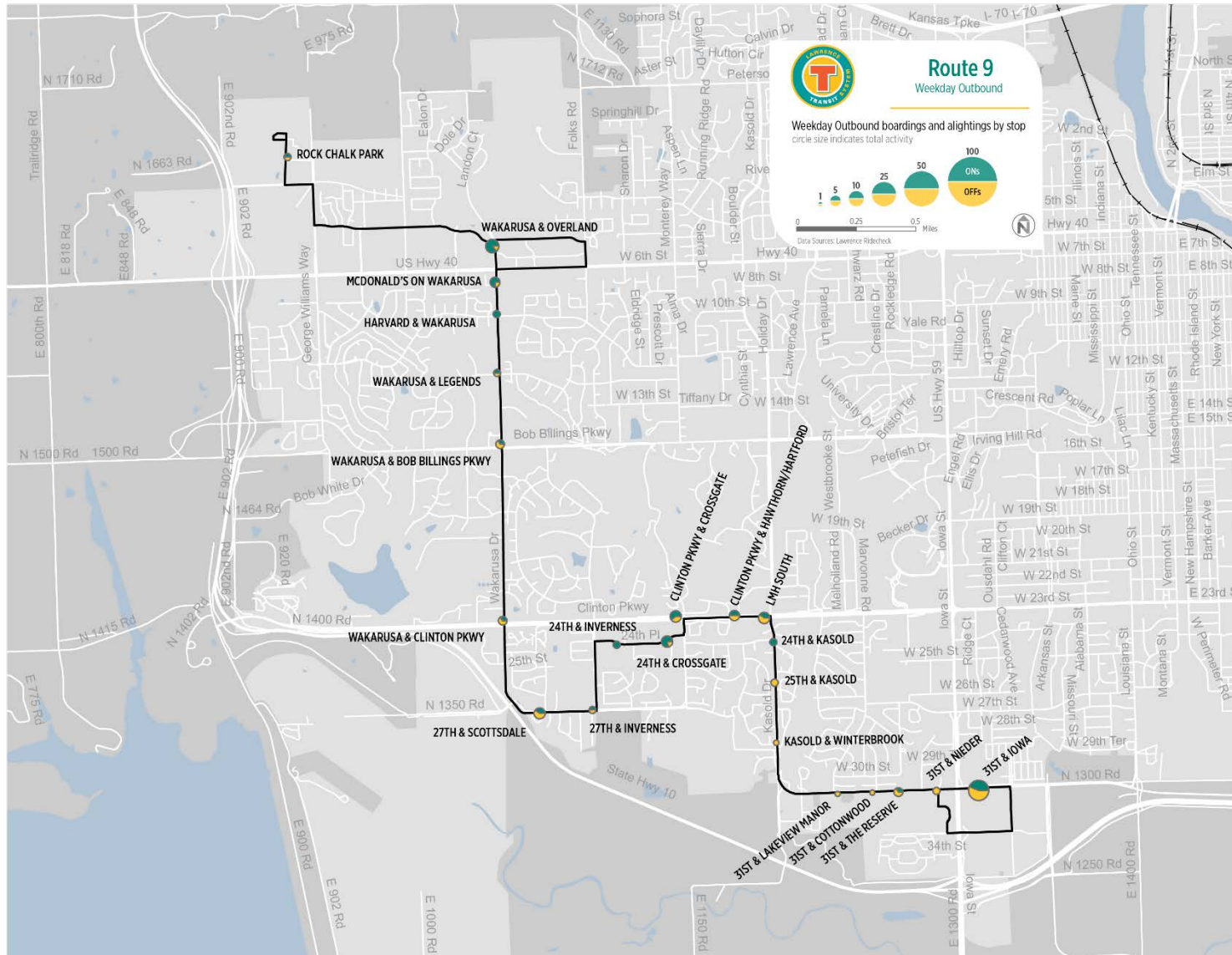
BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
31st Street / Iowa Street	10	Pine Ridge Plaza; local and national retailers
Wakarusa Drive / Bob Billings Parkway	8	Local and national retailers
Overland Drive / Free State High School	7	Free State High School; local and national retailers; residential neighborhoods
Wakarusa Drive / Marisco’s	5	Local and national retailers
Wakarusa Drive / Inverness Drive	5	Residential neighborhoods

*Weekday inbound ridership (boardings and alightings) for Route 9 only

ROUTE EVALUATION | ROUTE 9

Lawrence Transit

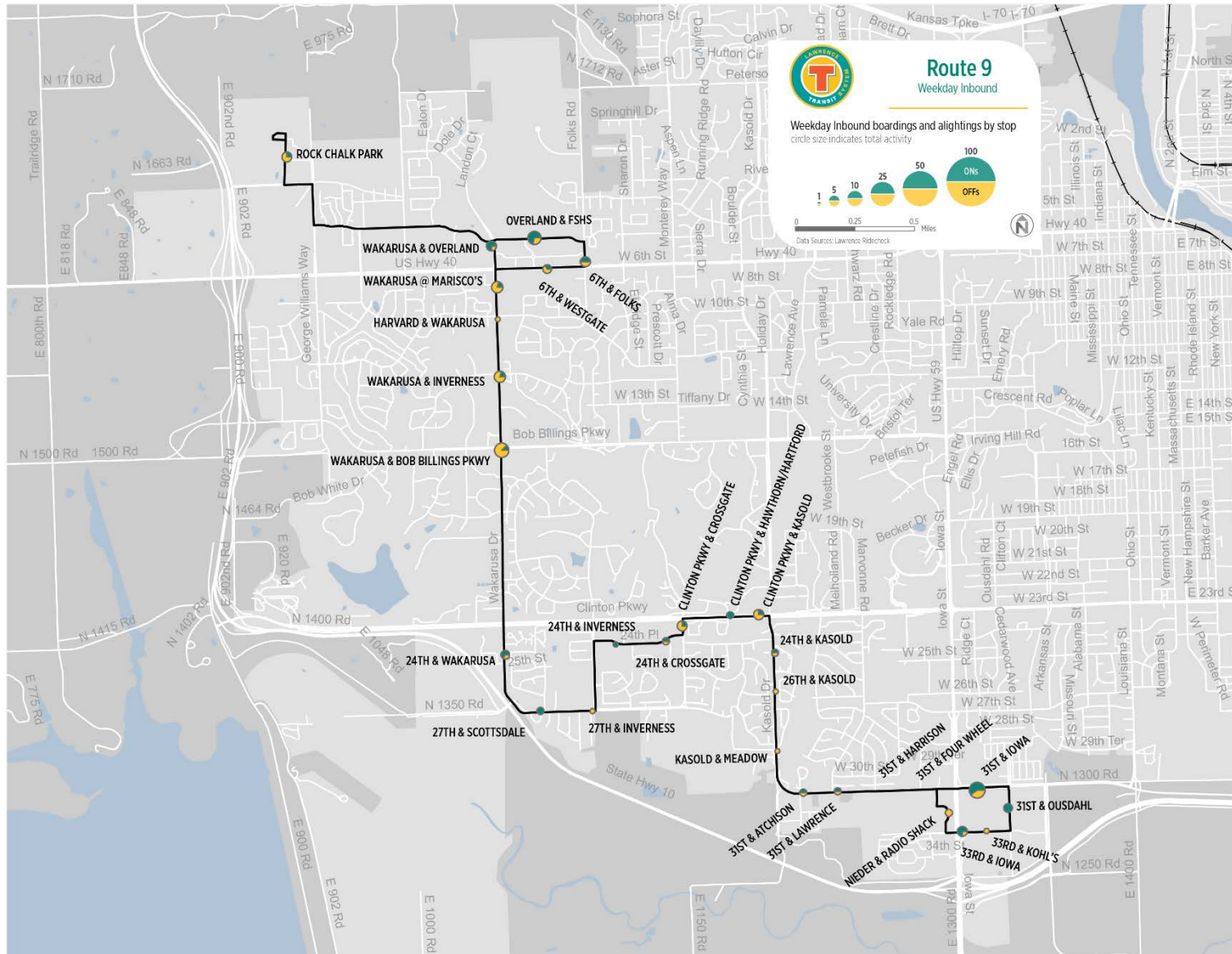
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

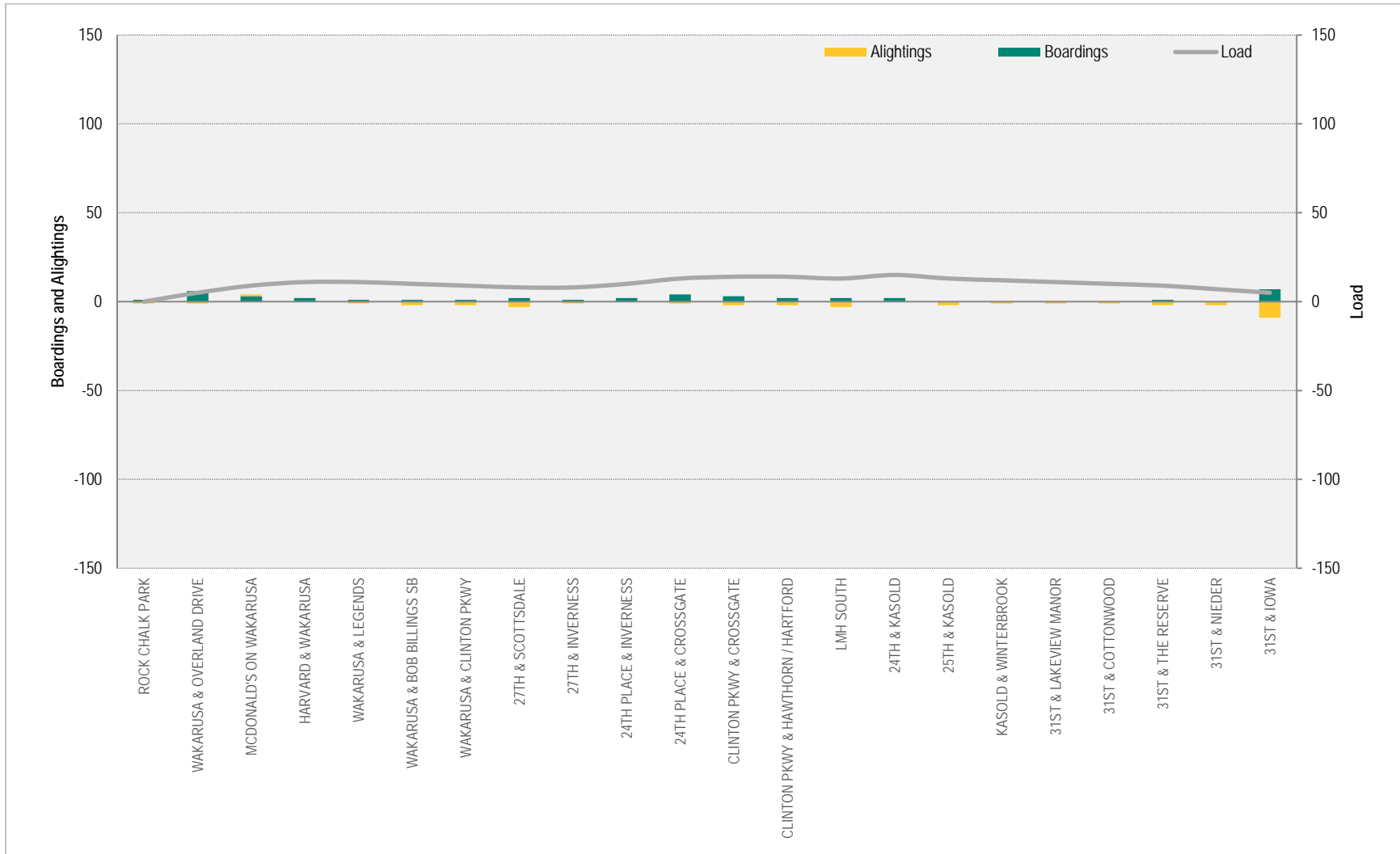
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

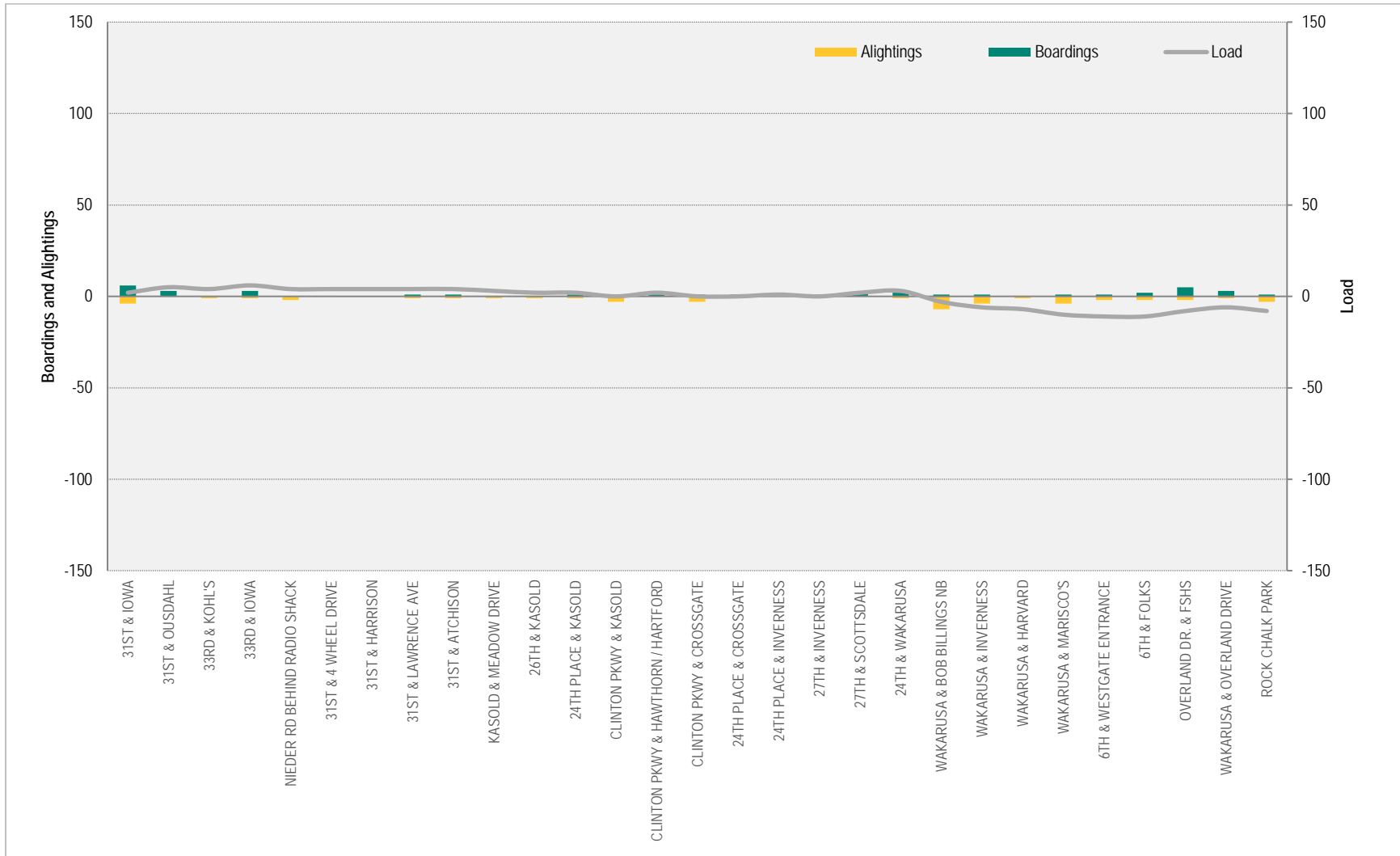
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

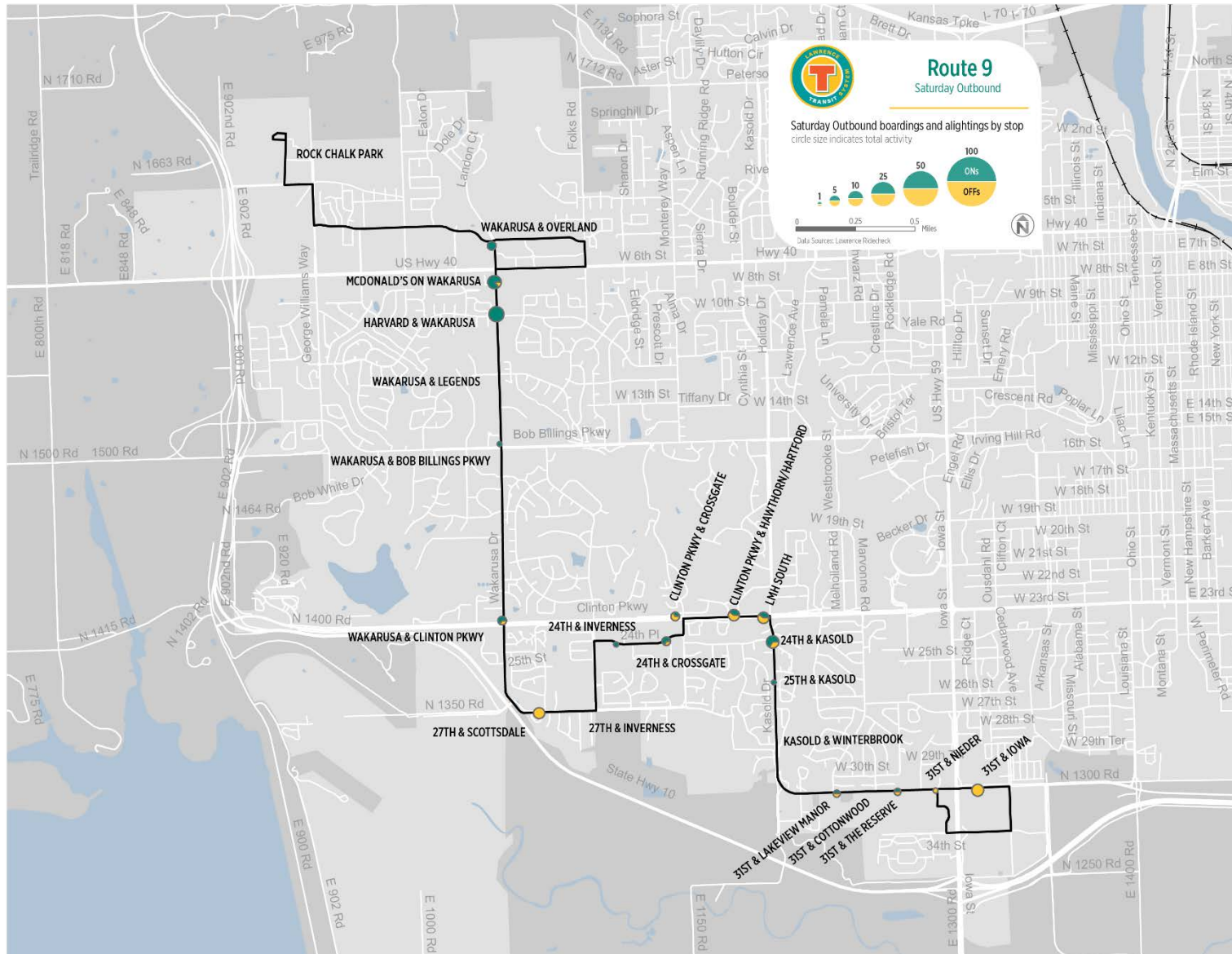
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

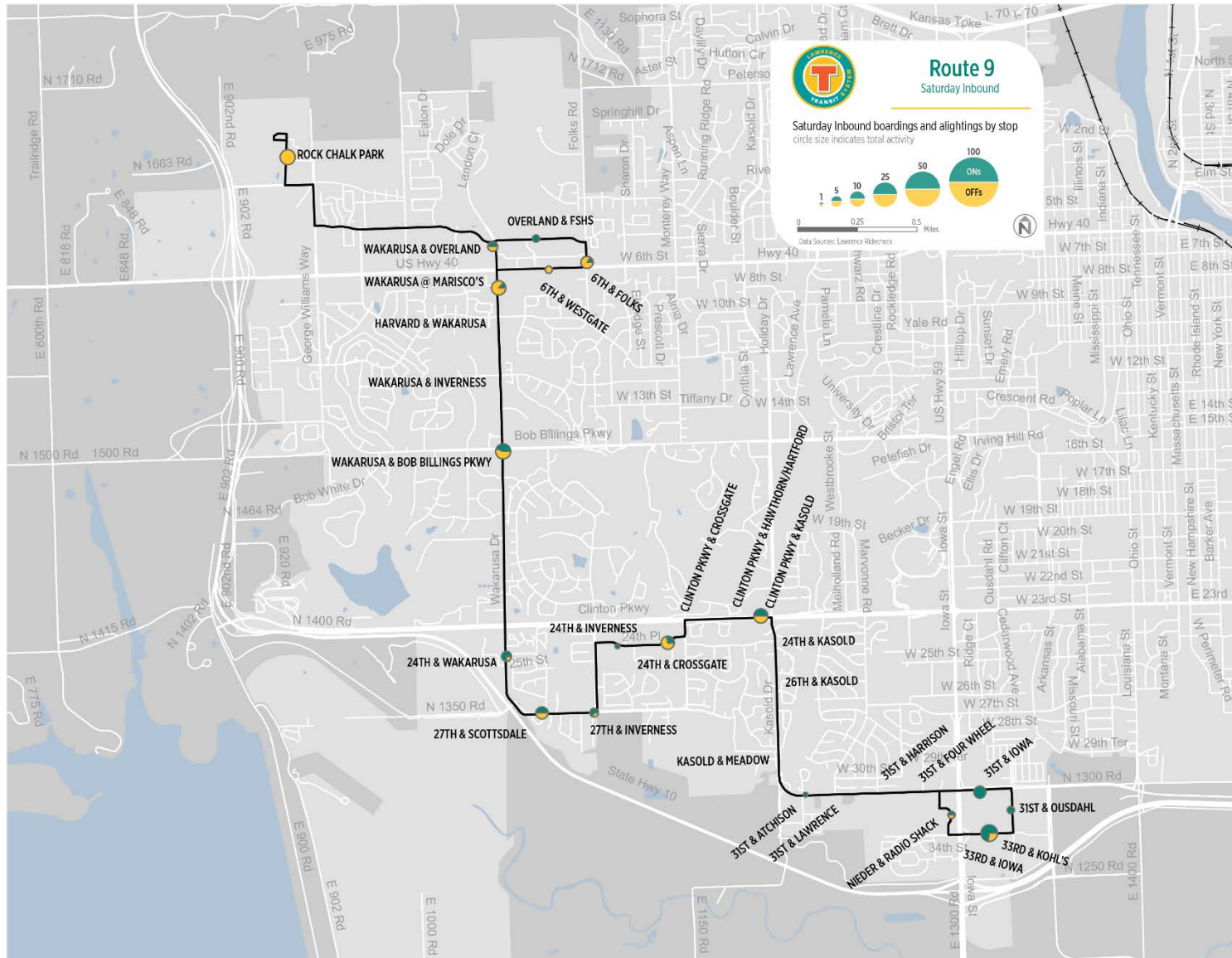
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

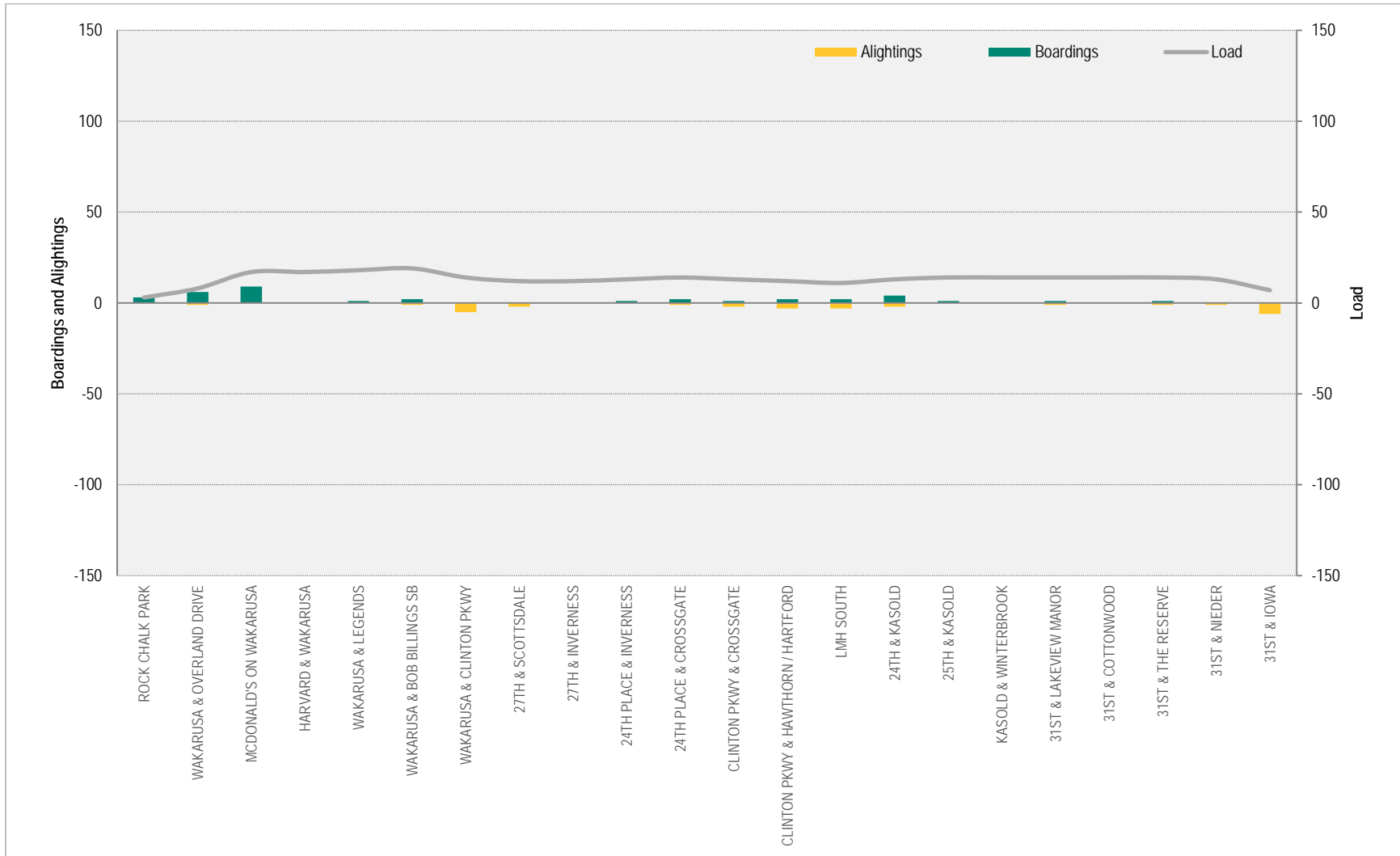
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

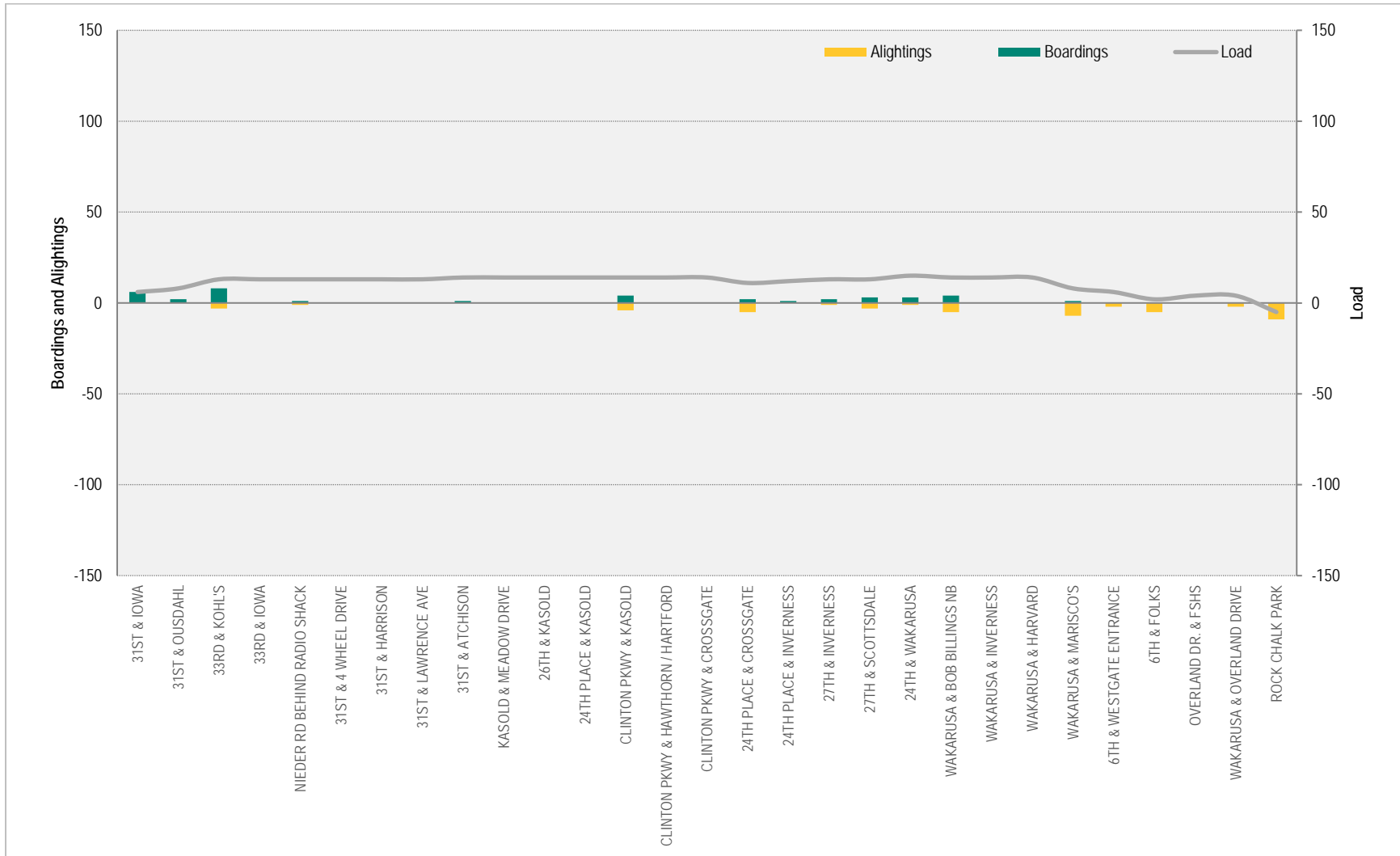
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

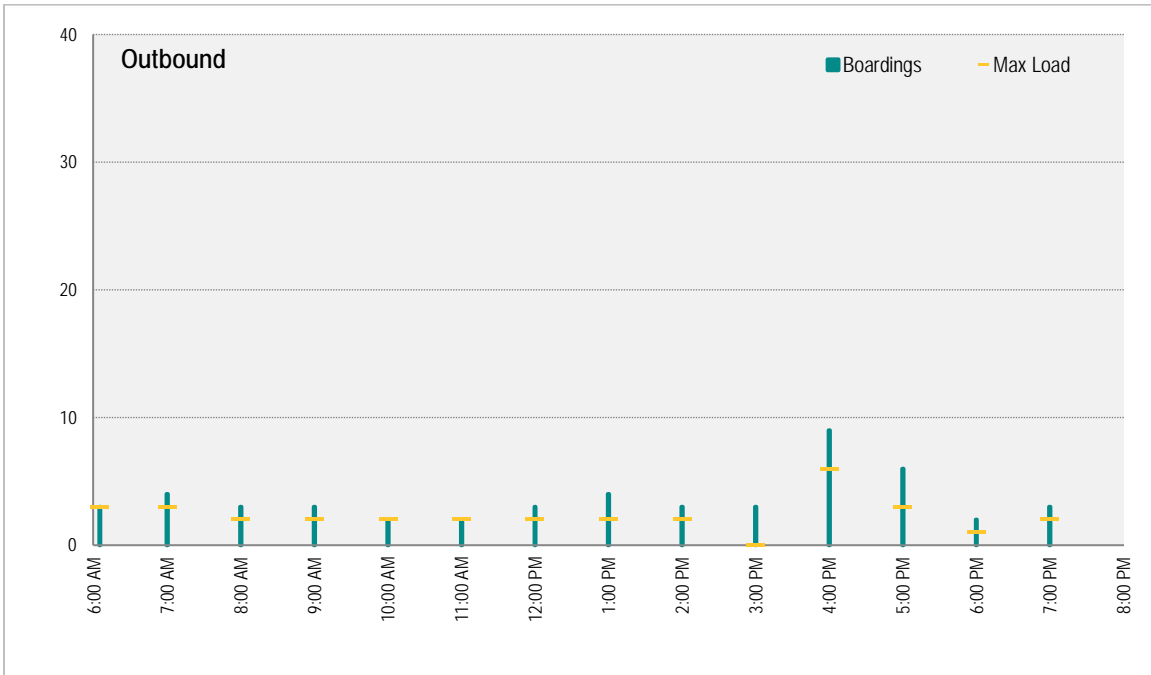
RIDERSHIP BY TRIP

On weekdays, Route 9 ridership is highest during the late afternoon service period, in both the outbound and inbound directions (Figure 18 and Figure 19). During these periods, ridership peaks at nine passengers outbound and eight passengers inbound. No trips in either direction carry more than 10 passengers.

On Saturdays, Route 9 ridership peaks at 2:00 PM in the outbound direction (seven passengers) and at 4:34 PM traveling in the inbound direction (seven passengers) (Figure 20 and Figure 21). No trips in either direction carry more than 10 passengers.

ROUTE EVALUATION | ROUTE 9
Lawrence Transit

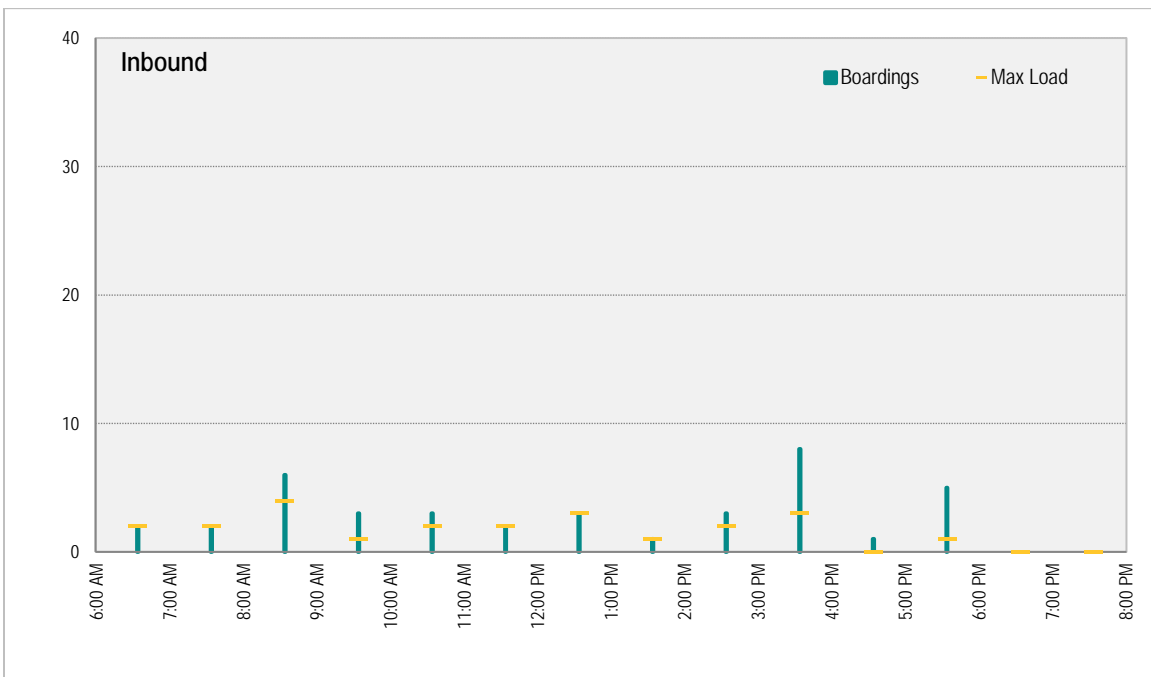
Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

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

Figure 19 | Weekday Inbound Ridership by Trip Chart

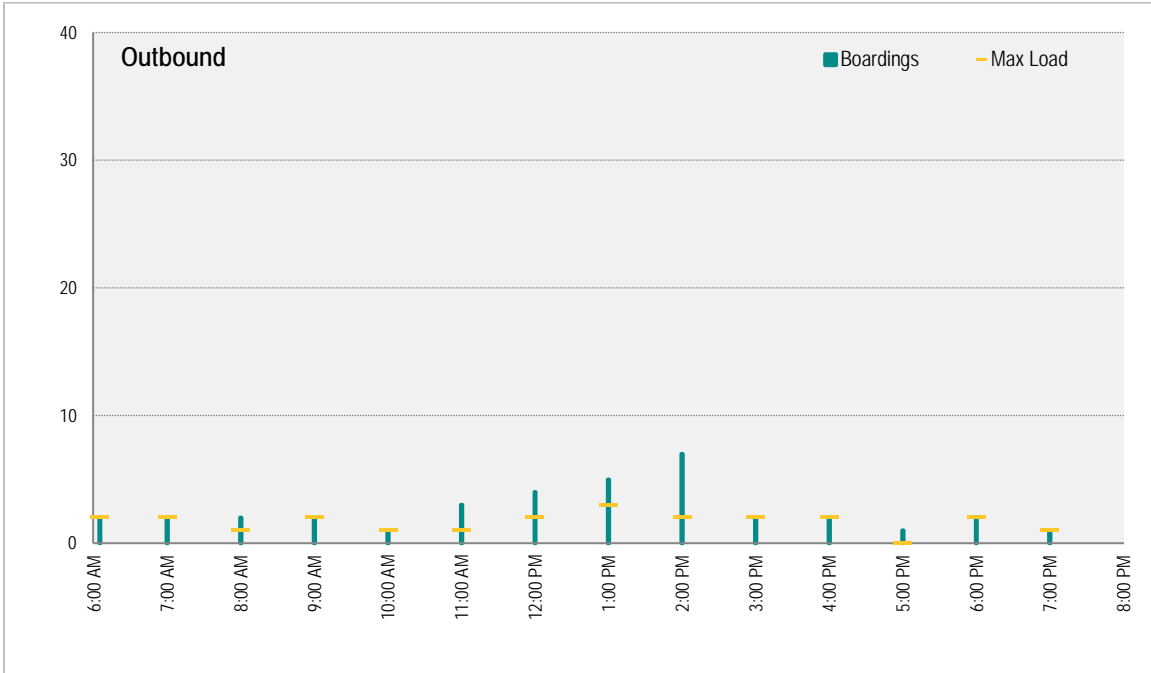


Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

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

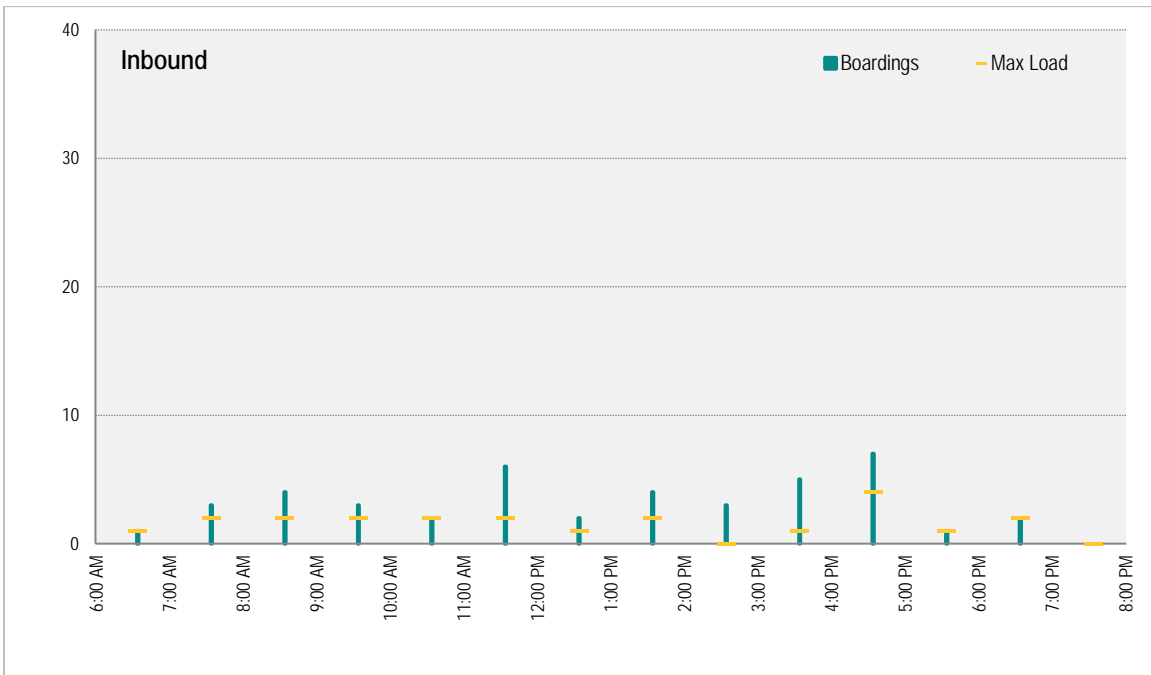
ROUTE EVALUATION | ROUTE 9
Lawrence Transit

Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 21 | Saturday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

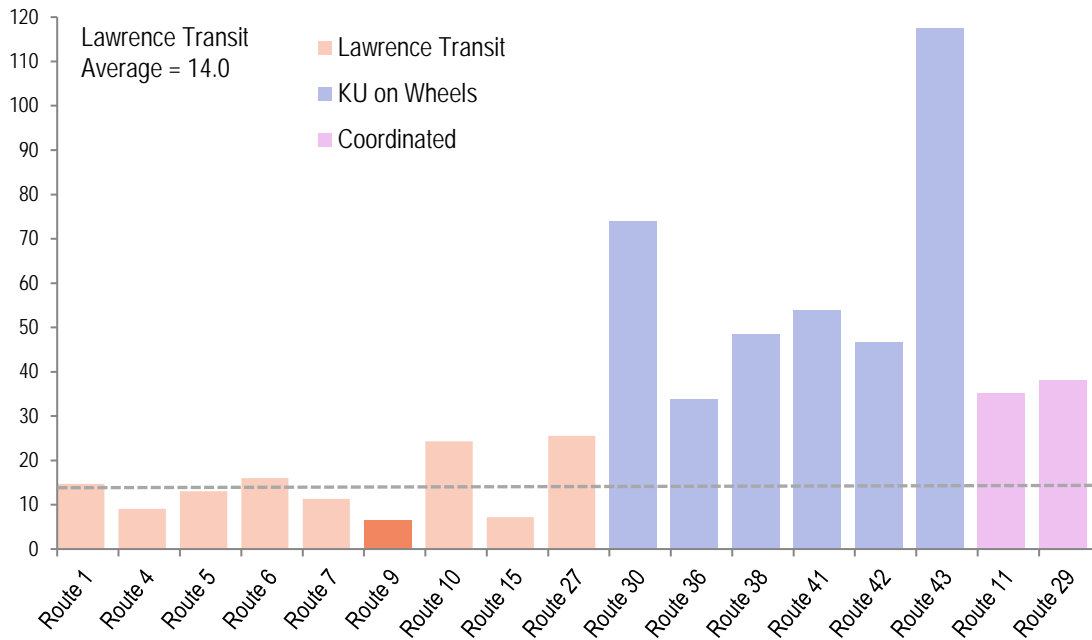
In terms of average passengers per hour, Route 9 is the least productive Lawrence Transit bus route on weekdays (Figure 22). The route carries 6.5 passengers per hour on weekdays, less than half of the system average (Figure 23). Route 9 is the second most productive Lawrence Transit bus route on Saturdays, carrying over twice as many passengers than on weekdays despite operating for the same number of service hours (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	91	14.0	6.5	14.0	9 of 9
Saturday	218	14.0	15.6	9.7	2 of 8

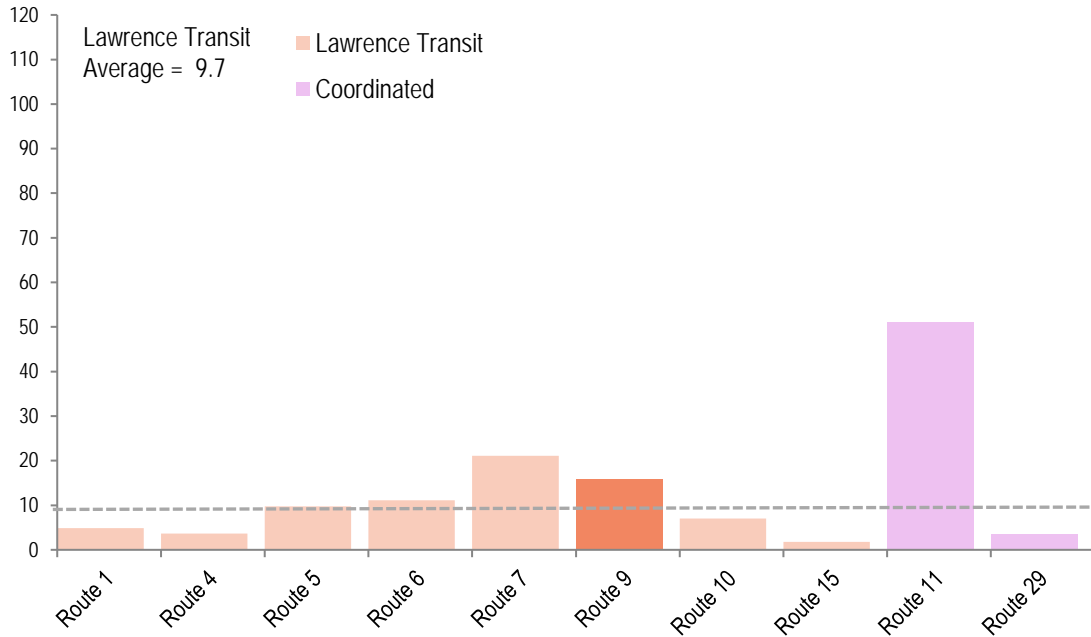
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 41.7% of Route 9 time points were served “on-time” during the survey period (Figure 25). On Saturdays, approximately 15.7% of Route 9 time points were served “on-time” during the survey period.” 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.

Both weekday and Saturday on-time performance were affected by late departures: on weekdays, 55% of time points are served late, while over 80% of Saturday time points are served late.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	41.7%	15.7%
Early	2.8%	2.9%
Late	55.6%	81.4%

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

- **Remove Service to Rock Chalk Park.** Service to Rock Chalk Park is unproductive, especially on weekdays. Connections exist between the park and shopping and low-density residential areas, but these are less useful with no direct connections between the park and KU or downtown Lawrence. Transfer opportunities are also not well-timed and infrequent. Operating service to Rock Chalk Park that has direct connections to downtown and/or KU would likely be more productive.

As of August 1, 2016, Route 6 now operates service to Rock Chalk Park instead of Route 9, creating a direct connection between downtown Lawrence and Rock Chalk Park.

- **Operate Along Clinton Parkway and Iowa Street.** Currently, Route 9 operates along Kasold Drive and 31st Street between Clinton Parkway and Pine Ridge Plaza. This segment of the route is particularly unproductive. Operating a more direct route along Clinton Parkway and Iowa Street would potentially attract more riders by making connections to land uses other than residential areas and improve operations.
- **End Service on Route 9 North of Clinton Parkway.** Though ridership patterns do not show links between origins and destinations, the overall low productivity on Route 9 indicates that few riders need to make the connections provided by the route. In addition, the number of through travelers going from one terminus to the other is likely low, and the segment along Wakarusa Drive between Clinton Parkway and Bob Billings Parkway has no ridership. It may be beneficial to serve parts of Wakarusa Drive with other Lawrence Transit routes, and focus Route 9 on serving Clinton Parkway and the retail areas on Iowa Street.

Lawrence Transit System

ROUTE 10

Downtown to 6th & Wakarusa

SERVICE DESIGN

Route 10 is a Lawrence Transit route that operates between Downtown Lawrence and the intersection of 6th Street and Wakarusa Drive in northwest Lawrence. The route travels primarily along Vermont Street, Jayhawk Drive, Bob Billings Parkway, and Wakarusa Drive (Figure 1). Route 10 provides service to government buildings and retail destinations in Downtown Lawrence, as well as the KU Main Campus, Lawrence Social Security Office, Dillons, Bauer Farm Shopping Center, Free State High School, and the 6th Street Walmart Supercenter.

ALIGNMENT/SERVICE PATTERNS

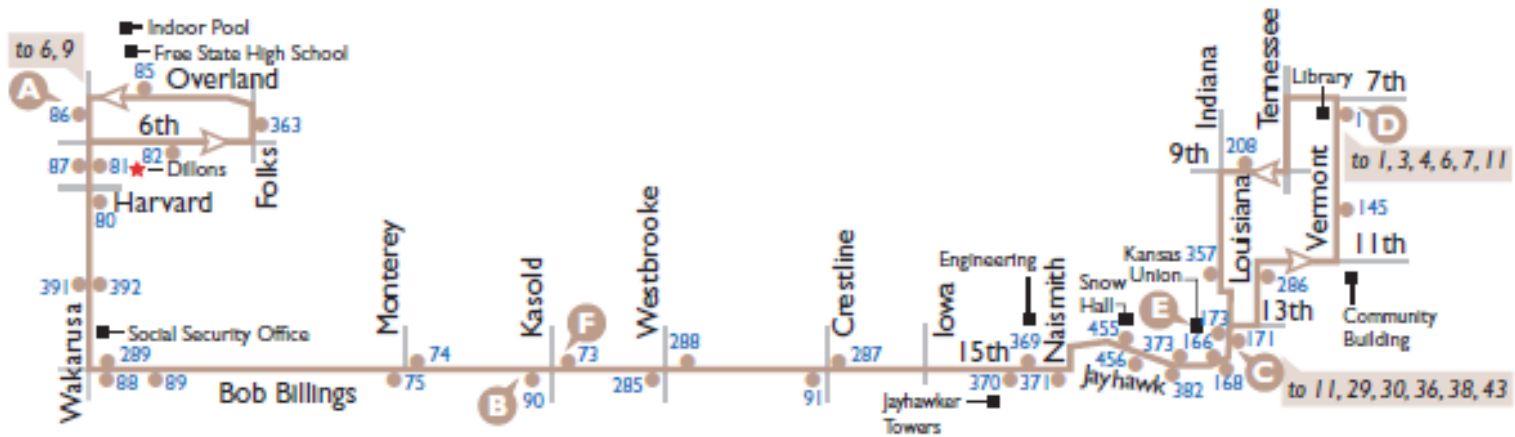
Route 10 has a single consistent service pattern for Weekday and Saturday service. Departing outbound from the intersection of 7th Street and Vermont Street in Downtown Lawrence, Route 10 turns left on 7th Street, left on Tennessee Street, right on 9th Street, left on Indiana Street, left on 12th Street, and right on Oread Avenue before serving the Kansas Union and passing through the KU Main Campus on Jayhawk Drive. The route then continues by turning left on Naismith Drive, right on 15th street, straight across Iowa Drive onto Bob Billings Parkway, right on Wakarusa Drive, right on 6th Street, left on Folks Road, left on Overland Drive, left on Wakarusa, and terminating near the intersection with 6th Street.

Returning inbound from 6th Street and Wakarusa Drive, Route 10 continues along the outbound alignment until reaching the Kansas Union. After serving the Kansas Union, the route continues by turning right on 13th Street, left on Louisiana Street, right on 11th Street, left on Vermont Street, and then terminating just before the intersection with 7th Street.

Figure 1 | Route Map

10 Downtown to 6th & Wakarusa

- A** Timing point
- Bus stop
- # Bus stop number
- ★ Bus pass sales location



Source: Lawrence Transit; August 2015 – August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 10 and several Lawrence Transit and KU on Wheels Routes at 6th Street and Wakarusa, the Kansas Union, and the Downtown Transit Hub (7th & Vermont). There are also transfer opportunities at several other points along the route, including on Wakarusa Drive (Route 9), sections of Bob Billings Parkway (Route 30), 15th Street (Route 29, 30, and 43), Jayhawk Boulevard (Route 11, 29, 30, 36, 38 and 43), and on Vermont Street (Route 1, 7, and 15 (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Wakarusa Drive and Overland Drive	Route 6 and Route 9
Kansas Union	Route 11, Route 29, Route 30, Route 36, Route 38, Route 43
Downtown Transit Hub	Route 1, Route 3, Route 4, Route 6, Route 7, and Route 11

SERVICE SCHEDULE

Route 10 operates Monday–Saturday year round (Figure 3). On weekdays and Saturdays, the route runs every 60 minutes from 6:03 AM to 8:00 PM. Route 10 does not run on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday-Friday	6:03 AM – 8:00 PM	60	14/14
Saturday	6:03 AM – 8:00 PM	60	14/14
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 10 ranks second of nine Lawrence Transit routes in terms of weekday ridership and first of nine in terms of ridership per trip (Figure 4). On average, the route carries 338 passengers per day, or 12.1 passengers per trip, on weekdays (Figure 5 and Figure 6). On Saturdays, Route 10 carries 97 passengers per day, or 3.5 passengers per trip (Figure 7 and Figure 8). Route 10 ridership drops over 70% between weekday and Saturday service.

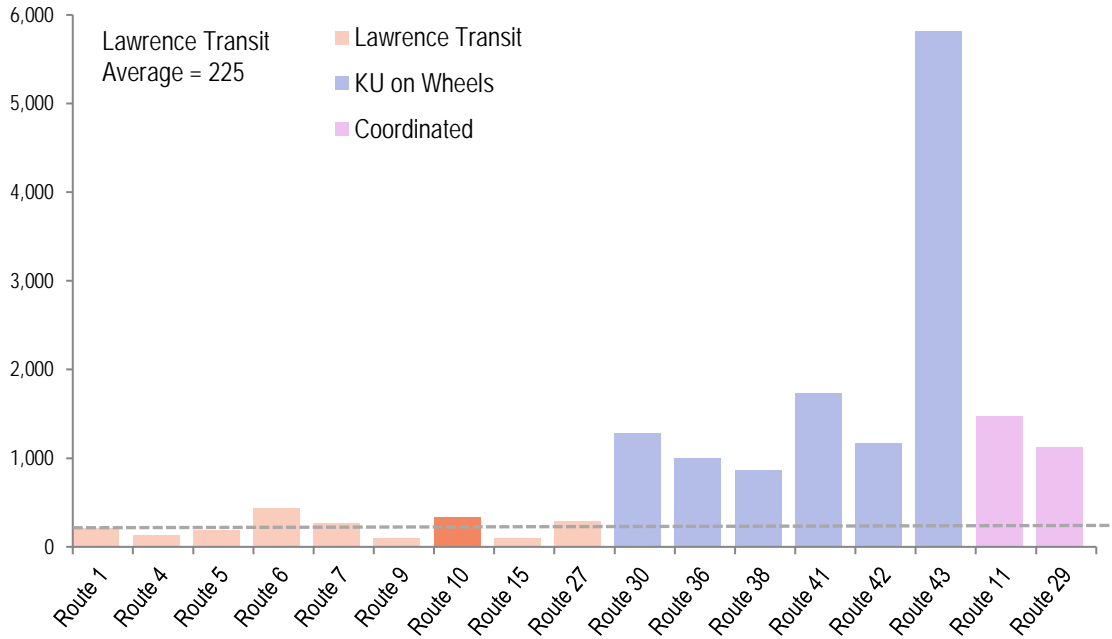
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	338	28	12.1	6.5	1 of 9
Saturday	97	28	3.5	4.7	5 of 8

Source: Lawrence Transit, 2016

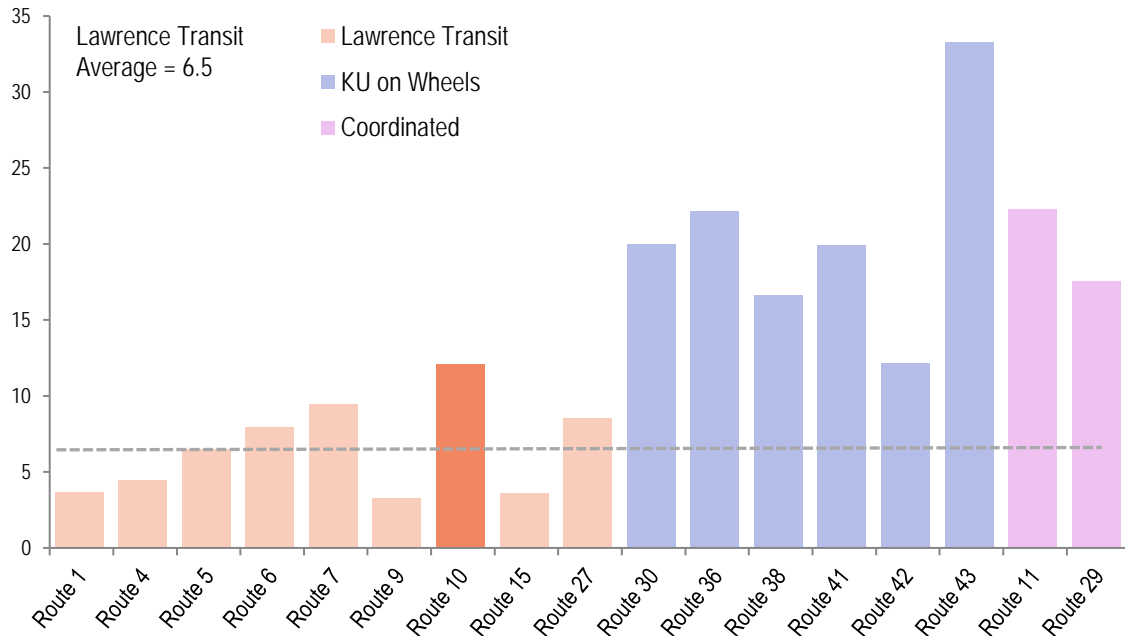
ROUTE EVALUATION | ROUTE 10
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

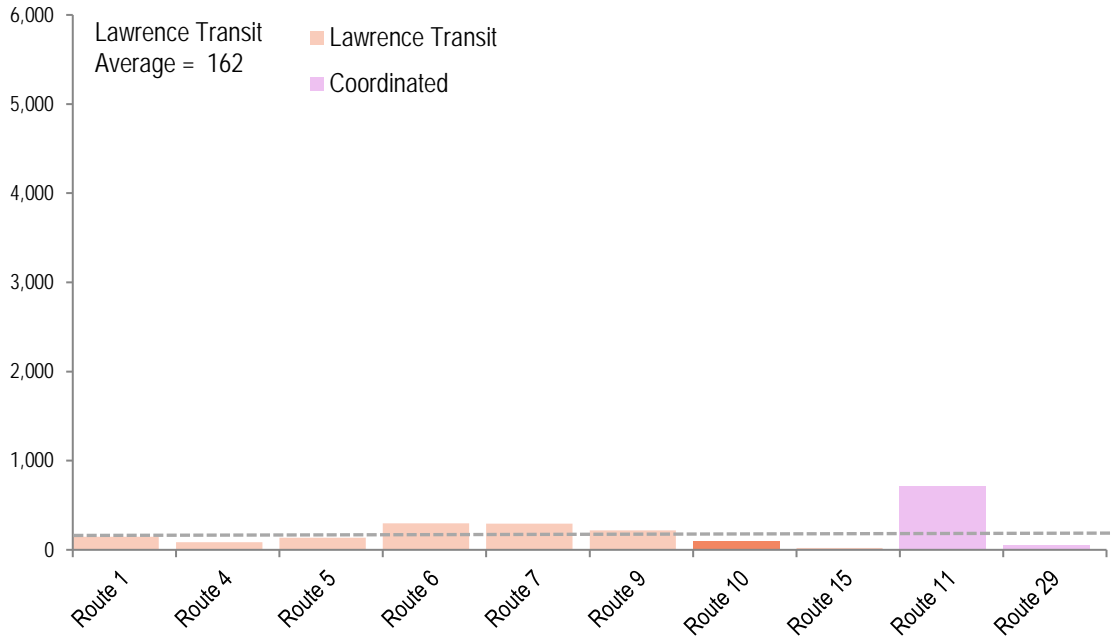
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

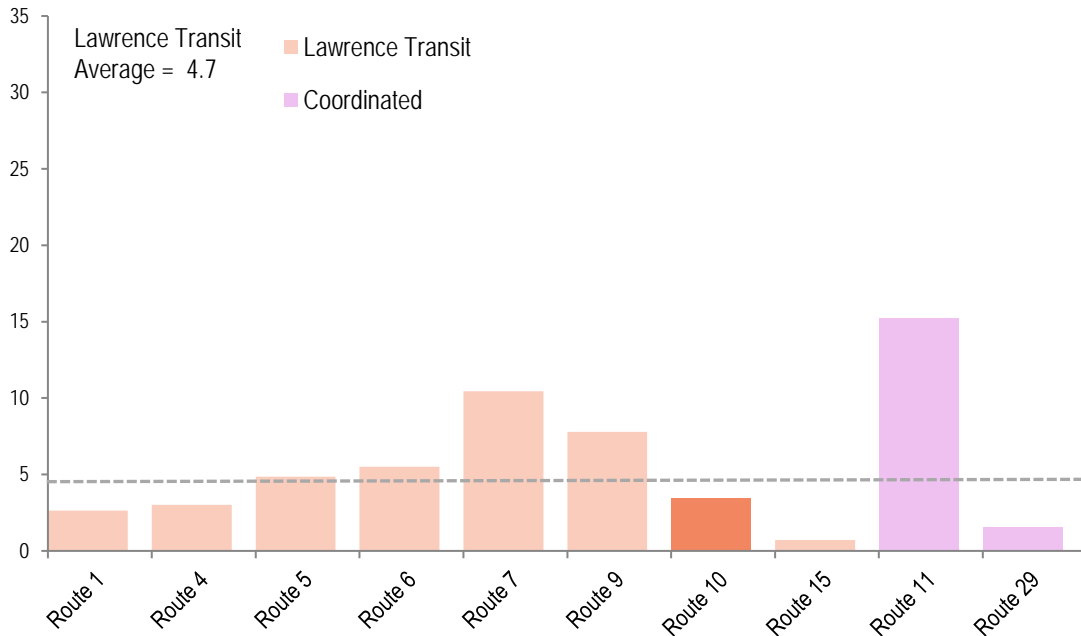
ROUTE EVALUATION | ROUTE 10
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 10 are located on KU’s campus at the Kansas Union, Snow Hall, the Engineering stop, and Jayhawker Towers (Figure 9). Other stops with more than 20 boardings and alightings per weekday include: the Downtown Transit Hub, the Orchards Corners shopping center (Bob Billings and Kasold), and the Bristol Terrace apartment complex (Bob Billings and Bristol Terrace). These stops serve multiple residential areas and several commercial destinations. All other stops serve fewer than 20 boardings and alightings (Figure 10-Figure 13).

Saturday ridership patterns are similar to weekday patterns, but with significantly lower volumes (Figure 14-Figure 17). Ridership on routes serving college campuses typically declines disproportionately on weekends when classes are not in session.

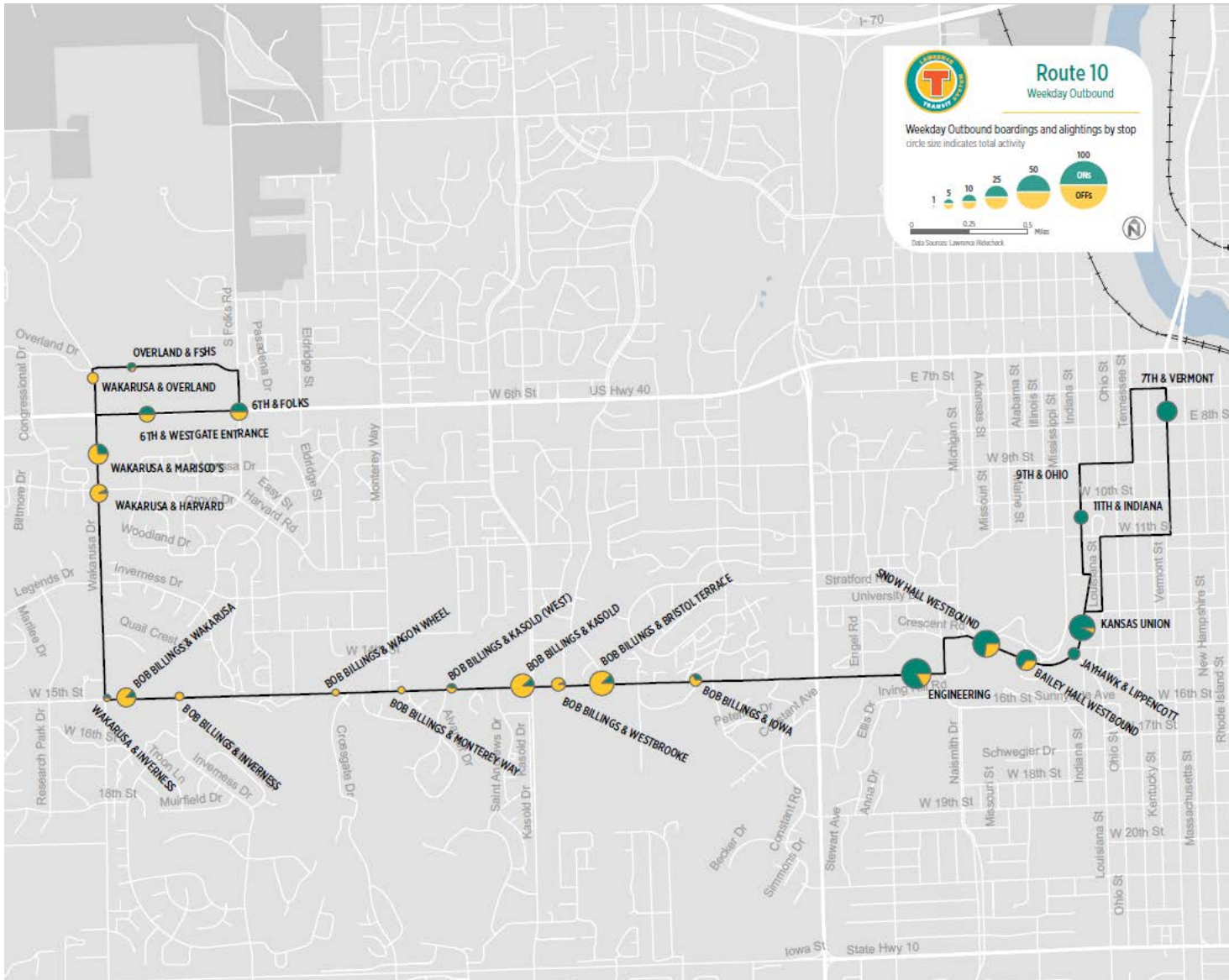
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Jayhawker Towers	54	Jayhawker Towers Apartments, School of Law
Engineering	36	School of Engineering, School of Law
Bob Billings and Bristol Terrace	35	Bristol Terrace Apartments
Snow Hall	30	Department of Engineering and Mathematics
Kansas Union	28	Kansas Union

*Weekday ridership (boardings and alightings) for Route 10 only

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

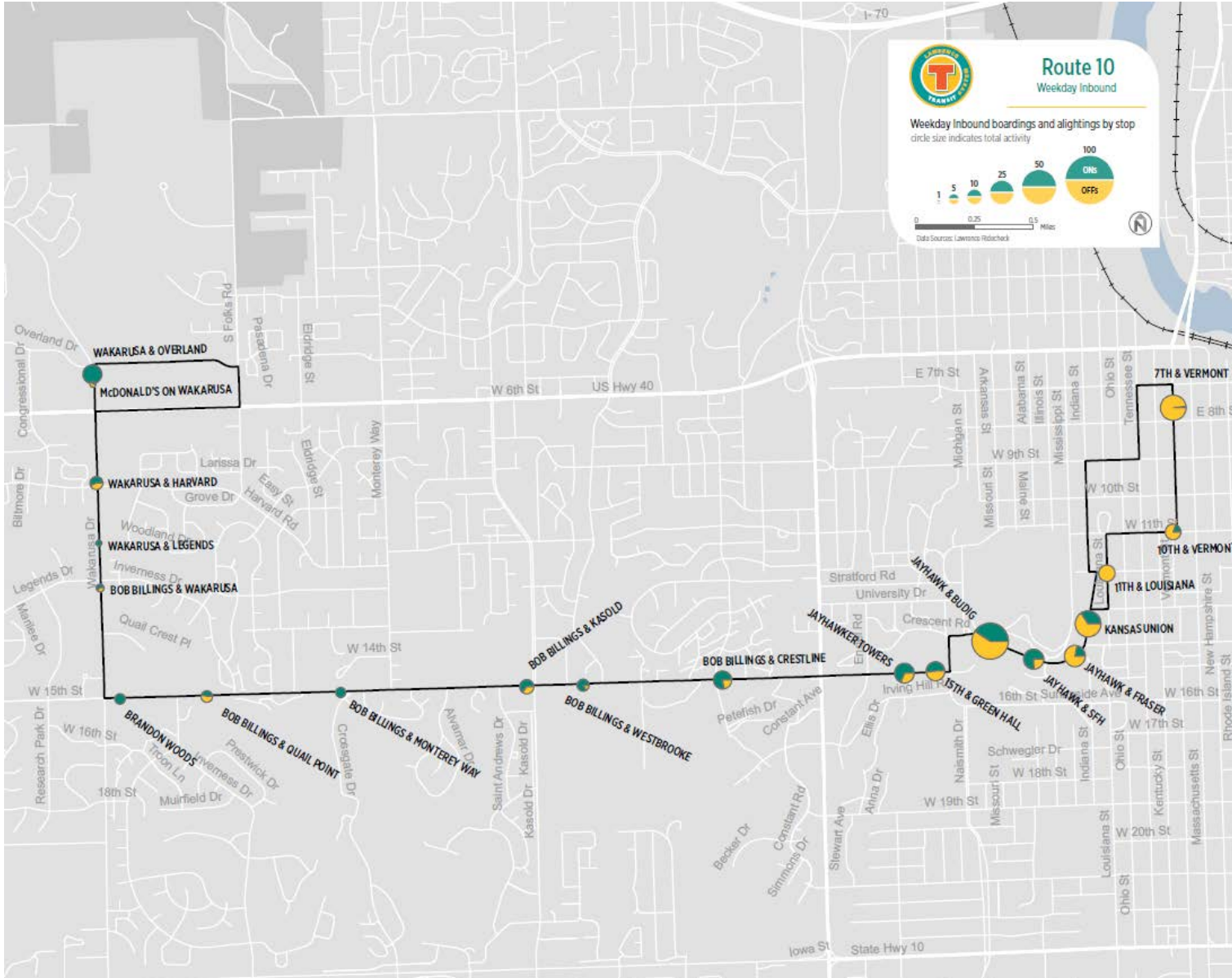
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

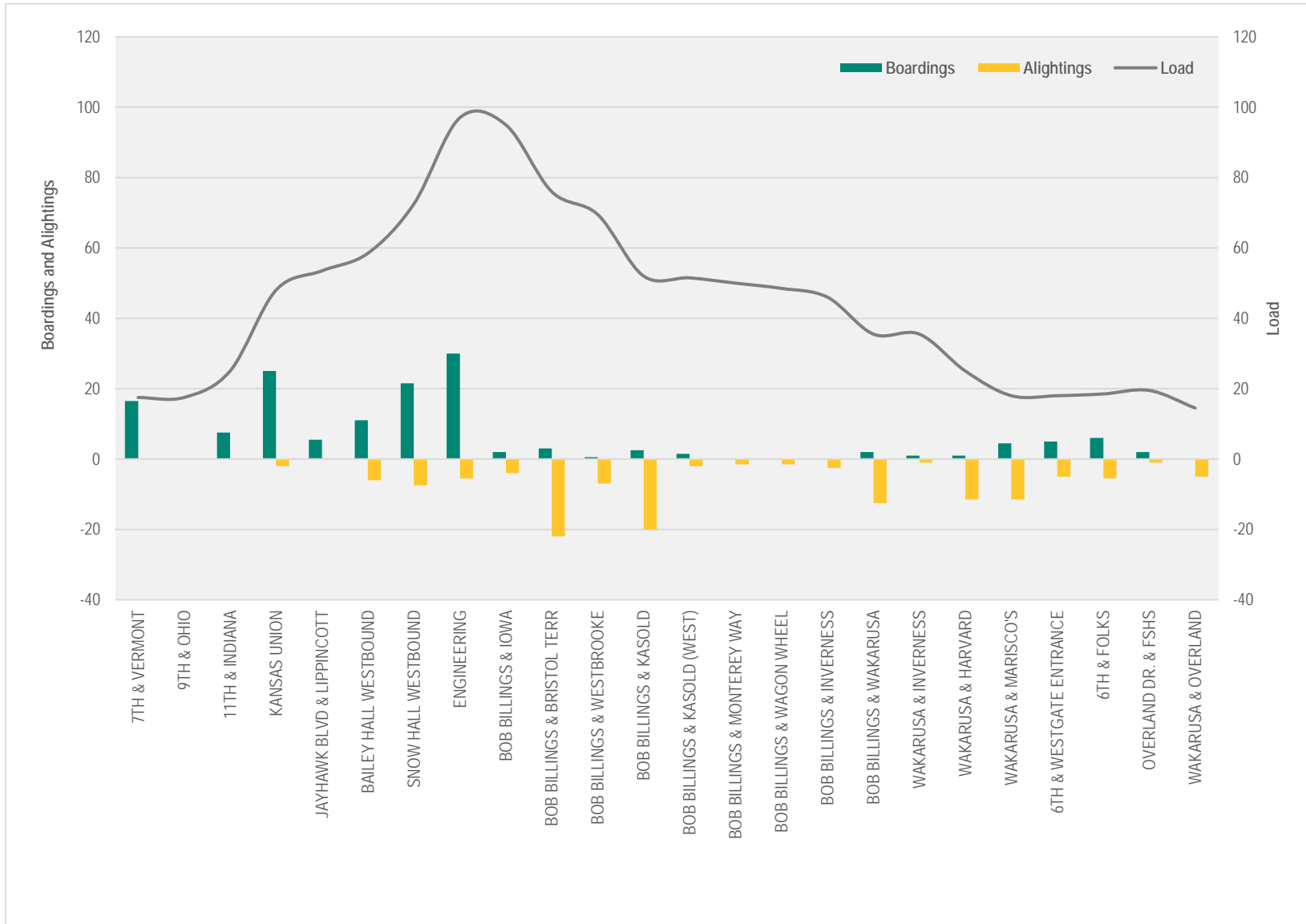
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

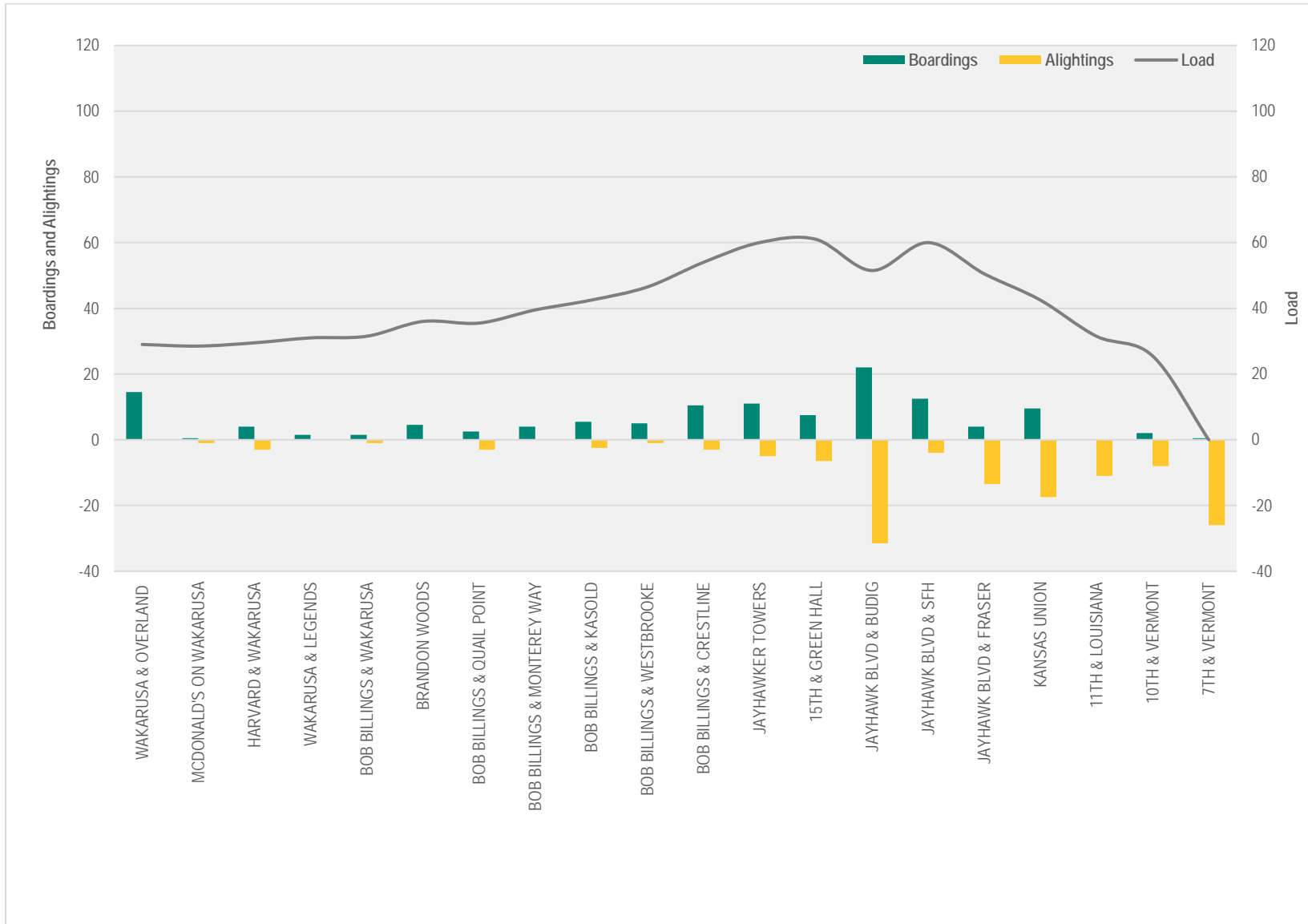
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

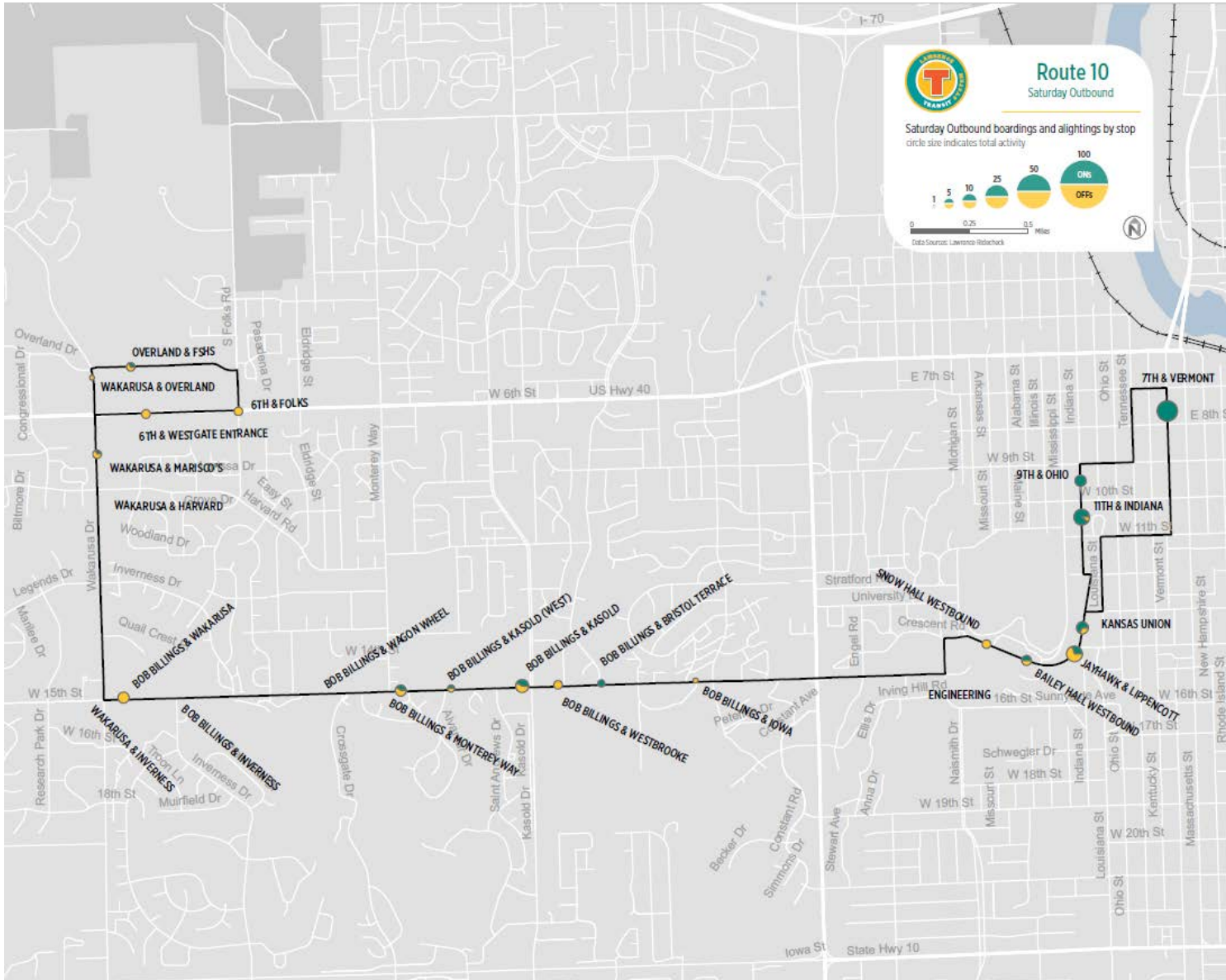
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

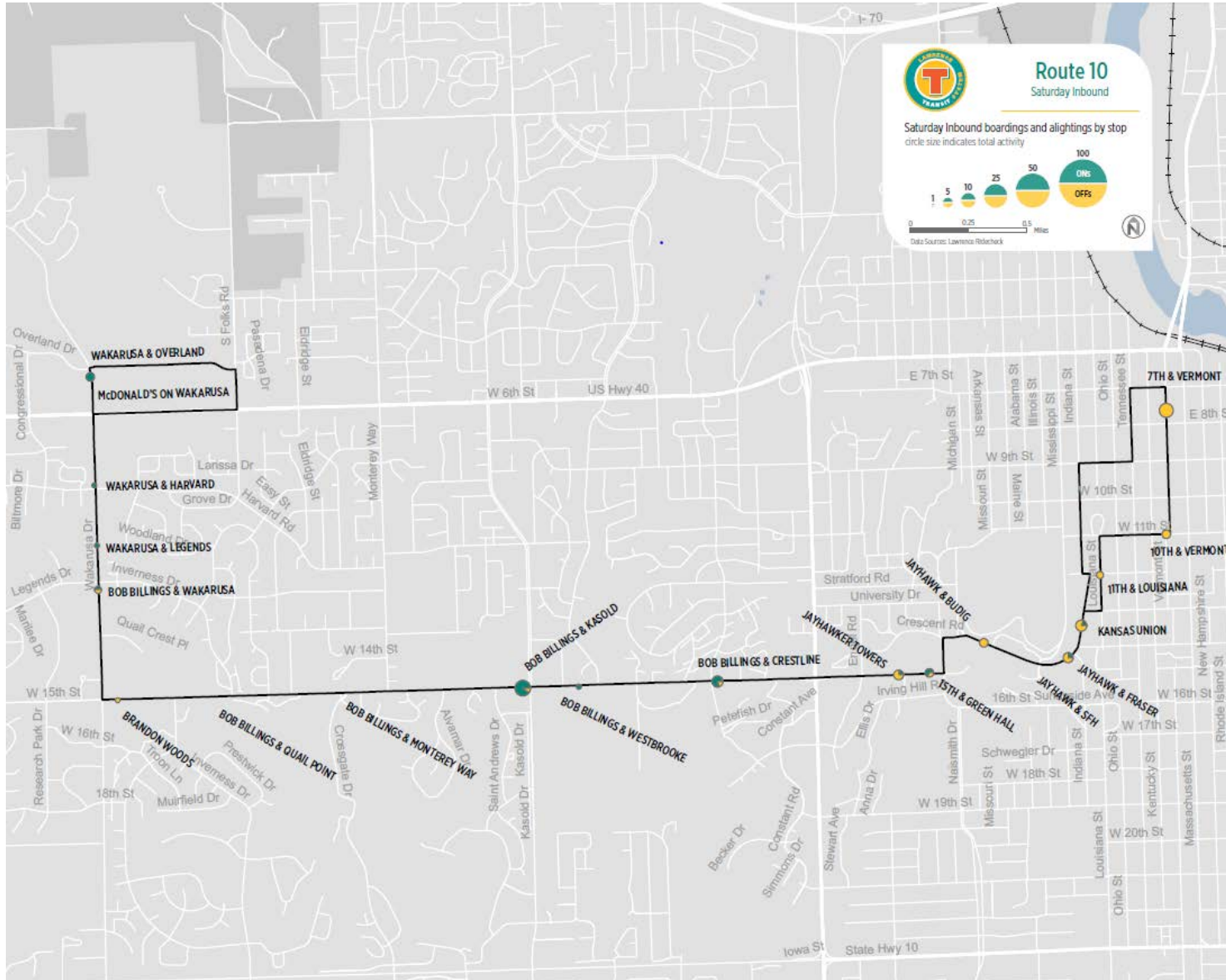
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

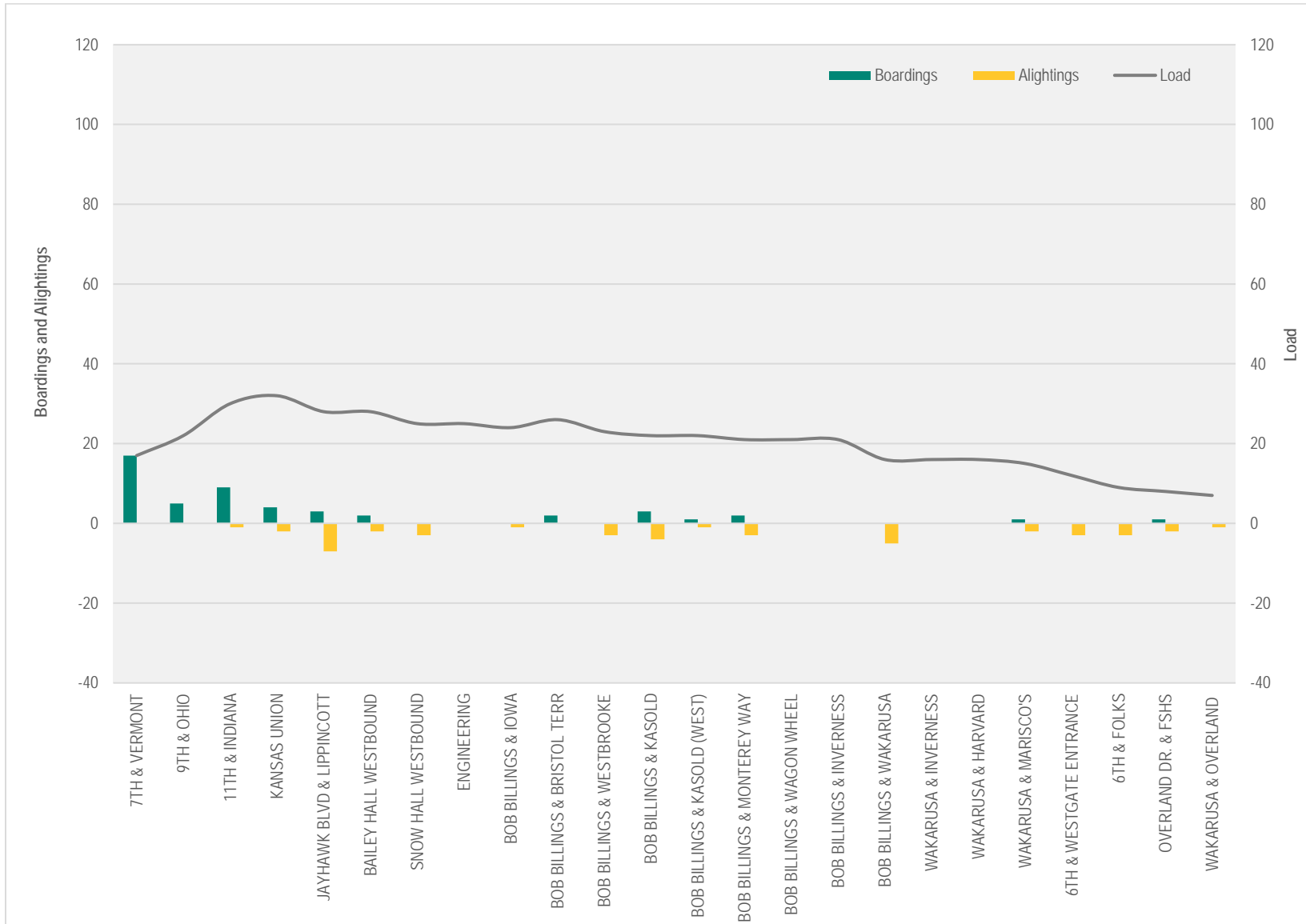
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

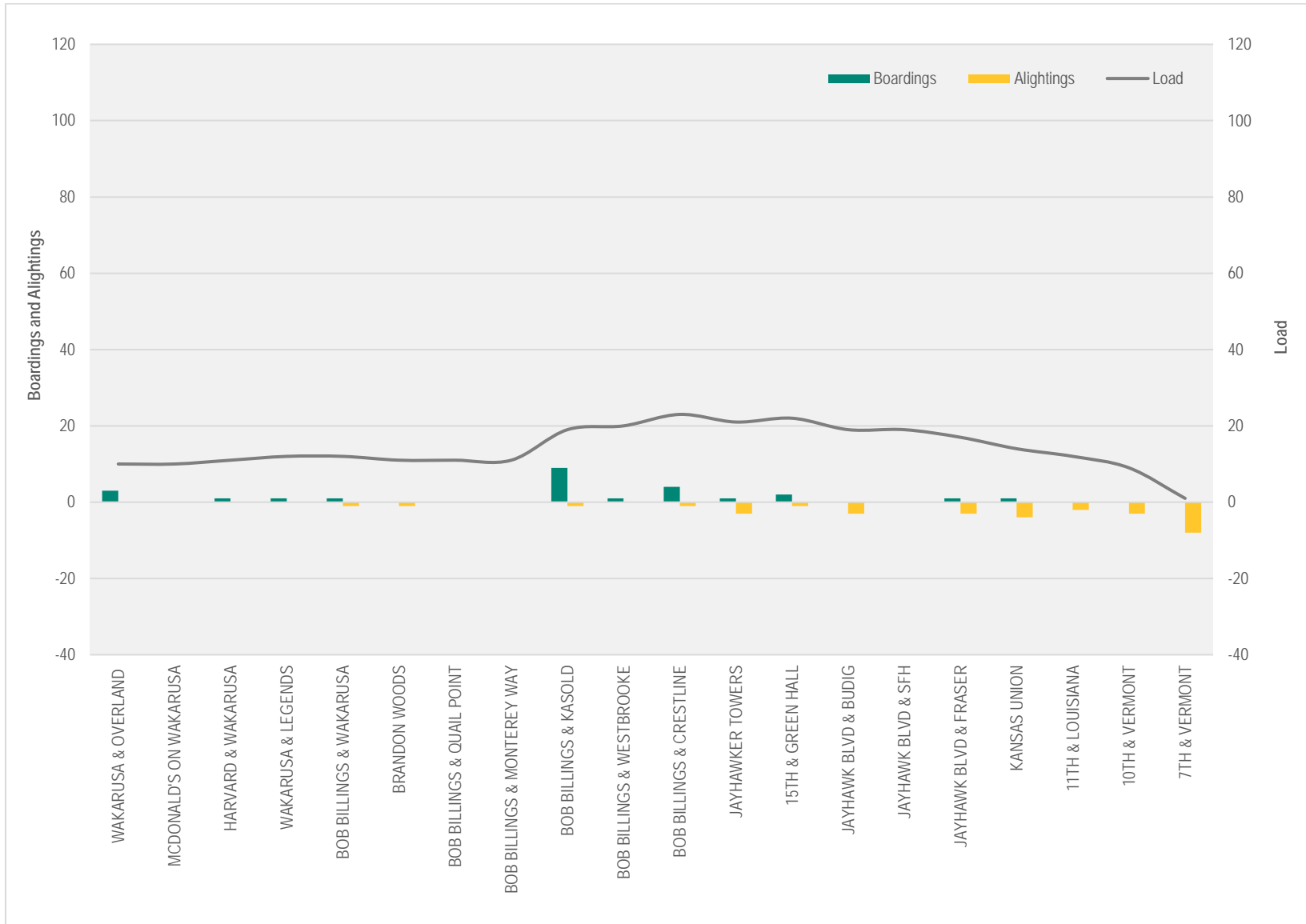
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 10
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



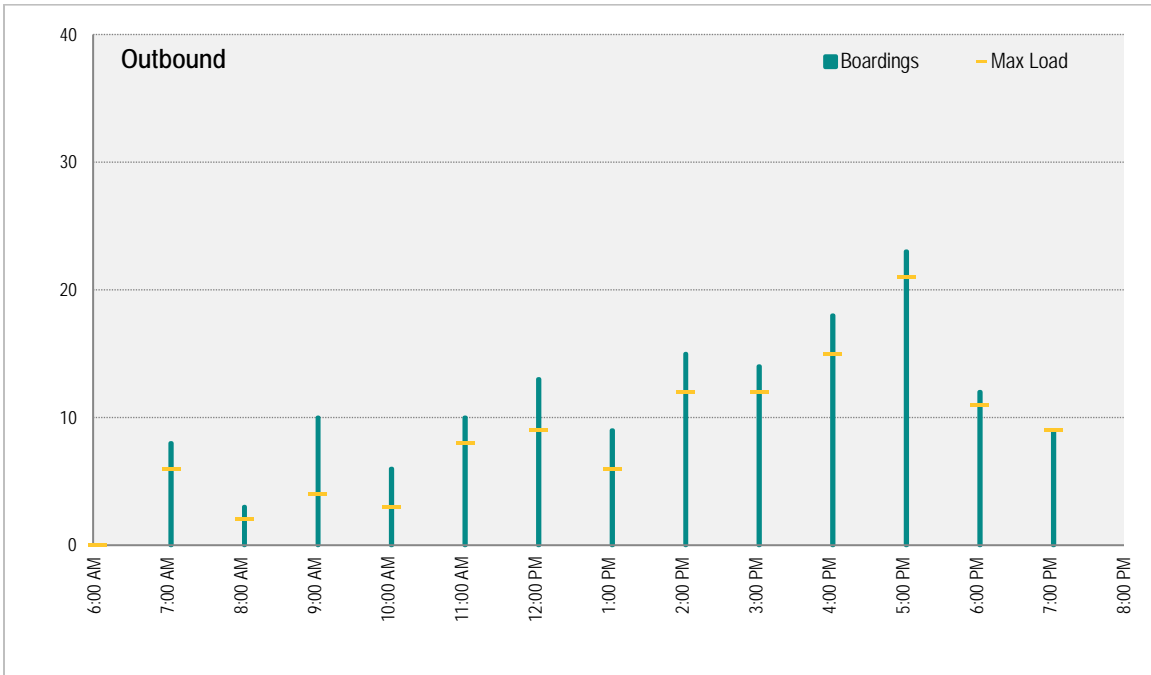
Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

On weekdays, Route 10 ridership is highest in the outbound direction in the early evening, when KU students, faculty, and staff are leaving campus; boardings peak at 5:03 PM, with an average of 23 passengers per trip. Inbound ridership is highest during the midday period (1:00 – 3:00 PM), when trips average 18-19 passengers (Figure 18 and Figure 19).

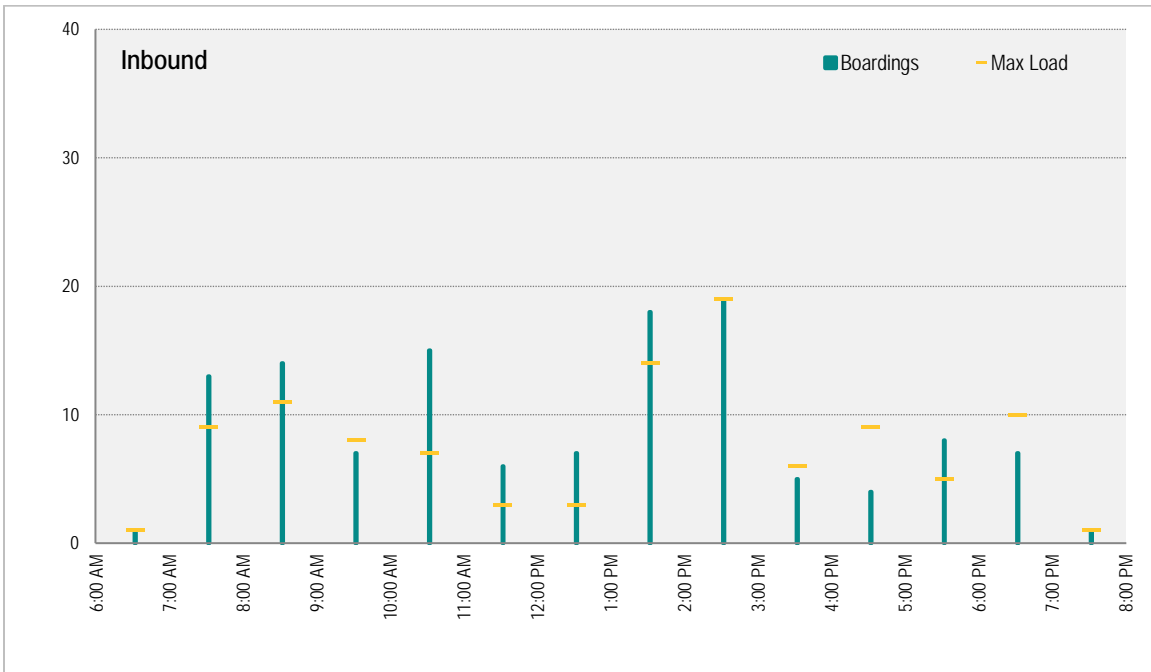
On Saturdays, Route 10 ridership is highest in the outbound direction from 2:00 – 6:00 PM. This period averages seven boardings per trip, and peaks at nine passengers per trip at 6:03 PM (Figure 20 and Figure 21).

Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

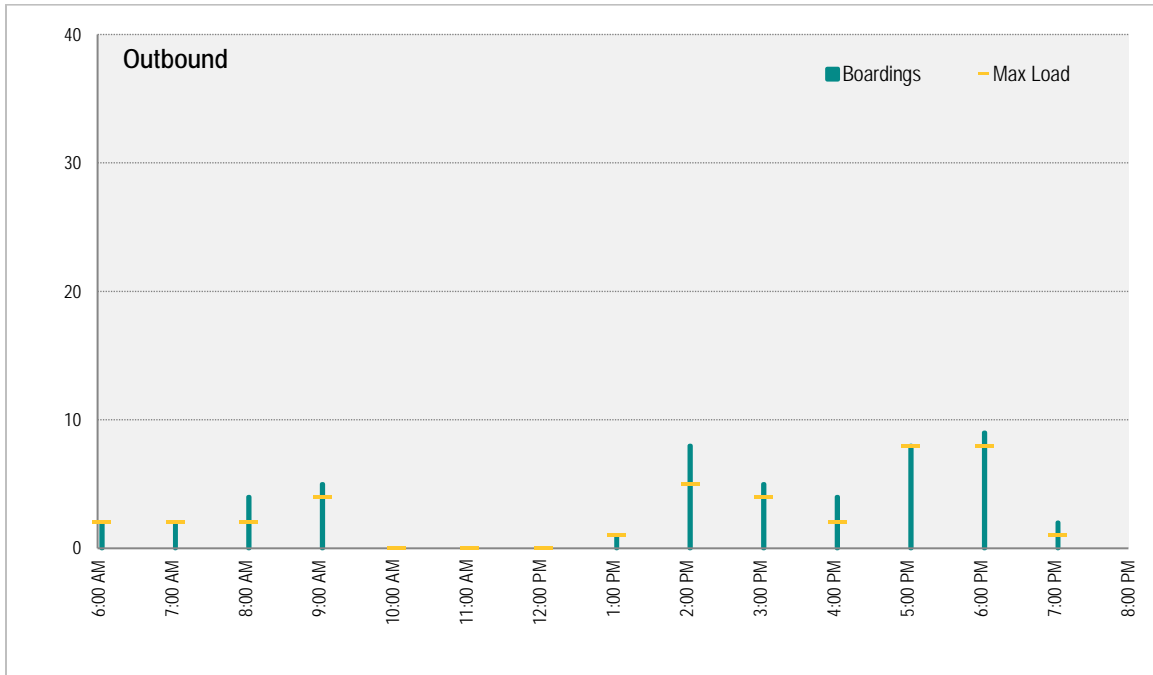
Figure 19 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

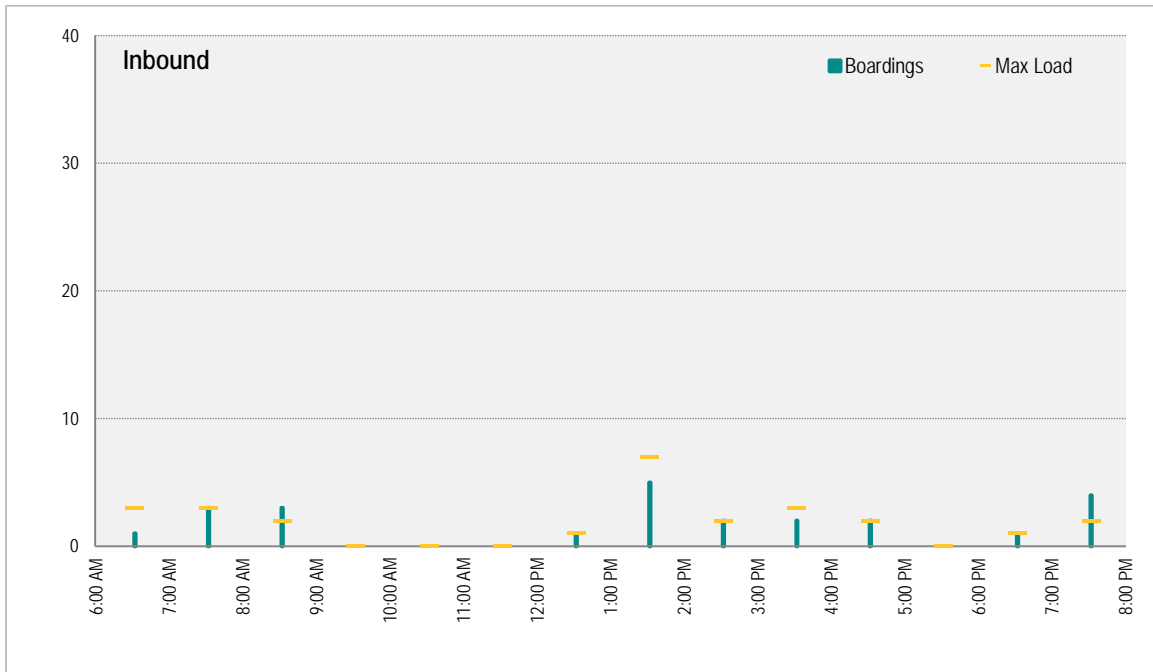
ROUTE EVALUATION | ROUTE 10
Lawrence Transit

Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

Figure 21 | Saturday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.

SERVICE PRODUCTIVITY

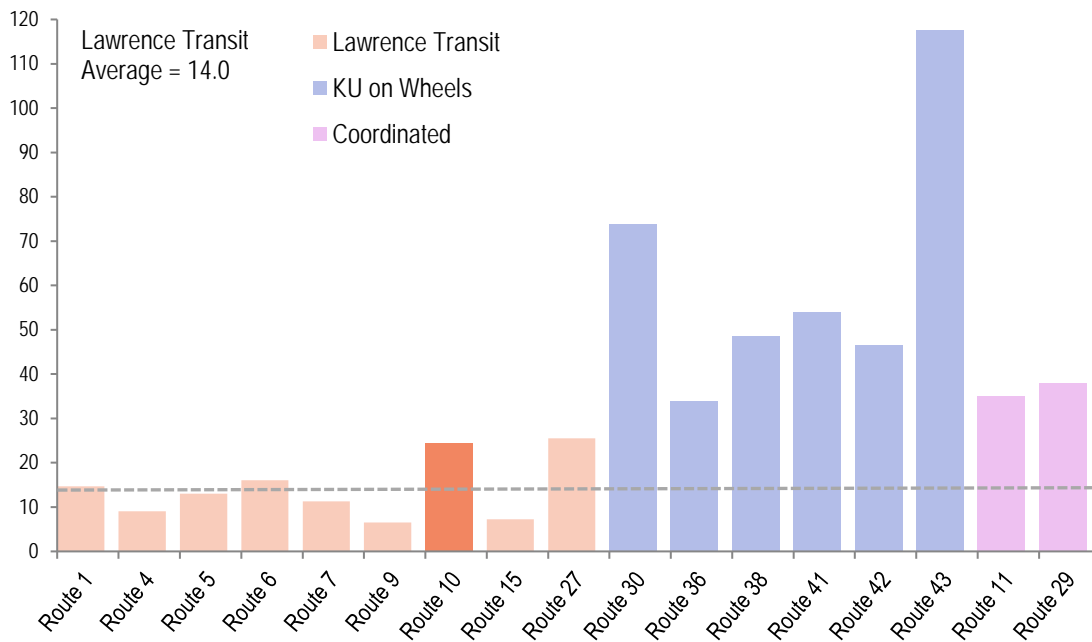
In terms of average passengers per hour, Route 10 is the second most productive Lawrence Transit bus route (Figure 22). The route carries 24.3 passengers per hour on weekdays, exceeding the system average by 74% (Figure 23). Route 10 carries 7.0 passengers per hour on Saturdays (Figure 24).

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	338	13.9	24.3	14.0	2 of 9
Saturday	97	13.9	7.0	9.7	6 of 8

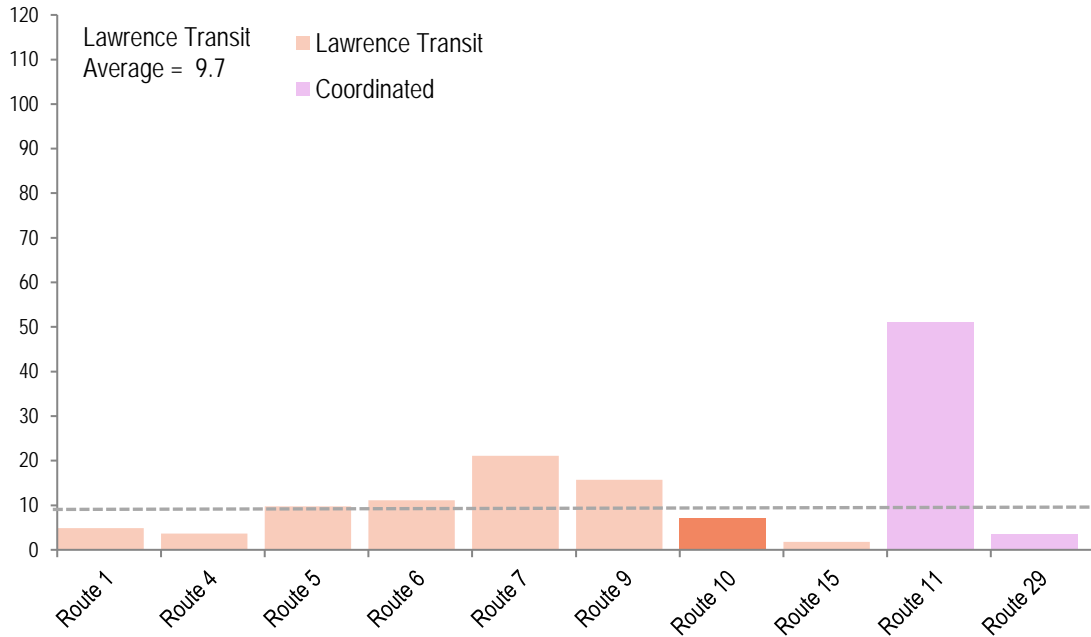
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 58% of Route 10 time points were served “on-time” during the survey period (Figure 25). 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. On Saturdays, approximately 70% of Route 10 time points were served “on-time” during the survey period.

Weekday on-time performance was affected by a high rate of late departures: four outbound time points and six inbound time points recorded delays of 10 minutes or more. On Saturdays, 14% of time points are served early, with buses departing before their scheduled departure time.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	58%	70%
Early	6%	14%
Late	38%	14%

Note: Trip data does not include all time points per trip.

Source: Ride Check, April and May 2016

POTENTIAL SERVICE IMPROVEMENT OPTIONS

Opportunities to strengthen Route 10 are listed below. Some suggestions may be contradictory, as there is usually more than one approach to improving a route.

- **Extend Service to George Williams Way.** Ridership on Route 10 is clustered around KU, with some additional ridership along Bob Billings Parkway west of KU and at the downtown transit hub. Wakarusa Drive shows weaker ridership. The market analysis shows some demand for service along Bob Billings Parkway past Wakarusa Drive. Removing service along Wakarusa Drive and extending Route 10 west along Bob Billings Parkway to George Williams Way would straighten the route and add service to western Lawrence, including to Corpus Christi Catholic School and Ironwood Court Apartments.
- **Remove Service to Free State High School.** Current cycle time on Route 10 is 57 minutes, leaving little recovery time and potentially causing Route 10's low on-time performance. Ridership is very low at Free State High School, and removing service from the school would affect few riders. Turning the bus around near the corner of Wakarusa Drive and 6th Street, potentially at the Walmart, will allow for a slightly shorter one-way running time.
- **Interline Route 10 with Another Route.** As an alternative to removing service to Free State High School, Route 10 could be interlined with another route to improve its on-time performance. If one route has insufficient running time, and another has running time to spare, operationally linking the routes together can optimize running time and recovery time on both routes. To interline two routes, they must have a common terminus and justify similar levels of service.
- **Begin Service at 7:03 AM; End Service after the 7:03 PM Departure.** Service on Route 10 currently begins at 6:03 AM and ends at 8:00 PM (last departure at 7:32 PM). Low ridership on departures before 7:00 AM and after 7:00 PM indicates that the resources necessary to operate that service could be better spent elsewhere. As a result, reducing the service span to approximately 7:00 AM to 7:00 PM would benefit users in some other way or on some other part of the system.
- **Improve Frequency on Weekdays.** Hourly service is not frequent enough to attract users who have other transportation options. Lawrence Transit has had a goal of improving most routes in the system to a frequency of 30 minutes or less. With Route 10's strong performance compared to other Lawrence Transit's routes, 30-minute frequency on weekdays could further improve ridership by attracting new users and facilitating more trips by current users.

As of August 1, 2016, Route 10 now operates on a 30-minute service frequency Monday through Saturday.

Lawrence Transit System

ROUTE 15

Downtown to the Peaslee Center

SERVICE DESIGN

Route 15 is a radial route that operates between Downtown Lawrence and the East Hills Business Park. The route travels primarily along Connecticut Street, 11th Street, Haskell Avenue, 23rd Street, and Venture Park Drive (Figure 1). Route 15 provides service to the U.S. Post Office, Lawrence Public Library, Lawrence Municipal Court, Douglas County Government Offices, East Lawrence Recreation Center, Central Middle School, Peaslee Technical Training Center, Lawrence Community Shelter, and East Hills Business Park.

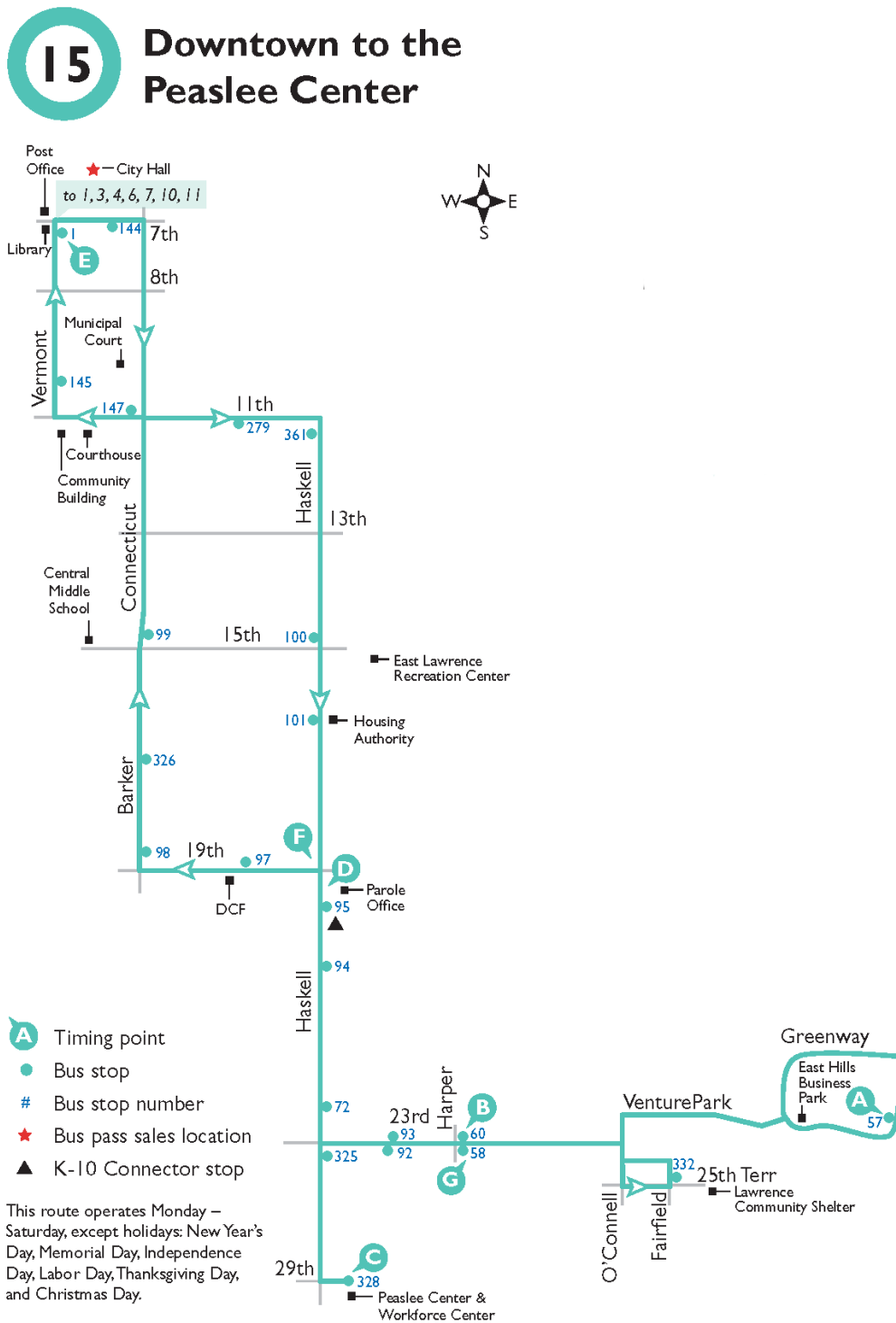
ALIGNMENT/SERVICE PATTERNS

Route 15 has one primary service pattern for Weekday and Saturday service. Departing outbound from the intersection of 7th Street and Vermont Street in Downtown Lawrence, Route 15 turns right on 7th Street, right on Connecticut Street, left on 11th Street, right on Haskell Avenue, left on 29th Street and into the Peaslee Center parking lot. After serving the Peaslee Center, Route 15 turns right on Haskell Avenue, right on 23rd Street, and completes a small loop to serve the Lawrence Community Shelter. After leaving the shelter, Route 15 continues north to reach Venture Park Drive, where it turns right and serves the East Hills Business Park, terminating near the General Dynamics building.

Returning inbound from the General Dynamics building, Route 15 heads west on Venture Park Drive and 23rd Street, south on Haskell Avenue, and turns left on 29th Street to enter the Peaslee Center parking lot. After serving the Peaslee Center, Route 15 turns right on Haskell Avenue, left on 19th Street, right on Barker Avenue, continues onto Connecticut Street, turns left on 11th Street, and right on Vermont Street, terminating just before the intersection with 7th Street.

As of August 1st, 2016, Route 15 serves the East Hills Business Park via a slightly different alignment, no longer serves the Lawrence Community Shelter, and does not operate along Haskell Avenue north of 19th Street. The route operates bi-directionally along Connecticut Street and Barker Avenue.

Figure 1 | Route Map



Source: Lawrence Transit, August 2015-July 2016
New route alignment effective as of August 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 15 and several Lawrence Transit routes and routes coordinated with KU on Wheels at the downtown transit hub (7th & Vermont). There are also transfer opportunities at several other points along the route, including on Connecticut Street (Route 1), 23rd Street (Route 5), and Greenway Drive (Route 5). Transfer opportunities to the K-10 Connector are also available on Haskell Avenue (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Downtown Transit Hub	Route 1, Route 3, Route 4, Route 6, Route 7, Route 10, and Route 11
Haskell Avenue and 23rd Street	Route 1, Route 5
23rd Street and Harper	Route 1, Route 5

SERVICE SCHEDULE

Route 15 operates from Monday–Saturday year round (Figure 3). On weekdays and Saturdays, the route runs every 60 minutes from 6:30 AM to 7:55 PM. Route 15 does not run on Sundays.

Figure 3 | Schedule Statistics

SERVICE DAY	SPAN OF SERVICE	FREQUENCY (MIN)	DAILY TRIPS (OUTBOUND/INBOUND)
Monday–Friday	6:34 AM – 7:55 PM	60	14/14
Saturday	6:34 AM – 7:55 PM	60	14/14
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 15 ranks eighth of nine Lawrence Transit routes in terms of weekday ridership and eight of nine in terms of ridership per weekday trip (Figure 4). On average, the route carries 100 weekday passengers, or 3.6 passengers per trip, on Monday–Friday (Figure 5 and Figure 6). On Saturdays, Route 15 carries 20 passengers, or 0.7 passengers per trip (Figure 7 and Figure 8).

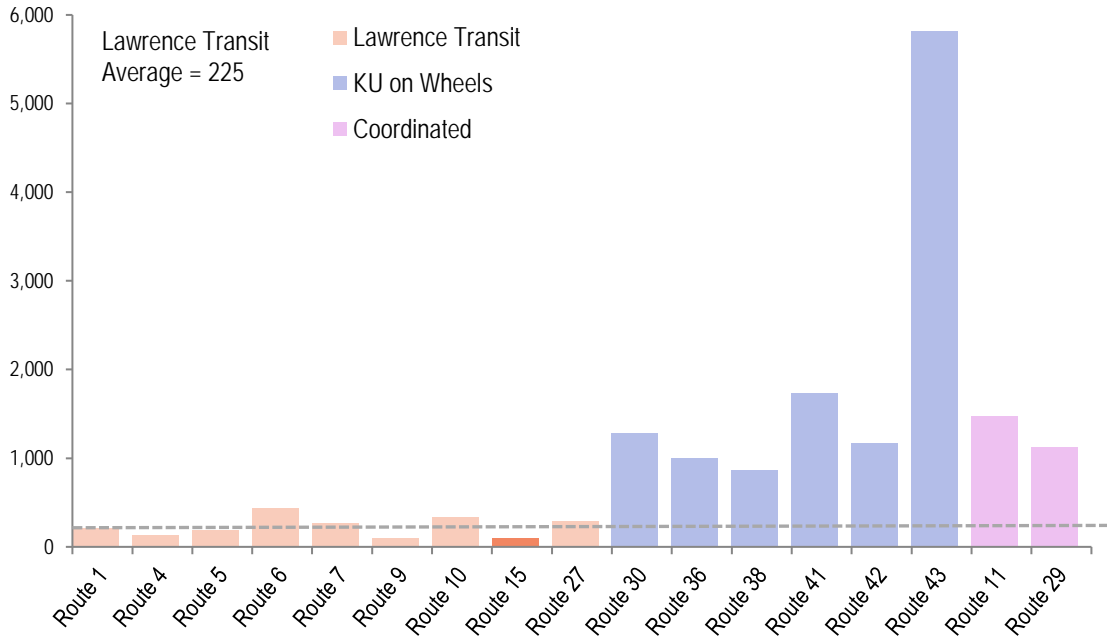
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday–Friday	100	28	3.6	6.5	8 of 9
Saturday	20	28	0.7	4.7	8 of 8

Source: Lawrence Transit, 2016

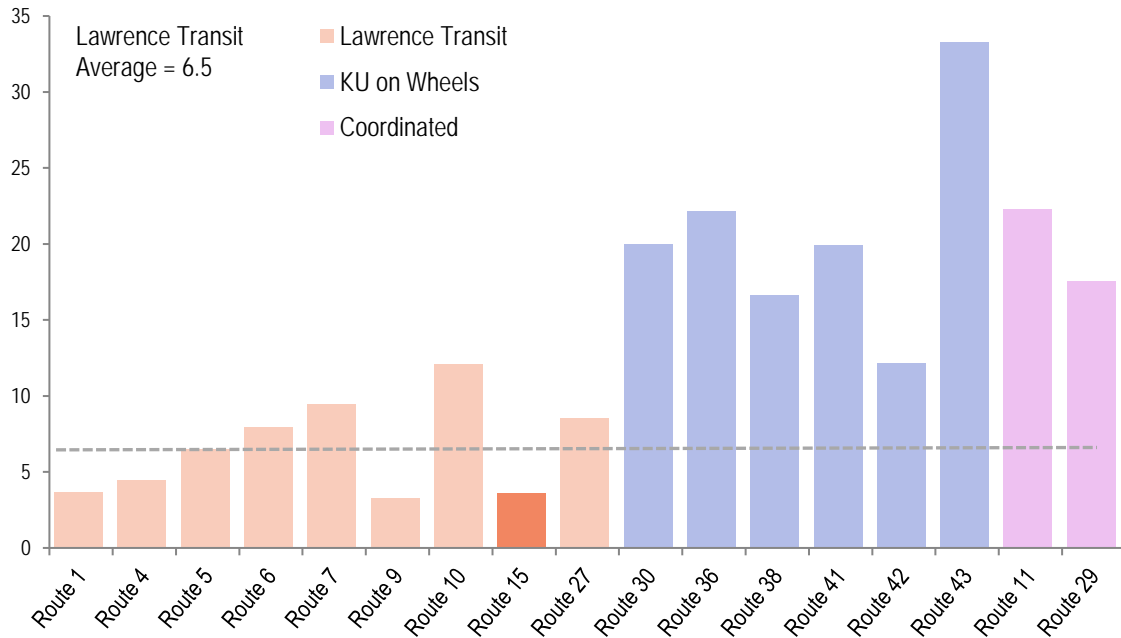
ROUTE EVALUATION | ROUTE 15
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

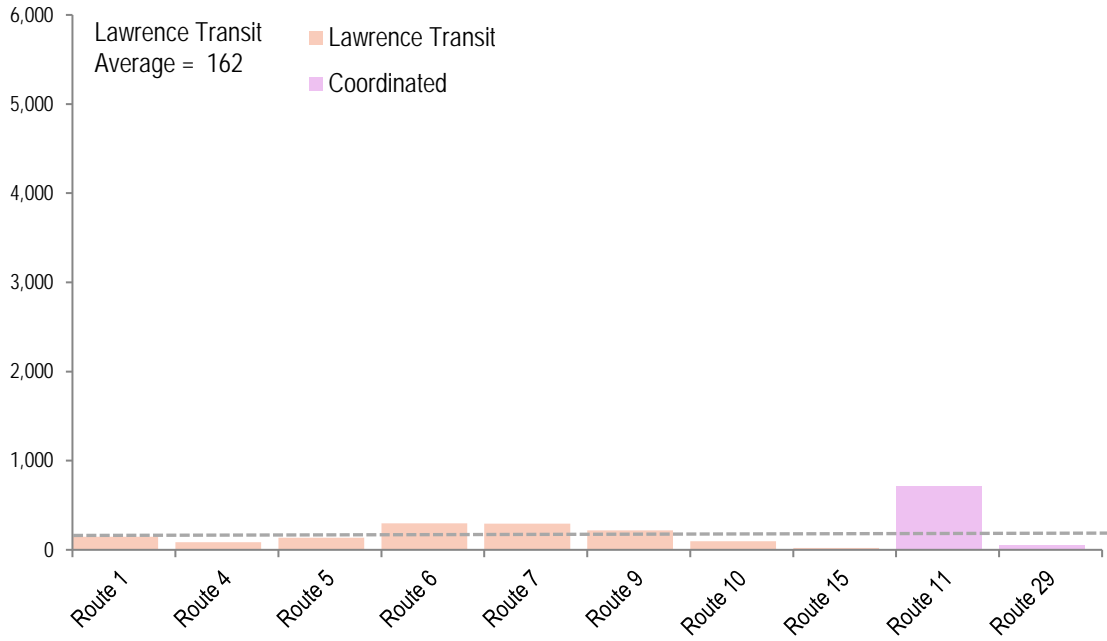
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

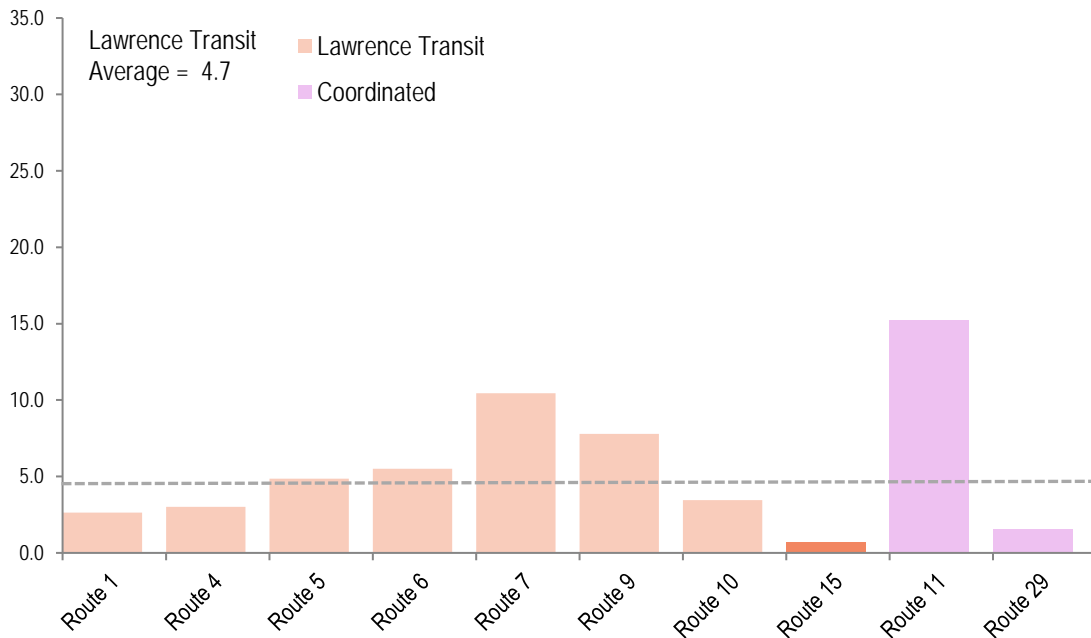
ROUTE EVALUATION | ROUTE 15
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 15 inbound are the final two stops, located near downtown Lawrence (Figure 9). The route’s terminating stop at 7th Street and Vermont Street generates the highest combined boardings and alightings. Only one other stop has more than 10 boardings and alightings per weekday: 10th Street and Vermont Street. These stops serve a mix of commercial, residential, and institutional destinations. All other stops serve fewer than ten boardings and alightings (Figure 10-Figure 13). Traveling outbound, the stop at 25th Terrace and Fairfield—near the Douglas County Jail and Lawrence Community Shelter—generates the highest number of combined boardings and alightings apart from the downtown transit hub.

Similar patterns exist on Saturday (Figure 14-Figure 17). The outbound stop at 25th Terrace and Fairfield generates a combined 50 boardings and alightings. Traveling inbound, the terminating stop downtown generates the highest ridership (24 alightings), while the stop at 11th Street and Connecticut Street generates the second-highest ridership, with 15 combined boardings and alightings.

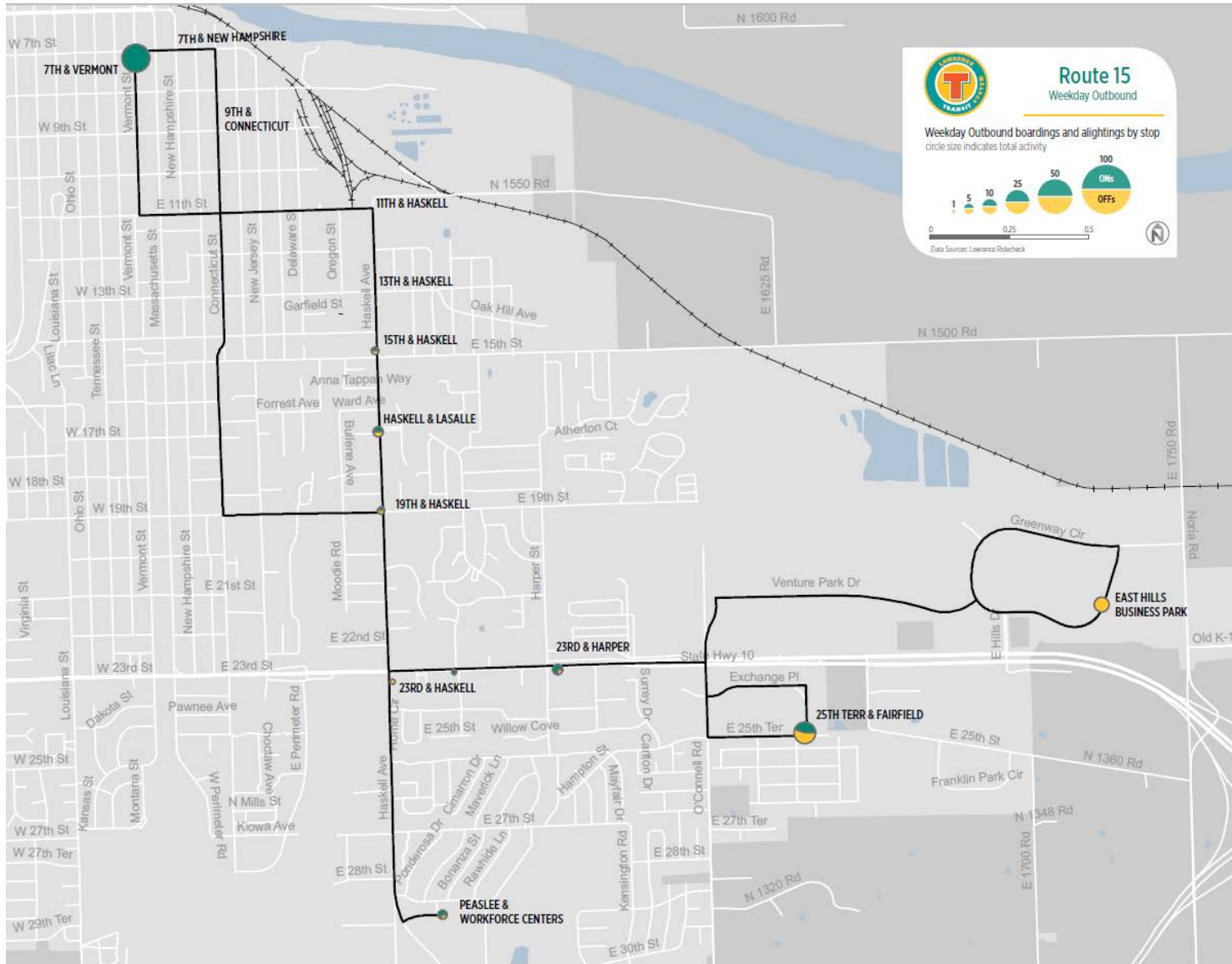
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
7th Street / Vermont Street	29	Downtown Lawrence; Lawrence Public Library; Buford M. Watson Jr. Park
10th Street / Vermont Street	11	Downtown Lawrence; Local retail stores
11th Street / Connecticut Street	6	Douglas County District Court; Motor Vehicle Registration; Residential neighborhood
East Hills Business Park	6	East Hills Business Park
23rd Street / Haskell Avenue	5	Local retail stores; Haskell Indian Nations University

*Weekday inbound ridership (boardings and alightings) for Route 15 only

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

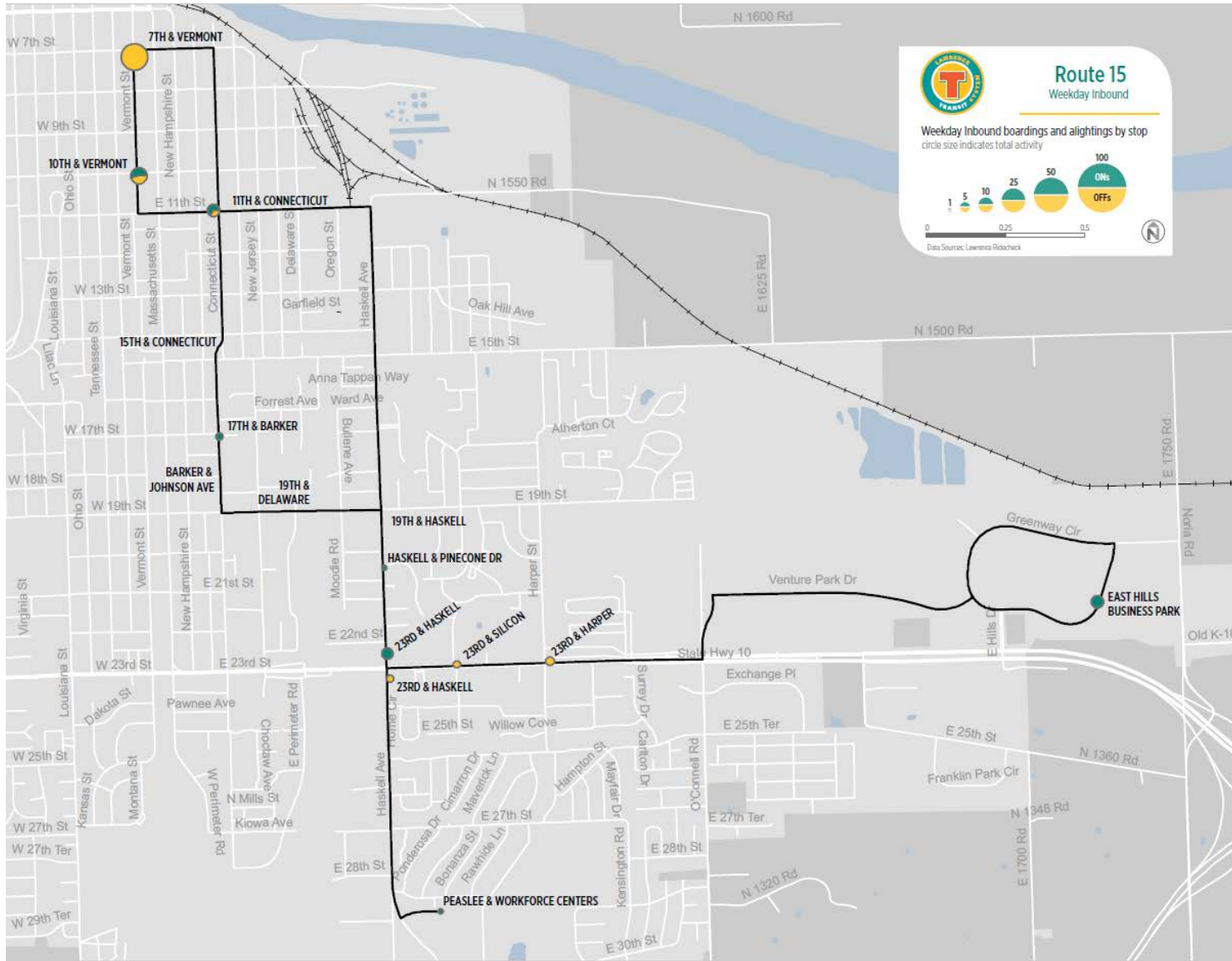
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

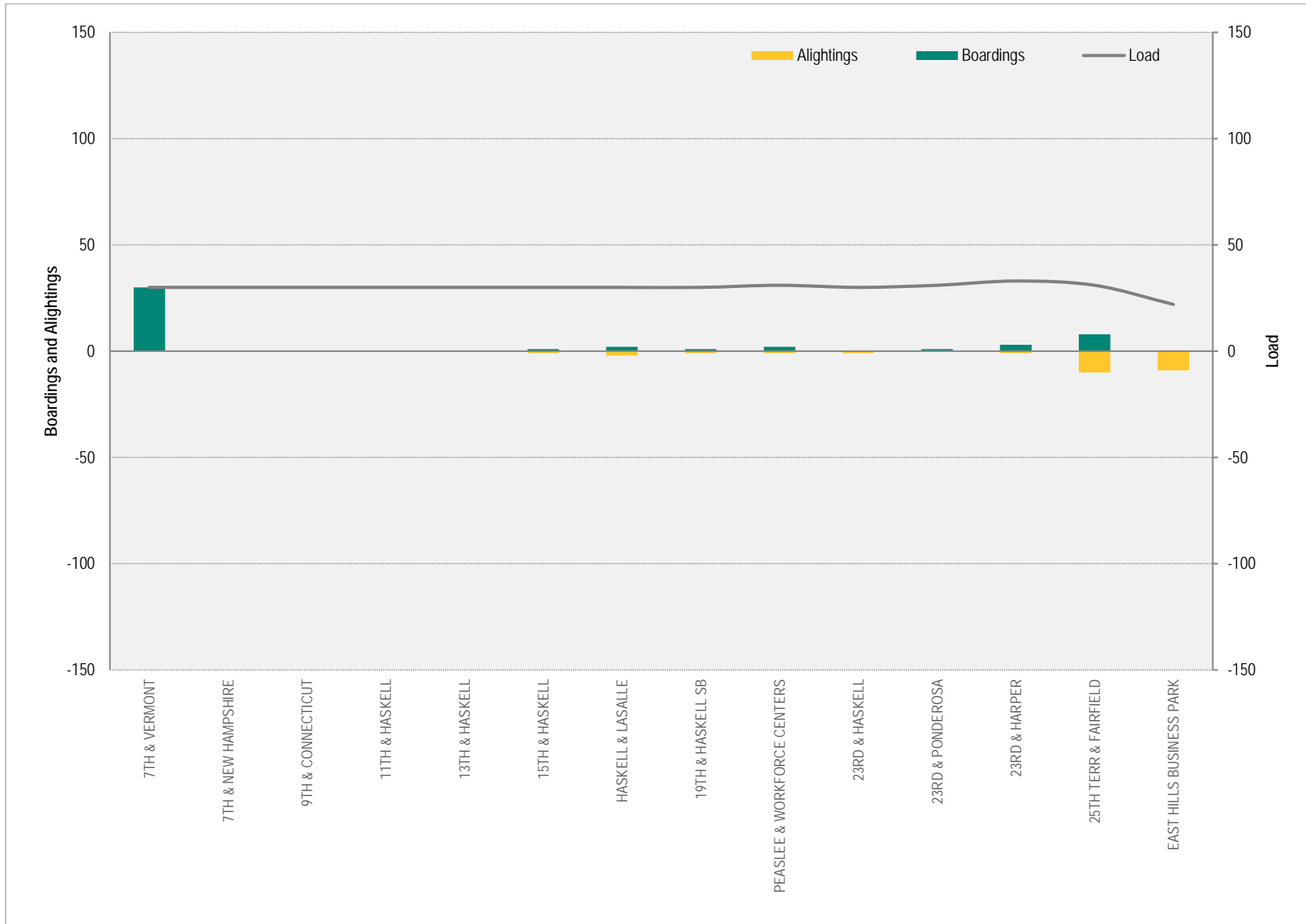
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

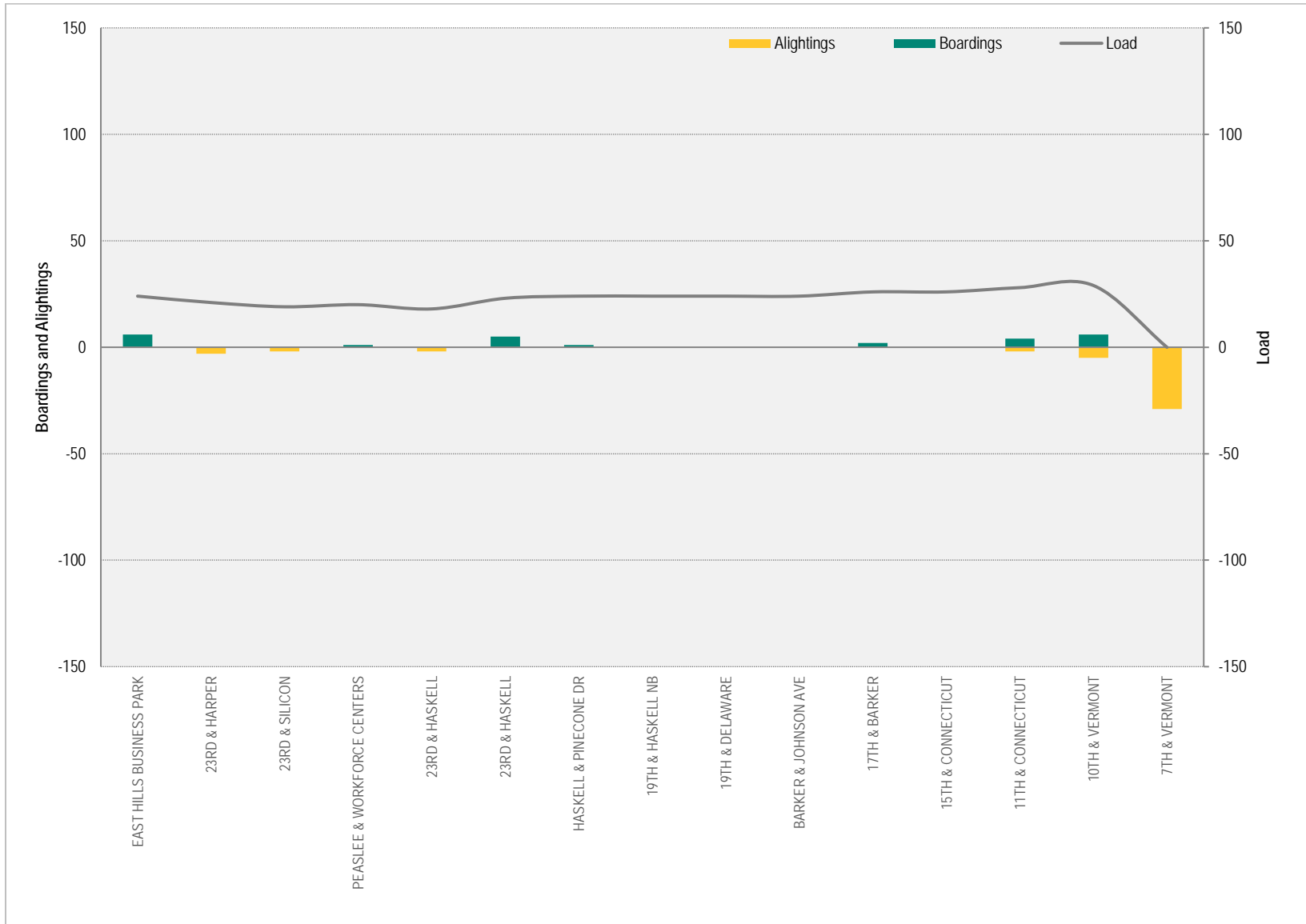
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

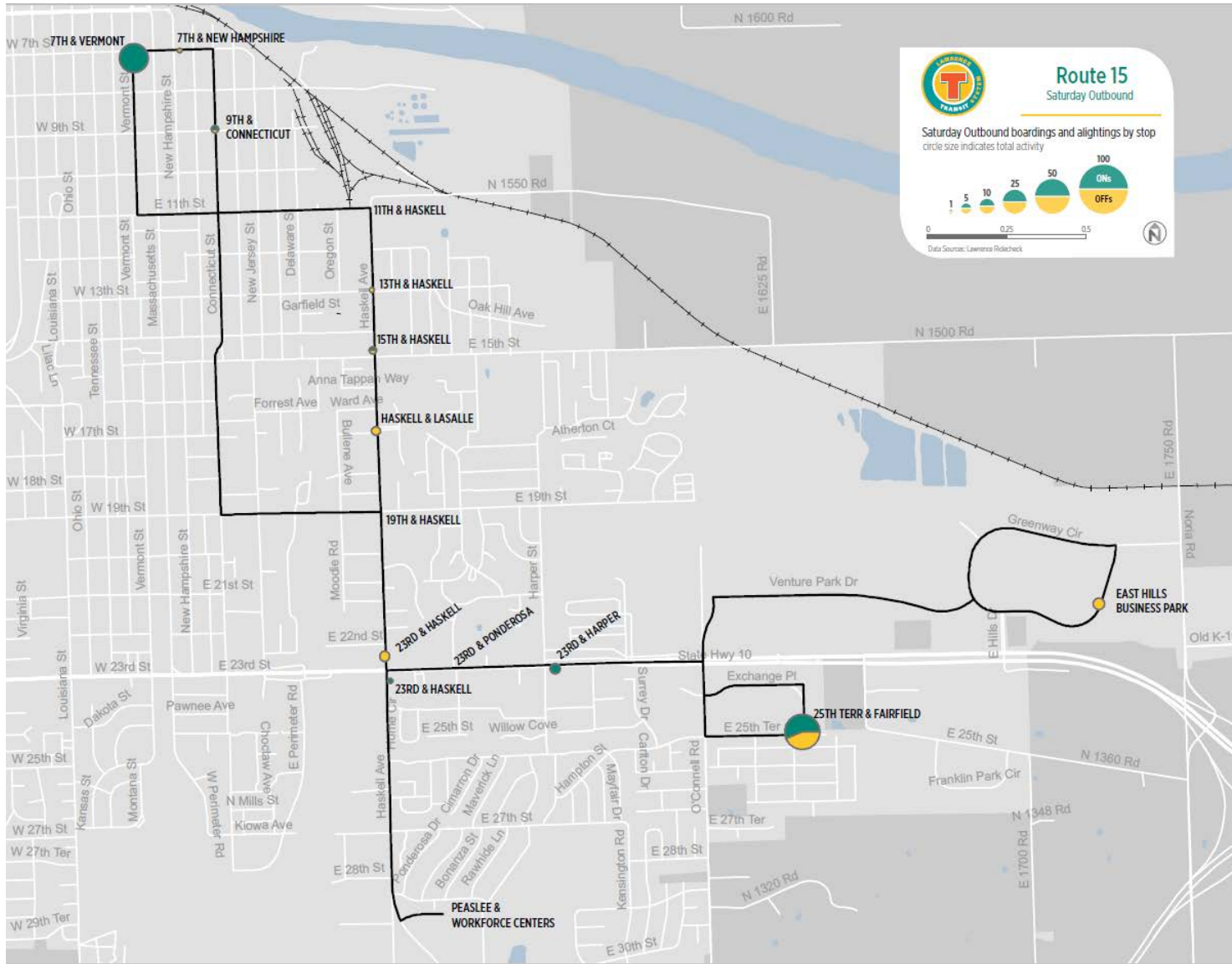
Figure 13 | Weekday Inbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

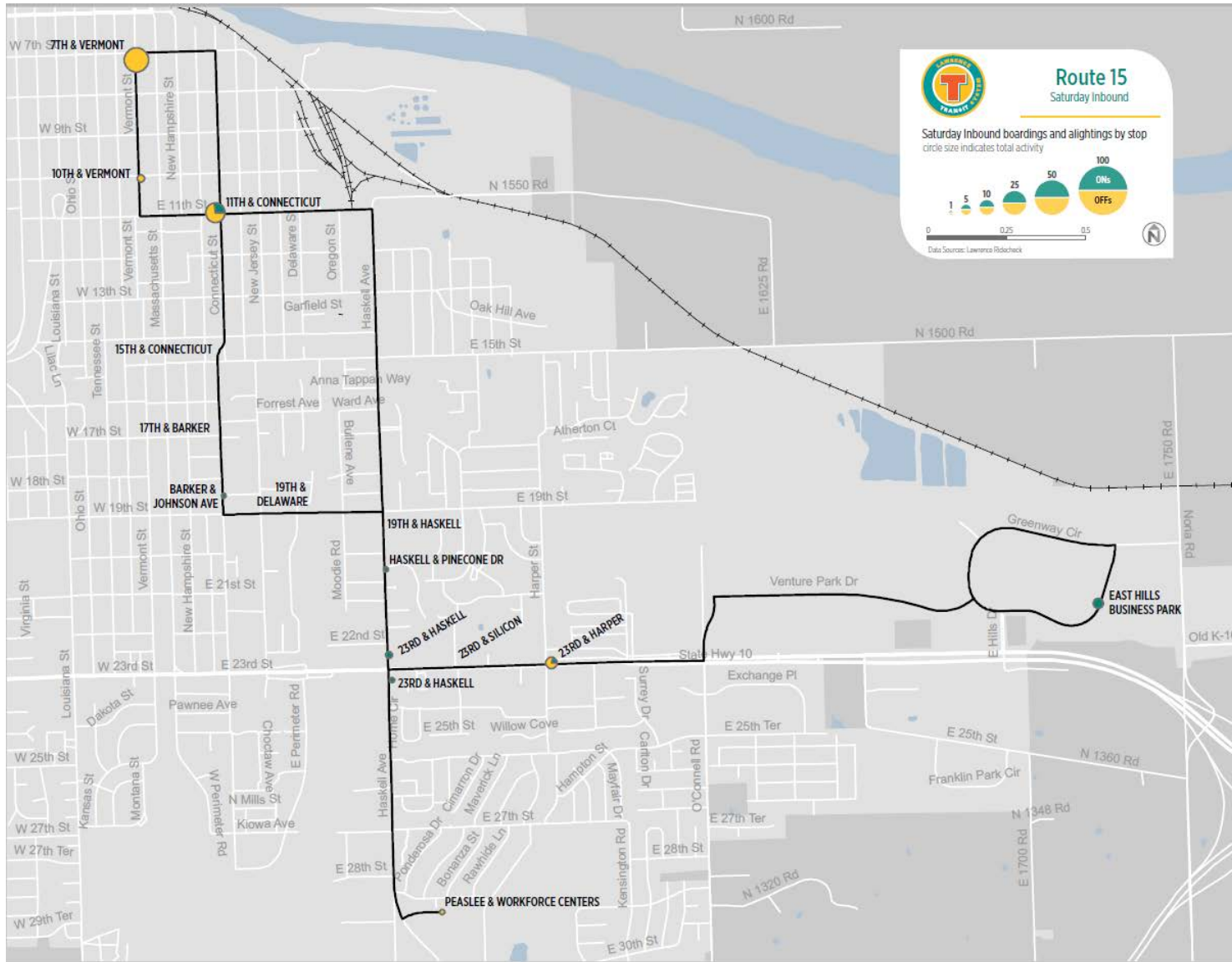
Figure 14 | Saturday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

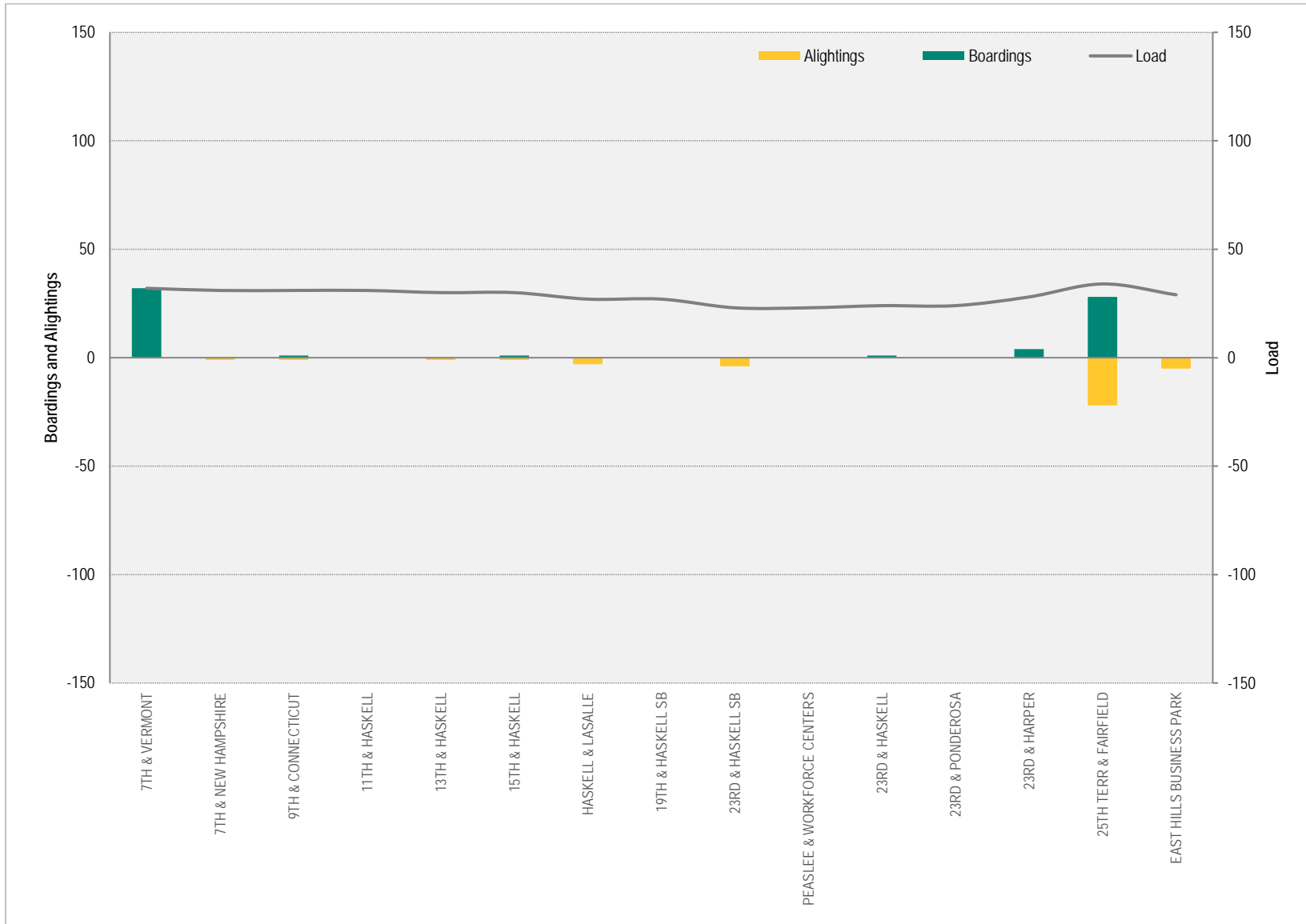
Figure 15 | Saturday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

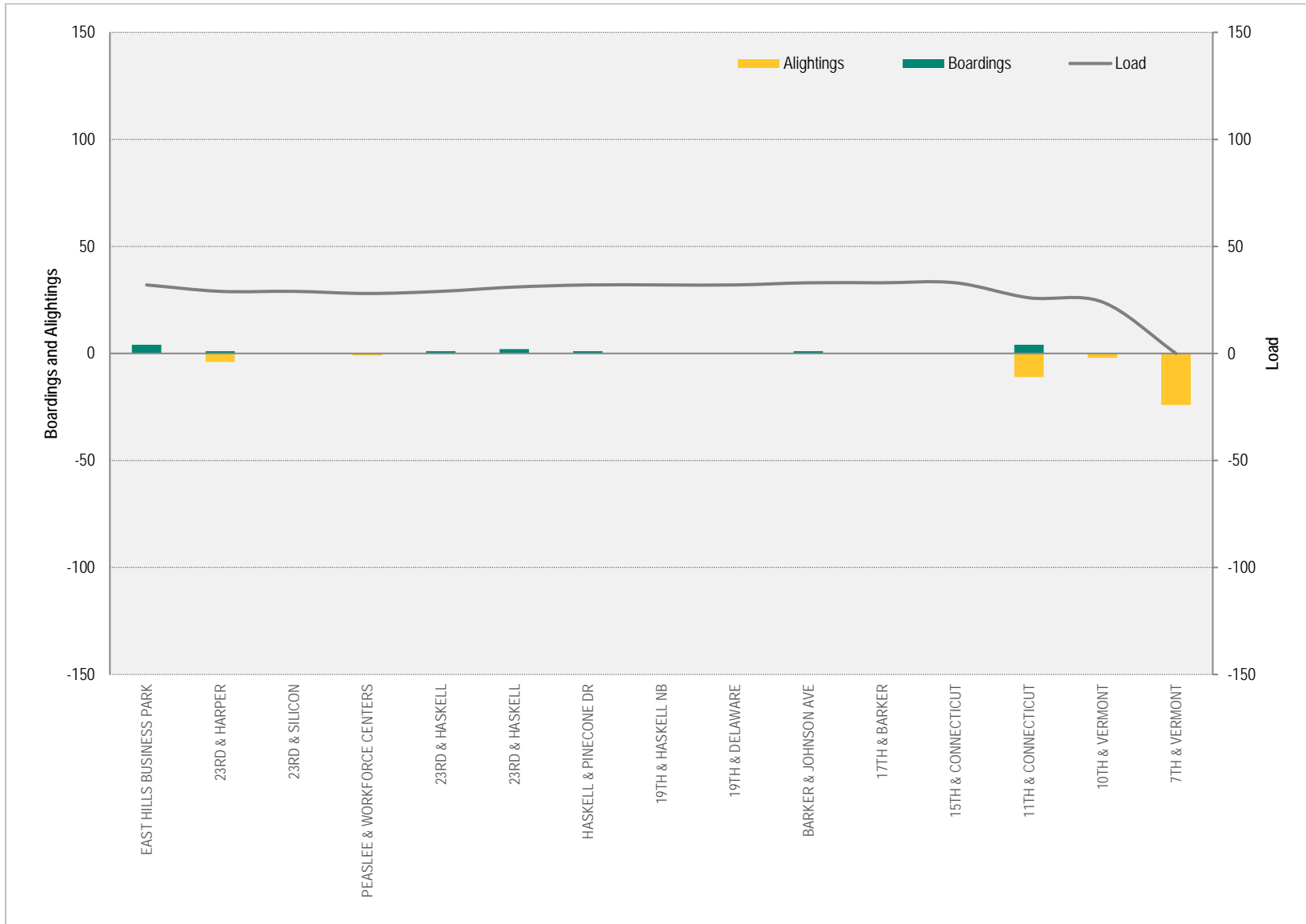
Figure 16 | Saturday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 15
Lawrence Transit

Figure 17 | Saturday Inbound Ridership by Stop Chart



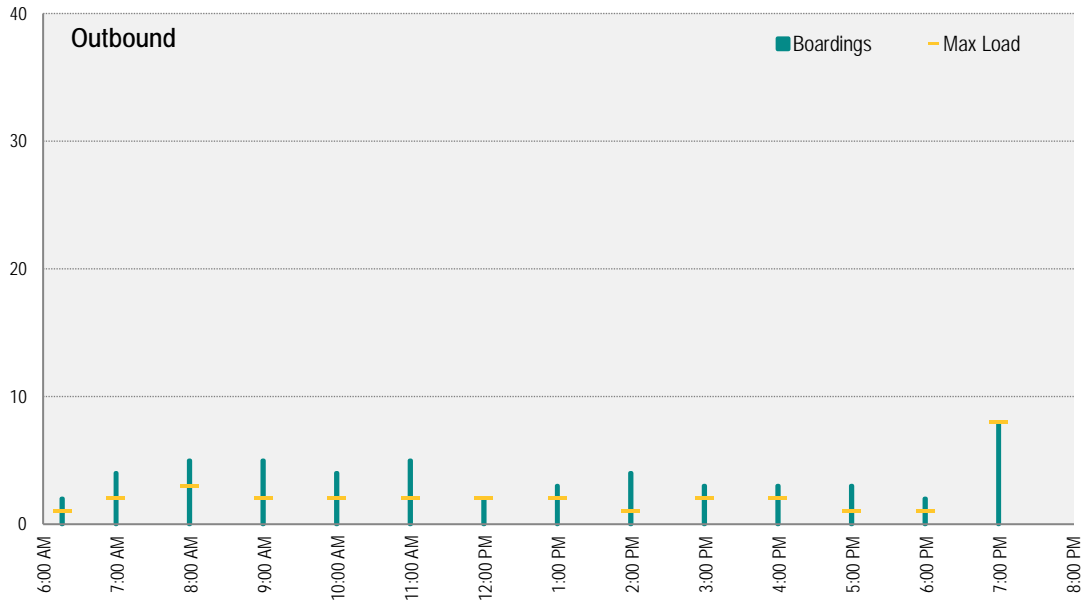
Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

On weekdays, Route 15 ridership is low throughout the day, with no trips carrying more than 10 passengers. Ridership is highest during the evening (traveling outbound) and the afternoon (traveling inbound) and (Figure 18 and Figure 19). During these periods, ridership peaks at 7:00 PM on outbound trips (eight passengers) and at 3:34 PM on inbound trips (seven passengers).

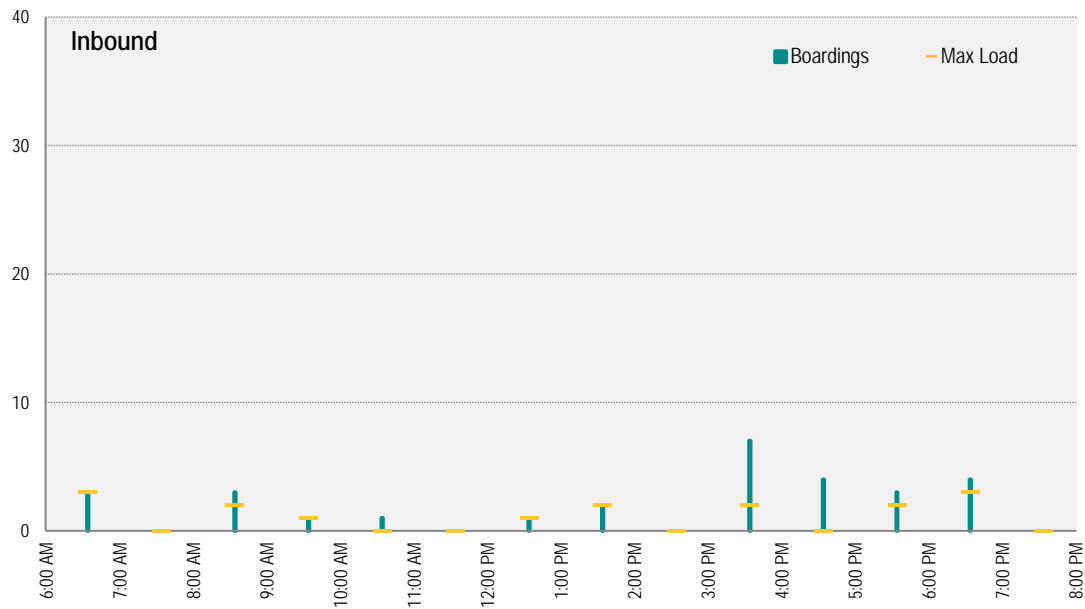
On Saturdays, Route 15 ridership is highest between 2:00 and 6:00 PM in the outbound direction (Figure 20 and Figure 21). During this period, ridership peaks at 2:00 PM, carrying 15 passengers, but two additional trips carry nine or more passengers. Ridership traveling inbound is minimal, with no trips carrying more than five passengers.

Figure 18 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

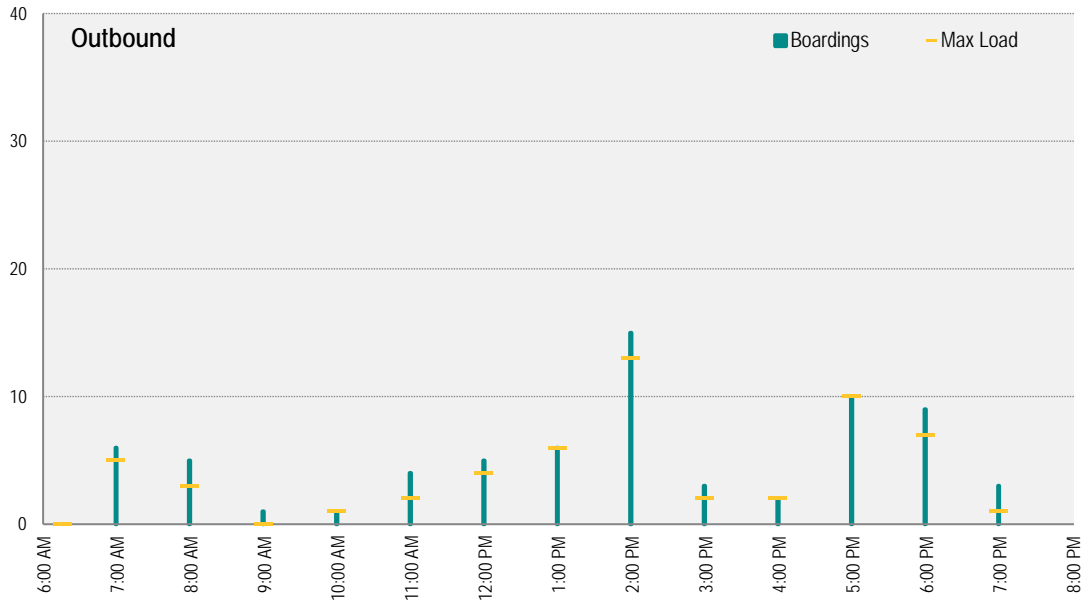
Figure 19 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

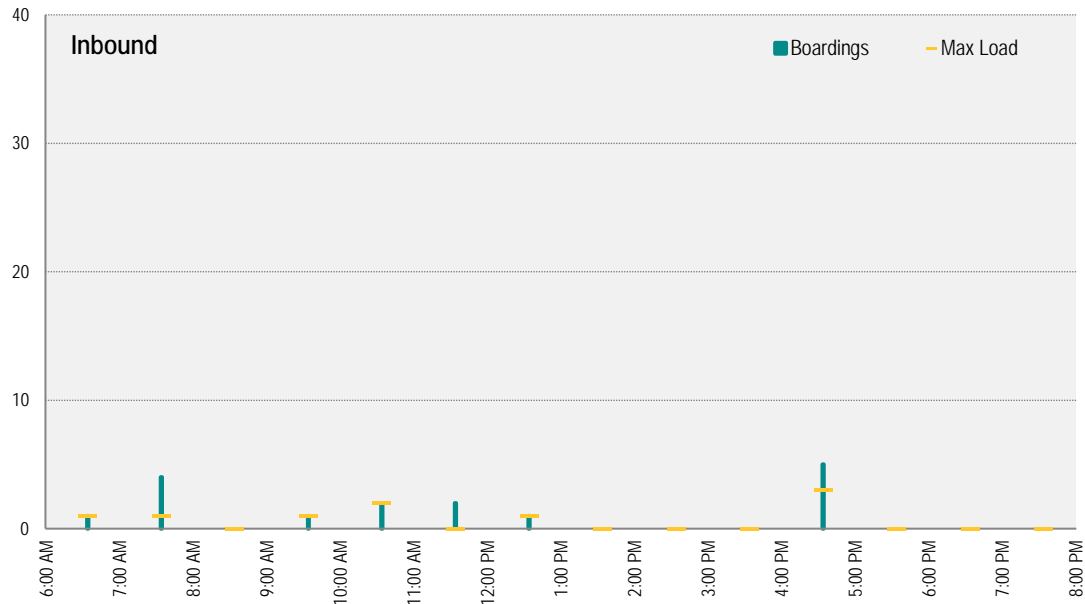
ROUTE EVALUATION | ROUTE 15
Lawrence Transit

Figure 20 | Saturday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 21 | Saturday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

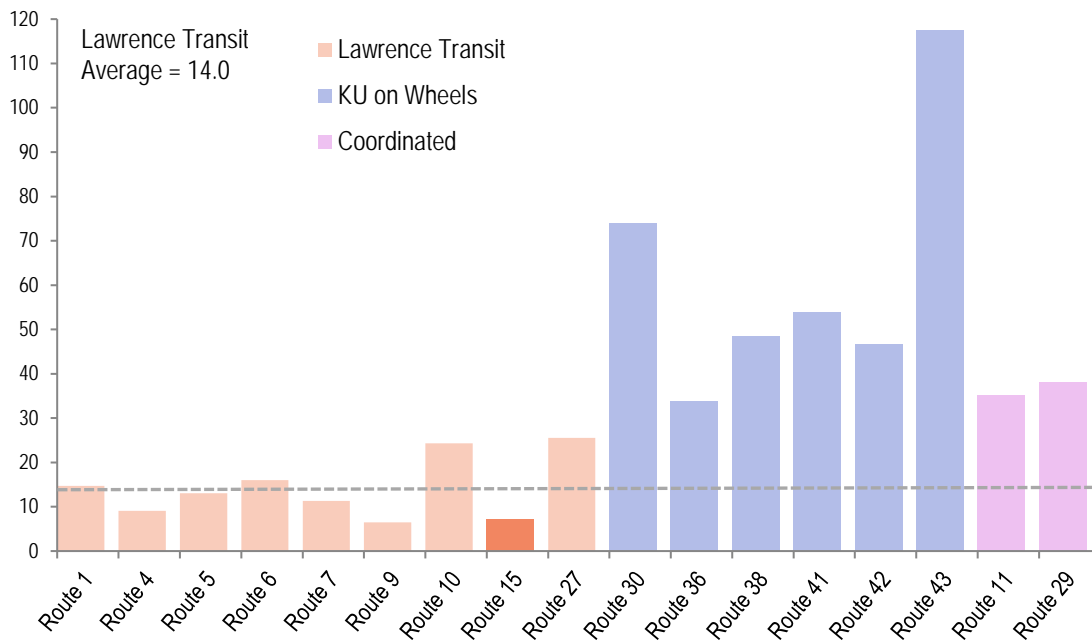
In terms of average passengers per hour, Route 15 is the eighth most productive Lawrence Transit bus route (Figure 22). The route carries 7.2 passengers per hour on weekdays, 49% less than the system average (Figure 23). Route 15 carries 1.4 passengers per hour on Saturdays, the lowest systemwide average (Figure 24). Low Saturday ridership may be attributable to the drop in commuter passengers that work at East Hills Business Park and use the route on weekdays.

Figure 22 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	100	13.9	7.2	14.0	8 of 9
Saturday	20	13.9	1.4	9.7	8 of 8

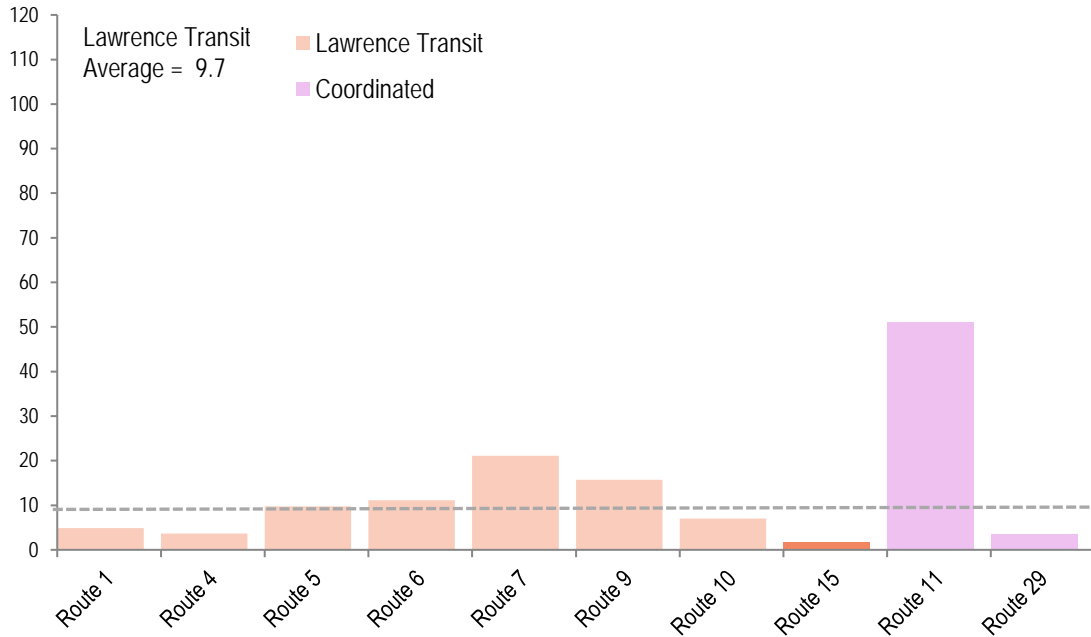
Source: Lawrence Transit, 2016

Figure 23 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 24 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 61% of Route 15 time points were served “on-time” during the survey period (Figure 25). On Saturdays, approximately 45% of Route 15 time points were served “on-time” during the survey period.” 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 nearly a third of time points served later than scheduled. Saturday on-time performance was affected by both late and early departures, with over half of departures not served on-time.

Figure 25 | On-Time Performance

	WEEKDAY	SATURDAY
On-Time	61.2%	44.7%
Early	6.1%	18.1%
Late	32.7%	37.2%

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

- **Remove one-way loops.** Most ridership on Route 15 occurs at either end of the route. One-way loops tend to make service less useful to riders, and less effective overall, because trips are only convenient in one direction. To simplify Route 15, service can be provided bi-directionally along one of its current directional alignments.

As of August 1st, 2016, Route 15 no longer serves the Lawrence Community Shelter and operates bi-directionally along Connecticut Street, Barker Avenue, and 19th Street, thus removing one-way service entirely and simplifying the route.

- **Reduce redundancy.** Route 15 has significant overlap with Route 1, with both routes operating outbound along Connecticut Street and Haskell Avenue, and inbound along Barker Avenue and Vermont Street. Splitting this alignment, so that one route operates bi-directionally along one set of streets and the other operates bi-directionally along the other set of streets will simplify both routes, reduce redundancy, and make transit service more appealing to riders along corridors that are currently served in one direction only.

The recent changes to Route 15 have reduced redundancy with Route 1, with each route now operating bi-directionally along a unique set of streets.

- **Begin Service at 6:33 AM; End Service after the 7:00 PM Departure.** Service on Route 15 currently begins at 6:00 AM and ends at 7:56 PM (last departure at 7:33 PM). Low ridership on departures before 6:33 AM and after 7:00 PM indicate that the resources necessary to operate that service could be better spent elsewhere. As a result, reducing the service span to approximately 6:30 AM to 7:00 PM would benefit users in some other way or on some other part of the system.
- **Remove Saturday Service on Route 15.** Ridership on Route 15 is low, especially on Saturdays. Route 15 adds transit coverage to eastern Lawrence, but the route's utilization patterns indicate that riders use the route primarily to reach the jail, community shelter, or East Hills Business Park. While the jail and community shelter may receive visitors on weekends, activity at the business park likely falls. Removing weekend service would affect few users.
- **Improve Frequency on Weekdays.** Hourly service is not frequent enough to attract users who have other transportation options. Lawrence Transit has had a goal of improving most routes in the system to a frequency of 30 minutes or less. As the only service between downtown and the East Hills Business Park, 30-minute service could help attract new users and facilitate more trips by current users.
- **Remove Service to the Peaslee Technical Training Center and 27th Street.** The Peaslee Technical Training Center generates little weekday or Saturday ridership. Removing the spur to Peaslee and operating along 23rd Street will shorten the route's overall length and cycle time traveling in both the outbound and inbound directions.
- **Consider Interlining Route 15 with Another Lawrence Transit Route.** As Route 15 originates and terminates in downtown Lawrence, the route could be interlined with another route leaving from downtown to create more one-seat ride opportunities. Interlining Route 15 with another route could also help improve its on-time performance by optimizing cycle time and recovery time.

Lawrence Transit System

ROUTE 27

KU to Haskell Indian Nations University

SERVICE DESIGN

Route 27 is a Lawrence Transit route that operates between Snow Hall on the KU Main Campus and Haskell Indian Nations University. The route travels primarily along Jayhawk Boulevard, Naismith Drive, 19th Street, Louisiana Street, and 23rd Street (Figure 1). Route 27 connects the KU Main Campus to Haskell Indian Nations University (HINU), and also serves Lawrence High School and apartment complexes and shopping centers southwest of the intersection of 23rd Street and Louisiana Street.

ALIGNMENT/SERVICE PATTERNS

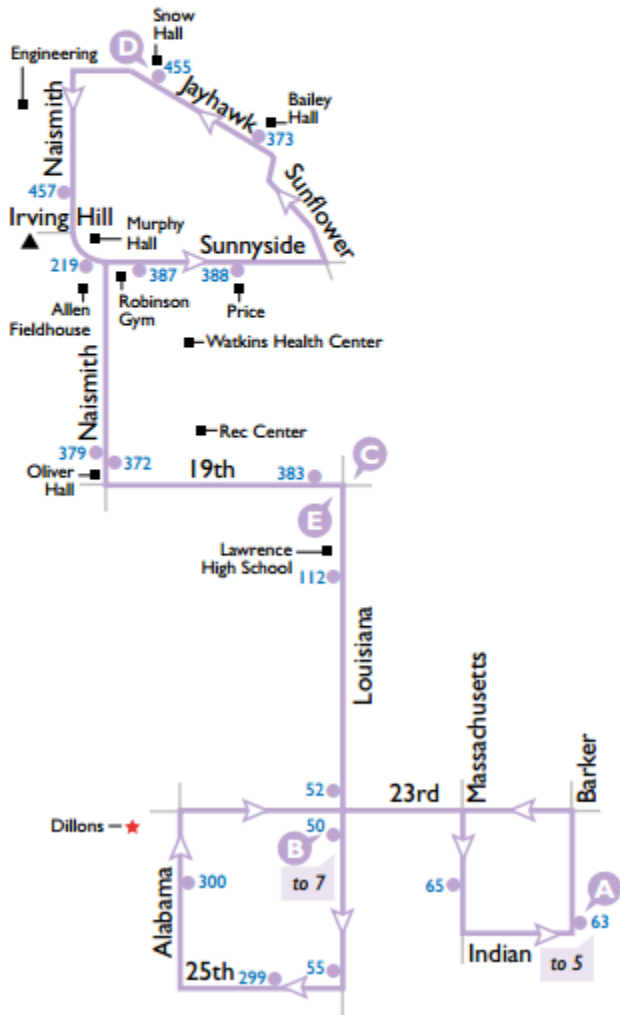
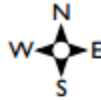
Route 27 has a single consistent service pattern for weekday service. Departing outbound from Snow Hall, Route 27 turns left on Naismith Drive, left on 19th Street, right on Louisiana Street, right on 25th Street, right on Alabama Street, right on 23rd Street, right on Massachusetts Street, and left on Indian Avenue before terminating at Haskell Indian Nations University.

Returning inbound from Haskell Indian Nations University, Route 27 turns left on 23rd Street, turns left on Louisiana Avenue, right on 25th Street, right on Alabama Street, right on 23rd Street, left on Louisiana Avenue, and then continues along the outbound alignment to the intersection of Naismith Drive and Sunnyside Avenue. At this intersection, Route 27 inbound service turns right on Sunnyside Avenue, and turns left on Sunflower Road, left on Jayhawk Boulevard, and terminates at Snow Hall.

Figure 1 | Route Map

27 KU to Haskell Indian Nations University

- A** Timing point
- Bus stop
- # Bus stop number
- ▲ K-10 Connector stop
- ★ Bus pass sales location



Source: Lawrence Transit, August 2015-July 2016

SYSTEM INTERACTIONS AND TRANSFER OPPORTUNITIES

Customers can transfer between Route 27 and several Lawrence Transit and KU on Wheels routes at Snow Hall, 23rd Street and Louisiana Street, and Haskell Indian Nations University. Transfer opportunities exist at several points along Naismith Drive (Route 3 and Route 38); transfer opportunities to the K-10 Connector, operated by Johnson County Transit, are also available on Naismith Drive (Figure 2).

Figure 2 | Primary Transfer Opportunities

LOCATION	TRANSFER TO
Snow Hall	Route 10, Route 11, Route 29, Route 30, Route 36, Route 38, Route 41, Route 42, Route 43
23rd Street and Louisiana Street	Route 7
Haskell Indian Nations University	Route 5

SERVICE SCHEDULE

Route 27 operates service Monday-Friday when KU is in session (Figure 3). On weekdays, the route runs every 40 minutes from 7:05 AM to 6:22 PM. Route 27 does not run 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	7:05 AM – 6:22 PM	40	17/17
Saturday	No service	–	–
Sunday	No service	–	–

Source: Lawrence Transit

RIDERSHIP

Route 27 ranks third of nine Lawrence Transit routes in terms of weekday ridership and third of nine in terms of ridership per trip (Figure 4). On average, the route carries 289 passengers, or 8.5 passengers per trip, on Monday-Friday (Figure 5 and Figure 6).

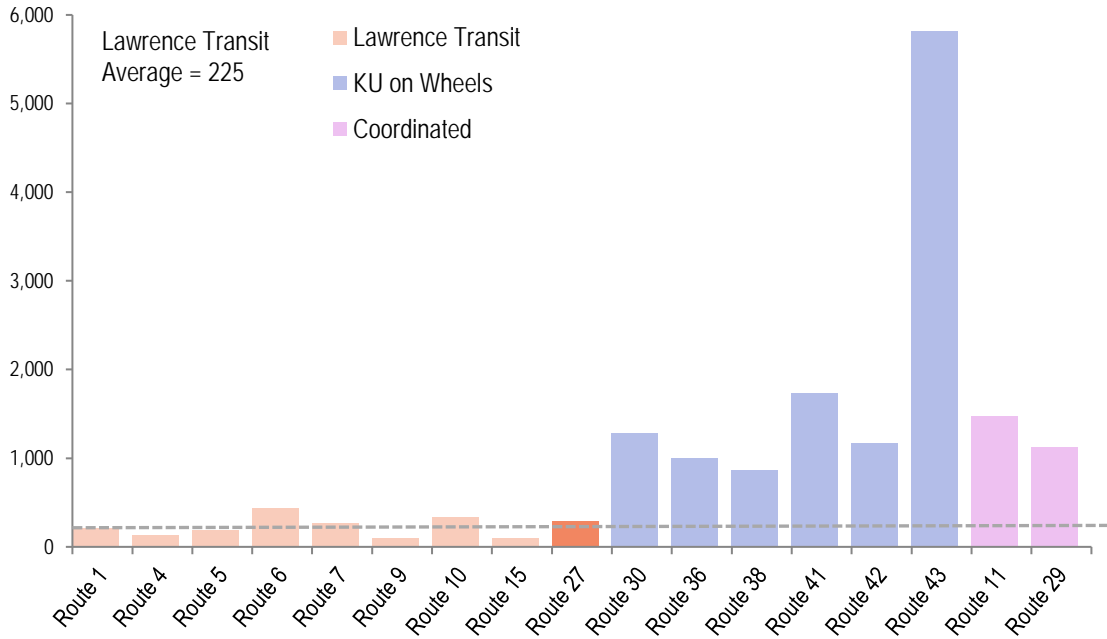
Figure 4 | Ridership Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	TYPICAL DAILY TRIPS	AVERAGE RIDERSHIP PER TRIP	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER TRIP	RIDERSHIP PER TRIP RANK
Monday-Friday	289	34	8.5	6.5	3 of 9

Source: Lawrence Transit, 2016

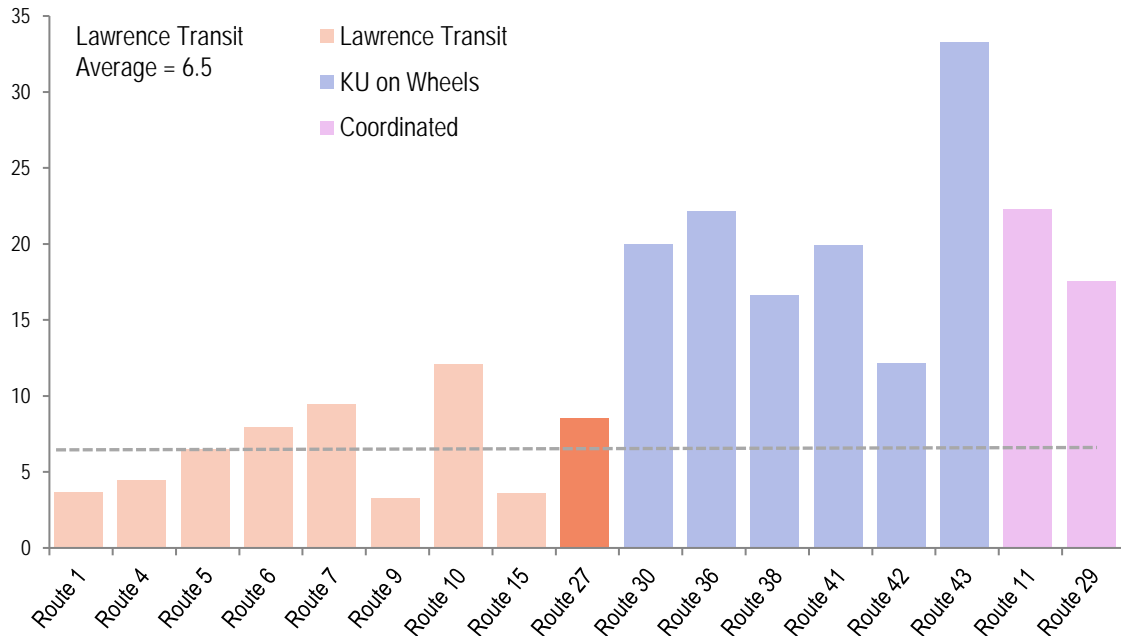
ROUTE EVALUATION | ROUTE 27
Lawrence Transit

Figure 5 | Weekday Ridership by Route



Source: Ride Check, April and May 2016

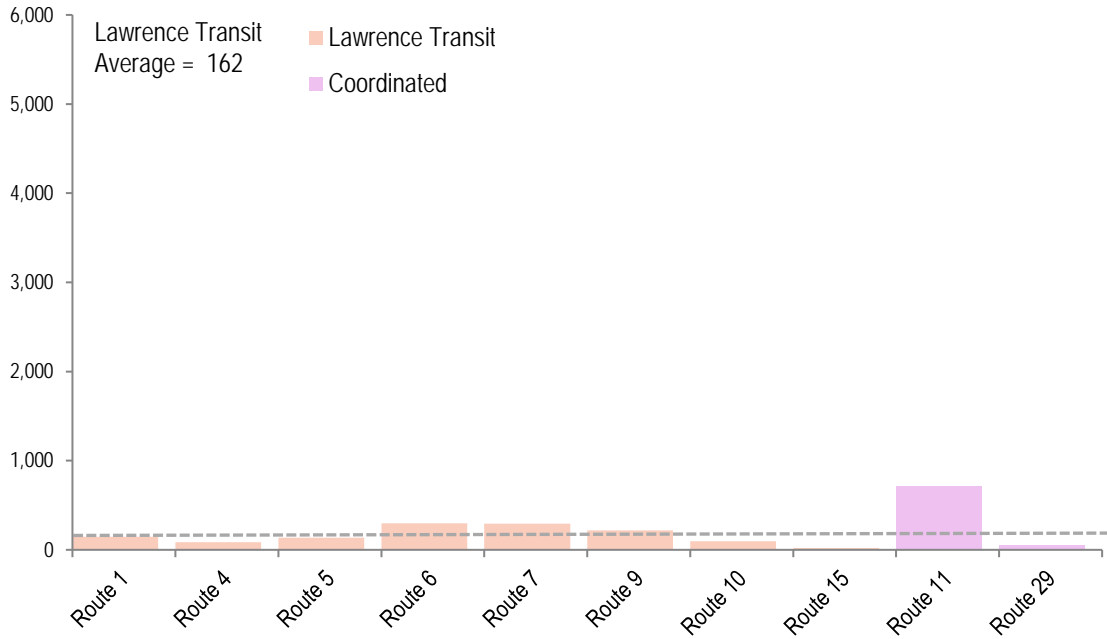
Figure 6 | Weekday Ridership per Trip by Route



Source: Ride Check, April and May 2016

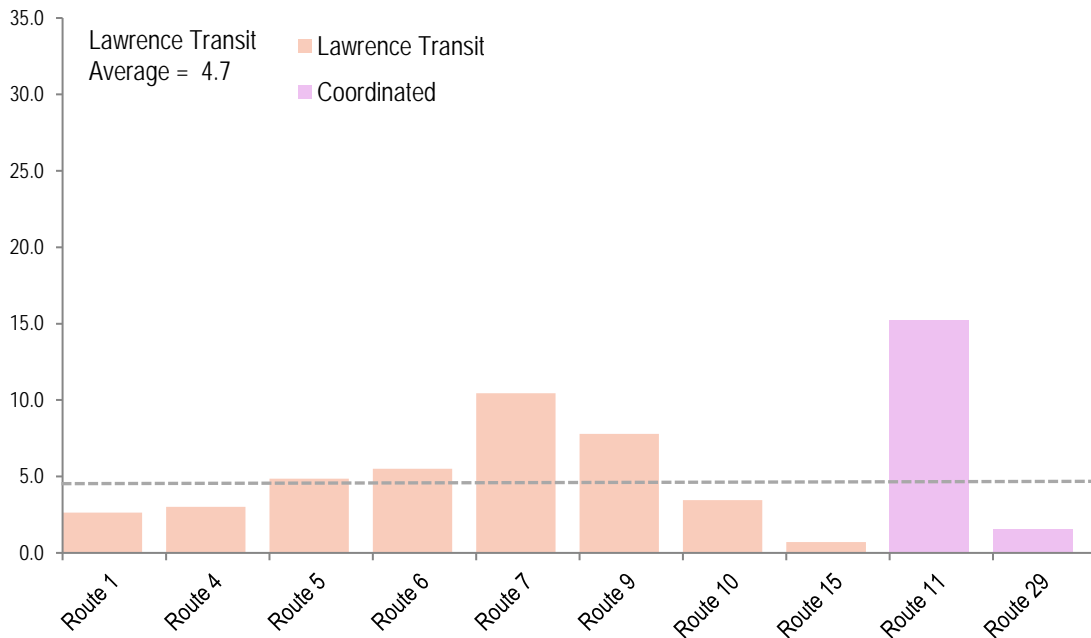
ROUTE EVALUATION | ROUTE 27
Lawrence Transit

Figure 7 | Saturday Ridership by Route



Source: Ride Check, April and May 2016

Figure 8 | Saturday Ridership per Trip by Route



Source: Ride Check, April and May 2016

RIDERSHIP BY STOP

The highest weekday ridership stops on Route 27 are located on KU’s campus (Figure 9). The stop at Bailey Hall generates the highest combined boardings and alightings (63 passengers), while stops at Robinson Gym and Snow Hall each generate more than 30 passengers. Other stops with more than 10 boardings include stops at 19th Street and Naismith Drive, Malls Olde English Apartments, 19th Street and Alabama Street, 24th Street and Alabama Street, 25th Street and Belle Haven Drive, and KU’s Computer Center. These stops primarily serve academic and commercial destinations. All other stops serve fewer than 10 combined boardings and alightings (Figure 10- Figure 13).

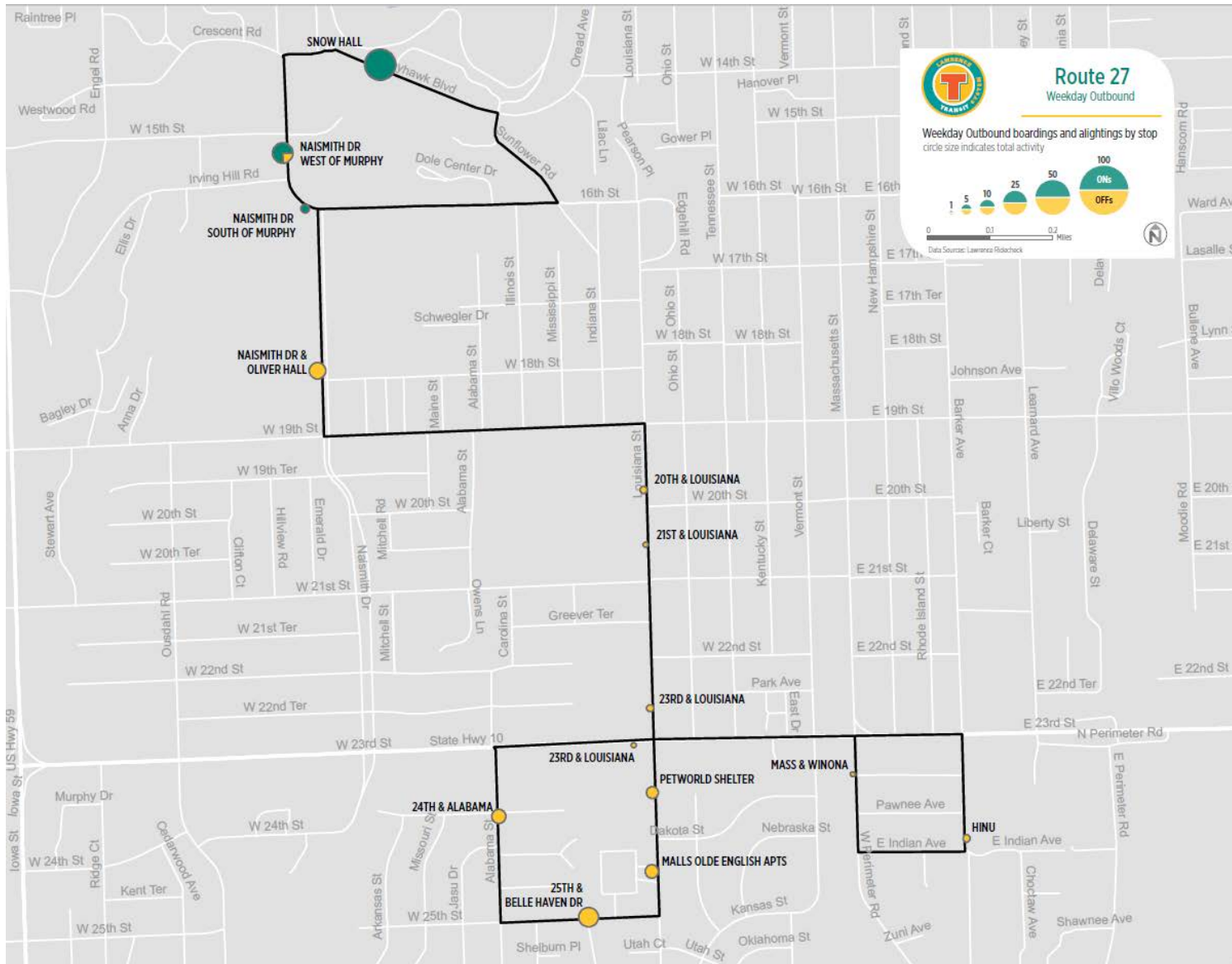
Figure 9 | Top 5 Highest Ridership Stops and Key Trip Generators (Weekday Inbound)

BUS STOP	RIDERSHIP*	MAJOR LOCAL DESTINATIONS
Bailey Hall	63	Bailey Hall; KU campus
Robinson Gym	34	Robinson Gym; KU campus
19th Street / Naismith Drive	32	Naismith Hall; KU campus
Snow Hall	32	Snow Hall; KU campus
Malls Olde English Apartments	20	The Malls Shopping Center; Residential neighborhood

*Weekday inbound ridership (boardings and alightings) for Route 27 only

ROUTE EVALUATION | ROUTE 27
Lawrence Transit

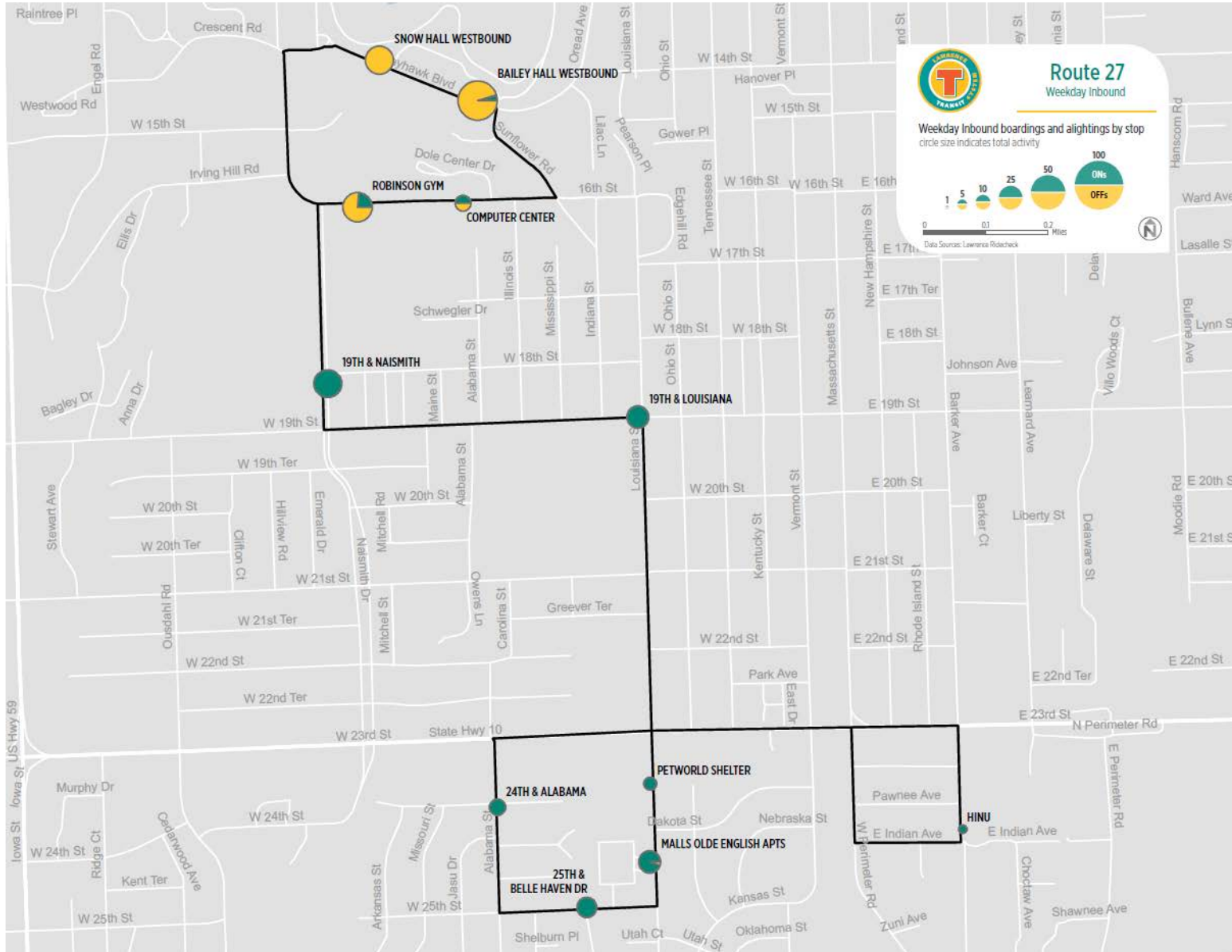
Figure 10 | Weekday Outbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 27
Lawrence Transit

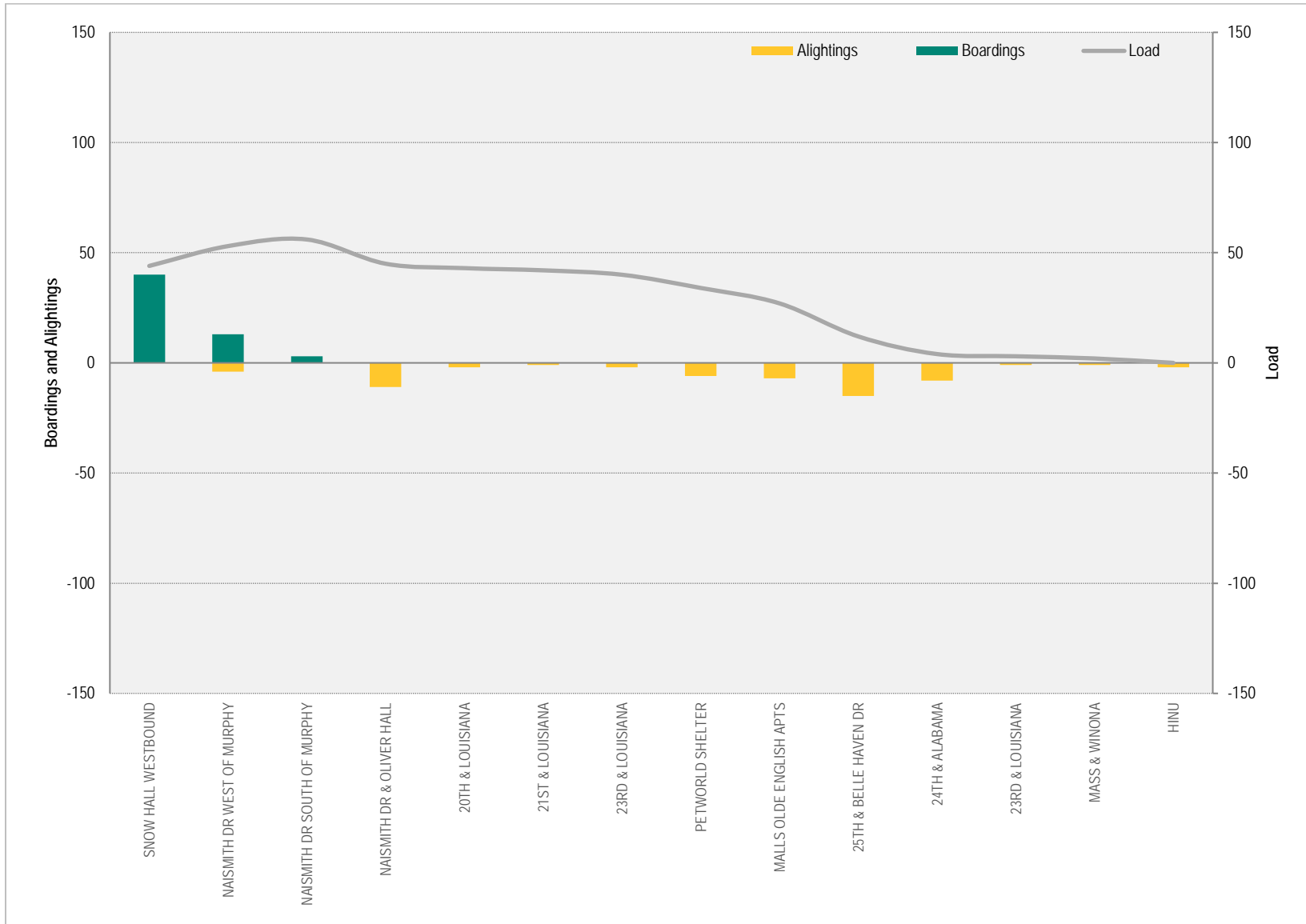
Figure 11 | Weekday Inbound Daily Ridership by Stop Map



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 27
Lawrence Transit

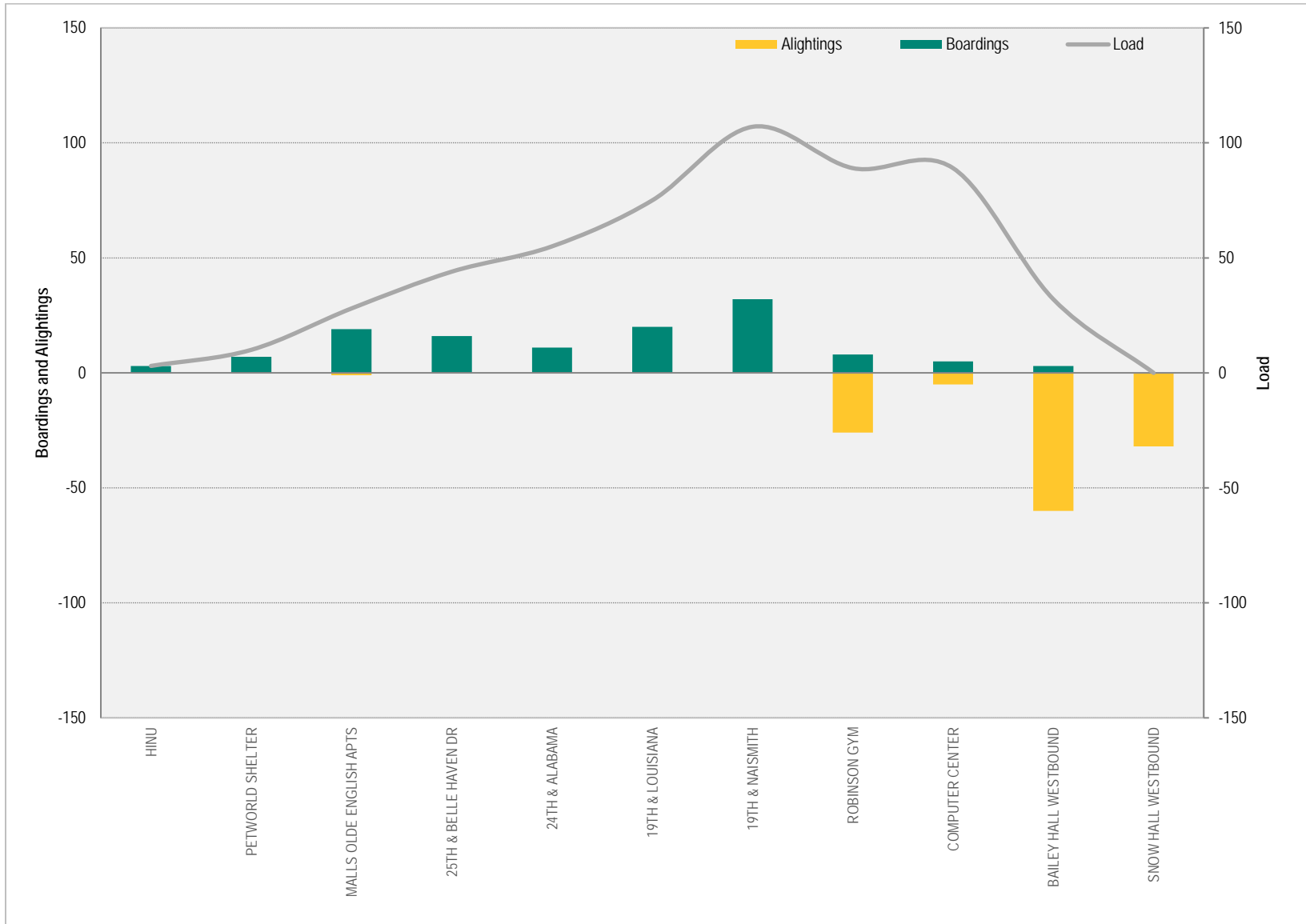
Figure 12 | Weekday Outbound Ridership by Stop Chart



Source: Ride Check, April and May 2016

ROUTE EVALUATION | ROUTE 27
Lawrence Transit

Figure 13 | Weekday Inbound Ridership by Stop Chart

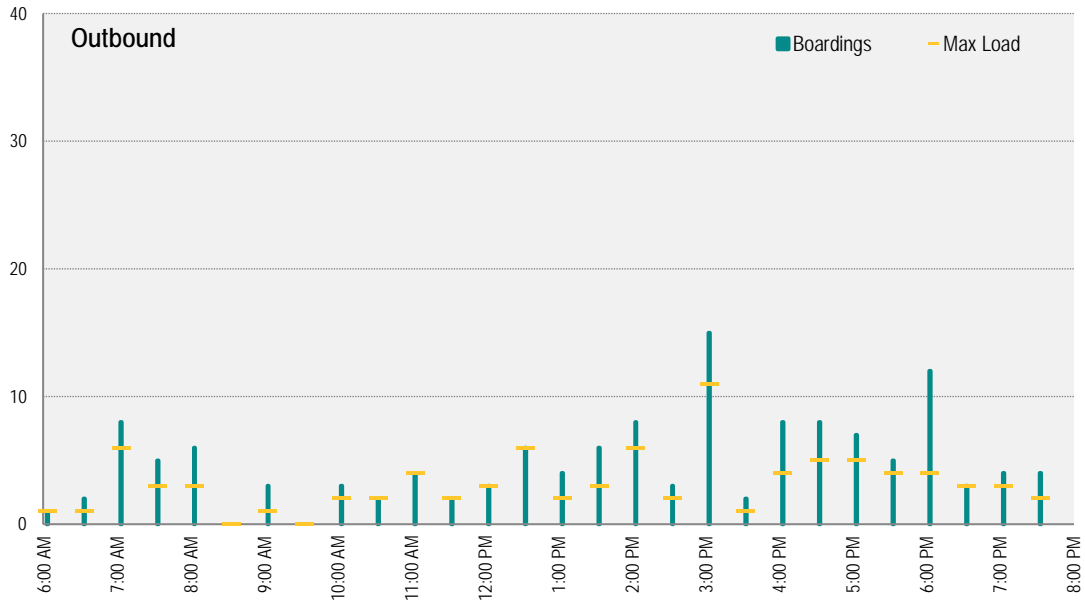


Source: Ride Check, April and May 2016

RIDERSHIP BY TRIP

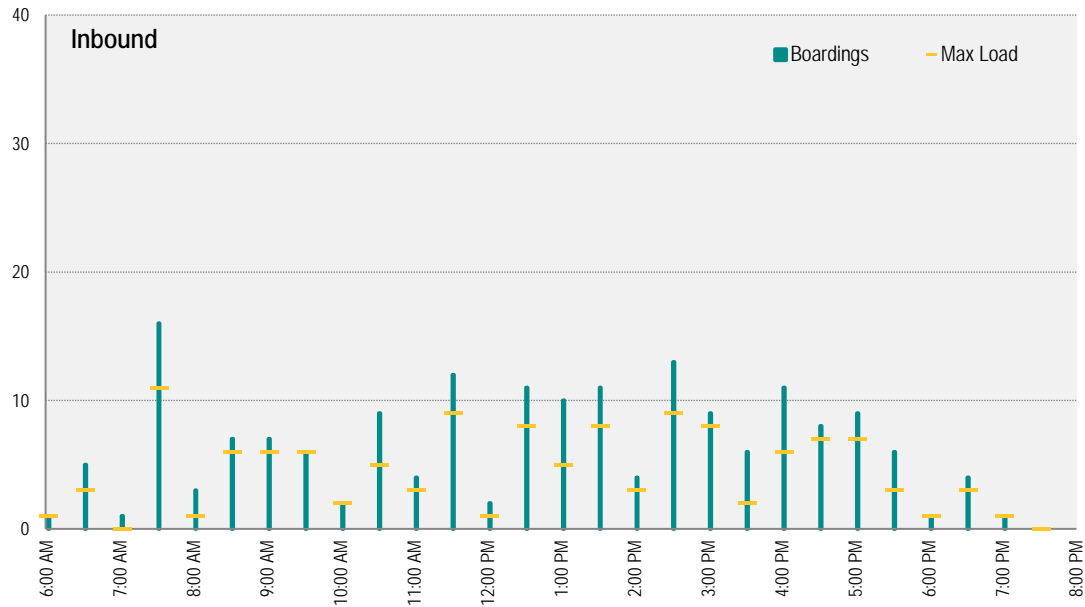
On weekdays, Route 27 ridership is highest in the outbound direction at 3:00 PM, peaking at 15 passengers per trip. Ridership is more consistent traveling in the inbound direction: ridership peaks at 7:30 AM but is moderately high from 1:30 to 6:00 PM. Seven inbound trips carry 10 or more passengers, while only two outbound trips exceed 10 passengers (Figure 14 and Figure 15).

Figure 14 | Weekday Outbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

Figure 15 | Weekday Inbound Ridership by Trip Chart



Source: Ride Check, April and May 2016; Max load factors include passengers that remained onboard from previous trips.
Note: No data was collected for the 11:45 AM inbound trip. Seating capacity of a typical 40-foot transit bus is between 35 and 40 passengers.

SERVICE PRODUCTIVITY

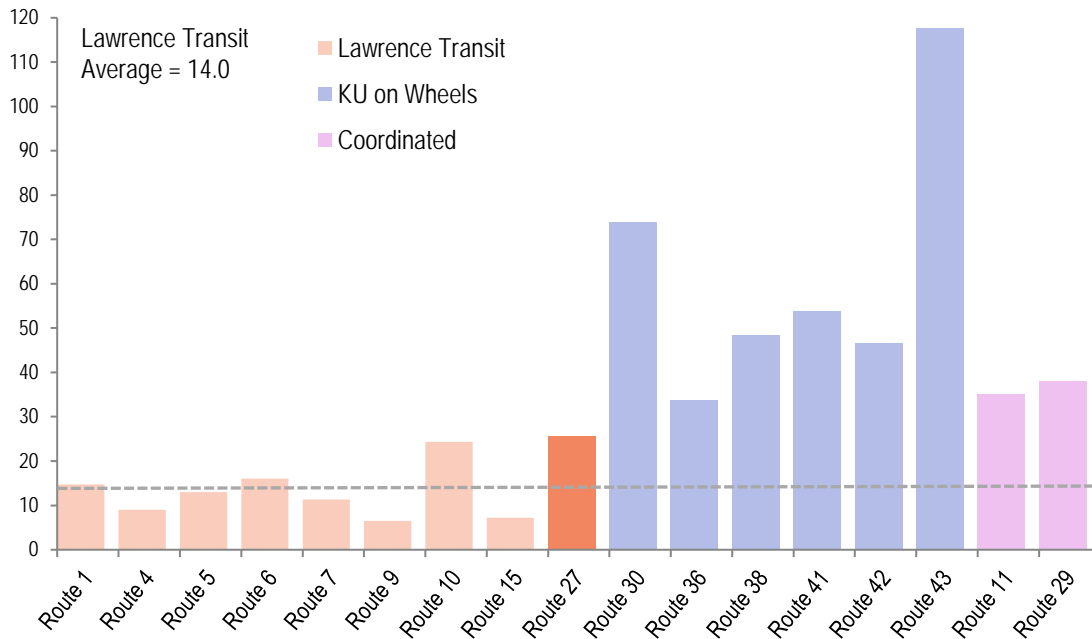
In terms of average passengers per hour, Route 27 is the most productive Lawrence Transit bus route (Figure 16). The route carries 25.5 passengers per hour on weekdays, exceeding the system average by 82% (Figure 17). Route 27 does not operate on Saturdays (Figure 18).

Figure 16 | Service Productivity Statistics

SERVICE DAY	TYPICAL DAILY RIDERSHIP	SERVICE HOURS	AVERAGE RIDERSHIP PER HOUR	LAWRENCE TRANSIT AVERAGE RIDERSHIP PER HOUR	SYSTEM RANK
Monday–Friday	289	11.3	25.5	14.0	1 of 9
Saturday	--	--	--	--	--

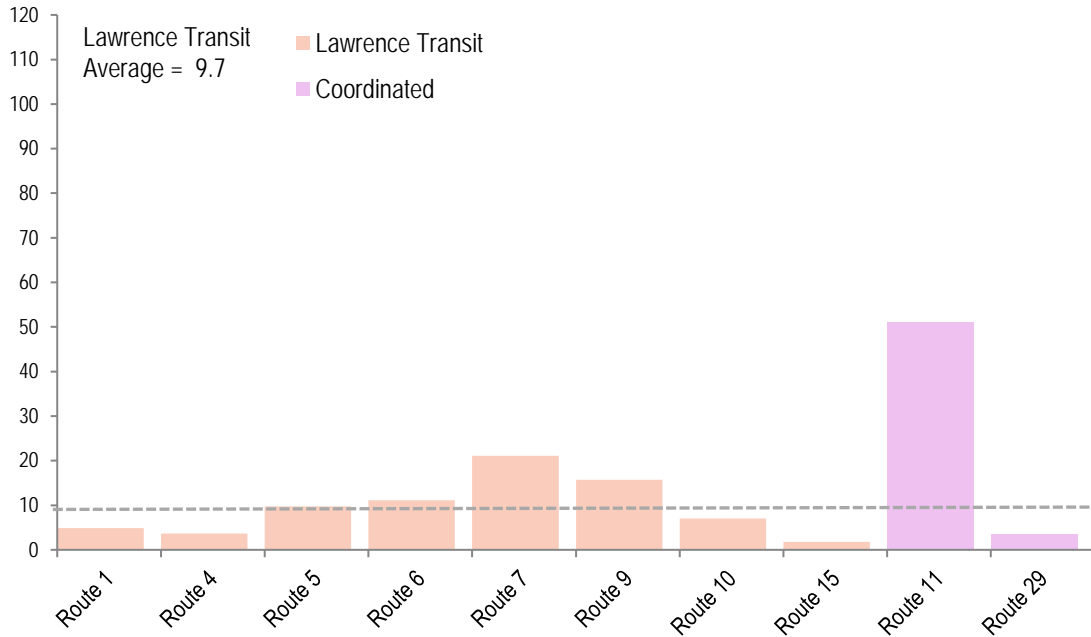
Source: Lawrence Transit, 2016

Figure 17 | Weekday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

Figure 18 | Saturday Ridership per Service Hour by Route



Source: Ride Check, April and May 2016

ON-TIME PERFORMANCE

On weekdays, approximately 62% of Route 27 time points were served “on-time” during the survey period (Figure 19). 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 by both early and late departures, with 18% of time points served early and 20% served late.

Figure 19 | On-Time Performance

WEEKDAY	
On-Time	61.9%
Early	18.1%
Late	20.0%

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

- **Remove Service from Haskell Indian Nations University (HINU).** Ridership at HINU is very low in both directions on Route 27, indicating that a direct connection between KU and HINU is not in high demand. Transit service to HINU is important to maintain, but it is likely best served by some other route or in some other way. Removing service from HINU would likely create a cycle time under 30 minutes, potentially allowing for improved frequency on Route 27 while still operating the route with one vehicle.
- **Add Saturday Service on Route 27.** Ridership is strong during the weekday on Route 27, indicating that additional weekend service could also be successful. As a very fast trip between the KU campus and housing and shopping areas to the south, Saturday service would benefit students, especially in inclement weather and during exam times.
- **Improve Frequency on Weekdays.** Service every 40 minutes is not frequent enough to attract users who have other transportation options, and creates a schedule that is difficult to remember or determine the next departure without a written timetable. Lawrence Transit has had a goal of improving most routes in the system to a frequency of 30 minutes or less. As a route with strong ridership, Route 27 would benefit from an increase in frequency, making service easier to use and potentially attracting new users.
- **Interline Route 27 with Another Route.** Since Route 27 is a short route, it could interline well with another route if additional length and time is needed to create a regular cycle time. If one route has insufficient running time, and another has running time to spare, operationally linking the routes together can optimize running time and recovery time on both routes. To interline two routes, they must have a common terminus and justify similar levels of service.