



IOWA CITY AREA TRANSIT STUDY

April 2021



IOWA CITY AREA TRANSIT STUDY | FINAL REPORT



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Appendix A – Ridership Maps

Appendix B – Route Profiles

Appendix C – Survey Instruments

Appendix D – Fare Study



1 EXECUTIVE SUMMARY

Background

The 2019-2020 Iowa City Area Transit Study, or ICATS, is the result of one year of public outreach, technical analysis, and service planning conducted by CAMBUS, Coralville Transit, Iowa City Transit (the study agencies), and consultant staff. The final product of the ICATS is a fiscally constrained Preferred Alternative that makes detailed route-level recommendations for improving public transit in the Iowa City area.

ICATS Goals

Goals for the ICATS were developed based on public input collected through surveys and in-person outreach, as well as from study agency goals. The primary goals of the ICATS are to increase transit ridership, better collaborate across agencies, improve communication to riders, and take a regional approach to transit planning.

Methodology

The ICATS included in-depth analysis of existing conditions at the study agencies and in the Iowa City area. This analysis included a comprehensive review of local planning work, a review of agency key performance indicators, an analysis of the local market and the distribution of likely transit demand, and a route-by-route examination of ridership, on-time performance, running time, alignment, and capacity. Comprehensive ridership and on-time performance data was collected for all three agencies. This analysis is included in Chapters 3 through Chapter 6.

The ICATS also includes analysis of best practices for transit infrastructure and transit fare policy, which are in Chapter 10 and Appendix D of this report, respectively.

Public Outreach

Three major phases of outreach were conducted as a part of the ICATS: an early fall onboard survey, a late fall series of in-person outreach events and survey, and a winter series of in-person outreach events and survey. The early fall onboard survey collected information on rider behaviors, the late fall outreach and survey collected information on community visions and goals for public transit, and the winter outreach collected feedback on three hypothetical scenarios for improving transit in the Iowa City area. Feedback collected on these three scenarios shaped the Preferred Alternative. Detailed information on and results from outreach work are in Chapter 8.



Recommendations

The ICATS Preferred Alternative for service was developed using public input, market conditions, and existing ridership data. Initially, three scenarios were developed that represent different principles of route planning and areas of emphasis. Following a public outreach and comment period on these three scenarios, a fiscally constrained Preferred Alternative was developed to address operational issues, future growth, industry-standard best practices for route design, and established project goals. The most significant improvements made by the Preferred Alternative are listed below by improvement category:

Increasing frequency on core routes

- 15-minute peak period service on Iowa City Transit's most popular route, the Oakcrest, and 15-minute all-day service on the Iowa City Transit Southside Downtown Shuttle
- 20-minute peak period service on the Iowa City Transit Lower Muscatine/Kirkwood route to Kirkwood Community College and South Iowa City
- 20-minute all-day CAMBUS service between the Hawkeye Commuter Lot, Aspire at West Campus, the University of Iowa hospitals, and downtown Iowa City
- Iowa City Transit Saturday service improvements

Simplifying routes

- Restructuring Iowa City Transit routes with a single set of alignments, instead of operating two different alignments for each route
- Shifting routes to arterials so riders can easily understand where a bus will take them
- Simpler CAMBUS service to and from the Hawkeye Commuter Lot
- A route numbering system to make the three systems easier for riders to use

Addressing on-time performance problems

- Shifting Coralville Transit and Iowa City Transit routes to major arterials for improved speed and reliability
- Eliminating time-consuming and dangerous deviations into parking lots
- Shifting service off roads with operational problems, such as Lee Street in Manville Heights, and off roads with congestion, such as Newton Road near the hospitals

Providing more direct service to popular destinations

- Better connections to major shopping destinations that eliminate the need to transfer vehicles for many riders
- Direct, all-day service between Iowa River Landing and downtown Iowa City
- A one-seat ride from the Pheasant Ridge neighborhood to the Walmart-anchored commercial area south of Highway 6
- Shifting route design away from ineffective loop routes to bi-directional alignments
- A one-seat ride from downtown Iowa City to commercial destinations in Coralville
- Direct service to and from the Hawkeye Commuter Lot

Maps of the preferred alternative for each transit system are in Figure 1-1 through Figure 1-3. A detailed description of the Preferred Alternative is in Chapter 9 of this report.

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Figure 1-2 Coralville Transit Preferred Alternative System Map

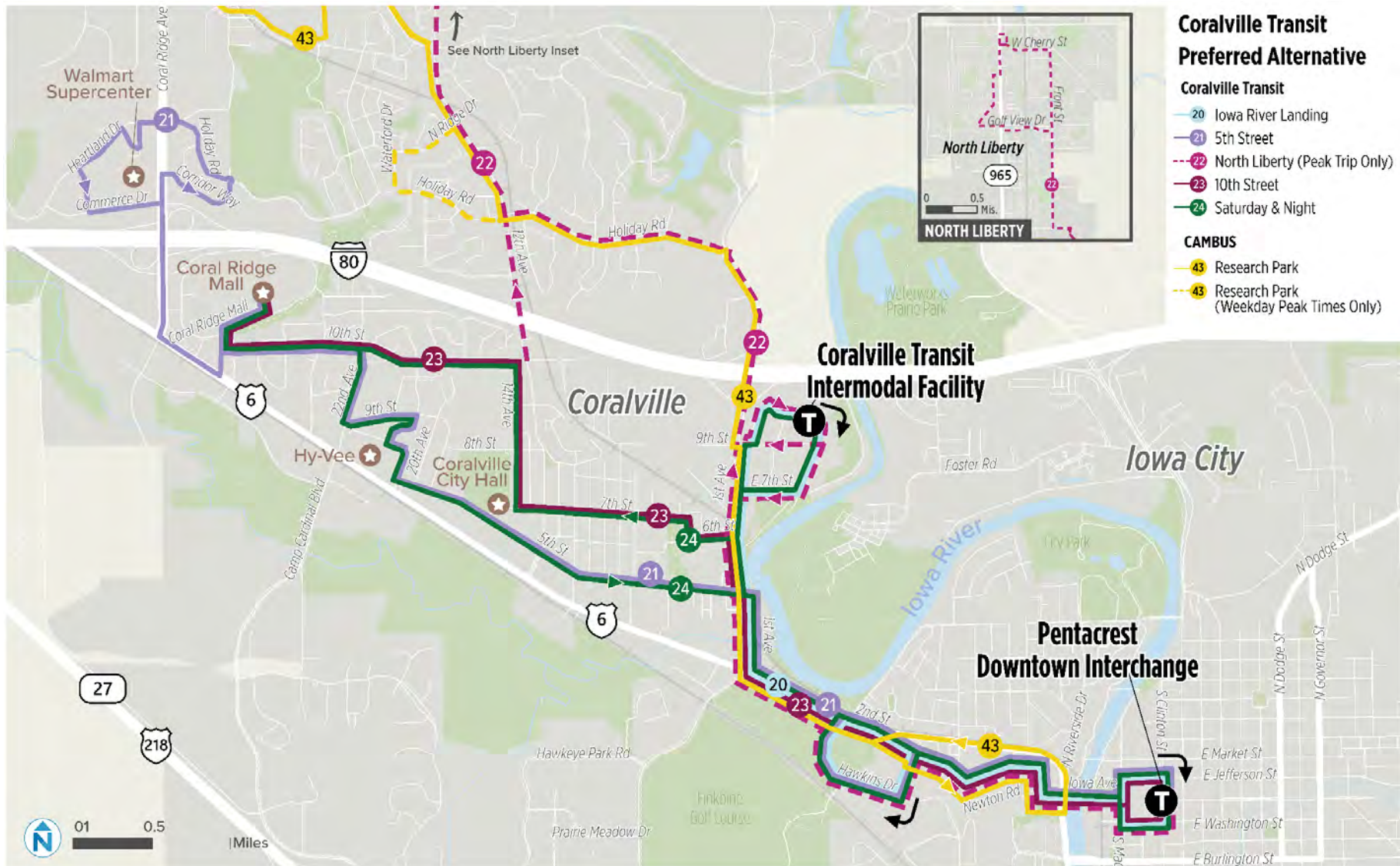
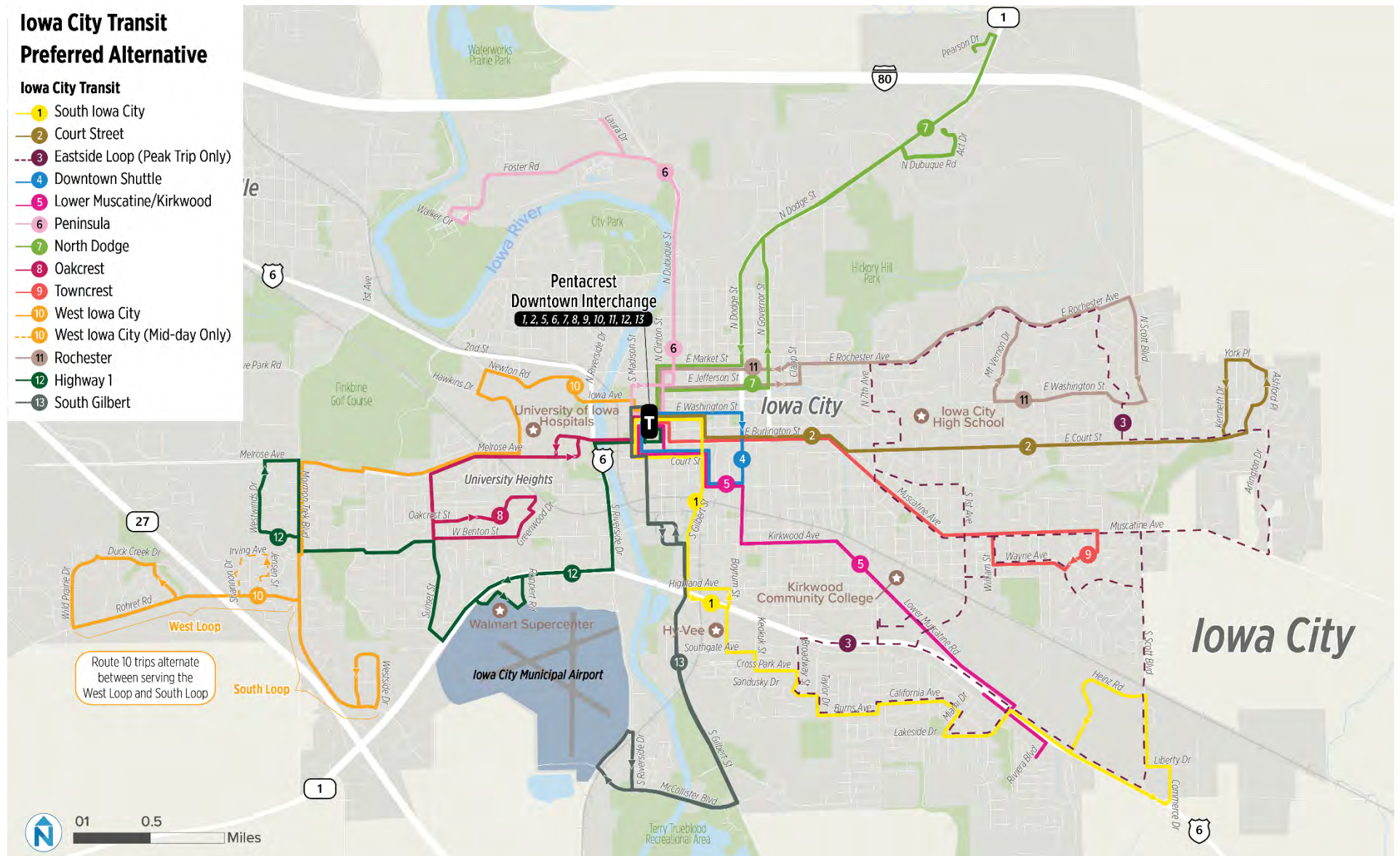




Figure 1-3 Iowa City Transit Preferred Alternative System Map





2 INTRODUCTION

This Final Report of the Iowa City Area Transit Study (ICATS) documents the current conditions of transit service in the Iowa City area, analyzes the results of outreach conducted during the study, and describes the Preferred Alternative of recommended changes to CAMBUS, Coralville Transit, and Iowa City Transit systems. Early, context-setting chapters of the report review the existing transportation and land use planning context in the area, review historic operating data for CAMBUS, Coralville Transit, and Iowa City Transit, and assess potential transit demand in Iowa City, Coralville, North Liberty, University Heights, and outlying areas. Later chapters of the report describe ICATS outreach, the initial service scenarios that were shared with the public, and the recommended Preferred Alternative for transit service in the Iowa City area. The final chapters in the report includes area-wide recommendations for improvements to transit infrastructure, and a description of the ICATS long-range ‘Vision for Transit’.

PROJECT GOALS

The overall goal of the ICATS is to provide practical and sustainable recommendations to improve the productivity and reliability of all three public transit systems operating in the Iowa City area. Specific goals and objectives established at the outset of the ICATS are:

- **Increase ridership** to help reduce Iowa City area residents’ dependence on personal autos, and to complement pedestrian and bicycling modes of transportation
- **Work together across agencies** to most efficiently serve the community, and to provide a streamlined experience for riders—particularly those that may use more than one agency’s services
- **Improve communications to riders** so they have complete and up-to-date information on routes, fares, stops, and service alerts
- **Take a regional approach** and look to see if there are options for expanding service outside of the study agencies’ current footprint



REPORT ORGANIZATION

This report assesses fixed-route transit in the four municipalities in the service area of CAMBUS, Coralville Transit, and Iowa City Transit: Coralville, Iowa City, North Liberty, and University Heights. This report also assesses the demographic and socioeconomic characteristics of the service area, as well as transit system characteristics and performance. The document consists of 11 chapters, including this introduction, and four appendices, which are summarized below:

- **Chapter 1** is a high-level summary of the ICATS that communicates the most important findings from the report.
- **Chapter 2** is this chapter, which introduces the ICATS Final Report.
- **Chapter 3** considers local planning efforts in the study area.
- **Chapter 4** evaluates socioeconomic and demographic conditions within the study area to better understand transit demand and service gaps.
- **Chapter 5** reviews trends for CAMBUS, Coralville Transit, and Iowa City Transit's fixed-route service, including recent operational and performance data.
- **Chapter 6** provides detailed information for existing CAMBUS, Coralville Transit, and Iowa City Transit routes.
- **Chapter 7** summarizes the service scenario development process and identifies the preliminary service concepts that were shared with the public.
- **Chapter 8** summarizes the public outreach and stakeholder engagement processes that occurred over the course of the ICATS.
- **Chapter 9** describes the Preferred Alternative that was developed based on public feedback to the preliminary service concepts. This chapter also details recommended changes in service and alignment for individual routes in the CAMBUS, Coralville Transit, and Iowa City Transit systems.
- **Chapter 10** describes best practices for bus stop location and infrastructure, speed and reliability improvements, and zero-emission transit vehicle planning. This chapter also makes planning-level recommendations for improvements to bus stops and transit corridor infrastructure in the Iowa City area.
- **Chapter 11** describes the ICATS 'Vision for Transit', which is a series of unfunded service improvements that the ICATS public outreach process uncovered as desired by the community. This chapter describes the Vision for Transit and estimates its capital and operating costs.
- **Appendix A** includes route maps for every study route, showing the alignment, bus stop locations, and average daily weekday boardings and alightings in the inbound and outbound direction.
- **Appendix B** provides route summary tables and charts that give insight into passenger loads, boardings, and alightings.
- **Appendix C** includes the English and Spanish onboard survey instrument used during outreach.
- **Appendix D** is the ICATS Fare Study, which was conducted during the ICATS as a set of analyses complementing existing conditions and service development work. The Fare Study examines various potential changes to transit fares in the Iowa City area and makes recommendations for improving and integrating fares to achieve study goals.



3 PLAN REVIEW

This chapter reviews Iowa City area transportation and land use plans published in the past 13 years. Each plan was analyzed and information relevant to the Iowa City Area Transit Study (ICATS) summarized. The plan review includes the following documents:

- University of Iowa Campus Master Plan (2006)
- Iowa City Downtown & Riverfront Crossings Master Plan (2013)
- Iowa City Comprehensive Plan (2013)
- Coralville Community Plan (2014)
- Iowa City Downtown & Pedestrian Mall Streetscape Plan Update (2014)
- MPO of Johnson County Future Forward 2045 Long Range Transportation Plan (2017)
- Coralville West Land Use Area Master Plan (2016)
- Iowa City Bicycle Master Plan (2017)

Findings from this chapter contextualize future transit planning work in Iowa City area by highlighting planning goals, visions, and unfulfilled objectives relating to public transit.

KEY FINDINGS

Important relevant transportation and land use themes from this study's plan review are:

- Long-term plans for a transportation hub with rail connections to Cedar Rapids, Chicago, Des Moines, and Omaha include a transit-oriented development community in the general area of S Clinton Street and Wright Street, just south of downtown Iowa City.
- There is general agreement among Iowa City area transportation plans that efforts should be continued to increase transit ridership, improve access to bus stops, and improve transit amenities.
- Transportation plans produced by both Iowa City and Coralville call for the continuous evaluation of transit service, an effort which this study (ICATS) is currently carrying out.
- Significant commercial, industrial, and residential greenfield development is planned in Coralville's West Land Use Area.



PLAN REVIEW

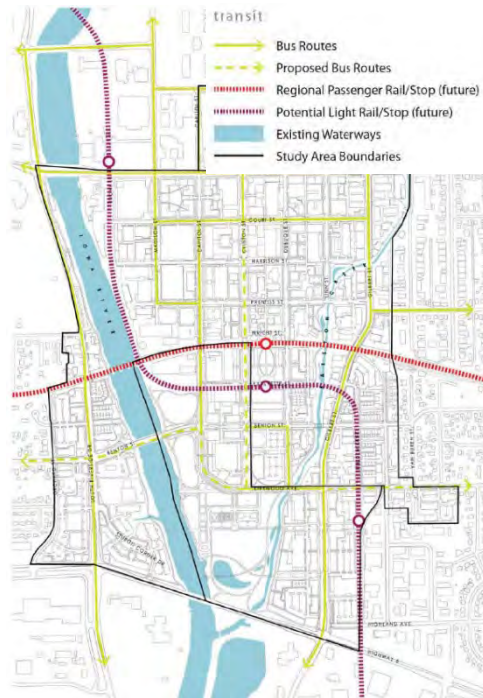
University of Iowa Campus Master Plan (2006)

Adopted in 2006, this master plan is a broad framework for the development of the University of Iowa campuses in Iowa City (Main Campus) and Coralville (Oakdale Campus), which total approximately 1,700 acres. The plan primarily guides land use development but also includes transportation goals meant to make the campus more pedestrian-oriented and transit-accessible. The plan supports compact growth, improved CAMBUS service, and a more robust bicycle network.

An updated campus master plan, which is currently under development, calls for financial support for dedicated CAMBUS park-and-ride facilities. The updated plan also proposes an important paradigm shift from the previous plan by recommending the reduction of parking capacity throughout campus to facilitate better active transportation and transit access to university destinations.

Iowa City Downtown & Riverfront Crossings Master Plan (2013)

This plan, which was adopted in 2013, serves as a framework to identify and guide investment towards redevelopment in the Downtown Riverfront Crossings District. The plan proposes guiding dense, mixed-use, transit-oriented development around a future regional passenger rail hub between Wright and Lafayette streets. The plan also recommends that bus service be expanded in the district, with new bus stops at key locations and integrated with any future rail stations.



Iowa City Comprehensive Plan (2013)

The city of Iowa City's 2013 comprehensive plan serves as the roadmap for directing growth in the city. The transportation component of the plan includes six goals:

- Accommodating all modes of transportation
- Encourage walking and bicycling
- Promote use of public transit
- Maximize the safety and efficiency of the transportation network
- Maximize mobility for the elderly and persons with disabilities
- Encourage economic vitality through transportation innovation and investment

Specific objectives outlined under the plan's 'promote use of public transit' goal include monitoring on-time performance, ensuring adequate levels of transit service during peak periods, continuing bus marketing campaigns, and upgrading transit capital equipment as necessary.



Coralville Community Plan (2014)

The Coralville Community Plan was adopted in 2014 and is the comprehensive plan for the City of Coralville. The plan's transportation and mobility component includes a number of goals and planned improvements for different transportation modes but specifically calls on the city to further invest in public transit.

The most significant transit investment produced by this plan is the Coralville Transit Intermodal Facility at Iowa River Landing, which opened in 2015. Opening the transit center involved restructuring Coralville Transit routes and provides riders with a connection to intercity bus service. In addition to the new transit center, the Coralville Community plan calls for:

- Continuous evaluation of Coralville Transit routes
- New bus shelters and benches
- Review of Coralville development regulations to ensure new buildings support transit use

Other plan recommendations include expanding Coralville's bicycle and trail network, conducting a comprehensive inventory of sidewalks, improving crosswalks, and evaluating parking requirements.

Iowa City Downtown & Pedestrian Mall Streetscape Plan Update (2014)

This 2014 plan includes a site assessment of existing conditions and general planning framework for Iowa City's Downtown District. The plan makes general recommendations to:

- Improve streetscape design
- Update wayfinding kiosks
- Improve pedestrian safety
- Develop new public spaces
- Enhance bicycle accommodations
- Replace aging infrastructure

This plan's transportation-related recommendations are primarily active transportation-based, although it does consider streetscape changes that would address bus queuing and improve the pedestrian environment around bus stops. The plan proposes a number of improvements that would make transit easier to access, such as crosswalks, ADA-compliant curb ramps with tactile warning strips, and new bicycle lanes along major streets.



MPO of Johnson County Future Forward 2045 Long-Range Transportation Plan (2017)

This plan, adopted in 2017, was produced by the Johnson County metropolitan planning organization (MPO) and is the federally recognized long-range transportation plan (LRTP) for the Iowa City urbanized area. The plan specifically identifies the need to increase funding for transit facilities, additional bus service, and transit bus replacement for vehicles beyond their useful life. The plan also calls for coordination with e-hailing companies such as Uber and Lyft and for a renewed focus on bringing passenger rail service to the region.

The LRTP specifically identifies a new maintenance and bus storage facility for Iowa City Transit as a pressing capital need for regional transit.

Coralville West Land Use Area Master Plan (2016)

This community plan was adopted in 2016 to guide development in Coralville's West Land Use Area. The plan focuses on conservation, walkability, sustainability, opportunity, and recreation, and calls for a mix of commercial, industrial, and residential development. The master plan proposes a grid network of arterial and collector streets but does not call specifically for transit infrastructure or service. The proposed transportation network also includes a comprehensive network of shared-use paths and trails to create a pedestrian-friendly environment.



Iowa City Bicycle Master Plan (2017)

The Iowa City Bicycle Master Plan was adopted in the summer of 2017 and establishes a framework for all investment related to bicycling in Iowa City. The plan targets Iowa City to become a gold-level Bicycle Friendly Community. To achieve this, the plan identifies six guiding elements for an effective transport network: Integrity, Directness, Safety, Comfort, Experience, and Feasibility. Recommendations include tailoring the system to specific user groups, avoiding conflicts with traffic operations, filling the gaps, expanding the network, improving wayfinding, and better bicycle facilities. The plan also recommends bicycle-transit integration where transit stops with good accessibility and secure parking can attract multimodal trips and increase ridership. Zoning recommendations in this plan include increasing minimum sidewalk widths, incorporating bike lanes into collectors and arterials, and differentiating between long-term and short-term parking requirements.



4 MARKET ANALYSIS

The market analysis maps demographic characteristics associated with the market for transit ridership in the Iowa City area. The primary purpose of this analysis is to:

- Identify areas with potentially high transit demand that are currently unserved by transit
- Identify areas with low demand that may currently be overserved by transit

Nine different demographic indicators (shown in Figure 4-1) are used in this analysis. Seven of these indicators are then combined into a Transit Propensity Index (TPI). The TPI uses this combination of relative densities to highlight the overall potential demand for public transit in different neighborhoods.

Figure 4-1 lists each demographic indicator included in this analysis, along with its data source and the geography at which it was originally reported. Each measure is related to a community's potential demand for transit and is explained in more depth before each map in the section below.

Figure 4-1 Market Analysis Indicators

Indicator	Measure	Source	Geography
Population	People per square mile	2017 ACS Five-Year Estimates	Census Block Group
Occupied Rental Units	Occupied rental units per square mile		Census Block Group
Zero-Vehicle Workers	Workers (over age 16) without access to a vehicle per square mile		Census Tract
Seniors	People aged 65 and over per square mile		Census Block Group
College-Aged Youth	People aged 18 through 21 per square mile		Census Block Group
Low-Income	People with incomes below the poverty line in the past 12 months		Census Block Group
People of Color	People identifying themselves as a race/ethnicity other than non-Hispanic/Latino white, per square mile	2015 LODES	Census Block Group
Employment	Jobs per square mile		Census Block Group
Low-Wage Employment	Jobs paying \$1,250 or fewer dollars per month per square mile		

Sources: American Community Survey (ACS) and Longitudinal Employer-Household Dynamics Origin-Destination Employment Statistics (LODES)



KEY FINDINGS

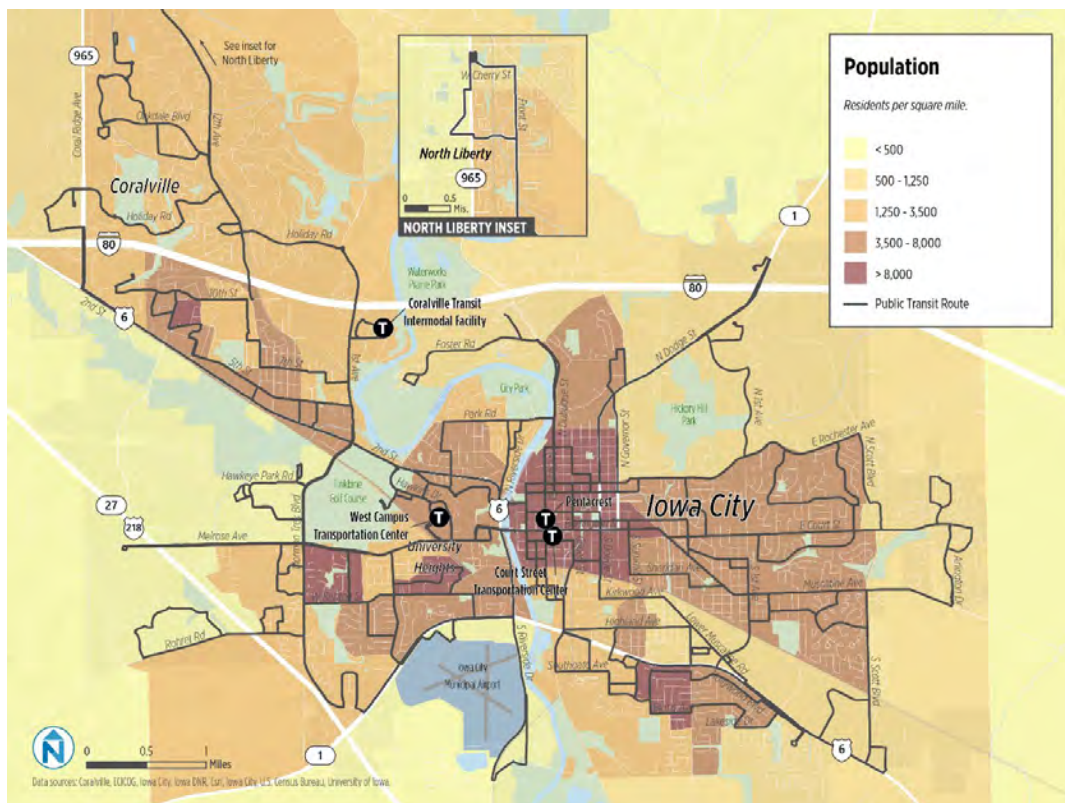
- Overall, downtown Iowa City shows the greatest potential demand for transit. High-density student housing southeast of University Heights, a small area of Coralville between I-80 and Highway 6, and Iowa City's Northside and College Green neighborhoods also score highly.
- Most low-earning jobs are concentrated in downtown Iowa City and in the commercial plazas along Highway 6 in Coralville.
- College-aged youth, workers without cars, and the general population are concentrated in high-density neighborhoods such as those around downtown Iowa City. People aged 65 and older, however, are concentrated in lower-density, outlying communities.

ANALYSIS INDICATORS

Population Density

Figure 4-2 shows population density for the greater Iowa City area. Population density is an important measure of potential transit demand, as higher concentrations of people represent more potential transit riders. In the Iowa City area, population density is highest in downtown Iowa City and its nearby residential neighborhoods. There is also high population density southeast of University Heights, in Iowa City's Wetherby neighborhood, in a small Coralville neighborhood, and south of Finkbine Golf Course. Coralville, outlying Iowa City, and North Liberty consist of primarily lower-density communities.

Figure 4-2 Population Density

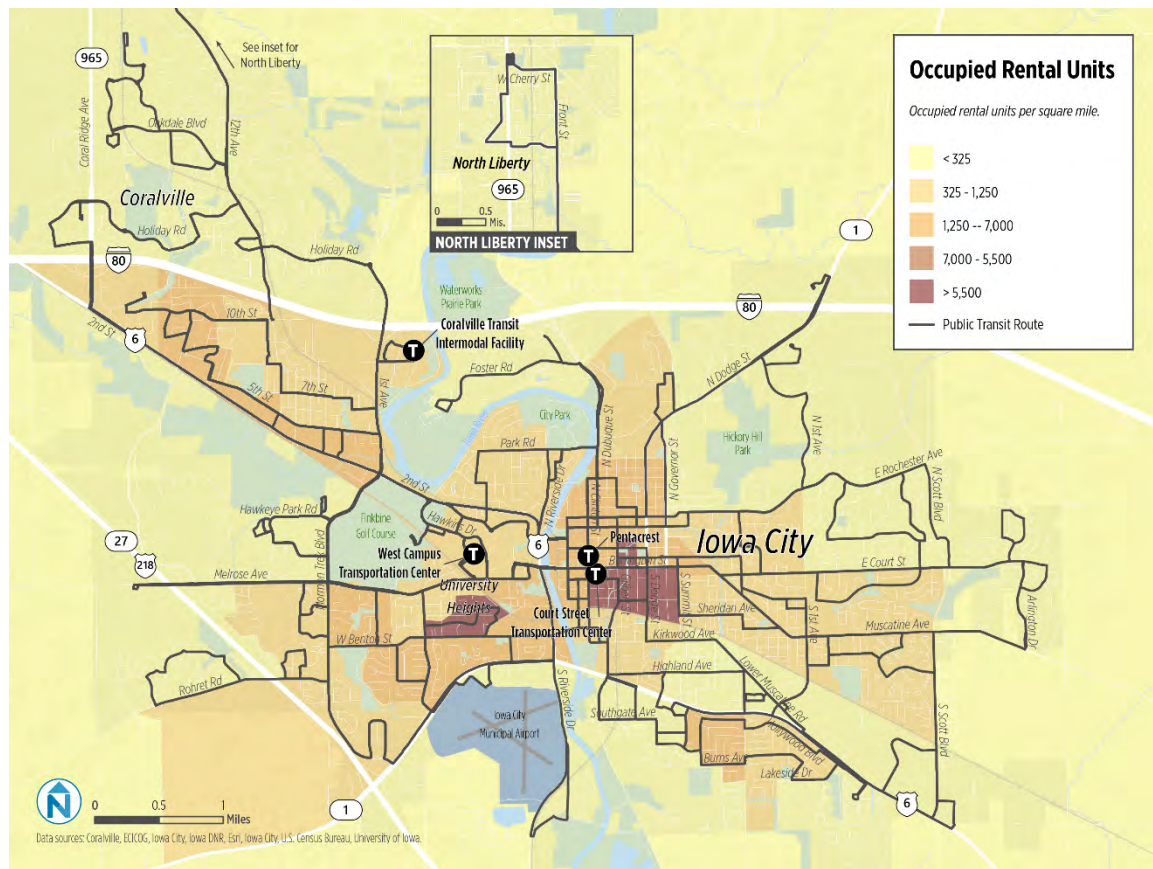




Apartment Density

People who live in rented apartments are typically more likely to ride transit than homeowners. In the Iowa City area, occupied rental units (Figure 4-3) are primarily concentrated southeast of downtown Iowa City and south of the main University campus, suggesting that renters are predominantly students. Other areas with moderate density of rental units include neighborhoods along Highway 6 in Coralville and in Iowa City's Northside neighborhood. Coralville north I-80, North Liberty, and northeast Iowa City all have low densities of rental units.

Figure 4-3 Density of Occupied Rental Units

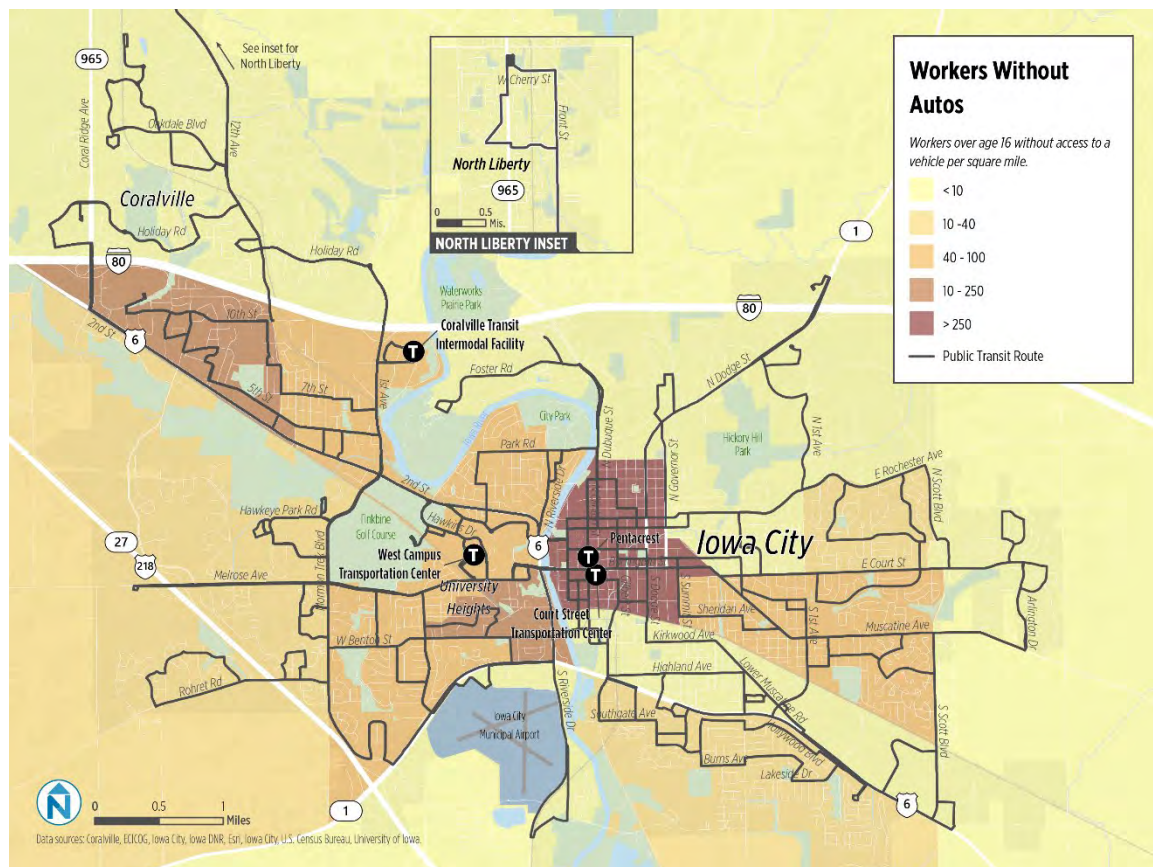




Density of Workers without Autos

Workers without access to a vehicle are typically frequent transit users, as their trips to and from work must be conducted without an automobile. Figure 4-4 shows the density of these workers in the Iowa City area. Downtown Iowa City, the Northside neighborhood, and the University of Iowa East Campus have the highest densities of workers without access to vehicles. Other areas with relatively moderate densities of workers without auto access include the area south of University of Iowa and the Coralville communities between I-80 and Highway 6. Communities north of I-80 and in northeast Iowa City have the lowest densities of workers without access to a vehicle.

Figure 4-4 Density of Workers without Access to a Vehicle

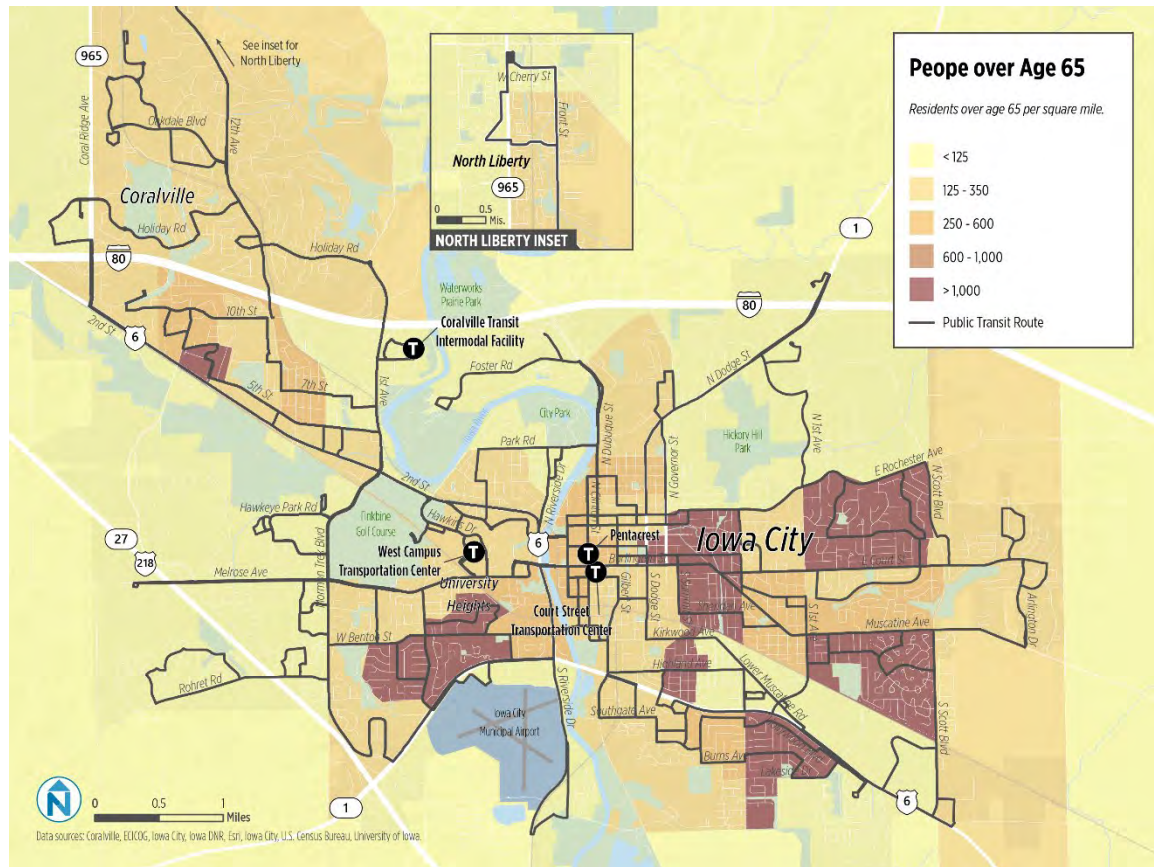




Senior Density

People over the age of 65 may ride transit more often than other community members, for reasons related to income, health, and safety. Figure 4-5 shows the density of people over 65 in the Iowa City area. These older residents are primarily concentrated in the eastern and southeastern neighborhoods of Iowa City and south of University Heights. The lowest densities of people over age 65 are in North Liberty west of Coral Ridge Avenue and north of W Cherry Street, northeast of Hickory Hill Park, and west of Mormon Trek Boulevard.

Figure 4-5 Density of Seniors



College-aged residents are typically more likely to ride transit than other community members, for reasons related to income, travel patterns, campus parking policy, and personal preference. Figure 4-6 shows density of college-aged youth in the Iowa City area. Unsurprisingly, the highest densities are near the University of Iowa campus and in the residential areas surrounding downtown Iowa City. Relatively moderate density of college-aged youth also exists in Coralville near Coral Ridge Mall, and in the Wetherby neighborhood of Iowa City. The rest of the area has considerably lower densities of college-aged youth.

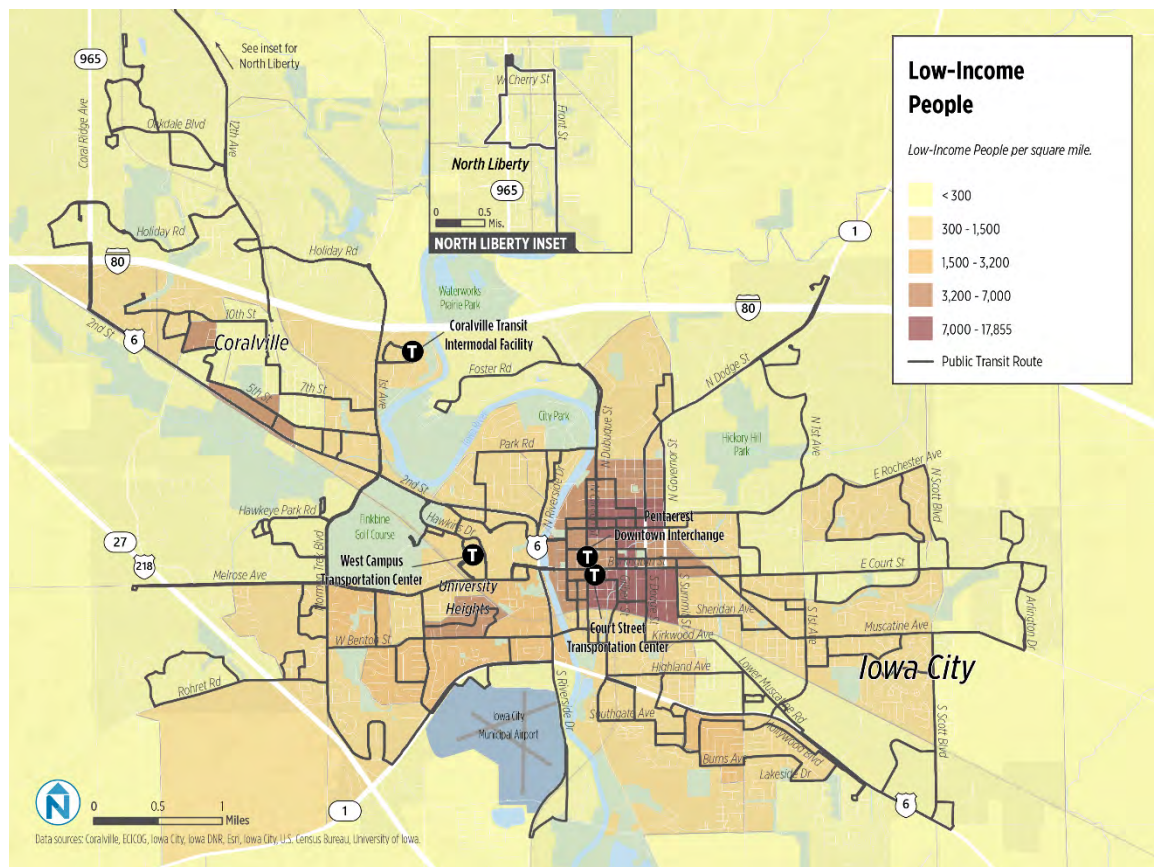
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Low-Income People Density

People with low incomes are often more likely to ride transit than people with higher incomes, due to the low cost of a transit trip and possible financial barriers to vehicle access. People with low incomes are concentrated most densely near downtown Iowa City, in student neighborhoods. Outside downtown Iowa City, people with low incomes are most densely concentrated in the Oakcrest Street area, north of Lantern Park Plaza in Coralville, and between 5th Street and Highway 6 in Coralville. There are also some concentrations of people with low incomes throughout west Iowa City and south of Highway 6 between Keokuk Street and Sycamore Street.

Figure 4-7 Low-Income People Density

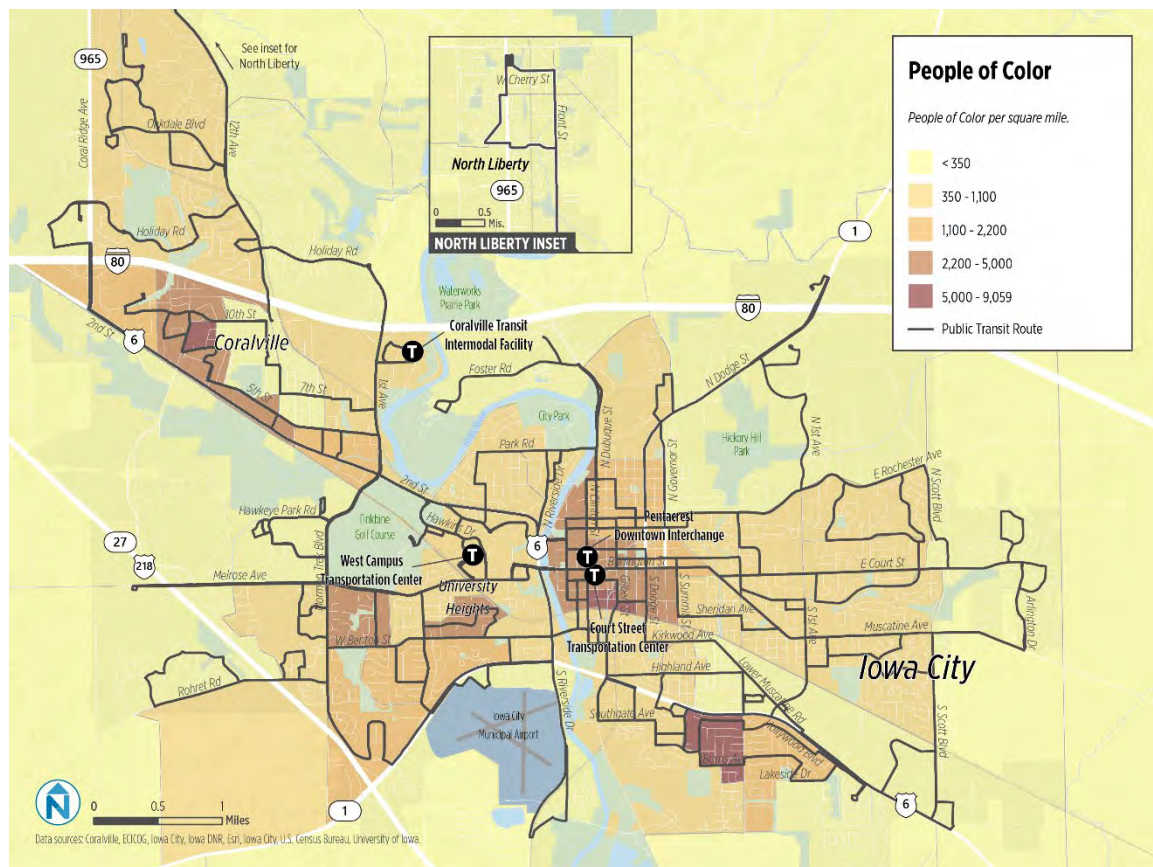




Density of People of Color

Understanding where concentrations of people of color exist in the Iowa City area is important for assessing racial equity impacts of any changes to the transit network. People of color live at the highest densities south of Highway 6 between Keokuk Street and Sycamore Street, just south of downtown around Ralston Creek, and in Coralville north of Lantern Park Plaza. There are also relatively high concentrations of people of color in places with high densities of University-affiliated residencies, such as the Westgate Street area, downtown Iowa City, high-density neighborhoods in west Coralville, and the Oakcrest Street corridor.

Figure 4-8 Density of People of Color

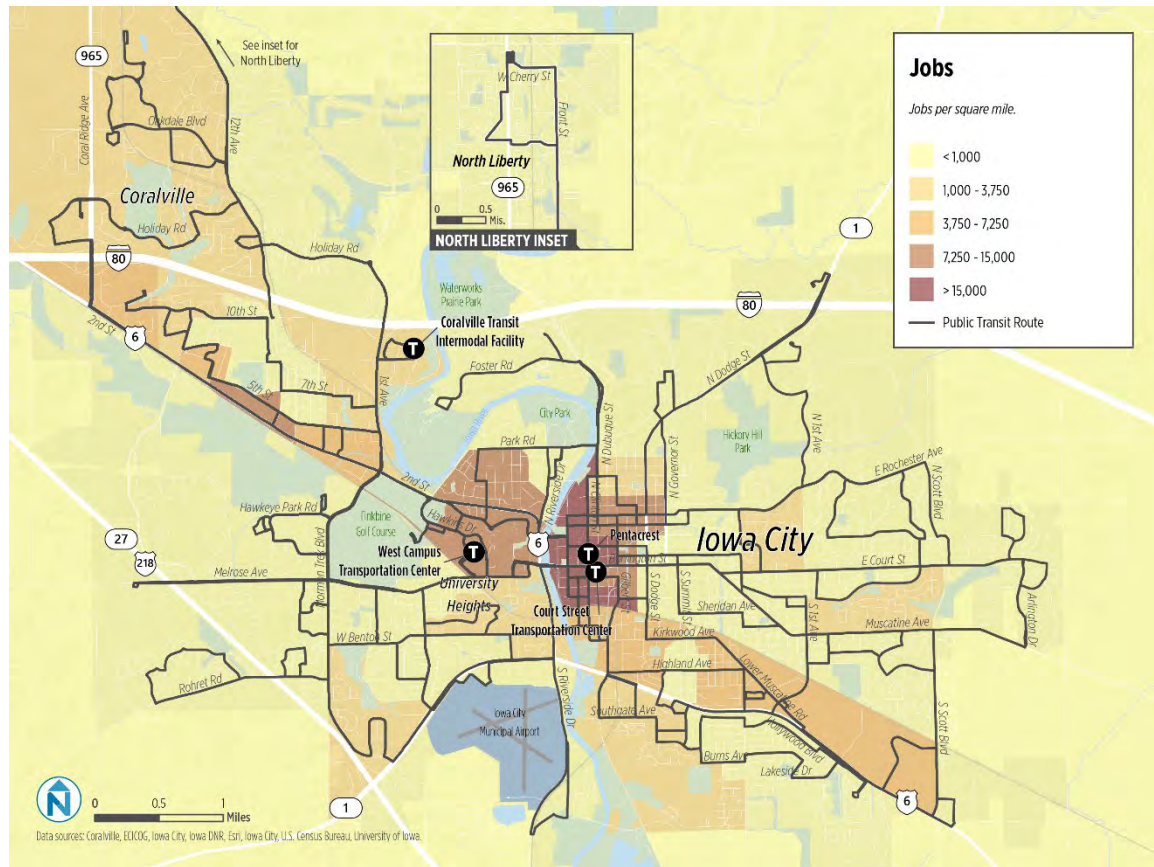




Job Density

Like population density, job density is an important predictor of transit demand; places with higher concentrations of jobs are more likely to support transit service. Job density in the Iowa City area (Figure 4-9) is highest in downtown Iowa City, on University of Iowa Campus, in Iowa City's Northside neighborhood, and along Highway 6 in Coralville. Other neighborhoods with a relatively high density of jobs include the area along Highway 6 in Iowa City. North Liberty and much of outlying Coralville and Iowa City have relatively low job density.

Figure 4-9 Job Density



Low-income job density is also an important predictor of transit demand, as workers earning relatively low wages are less likely to be able to afford a vehicle for commuting. Figure 4-10 shows the density of low-income jobs in the Iowa City area. Downtown Iowa City, the Coral Ridge Mall area, and the Highway 6 shopping corridor in Coralville have the highest concentration of low-income jobs. Other neighborhoods with a relatively moderate density of low-income jobs include the commercial corridor along Highway 6 in Iowa City, south Iowa City neighborhoods, and Iowa City's Muscatine Avenue neighborhood.

Low-Income Jobs

Jobs paying fewer than \$1,250 per month, per square mile.

- < 100
- 100 - 350
- 350 - 825
- 825 - 3,000
- > 3,000

— Public Transit Route

North Liberty Inset

0 0.5 Miles

See inset for North Liberty

Map Labels: Coralville, North Liberty, Iowa City, Coralville Transit Intermodal Facility, West Campus Transportation Center, University Heights, Court Street Transportation Center, Pentacrest, Municipal Airport, W. Cherry St, Front St, 965, 80, 6, 27, 218, 1, 127th Ave, Oakdale Blvd, Holiday Rd, 10th St, 7th St, 5th St, 3rd St, 2nd St, Hawkeye Park Rd, Malrose Ave, W Benton St, Rober Rd, City Park, Park Rd, Foster Rd, N Dubuque St, N Davenport St, N Hickory Hill Park, N 1st Ave, E Rochester Ave, N Scott Blvd, E Court St, Muscatine Ave, S Scott Blvd, Lakeside Dr, Burns Ave, S Highway, S 1st Ave, S 2nd Ave, S 3rd Ave, S 4th Ave, S 5th Ave, S 6th Ave, S 7th Ave, S 8th Ave, S 9th Ave, S 10th Ave, S 11th Ave, S 12th Ave, S 13th Ave, S 14th Ave, S 15th Ave, S 16th Ave, S 17th Ave, S 18th Ave, S 19th Ave, S 20th Ave, S 21st Ave, S 22nd Ave, S 23rd Ave, S 24th Ave, S 25th Ave, S 26th Ave, S 27th Ave, S 28th Ave, S 29th Ave, S 30th Ave, S 31st Ave, S 32nd Ave, S 33rd Ave, S 34th Ave, S 35th Ave, S 36th Ave, S 37th Ave, S 38th Ave, S 39th Ave, S 40th Ave, S 41st Ave, S 42nd Ave, S 43rd Ave, S 44th Ave, S 45th Ave, S 46th Ave, S 47th Ave, S 48th Ave, S 49th Ave, S 50th Ave, S 51st Ave, S 52nd Ave, S 53rd 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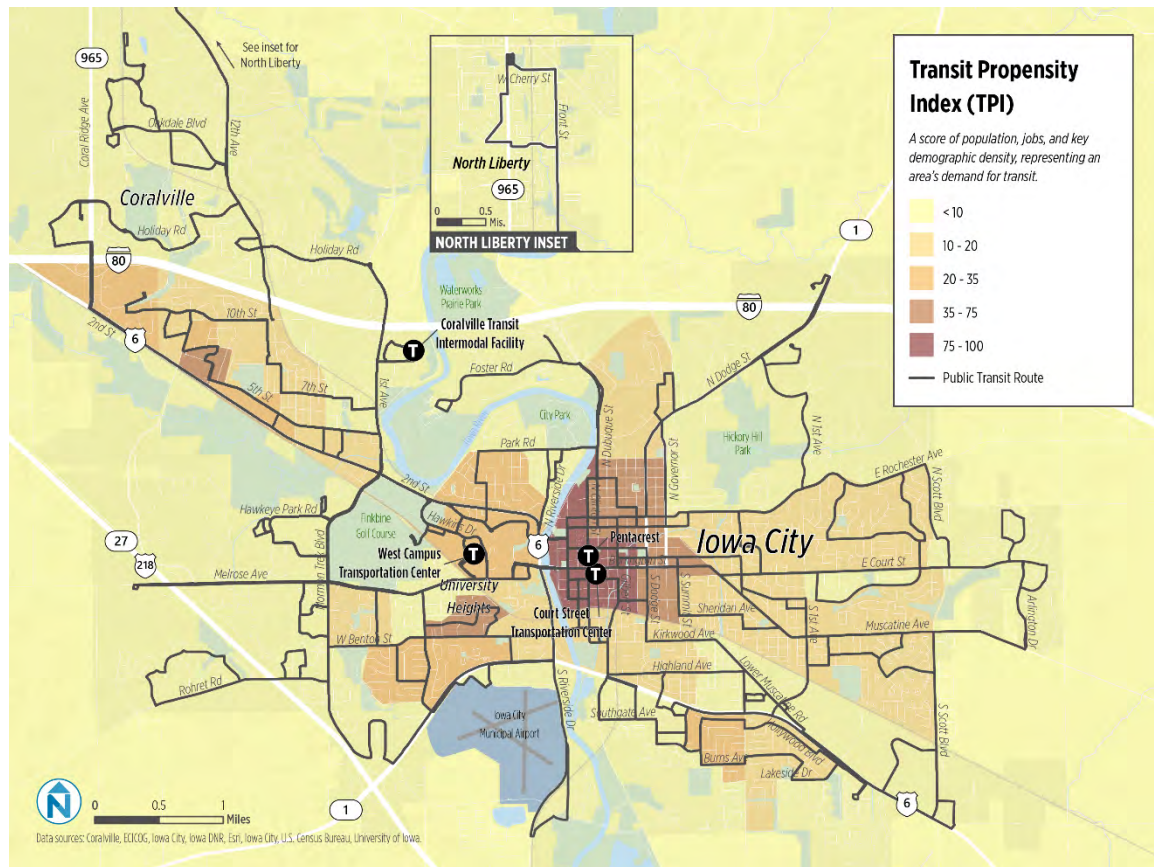


Transit Propensity Index

Figure 4-11 shows a Transit Propensity Index (TPI) for the Iowa City area. A TPI is a composite score of the density of population, occupied rental units, workers without access to autos, seniors, college-aged youth, employment, and low-wage employment. This score is relative to Johnson County as a whole and represents each census block group's overall potential demand for transit. In the Iowa City area, places with the highest TPI score are downtown Iowa City, the Northside neighborhood, the area south of University Heights, and part of the Highway 6 corridor in Coralville.

Neighborhoods in the area with the lowest TPI score include neighborhoods at the outskirts of Iowa City, Coralville north of I-80, the municipality of North Liberty, and communities west of Mormon Trek Boulevard.

Figure 4-11 Transit Propensity Index





5 TRANSIT IN IOWA CITY

This analysis compares and tracks the operations and performance of CAMBUS, Coralville Transit, and Iowa City Transit (also called the ‘study agencies’) from 2012 through 2017. The trends in this chapter represent performance relative to both previous years and each other study agency, providing context for future service improvements.

Data used in this analysis are from the National Transit Database (NTD), a federal database of transit data to which CAMBUS, Coralville Transit, and Iowa City Transit report annually. The analysis is conducted only through 2017 because that is the most recent year for which NTD data have been released. The key performance and operations indicators analyzed are:

- Annual passenger trips
- Annual revenue hours
- Passengers per revenue hour
- Annual revenue miles
- Passengers per revenue mile
- Total annual operating expenses
- Operating expense per passenger
- Operating expense per revenue hour
- Annual fare box revenue
- Average passenger fare
- Fare box recovery ratio

KEY FINDINGS

- Total ridership for all agencies has declined by 13% from 2012 to 2017
- The amount of service provided by all agencies did not change significantly from 2012 to 2017
- Efficiency in service provision and operating expenses declined significantly for all agencies from 2012 to 2017
- CAMBUS’ operating expenses are significantly lower than both Coralville Transit and Iowa City Transit’s, both absolutely and on a per-passenger and per-hour basis, due primarily to CAMBUS’ use of student operators



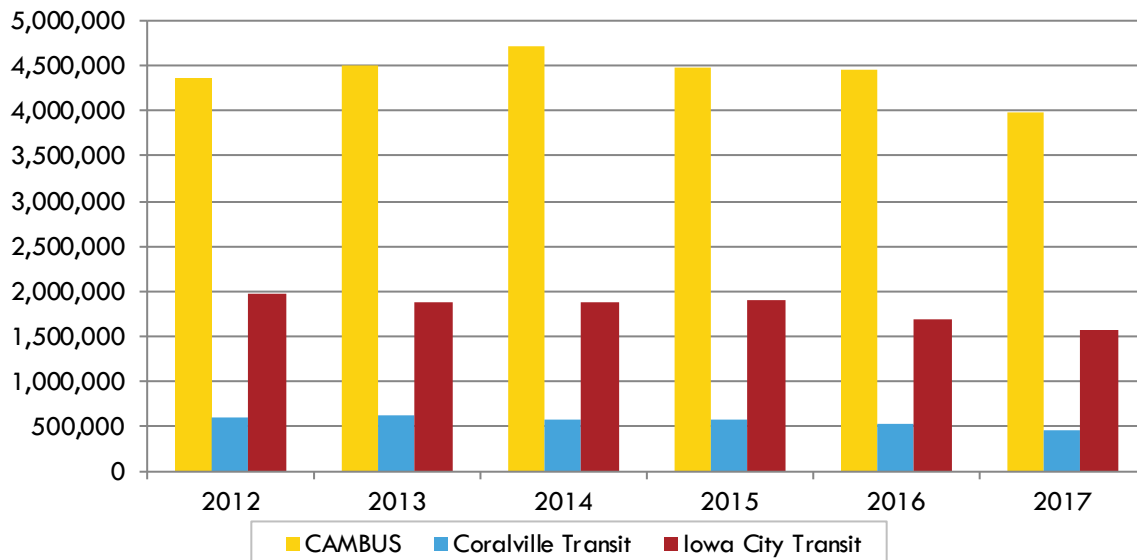
Operating Figures

Passenger Trips

Figure 5-1 shows unlinked passenger trips¹ for each agency. From 2012 to 2017, CAMBUS consistently recorded the highest number of annual boardings, with Coralville Transit reporting the fewest. From 2012 to 2014, ridership increased on CAMBUS before declining, with the largest dip occurring between 2016 and 2017 (-11%). The largest decrease in ridership for Coralville Transit occurred from 2016 to 2017 (-13%) and for Iowa City Transit from 2015 to 2016 (-11%).

Overall, from 2012 to 2017, ridership decreased by 9% on CAMBUS, decreased by 23% on Coralville Transit, and decreased by 20% on Iowa City Transit. Ridership for all agencies combined has declined a total of 13% over the same period.

Figure 5-1 Annual Unlinked Passenger Trips by Agency, 2012-2017



Source: National Transit Database

¹ An 'unlinked passenger trip' represents a single boarding of a transit vehicle. Passengers that board an Iowa City Transit bus and then transfer to a CAMBUS vehicle, for example, are counted as two unlinked passenger trips.

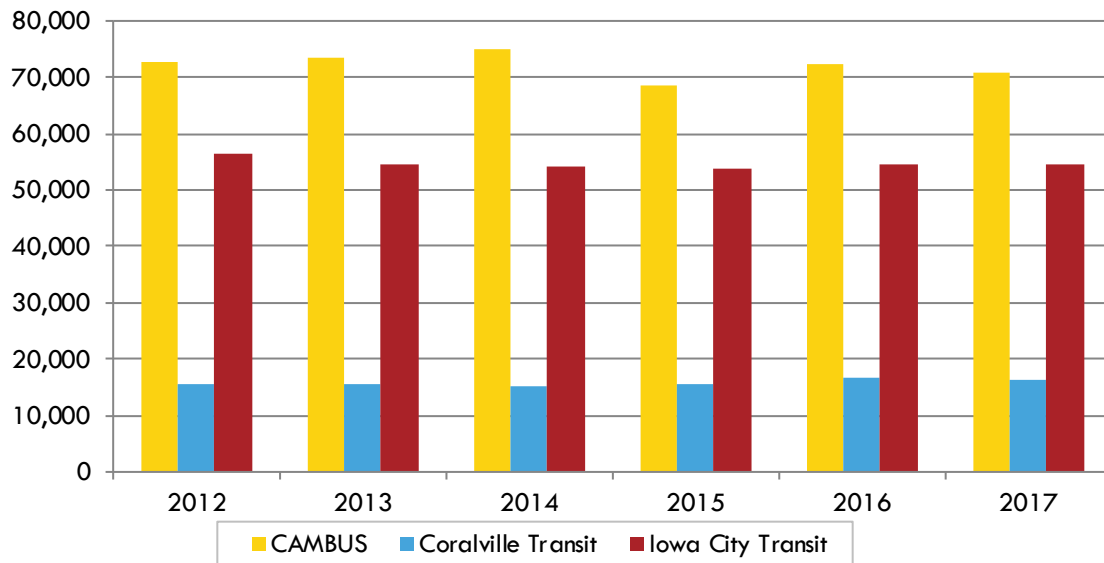


Revenue Hours

Annual revenue hours is a common measure of the amount of service provided by a transit agency. For the study agencies, annual revenue hours (Figure 5-2) fluctuated slightly from 2012 to 2017 but did not change significantly. From 2012 to 2017, CAMBUS has consistently provided the most service and Coralville Transit the least.

From 2012 to 2017, CAMBUS and Iowa City Transit decreased their annual revenue hours by 3%, while Coralville Transit increased its revenue hours by 5%.

Figure 5-2 Annual Revenue Hours by Agency, 2012-2017



Source: National Transit Database

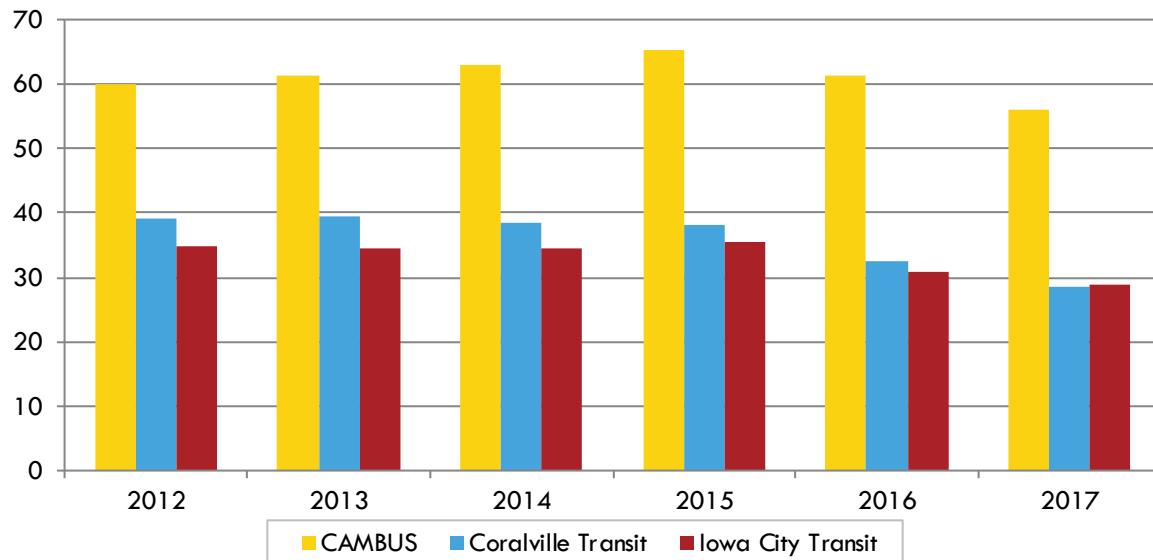


Passenger Trips per Revenue Hour

Passenger trips per revenue hour is a commonly used measure of service efficiency; providing more trips per hour can mean a transit service is using its resources more efficiently. Among study agencies from 2012 to 2017, CAMBUS has consistently provided the most trips per revenue hour of the three study agencies, while Iowa City Transit has typically provided the fewest (Figure 5-3). In 2017, Coralville Transit's trips per revenue hour dipped below Iowa City Transit's.

From 2012 to 2017, all study agencies experienced a decline in trips per revenue hour, with Coralville Transit's being the most extreme (-27%) and CAMBUS' the least extreme (-6%). Overall, Iowa City area transit agencies in 2017 carried 11% fewer passengers per revenue hour than they did in 2012. Because these agencies have not significantly increased the number of revenue hours operated, this decline in efficiency is likely due to falling ridership.

Figure 5-3 Passenger Trips per Revenue Hour by Agency, 2012-2017



Source: National Transit Database

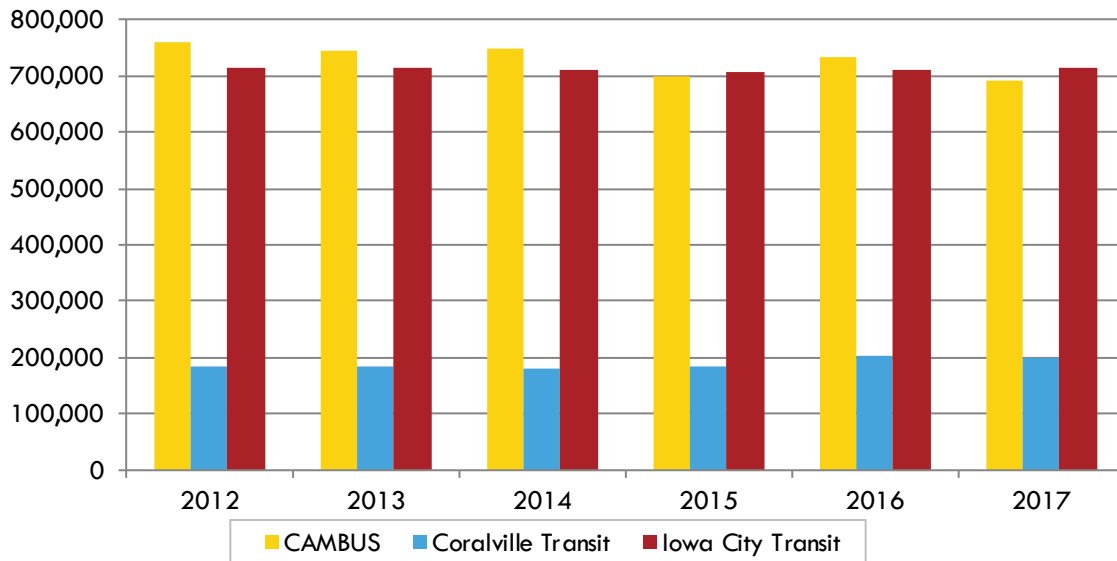


Revenue Miles

Revenue miles operated is a similar measure to revenue hours operated, proxying for the total amount of service a transit agency offers. From 2012 to 2017, CAMBUS and Iowa City Transit operated nearly identical annual revenue miles, while Coralville Transit operated significantly fewer (Figure 5-4).

From 2012 to 2017, revenue miles operated by each agency have changed only slightly; CAMBUS operates 9% fewer revenue miles, Coralville Transit operates 8% more revenue miles, and Iowa City Transit has not changed its annual revenue miles operated. Overall, the study transit agencies operated 3% fewer revenue miles in 2017 than they did in 2012.

Figure 5-4 Annual Revenue Miles by Agency, 2012-2017



Source: National Transit Database

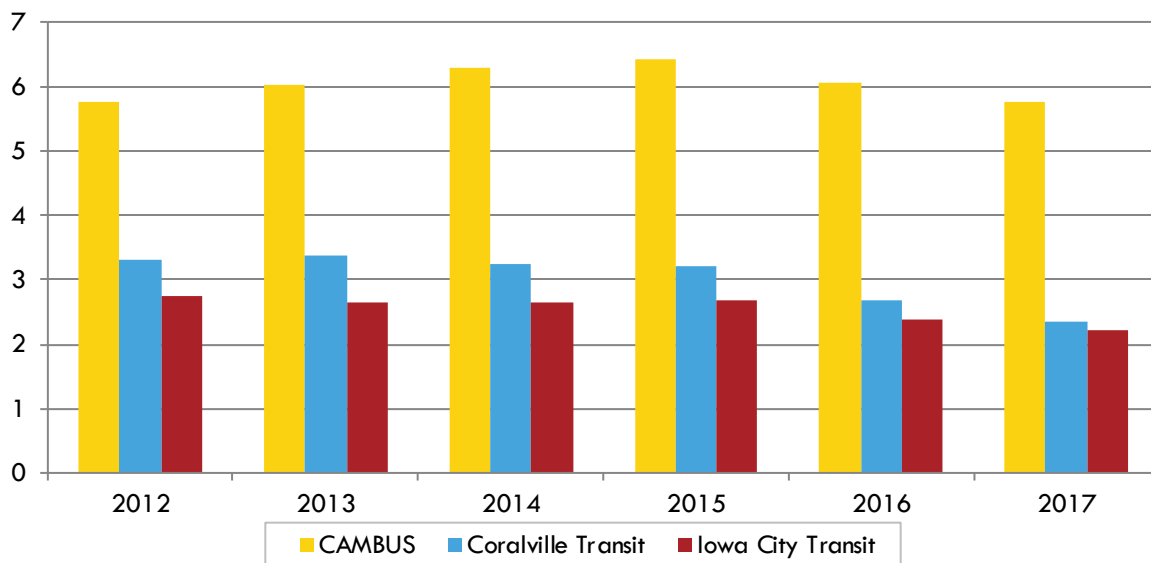


Passenger Trips per Revenue Mile

Like passenger trips per revenue hour, passenger trips per revenue mile is a helpful metric for assessing a transit agency's efficiency. From 2012-2017, CAMBUS consistently carried the most trips per revenue mile (approximately six trips per revenue mile), and Iowa City Transit carried the fewest (between two and three; Figure 5-5).

From 2012 to 2017, CAMBUS' trips per revenue mile rose and then fell, peaking in 2015. Coralville Transit's passengers per revenue mile declined by 29% and Iowa City Transit's declined by 20%. Overall, the combined agencies' trips per revenue mile declined by 10% from 2012 to 2017. Because these agencies have not drastically increased the number of revenue miles operated, this decline is likely primarily due to declining ridership.

Figure 5-5 Passenger Trips per Revenue Mile, 2012-2017



Source: National Transit Database

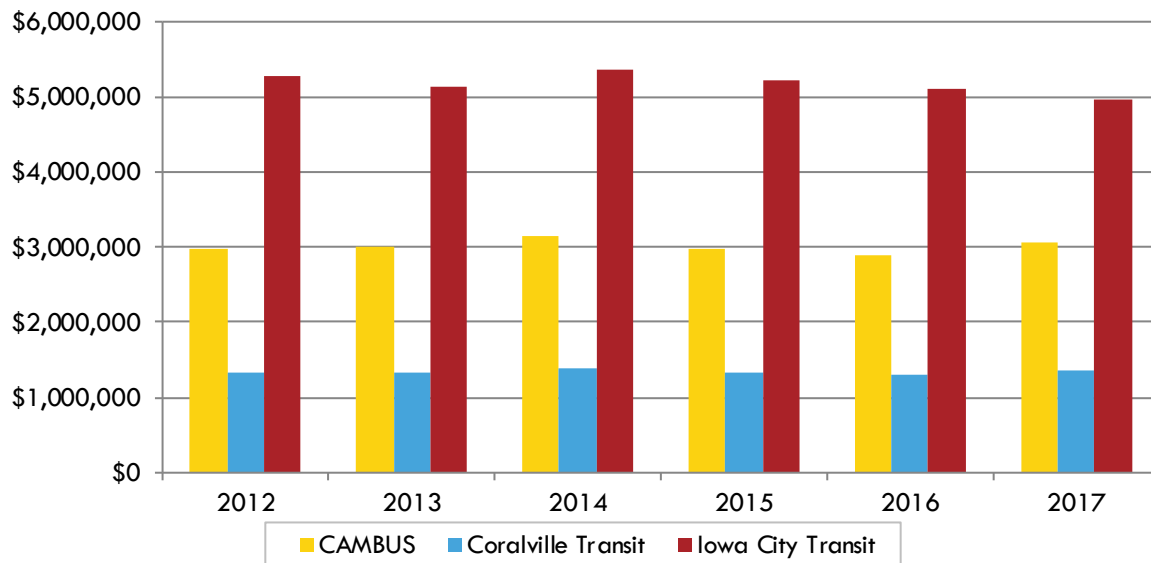


Expense Figures

Operating Expenses

Figure 5-6 shows the total annual operating expenses for the three study agencies. From 2012 to 2017, Iowa City Transit operating expenses have been more than \$5 million per year—by far the most of the three study agencies. CAMBUS, despite operating significantly more revenue hours, has lower total annual operating expenses, at approximately \$3 million. This lower total cost is primarily due to CAMBUS' use of student operators, although it also benefits from sharing facility maintenance expenses with the University of Iowa. From 2012 to 2017, operating expenses have not significantly changed for any agency, although Iowa City Transit's total annual operating expenses did decline slightly, by 6%.

Figure 5-6 Annual Operating Expense by Agency, 2012-2017



Source: National Transit Database

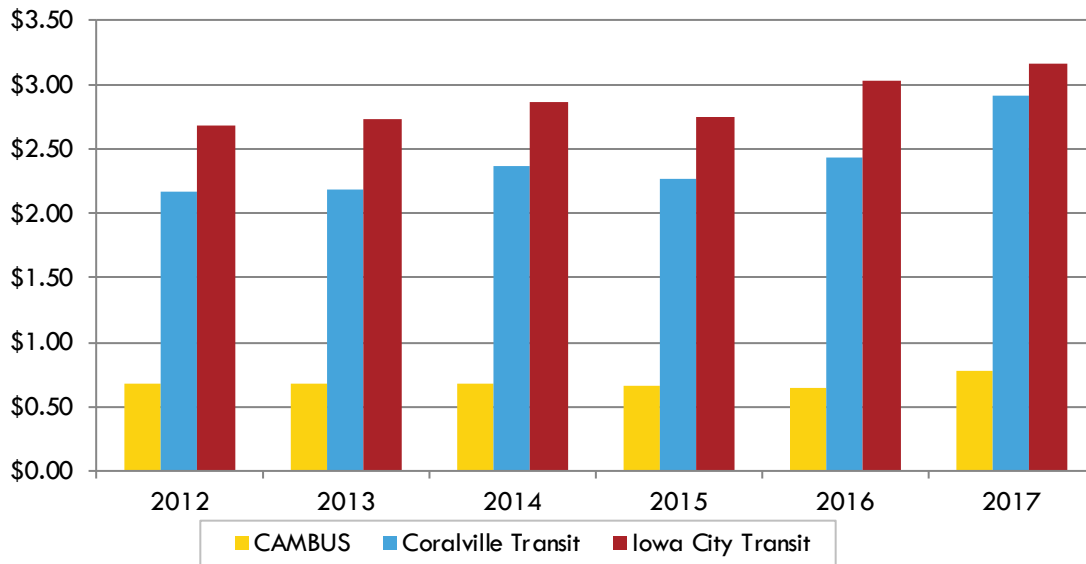


Operating Expense per Passenger Trip

Operating expense per passenger trip is a common measure of a transit agency's cost of providing service. From 2012 to 2017, operating expense per passenger trip increased significantly for all three study agencies (Figure 5-7). During the five-year study period, Iowa City Transit has typically had the highest cost per passenger trip, followed closely by Coralville Transit.

From 2012 to 2017, CAMBUS' cost per passenger trip has increased by 13%, Coralville Transit's cost per passenger trip has increased by 34%, and Iowa City Transit's cost per passenger trip has increased by 18%. Across all three agencies, the operating cost per passenger trip increased by 13% from 2012 to 2017. Because the amount of service offered by each agency has not significantly increased, this is likely primarily driven by ridership losses.

Figure 5-7 Operating Expense per Passenger Trip by Agency, 2012-2017



Source: National Transit Database

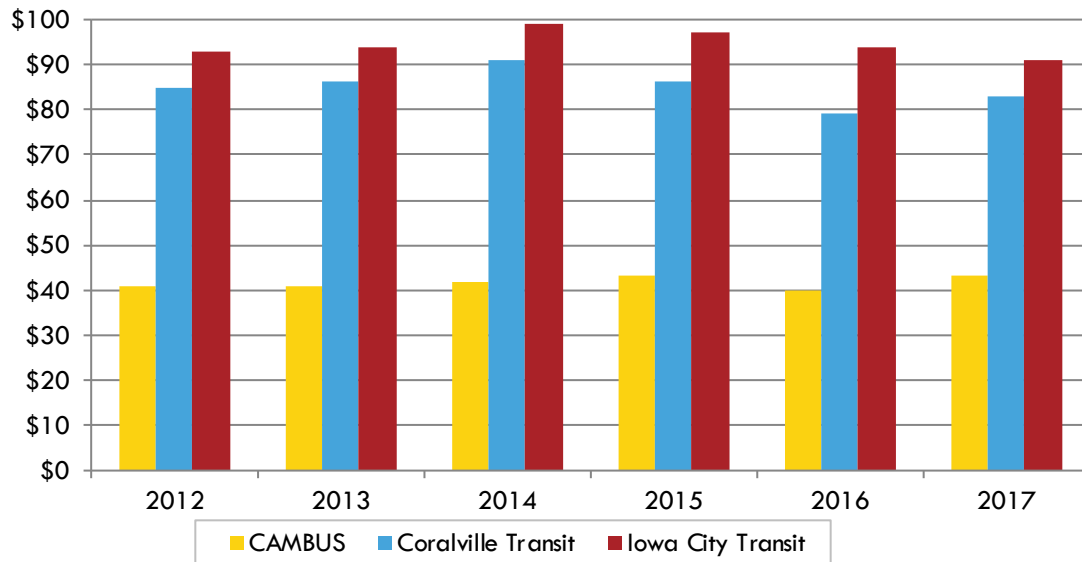


Operating Expense per Revenue Hour

Operating expenses per revenue hour are another common measure of the cost of service provision. From 2012 to 2017, both Coralville and Iowa City Transit typically spent over \$80 per revenue hour on service, while CAMBUS spent approximately \$40 per revenue hour (Figure 5-8).

In this time period, Coralville and Iowa City Transit's operating cost per revenue hour peaked in 2014 and declined thereafter, for a total change of -2% from 2012 to 2017. CAMBUS' cost per revenue hour increased by 5% in this time period but remained significantly lower than Coralville and Iowa City Transit's.

Figure 5-8 Operating Expense per Revenue Hour by Agency, 2012-2017



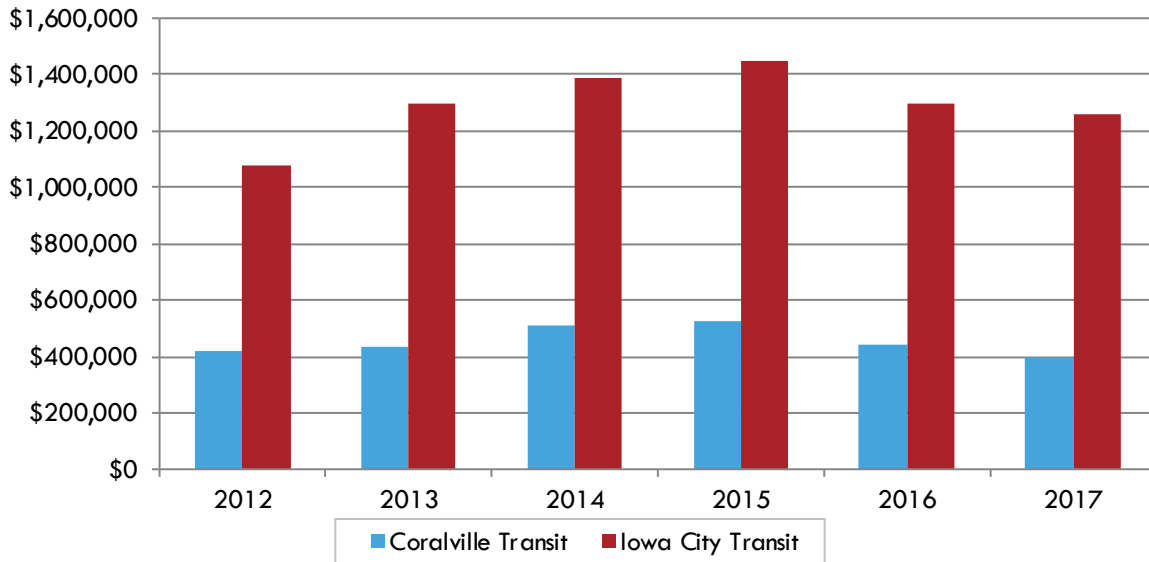
Source: National Transit Database



Farebox Revenue

Farebox revenue is determined by ridership, fare evasion rates, and the costs and usage rates of various fare products. From 2012 to 2017, both Coralville Transit and Iowa City Transit's farebox revenues peaked in 2015 and declined in the following two years (Figure 5-9). CAMBUS does not charge riders a fare. The decrease in farebox revenue for Coralville and Iowa City Transit is likely primarily caused by falling ridership.

Figure 5-9 Annual Farebox Revenue by Agency, 2012-2017



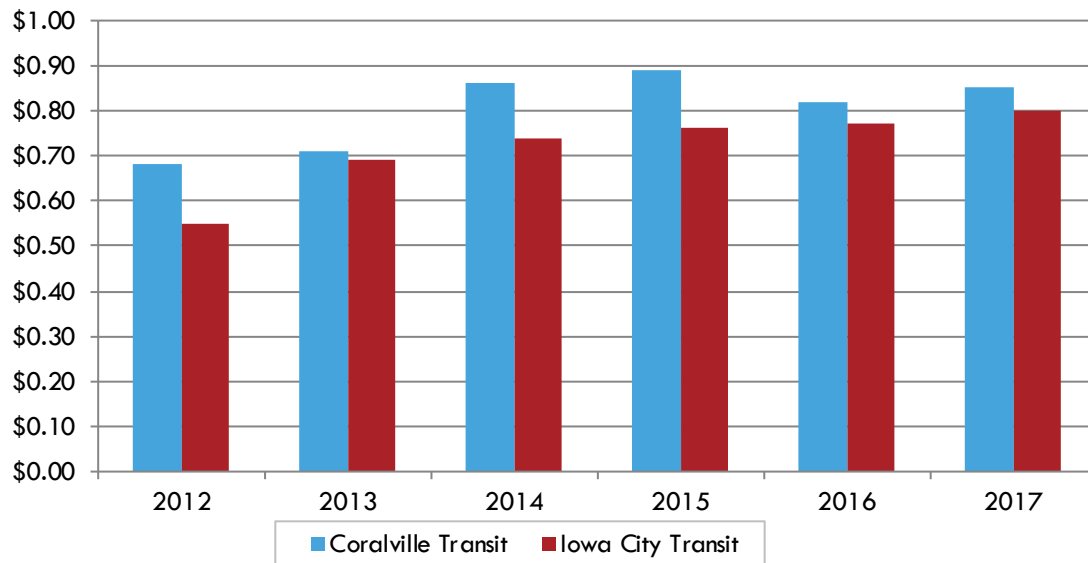
Source: National Transit Database



Average Fare

The average fares paid to a transit agency normalizes fare box revenue by ridership, allowing for a closer examination of trends in fare payment. From 2012 to 2017, the average fare paid by riders peaked for Coralville Transit in 2015 and declined afterwards (Figure 5-10). The average fare paid by riders on Iowa City Transit increased steadily from 2012 to 2017.

Figure 5-10 Average Fare by Agency, 2012-2017



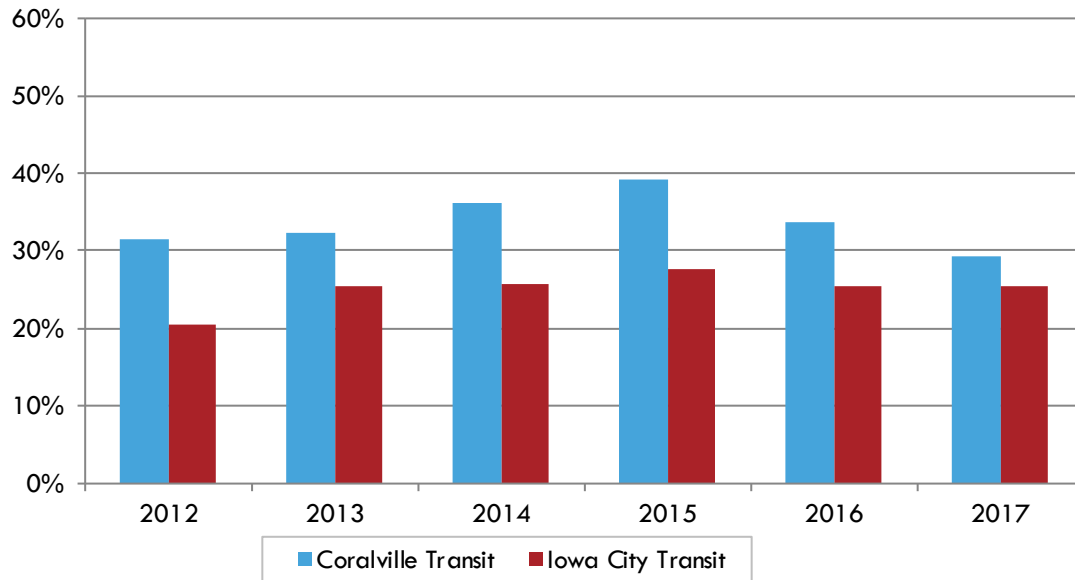
Source: National Transit Database



Farebox Recovery Ratio

Farebox recovery is a ratio of farebox revenues to operating expenses and is used to help estimate what percent of a transit agency's operations are funded by rider fares. From 2012 to 2017, farebox recovery rates peaked in 2015 for both Coralville Transit and Iowa City Transit, declining in the years following. CAMBUS does not collect rider fares. Because operating costs are not significantly declining for these agencies, the decline in farebox recovery ratio is likely primarily due to falling ridership.

Figure 5-11 Farebox Recovery Ratio by Agency, 2012-2017



Source: National Transit Database



6 ROUTE PROFILES

This chapter describes the fixed bus routes, including alignment characteristics, service span, headway, destinations served, ridership, and schedule adherence for the three transit agencies that serve the Iowa City area.

Figure 6-1 is the existing system map for the three agencies in the Iowa City area, Figure 6-2 shows average daily weekday ridership for each route, Figure 6-3 shows boardings per service hour for each route, and Figure 6-5 shows a system map of boardings by stop.

Ridership maps showing alignments and ridership activity by stop are in Appendix A.

Appendix B provides more detailed information for each route, including the following charts and tables:

- Weekday load by stop
- Weekday boarding/alighting profile
- Weekday ridership and maximum load by trip
- On-time performance by route segment and direction

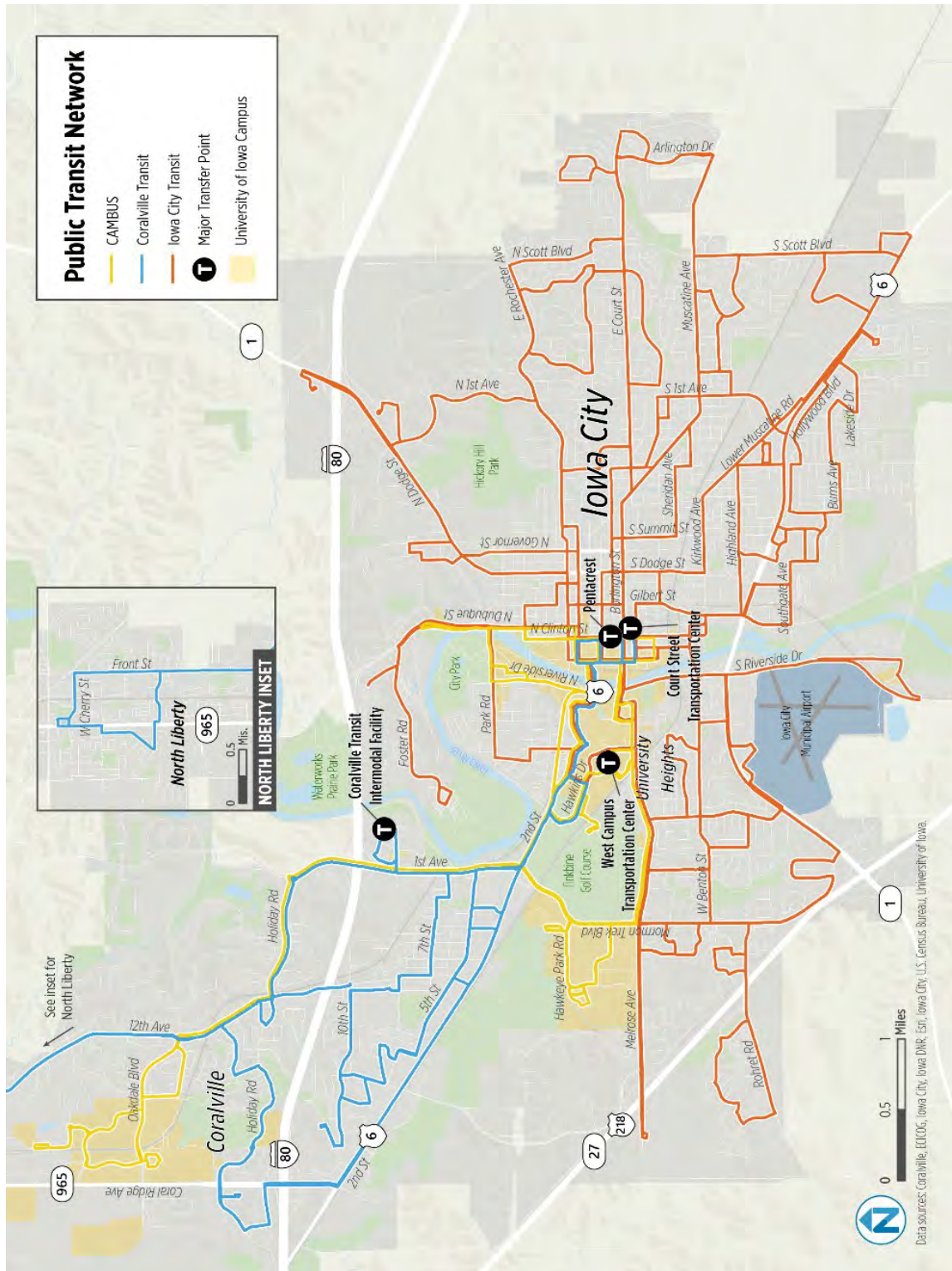
The data used to develop the route profiles for all three agencies come from agency schedules, route descriptions, route maps, General Transit Feed Specification (GTFS) tables, and a September 2019 ridecheck conducted on Coralville Transit and Iowa City Transit vehicles. CAMBUS on-time performance and ridership data are from CAMBUS staff. CAMBUS on-time performance is an estimate only, while ridership is operator-collected at each stop using mobile data tablets and represents a monthly average from September 2019.

In the on-time performance portion of the route profiles, “early” is defined as the percent of timepoint departures leaving before their scheduled time, and “late” is defined as the percent of timepoint departures leaving five minutes or more after their scheduled time. If a vehicle arrives early at a timepoint and waits until its scheduled departure time to leave, that is not considered an “early” departure.



In the Iowa City area, the three study agencies serve the municipalities of Coralville, Iowa City, North Liberty, and University Heights (Figure 6-1).

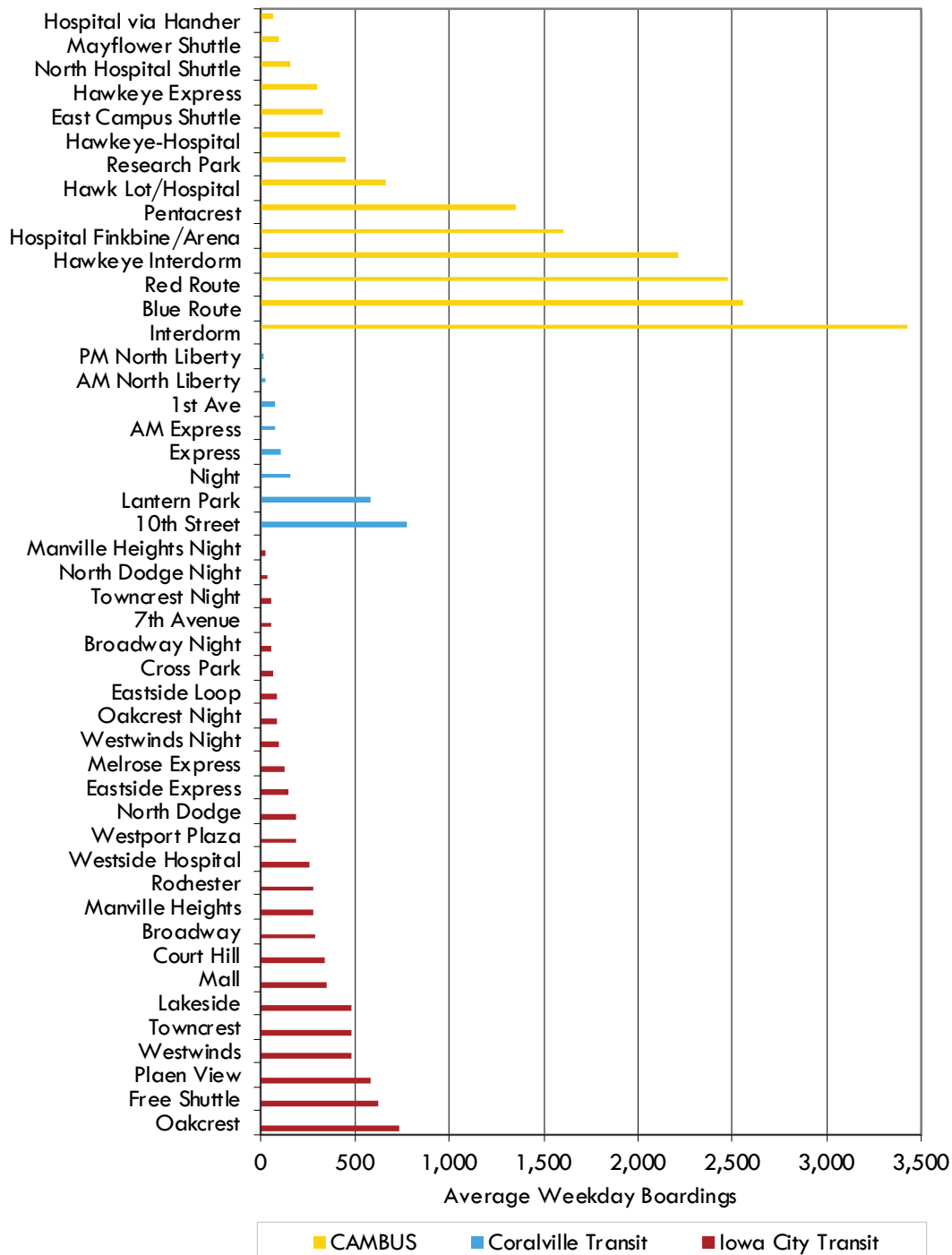
Figure 6-1 Iowa City Area Public Transit System Map





In general, CAMBUS routes see far more average daily boardings than Coralville and Iowa City Transit routes (Figure 6-2). The highest-ridership Coralville Transit routes are Lantern Park and 10th Street, and the highest-ridership Iowa City Transit routes are the Oakcrest, Free Shuttle, and Plaen View routes. The Interdorm route is by far the highest-ridership CAMBUS route, with the Blue and Red Routes the second- and third-highest ridership, respectively.

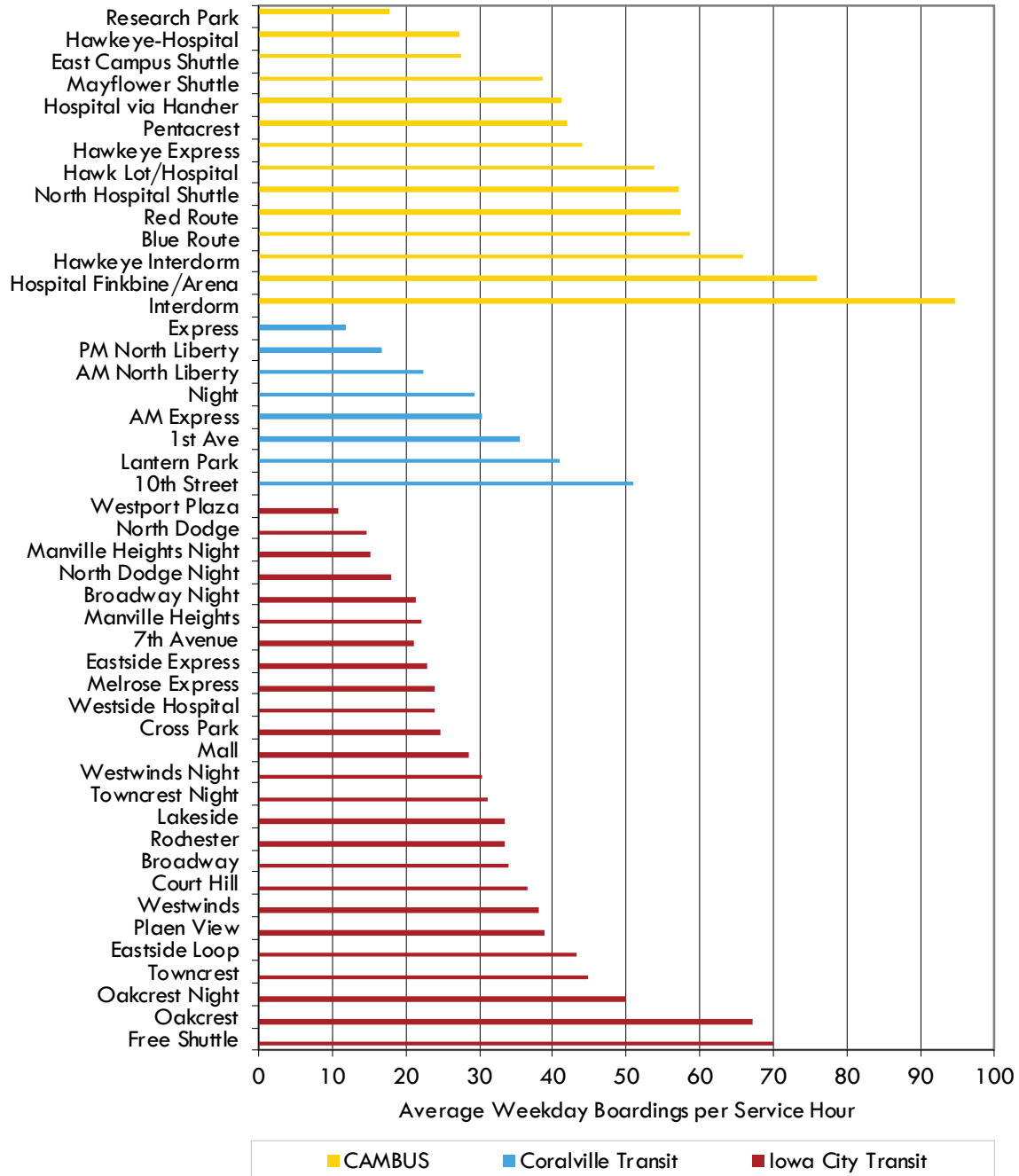
Figure 6-2 Average Weekday Boardings by Route, Fall 2019





Boardings per service hour is a common measure of a bus route's productivity. By and large, CAMBUS routes have the highest productivity, with the Interdorm and Hospital Finkbine /Arena routes the most productive among the three study agencies (Figure 6-3). Coralville Transit and Iowa City Transit routes range from 10 to 70 boardings per service hour, with only three routes (Coralville Transit 10th Street and Iowa City Transit Free Shuttle and Oakcrest) exceeding 50 boardings per service hour.

Figure 6-3 Average Weekday Boardings per Service Hour, Fall 2019



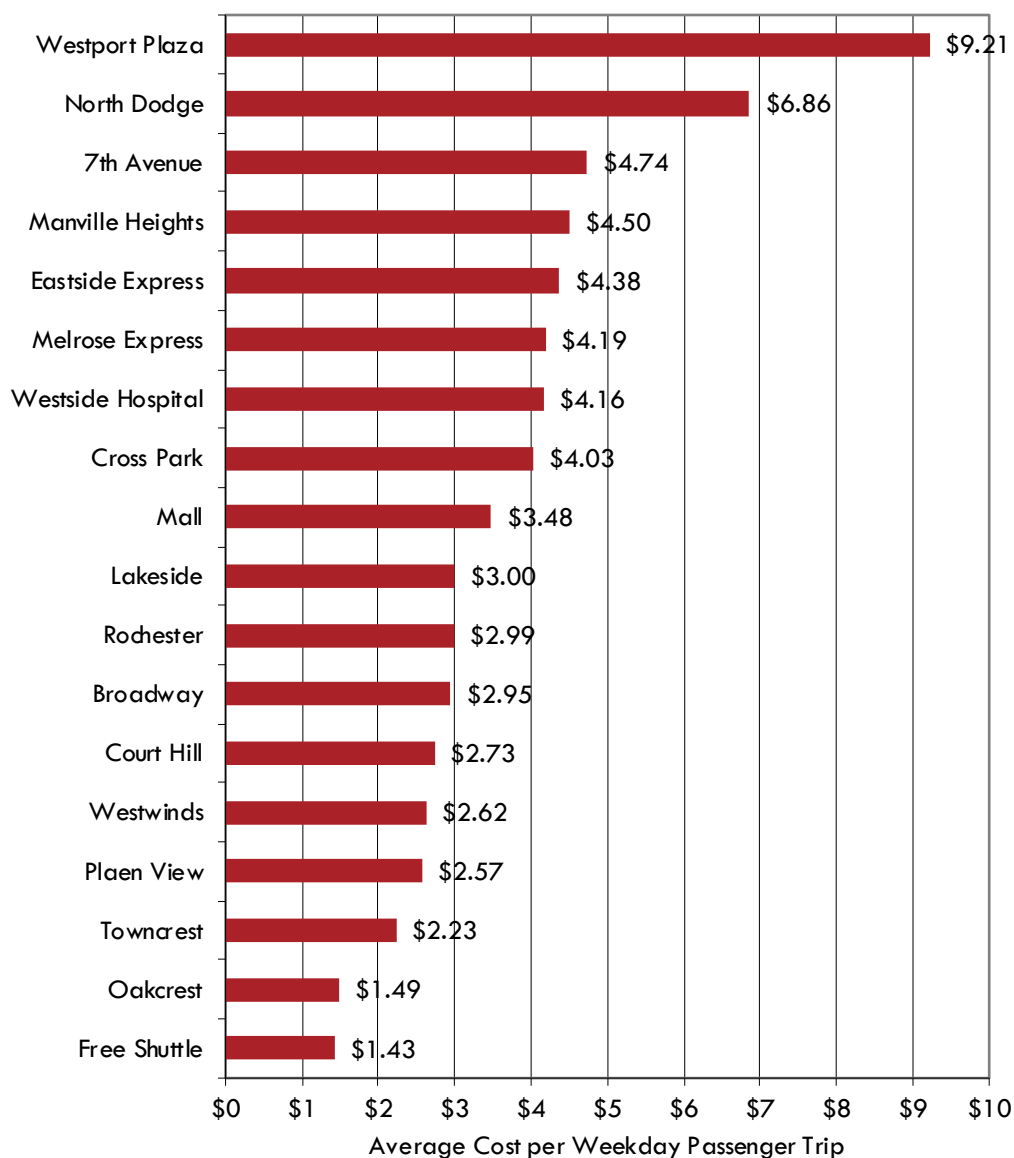
Note: CAMBUS figures are revenue hours, not service hours, with revenue hours defined as including layover and recovery time.



One way to assess the efficiency of transit service provision is to measure the average cost of providing a passenger trip. This is a high-level measure produced by dividing the annual weekday operating cost of a route (the number of revenue hours times the agency's average cost per revenue hour) by the annual weekday unlinked passenger trips.

The average cost of providing a weekday passenger trip on each Iowa City Transit route is in Figure 6-4. Westport Plaza, North Dodge, 7th Avenue routes have the highest operating costs per passenger and therefore require the greatest subsidies on a per-passenger basis. The free Downtown Shuttle, Oakcrest, and Towncrest routes have the lowest costs per passenger and require the least subsidy to cover operating costs. Generally, routes with the highest ridership have the lowest per-passenger costs.

Figure 6-4 Average Cost per Weekday Passenger Trip on Iowa City Transit Routes



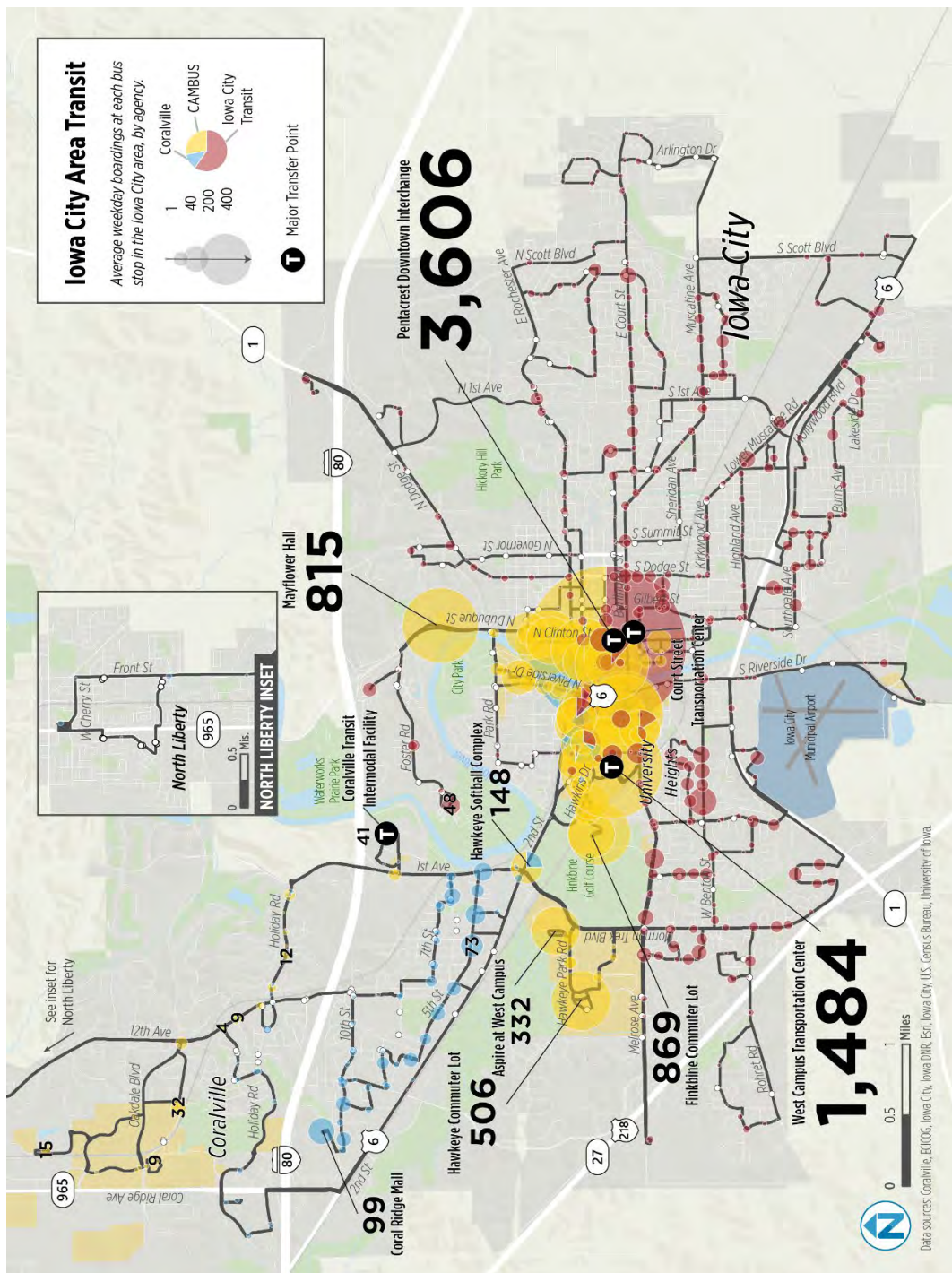
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Note: this chart assumes an operating cost per revenue hour of \$100 for Iowa City Transit.



Most ridership activity in the Iowa City area occurs in downtown Iowa City, on the University of Iowa campus, in high-density residential neighborhoods, and at select shopping centers (Figure 6-5). By and large, low-density residential neighborhoods do not experience high levels of transit ridership activity.

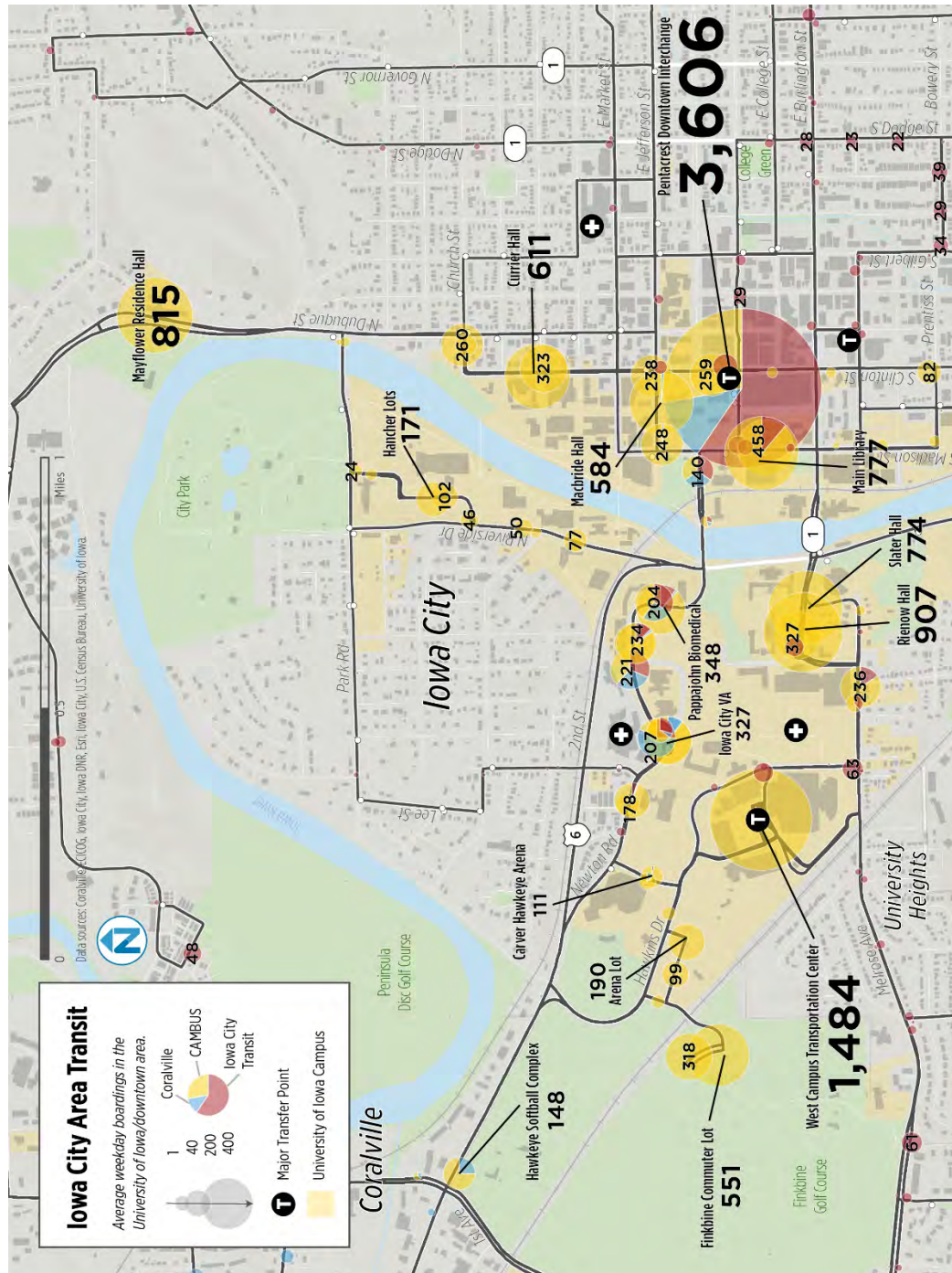
Figure 6-5 Iowa City Area Average Weekday Boardings, Fall 2019





The highest-ridership stops in the University of Iowa campus/downtown area are the Pentacrest downtown interchange, the West Campus Transportation Center, and various other university destinations. The Newton Road corridor and downtown Iowa City, however, have the highest concentrations of inter-agency boarding and alighting activity, illustrating the places with the greatest opportunities for inter-agency transfers and coordination.

Figure 6-6 University of Iowa/Downtown Average Weekday Boardings, Fall 2019





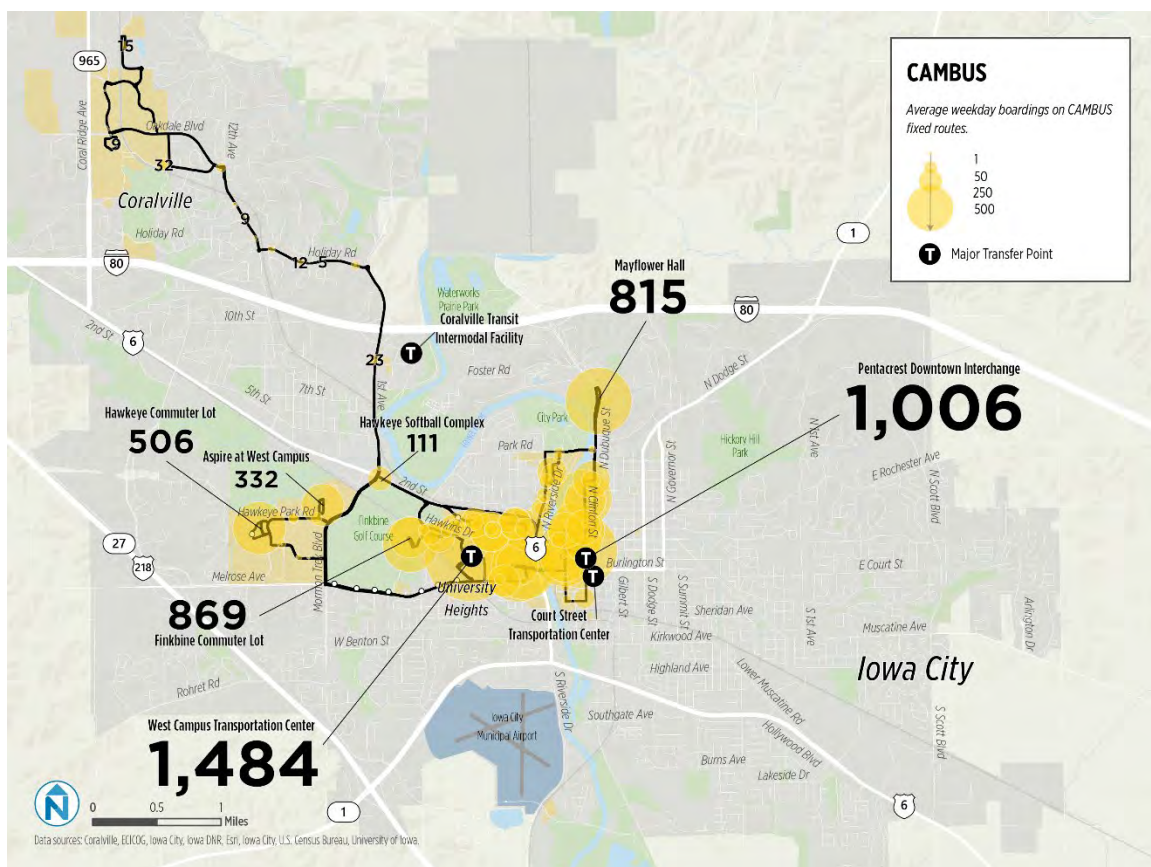
CAMBUS

CAMBUS is 14-route bus system operated by the University of Iowa that serves university properties on both sides of the Iowa River, outlying commuter lots, the University's Research Park, and the municipalities of Coralville, Iowa City, and University Heights. Although it primarily serves students, it is open to the public and free to ride. Schedules for CAMBUS are different during the academic period and summer period; this document analyzes only academic year operations. During the academic schedule, most routes operate only on weekdays but four routes also operate on weekends.

CAMBUS' operating base is located just south of downtown Iowa City, at 517 S Madison Street, and its primary transfer point is the West Campus Transportation Center, which also serves as a transit center serving Kinnick Stadium and the University of Iowa hospitals complex. All CAMBUS fixed-route vehicles are student-operated. CAMBUS also operates an ADA paratransit service called the Bionic Bus, along with special sporting event shuttles.

The vast majority of CAMBUS ridership occurs on the university's main campus and at outlying commuter parking lots, such as the Finkbine and Arena lots. The three highest-ridership stops in the CAMBUS system are the West Campus Transportation Center, the Pentacrest downtown interchange, and the Finkbine Commuter Lot. If the westbound Rienow Hall and eastbound Slater Hall stops were to be considered one stop, the Rienow/Slater stop would be busiest in the CAMBUS system, at 1,681 average weekday boardings.

Figure 6-7 CAMBUS Average Weekday Boardings



CAMBUS
Average weekday boardings on CAMBUS fixed routes.

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500

T Major Transfer Point

0 0.5 1 Miles

Data sources: Coralville, ECI006, Iowa City, Iowa DNR, Esri, Iowa City, U.S. Census Bureau, University of Iowa.

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EAST CAMPUS SHUTTLE

The East Campus shuttle is a small loop route that operates on East Campus. It is a weekday-only route that runs between Macbride Hall to the University Services Building. The route operates 48 trips per day on 15-minute headways. The route is somewhat similar to the Free Shuttle operated by Iowa City Transit, although the East Campus Shuttle is oriented more towards university destinations.

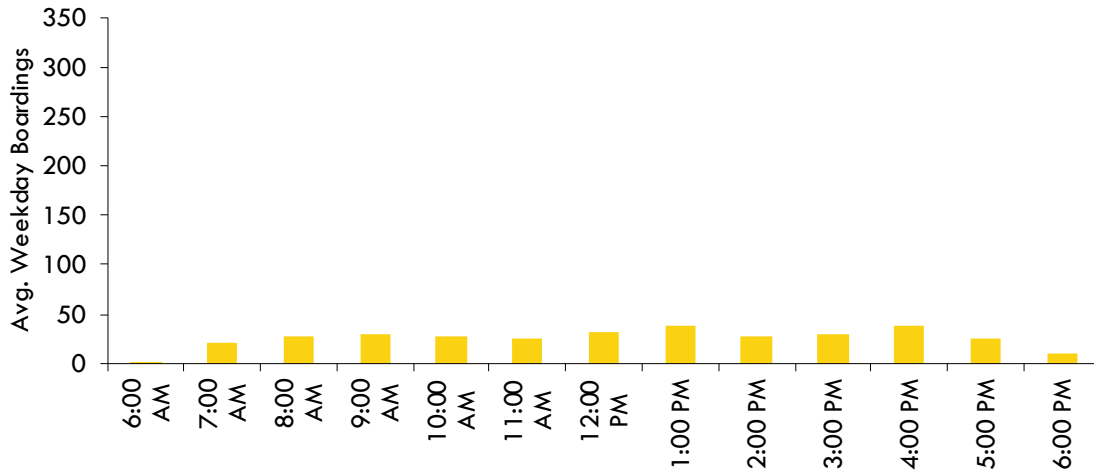
Major Destinations

- Lot 11 Parking Lot
- Old Capitol
- Pedestrian Mall
- Main Library
- Old Capitol Town Center
- Campus Recreation and Wellness Center

Route Characteristics	
Academic Weekday	
Start Time	6:30 AM
End Time	6:28 PM
Average Daily Boardings	332
Revenue Hours	12
Boardings per Revenue Hour	28
Peak Headway (mins.)	15
Off-Peak Headway (mins.)	15
On-Time Performance	95%

Ridership

The route has relatively low ridership with only 332 average daily boardings. Ridership is consistent throughout the day, with slightly higher ridership during the afternoons and evenings. Boardings per revenue is also relatively low (at 28), making it the third-least productive route in the CAMBUS system.



Summary

The East Campus shuttle is a lower-ridership route that somewhat duplicates segments of multiple other routes, including a free service offered by Iowa City Transit. It averages fewer than seven passengers per trip.



HAWK LOT/HOSPITAL

The HawkLot/Hospital route is a clockwise loop route that connects the Hawkeye Commuter Lot to major on-campus employment centers and the West Campus Transportation Center. It is a weekday commuter service that only operates during peak hours.

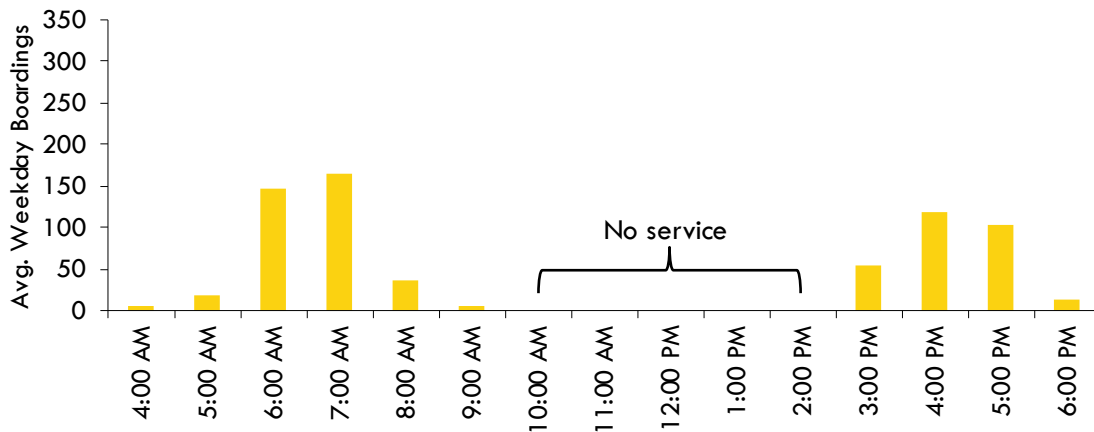
Major Destinations

- Hawkeye Commuter Lot
- Grant Field
- Hawkeye Tennis & Recreation Complex
- Carver Hawkeye Arena
- Kinnick Stadium
- University of Iowa Hospital
- West Campus Transportation Center

Route Characteristics	
Academic Weekday	
AM Service Span	4:40 AM – 9:22 AM
PM Service Span	3:33 PM – 6:43 PM
Average Daily Boardings	668
Revenue Hours	12.4
Boardings per Revenue Hour	54
Peak Headway (mins.)	10-20
Off-Peak Headway (mins.)	20
On-Time Performance	75%

Ridership

This route sees 668 average weekday boardings, with slightly peaked activity in the a.m. period. Boardings per revenue hour are just above CAMBUS average, at 54. Ridership primarily occurs at the Hawkeye Commuter Lot and Softball Complex, and at West Campus Transportation Center.



Summary

The HawkLot/Hospital route is a relatively high-performing commuter parking shuttle that operates during peak hours. The route's early a.m. operations and stop activity at Lot 71 are both underperforming. Both the Hawkeye Express and the Hawkeye Interdorm are somewhat duplicative of this service; the Hawkeye Express serves the same commuter parking lots but stops at the VA Loop instead of the West Campus Transportation Center and the Hawkeye Interdorm serves the same commuter parking lots and also stops at the West Campus Transportation Center. Both of these routes overlap with the Hawk Lot/Hospital route's service span. The route's relatively low ridership at Aspire apartments may be due to a need for pedestrian access improvements at the Hawkeye Court/Hawkeye Park Road stops.



HAWKEYE EXPRESS

The Hawkeye Express route runs between the Hawk Lot on the west campus to the Pentacrest downtown interchange in downtown Iowa City, connecting these areas with the Aspire at West Campus apartments (via front-door service) and the University of Iowa hospitals. It is a weekday-only route and has five a.m. and five p.m. trips.

Major Destinations

- Hawkeye Commuter Lot
- Grant Field
- Hawkeye Tennis & Recreation Complex
- Carver Hawkeye Arena
- Aspire at West Campus
- University of Iowa hospitals
- Old Capitol

Route Characteristics	
Academic Weekday	
AM Service Span	6:55 AM – 10:00 AM
PM Service Span	3:15 PM – 6:19 PM
Average Daily Boardings	294
Revenue Hours	6.7
Boardings per Revenue Hour	44
Peak Headway (mins.)	40
Off-Peak Headway (mins.)	--
On-Time Performance	90% (AM) 80% (PM)

Ridership

The route has the fourth-lowest ridership in the CAMBUS system, at 294 average weekday boardings, with slightly more boardings in the a.m. than p.m. service period. Productivity is below the CAMBUS average at 44 boardings per revenue hour. Most ridership activity occurs at the Aspire at West Campus apartments, Iowa City VA, and in downtown Iowa City.



Summary

The Hawkeye Express carries over 29 passengers per trip, but its overall productivity is less than other CAMBUS routes. It serves a specific market that somewhat duplicates that served by the more frequent Hawk Lot-Hospital: park-and-ride students and workers traveling to the university hospital complex. It also provides a more express trip for riders of the more-frequent Hawkeye Interdorm for park-and-ride students traveling to downtown Iowa City. Ridership on this route is low at the athletic facilities on Prairie Meadow Drive. Ridership at Aspire at West Campus apartments is high and may be due to the front-door service there. The low frequency suggests that anyone arriving between trips is taking a different and likely less-fast bus.



HAWKEYE INTERDORM

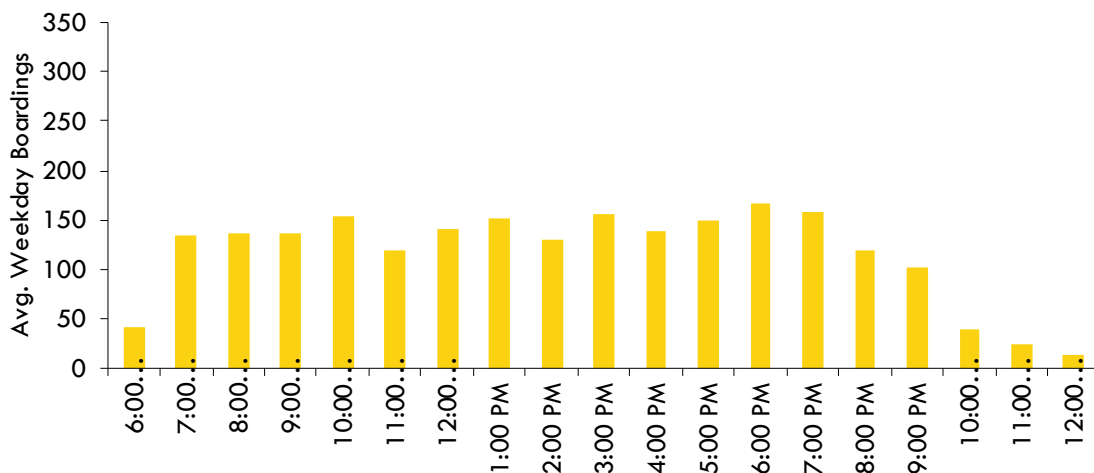
The Hawkeye Interdorm route runs on weekdays and weekends, connecting commuter parking lots with main campus, the West Campus Transportation Center, East Campus, downtown Iowa City, and Mayflower Hall.

Major Destinations

- Hawkeye Commuter Lot
- Aspire at West Campus
- West Campus Transportation Center
- Kinnick Stadium
- University of Iowa Hospital
- Main Library
- Campus Recreation and Wellness Center
- Mayflower Hall
- Old Capitol

Ridership

This Hawkeye Interdorm has the fourth-highest ridership in the system, at 2,214 average daily boardings. Ridership for the route is consistent throughout the day, with significantly lower ridership in the early morning and late evenings. The route has the third-highest boardings per revenue hour among CAMBUS routes. Ridership is highest on East and Main Campus, at Aspire at West Campus apartments, and at the Hawkeye Commuter Lot.



Summary

The Hawkeye Interdorm is a relatively high-performing route with consistent utilization throughout the day. Although the route duplicates the Hawk Lot/Hospital commuter parking shuttle service during peak hours, it provides a connection between the university hospitals and commuter lots during the off-peak period.

Route Characteristics	
Academic Weekday	
Start Time	6:15 AM
End Time	1:02 AM
Average Daily Boardings	2,214
Revenue Hours	33.6
Boardings per Revenue Hour	44
Peak Headway (mins.)	30
Off-Peak Headway (mins.)	30
On-Time Performance	80%
Academic Weekend	
Start Time	11:02 AM
End Time	1:02 AM
Average Daily Boardings	576
Headway (mins.)	60



HAWKEYE-HOSPITAL

The Hawkeye-Hospital is a weekday-only loop route that operates in a counter-clockwise direction during a.m. service and a clockwise direction during p.m. service. This route connects the University of Iowa Newton Road corridor and its hospital sites with commuter parking lots and the Aspire at West Campus apartments.

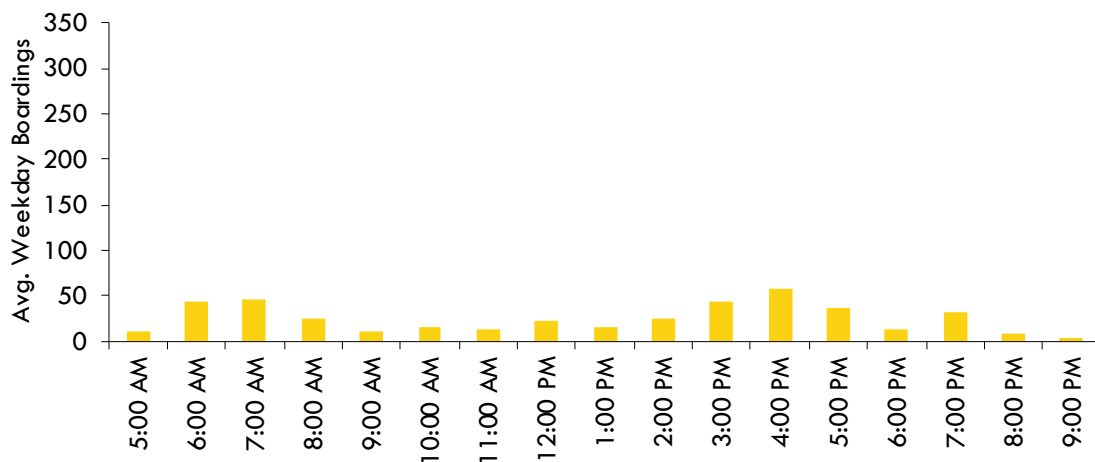
Major Destinations

- Aspire at West Campus
- Hawkeye Softball Complex
- Hawkeye Commuter Lot
- West Campus Transportation Center
- Kinnick Stadium
- Carver Hawkeye Arena
- Iowa City VA
- Hardin Library
- University of Iowa Hospital

Route Characteristics	
Academic Weekday	
Start Time	5:45 AM
End Time	9:18 PM
Average Daily Boardings	423
Revenue Hours	15.5
Boardings per Revenue Hour	27
Peak Headway (mins.)	30
Off-Peak Headway (mins.)	30
On-Time Performance	85%

Ridership

The Hawkeye-Hospital route sees 423 average weekday boardings. Ridership is slightly peaked during commute periods and productivity is below the CAMBUS average, at 27 boardings per revenue hour—the second-lowest for the system.



Summary

The Hawkeye-Hospital route is a lower-ridership route that somewhat duplicates the service of the other Hawkeye Commuter Lot to hospital routes. The route's a.m. service, which operates counter-clockwise, may create longer trips for commuters traveling from Aspire at West Campus apartments or commuter lots and heading to the university hospitals complex.



HOSPITAL FINKBINE/ARENA

The Hospital Finkbine/Arena route is a short commuter parking shuttle route that carries passengers from the Finkbine Commuter Lot and Arena Lot to the West Campus Transportation Center, where they can access the University of Iowa hospitals complex. It operates with high frequency during peak hours.

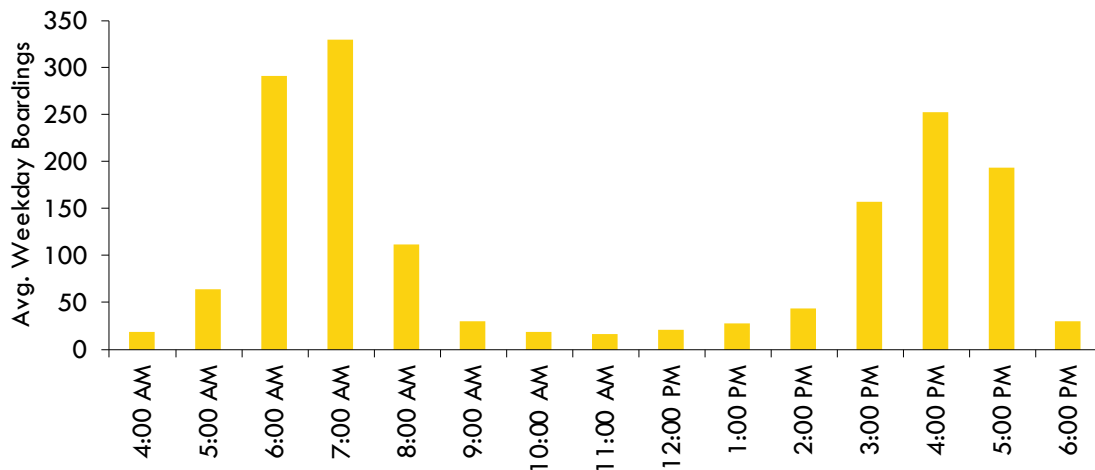
Major Destinations

- Finkbine Commuter Lot
- Arena Lot
- West Campus Transportation Center
- Kinnick Stadium
- University of Iowa Hospital

Route Characteristics	
Academic Weekday	
Start Time	4:30 AM
End Time	6:37 PM
Average Daily Boardings	1,610
Revenue Hours	21.2
Boardings per Revenue Hour	76
Peak Headway (mins.)	4-6
Off-Peak Headway (mins.)	12

Ridership

Total ridership on the Hospital Finkbine/Arena route is high, at 1,610 average weekday boardings, with distinct peaks during the commute period. It is the second-most productive route in the CAMBUS system, at 76 boardings per revenue hour.



Summary

The Hospital Finkbine/Arena shuttle is a high-performing commuter parking shuttle with relatively direct, efficient routing. The route does, however, deviate to enter the Arena Lot and may see travel time benefits from remaining on Hawkins Drive.



HOSPITAL VIA HANCHER

The Hospital via Hancher route is a short, commuter parking lot shuttle operating between the Hancher Commuter Lots and the University of Iowa main campus on Newton Road. The route operates at relatively high frequency and is primarily bi-directional, with terminal loops in the Hancher parking lots and at the VA Loop. The route offers only seven a.m. trips.

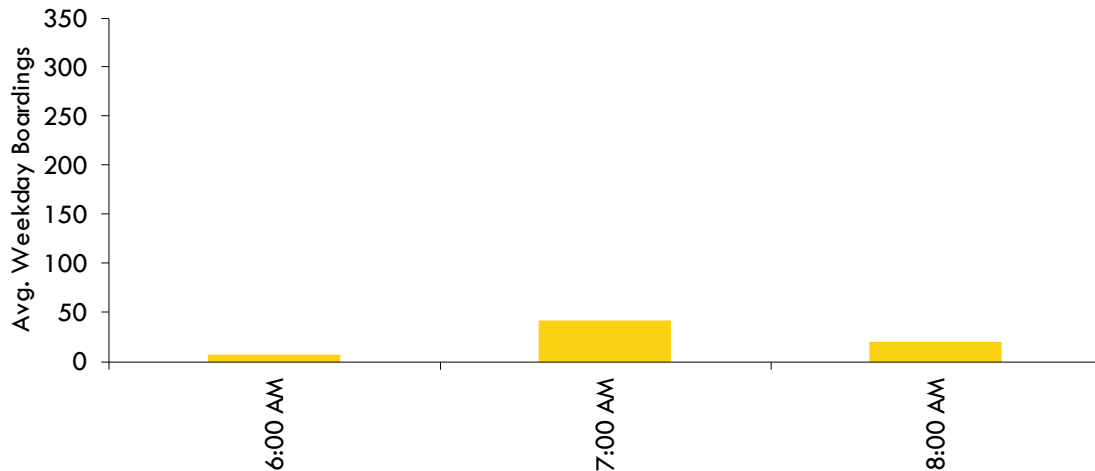
Major Destinations

- Hancher Auditorium and Commuter Lots
- College of Nursing
- Hardin Library
- Iowa City VA
- University of Iowa Hospital

Route Characteristics	
Academic Weekday	
Start Time	6:48 AM
End Time	8:27 AM
Average Daily Boardings	70
Revenue Hours	1.7
Boardings per Revenue Hour	41
Peak Headway (mins.)	15

Ridership

This route has the lowest ridership of all CAMBUS routes, at 70 average weekday boardings (about 10 riders per trip). Productivity on the route is 41 boardings per revenue hour. Ridership is highest at Hancher Lot and relatively low on Newton Road.



Summary

The Hospital via Hancher route has a limited service span and relatively low total ridership. The number of riders per trip is low, as well. The Blue Route duplicates this route's alignment and operates over the same service span.



INTERDORM

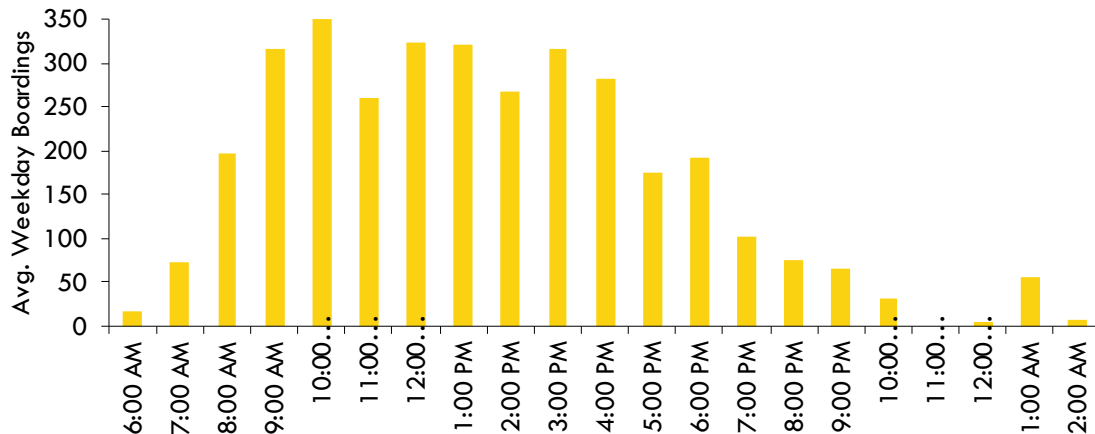
The Interdorm route connects the east and west side residence halls and campus buildings with the Pentacrest downtown interchange. This route also includes the late-night Interdorm Saferide service, which operates on Friday and Saturday nights from 12:50 a.m. to 2:20 a.m. Weekend service only operates in the morning.

Major Destinations

- Mayflower Hall
- Main Campus
- Old Capitol
- Main Library
- Campus Recreation & Wellness Center
- Rienow Hall
- Slater Hall

Ridership

Ridership for this route is the highest among all CAMBUS routes, at 3,432 average weekday boardings. Ridership is highest between 8:00 a.m. to 4:00 p.m. The route is also the most productive route in the CAMBUS system, with 95 boardings per revenue hour.



Summary

The Interdorm is a high-performing route with relatively evenly distributed ridership along its alignment. This route is a truncated version of the Hawkeye Interdorm, and does not extend past the University of Iowa Hospital. The Hawkeye Interdorm, Interdorm, and Mayflower Shuttle all provide service between Mayflower Hall and Main Campus. It is not clear that ridership warrants all three routes extending to Mayflower Hall.

Route Characteristics	
Academic Weekday	
Start Time	6:28 AM
End Time	10:45 PM (2:20 AM on Fri. nights)
Average Daily Boardings	3,432
Revenue Hours	36.2
Boardings per Revenue Hour	95
Peak Headway (mins.)	30
Off-Peak Headway (mins.)	30
On-Time Performance	85%
Academic Weekend	
Start Time	8:30 AM
End Time	11:00 AM (12:50-2:20 AM Sat.)
Average Daily Boardings	121
Headway (mins.)	30



MAYFLOWER SHUTTLE

The Mayflower shuttle is a weekday-only a.m. route that connects Mayflower Hall with the remainder of East Campus and downtown Iowa City. The route operates bi-directionally along N Dubuque Street and N Clinton Street. It serves as a peak hour overlay to the Interdorm route, providing additional morning capacity to Mayflower Hall.

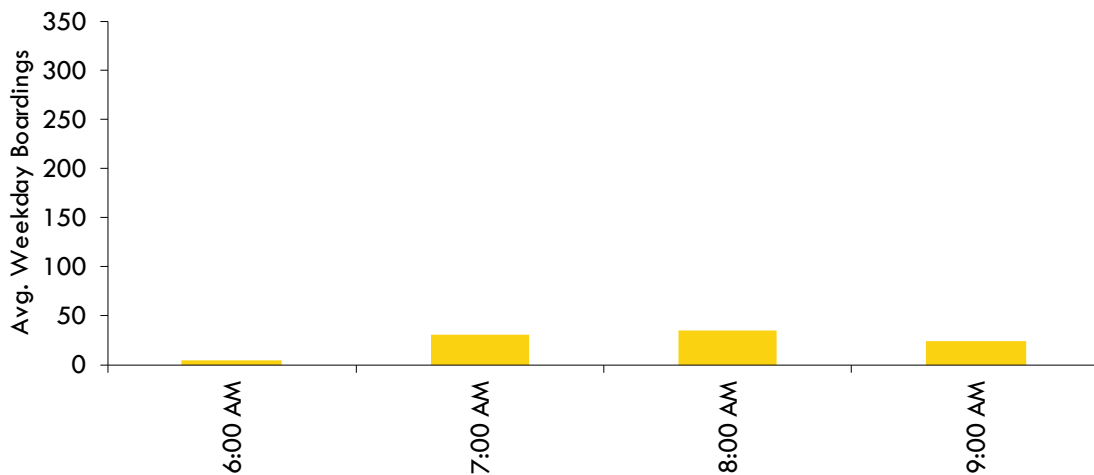
Major Destinations

- Mayflower Hall
- Old Capitol
- East Campus

Route Characteristics	
Academic Weekday	
Start Time	6:55 AM
End Time	9:23 AM
Average Daily Boardings	96
Revenue Hours	2.5
Boardings per Revenue Hour	39
Peak Headway (mins.)	20
On-Time Performance	95%

Ridership

The route has the second-lowest ridership of all routes in the system. The route also has below-CAMBUS-average productivity, at 39 boardings per revenue hour. The 7:00 a.m. and 8:00 a.m. hours are the busiest period for this route.



Summary

The Mayflower Shuttle is a relatively under-performing CAMBUS route that duplicates a segment of the Interdorm route and operates during the same time period. This route may not provide capacity relief on the Interdorm route, as the hours of operation for the Mayflower Shuttle are during the Interdorm's lower-ridership period.



NORTH HOSPITAL SHUTTLE

The North Hospital shuttle is a commuter parking shuttle that operates between Finkbine Commuter Lot, Arena Lot, and the VA Loop. This route serves the same lots as the Hospital Finkbine/Arena shuttle but travels slightly further north. The Pentacrest route also duplicates this alignment and extends into downtown Iowa City. This route only operates during peak hours.

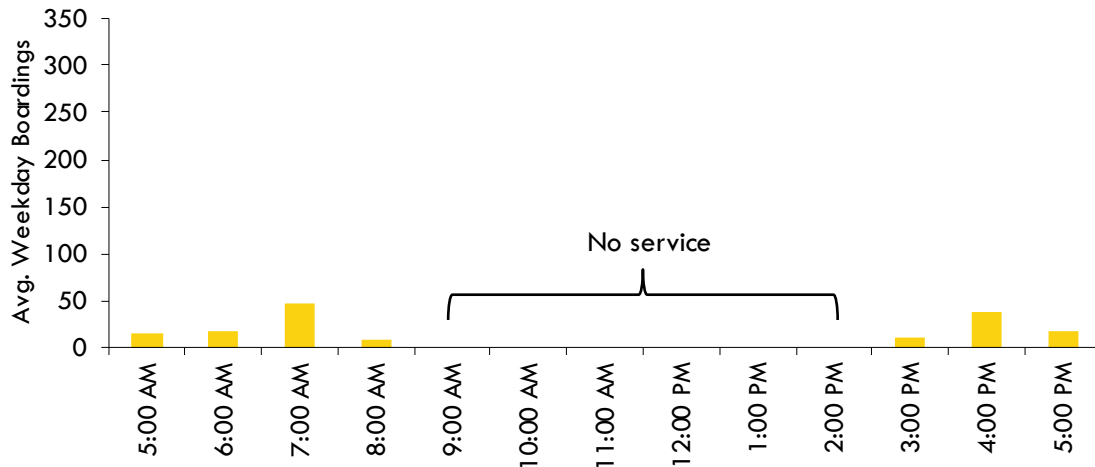
Major Destinations

- Finkbine Commuter Lot
- Arena Lot
- Carver Hawkeye Arena
- Hardin Library
- Iowa City VA

Route Characteristics	
Academic Weekday	
AM Service Span	5:36 AM – 8:02 AM
PM Service Span	4:00 PM – 5:22 PM
Average Daily Boardings	154
Revenue Hours	2.7
Boardings per Revenue Hour	57
Peak Headway (mins.)	12-15

Ridership

The route has low ridership, with 154 average weekday riders. Productivity is above the CAMBUS average, at 57 boardings per revenue hour. Significantly more ridership activity occurs at Finkbine Commuter Lot than at Arena Lot.



Summary

The North Hospital Shuttle is a relatively high-productivity commuter parking shuttle. The route currently enters Arena Lot for boarding/alighting; travel times and safety may be improved with an on-street stop on Hawkins Drive. This route duplicates service offered by the Pentacrest route but offers lower headways and earlier a.m. service than the Pentacrest route.



PENTACREST

The Pentacrest is a weekday-only route that connects downtown Iowa City and East Campus with Main Campus, the University of Iowa hospitals, and commuter lots. The route serves the Newton Road corridor bi-directionally but is otherwise looped in its service of downtown Iowa City, West Campus Transportation Center, and Finkbine/Arena lots. Service on the route is relatively frequent during the day.

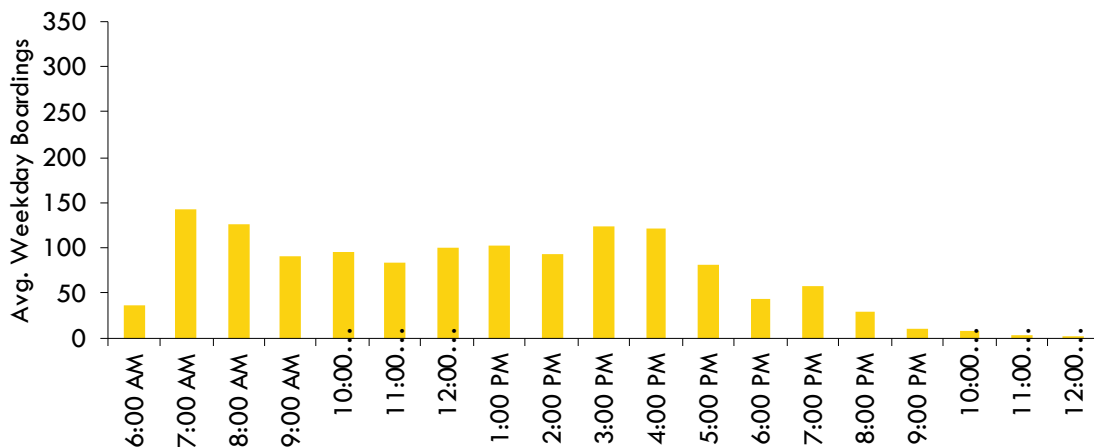
Major Destinations

- Old Capitol
- Iowa City VA
- Carver Hawkeye Arena
- Finkbine Commuter Lot
- Arena Commuter Lot
- Kinnick Stadium
- University of Iowa Hospital
- West Campus Transportation Center (night)

Route Characteristics	
Academic Weekday	
Start Time	6:21 AM
End Time	12:35 AM
Average Daily Boardings	1,357
Revenue Hours	32.4
Boardings per Revenue Hour	42
Peak Headway (mins.)	15
Off-Peak Headway (mins.)	15-30
On-Time Performance	80%

Ridership

Ridership for this route is above the CAMBUS average, with 1,357 average weekday boardings. Most of this ridership occurs between 7:00 a.m. and 4:00 p.m., with ridership trailing off in the evening. The route has below-CAMBUS-average productivity, at 42 boardings per revenue hour.



Summary

The Pentacrest is a relatively frequent route that connects East Campus with Main Campus via Newton Road. This East Campus to Main Campus connection is complementary to the Interdorm route, which connects East Campus to the west side of the river via Grand Avenue. The route duplicates the North Hospital Shuttle service but provides a mid-day connection to these commuter parking lots when North Hospital Shuttle is not operating.



BLUE ROUTE

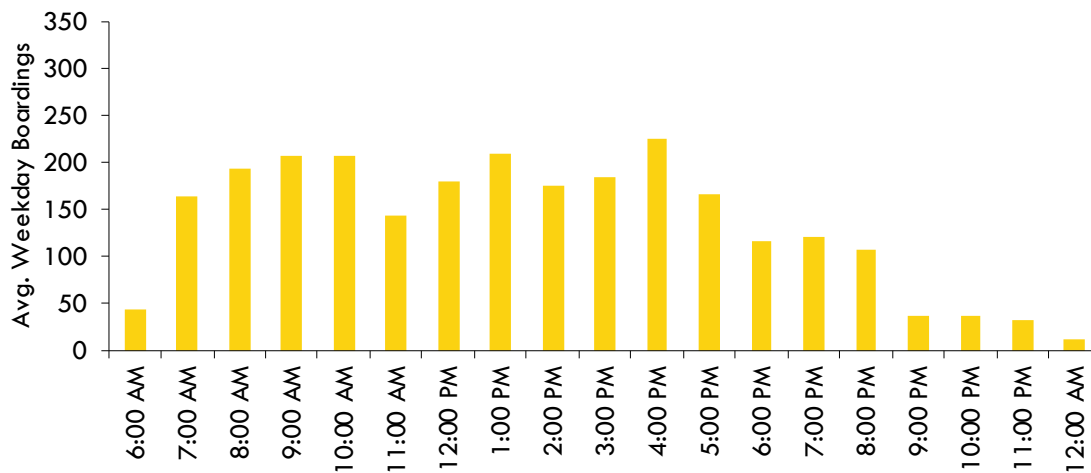
The Blue route is a counter-clockwise loop that operates on both East Campus and Main Campus, connecting academic buildings with residence halls, the hospital complex, and downtown Iowa City. It shares the same alignment as the Red route but runs in the opposite direction.

Major Destinations

- Hancher Auditorium and Commuter Lot
- Main Library
- Campus Recreation and Wellness Center
- University of Iowa Hospital
- Kinnick Stadium
- Mayflower Hall (evenings only)
- Carver Hawkeye Arena
- West Campus Transportation Center

Ridership

The route averages approximately 2,561 riders per weekday, making it the second-highest ridership route in the CAMBUS system. Ridership is highest between 7:00 a.m. and 4:00 p.m., with a dip during the afternoon hours and evening. Productivity on this route is above average, at 59 boardings per revenue hour.



Summary

The Blue Route provides complementary service to the Red Route and is relatively high-performing, with ridership mostly evenly distributed along the route. This route duplicates some other cross-river routes, such as the Interdorm, the Hawkeye Interdorm, and the Hospital via Hancher route.

Route Characteristics	
Academic Weekday	
Start Time	6:02 AM
End Time	12:37 AM
Average Daily Boardings	2,561
Revenue Hours	43.7
Boardings per Revenue Hour	59
Peak Headway (mins.)	12
Off-Peak Headway (mins.)	12-36
On-Time Performance	90%
Academic Weekend	
Start Time	11:08 AM
End Time	12:37 AM
Average Daily Boardings	438
Headway (mins.)	36



RED ROUTE

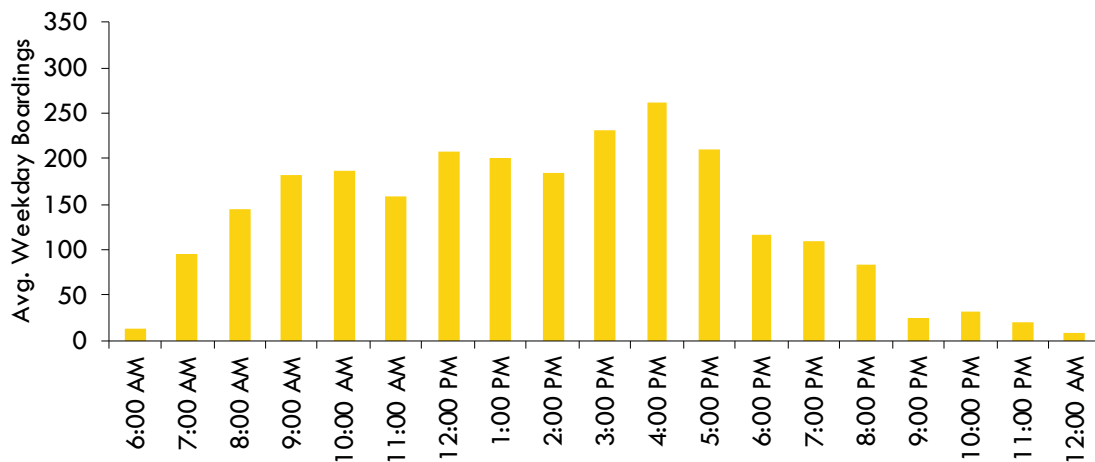
The Red route is the clockwise counterpart to the Blue route, connecting academic buildings with residence halls, the hospital complex, and downtown Iowa City. It shares the same alignment as the Blue route but runs in the opposite direction, providing 72 trips per day.

Major Destinations

- Hancher Auditorium and Commuter Lot
- Main Library
- Campus Recreation and Wellness Center
- University of Iowa Hospital
- Kinnick Stadium
- Mayflower Hall (evenings only)
- Carver Hawkeye Arena
- West Campus Transportation Center

Ridership

This route has the third-highest ridership in the CAMBUS system, at 2,472 average weekday boardings. Like the Blue route, ridership is highest during the work/class period of each day. Productivity is also very close to that on the Blue route, at 57 boardings per revenue hour.



Summary

The Red Route provides complementary service to the Blue Route and is relatively high-performing, with ridership mostly evenly distributed along the route. This route duplicates some other cross-river routes, such as the Interdorm and the Hawkeye Interdorm.

Route Characteristics	
Academic Weekday	
Start Time	6:28 AM
End Time	12:34 AM
Average Daily Boardings	2,472
Revenue Hours	43
Boardings per Revenue Hour	57
Peak Headway (mins.)	12
Off-Peak Headway (mins.)	36
On-Time Performance	90%
Academic Weekend	
Start Time	11:17 AM
End Time	12:34 AM
Average Daily Boardings	418
Headway (mins.)	36



RESEARCH PARK

The Research Parkroute connects Main Campus with residential communities in Coralville and the Research Park campus. This weekday-only route is the longest in the CAMBUS system and the only route that serves an extended residential corridor of non-residence hall dwellings.

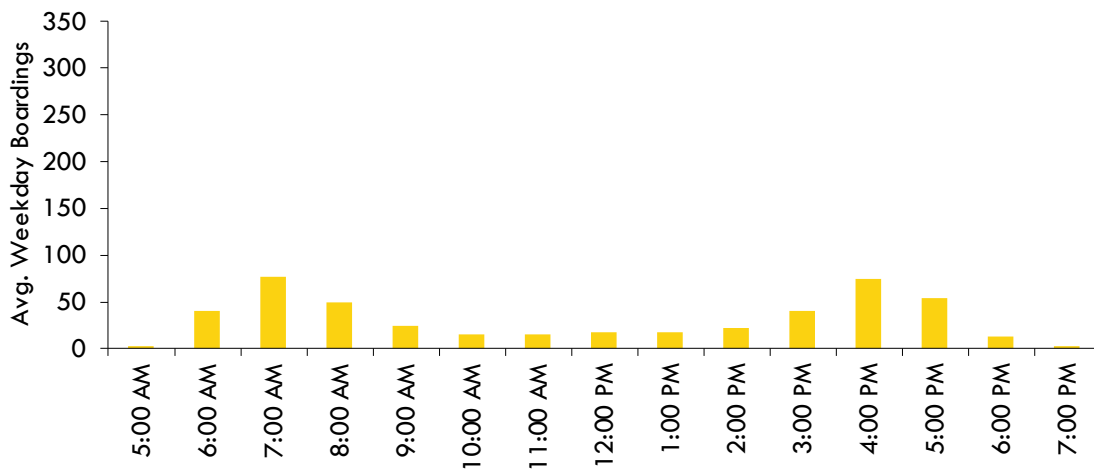
Major Destinations

- State Hygienic Laboratory
- University of Iowa Research Park
- UIHC Hospital Services Building
- UIHC Iowa River Landing Clinics
- Hawkeye Softball Complex
- Iowa City VA
- University of Iowa Hospital

Route Characteristics	
Academic Weekday	
Start Time	5:45 AM
End Time	7:10 PM
Average Daily Boardings	456
Revenue Hours	25.8
Boardings per Revenue Hour	18
Peak Headway (mins.)	30
Off-Peak Headway (mins.)	30
On-Time Performance	85%

Ridership and Productivity

The route has below-average ridership, with 456 average weekday boardings. Ridership is peaked in the morning and evening commute hours. The route has the lowest productivity of all routes in the system, with only 18 boardings per revenue hour. Most ridership activity occurs on Main Campus, at the Hawkeye Softball Complex, and at the East Lot temporary stop.



Summary

The Research Parkroute is relatively poorly performing but is the only CAMBUS connection between the Research Park area and Main Campus. The route is duplicative of portions of the Coralville Transit North Liberty, AM Express, and Express routes but operates 26 trips per day—much more service than the North Liberty route. This route may benefit from stop consolidation on the Holiday Road/12th Avenue/Oakdale Boulevard Corridor, where low-ridership stops are relatively close together.



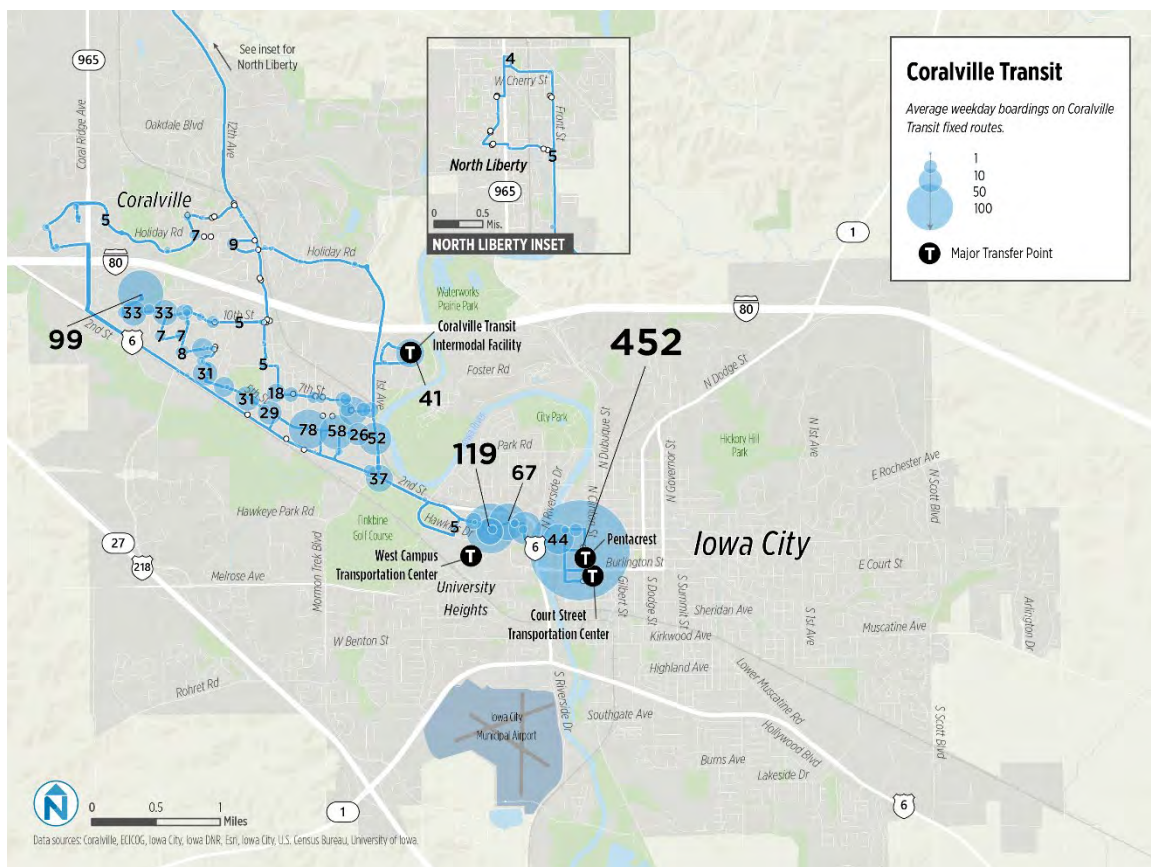
CORALVILLE TRANSIT

Coralville Transit is seven-route bus system operated by the City of Coralville that serves the communities of Coralville, North Liberty, and Iowa City, as well as the University of Iowa campus. Coralville Transit's service primarily connects commercial and residential areas in Coralville with the university's main campus and downtown Iowa City. General public fares are \$1.00 and discounted fares and passes are available. Coralville Transit's ADA paratransit service is operated by Johnson County SEATS.

Coralville Transit's operating base is located at the municipal parking and transportation maintenance facility at 900 10th Street. The agency provides connections to intercity bus service at the new Coralville Transit Intermodal Facility at Iowa River Landing.

The overwhelming majority of Coralville Transit ridership activity occurs at in downtown Iowa City, on University of Iowa campus, and in the commercial and residential area just north of Highway 6, including at the Coral Ridge Mall. The three highest-ridership stops in the system are the Iowa City Pentacrest downtown interchange, the University of Iowa hospitals complex, and the Coral Ridge Mall.

Figure 6-9 Coralville Transit Average Weekday Boardings





10TH STREET

The 10th Street route operates 18 weekday trips, connecting the Coral Ridge Mall and Coralville neighborhoods with the University of Iowa and downtown Iowa City. The route operates in a large counter-clockwise loop, although many a.m. and p.m. stops are within walking distance of one another.

Major Destinations

- Coral Ridge Mall
- Hy-Vee at Lantern Park Plaza
- Coralville City Hall
- Coralville Recreation Center
- Coralville Community Aquatic Center
- Coralville Public Library
- Social Security Administration
- Carver Hawkeye Arena
- Iowa City VA
- Old Capitol

Route Characteristics		
Weekday		
Start Time	6:13 AM	
End Time	6:19 PM	
Average Daily Boardings	777	
Service Hours	15.3	
Average Daily Boardings per Service Hour	51	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	52%
	Early	6%
	Late	42%

Ridership

Ridership on the 10th Street route is the highest for Coralville Transit, at 777 average weekday boardings, with most activity occurring during commuting hours and boarding/alighting activity distributed relatively evenly along the route. This is the most productive route in the Coralville Transit system, at 51 boardings per service hour.

In the morning, the inbound 6:55, 7:25, and 7:30 a.m. trips all have loads greater than 35 passengers, with the 7:30 a.m. trip having a maximum load of 52 passengers. In the afternoon, the 4:30 and 5:00 p.m. outbound departures have maximum loads of more than 50 passengers.

Schedule Adherence

The 10th Street route departs its timepoints on schedule approximately 50% of the time, with most of the untimely departures being late. The p.m. trips are more likely to run late than the a.m. trips. The 10th street is the second-most delayed route in the Coralville Transit system.

Summary

The 10th Street route is Coralville Transit's highest-performing route and is complementary to the Lantern Park route, which operates as a loop in the opposite direction. For some riders, the bi-directional loop split into two routes may be confusing. The route operates on several smaller, residential-type streets. Ridership appears to be stronger on the 5th Street segment portion of the loop. This pattern is also replicated in the Lantern Park route.



1ST AVE

The 1st Ave route (also called 1st Ave/Iowa River Landing or 1st Ave/IRL) connects the Coralville Transit Intermodal Facility with the University of Iowa campus in a bi-directional alignment, with terminal loops at the Iowa River Landing and on University of Iowa campus near Carver Hawkeye Arena. The route has six inbound (primarily a.m.) trips and four outbound p.m. trips.

Major Destinations

- Coralville Transit Intermodal Facility
- Trader Joe's
- Carver Hawkeye Arena
- University of Iowa Main Library
- Iowa City VA

Ridership

Ridership on the 1st Ave route is relatively low and occurs primarily before 8:00 a.m. and after 3:30 p.m., with most activity occurring at the Coralville Transit Intermodal Facility and on University of Iowa campus. This is the third-most productive route in the Coralville Transit system, at 35 boardings per service hour.

The first morning round trip carries only three people. The outbound 3:15 p.m. trip carries only four passengers.

Schedule Adherence

The 1st Ave route departs its timepoints on schedule 56% of the time, with most of the untimely departures being early. The a.m. trips are more likely to run early than the p.m. trips. This route is the third-least reliable in the Coralville Transit system.

Summary

The 1st Avenue route is a relatively productive peak hour commuter service. There is extremely limited ridership at the Carver Hawkeye Arena stop (none observed during the ICATS ridecheck). Several trips, including the first morning round trip and first afternoon outbound trip have extremely low ridership.

Route Characteristics		
Weekday		
AM Service Span	5:35 AM – 8:20 AM	
PM Service Span	2:50 PM – 4:55 PM	
Average Daily Boardings	72	
Service Hours	2	
Average Daily Boardings per Service Hour	35	
Peak Headway (mins.)	25-65	
Off-Peak Headway (mins.)	35	
Schedule Adherence	On Time	56%
	Early	36%
	Late	8%



AM EXPRESS

The AM Express route operates three a.m. clockwise loop trips connecting Coralville residential areas north of I-80 with the Coralville Transit Intermodal Facility, University of Iowa Campus, and downtown Iowa City. It operates in the opposite direction of the Express route.

Major Destinations

- Walmart Supercenter
- Goodwill
- ALDI
- Costco
- Coralville Transit Intermodal Facility
- Trader Joe's
- Lantern Park Plaza
- Carver Hawkeye Arena
- University of Iowa Hospital
- Iowa City VA
- Old Capitol

Route Characteristics		
Weekday		
Start Time	6:10 AM	
End Time	8:45 AM	
Average Daily Boardings	73	
Service Hours	2.4	
Average Daily Boardings per Service Hour	30	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	-	
Schedule Adherence	On Time	32%
	Early	23%
	Late	45%

Ridership

Ridership on the AM Express is relatively strong, considering the peak directional nature of the route. The most boardings occur on the 6:50 a.m. trip.

Schedule Adherence

On-time performance is problematic. The AM Express route departs its timepoints on schedule only 32% of the time, with most of the untimely departures being late. The AM Express is the least reliable route operated by Coralville Transit.

Summary

The AM Express is a morning-only peak overlay of the Express alignment. It has good peak directional ridership but its on-time performance is problematic. It serves primarily low-density residential areas north of I-80. Several destinations, such as Walmart, are not served well by the AM Express due to the peak directional nature of the route. Portions of this route duplicate the CAMBUS Research Park route.



EXPRESS

The Express route is 10 counter-clockwise loop trips connecting Coralville residential neighborhoods with downtown Iowa City, the University of Iowa Campus, the Coralville Transit Intermodal Facility, and shopping opportunities on Highway 6. It operates in the opposite direction from the AM Express.

Major Destinations

- Walmart Supercenter
- Goodwill
- ALDI
- Costco
- Coralville Transit Intermodal Facility
- Trader Joe's
- Lantern Park Plaza
- Clock Tower Plaza
- Carver Hawkeye Arena
- University of Iowa Hospital
- Iowa City VA
- Old Capitol

Route Characteristics		
Weekday		
Start Time	8:50 AM	
End Time	7:10 PM	
Average Daily Boardings	109	
Service Hours	9.2	
Average Daily Boardings per Service Hour	12	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60-85	
Schedule Adherence	On Time	60%
	Early	3%
	Late	37%

Ridership

Ridership on the Express route is low, at 109 average weekday boardings. Most activity occurs in the afternoon and is relatively evenly distributed along the route. This is the least productive route in the Coralville Transit system, at 12 boardings per service hour.

Midday productivity is poor, averaging 7.3 passengers per service hour. Several trips carry fewer than five total passengers during the midday.

Schedule Adherence

The Express route has below-average reliability, with only 60% of trips operating on time, with most of the untimely departures being late.

Summary

The Express route is a long, one-way loop that provides all-day service to commercial areas north of the Mall, including Walmart, as well as residential areas north of I-80. Ridership and productivity are both below average. Large, one-way loops are a disincentive for riders, particularly when travelling to major destinations requires riding the entire route to get back to the starting point. There is limited ridership at the Carver Hawkeye Arena stop, suggesting that this deviation may be eliminated to reduce route travel times and improve reliability.



LANTERN PARK

The Lantern Park route is a clockwise loop connecting Coralville residential neighborhoods with the University of Iowa, downtown Iowa City, and shopping on Highway 6. This route complements the 10th Street route, which operates in the opposite direction. The route has 19 weekday trips.

Major Destinations

- Coral Ridge Mall
- Coralville Recreation Center
- Coralville Community Aquatic Center
- Hy-Vee at Lantern Park Plaza
- Social Security Administration
- Coralville Public Library
- Carver Hawkeye Arena
- Iowa City VA
- Old Capitol

Route Characteristics		
Weekday		
Start Time	5:58 AM	
End Time	6:27 PM	
Average Daily Boardings	585	
Service Hours	14.3	
Average Daily Boardings per Service Hour	41	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	40-60	
Schedule Adherence	On Time	61%
	Early	16%
	Late	23%

Ridership

Ridership on the Lantern Park route is relatively high, at 585 average weekday boardings. Most activity occurs during the commute periods and is relatively well-distributed along the route. This is the second-most productive route in the Coralville Transit system, at 41 boardings per service hour.

The 4:40 p.m. outbound departure has a maximum load of almost 70 passengers, which is close to a crush-loaded bus. In addition, the last outbound departure at 5:40 p.m. has a maximum load of 32 passengers, which indicates likely demand for later service.

Schedule Adherence

The Lantern Park route departs its timepoints on schedule 61% of the time, with most of the untimely departures being late. The a.m. trips are more likely to be late and the p.m. trips are more likely to run early. This route is the third-most on-time in the Coralville Transit System.

Summary

The Lantern Park route is Coralville Transit's second-highest-performing route and is complementary to the 10th Street route, which operates as a loop in the opposite direction. For some riders, the bi-directional loop split into two routes may be confusing. The route operates on several smaller, residential-type streets. Ridership appears to be stronger on the 5th Street segment portion of the loop. This pattern is also replicated in the 10th Street route.



NIGHT AND SATURDAY

The Night and Saturday routes operate on a counter-clockwise loop covering a nearly identical alignment as the 10th Street route, connecting Coral Ridge Mall, Coralville residential neighborhoods, the University of Iowa, downtown Iowa City, and the Coralville Transit Intermodal Facility. The route operates six trips during night service and 13 trips during Saturday service.

Major Destinations

- Coral Ridge Mall
- Hy-Vee at Lantern Park Plaza
- Coralville Public Library
- Coralville Recreation Center
- Social Security Administration
- Coralville Transit Intermodal Facility
- Trader Joe's
- Carver Hawkeye Arena
- Iowa City VA
- University of Iowa Hospital
- Old Capitol

Route Characteristics		
Night		
Start Time	6:10 PM	
End Time	12:13 AM	
Average Daily Boardings	155	
Service Hours	5.3	
Average Daily Boardings per Service Hour	29	
Peak Headway (mins.)	-	
Off-Peak Headway (mins.)	60-70	
Schedule Adherence	On Time	62%
	Early	33%
	Late	4%
Saturday		
Start Time	7:13 AM	
End Time	8:09 PM	
Headway (mins.)	45-75	

Ridership

Ridership on the Night route is 155 average weekday boardings and is peaked in the 7:00 p.m. to 8:00 p.m. hours. The highest-activity stops are the Coral Ridge Mall and commercial area by the Iowa River Power dam. The night route is the third-least productive route in the Coralville Transit system, at 29 boardings per service hour.

Schedule Adherence

The Night route departs its timepoints on schedule 62% of the time, with most of the untimely departures being early. The inbound trips are more likely to be late than the outbound trips.

Summary

The Night route provides coverage for the communities served by the 1st Ave, 10th Street, and Lantern Park routes during the day. For an evening route, ridership and productivity is acceptable. The Night route serves the lower-ridership residential areas on 10th Street first on its loop.

Like other routes, ridership at the Carver Hawkeye Arena is limited. The deviation to serve Coralville Transit Intermodal Facility is also time-consuming and serves only five average daily riders.



NORTH LIBERTY

The North Liberty route connects the City of North Liberty with the University of Iowa and downtown Iowa City with one morning and one afternoon weekday trip. The alignment is primarily bi-directional and—for some of its distance—is identical to the CAMBUS Research Park route.

Major Destinations

- North Liberty Community Center
- Holiday Mobile Home Court
- Coralville Transit Intermodal Facility
- Trader Joe's
- Carver Hawkeye Arena
- Iowa City VA
- University of Iowa Hospital
- Old Capitol

Ridership

Ridership on the North Liberty route is low, at 38 average weekday boardings and with most activity occurring at the University of Iowa hospital complex and the Coralville Transit Intermodal Facility. This is the second-least productive route in the Coralville Transit system, at 20 boardings per service hour.

Schedule Adherence

The North Liberty route departs its timepoints on schedule 71% of the time, with all the untimely departures being late and occurring in the outbound direction. This route is the most on-time in the Coralville Transit System.

Summary

The North Liberty route has relatively strong on-time performance but only offers one trip in either direction, making it of limited use for commuters with a more variable schedule, particularly given that there are no other transit options connecting North Liberty with the University of Iowa and downtown Iowa City. This route provides the only public transit connection to the University of Iowa and downtown Iowa City for residents of North Liberty. Its peak directional ridership of 19 passengers per trip is relatively low.

Route Characteristics		
Weekday		
AM Service Span	6:38 AM – 7:37 AM	
PM Service Span	5:10 PM – 6:07 PM	
Average Daily Boardings	38	
Service Hours	1.9	
Average Daily Boardings per Service Hour	20	
Peak Headway (mins.)	-	
Off-Peak Headway (mins.)	-	
Schedule Adherence	On Time	71%
	Early	0%
	Late	29%



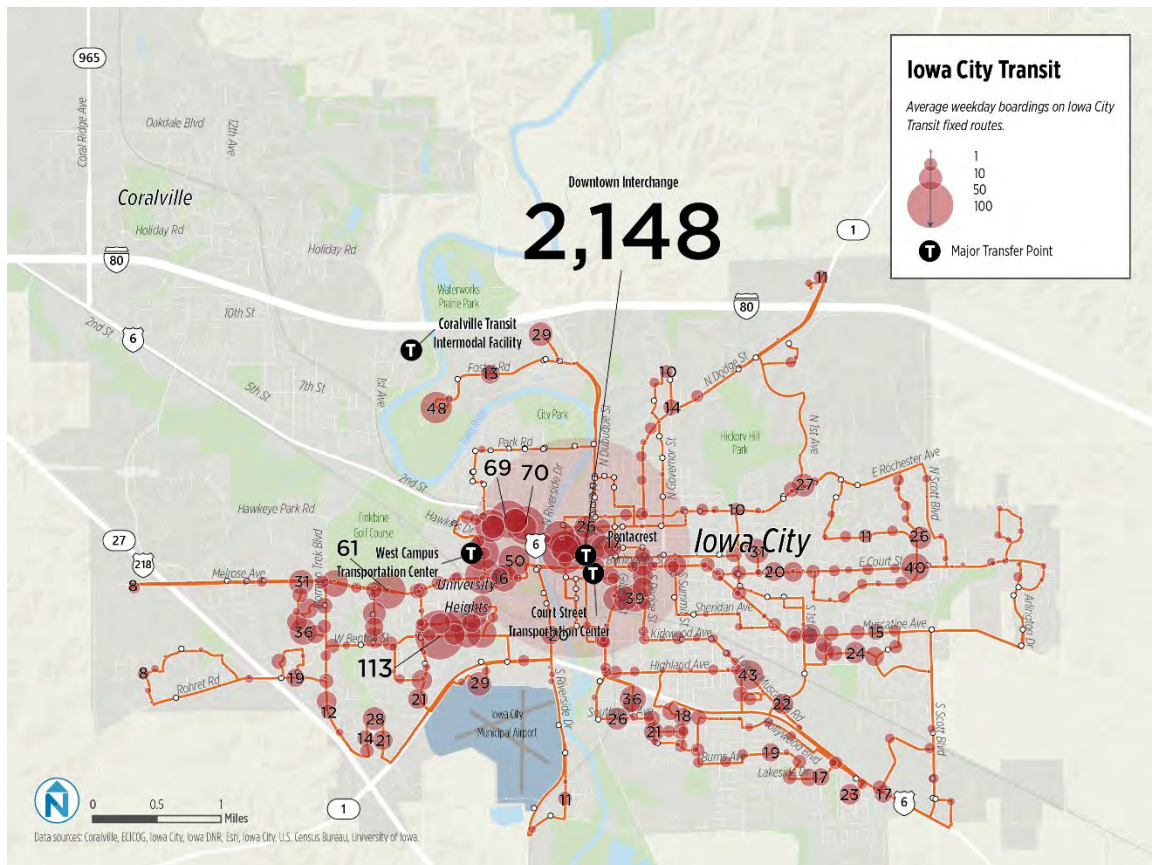
IOWA CITY TRANSIT

Iowa City Transit is a 19-route bus system operated by the City of Iowa City serving Iowa City, University Heights, and the University of Iowa. The bus network serves many of Iowa City's residential and commercial areas with a transfer hub at the Iowa City Pentacrest downtown interchange. General public fares are \$1.00 and discounted fares and passes are available. Iowa City Transit's ADA paratransit service is operated by Johnson County SEATS.

The operating base for Iowa City Transit is located at 1200 S Riverside Drive, and while the agency's primary transfer location is the Pentacrest downtown interchange, it also provides connections to intercity bus service at the Court Street Transportation Center.

Much of Iowa City Transit ridership activity occurs in downtown Iowa City, on the University of Iowa Campus, and in high-density student neighborhoods. The three highest-ridership stops are the Pentacrest downtown interchange, on W Benton Street near the Emerald Court/Seville apartments, and on Newton Road in the University of Iowa campus.

Figure 6-10 Iowa City Transit Average Weekday Boardings





7TH AVENUE

The 7th Avenue route is operated on a counter-clockwise weekday loop and connects downtown Iowa City with the Hy-Vee-anchored shopping center on S 1st Avenue, along with Iowa City High School. The route's stop is two blocks walking distance from Iowa City High School. The route has seven trips per day.

Major Destinations

- Hy-Vee
- Iowa City High School
- Mercy Iowa City
- Robert A. Lee Community Recreation Center
- Pedestrian Mall
- Old Capitol
- Iowa City City Hall

Ridership

Ridership on the 7th Avenue route is relatively low, at 57 average weekday boardings. Ridership is peaked towards commuting hours and is highest at the downtown interchange and near Iowa City High School.

There are only three trips that carry more than four passengers, including the inbound 4:18 p.m. trip and the outbound 8:00 a.m. and 5:00 p.m. trips.

Schedule Adherence

The 7th Avenue route departs its timepoints on schedule 66% of the time, with most of the untimely departures being early. Inbound trips are more likely to be early than outbound trips.

Summary

The 7th Avenue route is an underperforming peak period route that duplicates multiple other Iowa City Transit routes. Its highest ridership stop outside of downtown is near Iowa City High School, suggesting that high school students are the reason for the ridership peaks. Most trips operated by the 7th Avenue route are close to empty.

The only unique market served by the 7th Avenue route is the Longfellow neighborhood, north of the railroad tracks and south of E Court Street, although the 7th Avenue route only serves it during the peak hours.

Route Characteristics		
Weekday		
AM Service Span	6:13 AM – 8:27 AM	
PM Service Span	3:00 PM – 6:27 PM	
Average Daily Boardings	57	
Service Hours	2.7	
Average Daily Boardings per Service Hour	21	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	66%
	Early	27%
	Late	8%



BROADWAY

The Broadway route operates bi-directionally between the downtown interchange and Highway 6, and then in a large counter-clockwise terminal loop around Highway 6 commercial and residential communities. This route connects downtown Iowa City to social services, including Pathways, Shelter House, and the Youth Emergency Shelter.

The Broadway route also operates four night trips (after 7:15 p.m.) on a slightly different alignment. Saturday service is 13 trips and follows the night service alignment.

Major Destinations

- Iowa City Marketplace
- Pathways
- Shelter House
- Hy-Vee
- Youth Emergency Center
- Kirkwood Community College
- Johnson County Department of Human Services
- Old Capitol
- Pedestrian Mall
- Fareway Grocery (night and Saturday)

Route Characteristics		
Weekday		
Start Time	6:11 AM	
End Time	6:57 PM	
Average Daily Boardings	288	
Service Hours	8.5	
Average Daily Boardings per Service Hour	34	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	64%
	Early	22%
	Late	15%
Night		
Start Time	7:15 PM	
End Time	11:10 PM	
Headway (mins.)	60-75	

Ridership

Ridership on this route is 288 average weekday boardings, with activity fairly well-distributed throughout the p.m. period, and lower levels of boardings in the a.m. The first morning trip carries only four passengers. Major ridership activity occurs at the downtown interchange and around the commercial plaza and housing south of Highway 6. There is limited ridership between downtown Iowa City and Highway 6.

Schedule Adherence

The Broadway route departs its timepoints on schedule 64% of the time, with most of the untimely departures being early. Outbound trips are more likely to be early than inbound trips. Night service on this route is tied for second-most on-time in the Iowa City Transit system, at 83% on-time.

Summary

The Broadway route carries 34 passengers per service hour, providing connections to a large shopping center and high-density housing. Some of the Broadway route's service area south and east of the Hy-Vee-anchored shopping plaza on Highway 6 is also covered by the Lakeside route, and much of the route is supplemented by the Cross Park route at mid-day. Cross Park and Lakeside route departures are staggered along their shared corridor, providing reduced headways



(with shared frequency as low as 15 minutes) for some riders. Despite their complementary service, having three routes serve the same corridor may be confusing for some riders.

The Broadway route makes a deviation into Pepperwood Plaza to serve a stop near the Taco Bell on Highway 6.



COURT HILL

The Court Hill route operates on a bi-directional alignment along Court Street with a clockwise terminal loop in the Friendship neighborhood, connecting downtown Iowa City with residential communities to the east and Iowa City High School (approximately two blocks walking distance from the route). The route has 23 weekday trips and operates 13 Saturday trips on the same alignment.

Major Destinations

- Iowa City High School
- Old Capitol
- Pedestrian Mall
- Robert A. Lee Community Recreation Center
- Iowa City City Hall

Ridership

Ridership on the Court Hill route is 344 average weekday boardings, with activity relatively peaked in commuting hours. High ridership stops on this route include Iowa City High School, the downtown interchange, and the route's Court Street turnaround. The final evening trip on this route carries only four passengers.

Schedule Adherence

The Court Hill route departs its timepoints on schedule 57% of the time, with most of the untimely departures being early. Outbound trips are more likely to depart early than inbound trips.

Summary

The Court Hill route has high ridership at Iowa City High School and the route's E Court Street/Friendship Street turnaround, where there is some high-density housing. The route is complemented by the Eastside Express, which also has an outbound stop near Iowa City High School and departs from the downtown interchange 15 minutes before and after morning Court Hill departures. In the afternoon, the Eastside Express departs the downtown interchange at the same time as the Court Hill route. The Court Hill route is the only route to operate on Friendship Street between E Court Street and Upland Avenue.

The Court Hill route also supplements service on the Towncrest route along the E Burlington Street corridor by departing from the downtown interchange in-between Towncrest departures, effectively creating a shared corridor with 15-minute headways for some riders.

Route Characteristics		
Weekday		
Start Time		6:25 AM
End Time		9:40 PM
Average Daily Boardings		344
Service Hours		9.4
Average Daily Boardings per Service Hour		37
Peak Headway (mins.)		30
Off-Peak Headway (mins.)		60
Schedule Adherence	On Time	57%
	Early	25%
	Late	18%



CROSS PARK

The Cross Park route is a weekday-only mid-day route connecting downtown Iowa City with the Hy-Vee-anchored commercial area south of Highway 6. The route, which operates six trips, supplements the Broadway route in connecting important social services to downtown, including Pathways, Shelter House, and the Youth Emergency Shelter. The route has a large terminal counter-clockwise loop around the Hy-Vee shopping plaza and operates on the S Capitol Street corridor bi-directionally, as well as on parallel streets.

Major Destinations

- Hy-Vee
- Pathways
- Shelter House
- Youth Emergency Center
- Johnson County Department of Human Services
- Old Capitol
- Pedestrian Mall
- Court Street Transportation Center

Route Characteristics		
Weekday		
Start Time	9:00 AM	
End Time	2:27 PM	
Average Daily Boardings	67	
Service Hours	2.7	
Average Daily Boardings per Service Hour	25	
Peak Headway (mins.)	-	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	60%
	Early	27%
	Late	13%

Ridership

Ridership on the Cross Park route is 25 average daily boardings per service hour and is relatively well-distributed across the service span. High ridership stops are the downtown interchange and housing stops south of the Highway 6 Hy-Vee shopping center.

Schedule Adherence

The Cross Park route departs its timepoints on schedule 60% of the time, with most of the untimely departures being early.

Summary

The Cross Park route is a mid-day only supplemental route with limited ridership between downtown Iowa City and Highway 6. The route's departures are staggered to supplement the Broadway and Lakeside routes' service, providing reduced headways (with shared frequency as low as 15 minutes) along the corridor between downtown Iowa City and the Hy-Vee-anchored shopping center. For some riders, having three routes that serve the same general corridor with different alignments may be confusing.



EASTSIDE EXPRESS

The Eastside Express is a large counter-clockwise loop connecting downtown Iowa City with residential communities east of S Scott Boulevard and off Rochester Avenue, as well as with the Regina Catholic Education Center. The route is express in nature, with limited stops, and operates 13 weekday-only trips.

Major Destinations

- Iowa City High School
- Regina Catholic Education Center
- Mercy Hospital
- Old Capitol
- Pedestrian Mall
- Robert A. Lee Community Recreation Center

Route Characteristics		
Weekday		
Start Time	6:08 AM	
End Time	6:47 PM	
Average Daily Boardings	144	
Service Hours	6.3	
Average Daily Boardings per Service Hour	23	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60-75	
Schedule Adherence	On Time	46%
	Early	2%
	Late	53%

Ridership

Ridership on the Eastside Express is 144 average weekday boardings and is peaked during commuting hours. High ridership stops are the downtown interchange and Iowa City High School. Four trips on this route see seven or fewer total boardings.

Midday ridership is much lower than peak ridership. Most midday trips carry less than 10 passengers.

Schedule Adherence

The Eastside Express route departs its timepoints on schedule 46% of the time, with most of the untimely departures being late.

Summary

The Eastside Express route is a low-ridership route and the only route to serve the far eastern neighborhoods of Iowa City. The limited-stop nature of the route helps mitigate the route's long running distance and reduce rider trip times. The route's turnarounds in subdivisions off E Court Street are time-consuming and—although somewhat productive from a ridership perspective—also increase trip times for some riders.

In the morning, the Eastside Express departs 15 minutes before or after Court Hill trips from the downtown interchange, but in the afternoon the Eastside Express departs the downtown interchange at the same time as the Court Hill route.



EASTSIDE LOOP

The Eastside Loop is a large, weekday-only loop route that operates in the eastern portion of Iowa City, connecting residential neighborhoods with the Regina Catholic Education Center, Iowa City High School, and Tate High School, along with limited shopping opportunities. The route offers only two a.m. trips and one p.m. trip, all of which are oriented around high school bell times. The p.m. route operates one hour earlier on Thursdays than the remainder of the week. The a.m. service operates clockwise, while the p.m. service operates counter-clockwise.

Major Destinations

- Regina Catholic Education Center
- Iowa City High School
- Hy-Vee
- The Arc of SE Iowa
- Fareway Grocery
- Iowa City Marketplace
- Kirkwood Community College
- Tate High School
- Pathways

Route Characteristics		
Weekday		
AM Service Span	7:35 AM – 8:44 AM	
PM Service Span	4:05 PM – 4:55 PM ¹	
Average Daily Boardings	82	
Service Hours	1.9	
Average Daily Boardings per Service Hour	43	
Peak Headway (mins.)	55	
Off-Peak Headway (mins.)	-	
Schedule Adherence	On Time	50%
	Early	25%
	Late	25%

Ridership

Ridership on the Eastside Loop is 82 average weekday boardings. High ridership stops include The Quarters apartments and Iowa City High School. The second a.m. trip, which travels only as far as the Regina Catholic Education Center, carries only two riders.

Schedule Adherence

The Eastside Loop route departs its timepoints on schedule 50% of the time, with 50% of its clockwise loop trips departing early and 50% of its counter-clockwise loop trips departing late.

Summary

The Eastside Loop route is primarily a secondary school route, providing students in served neighborhoods a one-seat ride to Iowa City High School, Tate High School, Regina High School, and select middle schools. This route has a significant number of stops with zero average weekday boardings, particularly at those stops with longer trip times to the high schools. In the p.m., there is zero ridership at Regina High School, potentially because the route departure is nearly one hour after the end of the school day. The a.m. route's deviation to serve South East Junior High School does provide some riders with a shorter trip but also extends trip times for other riders.

¹ Service starts and ends one hour earlier on Thursdays.



LAKESIDE

The Lakeside route is a bi-directional route on much of its alignment, with a large clockwise terminal loop in the residential communities south of Highway 6. The route has 24 weekday trips and connects downtown Iowa City with shopping at the Hy-Vee-anchored shopping plaza on Highway 6 and high-density residential neighborhoods.

This route also operates 14 trips on Saturdays along the same alignment.

Major Destinations

- Bon-Aire Mobile Home Park
- Pathways
- Hy-Vee
- Shelter House
- Youth Emergency Shelter
- Court Street Transportation Center
- Old Capitol
- Pedestrian Mall

Ridership

Ridership on the Lakeside route is high, at 477 average weekday boardings. Boardings on the route are peaked during commuting hours and major ridership activity occurs at the downtown interchange and the Hy-Vee shopping center on Highway 6, although activity is relatively well-distributed along the remainder of the route's residential alignment.

Schedule Adherence

The Lakeside route departs its timepoints on schedule 59% of the time, with most of the untimely departures being early. Outbound trips are more likely to depart early than inbound trips.

Summary

The Lakeside route is a relatively high-productivity route that overlaps with some of the Broadway and Cross Park routes' alignment but with staggered departures, providing reduced headways along the routes' shared corridor. The route includes a large loop through residential neighborhoods south of Highway 6, which increases trip times for some riders but is the only transit access to downtown Iowa City for these residents. The Lakeside route provides better access to Hy-Vee than both the Broadway and Cross Park routes. This route duplicates the service provided to Bon-Aire Mobile Home Park and other apartments by the Mall route but also provides residents at these locations alternative shopping, educational, and employment access.

Route Characteristics		
Weekday		
Start Time	6:05 AM	
End Time	6:57 PM	
Average Daily Boardings	477	
Service Hours	14.3	
Average Daily Boardings per Service Hour	33	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	59%
	Early	25%
	Late	17%
Night		
Start Time	6:45 PM	
End Time	10:27 PM	
Headway (mins.)	60	



MALL

The Mall route operates bi-directional service from downtown Iowa City, and along Kirkwood Avenue and Lower Muscatine Road, with a small terminal loop around the industrial area at Scott Boulevard SE and Highway 6, and front-door service at the Iowa City Marketplace.² The route connects downtown Iowa City with residential neighborhoods, shopping, Kirkwood Community College, and job opportunities. The route operates 19 trips on weekdays only.

Major Destinations

- Fareway Grocery
- Iowa City Driver's License Station
- Iowa City Marketplace
- Kirkwood Community College
- Court Street Transportation Center
- Old Capitol
- Pedestrian Mall

Route Characteristics		
Weekday		
Start Time	6:20 AM	
End Time	6:40 PM	
Average Daily Boardings	353	
Service Hours	12.3	
Average Daily Boardings per Service Hour	29	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	67%
	Early	21%
	Late	12%

Ridership

Ridership on the Mall route is 353 average weekday boardings and is relatively evenly distributed throughout the day. Major activity occurs at the Kirkwood Community College, Eastdale Plaza, the Bon-Aire Mobile Home Park, and the downtown interchange. There is also significant ridership in the Heinz Road industrial area.

Schedule Adherence

The Mall route departs its timepoints on schedule 67% of the time, with most of the untimely departures being early. Outbound trips are more likely to depart early than inbound trips.

Summary

The Mall route averages 29 boardings per service hour and serves low-density and high-density residential neighborhoods, some commercial destinations, and major employers off Highway 6. This route provides front-door service to the Iowa City Marketplace and Eastdale Plaza, which improves access for some riders but increases trip times for others.

The Mall route is the only route to provide consistent daytime access to the Heinz Road industrial area and the residential community on Kirkwood Avenue between S Dodge Street and Franklin Street, south of the railroad tracks.

² The Iowa City Marketplace was formerly known as the Sycamore Mall.



MANVILLE HEIGHTS

The Manville Heights route provides bi-directional service from downtown Iowa City, through the University of Iowa Campus, Manville Heights residential neighborhood, and in the Peninsula neighborhood, Oak Grove condominiums, and Forest View mobile home park. The route has 19 weekday trips and operates four night and 13 Saturday trips on a different alignment. This route provides the only transit connection to the university and downtown Iowa City for people living between I-80, the Iowa River, and N Dubuque Street.

Major Destinations

- Mayflower Hall
- McCormick Square Condominiums
- The Peninsula Neighborhood
- Forest View Mobile Home Park
- Hancher Auditorium
- Iowa City VA
- University of Iowa Hospital
- Old Capitol
- Pedestrian Mall
- North Dodge Corridor (night)

Route Characteristics		
Weekday		
Start Time	6:15 AM	
End Time	6:55 PM	
Average Daily Boardings	282	
Service Hours	12.7	
Average Daily Boardings per Service Hour	22	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	67%
	Early	30%
	Late	4%
Night		
Start Time	6:45 PM	
End Time	10:10 PM	
Headway (mins.)	60	

Ridership

Ridership on the Manville Heights route is 282 average weekday boardings and is slightly peaked during commuting hours. High-ridership stops on this route are the downtown interchange, the Peninsula neighborhood, McCormick Square condominiums, Forest View mobile home park, and the University of Iowa Newton Road corridor. Night service on this route is tied for second-least productive route in the Iowa City Transit system, at only 15 boardings per service hour.

Schedule Adherence

The Manville Heights route departs its timepoints on schedule 67% of the time, with most of the untimely departures being early. Outbound trips are more likely to depart early than inbound trips. The Manville Heights night service has slightly higher on-time performance, at 71%.

Summary

The Manville Heights route provides the only transit connection to downtown and the University of Iowa for residents of the Manville Heights and Normandy Peninsula neighborhoods. This route is relatively unproductive and has low ridership in the Manville Heights neighborhood. Some stops on Park Road have zero average daily boardings or alightings.



MELROSE EXPRESS

The Melrose Express route is a weekday-only route serving the Melrose Avenue corridor bi-directionally with 12 daily trips. Service through university property is provided via a counter-clockwise terminal loop, with inbound trips serving the southern portion of main campus and outbound trips serving the Newton Road corridor. The route connects downtown Iowa City with the University of Iowa and residential communities in University Heights and along Melrose Avenue. The route also serves some commuter parking lots. Despite it being called an “express” route, trips stop relatively frequently along Melrose Avenue.

Major Destinations

- West High School
- Iowa City VA
- University of Iowa Hospital
- Main Campus
- Old Capitol
- Pedestrian Mall

Route Characteristics		
Weekday		
Start Time	6:35 AM	
End Time	6:17 PM	
Average Daily Boardings	129	
Service Hours	5.4	
Average Daily Boardings per Service Hour	24	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60-75	
Schedule Adherence	On Time	28%
	Early	17%
	Late	56%

Ridership

Ridership on the Melrose Express is 129 average weekday boardings and is slightly higher in the earlier evening than it is later. High ridership stops include the downtown interchange and Finkbine Commuter Drive.

Schedule Adherence

On-time performance for the Melrose Express is problematic; the route departs its timepoints on schedule 28% of the time, with most of the untimely departures being late. Inbound trips are more likely to depart late than outbound trips. This route is the least on-time in the Iowa City Transit system.

Summary

The Melrose Express route is a relatively low-ridership route that connects communities on the western end of Melrose Avenue with University of Iowa campus and downtown Iowa City. The route’s large terminal loop through the University of Iowa campus provides better access to certain destinations for some riders but extends travel times for other riders. Outbound trips on this route are duplicative of service offered by the Plaen View, Westwinds, and Westside Hospital routes but these routes largely depart in staggered fashion, giving riders higher-frequency outbound trips on this shared corridor. This route provides the only transit access to the University of Iowa and downtown Iowa City for people living and working west of Hawkeye Park Road.



NORTH DODGE

The North Dodge route operates 19 weekday trips on the Market/Jefferson Street and North Dodge Street/Highway 1 corridor, connecting downtown Iowa City with the northside neighborhood and major employers in northeast Iowa City. The route provides front-door service to both Pearson and the ACT campus and deviates on inbound trips to serve the residential neighborhood off Prairie du Chien Road.

The route also offers three weekday night and 14 Saturday trips on an alternative alignment.

Major Destinations

- Hy-Vee
- Pearson
- ACT
- Mercy Hospital
- Old Capitol and Pedestrian Mall
- Regina Catholic Education Center (night and Saturday)

Ridership

Ridership on the North Dodge route is relatively low, considering the number of trips offered. Boardings are peaked in the commute hours, and high-ridership stops include the downtown interchange, the ACT campus, and Pearson offices. This route is tied for second-least productive in the Iowa City Transit system, at 15 boardings per service hour. Night service on this route is the third-least productive in the system, at 18 boardings per service hour. The final night trip (9:00 p.m.) carries only one rider.

Schedule Adherence

The North Dodge route departs its timepoints on schedule 40% of the time, with most of the untimely departures being early. Outbound trips are slightly more likely to depart early than inbound trips. This route is the second-least on-time in the Iowa City Transit system but its night service is tied for second-most on-time in the system.

Summary

The North Dodge route is a low-ridership route that includes three alignment types: a bi-directional couplet, destination loops, and bi-directional corridor. The route deviation to ACT campus provides good access for ACT employees but increases trip times for other riders—particularly those who may be travelling to the Pearson Education campus. The Prairie Du Chien Road deviation, while relatively productive from a ridership perspective, also increases trip times for some riders. This route provides the only transit access to downtown Iowa City for people living and working off Highway 1 and in the northeast Northside neighborhood of Iowa City.

Route Characteristics		
Weekday		
Start Time	6:00 AM	
End Time	6:40 PM	
Average Daily Boardings	185	
Service Hours	12.7	
Average Daily Boardings per Service Hour	15	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	40%
	Early	51%
	Late	9%
Night		
Start Time	7:00 PM	
End Time	9:40 PM	
Headway (mins.)	60	



FREE SHUTTLE

The zero-fare Free Shuttle route consists of two weekday-only downtown Iowa City loops, the Northside Shuttle and the Southside Shuttle (also called the “Free Shuttle North” and “Free Shuttle South”).

The Northside Shuttle circulates on a short, counter-clockwise loop from the Pentacrest downtown interchange, past Mercy Hospital, and through the northside neighborhood. This shuttle operates 11 trips per weekday.

The Southside Shuttle operates a short, clockwise loop from the Pentacrest downtown interchange and through high-density residential neighborhoods in and around the College Green neighborhood and through University of Iowa east campus. This shuttle operates 33 trips per weekday.

Major Destinations

- Mercy Hospital
- Old Capitol and Pedestrian Mall
- Iowa City Senior Center
- IMU
- Court Street Transportation Center

Route Characteristics		
Weekday		
Start Time	7:30 AM	
End Time	6:28 PM	
Average Daily Boardings	624	
Service Hours	8.9	
Average Daily Boardings per Service Hour	70	
Peak Headway (mins.)	15-60	
Off-Peak Headway (mins.)	15-60	
Schedule Adherence	On Time	93%
	Early	7%
	Late	0%

Ridership

Ridership on the Free Shuttle is high, at 624 average weekday boardings, and is peaked during the a.m. period. The Southside Shuttle is the most productive route in the Iowa City Transit system, at over 80 boardings per service hour. Four trips (all in the a.m.) on the Southside Shuttle see maximum passenger loads of over 30, with the 9:00 a.m. trip having a maximum passenger load of 65. The ridership on the Northside Shuttle is low, with only 22 daily passengers. Seven of the 11 Northside Shuttle trips carried one or less passengers.

Schedule Adherence

This route departs its timepoints on schedule 93% of the time. All untimely departures are early and occur on the Northside shuttle. This route is the most on-time in the Iowa City Transit system.

Summary

The Southside Shuttle is short, reliable, and popular. Its high ridership may be due to its fare-free nature and the high concentration of potential riders living and working along the alignment. The route is somewhat duplicative of the CAMBUS East Campus Shuttle, which is also fare-free. High maximum passenger loads on the a.m. Southside Free Shuttle route suggest additional service may be warranted. The Northside Shuttle underperforms. It also duplicates multiple other routes, but ridership has been poor.



OAKCREST

The Oakcrest route operates in a bi-directional alignment from the downtown interchange, through University of Iowa Campus, along Melrose Avenue in University Heights, and on Sunset Street. The route operates a relatively large clockwise terminal loop around the high-density housing between Oakcrest Street and West Benton Street. On weekdays, this route has 26 daily trips.

The route also operates four weekday night and 14 Saturday trips on an alternative alignment that serves shopping destinations on Highway 1. There is also a football shuttle version of the route for game days.

Major Destinations

- Old Capitol
- Main Campus
- University of Iowa Hospital
- Seville and Emerald Court Apartments
- Oaknoll Retirement Community
- Pedestrian Mall
- ALDI (night and Saturday)
- Walmart Supercenter (night and Saturday)

Route Characteristics		
Weekday		
Start Time	6:14 AM	
End Time	6:57 PM	
Average Daily Boardings	732	
Service Hours	10.9	
Average Daily Boardings per Service Hour	67	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	30	
Schedule Adherence	On Time	69%
	Early	19%
	Late	12%
Night		
Start Time	7:00 PM	
End Time	10:23 PM	
Headway (mins.)	60	

Ridership

Ridership on the Oakcrest route is relatively high, at 732 average weekday boardings, and is peaked in the commute periods. High-ridership stops are relatively well-distributed along the route and are often located near high-density housing. This is the most productive route in the Iowa City Transit system that charges a fare, at 67 boardings per service hour. The night service on this route is the third-most productive in the system, at 50 boardings per service hour. Two inbound and one outbound trip (7:44 a.m., 8:44 a.m., and 5:00 p.m., respectively) have maximum passenger loads of more than 35 passengers.

Schedule Adherence

The Oakcrest route departs its timepoints on schedule 69% of the time, with most of the untimely departures being early. Inbound trips are more likely to depart early than outbound trips. The Oakcrest night service is slightly less on-time, at 65% schedule adherence.

Summary

The Oakcrest route is a high-productivity route that provides relatively short and direct connections between high-density residential apartment buildings, University of Iowa, and downtown Iowa City.



PLAEN VIEW

The Plaen View route is a weekday-only route that operates on a bi-directional alignment from downtown Iowa City, through University of Iowa on Newton Road, Finkbine Commuter Drive, and Melrose Avenue in University Heights, and then transitions to a large clockwise terminal loop that circulates through residential communities southwest of University of Iowa and offers some shopping opportunities. This route has 20 trips per weekday.

Major Destinations

- Iowa City VA
- University of Iowa Hospital
- Old Capitol
- Pedestrian Mall
- Court Street Transportation Center
- Walmart Supercenter
- ALDI
- Fareway Grocery

Route Characteristics		
Weekday		
Start Time	6:30 AM	
End Time	6:58 PM	
Average Daily Boardings	583	
Service Hours	15	
Average Daily Boardings per Service Hour	39	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	66%
	Early	14%
	Late	20%

Ridership

Ridership on this route is 583 average weekday boardings and is relatively peaked during commute hours. High ridership stops on this route are the downtown interchange, University of Iowa campus, and near high-density housing. Two trips (the 6:45 a.m. and 5:15 p.m.) reach approximately 35 passengers maximum load, and the final trip of the day (6:15 p.m.) sees 24 boardings, suggesting there may be additional, later-evening and unserved demand for this route.

Schedule Adherence

The Plaen View route departs its timepoints on schedule 66% of the time, with most of the untimely departures being late.

Summary

The Plaen View route is a high-productivity route serving southwestern Iowa City. The route's outbound trips supplement service offered by the Melrose Express, Westwinds, and Westside Hospital route on the Newton Road corridor, as they generally depart offset from these other routes, providing riders on the shared corridor with more frequent service. Other portions of the route's service area are also covered by the Westwinds (in reverse direction) and Westside Hospital routes. The route's Westside Drive loop provides better access to home for some riders but may increase travel times for other riders.



ROCHESTER

The Rochester route operates on weekdays only on the Market/Jefferson couplet, bi-directionally on Rochester Avenue, and in a terminal loop through the Lemme neighborhood, connecting downtown Iowa City with parts of the Northside neighborhood, Regina Catholic Education Center, and some shopping and medical destinations. The route operates 19 trips per weekday.

Major Destinations

- Old Capitol
- Mercy Hospital
- Regina Catholic Education Center
- Pedestrian Mall

Ridership

Ridership on the Rochester route is 281 average weekday boardings and is relatively peaked at commute hours. High-ridership stops on the route are the Regina Catholic Education Center, downtown interchange, and near the Regency Heights apartments.

Schedule Adherence

The Rochester route departs its timepoints on schedule 75% of the time, with most of the untimely departures being late. This route is the third-most on-time in the Iowa City Transit system.

Summary

The Rochester route provides an all-day connection between the Regina Catholic Education Center and downtown Iowa City. The large terminal loop at the eastern end of the route provides better access to transit for many residents but also increases trip times for other riders. The route duplicates portions of the Eastside Express. On-time performance on this route is good, relative to other Iowa City Transit routes. This route is the only route to provide consistent daytime service to downtown Iowa City for people living in the vicinity of Pheasant Hill Park.

Route Characteristics		
Weekday		
Start Time		6:26 AM
End Time		6:42 PM
Average Daily Boardings		281
Service Hours		8.4
Average Daily Boardings per Service Hour		33
Peak Headway (mins.)		30
Off-Peak Headway (mins.)		60
Schedule Adherence	On Time	75%
	Early	8%
	Late	17%



TOWNCREST

The Towncrest route operates bi-directionally along E Burlington Street and Muscatine Avenue with a terminal loop traveling through the residential neighborhood off Wayne Avenue. The route connects downtown Iowa City with residential communities, shopping centers (including the S 1st Avenue Hy-Vee), and two lower-grade schools. This route has 25 trips per weekday.

The route also operates four weekday night trips and 13 Saturday trips on an alternative alignment.

Major Destinations

- Old Capitol
- Pedestrian Mall
- Robert A. Lee Community Recreation Center
- Hy-Vee

Ridership

Ridership on the Towncrest route is 480 average weekday boardings and is peaked during commute hours. Ridership is relatively evenly distributed along the route corridor.

Schedule Adherence

The Towncrest route departs its timepoints on schedule 71% of the time, with most of the untimely departures being early. Outbound trips are more likely to depart early than inbound trips. This route's night service is tied for second-least on-time route in the Iowa City Transit system. The night service on this route is significantly less on-time, at 40% schedule adherence.

Summary

The Towncrest route is a high-productivity route that primarily operates on a bi-directional alignment with good rider legibility. The route sees decent ridership near the South East Junior High School without providing front-door service. The Towncrest route supplements service on the Court Hill route along the E Burlington Street corridor by departing from the downtown interchange in-between Court Hill departures, effectively creating a shared corridor with 15-minute headways for some riders.

Route Characteristics		
Weekday		
Start Time	6:11 AM	
End Time	6:27 PM	
Average Daily Boardings	480	
Service Hours	10.7	
Average Daily Boardings per Service Hour	45	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	30	
Schedule Adherence	On Time	71%
	Early	18%
	Late	11%
Night		
Start Time	6:30 PM	
End Time	9:57 PM	
Headway (mins.)	60	



WESTPORT PLAZA

The Westport Plaza route is a weekday-only route that operates 13 daily trips connecting downtown Iowa City with residential and commercial districts off Highway 1 and S Riverside Drive, as well as mobile home communities southeast of the Iowa City Municipal Airport. The route primarily operates bi-directionally but includes front-door service to Walmart and has a terminal loop at the Baculis Mobile Home Park.

Major Destinations

- Old Capitol
- ALDI
- Walmart Supercenter
- Cole's Mobile Home Court
- Lake Ridge Mobile Home Park
- Pedestrian Mall

Route Characteristics		
Weekday		
Start Time	6:30 AM	
End Time	6:56 PM	
Average Daily Boardings	191	
Service Hours	17.6	
Average Daily Boardings per Service Hour	11	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	58%
	Early	3%
	Late	38%

Ridership

Ridership on the Westport Plaza route is 191 average weekday boardings and is higher in the p.m. than a.m. period. High-ridership stops include the downtown interchange, Walmart Supercenter, and at the W Benton Street and S Riverside Drive intersection. This is the least productive route in the Iowa City Transit system, at 11 boardings per service hour.

Schedule Adherence

The Westport Plaza route departs its timepoints on schedule 58% of the time, with most of the untimely departures being late.

Summary

The Westport Plaza route is a low-productivity route that combines shopping access with service to residential communities by the Iowa City Municipal Airport. The Walmart is the single biggest destination outside of downtown for the route, yet it is only served in one direction. Anyone wishing to go to Walmart has a long, out-of-direction ride in at least one direction. The route approaches but does not enter the Lake Ridge mobile home community (there are no sidewalks between the bus stop and the mobile home park, making access to and from this bus stop dangerous and difficult), although it does provide 'front-door' service to Cole's mobile home community.



WESTSIDE HOSPITAL

The Westside Hospital route is a weekday-only route that operates bi-directionally through downtown Iowa City, University of Iowa campus' Newton Road and Hawkins Drive, and along Melrose Avenue through University Heights. The route also loops through three residential neighborhoods west of Mormon Trek Boulevard, with some shopping opportunities. There are 13 trips per weekday.

Major Destinations

- Old Capitol
- Iowa City VA
- University of Iowa Hospital
- Fareway Grocery
- Pedestrian Mall

Ridership

Ridership on the Westside Hospital route is 257 average weekday boardings, with ridership peaked in the p.m. period. High-ridership stops on the route include University of Iowa campus and high-density housing on Rohret Road.

Schedule Adherence

The Westside Hospital route departs its timepoints on schedule 58% of the time, with most of the untimely departures being late. Inbound trips are more likely to depart late than outbound trips. This route is the third-least on-time route in the Iowa City Transit system.

Summary

The Westside Hospital route is a relatively low-ridership route that struggles with on-time performance (48% of timepoint departures are late). The route has three neighborhood loops, all of which improve access for residents but increase trip times for other riders. This route also duplicates a significant segment of the Plaen View, Melrose Express, and Westwinds routes, although its outbound departures are generally staggered, which provides some riders using the shared Newton Road corridor with higher-frequency service. This route provides the only transit access for people living off Rohret Road west of Mormon Trek Boulevard.

Route Characteristics		
Weekday		
Start Time	6:22 AM	
End Time	7:11 PM	
Average Daily Boardings	257	
Service Hours	10.7	
Average Daily Boardings per Service Hour	24	
Peak Headway (mins.)	60	
Off-Peak Headway (mins.)	60-75	
Schedule Adherence	On Time	58%
	Early	11%
	Late	48%



WESTWINDS

The Westwinds route operates 19 trips per weekday, connecting downtown Iowa City with the University of Iowa Main Campus and hospitals, residential communities in University Heights, and residential and commercial districts southwest of University Heights. The route operates bi-directionally through downtown Iowa City and the University of Iowa, as well as through University Heights on Melrose Avenue. Outside of these areas, there are two loops that travel through primarily residential communities.

The route also operates five night and 13 Saturday trips on an alternative alignment. There is also a football shuttle version of the route for game days.

Major Destinations

- Old Capitol
- Iowa City VA
- University of Iowa Hospital
- Fareway Grocery
- Pedestrian Mall

Ridership

Ridership on the Westwinds route is 484 average weekday boardings and is peaked during the commute period. Ridership is relatively evenly distributed along the route alignment, with clear employment-based and student activity occurring on the University of Iowa campus. Two trips on the Westwinds route (7:00 a.m. and 7:30 a.m.) have maximum passenger loads of more than 35.

Schedule Adherence

The Westwinds route departs its timepoints on schedule 63% of the time, with most of the untimely departures being late. Night service has higher schedule adherence, at 74% on-time.

Summary

The Westwinds route is a relatively high-ridership route that struggles with on-time performance (48% of timepoint departures are late). This route also duplicates a significant segment of the Plaen View, Melrose Express, and Westside Hospital routes, although its outbound trips are generally offset from these other routes, providing some riders on the shared corridor more frequent service.

Route Characteristics		
Weekday		
Start Time	6:19 AM	
End Time	6:41 PM	
Average Daily Boardings	484	
Service Hours	12.7	
Average Daily Boardings per Service Hour	38	
Peak Headway (mins.)	30	
Off-Peak Headway (mins.)	60	
Schedule Adherence	On Time	63%
	Early	13%
	Late	23%
Night		
Start Time	6:30 PM	
End Time	10:56 PM	
Average Daily Boardings		
Headway (mins.)	60	



7 SCENARIO DEVELOPMENT

INTRODUCTION

Convenient and cost-effective transit service requires an appropriate balance of coverage, frequency, and service span. Prior to developing any recommendations, this study assessed existing ridership patterns, on-time performance, travel patterns, and demographic data. Public meetings and an online survey indicated that expanding service hours, improving service frequency, and better connecting locations outside of downtown were some of the improvements desired most by riders and non-riders. More information on the community input that was used to shape these scenarios is in Chapter 8.

THREE SCENARIOS WITH DIFFERENT PRIORITIES

As a result of these efforts, the ICATS project team developed three preliminary scenarios to improve CAMBUS, Coralville Transit, and Iowa City Transit service. These scenarios do not increase operating costs (i.e., they are cost-neutral) and each emphasizes different types of improvements and route planning principles:

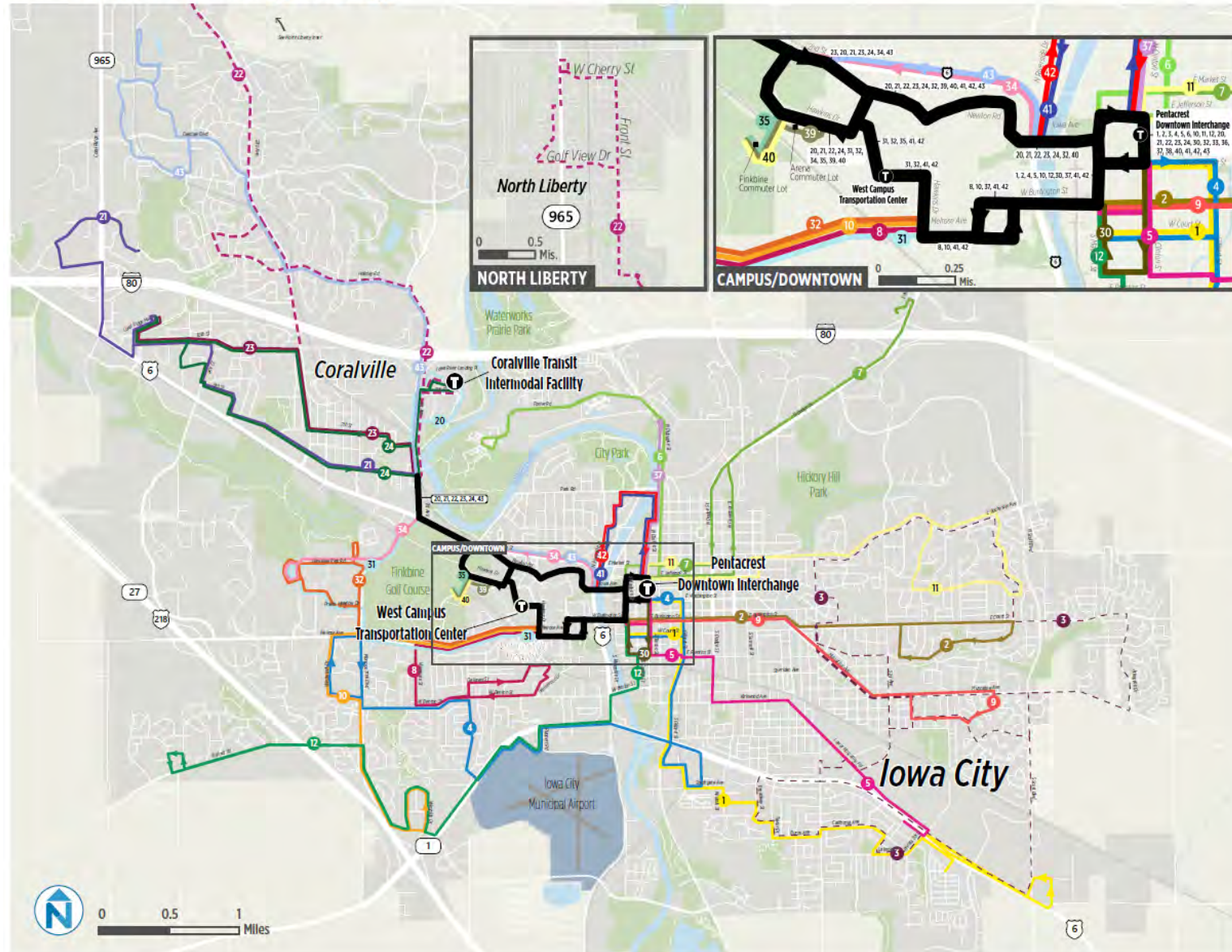
- **Scenario 1** focused on improving frequency on the most popular routes. In addition, it made service more direct and improved speed and reliability. Resources were shifted from lower-ridership routes.
- **Scenario 2** focused on maintaining service coverage, while also improving speed and reliability. This option is most like today's service.
- **Scenario 3** focused on improving weekday evening and weekend service, a top customer priority, by shifting resources from weekday service to weekend service. It also introduced a limited on-demand type service on Sundays. This scenario involves changes to only Iowa City Transit routes.

Route maps for the three scenarios are in Figure 7-1 through Figure 7-3. These scenarios were shared with the public at in-person open houses in January of 2020 and made available for comment via an online survey that was open from January 2020 through March 2020. More information on this outreach is in Chapter 8 of this report.



Figure 7-1 Scenario 1 System Map and Highlights

Scenario 1: Frequency



Scenario 1: Frequency

- | | |
|----------------------------------|-------------------------------------|
| Iowa City Transit | Coralville Transit |
| 1 Broadway | 20 Iowa River Landing |
| 2 Court Street | 21 5th Street |
| 3 Eastside Loop (Peak Trip Only) | 22 North Liberty (Peak Trip Only) |
| 4 Crossdown | 23 10th Street |
| 5 Mall | 24 Saturday & Night |
| 6 Peninsula | CAMBUS |
| 7 North Dodge | 30 East Campus Shuttle |
| 8 Oakcrest | 31 Hawk Lot/Hospital |
| 9 Towncrest | 32 Hawkeye - Hospitals - Pentacrest |
| 10 Platen View | 33 Hawk Lot - VA Express |
| 11 Rochester | 34 Hospital Finkbine/Arena |
| 12 Westside | 35 Interdorm |
| | 36 North Hospital Shuttle |
| | 40 Pentacrest |
| | 41 Blue Route |
| | 42 Red Route |
| | 43 Research Park |
- Peak Trip Only



Oakcrest, Towncrest, and new Hawkeye-Hospitals-Pentacrest operate every 15 minutes all day on weekdays. Mall route operates every 20 minutes on weekdays.



Connection between west Iowa City and south Iowa City without going downtown.



Faster and more direct service on major streets.



Improved access to Iowa River Landing.

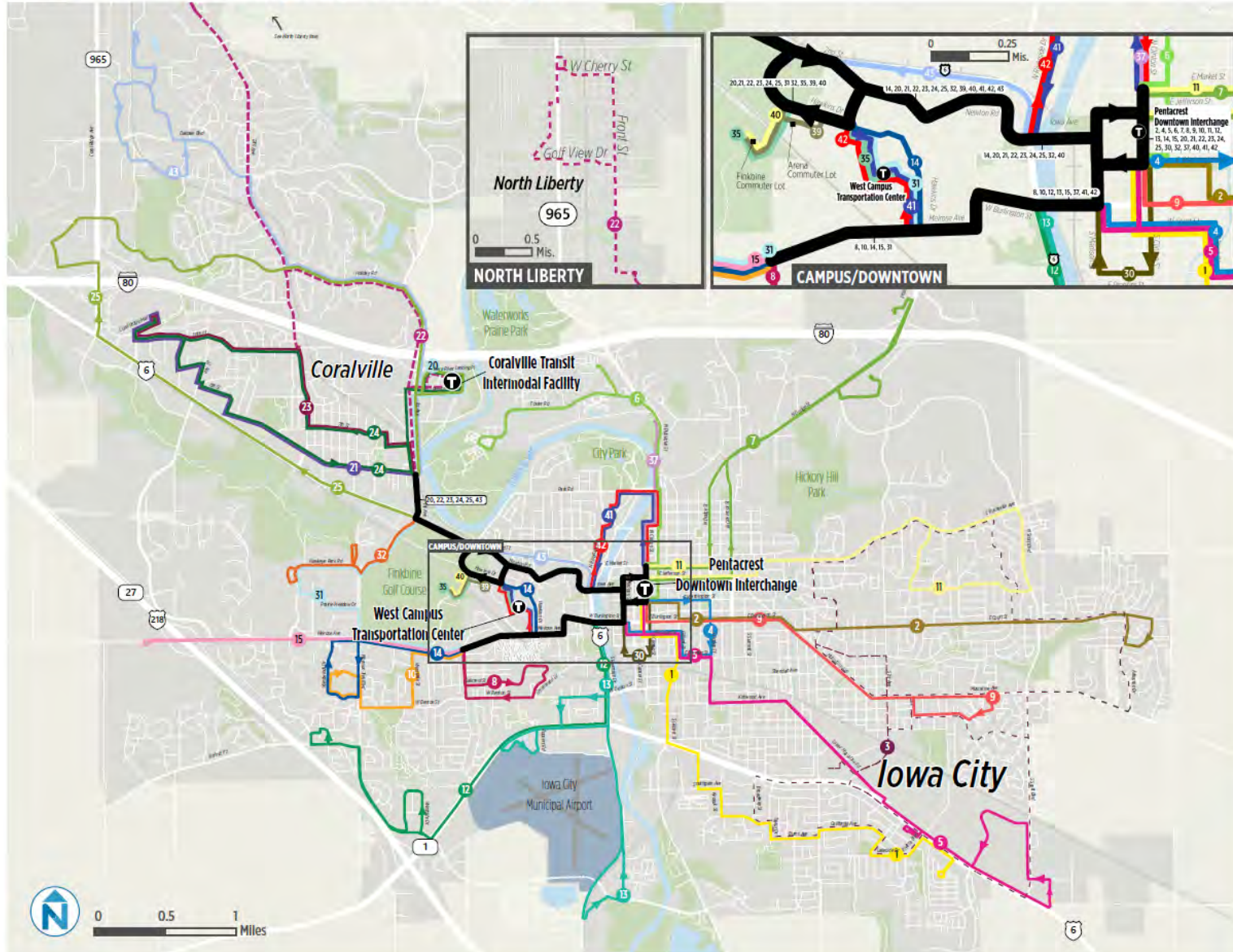


Simplified routes that don't change at night or on weekends.



Figure 7-2 Scenario 2 System Map and Highlights

Scenario 2: Simplified Coverage



Scenario 2: Simplified Coverage

- | | |
|----------------------------------|-------------------------------------|
| Iowa City Transit | Coralville Transit |
| 1 Lakeside | 20 Iowa River Landing |
| 2 Court Street | 21 5th Street |
| 3 Eastside Loop (Peak Trip Only) | 22 North Liberty (Peak Trip Only) |
| 4 Downtown Shuttle | 23 10th Street |
| 5 Mail | 24 Saturday & Night |
| 6 Peninsula | 25 Express |
| 7 North Dodge | CAMBUS |
| 8 Oakcrest | 30 East Campus Shuttle |
| 9 Towncrest | 31 Hawk Lot/Hospital |
| 10 Westside - Downtown | 32 Hawkeye - Hospitals - Pentacrest |
| 11 Rochester | 33 Hospital Finkbine/Arena |
| 12 Walden | 34 Intermorm |
| 13 Westport Plaza | 35 North Hospital Shuttle |
| 14 Westside - Hospital | 40 Pentacrest |
| 15 Melrose Express | 41 Blue Route |
| | 42 Red Route |
| | 43 Research Park |
- Peak Trip Only

 Oakcrest and Towncrest routes operate more frequently on Saturdays.

 Fewer overlapping routes serving the same destinations.

 Hawkeye-Hospitals-Pentacrest operates every 15-minutes all day weekdays.

 Service to lower-ridership neighborhoods is maintained.


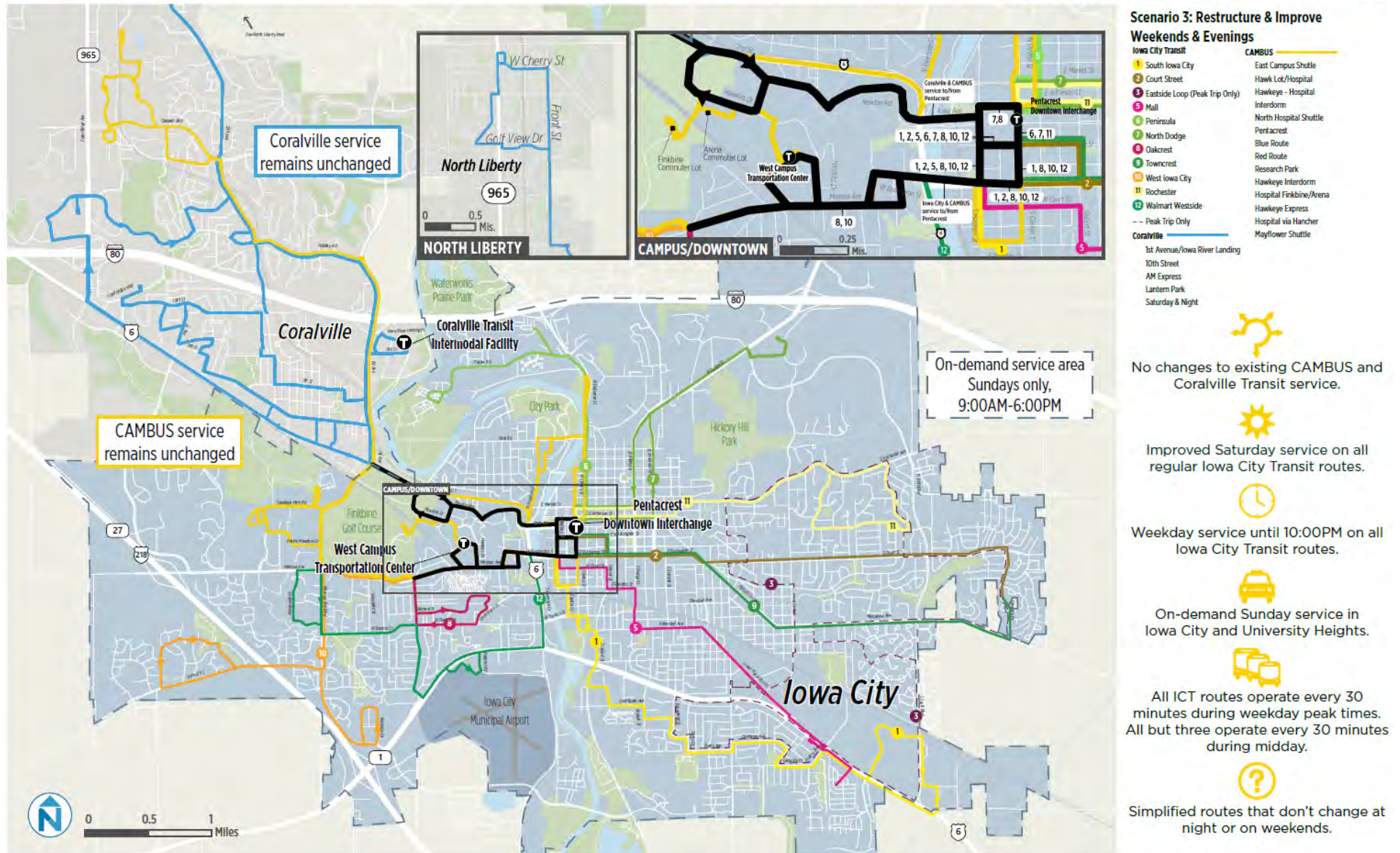
 Faster, more direct service on major streets.



Figure 7-3 Scenario 3 System Map and Highlights

Scenario 3: Restructure & Improve Weekends & Evenings (Iowa City Transit Only)





8 OUTREACH SUMMARY

This chapter summarizes outreach conducted as a part of the Iowa City Area Transit Study (ICATS). Most of the outreach conducted during the ICATS can be separated into five distinct phases. These phases are listed below, along with the summary and analysis work for each phase that is found in this chapter.

- **September 2019 onboard survey analysis:** This section of the chapter analyzes results from the 2019 onboard survey conducted as a part of the ICATS ride check. It provides baseline information on how people use transit in the Iowa City area.
- **Fall/winter 2019 Design Your Own System survey analysis:** This section analyzes results from the interactive online Design Your Own System survey that was open to the public in fall and winter of 2019. It provides information on community members' goals and vision for transit in the Iowa City area.
- **November 2019 outreach summary:** This section summarizes in-person outreach conducted by the ICATS team in November 2019. This outreach included open houses, operator interviews, and stakeholder meetings, and focused on gathering information on the community's goals and vision for transit.
- **January 2020 outreach summary:** This section summarizes in-person outreach conducted by the ICATS team in January of 2020. This outreach included open houses, operator interviews, and stakeholder meetings, and focused on gathering feedback on service scenarios.
- **Winter/spring 2020 survey analysis:** This section summarizes the preferences of survey respondents for the three service scenarios shared on an online survey.

Feedback received during outreach informed initial scenario development and refinement of scenarios into a Preferred Alternative.



SEPTEMBER 2019 ONBOARD SURVEY

Introduction

To learn about current rider behaviors, demographics, and desired transit improvements, an onboard survey was distributed to CAMBUS, Coralville Transit, and Iowa City Transit riders during the ICATS ride check. The paper surveys were distributed in September 2019 and were offered in both English and Spanish. A QR code and URL for an online version of the questions was included on each survey, although only 21 respondents completed the online version. Copies of the English and Spanish survey instruments are in Appendix C.

A total of 2,777 respondents completed the survey. The most completed surveys were collected on CAMBUS trips (1,418 respondents), followed by Iowa City Transit trips (962 respondents) and Coralville Transit trips (397 respondents). The number of respondents that answered each question is indicated on charts and in chart titles with the nomenclature “n=”, with the n-value being the number of respondents or responses.

This analysis examines survey results for each ICATS partner agency, reviewing the answers to each question and identifying key findings.

Key Findings

- Most reported trip activity was either work- or school-related
- Relatively few respondents reported transferring to or from a different transit system (e.g., transferring from Iowa City Transit to Coralville Transit). Many respondents reported transferring within a system; this may be respondent error as operators do not report high levels of intra-agency transfers.
- Most respondents on Coralville Transit and Iowa City Transit paid their fare with a U-PASS (CAMBUS is fare-free)
- Most respondents on all three systems were affiliated with the University of Iowa
- Respondents primarily desired more frequent service, weekend service, and later evening service. Many open-ended comments requested updates to Bongo to make it more reliable.
- Very few respondents desired service to new areas



CAMBUS

This section analyzes the 1,418 survey responses collected on CAMBUS trips.

Travel Behaviors

Survey respondents on CAMBUS trips were distributed across routes at proportions roughly similar to the distribution of systemwide average weekday ridership, with some exceptions (Figure 8-1). The North Hospital Shuttle, Hawkeye-Hospital, Hawkeye Express, and Hospital via Hancher were slightly oversampled, while the Hawkeye Interdorm, Interdorm, and Pentacrest were slightly undersampled. The most responses were collected on the Blue and Red routes, and the fewest total survey responses were collected on the Research Park and Mayflower Shuttle routes.

Figure 8-1 CAMBUS Transit Route Respondent was Riding (n=1,418)

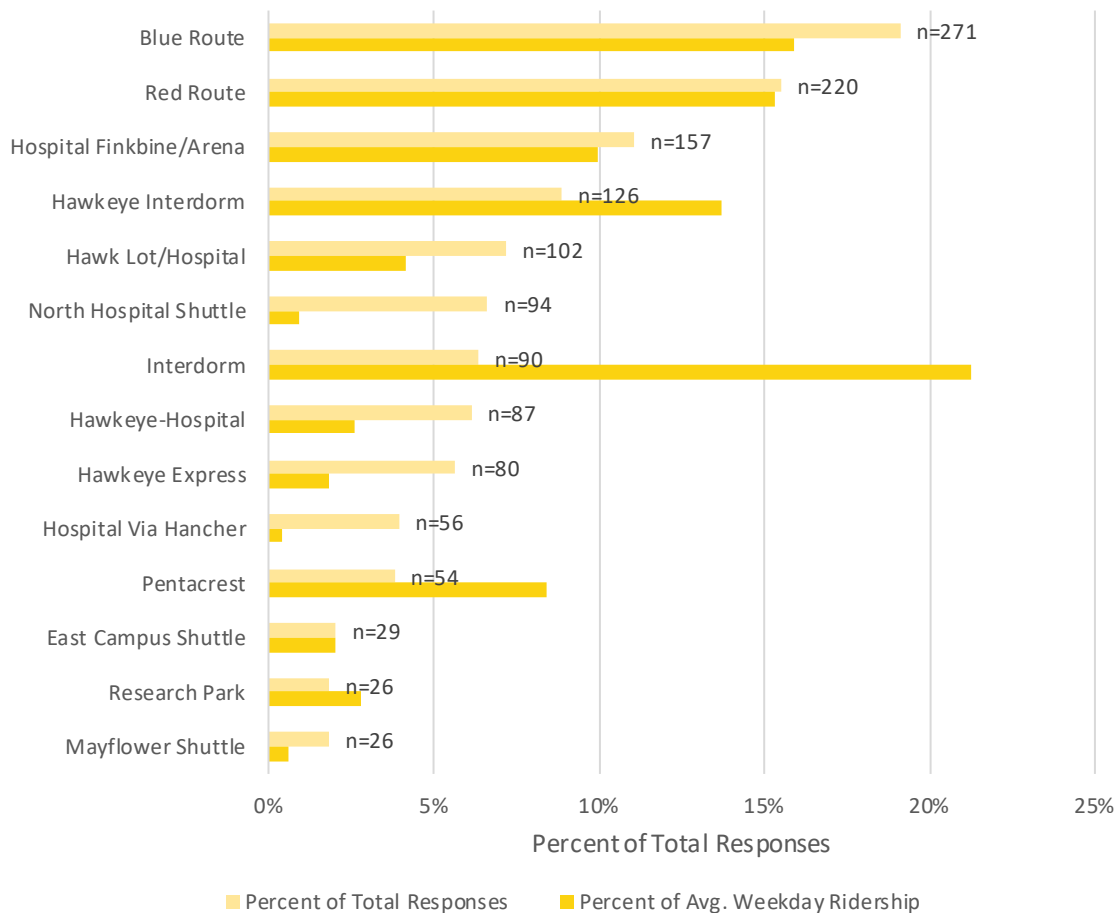
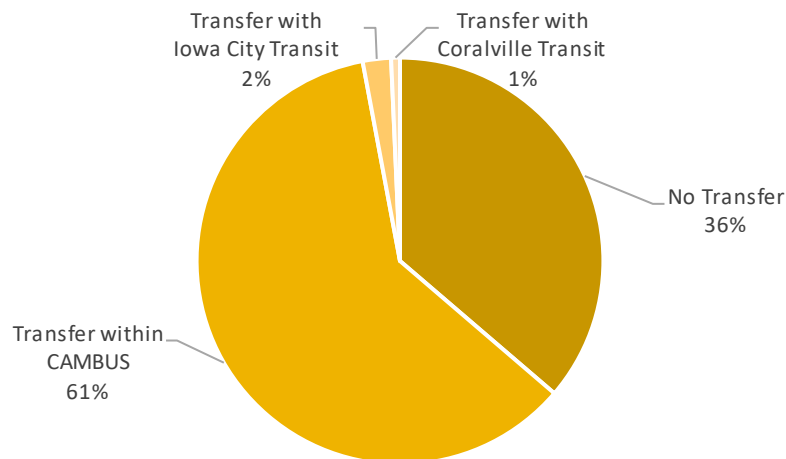




Figure 8-2 shows the percent of respondents who were transferring to or from another route. A majority (64%) reported transferring, primarily to or from another CAMBUS route. Very few respondents transferred to or from a Coralville Transit or Iowa City Transit route. Because operators report there are relatively few transfers within the CAMBUS system, it is likely many respondents misunderstood the question and considered a return trip a transfer.

Figure 8-2 Percent of Respondents Transferring to or From Another Route (n=1,425)

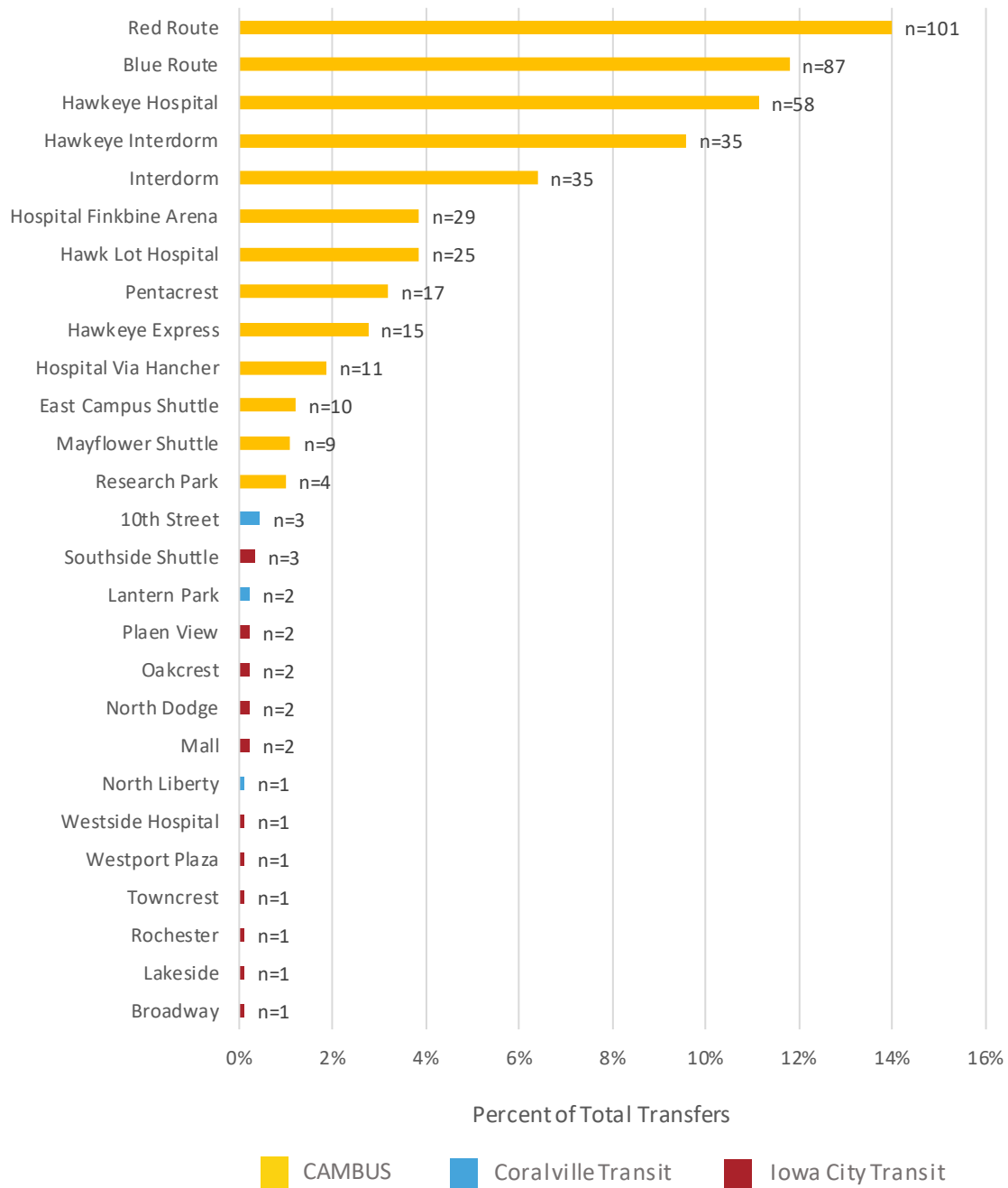


Note: This chart includes online responses.



Figure 8-3 shows the routes with the most reported transfer activity (either to or from the route). A significant number of respondents (233) named only the transit agency they transferred to or from, without specifying the route; these responses are excluded. The route pairs with the greatest number of reported transfers were Red Route/Blue Route, Hawkeye Interdorm/Hawkeye Hospital, and Hawkeye Hospital/Hawk Lot Hospital.

Figure 8-3 Reported Transfer Activity (to or from) by Route (n=1,425)

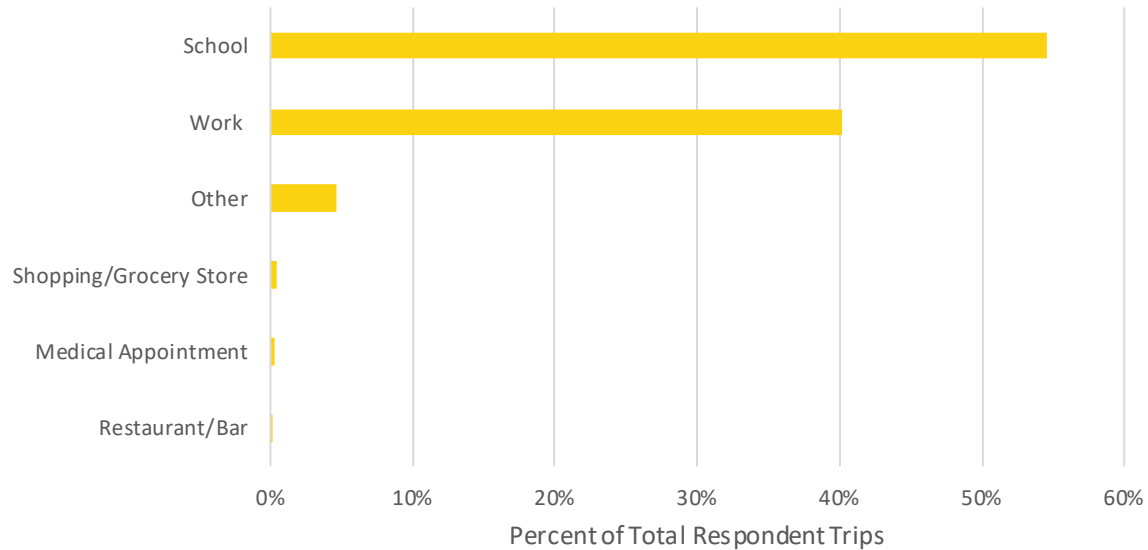


Note: Unidentified routes are not included in this graph. This chart includes online responses.



Figure 8-4 shows respondents' trip purposes. Most respondents (55%) were making school trips, and approximately 40% were making work trips. Very few respondents were using CAMBUS for shopping, restaurant/bar, or medical appointment trips.

Figure 8-4 Respondent Trip Type (n=1,314)



When asked how they would have made their trip if the bus route they were riding was not available, respondents primarily reported that they would have walked (Figure 8-5). Around 20% of respondents said they would have driven alone or used another bus route. Fewer than 5% of respondents reported they would have used other modes or not made their trip. It should be noted that this survey was conducted in September, when the relatively mild weather allows for more comfortable active transportation.

Figure 8-5 Respondent Alternative Mode of Transportation (n=1,403)

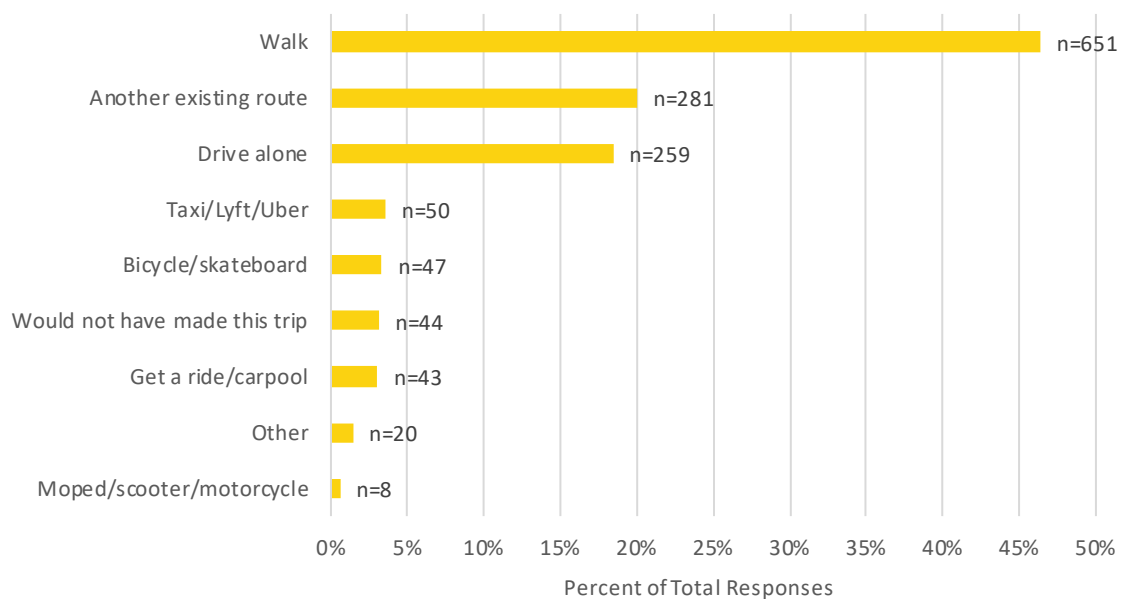
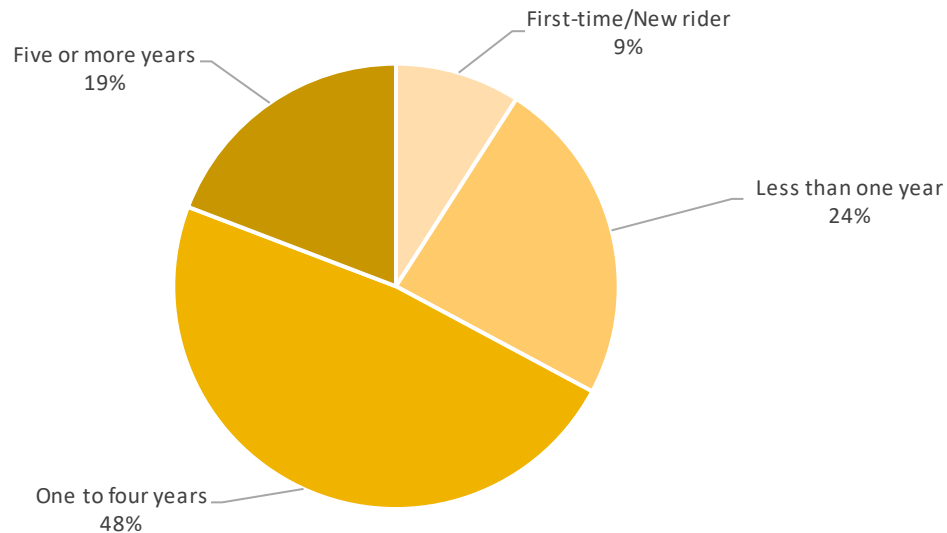




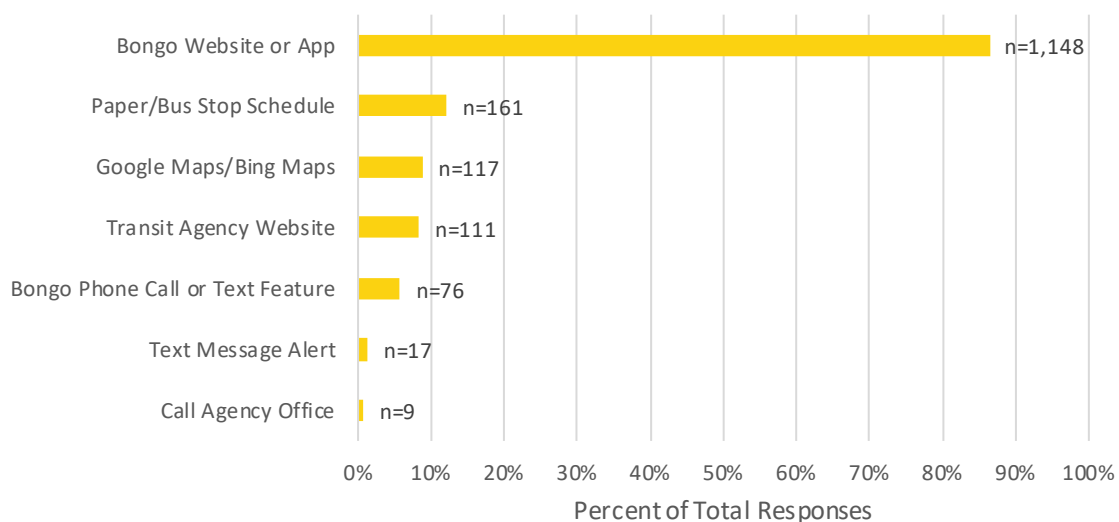
Figure 8-6 shows the number of years respondents have been using CAMBUS. Most respondents reported riding the bus for one to four years, which is likely indicative of CAMBUS' college student ridership base, which consists of riders that typically live in Iowa City for four years. Only 20% of the respondents reported riding CAMBUS for more than five years.

Figure 8-6 Respondent Time Riding CAMBUS (n=1,386)



The vast majority of respondents (86%) reported using the Bongo website or app for checking schedules or obtaining on-time bus information (Figure 8-7). Between 5% and 15% of respondents also reported using paper/bus stop schedules, Google or Bing Maps, the CAMBUS website, and the Bongo phone call/text feature. Very few respondents reported using text message alerts or agency office phone calls.

Figure 8-7 Respondent Source for Schedule/Real-Time Information (n=1,328)

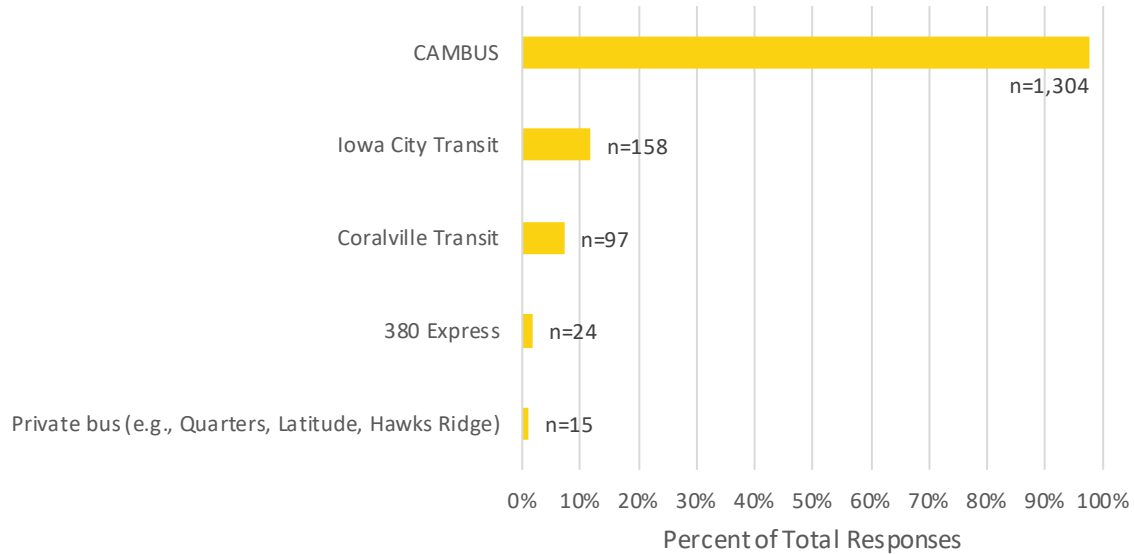


Note: Respondents were able to select more than one answer so percents do not total to 100.



In the past month, most respondents used only CAMBUS (Figure 8-8). Only 12% of respondents used Iowa City Transit and only 7% used Coralville Transit. Very few respondents used the 380 Express or private shuttle buses.

Figure 8-8 Respondent Transit Used in Past Month (n=1,334)



Note: Respondents were able to select more than one answer so percents do not total to 100.

Demographic Characteristics

Most respondents were affiliated with the University of Iowa in some way; approximately 57% were students and 34% were staff (Figure 8-9). Fewer than 10% of respondents were not faculty or students or were affiliated with Kirkwood Community College.

Figure 8-9 Respondent University Affiliation (n=1,399)

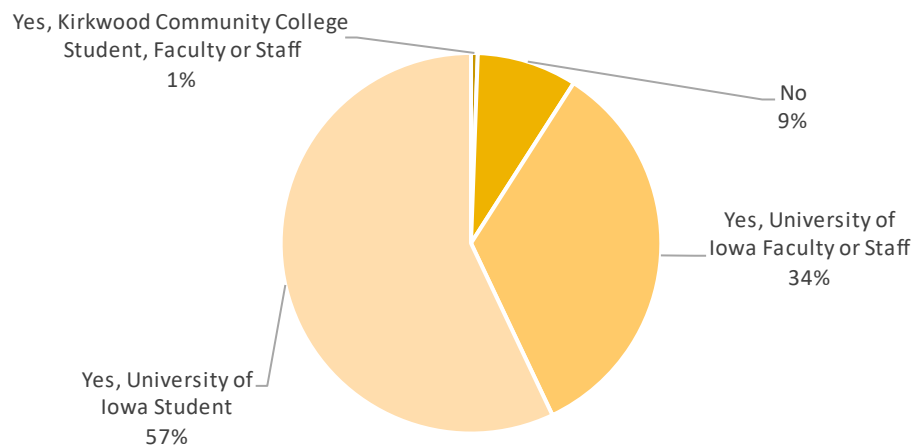
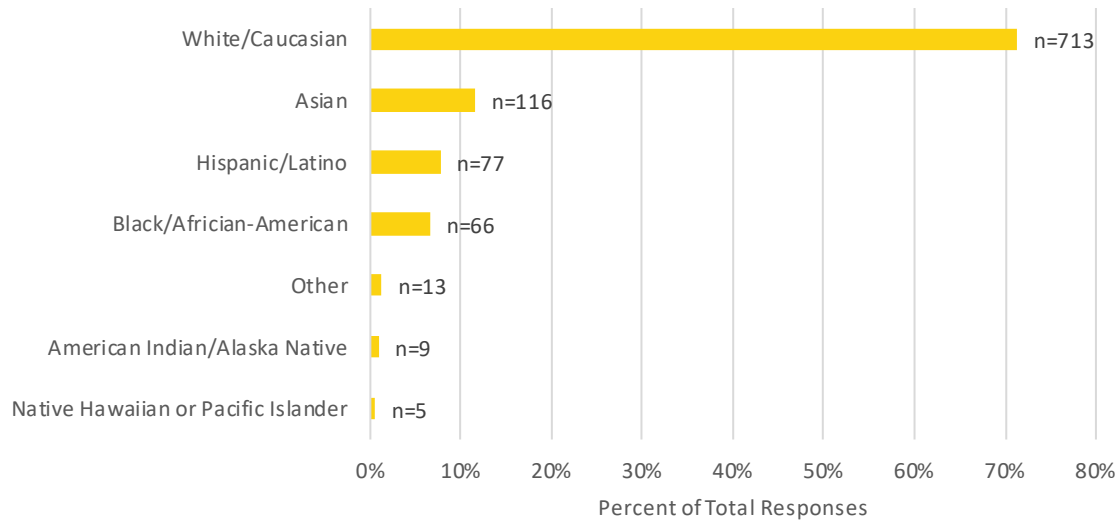




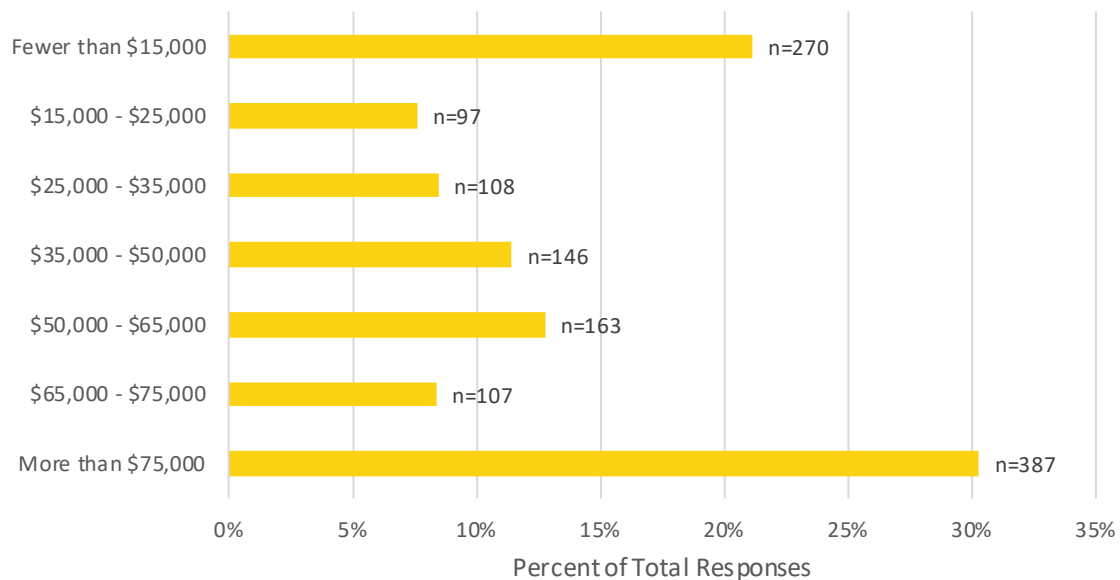
Figure 8-10 shows the race/ethnicity of respondents. The vast majority identified as white/Caucasian and Asian-identifying respondents were the largest racial/ethnic minority group, at 12%.

Figure 8-10 Respondent Race/Ethnicity (n=999)



Approximately 30% of respondents reported living in households with an annual income of \$75,000 or more (Figure 8-11). This figure may reflect the high percentage of university employees that ride CAMBUS (see Figure 8-9). The second-most commonly reported household income was fewer than \$15,000, which likely represents student ridership.

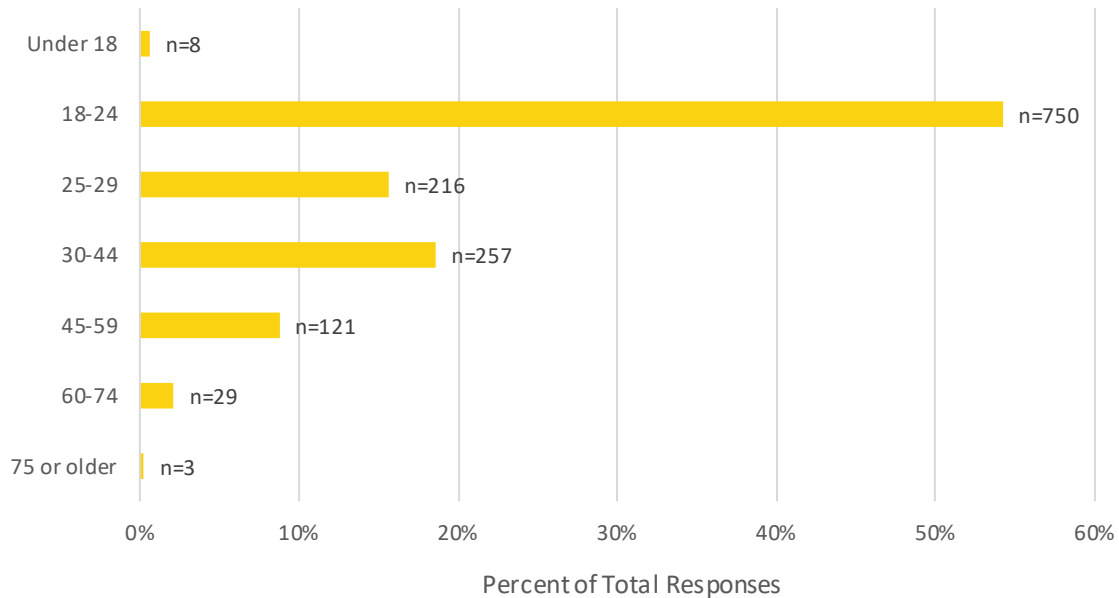
Figure 8-11 Respondent Annual Household Income (n=1,278)





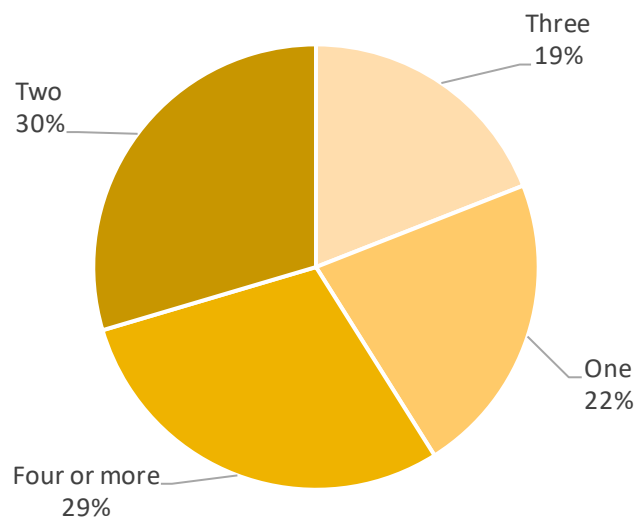
Most survey respondents (54%) were aged 18 through 24 (Figure 8-12). The second-largest group of respondents (19%) was between the ages of 30 and 44. Very few respondents were over age 60 or under age 18.

Figure 8-12 Respondent Age (n=1,384)



The vast majority of respondents (78%) lived in multi-resident households (Figure 8-13).

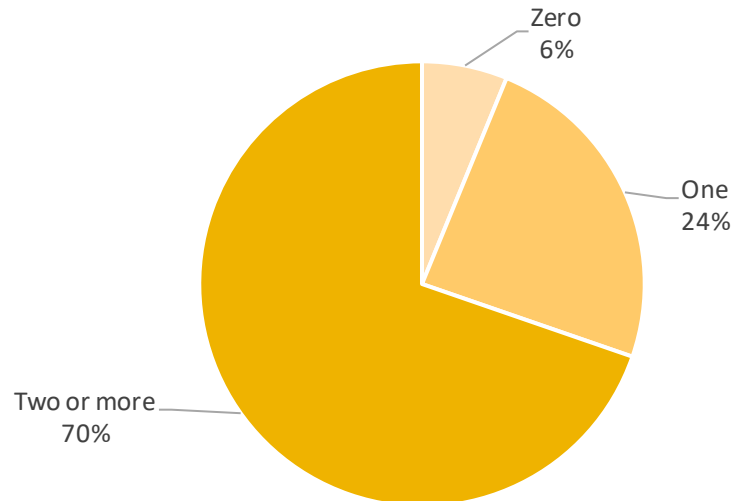
Figure 8-13 Respondent Household Size (n=1,376)





An overwhelming majority (94%) of respondents had at least one vehicle available in their household (Figure 8-14). Only 6% of respondents lived in zero-vehicle households.

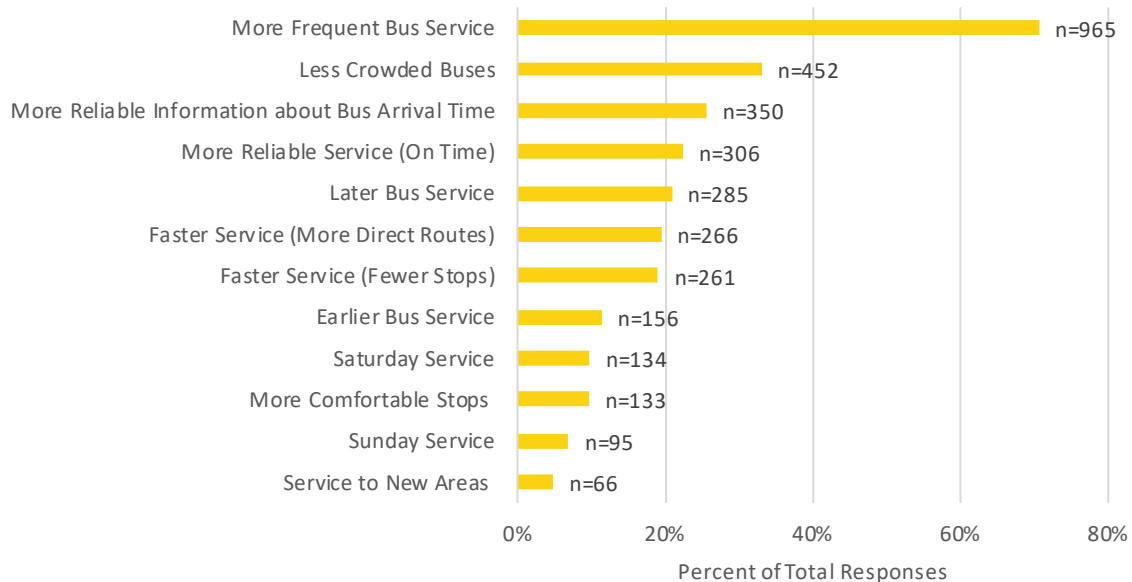
Figure 8-14 Vehicles in Respondent Household (n=1,370)



Desired Improvements

When asked to identify the top three service improvements they would like to see implemented, most respondents selected more frequent bus service and less crowded buses (Figure 8-15). Between 20% and 30% of respondents also identified more reliable buses and real-time information as desired improvements. Very few respondents requested service to new areas, weekend service, or more comfortable stops.

Figure 8-15 Respondent Improvements Desired (n=1,366)



Note: Respondents were able to select more than one answer so percents do not total to 100.



At the end of the survey, respondents were provided an open-response space and encouraged to leave thoughts or suggestions. Several open-ended comments requested updates and fixes for the Bongo app, and other respondents expressed frustration with overcrowded buses. Commenters also requested more frequent service in the mornings and evenings. Multiple respondents requested improved frequency on the HawkLot-Hospital route.

Summary of CAMBUS Rider Characteristics

- Very few respondents reported transferring to or from a Coralville Transit or Iowa City Transit route
- CAMBUS was used almost exclusively for trips to work or school
- Most respondents would walk if their CAMBUS route was unavailable
- Approximately 90% of respondents were University of Iowa students or employees
- Almost all CAMBUS riders have access to a vehicle
- The most desired improvements were increased frequency and less crowded buses. Very few respondents desired service to new areas.



Coralville Transit

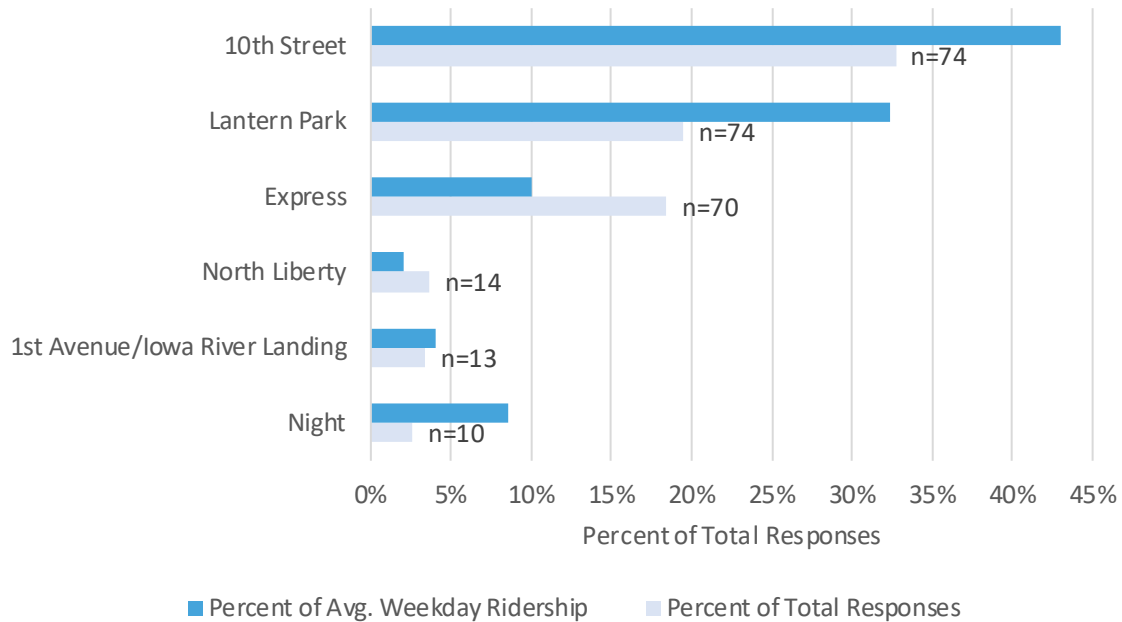
This section analyzes the 397 total survey responses collected on Coralville Transit trips.

Travel Behaviors

Figure 8-16 shows the percentage of survey responses received on each route, compared to the share of average weekday ridership on each route. Most respondents (33%) were riding the 10th Street route, followed by Lantern Park (20%). A significant percentage of respondents (20%) did not identify the route they were currently riding, instead confirming only that they were riding a Coralville Transit route.

By and large, survey responses were collected at similar proportions to a route's ridership, although the Lantern Park, 10th Street, and Night routes were slightly undersampled, and the Express route was slightly oversampled.

Figure 8-16 Coralville Transit Route Respondent was Riding (n=379)

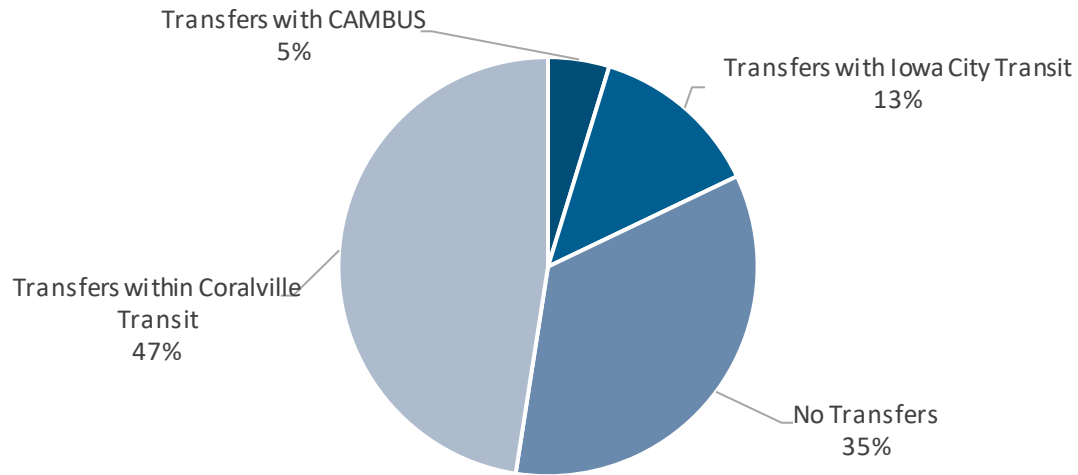


Note: Unidentified routes are not included in this graph.



Figure 8-17 shows the percentage of respondents that reported transferring to or from another route. Approximately 65% of respondents reported making a transfer on their trip, with most of these transfers being within the Coralville Transit system.

Figure 8-17 Percent of Respondents Transferring to or From Another Route (n=394)

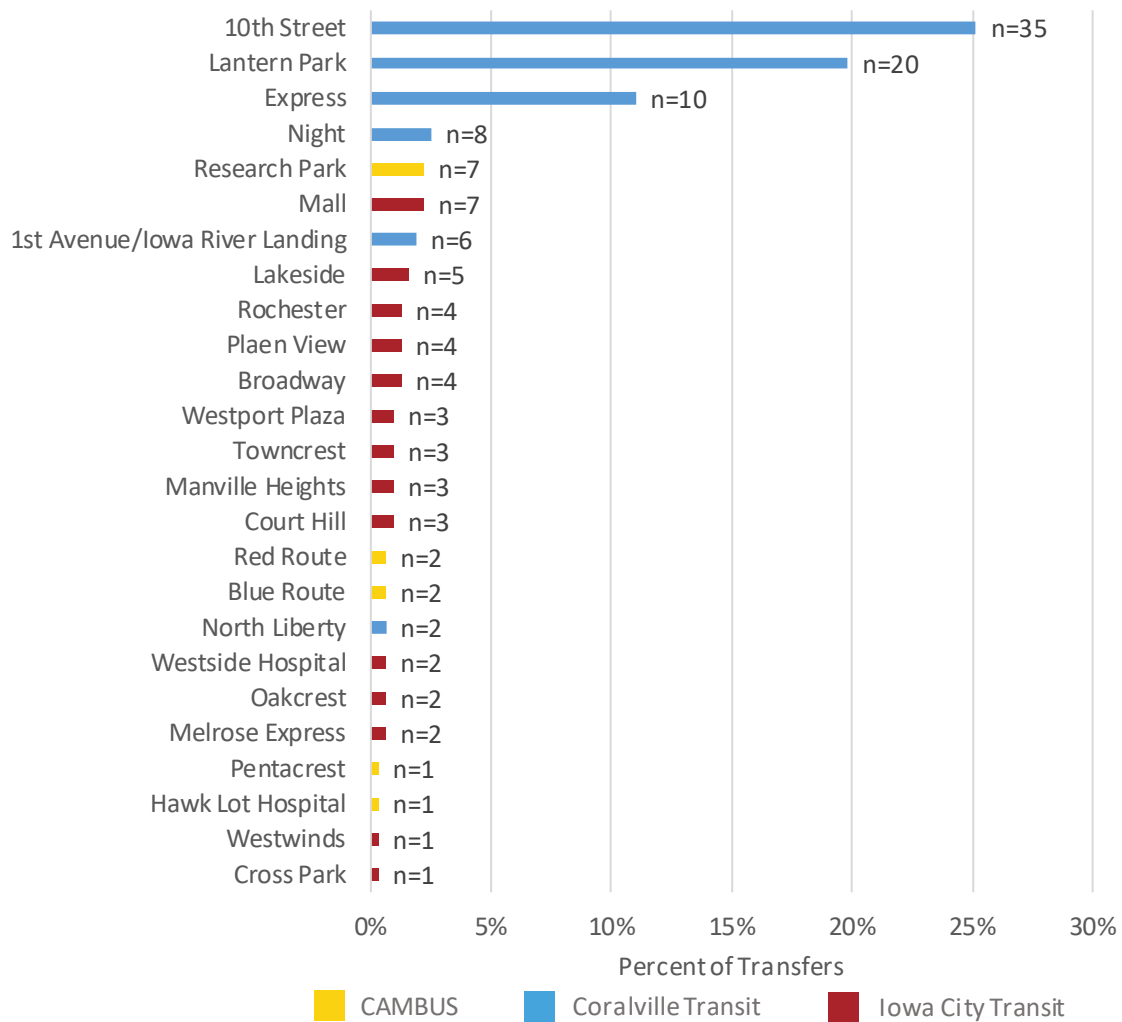


Note: This chart includes online responses.



Figure 8-18 shows the CAMBUS, Coralville Transit, and Iowa City Transit routes that respondents reported transferring to or from. Most respondents transferred between Lantern Park and 10th Street. Because these routes are peak directional loops, it is likely that many respondents interpreted the question—which asked about “transfers”—as asking about round-trip behavior, and these responses reflect the two routes they used for a round trip.

Figure 8-18 Top Transfers made by Respondents (n=394)

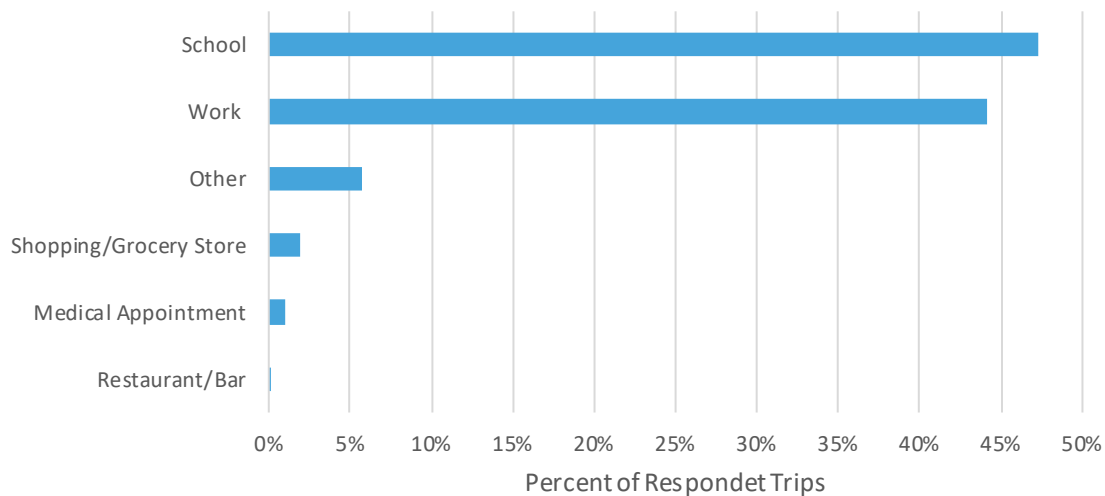


Note: Unidentified routes are not included in this graph. This chart includes online responses.



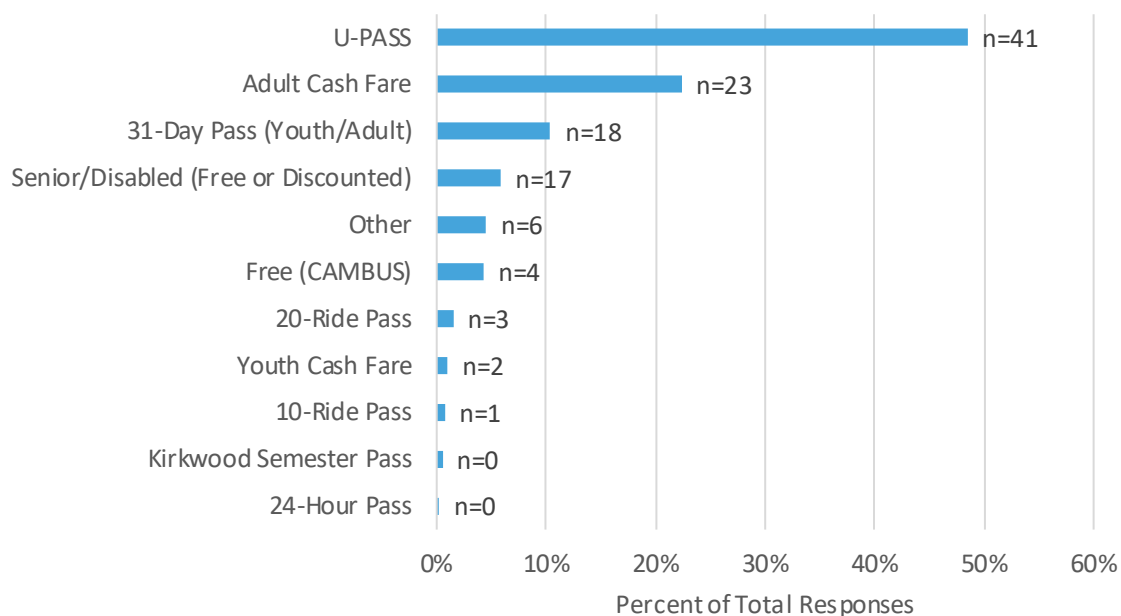
Over 40% of respondents were taking school or home trips, and very few respondents were taking shopping, medical appointment, or restaurant/bar trips (Figure 8-19).

Figure 8-19 Respondent Trip Type (n=1,288)



About half of respondents (48%) reported paying their fare with a U-PASS. The second most commonly reported fare payment type was adult cash fare, at 22% of respondents. Just over 10% of respondents reported using a 31-day youth or adult pass, and fewer than 10% reported using other fare types. Some respondents reported using fare types that are not accepted on Coralville Transit (e.g., 10-ride pass); this is likely respondent error.

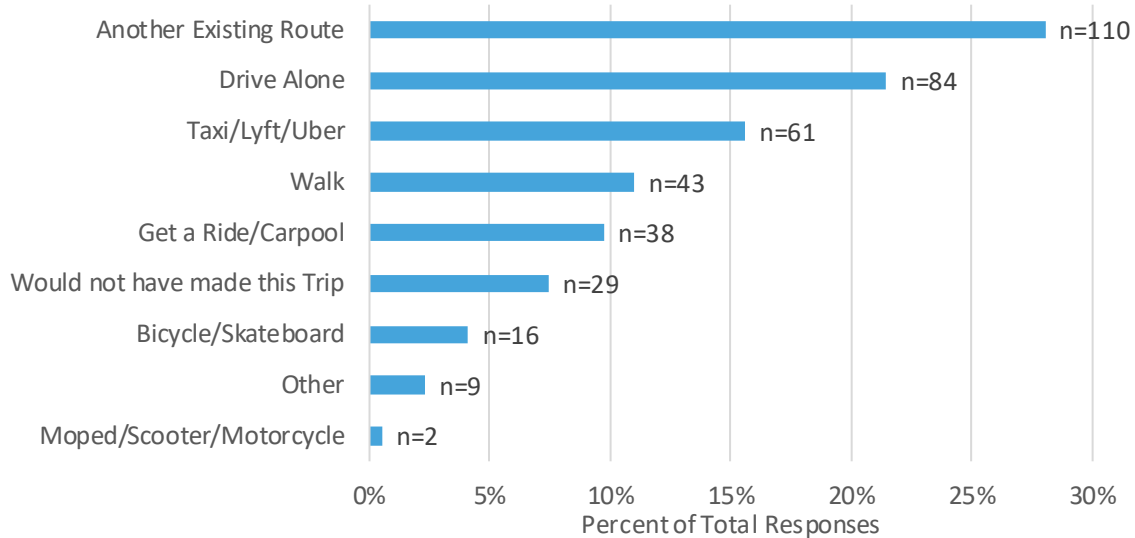
Figure 8-20 Respondent Fare Type for Current Trip (n=394)





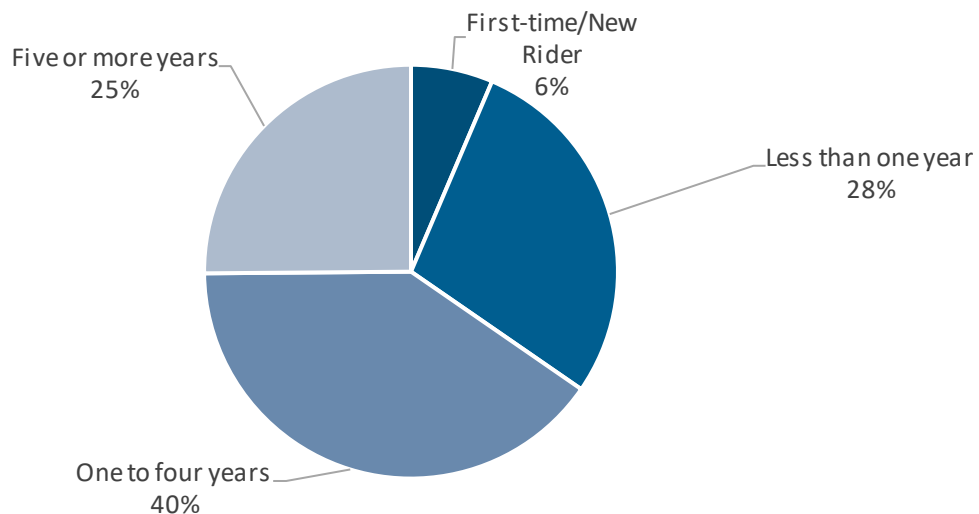
When asked what means of transportation they would have used if the bus route they were currently riding was unavailable, most respondents reported that they would have used another bus route (28%) or driven alone (21%, Figure 8-21). Active transportation options (walking or biking) made up 15% of the responses. About 7% of respondents reported that they would not have made the trip.

Figure 8-21 Respondent Alternative Mode of Transportation (n=392)



Around 40% of respondents reported taking the bus for one to four years, which may be related to the large student population in the area and their typical four-year residence period. Approximately 25% of respondents reported riding Coralville Transit for five or more years.

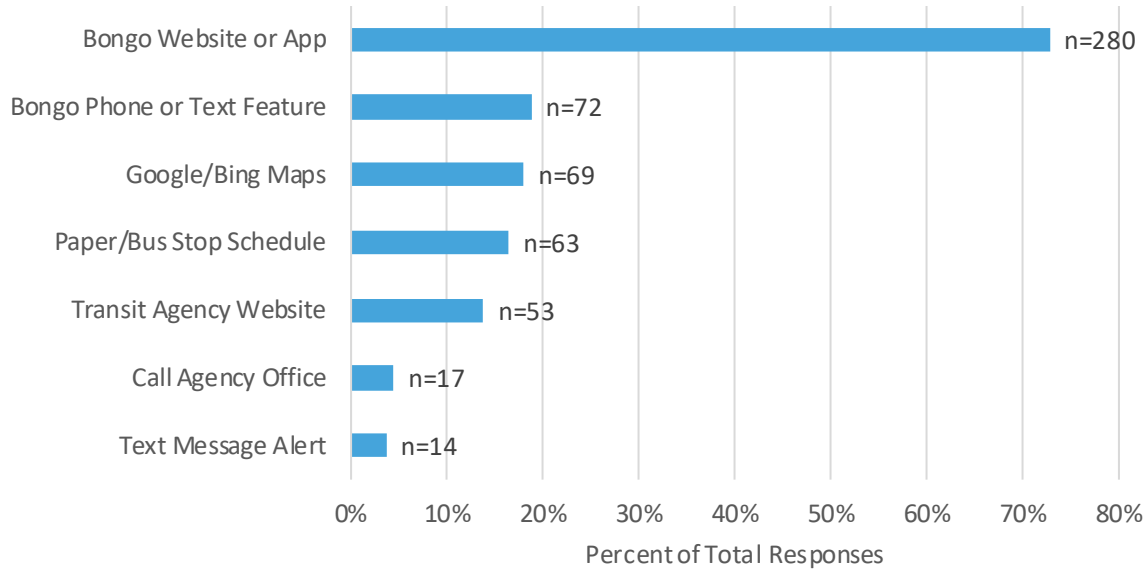
Figure 8-22 Respondent Time Riding Coralville Transit (n=390)





The vast majority of respondents reported using Bongo to access bus schedule or real-time information (Figure 8-23). Calling the agency office and text message alert were respondents' least-used means for accessing this information.

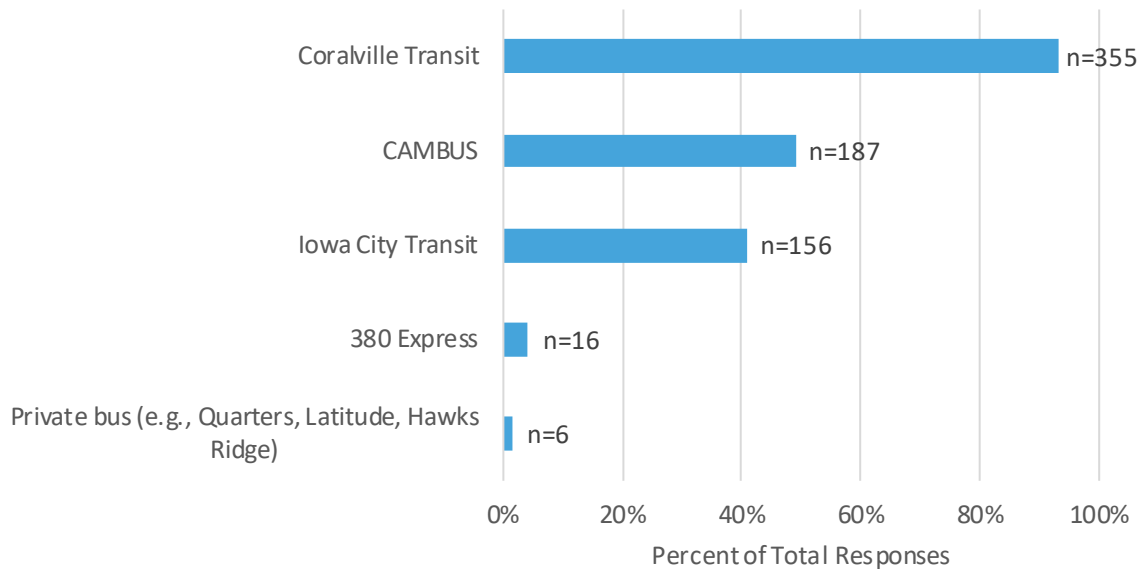
Figure 8-23 Respondent Source for Schedule/Real-Time Information (n=384)



Note: Respondents were able to select more than one answer so percents do not total to 100.

Figure 8-24 shows the different bus services respondents used in the past month. Most respondents (93%) had used Coralville Transit, and 40% to 50% of respondents had used CAMBUS or Iowa City Transit. Very few respondents had used the 380 Express service or a private shuttle bus.

Figure 8-24 Respondent Transit Used in Past Month (n=381)



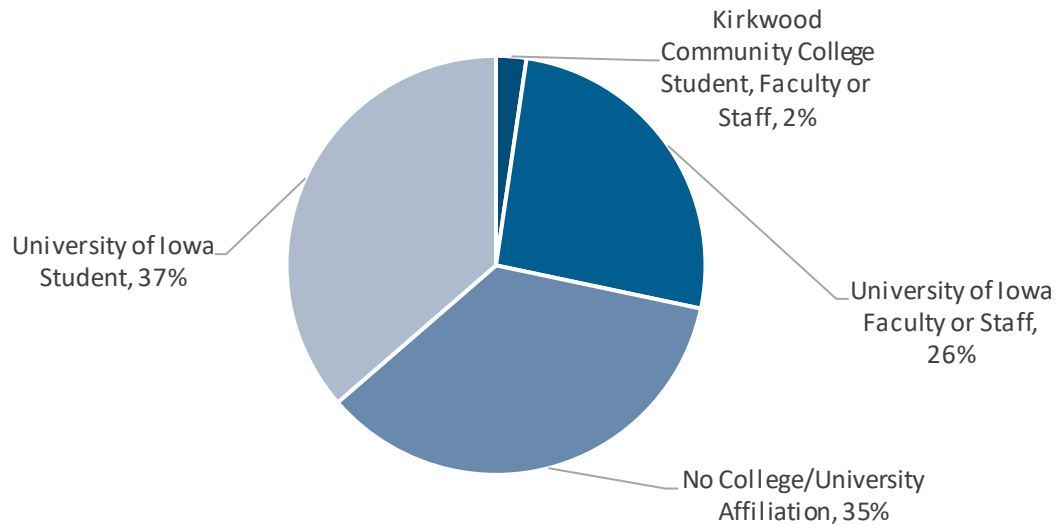
Note: Respondents were able to select more than one answer so percents do not total to 100.



Demographic Characteristics

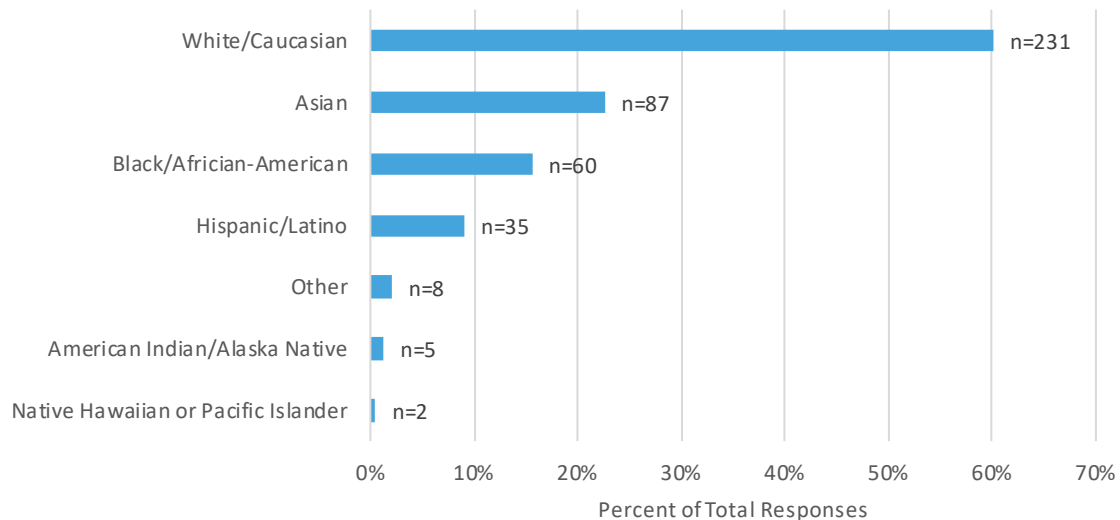
Most respondents who rode Coralville Transit were affiliated with the University of Iowa in some way; 37% were students and 26% were faculty or staff (Figure 8-25). Approximately 37% of respondents were unaffiliated with the University of Iowa.

Figure 8-25 Respondent University Affiliation (n=385)



Most respondents (54%) identified as white/Caucasian (Figure 8-26). Approximately 23% of respondents identified as Asian and 16% as black/African-American.

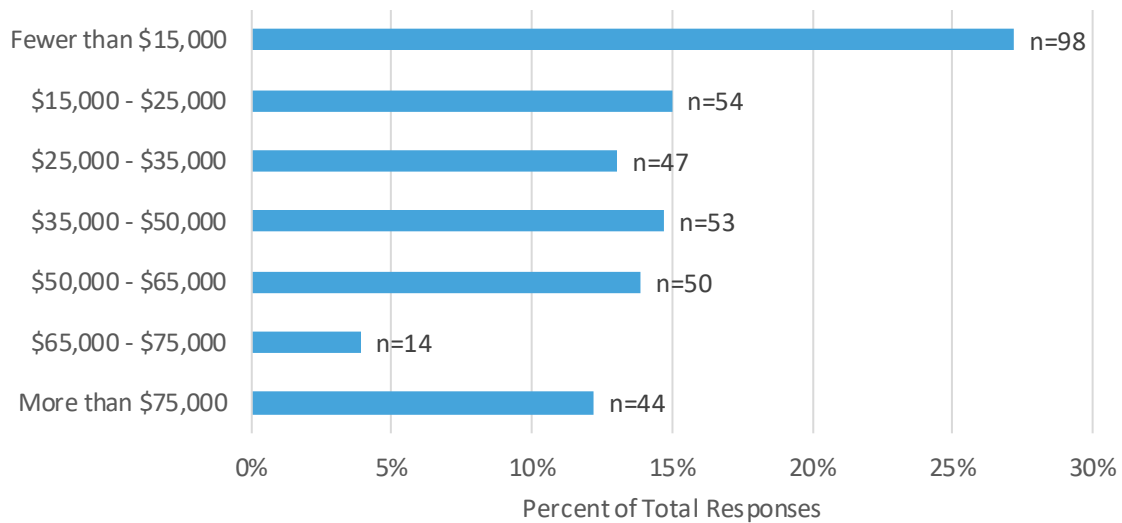
Figure 8-26 Respondent Race/Ethnicity (n=384)





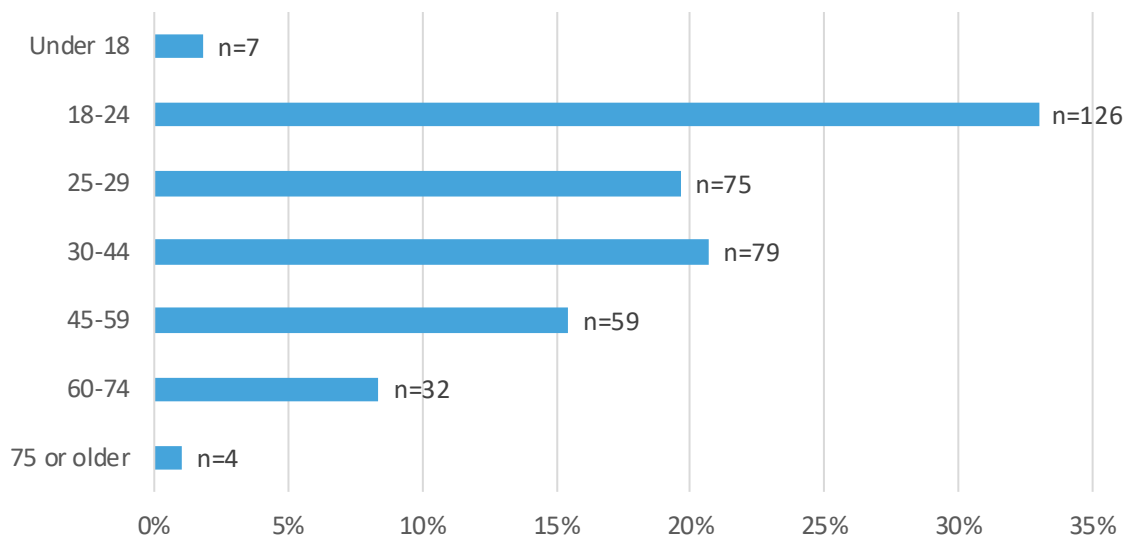
Nearly 30% of respondents reported an annual household income below \$15,000, which may represent the large number of students (approximately 37%, see Figure 8-25) surveyed (Figure 8-27).

Figure 8-27 Respondent Annual Household Income (n=360)



A total of 53% of respondents were age 18 through 29 (Figure 8-28). Although a significant number of respondents were between ages 29 and 75, very few were over age 75 or under age 18.

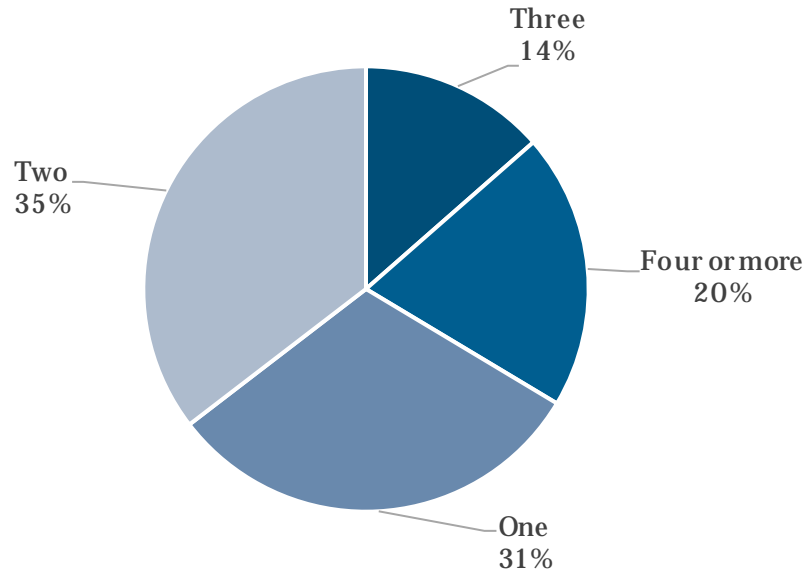
Figure 8-28 Respondent Age (n=382)





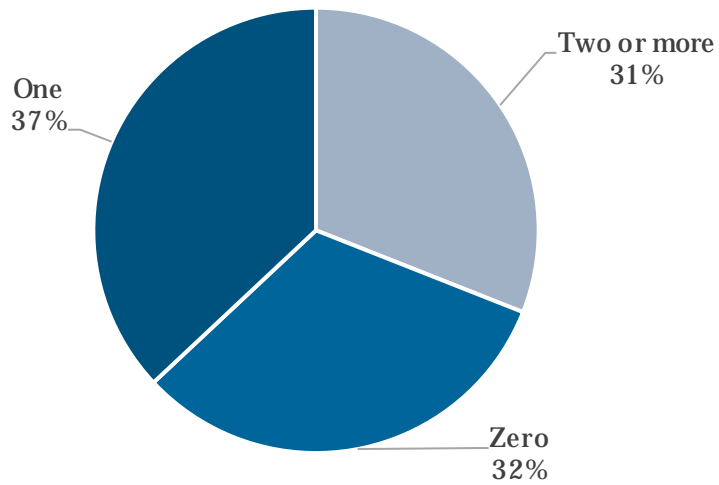
Only 31% of respondents lived alone; 69% of respondents lived in multi-person households (Figure 8-29).

Figure 8-29 Respondent Household Size (n=384)



Approximately one-third of respondents lived in zero-vehicle households (Figure 8-30).

Figure 8-30 Vehicles in Respondent Household (n=384)

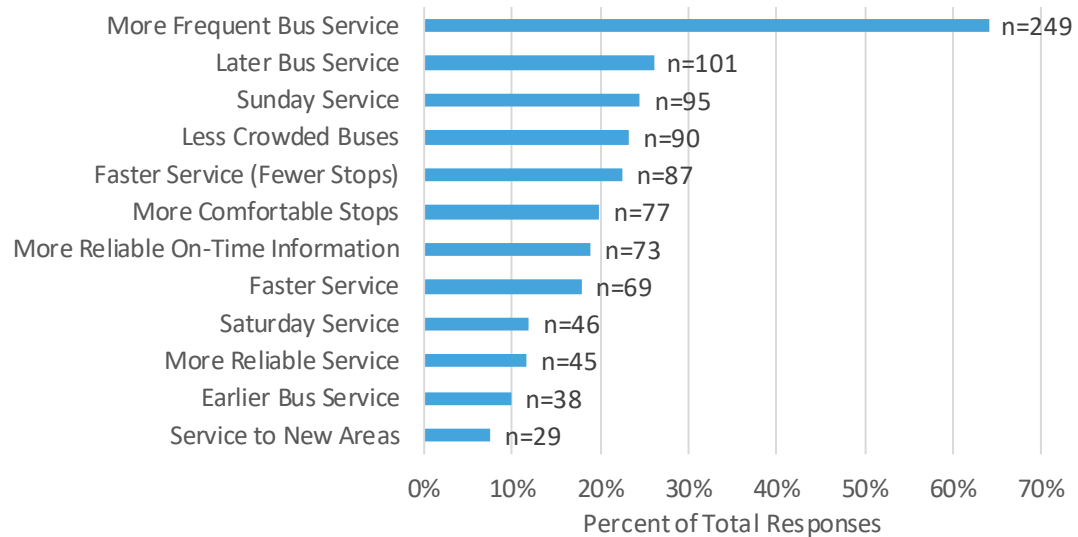




Desired Improvements

When asked to identify the top three service improvements they would like to see implemented, over 60% of respondents selected more frequent bus service (Figure 8-31). The second- and third-most requested improvements were later evening service and Sunday service. Service to new areas and earlier morning bus service were the least-commonly requested improvements.

Figure 8-31 Respondent Top Improvements Desired (n=388)



Note: Respondents were able to select more than one answer so percents do not total to 100.

At the end of the survey, respondents were provided an open-response space and encouraged to leave thoughts or suggestions. Many respondents requested fixes and/or updates to the Bongo app, while others requested improved bus stop amenities, such as shelters or benches. Other respondents requested improved weekend service and improved frequency on all routes.

Summary of Coralville Transit Rider Characteristics

- Approximately 20% of Coralville Transit respondents transferred to either Iowa City Transit or CAMBUS
- Between 40% and 50% of respondents have used CAMBUS or Iowa City Transit in the past month. The majority of trips were either work or school related.
- Almost 50% of respondents paid their fare with a U-PASS and just under 25% paid an adult cash fare
- When asked how they would have made their trip if the bus route they were riding wasn't available, most respondents reported they would have used another bus route or driven alone
- Most respondents (65%) were affiliated with Kirkwood Community College or University of Iowa
- One third of respondents did not have access to a vehicle
- Most respondents desired increased service frequency, later evening service, or Sunday service. Very few respondents desired service to new places.



Iowa City Transit

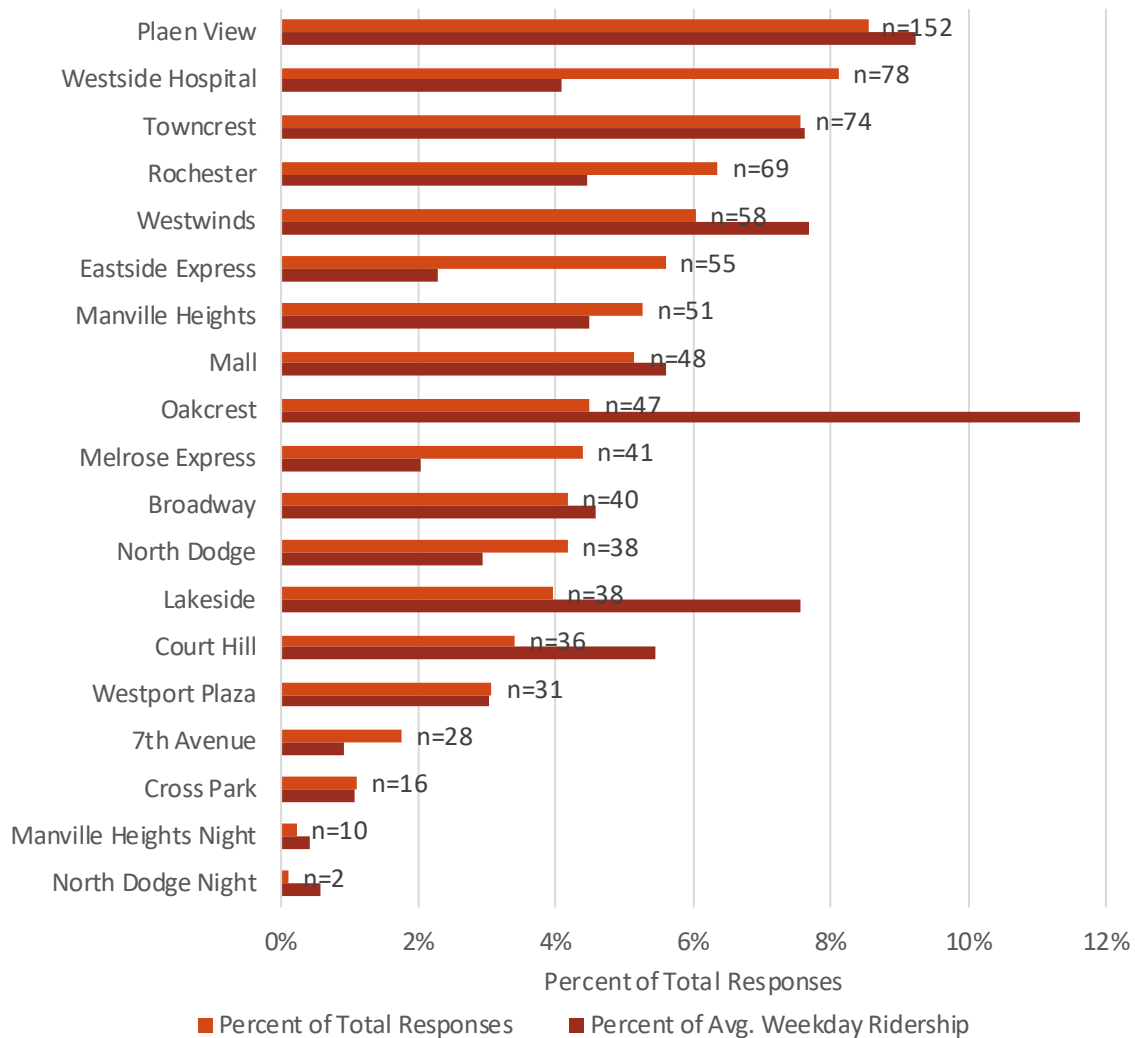
This section analyzes the 962 total survey responses collected on Iowa City Transit trips.

Travel Behaviors

Survey respondents on Iowa City Transit trips were distributed across the routes at proportions roughly similar to the distribution of systemwide average weekday ridership, with the exception of the Oakcrest and Lakeside routes, which were slightly undersampled, and the Melrose Express and Westside Hospital routes, which were slightly oversampled. (Figure 8-32). A total of 152 respondents identified that they were riding an Iowa City Transit bus but did not identify the route they were riding.

The most surveys were collected from the Plaen View and Westside Hospital routes and the fewest surveys were collected on the Manville Heights Night and North Dodge Night routes.

Figure 8-32 Iowa City Transit Route Respondent was Riding (n=913)

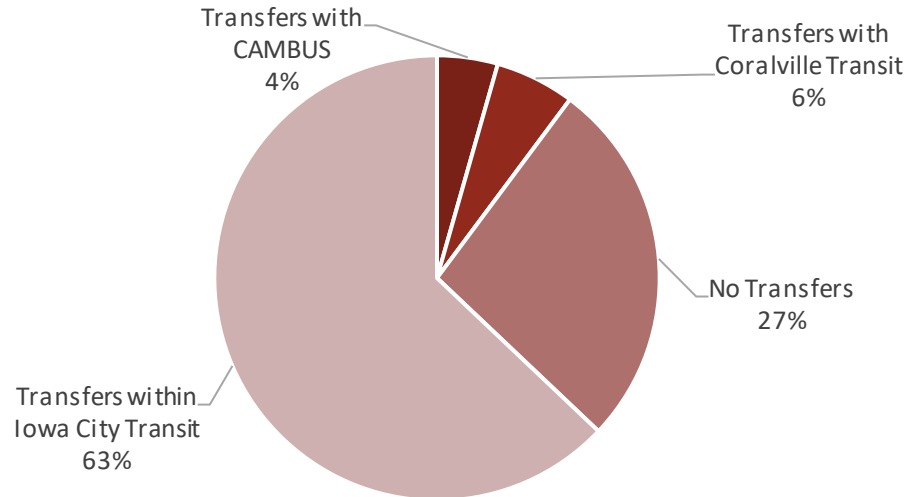


Note: Unidentified routes are not included in this graph.



Approximately 73% of respondents reported making a transfer to a CAMBUS, Coralville Transit, or another Iowa City Transit route (Figure 8-33).

Figure 8-33 Percent of Respondents Transferring to or From Another Route (n=952)

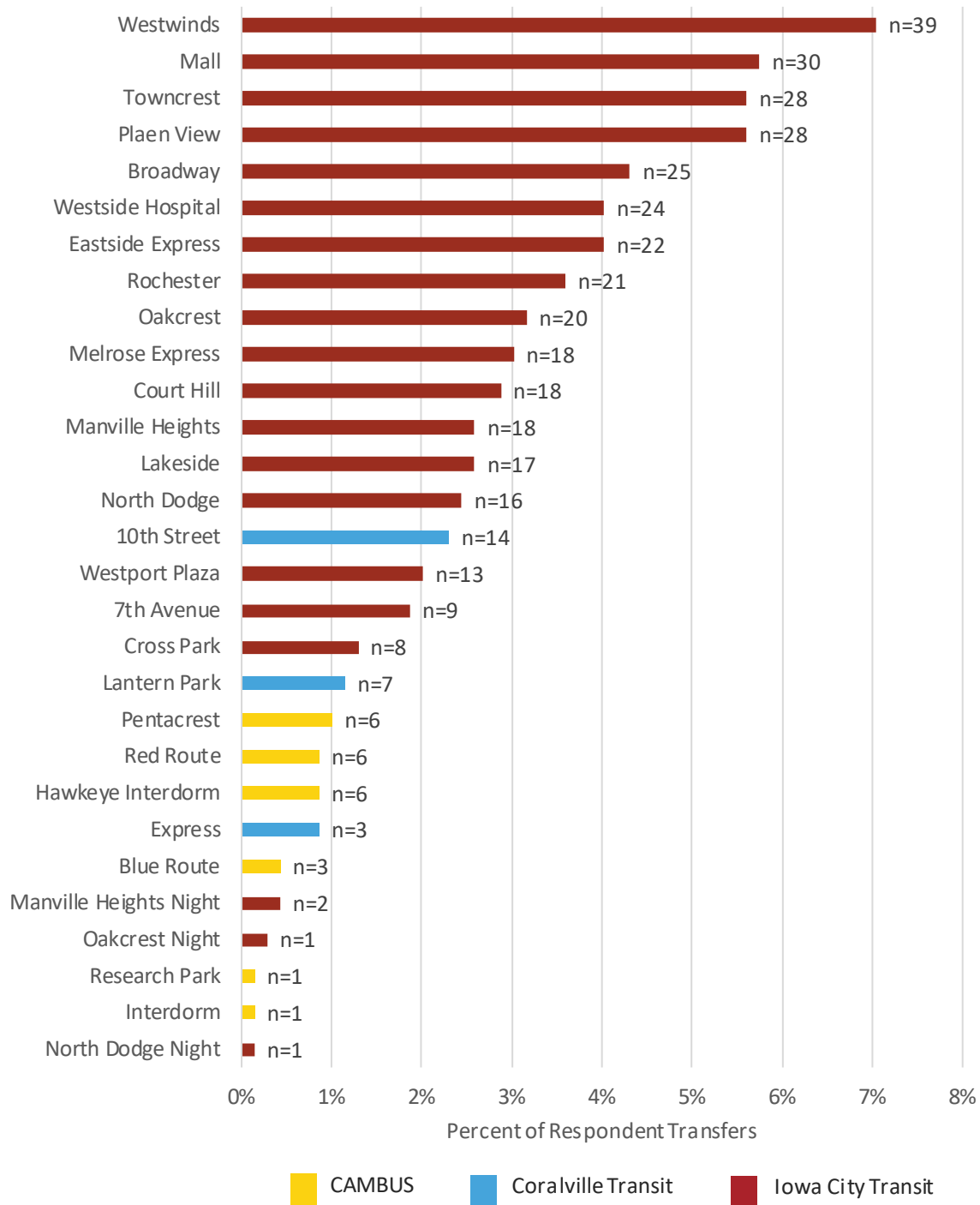


Note: This chart includes online responses.



Figure 8-34 shows the routes with the most reported transfer activity (either to or from the route). The Westwinds, Mall, Towncrest, and Plaen View routes saw the highest levels of reported transfer activity. Over 160 respondents identified the agency they transferred to or from (without specifying the route).

Figure 8-34 Reported Transfer Activity (to or from) by Route (n=952)

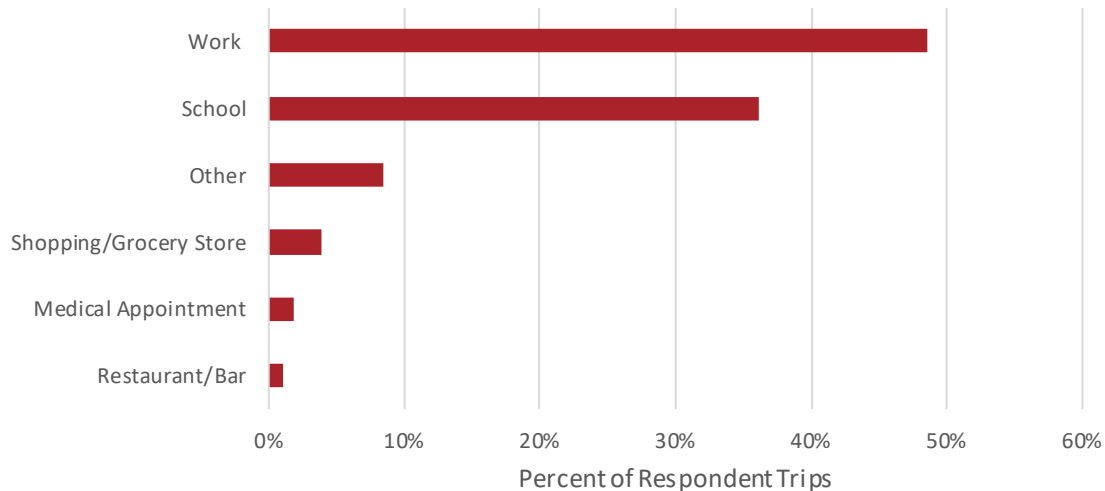


Notes: Unidentified routes are not included in this graph. This chart includes online responses.



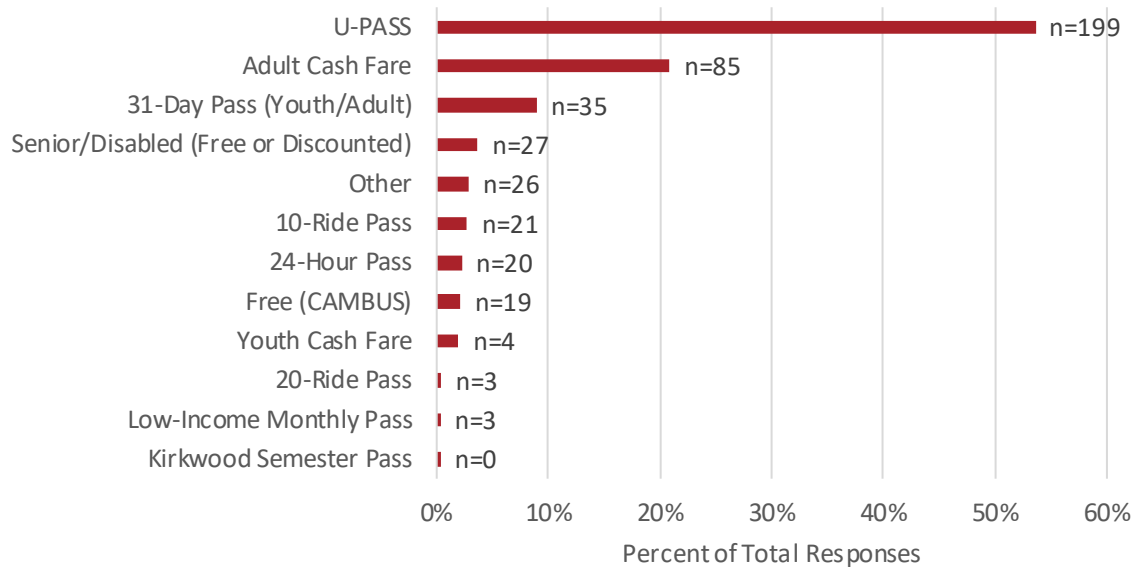
Over 40% of respondents were taking a work or school trip (Figure 8-35). Just under 5% of respondents were taking a shopping trip and very few were taking medical or restaurant/bar-type trips.

Figure 8-35 Respondent Trip Type (n=859)



Most respondents (54%) reported paying their fare with a U-PASS and approximately 20% reported paying with an adult cash fare (Figure 8-36). Very few respondents reported using discounted or other pass types.

Figure 8-36 Respondent Fare Type Used for Current Trip (n=954)





When asked how they would have made the trip if the bus route they were currently riding was not available, most respondents reported that they would have taken another bus route (25%) or driven alone (23%, Figure 8-37). Active transportation (walking and biking) alternatives were reported by 24% of respondents.

Figure 8-37 Respondent Alternative Mode of Transportation (n=948)

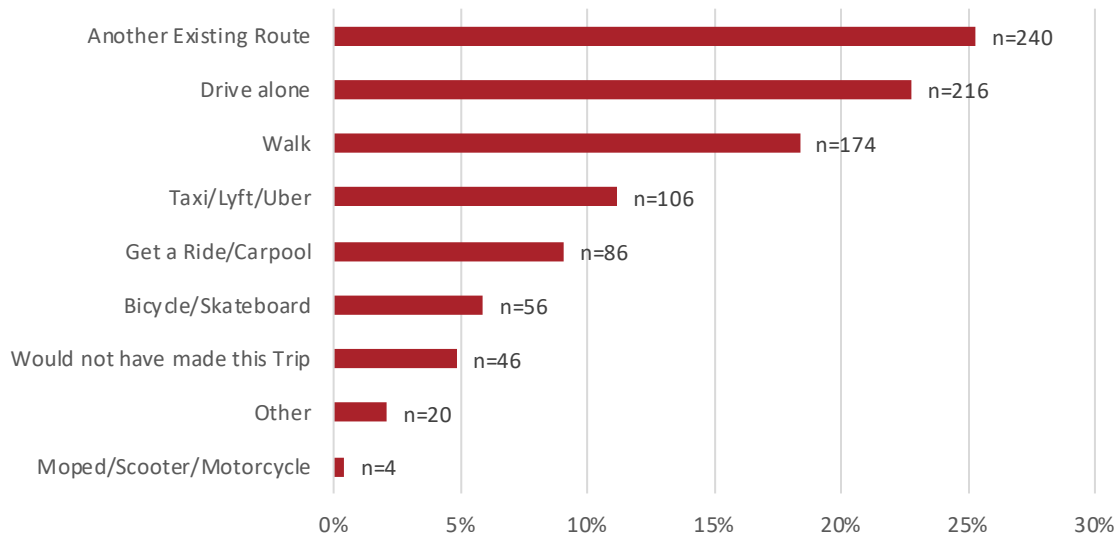
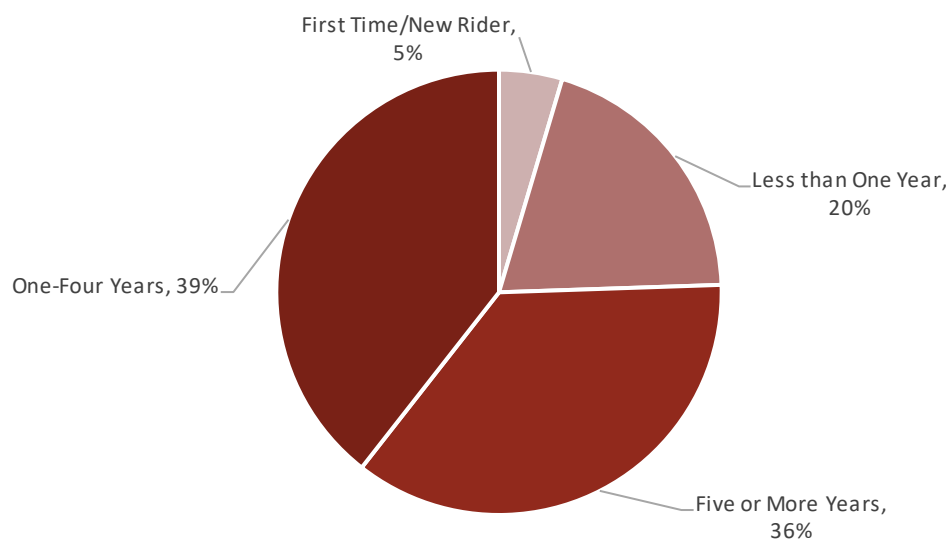


Figure 8-38 shows the number of years respondents have been using Iowa City Transit. Most respondents (39%) have been taking the bus for one to four years, which is likely related to the large college student population in Iowa City and their typical four-year residence period. Respondents who have been taking the bus for five or more years form the second-highest percentage (36%) of respondents.

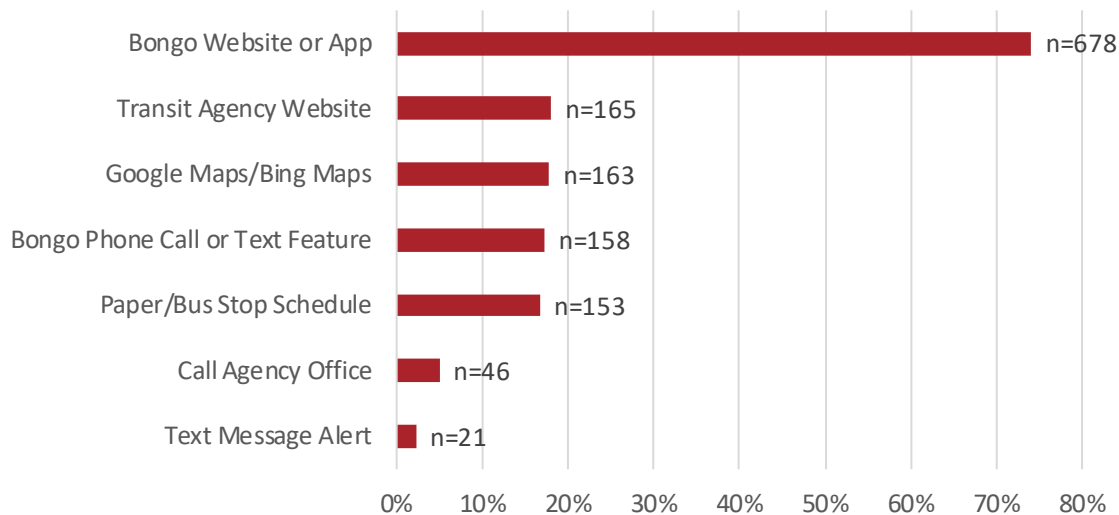
Figure 8-38 Respondent Time Riding Iowa City Transit (n=936)





The vast majority of respondents (74%) reported using the Bongo website or app for checking schedules or obtaining on-time bus information (Figure 8-39). Between 5% and 15% of respondents also reported using paper/bus stop schedules, Google or Bing Maps, the Iowa City Transit website, and the Bongo phone call/text feature. Very few respondents reported using text message alerts or agency office phone calls.

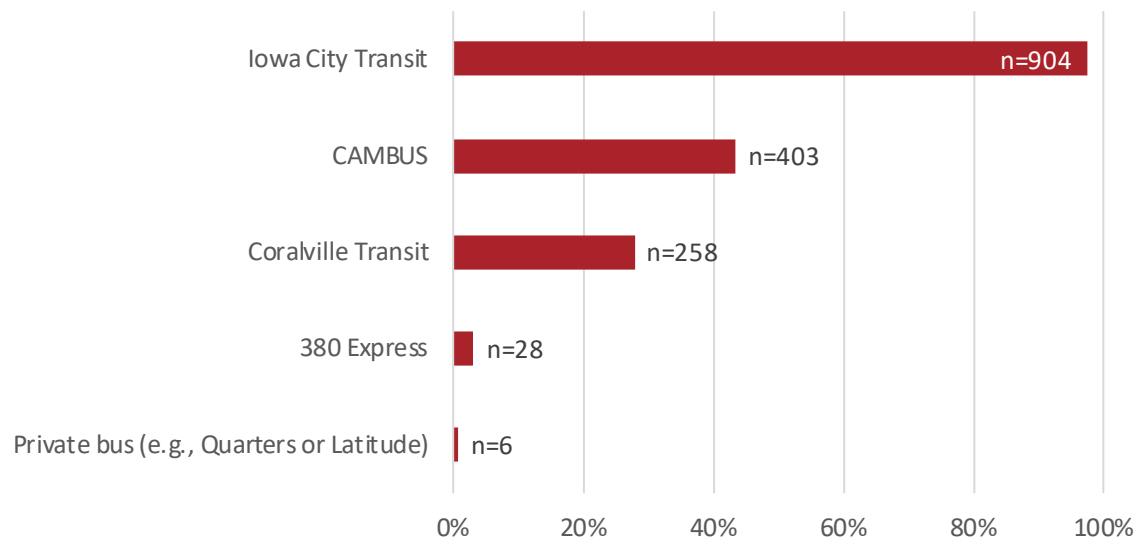
Figure 8-39 Respondent Source for Schedule/Real-Time Information (n=915)



Note: Respondents were able to select more than one answer so percents do not total to 100.

Figure 8-40 shows the different transit services respondents reported using in the past month. Iowa City Transit topped the list, followed by CAMBUS and Coralville Transit. Relatively few respondents used the 380 Express and only six reported riding a private shuttle bus.

Figure 8-40 Respondent Transit Used in Past Month (n=926)



Note: Respondents were able to select more than one answer so percents do not total to 100.



Demographic Characteristics

Most respondents who rode Iowa City Transit were affiliated with the University of Iowa in some way (Figure 8-41). University of Iowa students were 37% of respondents, while 26% of respondents were University of Iowa staff. There was still a significant number of respondents (33%), however, who were not affiliated with the University of Iowa or Kirkwood Community College.

Figure 8-41 Respondent University Affiliation (n=948)

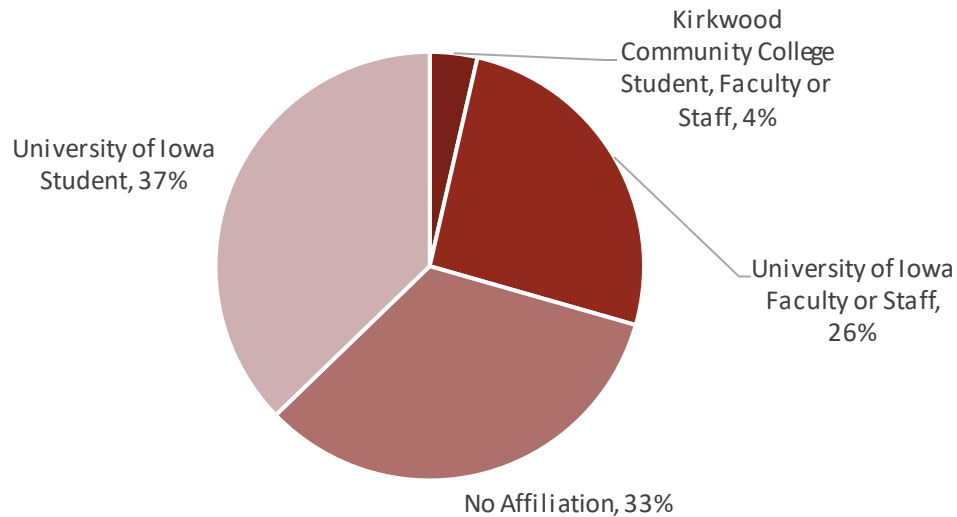
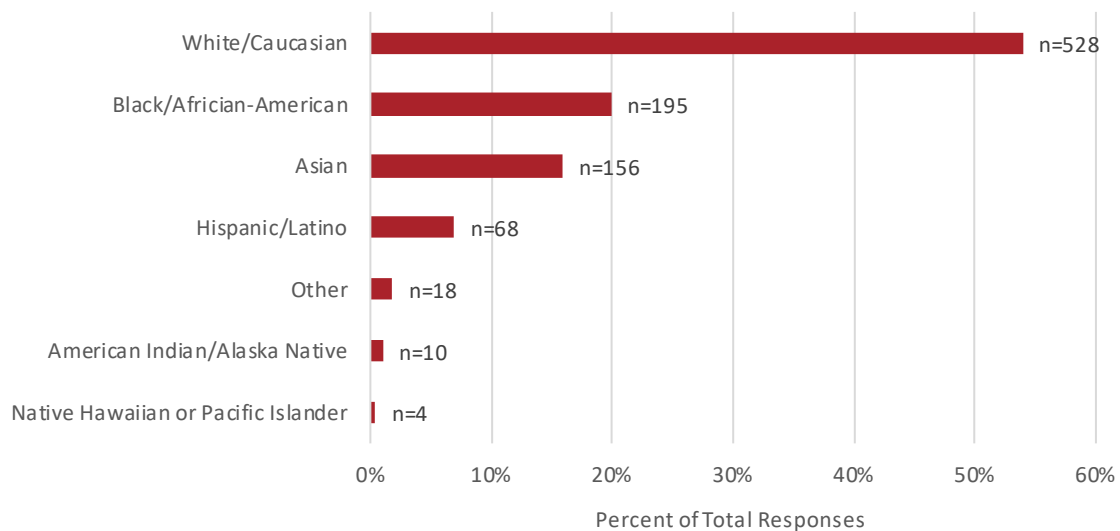


Figure 8-42 shows the racial/ethnic identification of respondents. White respondents were the majority at 54%, followed by black/African-American respondents at 20%.

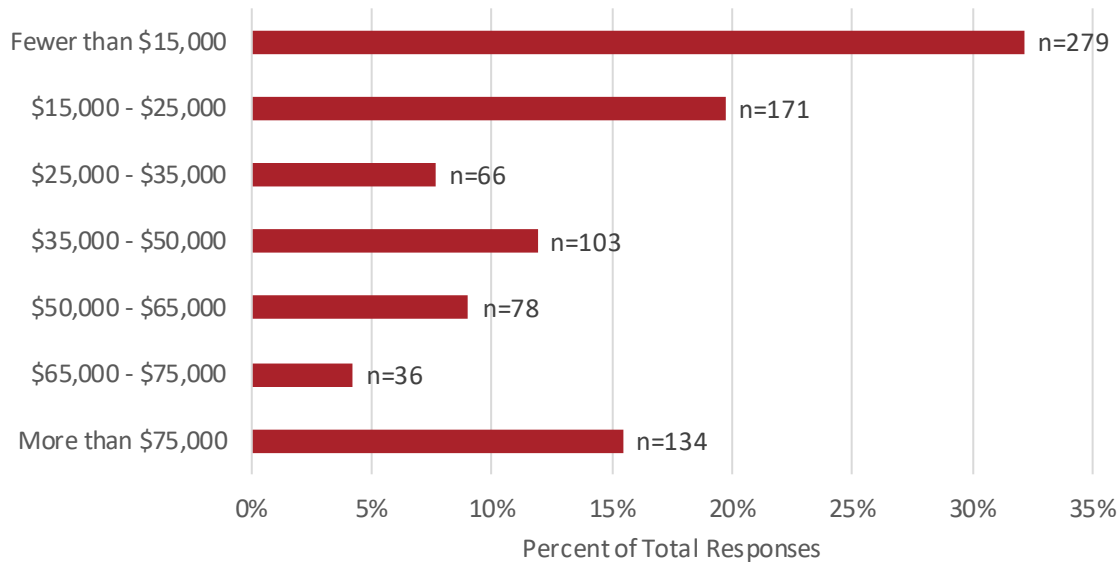
Figure 8-42 Respondent Race/Ethnicity (n=979)





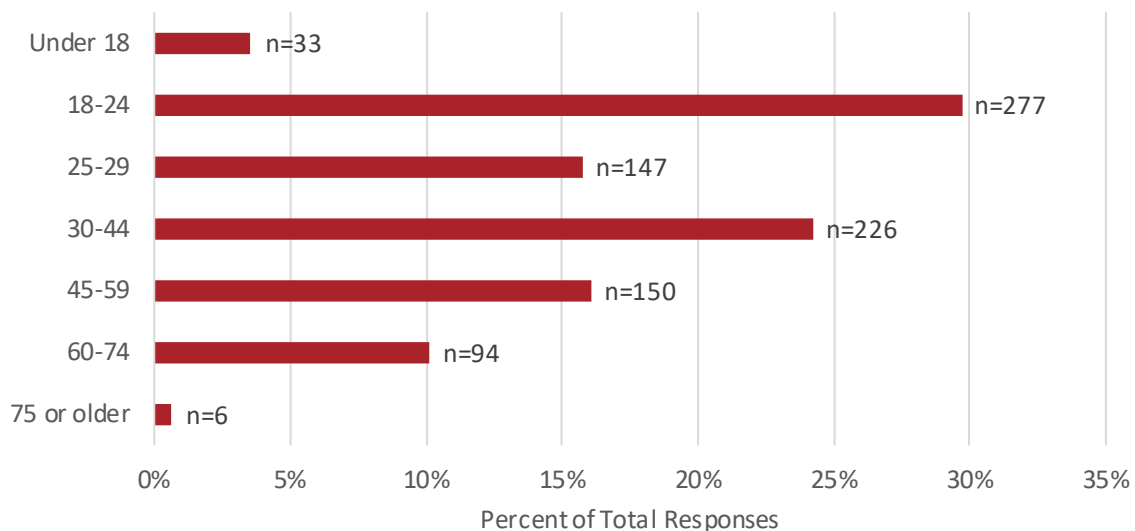
The percentage of respondents reporting an annual household income below \$15,000 was 32% (Figure 8-43), which may be related to the fact that 41% of respondents reported being university or college students. The next-largest group were respondents who earned between \$15,000 and \$25,000 (20%), followed by respondents who earned above \$75,000 (15%).

Figure 8-43 Respondent Annual Household Income (n=867)



Approximately 46% of respondents were age 18 through 29 (Figure 8-44). People over age 75 and below 18 formed relatively small percentages of respondents, although people aged 60 through 74 represented 10% of respondents.

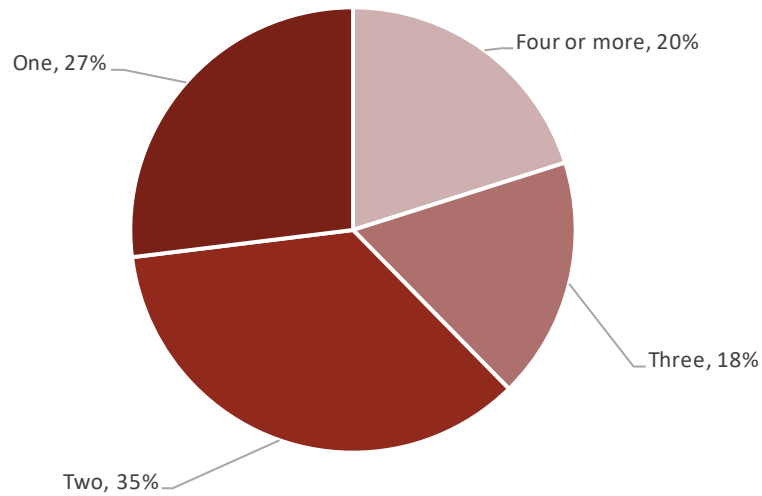
Figure 8-44 Respondent Age (n=933)





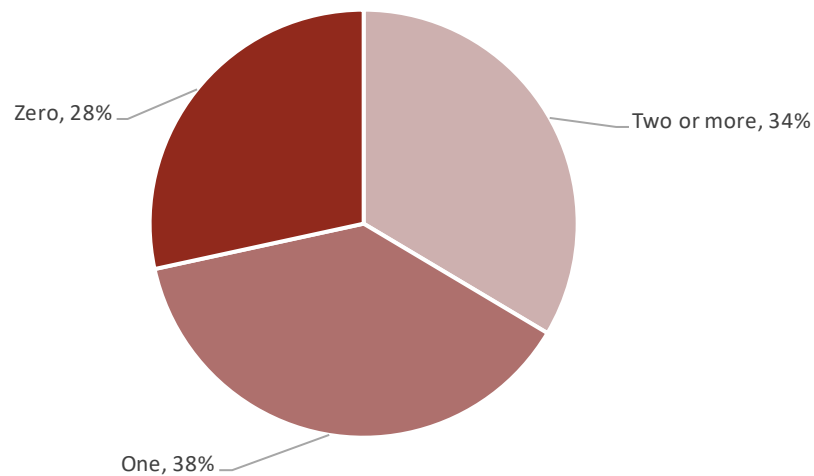
Most respondents (73%) lived with at least one other person and 27% of respondents lived alone (Figure 8-45).

Figure 8-45 Respondent Household Size (n=935)



Most respondents (72%) reported having at least one car in their household (Figure 8-46). Almost 30% of respondents lived in zero-vehicle households.

Figure 8-46 Vehicles in Respondent Household (n=933)

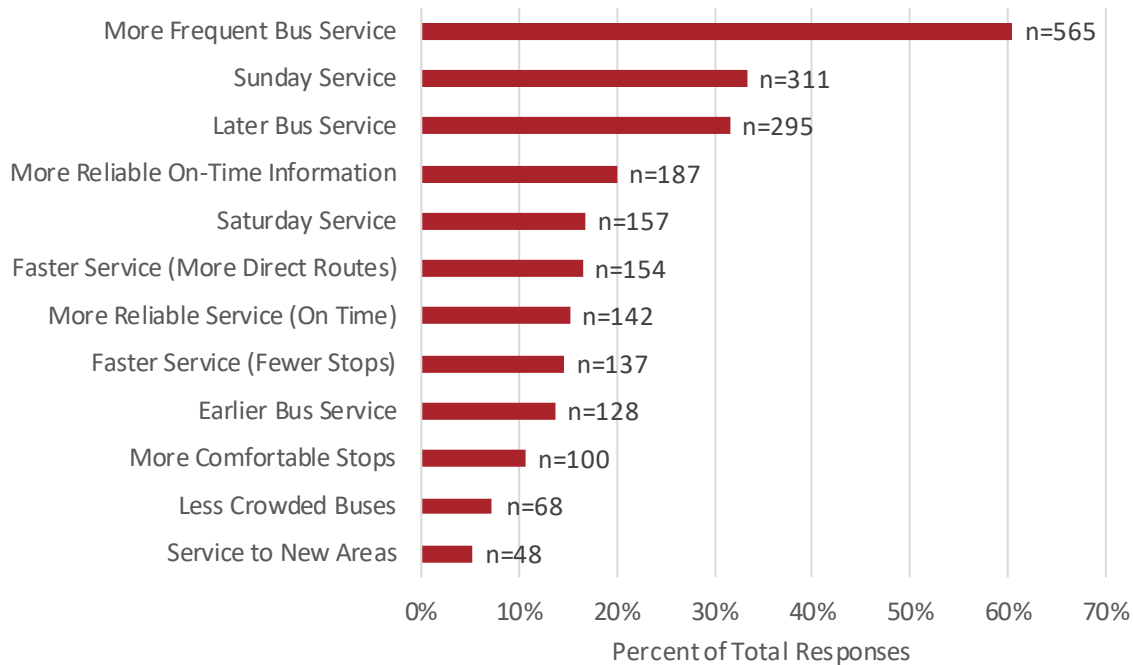




Desired Improvements

When asked to identify the top three service improvements they would like to see implemented, most respondents selected more frequent service, Sunday service, and later evening service (Figure 8-47). Very few respondents requested service to new areas or less crowded buses.

Figure 8-47 Respondent Top Improvements Desired (n=934)



Note: Respondents were able to select more than one answer so percents do not total to 100.

At the end of the survey, respondents were provided an open-response space and encouraged to leave thoughts or suggestions. Most of these comments were directed towards improving the reliability of the Bongo App, which was reported to crash frequently. Respondents also called for an increase in frequency for multiple routes, especially during the weekends, and for more routes that connect to the east side of the Iowa River.

Summary of Iowa City Transit Rider Characteristics

- Only 10% of respondents reported transferring to a CAMBUS or Coralville Transit route
- More than one quarter of respondents had used Coralville Transit and/or CAMBUS in the past month
- Most trips were either work- or school-related
- Over half of all respondents paid for their trip using a U-PASS, and approximately 20% paid an adult cash fare
- Approximately 63% of respondents were affiliated with the University of Iowa
- Just under one third of respondents did not have access to a vehicle
- Most respondents desired more frequent service, Sunday service, and/or later evening service. Very few respondents desired service to new areas.



FALL/WINTER 2019 DESIGN YOUR OWN SYSTEM SURVEY

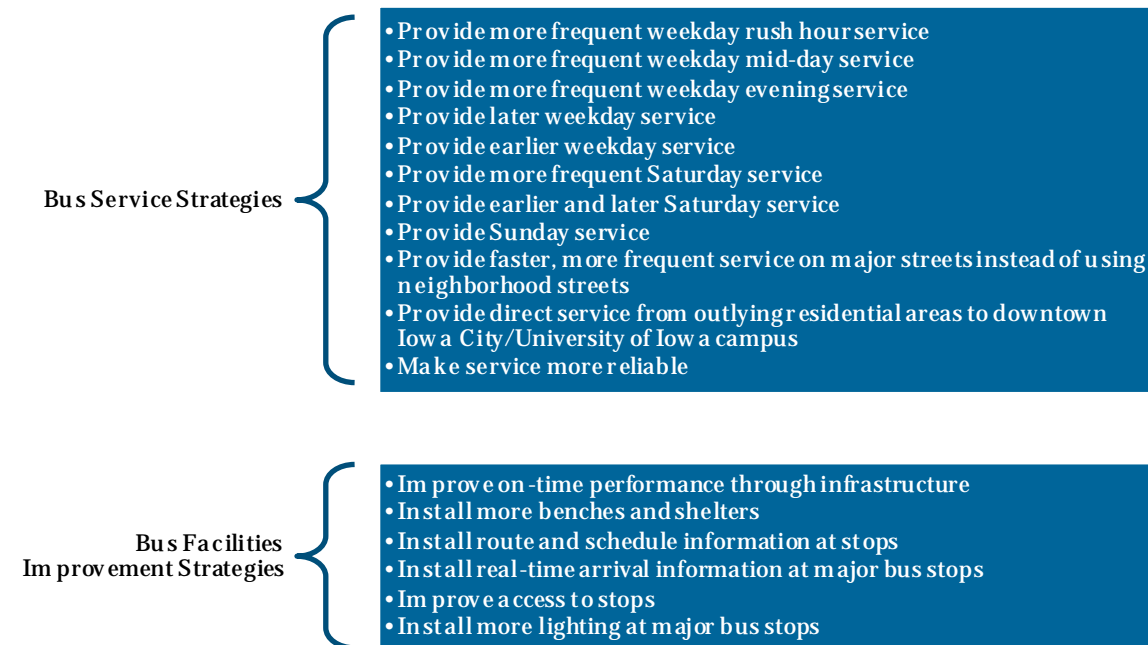
Introduction

This section of the chapter summarizes the results of the online Design Your Own System (DYOS) survey. The survey was conducted from October through December of 2019 as part of the ICATS and collected information on respondent demographics and transit improvement preferences.

In the DYOS, community members were given a limited, fictional budget of \$20 and asked to use these funds to select improvements to Iowa City-area transit infrastructure and service. Each improvement cost a certain amount of 'dollars'. After completing the budget game portion of the survey, respondents were given the option to answer demographic questions.

The potential transit improvements that respondents could choose from are in Figure 8-48.

Figure 8-48 DYOS Transit Improvement Options and Categories



A total of 1,325 respondents completed the budget game portion of the survey and approximately 95% of these respondents chose to answer the demographic questions. The Johnson County Mobility Coordinator and Community Transportation Committee conducted approximately 125 surveys with mobility challenged or transit-dependent area residents.



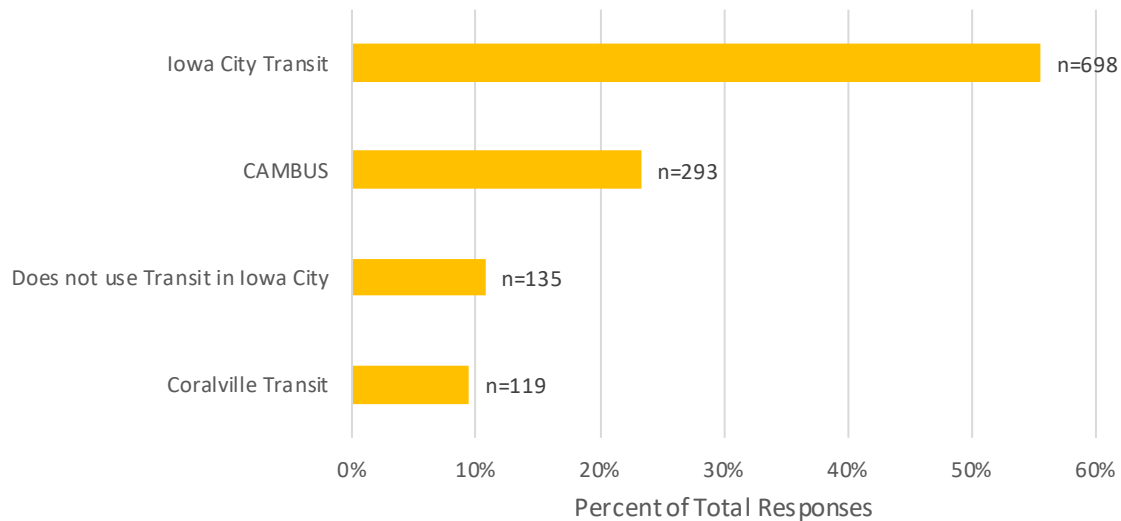
Key Findings

- Overall, most respondents desired Sunday service and both earlier and later Saturday service.
- Most respondents who ride Iowa City Transit and Coralville Transit desired Sunday service and earlier or later Saturday service. CAMBUS riders' top desired service improvement was direct service to outlying residential areas.
- Respondents that ride transit both frequently and infrequently primarily desired Sunday service.
- Respondents that were both affiliated and unaffiliated with the University of Iowa and Kirkwood Community College primarily desired Sunday service, although affiliated respondents' top desired improvement was frequent rush hour weekday service.
- Respondents who lived in Iowa City/University Heights primarily desired Sunday service while those living in Coralville/North Liberty primarily desired more lighting at major stops, frequent rush hour service, and direct service from outlying areas. Respondents living in University of Iowa residence halls primarily desired frequent Saturday service.

Respondent Demographics

Figure 8-49 shows the transit system most frequently used by respondents. Most respondents (56%) reporting using Iowa City Transit most frequently, followed by CAMBUS at 23%.

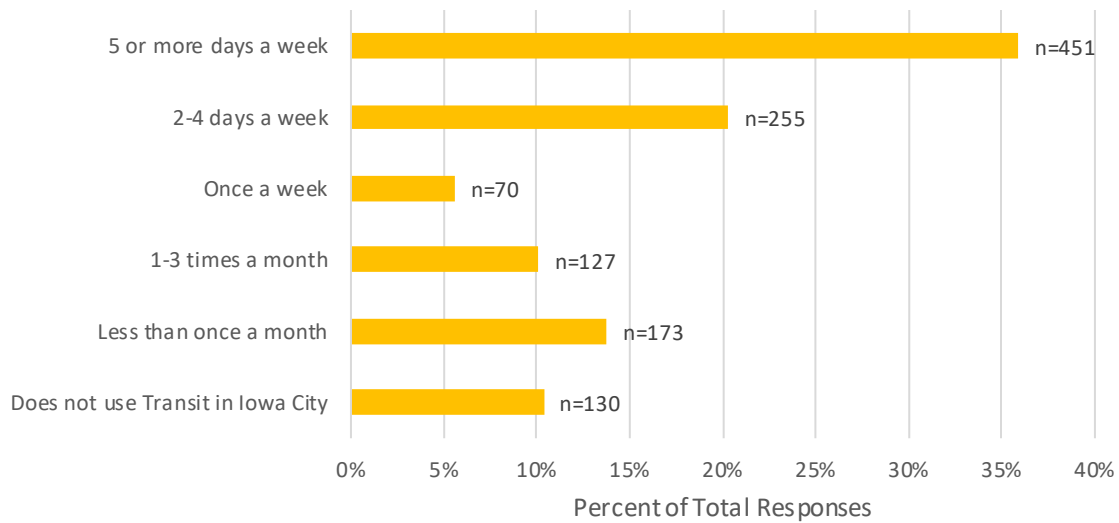
Figure 8-49 Most-Frequently Used Transit System (n=1,245)





Most respondents were frequent transit riders, with 56% riding the system two or more days a week (Figure 8-50). Approximately 24% were infrequent users, riding the system three times each month or less.

Figure 8-50 Frequency of Transit Use (n=1,206)



Most respondents were affiliated with the University of Iowa in some way; approximately 22% were students and 31% were staff (Figure 8-51). Approximately 42% were not affiliated with the university or Kirkwood Community College.

Figure 8-51 University Affiliation (n=1,235)

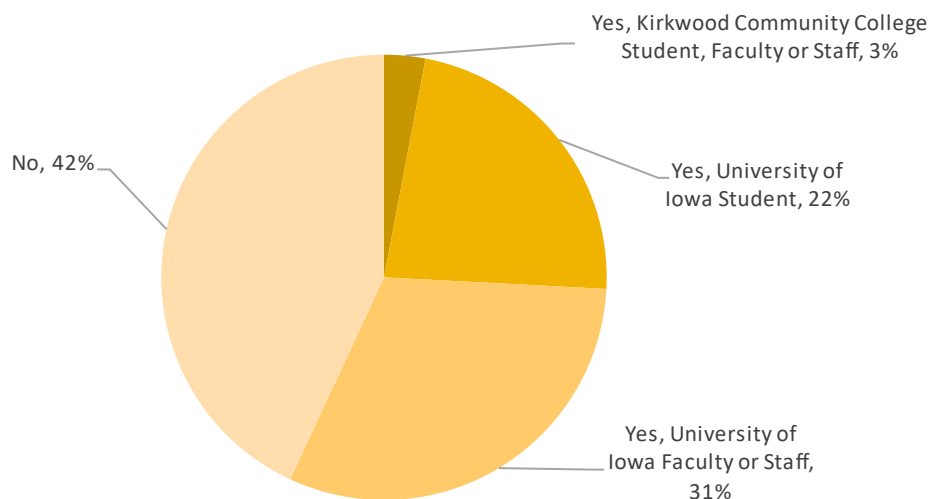




Figure 8-52 shows the distribution of respondents' home locations in the Iowa City area. Most respondents (74%) lived in Iowa City/University Heights, followed by Coralville/North Liberty (16%). Although 22% of respondents were University of Iowa students, only 2% of respondents lived in campus residence halls.

Figure 8-52 Residence Location (n=1,238)

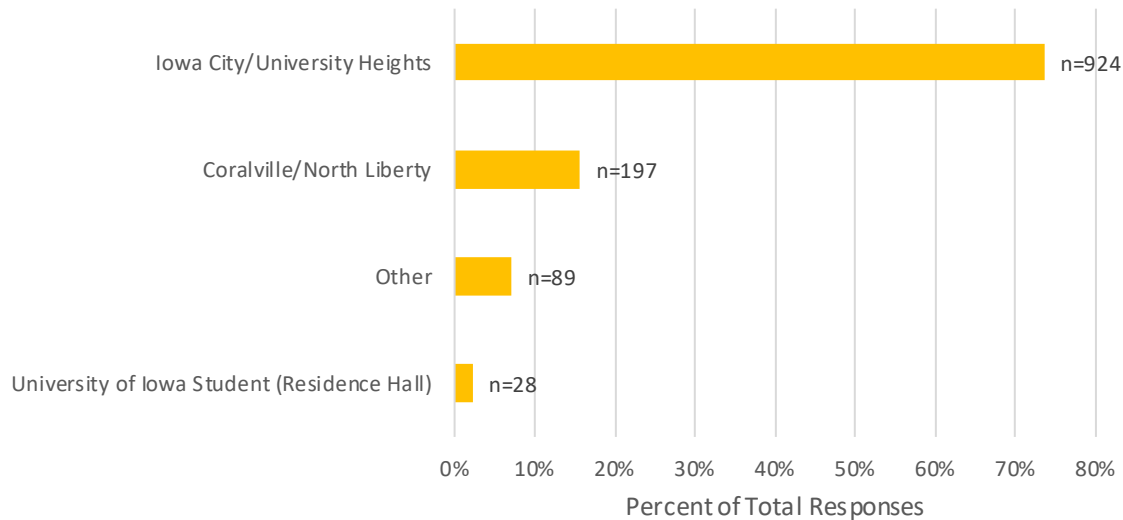
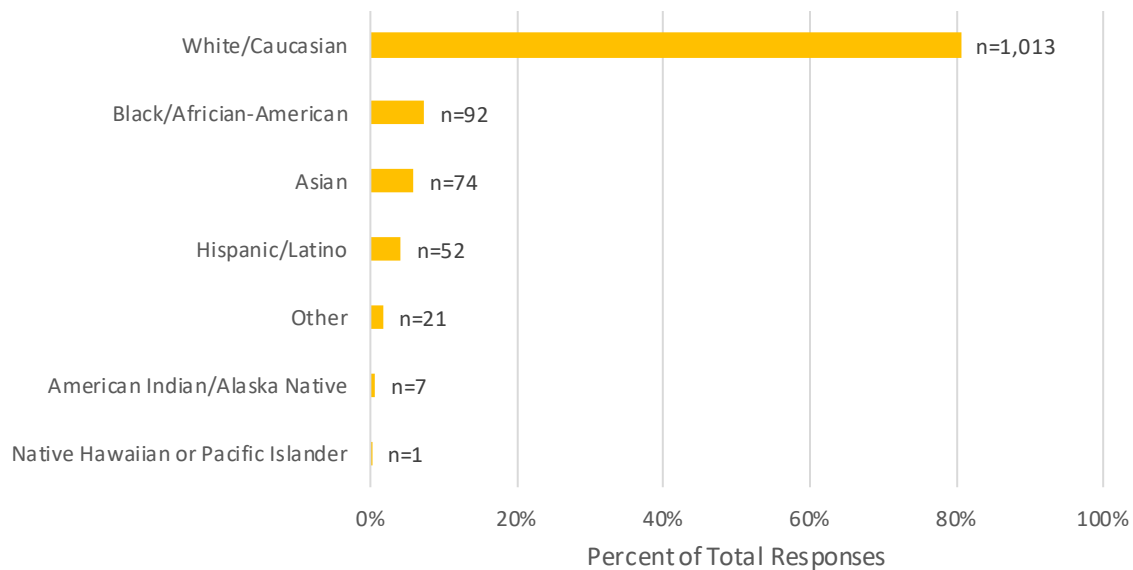


Figure 8-53 shows the race/ethnicity of respondents. The vast majority identified as white/Caucasian. Black/African-American respondents were the largest racial/ethnic minority group (7%), followed by those identifying as Asian (6%).

Figure 8-53 Race/Ethnicity (n=1,260)

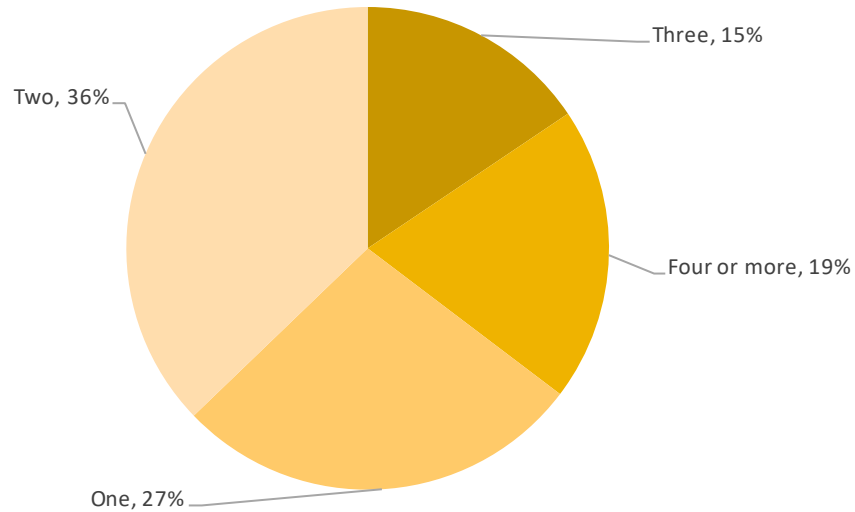


Note: Respondents were able to select more than one answer so percents do not total to 100.



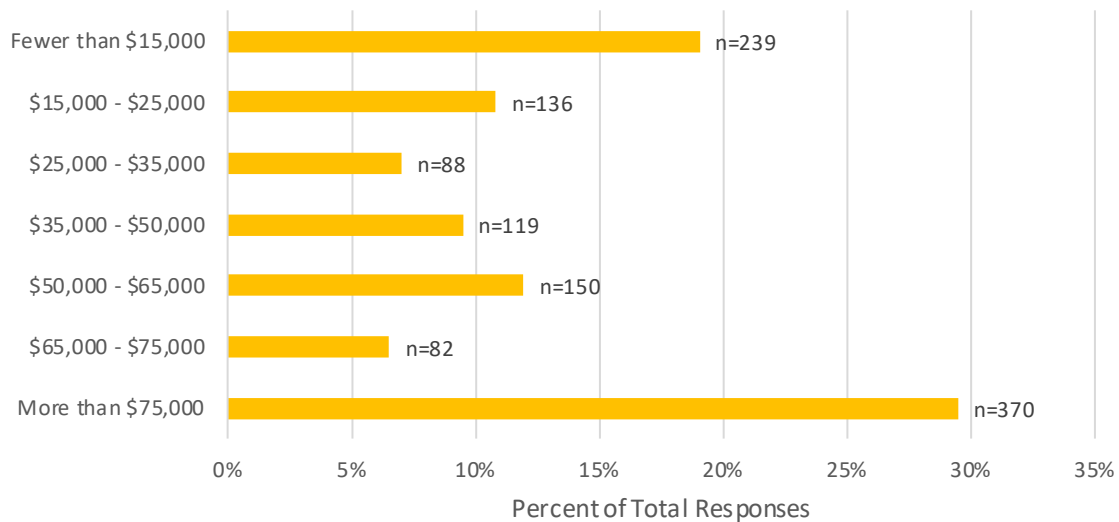
The vast majority of respondents (71%) lived in multi-resident households. Around 27% of respondents lived alone (Figure 8-54).

Figure 8-54 Household Size (n=1,226)



Most respondents lived in households (29%) that earned more than \$75,000 per year (Figure 8-55). The next largest group were respondents who earned fewer than \$15,000 (19%).

Figure 8-55 Household Income (n=1,184)

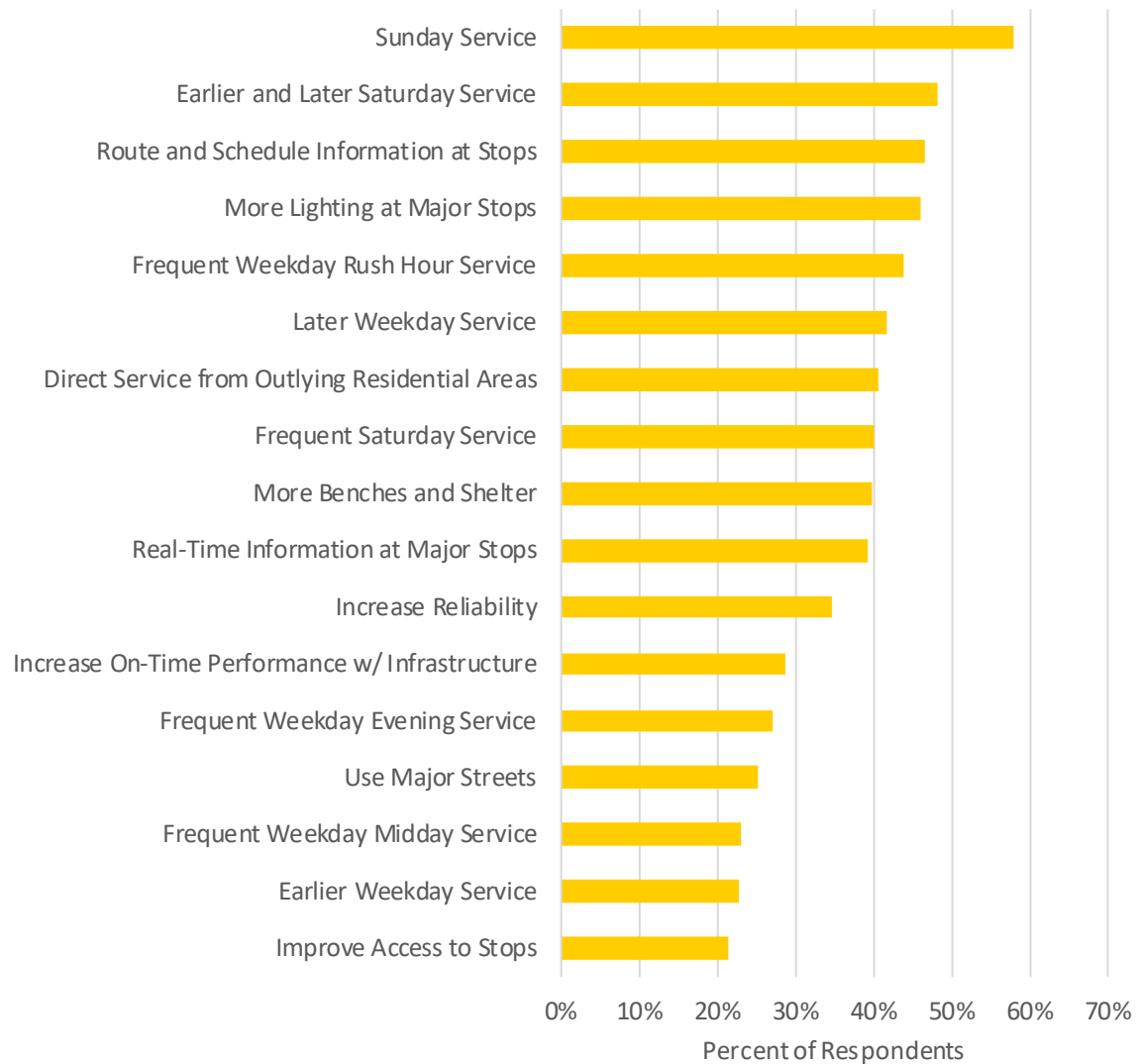




Respondent Desired Improvements

When asked to prioritize potential transit service improvements in the budget game portion of the survey, most respondents selected Sunday service, followed by earlier and later Saturday service. The top physical improvements selected by respondents were route and schedule information and more lighting at major stops. Some of the least-desired improvements were improving access to stops and earlier weekday service. By and large, the desired improvements selected by DYOS respondents were similar to the improvements selected by ICATS on-board survey respondents.

Figure 8-56 Desired Improvements (n=1,325)



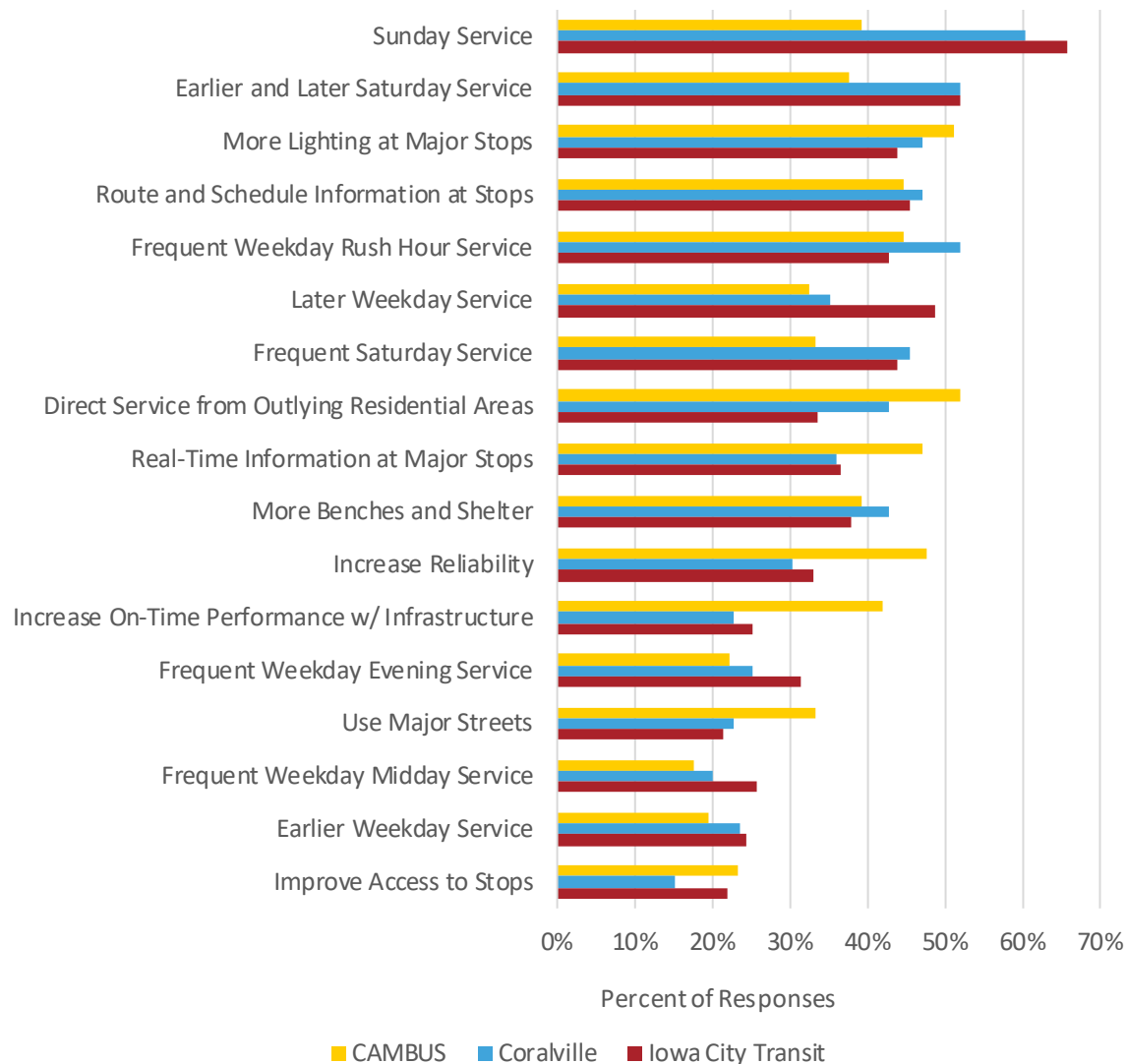
Note: Respondents were able to select more than one answer so percents do not total to 100.



Overall desired transit improvements are cross-tabulated in the following charts to help identify differences in desired improvements by respondent university affiliation, home location, frequency of transit ridership, and transit agency most frequently used.

Figure 8-57 shows the desired improvements of respondents who rode the three transit agencies in the Iowa City area. Sunday service was the most desired improvement for both Coralville Transit and Iowa City Transit rider respondents. Earlier and later Saturday service was selected the most by respondents who rode Coralville Transit and Iowa City Transit. Respondents who rode CAMBUS mostly asked for direct service from outlying residential areas and more lighting at major stops.

Figure 8-57 Desired Improvements by System used by Respondent

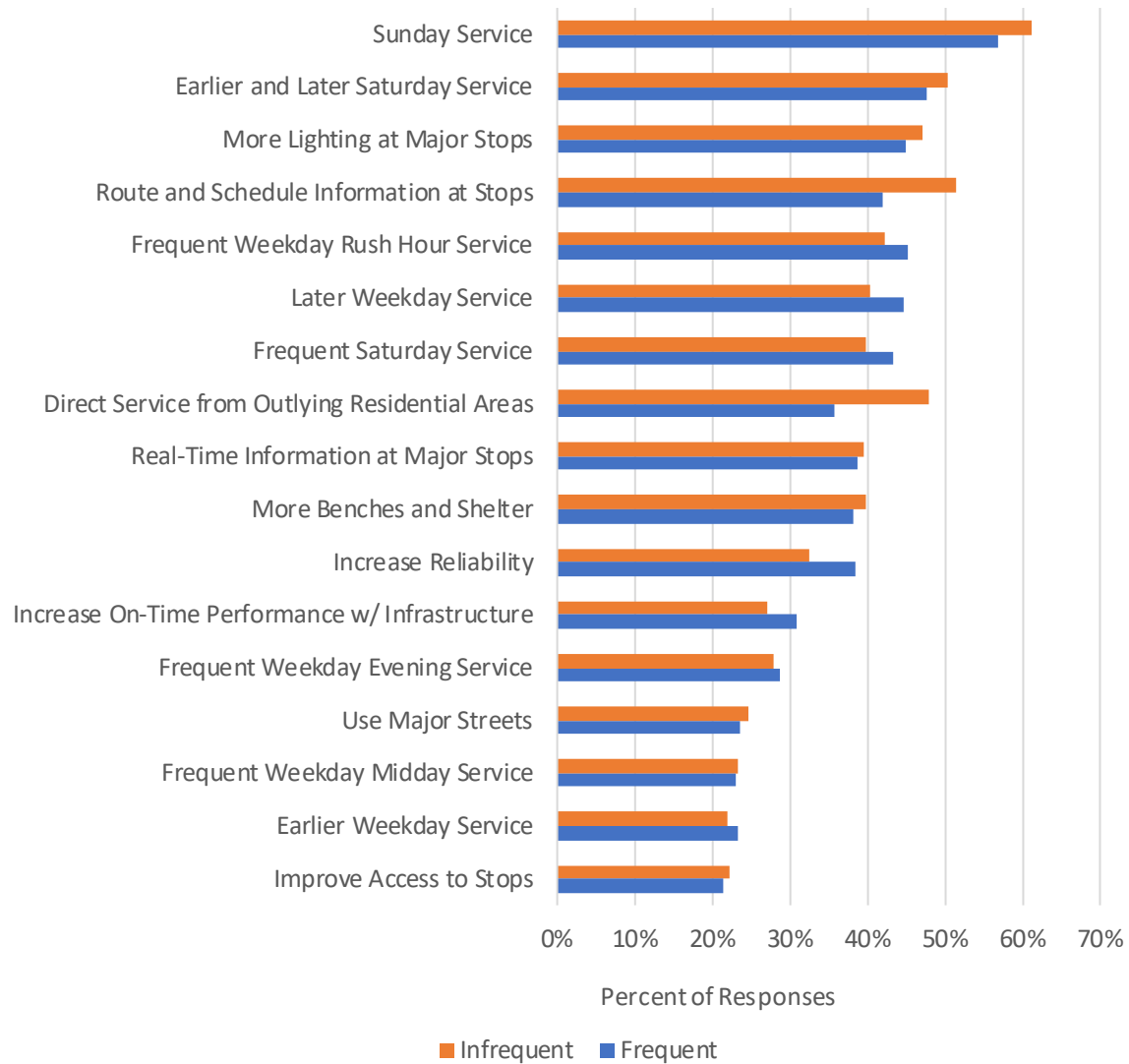


Note: Respondents were able to select more than one answer so percents do not total to 100.



Figure 8-58 compares the desired improvements of frequent and infrequent transit rider respondents, with frequent riders defined as those who ride more than once a week and infrequent riders defined as those who ride once a week or less. By and large, frequent and infrequent rider respondents desired similar improvements, although infrequent riders were more likely to choose route and schedule information at stops and direct service from outlying areas. Frequent riders were more likely to desire increased reliability than infrequent riders were.

Figure 8-58 Desired Improvements by Respondent Frequency of Transit Use



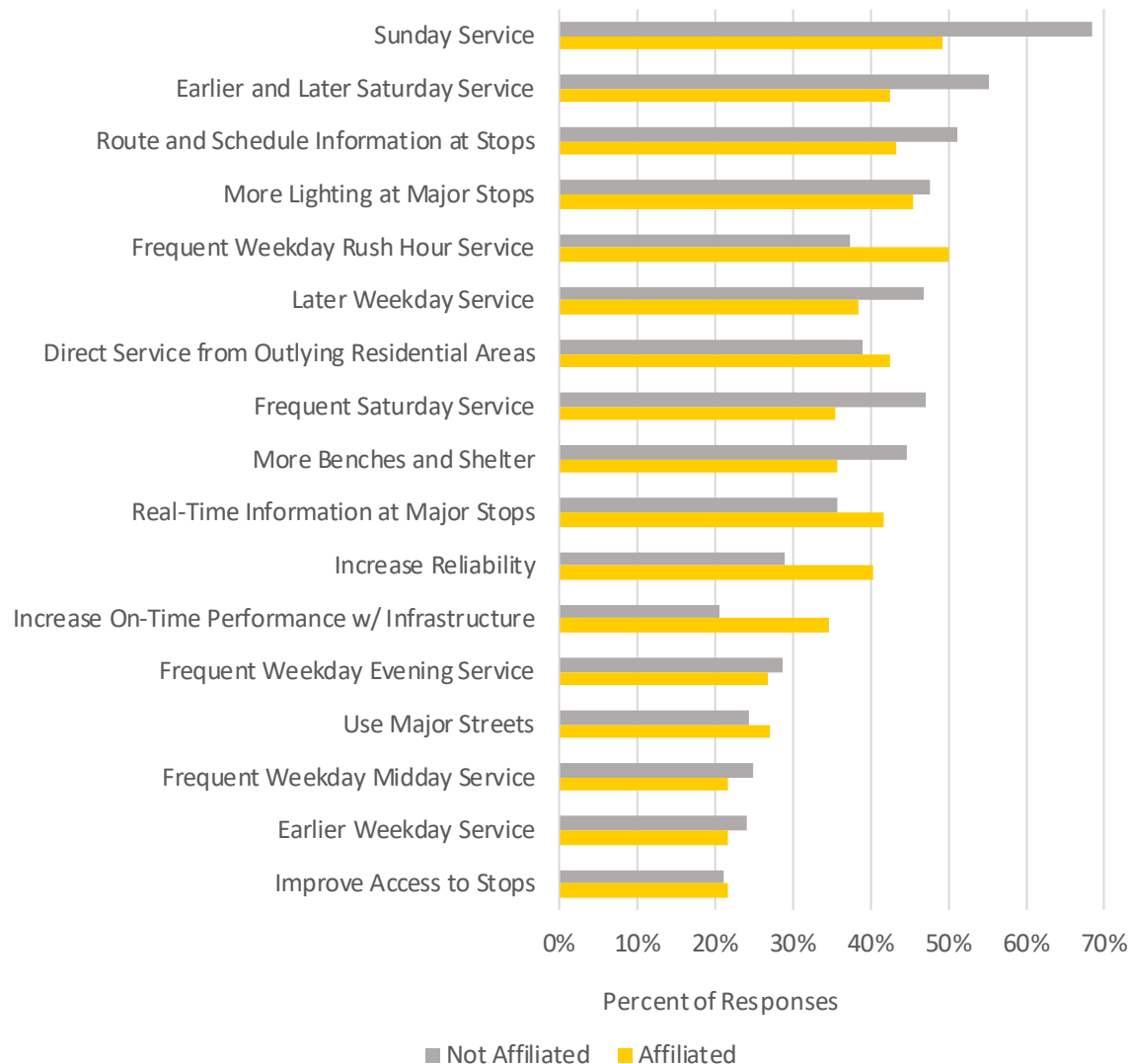
Note: Respondents were able to select more than one answer so percents do not total to 100.



Figure 8-59 shows desired improvements by respondent affiliation to the University of Iowa or Kirkland Community College. The top desired improvement of university-affiliated respondents was frequent weekday rush hour service, followed by Sunday service. Non-affiliated respondents were most likely to desire Sunday service and earlier and later Saturday service.

Overall, university-affiliated respondents were more likely to desire frequent weekday rush hour service, increased reliability, and increased on-time performance than unaffiliated respondents. Non-affiliated respondents were more likely to desire Sunday service, earlier/later Saturday service, and frequent Saturday service than affiliated respondents.

Figure 8-59 Desired Improvements by Respondent University Affiliation

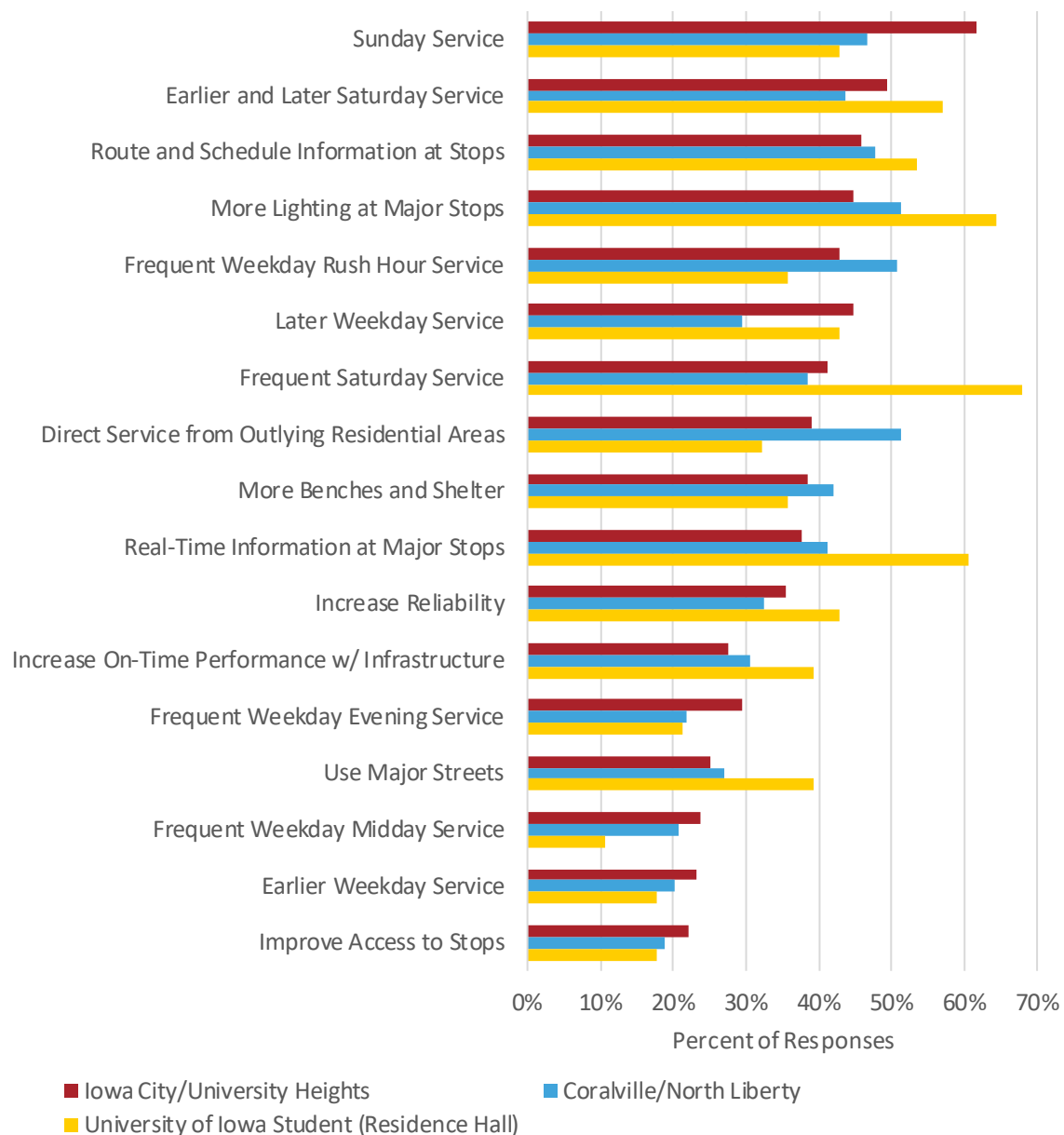


Note: Respondents were able to select more than one answer so percents do not total to 100.



Figure 8-60 shows desired improvements by respondent home location. The top desired improvements for Iowa City resident respondents were Sunday service and earlier/later Saturday service. The top improvements desired by Coralville resident respondents were more lighting at bus stops, direct service from outlying residential areas, and frequent weekday rush hour service. For University of Iowa student respondents living in residence halls, top desired improvements were frequent Saturday service, more lighting at major bus stops, and real-time information at major stops.

Figure 8-60 Desired Improvements by Respondent Residence



Note: Respondents were able to select more than one answer so percents do not total to 100.



NOVEMBER 2019 OUTREACH

Introduction and Key Findings

This section of the chapter summarizes public outreach conducted by the ICATS team in November 2019. The purpose of the outreach was to understand local transit improvement priorities. Outreach consisted of open houses, stakeholder meetings, and operator interviews and direct outreach to underserved populations through community partnerships. Key findings from the outreach are:

- Stakeholders and members of the public desire increased frequency, Sunday service, and later evening service. Early morning service was not frequently mentioned.
- The lack of fare integration and service legibility across systems is frustrating for many riders and may be a barrier to mobility for certain people.
- Many people and stakeholders are interested in the idea of a crosstown route that allows riders to avoid transfers at the Pentacrest.
- Improved service to North Liberty has broad public and stakeholder support.
- Reducing greenhouse gas emissions from public transit is important to many riders and community members.



Open Houses

Three open houses were held during the ICATS November outreach week. At each open house, poster boards with project information were set up for public viewing, consultant and project partner staff were present to answer questions and receive comments about the ICATS, and comment cards and paper versions of the Design Your Own System survey were available for attendees to complete. Attendees at the open houses were riders, interested stakeholders, and non-rider community members.

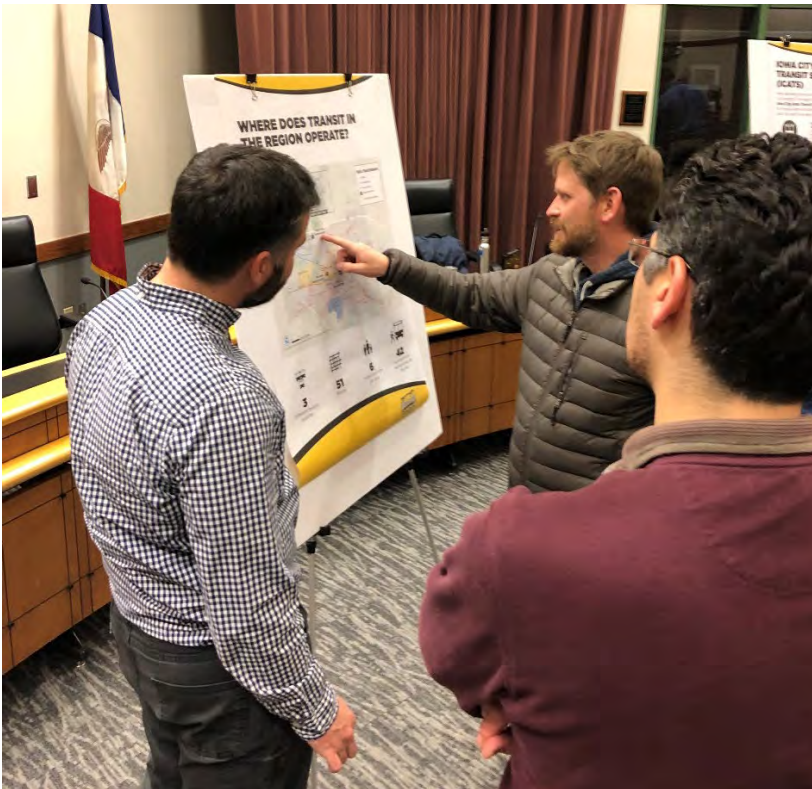
City of Coralville

The City of Coralville open house was held at Coralville City Hall on November 14, from 6:30 p.m. to 8:30 p.m. More than 20 people attended the meeting.

Comments received at the meeting included support for Coralville Transit's current connections to downtown Iowa City and the University of Iowa. Riders at the meeting valued Coralville Transit, as it allows them to commute without automobiles and avoid traffic and parking congestion. Some infrequent riders explained that they might ride more often if routes were not one-way loops that forced them to spend extra time on the bus.

Two representatives of Integrated DNA Technologies, a large Coralville business, expressed interest in operating a shuttle service on their campus and shared these concepts with project partners. Some meeting attendees explained how it was somewhat confusing to plan transfers because of fare structure incompatibilities and service legibility issues across various operators.

Figure 8-61 November 14, 2019 Coralville Open House



Source: Nelson\Nygaard



City of Iowa City

The City of Iowa City open house was held at the Iowa City Public Library on November 13, from 6:30 p.m. to 8:30 p.m. More than 50 people attended the meeting and 16 comment cards were turned in. Zero-cost rides home for attendees were provided by Iowa City Transit. Three laptops were set up for attendees to complete the online Design Your Own System survey.

Many of the comments submitted at the open house were requests for additional service in the form of Sunday service, greater frequency, and evening service. Other comments were in favor of electric buses, improvements to the Bongo app, better pedestrian access to bus stops, and more comfortable bus stops. Some open house attendees expressed an interest in streamlining service by reducing the number of stops on each route to allow for faster trips. Other attendees raised equity concerns about the geographic distribution of service and the importance of providing good options for low-income communities and communities of color.

Figure 8-62 November 13, 2019 Iowa City Open House



Source: Nelson\Nygaard



University of Iowa

The University of Iowa open house was held at the Iowa Memorial Union, in the Historic Iowa River Room, on November 12, from 5:00 p.m. to 7:00 p.m. More than 20 people attended the meetings and two comment cards turned in.

Comments received at this open house included requests for Sunday service, additional service to the Latitude apartment complex, and a greater focus on the environmental sustainability of CAMBUS operations. Community stakeholders at the open house highlighted the importance of connecting campus with areas of high-density student housing. Riders with visual impairments requested greater accessibility of outreach materials.

Figure 8-63 November 12, 2019 University of Iowa Open House



Source: Nelson\Nygaard



Operator Interviews

The consultant team conducted drop-in operator interviews at each of the three ICATS partner agencies. These interviews were held informally in operator break areas. Snacks were provided, and comment cards were available for operators who did not have time to or feel comfortable providing in-person comments.

CAMBUS

Operator interview sessions were held on November 14. A morning session was held at the CAMBUS maintenance facility, at 517 S Madison Street, from 6:00 a.m. to 7:30 a.m., and an afternoon session was held at the CAMBUS offices in the West Campus Transportation Center from 3:30 p.m. to 6:00 p.m.

During these meetings, operators expressed general contentment with CAMBUS' current service, although some reported on-time performance could be improved. Operators explained that many students would like to see CAMBUS go to more high-density student housing and shopping areas, because riders like the fare-free nature of CAMBUS.

Some operators were concerned about pedestrian-bus conflicts, especially at the Pentacrest and Rienow Hall stops. Other operators shared thoughts about reducing redundancy in the CAMBUS network, and having fewer routes operating on the same corridors.

Coralville Transit

The Coralville Transit operator interview session was held at the Coralville Transit facility at 900 10th Street in Coralville, on November 13, from 2:30 p.m. to 3:10 p.m.

Coralville Transit operators thought the current route alignments, although sometimes challenging to drive, serve community needs well. They unanimously agreed that the greatest impacts to their on-time performance were caused by traffic on Hawkins Drive and on Highway 6 in the p.m. commute period. Operators were also frustrated by the pedestrian and auto traffic at the Pentacrest, which delays their trips and can be unsafe. Operators reported that some riders are frustrated and confused by the different passes and fare structures across systems.

One operator, who also serves as a dispatcher, explained that they field regular phone calls requesting additional service to North Liberty.

Iowa City Transit

The Iowa City Transit operator interview session was held in the Iowa City Transit base operator break room, at 1200 S Riverside Drive, in Iowa City, from 1:30 p.m. to 2:45 p.m. on November 12. Iowa City Transit operators also submitted 10 comment cards.

Many operators complained about the difficulty of operating at the Pentacrest. Auto and pedestrian traffic were frequently mentioned as delaying trips, particularly when classes are changing. Operators raised safety concerns regarding people walking in front of general purpose and bus traffic in this area.

Some operators expressed concerns about operating on small, neighborhood streets—particularly those with steep grades that are not well-salted in winter. They also explained that many riders are confused by routes' transitions to 'night and weekend' alignments, as well as transfer policies and the lack of fare integration across systems.



Operators also commented on the need for more layover/recovery time on routes, and for better outreach/marketing to encourage good rider behavior. Some operators noted that there is significant shopping- and employment-based demand for transit on the Highway 1 commercial corridor west of the Iowa River.

Stakeholder Meetings

Thirteen meetings were held with community stakeholders as part of this outreach process. A complete list of these meetings is in Figure 8-64, followed by summaries of concerns and comments from each meeting.

Figure 8-64 Stakeholder Meeting List and Schedule

Organization(s)	Attendee(s)	Date/Time
Goodwill of the Heartland	Stefanie Throckmorton	11/12/19 10:00 a.m. – 10:30 a.m.
Community Transportation Committee	Jeremy Endsley	11/12/19 10:30 a.m. – 11:00 a.m.
Iowa City Chamber of Commerce	Jennifer Banta	11/12/19 10:45 a.m. – 11:15 a.m.
Johnson County Mobility Coordinator	Kelly Schneider	11/12/19 11:30 a.m. – 12:00 p.m.
Hawk's Ridge Apartments	Teddy Abdelmalek	11/12/19 2:45 p.m. – 3:15 p.m.
Center for Worker Justice	Rafael Morataya	11/13/19 10:00 a.m. – 10:30 a.m.
The Quarters Apartments	Drew Coffin	11/13/19 10:45 a.m. – 11:15 a.m.
Iowa City Downtown District	Nancy Bird	11/13/19 11:30 a.m. – 12:00 p.m.
Community Transportation Committee Johnson County Livable Communities Transportation Committee Johnson County Paratransit Advisory	Apprx. 25 attendees	11/13/19 1:00 p.m. – 2:15 p.m.
Kirkwood Community College	- Kristie Leeman - Mark Butland - Nick Borders	11/14/19 9:00 a.m. – 9:30 a.m.
Iowa City Community School District	- Chace Ramey - Esme Davis	11/14/19 10:00 a.m. – 10:30 a.m.
Neighborhood Centers of Johnson County	Chastity Dillard	11/14/19 11:00 a.m. – 11:30 a.m.
Access to Independence Systems Unlimited	- Gerald Rath, Access to Independence - Josh Super, Kristin Rankin, Mallory Moore, and Steve Oulman from Systems Unlimited	11/14/19 1:00 p.m. – 1:30 p.m.



Goodwill of the Heartland

Goodwill assists approximately 145 local workers in their area-wide supportive employment program. For many of their clients, transferring at the Pentacrest extends their trip times and can be challenging, especially if multiple schedules and fares must be used to plan the trip. Goodwill's clients would benefit from added service to North Liberty and a more user-friendly disabled bus pass. Many of their clients currently use SEATS but might use fixed-route service if it were easier to understand the routes and pay fares.

Community Transportation Committee

The Community Transportation Committee (CTC) reported that many workers in the area have quit or turned down jobs because of a lack of bus access. In many of these cases, jobs were starting earlier or ending later than bus service operates. For many of these people, Sunday and later evening service would unlock significant employment opportunities. The CTC also reported that the lack of fare integration and a customer service center at the Pentacrest presents challenges for many riders. Other concerns and comments from the CTC included:

- There is a lack of service to mobile home communities
- Afterschool activity service for students would be beneficial
- Improvements could be made to pass structures for seniors and low-income riders
- There is an opportunity for a demand-response late-night service for workers
- More service is needed in North Liberty
- Both loop routes and downtown transfers extend trip times for many riders

Iowa City Chamber of Commerce

The Iowa City Chamber of Commerce reported concerns from both Chamber staff and member businesses. The Chamber's concerns were generally related to span of service. The lack of late-night service was reported as affecting employee access for businesses, and also contributing to parking challenges. Likewise, workers with weekend shifts face similar transit access challenges. The relatively low frequency of existing service was also cited as a challenge for member organizations, particularly Kirkwood Community College.

The Chamber also expressed an interest in improving transit access to North Liberty and its employment opportunities, and in experimenting with smaller vehicles and demand-response service in places and times that may not warrant fixed-route service.

Johnson County Mobility Coordinator

This meeting focused on mobility challenges for Johnson County residents and particularly those residents with low incomes, with disabilities, and who are over the age of 65. A number of concerns with current transit operations were raised, including:

- The current fare structure makes transferring difficult to understand and intimidating for some riders
- Challenges with bus stop maintenance and snow clearance, particularly affecting riders with disabilities
- Limited mobility options late at night and to North Liberty



Hawk's Ridge Apartments

Hawk's Ridge management described the operations of their resident shuttle bus service and expressed interest in exploring some type of partnership with public transit agencies in the area.

Center for Worker Justice

The Center for Worker Justice (CWJ) stakeholders primarily raised concerns about transit's role in providing equitable access to employment opportunities. The CWJ is supportive of Sunday service and better late-night service, primarily to support people working jobs outside of the 9:00 a.m. to 5:00 p.m. window; hotel jobs in Coralville were called out as a specific area of need. Concerns about necessary transfers and loop routes causing riders to travel for long periods of time out-of-direction were also raised.

Other issues of note for the CWJ were:

- Improving frequency on existing routes
- Connecting SE Iowa City to shopping opportunities
- Developing a mini-transfer center at the Iowa City Marketplace

The Quarters Apartments

Management staff from The Quarters described the operations of their resident shuttle bus service and expressed interest in exploring some type of partnership with public transit agencies in the area.

Iowa City Downtown District

Representatives from the Iowa City Downtown District (ICDD) were generally supportive of Sunday service and fare-free transit. The ICDD is supportive of provision of better options for people to access downtown without autos.

The ICDD is also interested in ensuring public transit works for middle and high school students, as well as more involvement from North Liberty in the ICATS. The lack of shelter and transit resources for riders at the Pentacrest was also raised as a problem.



Paratransit Advisory, Livable Community, and Community Transportation Committees

This stakeholder meeting was the largest held during the outreach week. It had approximately 25 attendees and involved an initial presentation by Iowa City Transit and consultant staff, along with an extended question-and-answer-style discussion.

Attendees expressed a clear desire for Sunday and late-evening service. Attendees also voiced support for routes that connected neighborhoods to work and shopping destinations without a downtown transfer.

Other comments raised at the meeting included:

- Greater accessibility of bus passes for people with low-incomes and/or experiencing homelessness
- Need for translation of outreach and rider materials into additional languages, specifically Arabic
- Need for better service to North Liberty
- Frustration with the number of fare types and lack of integration of fares across systems
- Interest in experimenting with demand-response options and public-private partnerships

Kirkwood Community College

Three stakeholders from Kirkwood Community College's (KCC) Iowa City campus joined this stakeholder meeting and highlighted the important role public transit plays in connecting people to educational opportunities. The Iowa City Marketplace was discussed as a potential transfer hub that could play a role in providing more robust transit connections between KCC Iowa City, KCC Cedar Rapids, and the University of Iowa.

The lack of fare integration across transit providers was raised as a barrier for some KCC students, along with reduced service on nights and weekends (KCC offers Saturday classes). The KCC representatives also identified the cost of public transit as a challenge for many students and expressed interest in being a part of a fare-free transit coalition.

Iowa City Community School District

Iowa City Community School District (ICCSA) representatives were primarily concerned with ensuring public transit service's compatibility with local educational opportunities. Concerns raised by ICCSA included:

- Eastside Loop operating hours have not adjusted to accommodate changing bell times¹
- Providing direct access to schools, particularly new schools and schools in Coralville
- Parking problems at the high schools that could be alleviated by better transit service
- Making low-income student or general student bus passes available²

The ICCSA also noted that they would be supportive of a fare-free policy for students and potentially for all riders.

¹ The Eastside Loop has been adjusted to accommodate changing bell times.

² Youth passes are available and are functionally equivalent to an ICCSA student pass.



Neighborhood Centers of Johnson County

Although this meeting took place at the Pheasant Ridge Neighborhood Center, the discussion related to all Johnson County Neighborhood Centers (NCJCs). Service to North Liberty and more direct service to Coralville were raised as opportunities to provide better access to employment. Sunday service and increased frequency were also raised as important improvements for shopping, recreation, and employment access.

Translation of rider materials into additional languages was highlighted as an opportunity area for local transit agencies to grow ridership.

Access to Independence and Systems Unlimited

This meeting included four stakeholders from Systems Unlimited and one from Access to Independence. Throughout the meeting, concerns were raised about fixed-route transit's accessibility for people with disabilities. Several concerns regarding operator training and courtesy were raised and highlighted with anecdotes of distressing operator interactions with people with disabilities.

Specific concerns were raised about the lack of accessibility of fixed-route bus stops for people using mobility devices, including lack of sidewalks, curb ramps, and shelters. Access to recreational opportunities at places such as Terry Trueblood Recreational Area was raised in the context of service expansion discussions. Better service to North Liberty was also requested.

Stakeholders at this meeting also expressed support for Sunday and fare-free service. The bright red "disability passes" were discussed as a stigmatizing physical fare medium, and a need for fare vending machines at the Pentacrest and other major stops was discussed.



JANUARY 2020 OUTREACH – FEEDBACK ON SCENARIOS

Introduction

The ICATS project team held three open houses, two operator meetings, and two key stakeholder meetings as a part of January 2020 outreach. The purpose of this outreach was to receive feedback on three proposed service scenarios.

Open Houses

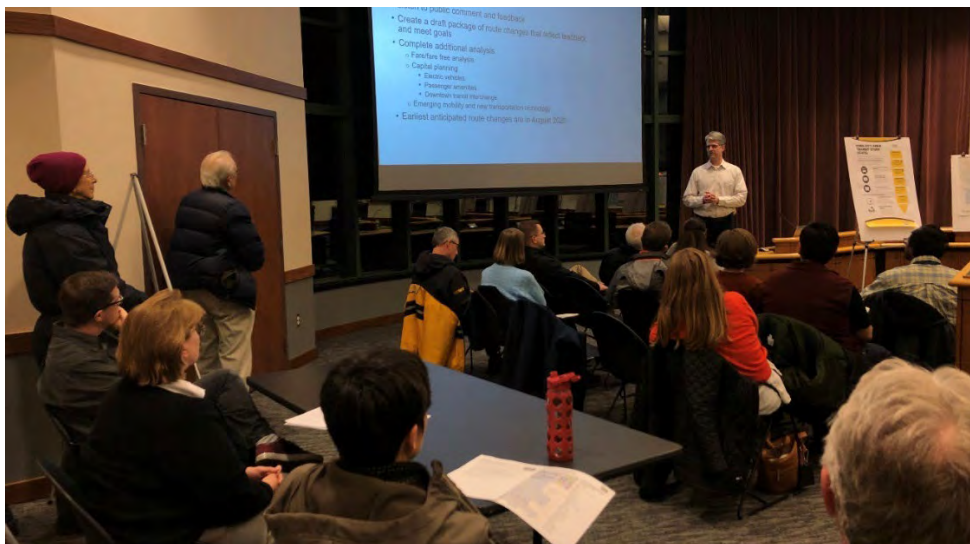
Three open houses were held during the week of January 26. These events were open to the public and included poster boards that showed three service scenarios proposed for ICATS partner agencies. Each open house also included a brief presentation by ICATS project staff on study process and next steps. Staff answered questions and discussed the scenarios with the public at project poster stations. One open house was held in the City of Iowa City, one in Coralville, and one on University of Iowa campus.

City of Coralville

A public open house was held at Coralville City Hall at 5:30 p.m. on January 30. Over 30 community members attended for a presentation by the ICATS team and to discuss service scenarios. Comment cards were available for community members to submit written comments.

Comments received during the Coralville open house included concerns about a proposed Iowa City Transit Westside-Hospital route not serving the Newton Road corridor, support for the Coralville Transit 5th Street route extending to Walmart, and concern about the Iowa City Transit Melrose Express route being eliminated. Some riders were interested in being able to board CAMBUS vehicles on Melrose Avenue and in Coralville Transit operating Sunday service. One attendee was adamantly opposed to zero-fare bus service and one commenter requested that Coralville Transit's span of service extend later into the evening to allow for evening shopping.

Figure 8-65 January 30, 2020 Coralville Open House



Source: Nelson\Nygaard



City of Iowa City

The Iowa City public openhouse was held in the Iowa Public Library Meeting Room A on January 28 at 5:15 p.m. The event was well-attended, with over 70 community members signing in at the front door. Staff from the ICATS presented information on study process and then made themselves available to the public for questions and comments at poster stations in the meeting room. Comment cards were available for community members to submit written comments.

Comments received included general support for increased frequency on Iowa City Transit routes and compliments on Iowa City Transit operators' courtesy and professionalism. Meeting attendees expressed concerns with the proposed elimination of the Iowa City Transit 7th Avenue route, as well as the proposed re-alignment of the Court Hill route off Friendship Street. Some community members were concerned about the proposed elimination of the Melrose Express.

Meeting attendees also shared ideas for the Iowa City area transit system, such as developing a network of park-and-ride lots. One community member was surprised to learn that CAMBUS was a zero-fare service for everyone and not just for students.

Figure 8-66 January 28, 2020 Iowa City Open House



Source: Nelson\Nygaard



University of Iowa

A public open house was held on University of Iowa campus in the Iowa Memorial Union room 355 on January 29. This event included a brief presentation by project staff on the ICATS process and proposed service scenarios, as well as time for attendees to ask questions and discuss proposed service scenarios at poster stations. Comment cards were available for community members to submit written comments. Over 30 people attended the event.

Attendees at this public meeting were supportive of the proposed route numbering concept and for increasing frequency on the Iowa City Transit Oakcrest route. Community members were concerned about routes not serving the Newton Road corridor, as many people used these routes to commute to University of Iowa hospital facilities. Some community members said they had hoped to see more improvements and asked about what a fiscally unconstrained scenario for improving Iowa City area transit might look like.

Figure 8-67 January 29, 2020 University of Iowa Open House



Source: Nelson\Nygaard



Operator Interviews

ICATS staff members conducted two interview sessions with Iowa City Transit bus operators on January 28, at 9:00 a.m. and 12:30 p.m. The purpose of these interviews was to solicit feedback on the proposed service scenarios for Iowa City Transit. The interviews were conducted in a casual, focus group-type format, with operators able to chat with ICATS staff before and after operating shifts ended, for as long as they felt comfortable.

Feedback received from the operators included concerns about continuing to serve the Forest View mobile home community (turning around there is dangerous) and not serving Concord Terrace apartments, given the riders with disabilities and older people that board the bus there. Operators also shared that serving Newton Road was important for commuters that worked at the hospital, and that increasing frequency on the Oakcrest and Towncrest routes was a good idea. Operators supported a reduction in the number of stops on most routes.

Stakeholder Meetings

Two stakeholder meetings were conducted at the Johnson County SEATS facility to share ICATS updates and solicit feedback on the proposed service scenarios. One meeting was held on January 29 at 10:30 a.m. with SEATS staff to discuss the paratransit implications of potential service changes. This meeting's purpose was primarily informational.

A second meeting was held in the SEATS facility meeting room on January 30 at 10:45 a.m. and was attended by members of the Paratransit Advisory Committee, Livable Community Transportation Committee, and Community Transportation Committee. This meeting involved a discussion of the proposed service scenarios, as well as information sharing on the status of the ICATS project. Comments received from meeting attendees included support for adding Sunday service and for numbering bus routes. Attendees also expressed support for simplifying fares and integrating them across systems.



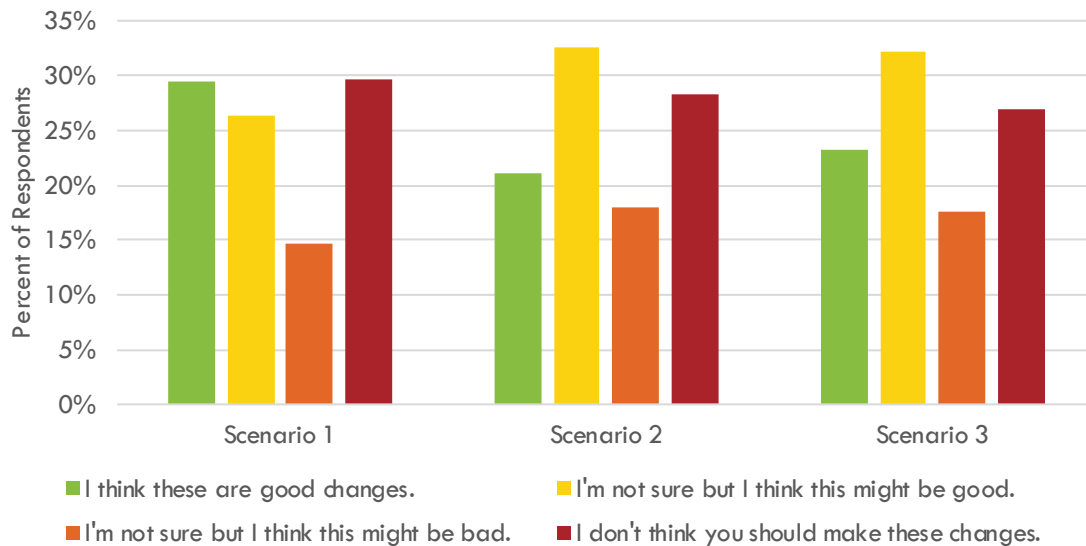
WINTER/SPRING 2020 ONLINE SURVEY

Concurrent with the public meetings in January 2020, an online survey was publicized and made available to the public through March 2 of the same year. This survey asked respondents to comment on which service scenario they preferred and provide feedback.

Scenario 1 received the highest percentage of supportive survey responses while scenario 2 received the lowest percentage of supportive responses (Figure 8-68). Scenario 1 was also the most polarizing scenario, with the highest percent of respondents believing both that these responses were good and bad, and the lowest percent of respondents who were unsure. Overall, no single scenario was rated by respondents as drastically better or worse than the others.

The survey also included multiple comments for each potential route recommendation. Respondent concerns about not having service to Newton Road or needing to transfer downtown were two common themes.

Figure 8-68 Respondent Opinion on Service Scenario





9 PREFERRED ALTERNATIVE

The Iowa City Area Transit Study (ICATS) Preferred Alternative was developed using public input, market conditions, and existing ridership data. Initially, three scenarios were developed that represent different principles of route planning and areas of emphasis. Following a public outreach and comment period on these three scenarios, a fiscally constrained Preferred Alternative was developed to address operational issues, future growth, industry-standard best practices for route design, and established project goals.

OVERVIEW

The ICATS project seeks to improve transit service to better serve existing and potential riders, new developments, and essential services in the community. Two rounds of public outreach were conducted as part of the ICATS process. After hearing from residents through public meetings, conversations about the system, and online and in-person surveys, the service planning team developed a Preferred Alternative to best meet the needs of the community. The Preferred Alternative is fiscally constrained and designed for implementation with existing resources.

The service proposed in this Preferred Alternative is for academic schedule periods of the year. Summer and holiday service would likely see service reductions by CAMBUS and Iowa City Transit, in similar fashion to current practice.

Numbers are added to route names in the Preferred Alternative, based on positive feedback from riders and non-riders during outreach, who confirmed that numbering routes would make them easier to understand. In the numbering system recommended for the Preferred Alternative, numbers 1 through 19 are reserved for Iowa City Transit, numbers 20 through 29 are reserved for Coralville Transit, and numbers 30 and above are reserved for CAMBUS.¹

Key themes addressed by the Preferred Alternative include:

- Increasing frequency on core routes
- Simplifying routes
- Addressing on-time performance
- Providing more direct service to popular destinations

Details for proposed service are described in the agency-specific sections of this report that follow.

¹ If route numbering is coordinated with the 380 Express intercity bus, it is recommended that route be numbered 380 or 380X.

Figure 9-1 CAMBUS Preferred Alternative System Map





Figure 9-2 CAMBUS Preferred Alternative Service Summary

Route	Service Summary	Frequency: Proposed Weekday	Frequency: Proposed Night/Wknd.	Service Span: Preferred Alternative
30 East Campus Shuttle	No change from today. Serves the downtown Iowa City and campus area in a clockwise loop on Jefferson Street, Clinton Street, Prentiss Street, and Madison Street.	15	--	6:30 a.m. - 6:30 p.m. (M-F)
31 Hawk Lot/Hospital	No change in alignment from today. Serves the Hawkeye Commuter Lot and the West Campus Transportation Center. This loop route would operate counter-clockwise in the a.m. and clockwise in the p.m. Span of service broadened and peak period frequency improved.	7/10/7	20	4:40 a.m. - 9:00 p.m. (M-F)
32 Hawkeye - Interdorm	A night and weekends route connecting Mayflower Residence Hall, the Pentacrest Downtown Interchange, West Campus Transportation Center, Hawkeye Commuter Lot, and Aspire at West Campus. This route would include weekend late-night Interdorm Saferide service.	--	30-60	8:00 p.m. - 1:00 a.m. (M-F) 11:00 a.m. - 1:00 a.m. (Wknd)
34 Hawkeye Express	No change in alignment from today. Connects Hawkeye Commuter Lot and Aspire at West Campus with Newton Road and Pentacrest Downtown Interchange. Span of service broadened and frequency improved.	20	--	4:40 a.m. - 8:00 p.m. (M-F)
35 Hospital Finkbine/Arena	No change in alignment from today. Connects Finkbine and Arena lots with West Campus Transportation Center. p.m. period frequency improved.	4/12/4/6	--	4:45 a.m. - 7:00 p.m. (M-F)
37 Interdorm	No change from today. Connects Mayflower Resident Hall with Pentacrest Downtown Interchange and Rienow/Slater hall area.	10/30/10/20	30	6:30 a.m. - 10:45 p.m. (M-F) 8:30 a.m. - 11:00 a.m. (Wknd)
38 Hospital via Hancher	No change from today. Connects Hancher Lot with Newton Road in a.m. period only.	15		6:30 a.m. - 8:30 a.m. (M-F)
39 North Hospital Shuttle	No change in alignment from today. Connects Finkbine and Arena lots with Newton Road in early a.m. period only.	12	--	4:30 a.m. - 6:45 a.m. (M-F)
40 Pentacrest	Connects Pentacrest Downtown Interchange with Newton Road, Arena Lot, and Finkbine Lot. Nighttime deviation to West Campus Transportation Center would be eliminated.	15/20	15-30	6:30 a.m. - 12:15 a.m. (M-F)
41 Blue	No change in alignment from today. A counter-clockwise loop route connecting East Campus, the Pentacrest Downtown Interchange, Rienow/Slater hall area, West Campus Transportation Center, Newton Road, and Hancher Lot.	12	36	6:30 a.m. - 12:30 a.m. (M-F) 11:00 a.m. - 12:30 a.m. (Wknd)
42 Red	No change in alignment from today. A clockwise loop route connecting the Pentacrest Downtown Interchange, East Campus, Hancher Lot, Newton Road, West Campus Transportation Center, and Rienow/Slater hall area.	12	36	6:30 a.m. - 12:30 a.m. (M-F) 11:15 a.m. - 12:45 a.m. (Wknd)
43 Research Park	Connects the Coralville Research Park area with Newton Road via 12 th Avenue, Holiday Road, 1 st Avenue, and 2 nd Street/Highway 6. Deviates to serve the N Ridge Drive/Waterford Drive/Holiday Road residential community during peak hours.	30	--	5:45 a.m. - 7:15 p.m. (M-F)

Note: Frequencies are in minutes. A slash between frequency numbers indicates that frequency changes throughout the day, typically with on- and off-peak periods. For example, 30/60/30 indicates three periods of varying frequencies: one period of 30-minute frequency service, followed by a period of 60-minute frequency service, followed by a period of 30-minute frequency service.



Key Themes for CAMBUS Recommendations

CAMBUS' current system is a blend of intra-campus circulation service, commuter parking shuttle service, and inter-campus shuttle service. The system operates productive core routes but also provides a number of routes that duplicate one another in purpose, operating span, and alignment. The recommended changes to CAMBUS service in the Preferred Alternative focus on three key areas:

- **Better the serving Hawkeye Commuter Lot:** The Hawkeye Commuter Lot is currently served by four routes that provide similar service and overlap on much of their alignment. This service is confusing for many riders and connections from the Hawkeye Commuter Lot to downtown Iowa City are significantly less frequent than those to the Hospital area. Recommendations in the Preferred Alternative focus on simplifying service to the Hawkeye Commuter Lot and increasing the frequency of service from the Hawkeye Commuter Lot to downtown Iowa City.
- **Coordinating with Coralville Transit:** Many University of Iowa students, faculty, and staff live in Coralville and use both Coralville Transit and CAMBUS. Also, a number of University of Iowa campus facilities are located in Coralville. The recommended Preferred Alternative considers CAMBUS and Coralville Transit resources holistically—instead of in silos—to better serve these markets.
- **Right-sizing Mayflower service:** Mayflower Residence Hall is currently served by four routes, at different times of the day and week. This duplication provides slightly more service than is necessary and the recommendations shift these resources to parts of the system where they can serve more riders.

The Preferred Alternative will have some drawbacks that may affect certain markets' mobility. Mayflower Residence Hall is recommended to be served by fewer routes and trips, which—although appropriate—will inconvenience some residents. Ridership at Mayflower Residence Hall is not likely to decrease, as it retains 10-minute service throughout much of the day. The recommended changes to the Research Park route extend its running time slightly, which may inconvenience some riders. Challenges with congestion on Newton Road and Hawkins Road are likely to persist, absent transit priority improvements. Most CAMBUS riders will see little change to their campus mobility and many are likely to experience an improvement.

The major benefits to CAMBUS riders and the University community include improvements to system legibility and improved service from the Hawkeye Commuter Lot to downtown. The recommended 20-minute all-day service from the Hawkeye Commuter Lot to downtown on a single route will make parking at this location (the largest lot on campus) a more appealing scenario for University employees. This service will also increase mobility for the hundreds of Aspire at West Campus residents, providing them more frequent, direct service to main campus. Ridership at Aspire at West Campus will likely increase as their access to downtown is improved.



Route-Level Recommendations

Route 30: East Campus Shuttle

This route is an East Campus circulator that also serves parking locations south of Burlington Street. No change is recommended for this route.

Route 31: Hawk Lot/Hospital

The HawkLot/Hospital route serves the Hawkeye Commuter Lot and West Campus Transportation Center. The current HawkLot/Hospital route operates only in peak periods, which means mid-day riders must learn the direction and alignment of another route to make a return trip. To simplify this and to accommodate the recommended elimination of the Hawkeye-Hospital route, Route 31 should offer mid-day service every 10 minutes and late evening service every 20 minutes.

Route 31 should also increase the frequency of its peak-period service from every 10 to every seven minutes, to accommodate demand caused by the recommended elimination of the Hawkeye-Hospital route.

Expanding service on Route 31 will simplify overall service to the Hawkeye Commuter Lot and provide a consistent, recognizable route option for people parking at this location and working at in the hospital area.

Route 32: Hawkeye-Interdorm

The current Hawkeye-Interdorm provides an important cross-campus connection but duplicates weekday service provided by the existing Interdorm, Red, Blue, and HawkLot routes. It also spends a significant amount of in-service time to serve the Mayflower Residence Hall, which is served by three other routes. Most of the resources used to operate this largely duplicative route are recommended to be reallocated to other services.

To improve service legibility and reduce rider confusion, Route 32 should provide only weekday night and weekend service, connecting the Hawkeye Commuter Lot and Aspire at West Campus, which complements—without duplicating—the daytime service provided by other routes. It would perform the same late-night and weekend complementary service for the Interdorm, Red, and Blue routes.

Route 32 should be re-aligned to operate bi-directionally on Melrose Avenue, instead of 1st Avenue, 2nd Street/Highway 6, and Hawkins Road. This will improve route legibility for riders and serve the Melrose Avenue corridor, which is just north of high-density student housing. The remainder of the route's alignment would remain the same. Stopping on Melrose Avenue will likely increase ridership on this route and be popular with riders.

Route 34: Hawkeye Express

The current Hawkeye Express route provides a weekday express connection from Hawkeye Commuter Lot and Aspire at West Campus to Newton Road and downtown Iowa City, without a stop at West Campus Transportation Center. The alignment of this route serves its purpose well, so no change in alignment is recommended. In the a.m., this route would travel east on Newton Road and west on Highway 6. In the p.m., this route would travel west on Newton Road and east on Highway 6.



The current Hawkeye Express route is not a high-frequency service: it operates every 40 minutes during peak periods. This frequency is recommended to be improved to every 20 minutes from 4:40 a.m. to 8:00 p.m. on weekdays, providing a frequent connection to Newton Road and downtown Iowa City for Hawkeye Commuter Lot parkers and Aspire at West Campus residents.

The increase in span of service and frequency on Route 34 will compensate for the elimination of daytime Hawkeye-Interdorm service and provide significantly faster, more legible service for hundreds of commuters and Aspire residents. Ridership on this route will likely increase considerably and single-occupancy vehicle travel from Aspire to downtown Iowa City will likely also decrease, taking pressure off downtown and campus parking ramps.

Route 35: Hospital Finkbine/Arena

The current Hospital Finkbine/Arena route serves primarily as a weekday commuter shuttle service between the Finkbine and Arena lots and the West Campus Transportation Center. The route alignment is simple and serves its purpose well, so no change in alignment is recommended.

Demand is slightly greater later in the evening, so Route 35 is recommended to operate weekdays from 4:45 a.m. to 7:00 p.m., instead of 4:30 a.m. to 6:30 p.m. To accommodate slightly reduced frequency on Route 40, the route's p.m. period frequency should increase from every four to 12 minutes to every four to six minutes.

Route 37: Interdorm

The current Interdorm route connects the Mayflower Residence Hall, downtown Iowa City and East Campus, and the Slater/Rienow hall area on West Campus. It is the highest-ridership and -productivity route in the CAMBUS system. No change is recommended.

Route 38: Hospital via Hancher

This route serves primarily as a weekday a.m. period commuter shuttle between the Hancher Lots and Newton Road. No change is recommended.

Route 39: North Hospital Shuttle

The current North Hospital Shuttle serves primarily as a weekday peak-period commuter shuttle between the Finkbine and Arena lots and Newton Road. Ridership is relatively low and is lower in the p.m. peak period than the a.m. peak period, and the route duplicates service provided by the Pentacrest route.

To simplify service and reduce confusion, Route 39 is recommended to *not* operate simultaneously with Route 40 and only to operate from 4:30 a.m. to 6:45 a.m., before Route 40 service has begun. This will provide access for Newton Road area employees who arrive at Finkbine and Arena lots before Pentacrest is operating.

The Route 39 alignment is simple and effective so no change in alignment is recommended.

Route 40: Pentacrest

The current Pentacrest route provides a frequent, direct weekday connection between the Pentacrest Downtown Interchange, Newton Road, and the Finkbine and Arena lots. This bi-directional alignment serves its purpose well so no change in alignment is recommended.



To improve route legibility and reduce rider confusion, Route 40 is recommended to operate a consistent alignment, without a nighttime alternate alignment to the West Campus Transportation Center. Travel to the West Campus Transportation Center will be possible from the Pentacrest Downtown Interchange after 7:00 p.m. on weekdays via the 32 Hawkeye-Interdorm and 42 Red routes.

Route 41: Blue

The current Blue route operates in a counter-clockwise loop through east and west campus, serving Hancher Lot, Newton Road, West Campus Transportation Center, Slater/Rienow halls, and the Pentacrest Downtown Interchange. This route serves the Mayflower Residence Hall after 7:30 p.m. on weekdays. The Blue Route has the second-highest ridership in the CAMBUS system.

Route 41 is recommended to operate an evening period of 18-minute frequency service as an intermediary step between p.m. peak 12-minute service and later evening 36-minute service, to accommodate some of the evening demand that was previously served by the Hawkeye-Interdorm route.

Route 41 is recommended to begin operating a half-hour later on weekdays, at 6:30 a.m., as early a.m. ridership on the route is currently low.

No change in alignment is recommended for this route.

Route 42: Red

The current Red route operates the same loop as the Blue route but clockwise. The Red route has the third-highest ridership in the CAMBUS system. Both the Red and Blue routes provide important intra-campus circulation service.

Route 42 is recommended to operate an evening period of 18-minute frequency service as an intermediary step between p.m. peak 12-minute service and later evening 36-minute service, to accommodate some of the evening demand that was previously served by the Hawkeye-Interdorm route.

No change in alignment is recommended for this route.

Route 43: Research Park

The current Research Park route connects the University of Iowa's Research Park community with the Newton Road area via all-day weekday 30-minute service.

As part of recommended Preferred Alternative coordination with Coralville Transit, Route 43 is recommended to deviate to serve N Ridge Drive, Westford Drive, and Holiday Road in the inbound direction in the morning and outbound direction in the afternoon. Providing CAMBUS service to this neighborhood, which is proposed to lose Coralville Transit service in the Preferred Alternative, is an efficient, collaborative recommendation that allows Coralville Transit to better use its resources for more productive service. This deviation will likely increase ridership on Route 43 by approximately 20 daily riders but will result in longer travel times for some riders.



Eliminated Routes

Hawkeye-Hospital

One key goal of the CAMBUS Preferred Alternative was to streamline service to the Hawkeye Commuter Lot and make it easier to understand. To this end, the Hawkeye-Hospital route is recommended to be eliminated and replaced by other service.

The Hawkeye-Hospital route currently serves largely as a commuter shuttle, connecting the Hawkeye Commuter Lot, Aspire at West Campus, West Campus Transportation Center, and Newton Road. The route duplicates service provided by other routes and has the second-lowest productivity in the CAMBUS system.

Because of the route's duplicative service and low productivity, it is recommended for elimination. Riders currently served by this route will be able to use the 31 Hawk Lot/Hospital and 34 Hawkeye Express to make their trips.

Mayflower Shuttle

Another key goal of the CAMBUS Preferred Alternative was to re-allocate resources away from Mayflower Residence Hall, which is currently over-served by four routes. To this end, the Mayflower Shuttle is recommended to be eliminated.

The Mayflower Shuttle currently operates only during a.m. periods on weekdays, providing supplemental service between the Mayflower Residence Hall and the Pentacrest Downtown Interchange. This route duplicates service offered by the Interdorm route and has below-average productivity for a CAMBUS route.

Because of its duplicative alignment, this route is recommended to be eliminated. This should reduce confusion for riders without negatively impacting mobility for Mayflower Residence Hall residents. Riders currently served by this route will be able to use Route 37 to make their trips.

Figure 9-3 Coralville Transit Preferred Alternative System Map



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Figure 9-4 Coralville Transit Preferred Alternative Service Summary

Route	Service Summary	Frequency: Proposed Weekday	Frequency: Proposed Night/Sat.	Service Span: Preferred Alternative
20 Iowa River Landing	Connects Iowa River Landing with downtown Iowa City via Newton Road in Iowa City. 60-minute mid-day service is added and the route is extended to downtown Iowa City.	30/60/30	--	6:30 a.m. - 6:30 p.m. (M-F)
21 5th Street	Connects downtown Iowa City with the Walmart-anchored shopping center north of I-80, with stops at the Coral Ridge Mall, in Coralville's residential communities, and on Newton Road in Iowa City. Operates bi-directionally instead of as a loop.	30/60/30	--	6:30 a.m. - 6:30 p.m. (M-F)
22 North Liberty	No change from today. This route provides one trip in the a.m. and p.m. peak periods that connects North Liberty, Iowa River Landing, and downtown Iowa City via Front Street NE, 12 th Avenue, Holiday Road, and 1 st Avenue, and Newton Road in Iowa City.	One trip	--	Peak period only (M-F)
23 10th Street	Connects downtown Iowa City with the Coral Ridge Mall, with stops in Coralville residential communities and on Newton Road in Iowa City. Operates bi-directionally instead of as a loop.	30/60/30	--	6:00 a.m. - 6:00 p.m. (M-F)
24 Saturday & Night	Weekday night and Saturday service covering Coralville residential communities in a loop, with stops at Iowa River Landing, on Newton Road in Iowa City, and in downtown Iowa City.	--	60	6:30 p.m. - 12:30 a.m. (M-F) 7:00 a.m. - 8:00 p.m. (Sat.)

Note: Frequencies are in minutes. A slash between frequency numbers indicates that frequency changes throughout the day, typically with on- and off-peak periods. For example, 30/60/30 indicates three periods of varying frequencies: one period of 30-minute frequency service, followed by a period of 60-minute frequency service, followed by a period of 30-minute frequency service.



Key Themes for Coralville Transit Recommendations

Coralville Transit currently operates a coverage-based commuter system that connects most of Coralville's residential communities to the Newton Road and downtown areas of Iowa City. The Preferred Alternative recommends improvements to this system that enhance its viability for non-commute trips and make the system easier to understand. The recommended changes to Coralville Transit service in the Preferred Alternative focus on three key areas:

- **Better non-commute trip options:** The Walmart-anchored mall district north of I-80 is currently not well served by Coralville Transit, and service in the Highway 6 commercial area is challenged by poor pedestrian infrastructure. The Preferred Alternative provides all-day bi-directional service to these shopping opportunities and strengthens connections to downtown Iowa City from Iowa River Landing by providing direct, all-day service.
- **Improvements to Iowa River Landing service:** Iowa River Landing is the fastest-growing part of Coralville but current Coralville Transit service has not yet caught up to its growth. The Preferred Alternative provides bi-directional all-day service to Iowa River Landing, strengthens the neighborhood's connection to the University of Iowa campus and downtown Iowa City, and re-aligns routes to serve major residential developments. Iowa River Landing is likely to see Coralville Transit's fastest-growing ridership under the Preferred Alternative.
- **Improved system legibility:** Coralville Transit routes currently operate primarily in large loops, which forces many riders to travel out-of-direction and take longer trips. These loops can also be confusing. The Preferred Alternative shifts Coralville Transit to bi-directional alignments, which are easier to understand, allow riders to take shorter trips, and use municipal resources more efficiently. This should increase ridership along bi-directional corridors.

Shortcomings of the Preferred Alternative will largely be experienced by riders of the existing AM Express and Express routes in the neighborhood west of 12th Avenue. Approximately five riders will need to walk more than ¼-mile to access the proposed CAMBUS 43 Research Park route during peak periods, and approximately 21 riders will need to walk more than ¼-mile to access mid-day service on this route. The CAMBUS 43 Research Park, however, will operate every 30 minutes and is zero-fare. The benefit of more frequent, zero-fare service may outweigh the increased walking distance for some riders.

Systemwide, ridership should increase, driven by improvements to route alignment, access to shopping destinations, all-day connections, and improved service to Iowa River Landing. Any partnership developed with large residential housing operators to fund service improvements will likely further boost ridership and offset operating costs. Improvements to system legibility will also make the system more attractive to new, first-time riders.



Route-Level Recommendations

Route 20: Iowa River Landing

The current Iowa River Landing route connects Iowa River Landing with Newton Road in Iowa City. The route suffers from on-time performance issues but is productive, and its trip times and destination are designed to accommodate hospital employees—not students. Latitude, a large student apartment complex, operates a free, Latitude resident-only bus service from Iowa River Landing to downtown Iowa City on a schedule tailored to students. This service competes for riders with Coralville Transit.

To better serve the student market and growing commercial development in Iowa River Landing, Route 20 is recommended to extend from its current Newton Road terminus to the Pentacrest Downtown Interchange. Route 20 should also depart the Iowa River Landing area on E 7th Street to provide better service to Latitude and avoid congestion on E 9th Street. Route 20 should replace the privately-operated Latitude service.

Route 20 is recommended to operate every 60 minutes on weekdays between 9:00 a.m. and 3:00 p.m. Morning peak service should begin at 6:30 a.m., instead of 5:30 a.m., due to low ridership on the first morning trip. In addition, afternoon 30-minute peak service should be extended from 5:00 p.m. to 6:30 p.m.

In downtown Iowa City, Route 20 would interline with the proposed Route 21 5th Street. This means that every inbound Route 20 trip arriving at the Pentacrest would continue outbound as Route 21, and every inbound route 21 trip arriving at the Pentacrest would continue outbound as Route 20.

Route 21: 5th Street

The current Lantern Park route operates in a clockwise loop connecting Coralville residential neighborhoods with the University of Iowa, downtown Iowa City, and shopping on Highway 6. To make the route easier for existing and future riders to understand, it is recommended to operate bi-directionally between downtown Iowa City and Walmart-anchored mall district north of I-80, via the Coral Ridge Mall, Lantern Park Plaza, 5th Street, and Newton Road.

Route 21 will improve service to and increase ridership at the Walmart commercial area north of I-80. Providing service to this area with Route 21, instead of two infrequent loops (as is current practice) will give Coralville residents more and better access to shopping destinations, as well as a one-seat ride to most of Coralville's major destinations.

Route 21 is recommended to begin operation at 6:30 a.m., instead of the current 6:00 a.m., due to resource constraints. The route is recommended to be re-named 21 5th Street to better describe its east-west alignment.

In downtown Iowa City, Route 21 would interline with the proposed Route 20 Iowa River Landing. This means that every inbound Route 21 trip arriving at the Pentacrest would continue outbound as Route 20, and every inbound route 20 trip arriving at the Pentacrest would continue outbound as Route 21. The portion of the current route not covered by the recommended realignment will be served by the proposed 23 10th Street.



Route 22: North Liberty

This route is operated under contract with North Liberty. No change is recommended.

Route 23: 10th Street

The current 10th Street route operates in a counter-clockwise loop connecting the Coral Ridge Mall and Coralville neighborhoods with the Newton Road area and downtown Iowa City, serving as a directional counterpart to the current Lantern Park route. Having two separate routes that serve the same area in opposite directions is confusing for many riders, so it is recommended that Route 23 serve the northern portion of its current alignment to increase system legibility. Route 23 should operate bi-directionally between downtown Iowa City and the Coral Ridge Mall via 7th Street, 14th Avenue, and 10th Street.

The portion of the current route not covered by the recommended realignment will be served by the proposed 21 5th Street. Route 23 is recommended to operate on 14th Avenue between 7th Street and 8th Street, to reduce the number of turning movements and delay.

Route 24: Saturday & Night

The current Saturday & Night route provides evening and Saturday service to the neighborhoods covered by the existing Lantern Park and 10th Street routes by operating in a counter-clockwise loop from downtown Iowa City, with a stop at Iowa River Landing. No major changes are recommended for this route, as it provides essential weekend and evening service using a small amount of resources.

Route 24 is recommended to follow the same alignments and use the same stops as the proposed 21 5th Street and 23 10th Street in Coralville's residential communities, and to maintain the Iowa River Landing deviation. At Iowa River Landing, the route is recommended to operate westbound on E 7th Street, instead of E 9th Street, to provide better access for the residents of the Latitude apartment complex.

Eliminated Routes

The AM Express and Express routes are recommended for elimination under the Preferred Alternative. These routes are large, directionally-paired loops that connect the Walmart-anchored shopping area, Holiday Road residential communities north of I-80, Iowa River Landing, Newton Road, downtown Iowa City, and Highway 6.

The AM Express and Express suffer from poor on-time performance and low productivity, respectively. The size of the loops and their infrequent headways make them of limited utility to most Coralville residents for shopping trips, so they are used primarily as commuter shuttles. Eliminating these routes will allow their resources to be used for more productive, all-day bi-directional service to the Walmart shopping area.

Riders currently using these routes south of I-80 will have improved, all-day service via routes 20, 21, and 24. The approximately 21 riders currently using these routes north of I-80 on Holiday Road west of 12th Avenue, North Ridge Drive, and Lynncrest Drive will have peak period service via the CAMBUS 43 Research Park route, which is a zero-fare service that is recommended to operate with 30-minute headways. During the mid-day period, these riders will have to walk over ¼-mile to access the 43 Research Park; this is a drawback to the Preferred Alternative.



IOWA CITY TRANSIT

Figure 9-5 Iowa City Transit Preferred Alternative System Map

Iowa City Transit Preferred Alternative

Iowa City Transit

- 1 South Iowa City
- 2 Court Street
- 3 Eastside Loop (Peak Trip Only)
- 4 Downtown Shuttle
- 5 Lower Muscatine/Kirkwood
- 6 Peninsula
- 7 North Dodge
- 8 Oakcrest
- 9 Towncrest
- 10 West Iowa City
- 10 West Iowa City (Mid-day Only)
- 11 Rochester
- 12 Highway 1
- 13 South Gilbert

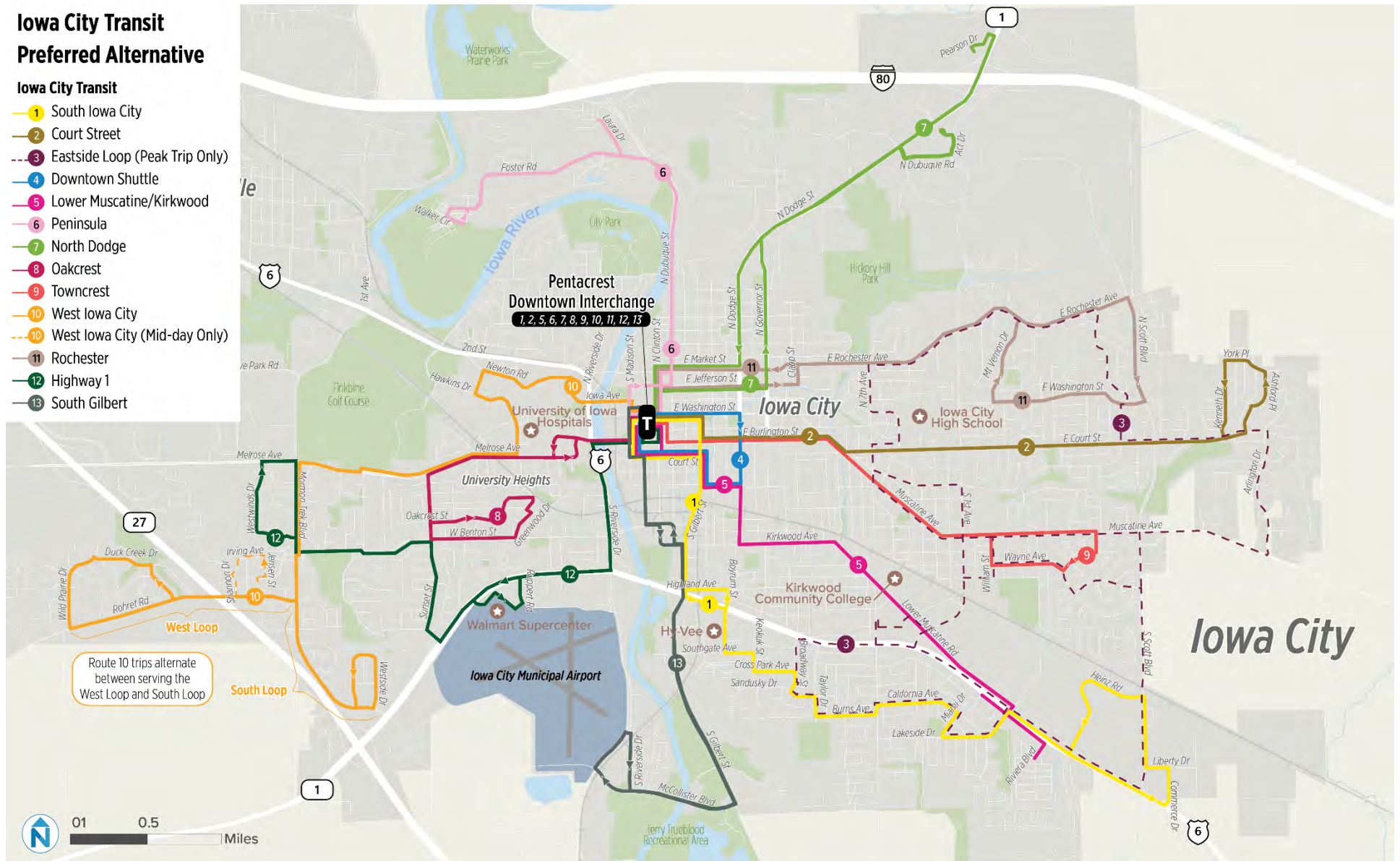




Figure 9-6 Iowa City Transit Preferred Alternative Service Summary

Route	Service Summary	Frequency: Proposed Weekday	Frequency: Proposed Night/Sat.	Service Span: Preferred Alternative
1 South Iowa City	Connects downtown Iowa City with the commercial area south of Highway 6, South Iowa City residential neighborhoods, and the Heinz Road industrial area. Consolidates service that is currently provided by the Lakeside, Cross Park, and Broadway routes into a single route that operates primarily on a bi-directional alignment. The combination of this route and the 13 South Gilbert provides frequent service on S Gilbert Street between Highway 6 and Kirkwood Avenue.	30/30/30	60	6:30 a.m. - 10:00 p.m. (M-F) 7:00 a.m. - 7:00 p.m. (Sat.)
2 Court Street	Connects downtown Iowa City with E Court Street neighborhoods, with a new terminal loop to Frauenholtz-Miller Park. This route covers some neighborhoods currently served by the Eastside Express and operates bi-directionally on E Court Street.	30/30/30	60	6:00 a.m. - 9:15 p.m. (M-F) 7:00 a.m. - 6:45 p.m. (Sat.)
3 Eastside Loop	No change from today. This route provides one trip in the a.m. and p.m. peak periods that connects educational destinations in east Iowa City. The p.m. schedule varies on Thursdays.	One trip	--	Weekday peak trips only
4 Downtown Shuttle	Northside trips are eliminated and the Southside alignment operates more frequently, at 15-minute headways all day. Operates as a zero-fare downtown loop connecting high-density residential neighborhoods to downtown Iowa City.	15/15/15	--	7:30 a.m. - 6:30 p.m.
5 Lower Muscatine/Kirkwood	Connects downtown Iowa City to the Lower Muscatine Road corridor and residential neighborhoods in southeast Iowa City. This route no longer operates a terminal loop in the Heinz Road industrial area or deviates from Lower Muscatine Road to serve off-street stops. The route now turns around at the Bon-Aire Mobile Home Lodge.	20/20/20	40	6:00 a.m. - 10:00 p.m. (M-F) 7:00 a.m. - 7:00 p.m. (Sat.)
6 Peninsula	Connects the Peninsula neighborhood and Forest View mobile home community directly to downtown Iowa City, with transfer opportunities to the University of Iowa hospitals. This route no longer serves the Manville Heights neighborhood.	30/60/30	60	6:30 a.m. - 8:00 p.m. (M-F) 7:00 a.m. - 6:30 p.m. (Sat.)
7 North Dodge	Connects major employers on Highway 1 with the N Dodge Street and E Market Street corridors and downtown Iowa City. This route no longer deviates to serve Prairie du Chien Road and serves major employers off N Dodge Street on alternating trips.	30/60/30	60	7:00 a.m. - 8:30 p.m. (M-F) 7:30 a.m. - 7:00 p.m. (Sat.)
8 Oakcrest	No change in alignment from today but operates more frequently during peak hours, at 15-minute headways. Connects residential neighborhoods in University Heights and Iowa City with the University of Iowa and downtown Iowa City.	15/30/15	60	6:30 a.m. - 10:00 p.m. (M-F) 7:30 a.m. - 7:00 p.m. (Sat.)
9 Towncrest	No change in alignment from today. This route connects residential neighborhoods in east Iowa City with the Muscatine Avenue and E Burlington Street corridors and downtown Iowa City.	30/30/30	60	6:30 a.m. - 9:30 p.m. (M-F) 7:00 a.m. - 6:30 p.m. (Sat.)
10 West Iowa City	Connects residential neighborhoods in west Iowa City with the University of Iowa and downtown Iowa City. This route covers west Iowa City residential areas currently served by Melrose Express, Plaen View, Westwinds, and Westside Hospital. The route's two tails are served on alternating trips: one serves Rohrer Road and one serves Westside Drive.	30/30/30	60	6:45 a.m. - 10:00 p.m. (M-F) 7:45 a.m. - 7:30 p.m. (Sat.)
11 Rochester	Connects residential neighborhoods in northeast Iowa City with downtown Iowa City. This route alignment is slightly altered from the existing Rochester route by serving N Scott Boulevard instead of Amhurst Street.	30/60/30	60	6:30 a.m. - 6:30 p.m. (M-F) 7:00 a.m. - 6:30 p.m. (Sat.)
12 Highway 1	Connects residential neighborhoods in west Iowa City with the Walmart-anchored commercial district south of Highway 6 and downtown Iowa City. This route serves areas currently served by the Plaen View, Westwinds, and Westport Plaza routes.	30/60/30	60	6:30 a.m. - 10:00 p.m. (M-F) 7:00 a.m. - 7:00 p.m. (Sat.)
13 South Gilbert	Connects Cole's mobile homes, Terry Trueblood Recreation Area, commercial destinations near Highway 6/S Gilbert Street, and S Capitol Street with downtown Iowa City. This route serves areas currently served by the Westport Plaza and Cross Park routes. This route and the 1 South Iowa City combined provide frequent service on S Gilbert Street from Highway 6 to Kirkwood Avenue.	30/60/30	60	7:00 a.m. - 7:00 p.m. (M-F) 7:30 a.m. - 7:00 p.m. (Sat.)

Note: Frequencies are in minutes. A slash between frequency numbers indicates that frequency changes throughout the day, typically with on- and off-peak periods. For example, 30/60/30 indicates three periods of varying frequencies: one period of 30-minute frequency service, followed by a period of 60-minute frequency service, followed by a period of 30-minute frequency service.



Key Themes for Iowa City Transit Recommendations

Iowa City Transit currently connects residential neighborhoods throughout Iowa City to two primary destinations: the University of Iowa hospitals and downtown Iowa City. The Preferred Alternative recommends improvements to this system that improve frequency and reliability on routes that serve the most people. The Preferred Alternative also eliminates confusing 'nights and Saturday' alignments by operating a consistent network at all times. New routes proposed in the Preferred Alternative will allow many residents greater access to commercial destinations for work and shopping, without needing to transfer at the Pentacrest Downtown Interchange. The recommended changes to Iowa City Transit service in the Preferred Alternative focus on three key areas:

1. **Faster, more frequent, and more reliable service:** The Preferred Alternative streamlines existing service by operating most service bi-directionally on major arterials and eliminating loops that require riders to travel out-of-direction. These changes will reduce trip times for many riders and improve on-time performance. The Preferred Alternative increases the frequency on key routes; 8 Oakcrest buses will arrive every 15 minutes and 5 Lower Muscatine/Kirkwood buses will arrive every 20 minutes.
2. **Enhancing non-commute mobility:** The Preferred Alternative increases access to commercial destinations without the need for a transfer at the Pentacrest Downtown Interchange, particularly for low-income communities of color in the Pheasant Ridge neighborhood via the 12 Highway 1. Service between South Iowa City neighborhoods and the Hy-Vee-anchored shopping mall on Highway 6 is also improved. The Preferred Alternative also increases frequency during non-commute hours for the 4 Downtown Shuttle service to every 15 minutes and on the 5 Lower Muscatine/Kirkwood route to every 40 minutes.
3. **Improved system legibility:** Iowa City Transit currently operates two different sets of alignments: daytime routes and 'nights and Saturday' routes. This route structure is confusing for existing riders and intimidating for potential future riders. The Preferred Alternative recommends changing the dual alignment to a single, consistent set of alignments, as well as operating fewer loops and route deviations. The Preferred Alternative also recommends shifting bus routes off neighborhood streets and onto arterials. Together, these changes make the system easier for riders to use, in addition to reducing rider trip times and improving on-time performance.

Shortcomings of the Preferred Alternative will generally be experienced by riders that will have to walk further to the nearest bus stop, albeit for faster, more frequent, and more reliable service. Proposed re-alignments in the Preferred Alternative improve the transit system and make operations more efficient by removing buses from certain small, neighborhood streets, such as Amhurst Street, Kimball Road, Friendship Street, Huntington Drive, and Hollywood Boulevard. A small number of riders will also see service removed from their neighborhood altogether, as is the case of the approximately 10 riders currently boarding the Manville Heights route in the Manville Heights neighborhood (some of these riders will still have easy access to zero-fare CAMBUS service). Service is recommended to be removed from these low-ridership corridors to be allocated to areas of greater need and demand.

Systemwide, ridership should increase, driven by improvements to route alignment, frequency, access to shopping destinations, and trip times. Any partnership developed with large residential housing operators to fund service improvements will likely further boost ridership and offset operating costs. Improvements to system legibility will also make the system more attractive to new, first-time riders.



Route-Level Recommendations

Route 1: South Iowa City

Route 1 South Iowa City is recommended to replace the current Lakeside route. The existing Lakeside route connects south Iowa City neighborhoods and commercial areas with downtown Iowa City via the S Gilbert Street corridor and is relatively productive but suffers from poor on-time performance. The route serves the same areas as the existing Cross Park and Broadway routes, which are recommended to be eliminated in the Preferred Alternative.

To provide a simpler, more efficient service in the south Iowa City area, Route 1 is recommended to cover this neighborhood, as well as the Heinz Road industrial area (this is currently served by the Mall route). Route 1 is recommended to operate bi-directionally throughout south Iowa City, instead of on different inbound and outbound corridors, as the Lakeside route currently does. The route is recommended to continue serving S Gilbert Street, given the high-density development occurring on that corridor. Route 1 is recommended to serve Highland Avenue on inbound trips, which will provide service to some riders that currently use the Broadway route, which is recommended to be eliminated.

Route 1 is recommended to operate with weekday 30-minute all-day and 60-minute nighttime service, from 6:30 a.m. to 7:00 p.m. The 30-minute mid-day service is an improvement over the hourly mid-day service currently operated on the Lakeside route, although the span of service is approximately one hour fewer than the Lakeside route. Route 1 will operate from 7:00 a.m. to 7:00 p.m. on Saturdays, which is approximately 1.5 hours fewer than the current Lakeside route, due to resource constraints.

The proposed Route 1 will also offer riders transfer opportunities to the proposed Route 5 Lower Muscatine/Kirkwood, which will serve The Quarters apartments and Bon-Aire Mobile Home Lodge. The route is recommended to be called South Iowa City to better describe its service area.

Route 2: Court Street

The current Court Hill route operates from downtown Iowa City to neighborhoods east of downtown, turning around on Friendship Street. The route has 344 average weekday boardings but suffers from poor on-time performance. The route duplicates some of the alignment of the existing Eastside Express.

To more efficiently allocate resources and reduce duplicative service, Route 2 is proposed to operate further east and serve neighborhoods that are currently served by the Eastside Express route, which is recommended to be eliminated. Route 2 is proposed to turn around north of E Court Street, on Ashford Place, York Place, and Kenneth Drive (which is planned to be extended). Route 2 is proposed to not operate on Friendship Street, which is a smaller, neighborhood-type street that reduces the route's on-time performance, increases trip times for some riders, and reduces the route's legibility to new and future riders.

Route 2 is recommended to operate with weekday 30-minute all-day and 60-minute night headways. This is an improvement over the existing Court Hill service, which operates at 60-minute headways during the mid-day.

Route 2 is recommended to interline with the Route 10 West Iowa City at the Pentacrest Downtown Interchange, providing some riders with a one-seat ride to and from points west of downtown. Route 2 is recommended to be named Court Street to better describe its service corridor.



Route 3: Eastside Loop

No change is recommended.

Route 4: Downtown Shuttle

The current zero-fare Downtown Shuttle route is split into two alignments: the Northside Shuttle and the Southside Shuttle. One vehicle operates both alignments by repeating two consecutive Southside Shuttle trips and then one Northside Shuttle trip. The Northside Shuttle currently has low ridership (an average of 22 weekday boardings) and low productivity (an average of 12 boardings per service hour) and serves a neighborhood that is close to downtown and has good pedestrian infrastructure.

Route 4 is recommended to operate only the Southside Shuttle and to eliminate the Northside Shuttle alignment, so resources can be concentrated on the Southside Shuttle, which sees much higher demand. The Southside Shuttle also suffers from occasional capacity issues, which will be alleviated by shifting resources from the Northside Shuttle. Riders that currently use the Northside Shuttle will still have access to transit via the proposed Preferred Alternative routes 6 Peninsula, 7 North Dodge, and 11 Rochester.

No change to the Route 4 span of service is recommended and the route is recommended to be operated every 15 minutes, all day, on weekdays only.

Route 5: Lower Muscatine/Kirkwood

The current Mall route connects downtown Iowa City with the Kirkwood Avenue and Lower Muscatine Road corridors, as well as with the Heinz Road industrial area. Kirkwood Community College is a major destination on the route. The current route makes two parking lot deviations on Lower Muscatine Road. The route has 353 average weekday boardings but on-time performance is below 70%.

The proposed Route 5 Lower Muscatine/Kirkwood is recommended to terminate at the Bon-Aire Mobile Home Lodge, instead of on Heinz Road, and to serve The Quarters apartments, both of which are high-density residential communities. The route is also recommended to no longer deviate off Lower Muscatine Road to serve parking lot stops, which will improve speed and reliability and reduce trip times for many riders. Although the proposed Route 5 will no longer serve the Heinz Road industrial area, that area will be served by the proposed Route 1 South Iowa City.

Route 5 is recommended to operate on weekdays at 20-minute all-day and 40-minute night headways. This is a significant improvement over the current Mall route, which operates at 30- and 60-minute weekday headways during peak periods and mid-day, respectively. The route is recommended to operate from 6:00 a.m. to 10:00 p.m. on weekdays, which is earlier than the current Mall route but not later than the current Broadway Night route, which covers Lower Muscatine Road. The proposed Route 5 is also recommended to operate from 7:00 a.m. to 7:00 p.m., which is approximately 45 minutes fewer than the current Broadway Saturday route, which covers some of the proposed Route 5's service area.

The proposed Route 5 will also offer riders transfer opportunities to the proposed Route 1 South Iowa City, which will stop near The Quarters apartments and Bon-Aire Mobile Home Lodge.

Route 6: Peninsula

The current Manville Heights route connects downtown Iowa City, University of Iowa Hospitals and Clinics, the Manville Heights neighborhood, and Peninsula communities. For some riders, the route travels far out of direction into the Manville Heights neighborhood, where very few riders board (this section has an average of approximately 10 weekday boardings). On-time performance on this route is low, at under 70% of all timepoints stops occurring on-time.



The recommended Route 6 alignment does not serve the Manville Heights neighborhood and the University of Iowa hospitals, due to low ridership on the Manville Heights segment and unsafe operating conditions in winter. Some riders currently using the bus in Manville Heights will have access to zero-fare CAMBUS service on N Riverside Drive, while others will no longer have transit access close to their residences. Riders that currently use the route to travel from Peninsula communities to the University of Iowa hospitals will now transfer at the Pentacrest Downtown Interchange to complete their trip.

The frequency and service span of Route 6 is not recommended to change significantly.

Route 6 is recommended to interline with the Route 7 North Dodge at the Pentacrest Downtown Interchange. As this route is no longer recommended to serve the Manville Heights neighborhood, it is recommended to be re-named Peninsula to better describe the service area.

Route 7: North Dodge

The current North Dodge route serves large employers on Highway 1, connecting them with downtown Iowa City via the North Dodge corridor and the E Market Street corridor. The route operates on a couplet on these corridors and bi-directionally on Highway 1, with deviations to Pearson and ACT parking lots, as well as a small residential neighborhood off Prairie du Chien Road. The route chronically poor on-time performance, with 60% of all timepoint stops either late or early.

The recommended Route 7 will operate the same alignment but without serving the Prairie du Chien road deviation. Eliminating this deviation will decrease trip times for many riders and improve on-time performance. Some current North Dodge riders living off Prairie du Chien road will be able to walk to Highway 1 to access the proposed Route 7 but some will need to walk more than ¼ of a mile.

To further improve on-time performance, this route is recommended to serve ACT only every other trip during the peak period. Service during weekday peaks hours and midday will serve Pearson once an hour. ACT will be served hourly during weekday peak times only.

No changes to route frequency are recommended and the proposed Route 7 is recommended to operate from 7:00 a.m. to 8:30 p.m. on weekdays. The proposed Route 7 will operate the same alignment at night and on Saturday, as opposed to using the current 'nights and Saturday' alignment, which is currently the second-lowest ridership weekday alignment in the Iowa City Transit system.

Route 7 is recommended to interline with the Route 6 Peninsula at the Pentacrest Downtown Interchange.

Route 8: Oakcrest

The current Oakcrest route connects high-density residential communities in University Heights and Iowa City to the University of Iowa and downtown Iowa City via Melrose Avenue. This route is the highest-ridership and second-highest productivity route in the Iowa City Transit system.

No alignment changes are recommended for the proposed Route 8 but it is recommended to operate every 15 minutes in the peak period, which is a significant improvement over the current 30-minute peak period service and will help address vehicle crowding issues that currently occur in the peak period. No significant changes are recommended for the Route 8 weekday operating span but it is proposed to operate one fewer hour on Saturdays, due to resource constraints.

Route 8 is recommended to operate the same alignment at night and on Saturdays, to improve system legibility. Some riders that currently use the Oakcrest Night and Saturday alignments to access Walmart



will still have access via the proposed 12 Highway 1 while others will need to walk further to access the proposed Route 12 or use Route 8 and transfer downtown to Route 12.

Route 8 is recommended to interline with the proposed Route 9 Towncrest in the evening and on weekends, at the Pentacrest Downtown Interchange, providing some riders a one-seat ride cross-town connection. During the day, Route 8 will not interline with another route.

Route 9: Towncrest

The current Towncrest route connects neighborhoods in east Iowa City to downtown Iowa City via Muscatine Avenue and E Burlington Street. This route is the fifth-highest ridership route in the Iowa City Transit system.

No alignment changes are recommended for the proposed Route 9 but it is proposed to operate the same alignment at nights and on Saturdays, for improved system legibility. Many riders currently boarding the Towncrest on stops from its 'night and Saturday' alignment will still be able to walk to Route 9 stops but the approximately eight weekday riders that alight on Sheridan Avenue will need to walk more than ¼ of a mile. Route 9 is recommended to operate for one fewer hour on Saturdays and approximately 45 minutes fewer on weekdays, due to resource constraints.

Route 9 is recommended to interline with the proposed Route 8 Oakcrest in the evening and on weekends, at the Pentacrest Downtown Interchange, providing some riders a one-seat ride cross-town connection.

Route 10: West Iowa City

Route 10 is recommended to replace the current Plaen View and Westside Hospital routes that connect west Iowa City neighborhoods to University of Iowa hospitals and downtown Iowa City. The proposed Route 10 will connect downtown Iowa City to University of Iowa hospitals via Newton Road, and west Iowa City destinations to these locations via Melrose Avenue, Mormon Trek Boulevard, and two 'tails' that will be served on alternating trips. One tail will serve the Westside Drive loop currently served by the Plaen View route and the other tail will serve the Rohret Road communities currently served by the Westside Hospital route. The Rohret Road tail is proposed to end in a slightly smaller terminal loop that will improve route speed and reliability but will force five-to-ten riders to walk further to access the route.

Riders living in the Irving Avenue neighborhood, including residents of the Concord Terrace and Lexington Place apartments, will be served on mid-day trips only. Riders currently living in the western portion of the Pheasant Ridge neighborhood and on Sunset Street that are currently served by the Westside Hospital route will be served by the proposed Route 12 Highway 1.

Route 12 is proposed to operate every 30 minutes during weekday peak periods and every 60 minutes during weekday off-peak periods and Saturdays. The route is proposed to operate from 6:30 a.m. to 10:00 p.m. on weekdays and 7:00 a.m. to 7:00 p.m. on Saturdays.

Route 11: Rochester

The current Rochester route connects downtown Iowa City with neighborhoods in northeast Iowa City and operates a large terminal loop on Amhurst Street, E Washington Street, and S 1st Avenue. Currently 25% of weekday timepoint stops are not on-time.

The proposed Route 11 includes only one minor alignment change of moving the eastern corridor of the route from Amhurst Street to N Scott Boulevard, which is an arterial and has some higher-density uses



that will allow more people to use the route. Pedestrian improvements may be necessary to facilitate safe crossings of N Scott Boulevard for riders.

Route 11 is proposed to operate from 6:30 a.m. to 6:30 p.m., which will eliminate late-night service for approximately five riders that currently use the North Dodge Night route, although most of these riders will be able to walk to access the proposed Route 2 Court Street. Route 11 is proposed to operate from 7:00 a.m. to 6:30 p.m. on Saturdays, which is one fewer hour than is currently operated on the North Dodge Saturday route that serves a portion of the proposed Route 11 alignment. No changes to route frequency are recommended.

Route 11 is proposed to interline with the proposed Route 13 South Gilbert at the Pentacrest Downtown Interchange.

Route 12: Highway 1

The proposed Route 12 Highway 1 route is an altered version of the current Westwinds route. The current Westwinds route connects residential areas in the Pheasant Ridge neighborhood and along Melrose Avenue, Westwinds Drive, Mormon Trek Boulevard, E Benton Street, Sunset Street, and Westgate Street to the University of Iowa hospitals and downtown Iowa City.

The proposed Route 12 serves the Pheasant Ridge neighborhoods along E Benton Street and Sunset Street but connects them to downtown via the Walmart-anchored commercial district south of Highway 6, instead of via the University of Iowa. This connection provides better non-commute transit mobility for residential communities served by this route, and also a better connection to the Walmart area for riders transferring at the Pentacrest Downtown Interchange. The previous route serving Walmart from the Pentacrest forced riders to make long, out-of-direction trips to access commercial destinations.

For Westwinds riders that currently use the route to access the University of Iowa hospitals, the proposed Route 10 West Iowa City and Route 8 Oakcrest will serve these trips. Although some riders on Westgate Street will no longer have front-door service via the Westwinds route, they will still be able to access transit within a ¼-mile walk. Fewer than 10 riders that use the Westwinds route on Denbigh Drive will need to walk slightly more than ¼-mile to access the route.

Route 12 is proposed to operate on weekdays from 6:30 a.m. to 10:00 p.m. and on Saturdays from 7:00 a.m. to 7:00 p.m.

Route 13: South Gilbert

Route 13 is proposed as an altered version of the Westport Plaza route, which currently serves communities in south Iowa City along the Iowa River. The existing Westport Plaza route is the lowest-productivity route in the Iowa City Transit system and connects downtown Iowa City with the S Riverside Drive corridor, mobile home communities south of the Iowa City Airport, and shopping destinations anchored by Walmart.

The proposed Route 13 continues to serve mobile home communities south of Iowa City Airport, although the approximately four riders that board at the Lake Ridge mobile home community will need to walk further to access the route. Cole's Mobile Home Community will retain an adjacent stop, although it would be moved to the opposite side of the street. The proposed Route 13 would also provide new service to Terry Trueblood Park and S Gilbert Street south of Southgate Avenue. The route would provide riders with access to Hy-Vee, although pedestrian improvements on Stevens Drive may be necessary for this connection to be comfortable for all travelers.



Riders that currently use the Westport Plaza route to access the commercial area south of Highway 6 will be able to make that trip with the proposed Route 12 Highway 1, which will reduce trip times between downtown and these commercial destinations significantly over the current Westport Plaza route. Riders that currently use the Westport Plaza route to access the S Riverside Drive corridor will be able to make these trips using the proposed Route 12 Highway 1.

Route 13 is proposed to operate 7:00 a.m. to 7:00 p.m. on weekdays and hourly from 7:30 a.m. to 7:00 p.m. on Saturdays, which represents an improvement over existing Westport Plaza span of service, which does not include Saturdays. Weekday service will operate every half-hour at peak periods and every hour during off-peak periods.

Route 13 is proposed to interline with the proposed Route 11 Rochester at the Pentacrest Downtown Interchange.

Eliminated Routes

Night and Saturday Routes

One of the primary goals of the Iowa City Transit Preferred Alternative is to improve system legibility for existing and new riders. To achieve this, all 'nights and Saturday' routes are recommended to be eliminated in the Preferred Alternative. Most of the areas that the existing 'nights and Saturday' routes serve will continue to be covered in the Preferred Alternative by the new, all-day alignments. The Scott Boulevard / N 1st Avenue alignment of the North Dodge Night route, which currently has one average weekday boarding, will no longer be served at any time of day.

7th Avenue

The 7th Avenue route is the lowest-ridership route in the Iowa City Transit system, carrying an average of 57 average weekday passengers. The route also suffers from on-time performance issues; only 66% of weekday timepoint stops are on-time. The route operates largely as a loop, which forces many riders to travel out of direction and increases their trip times. This route is recommended to be eliminated in the Preferred Alternative to allocate resources to places with greater need and demand.

Riders using the 7th Avenue route will continue to have transit access via the Preferred Alternative 9 Towncrest and 5 Lower Muscatine/Kirkwood routes, which will operate every 30 and 20 minutes during peak hours, respectively. Some riders that currently board on Sheridan Avenue will have to walk further than ¼ of a mile to access transit service.

Broadway

The current Broadway route serves many of the same areas as the Lakeside, Mall, and Cross Park routes and suffers from on-time performance problems (only 64% of timepoint stops are on-time). To improve service legibility and more efficiently allocate resources, the Broadway route is recommended to be eliminated.

Most riders that use this route will be served by the proposed 1 South Iowa City and 5 Lower Muscatine/Kirkwood routes, which will operate with 30- and 20-minute peak period headways, respectively. Approximately 22 riders living on Highland Avenue would need to walk more than ¼-mile to access transit service.



Eastside Express

The Eastside Express currently operates as an hourly express service, although it serves small neighborhood streets for part of its alignment, which makes it slower than typical express service. The route duplicates service provided by existing Court Hill and Rochester routes.

To reduce this duplication and better allocate resources elsewhere in the Iowa City Transit network, the Preferred Alternative recommends eliminating this route. Most riders living on the alignment will still have access to service on the proposed 2 Court Street and 11 Rochester routes, although some will need to walk more than $\frac{1}{4}$ of a mile to transit, including the approximately seven average daily riders currently boarding on Huntington Drive.

Cross Park

The Cross Park route currently operates as a mid-day only route connecting downtown Iowa City with the Hy-Vee-anchored commercial area south of Highway 6. This route serves similar markets as the existing Lakeside and Broadway routes. The northern portion of the route duplicates service provided by the frequent and zero-fare CAMBUS East Campus Shuttle.

To improve service legibility and better allocate resources, it is recommended that this route be eliminated. Operating a mid-day only route, in addition to daytime alignments and 'nights and Saturday' alignments—all to the same area—is confusing for riders.

The neighborhoods served by this route will continue to be served by the proposed 1 South Iowa City and 13 South Gilbert.

Melrose Express

The Melrose Express is a local route (despite being called an “express” route) serving the Melrose Avenue corridor, University of Iowa hospitals, and downtown Iowa City. The route duplicates service provided by CAMBUS, as well as the Iowa City Transit Plaen View, Westwinds, and Westside Hospital routes. The portion of the Melrose Express’ service area that is served only by this route generates approximately 18 boardings per day. The route suffers from chronic on-time performance issues, with only 28% of timepoint stops on time.

To shift resources to places with a higher level of transit demand and reduce service duplication, this route is recommended to be eliminated. Most riders will continue to be served by the proposed Preferred Alternative 10 West Iowa City, 12 Highway 1, and 8 Oakcrest routes. Zero-fare CAMBUS service would also operate on Melrose Avenue east of Mormon Trek Boulevard. Because of this elimination, approximately 18 riders will no longer have access to fixed-route transit, although some will be able to walk to service in the Pheasant Ridge neighborhood.



10 TRANSIT INFRASTRUCTURE AND ZERO-EMISSIONS TRANSITION CONSIDERATIONS

INTRODUCTION

This chapter reviews best practices for select transit infrastructure elements in the context of the ICATS and makes recommendations for agency implementation, where appropriate. The document is organized into four sections:

- **Introduction:** Introduces this chapter of the report.
- **Bus Stops:** Reviews best practices for bus stops, with special focuses on and recommendations for bus stop signage and the Pentacrest Downtown Interchange. This section also discusses best practice in stop spacing and opportunities for optimizing bus stop locations in the existing transit network.
- **Speed & Reliability:** Reviews context-specific best practices for speed and reliability improvements, making planning-level recommendations for select portions of the transit network.
- **Zero-Emissions Vehicles:** Discusses key considerations for the transition of a fossil fuel-based bus transit fleet to battery-electric or fuel cell-electric.



BUS STOPS

This section of the chapter reviews best practices in bus stop signage, making recommendations for future sign installation and replacement activities. It also discusses the current state of bus stop infrastructure at the Pentacrest Downtown Interchange, making recommendations to improve rider comfort. Stop location and optimization is also discussed.

Bus Stop Signage

Well-designed bus stop signage provides useful customer information while simultaneously marketing transit service. Current bus stop signage for CAMBUS, Coralville Transit, and Iowa City Transit could be improved to provide more information and better advertise the service.

Existing stop signs at ICATS agency stops include the agency name, stop ID, agency contact information, and information regarding real-time arrival information access. Iowa City Transit bus stops do not always include the routes serving the stop, and CAMBUS signs do not always include a no parking or standing notice. Stop signs for all three agencies display the stop ID more prominently than the names of the routes serving the stop.

Figure 10-1 CAMBUS and Iowa City Transit Bus Stop Sign Designs



Sources: Left to right, Iowa City Transit, CAMBUS



Bus stop signs are the single most important and cost-effective way to show where a bus operates, stops, and what destinations are served. Bus stop signs help new and potential riders learn the system and raise the visibility of the system in the community. Recommended changes to ICATS agency stop signs are to ensure the following information is included on every sign:

- Agency logo and colors (for all agencies serving the stop).
- Unique panels/stickers for each route serving the stop, with route number (if implemented) and name.
- Unique stop identification number (also called “stop ID”), which can be used to access schedule information via app or website. This information should be displayed less prominently than the names and numbers of routes serving the stop.
- Customer service phone number and website address.
- ADA-accessible symbol indicating that buses (not necessarily the stop) are accessible.

The placement of bus stop signage should be consistent for all stops. New signage should be installed on a free-standing pole and placed at the far end of the stop to mark the stopping point of the bus. Signage should ideally be installed three to five feet from the curb to maximize visibility.

Displaying route-specific information on bus stop signs is key for communicating route information to potential riders. Information can be displayed directly on the sign, or on separate placards that can be updated as route alignments change, without needing to replace the entire sign.

Figure 10-2 Best Practice Single-Route Bus Stop Sign in Chicago



Source: Marc Heiden, licensed under [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/).



Downtown Interchange

The Pentacrest downtown interchange is served by CAMBUS, Coralville Transit, and Iowa City Transit, and is the primary transit interchange for the Iowa City metropolitan area. On an average weekday when University of Iowa is in session, over 3,600 riders begin bus trips at the interchange. This chapter addresses the lack of shelters and real-time information at the Pentacrest Downtown Interchange and provides examples of context-sensitive implementations elsewhere in the United States.

Shelters

Despite high ridership at the Pentacrest Downtown Interchange, there are no shelters for riders. This location is one of the few—if not the only—bus interchanges in the United States with over 3,500 average weekday boardings that does not have shelters. The recommended threshold for installing shelters in urban areas (50 to 100 boardings per day)¹ is well under the current boardings at the Pentacrest Downtown Interchange, and input gathered from the public, agency staff, and transit operators during the ICATS process included a clear desire from all parties for rider shelters at this location.

Figure 10-3 shows riders waiting for buses on E Jefferson Street at the Pentacrest Downtown Interchange without shelter. In inclement weather, the lack of shelters likely causes some riders to shift their trip mode away from transit. It also makes transfers between routes at this location much less attractive to existing and potential customers.

Figure 10-3 Riders Wait for Buses without Shelter at the Pentacrest



Source: Nelson\Nygaard

¹ Transit Cooperative Research Program. 1996. *Guidelines for the Location and Design of Bus Stops*. <http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_19-a.pdf> p. 66



Bus shelters are available in a variety of designs with different sizes, functionality, amenities, and aesthetics. Shelters can include benches, waste receptacles, HVAC equipment, lighting, green roofs, and artwork. In a downtown transit interchange context, a series of shelters or large pergola-type structures are frequently implemented to allow large numbers of riders protection from the elements. For installation in historically sensitive environments, shelters can be customized to include design elements that are compatible with surrounding architecture. Two examples of custom shelters are in Figure 10-4.

Figure 10-4 Bus Shelters in Historic Environments (left to right: Memphis, TN and Seattle, WA)



Sources: Left to right, Thomas R. Machnitzki, licensed under [GNU Free Documentation License](#); Joe Mabel, licensed under [GNU Free Documentation License](#)



Real-Time Arrival Information

Improved real-time arrival information was an important desired improvement for riders and non-riders that engaged in ICATS public outreach. Access to more reliable on-time information was the third-most desired transit improvement for respondents taking the ICATS on-board survey,² and 39% of all online Design Your Own System respondents desired real-time information at stops.³

Real-time information increases riders' impressions of reliability and can allow them to better plan their trips. For some occasional or non-riders, real-time information provides just enough extra confidence in the reliability of the service to change their behavior and encourage them to ride more often. Real-time information displays also give riders without smartphones the ability to track approaching buses.

A significant portion of survey respondents complained about the reliability of the Bongoreal-time bus tracker application used by ICATS agencies. These responses, however, were recorded before the introduction of Transit App to the Iowa City area. Transit App is, generally speaking, a higher-quality platform for real-time transit information, with improved user interface and experience and a trip-planning feature. The introduction of this app may have addressed many of the survey respondents' concerns and may generally improve access to real-time transit information for smartphone users in the Iowa City area.

In addition to supporting real-time bus tracking applications, many transit agencies install real-time information equipment at high-ridership stops using kiosks, televisions/monitors, or LED tickers. Examples of real-time displays in Urbana-Champaign, Illinois, are in Figure 10-5.

Figure 10-5 Real-Time Bus Arrival Information at University of Illinois Urbana-Champaign



Source: Nelson\Nygaard

² Iowa City Area Transit Study. November 2019. *Survey Analysis*. p. 14

³ Iowa City Area Transit Study. December 25, 2019. *ICATS "Design Your Own System" Survey Results*. p. 6



Stop Spacing

Optimal bus stop spacing requires a balance of customer convenience and operating efficiency. Closely spaced stops reduce the distance to and from customer origins and destinations but result in slower bus speeds and less reliable service. Stops spaced far apart result in faster, more reliable service but can significantly increase walking distance for riders.

Bus stop spacing varies in the ICATS area and is based on several factors, including population and employment densities, sidewalk availability, travel speeds, and past rider requests. In general, stops in the ICATS area are more closely-spaced than is ideal and—on some corridors—are spaced more than two times as closely as is ideal. In general, the recommended stop spacing for local bus service is between 1/5 and 1/3 of a mile, or a five-minute walk. This industry standard is supported by optimization research.⁴

Figure 10-6 Stops Spaced Approximately 500 Feet Apart on W Benton Street



Source: Nelson\Nygaard

In general, bus stops are recommended to be located in areas with good pedestrian access and safe crossings of nearby streets to and from major destinations. Stops are typically recommended to be located at the far side of signalized intersections. When possible, bus stops should be located close to the 'front door' area of major destinations, without requiring buses to deviate into driveways or parking lots.

⁴ Peter Furth and Adam Rahbee, "Optimal Bus Stop Spacing Through Dynamic Programming and Geographic Modeling", Transportation Research Record 1731, Paper No. 00-0870 (2000)



Pedestrian infrastructure in the stop area is an important consideration; stops should be accessible via ADA-compliant sidewalks and should consider local topography and traffic patterns. Figure 10-7 shows Iowa City Transit Stop #8117, which lacks safe pedestrian access in winter conditions.

Figure 10-7 Bus Stop without Adequate Pedestrian Infrastructure on Oakcrest Street



Source: Nelson\Nygaard

Stop Optimization Recommendations

Eliminating stops that are too close together can improve schedule reliability and bus travel speeds while minimally impacting access to the route. However, stop spacing is not the only factor involved in bus stop optimization. Each stop's potential for transit demand, as well as its location relative to other streetscape elements, amenities, and pedestrian and wheelchair access are also important factors in optimizing a network of high-quality, appropriately spaced stops.

Guided by these considerations and using the industry standard 1/5- to 1/3-mile bus stop spacing, a bus stop optimization program in the ICATS area could consolidate up to 187 total stops. Stop optimization could also relocate up to 39 stops and add up to nine stops. Such a bus stop optimization program should also be guided by ADA accessibility requirements and should ensure that every bus stop is universally accessible. This includes—but is not limited to—paved sidewalks of the appropriate width and grade, satisfactory transit vehicle ramp deployment space, and tactile curb ramps at nearby curb cuts.

This level of opportunity for improvement to the bus stop network is significant. Consolidating 187 of 752 total bus stops (25% of stops) in the ICATS area would improve speed and reliability of nearly every route in the system, without increasing stop spacing beyond optimal distances, and without significant capital investment. Reducing the total of number of stops would also lower ICATS agencies' stop infrastructure maintenance and capital replacement costs.



SPEED & RELIABILITY

This section of the chapter highlights potential infrastructure upgrades to improve the speed and reliability of ICATS agency service in Iowa City, focusing on transit-only lanes and signal improvements.

Transit-Only Lanes

Providing transit vehicles with dedicated right-of-way is one of the most effective means of improving speed and reliability. Transit-dedicated right-of-way is most appropriate in select locations where transit carries high passenger volumes and consistent delays impact hundreds or thousands of riders per day. Successful implementations of transit-only lanes increase the total number of people moved on a road during congested periods and are a relatively low-cost strategy for decreasing travel times.

Jefferson Street Eastbound

The two eastbound general purpose lanes climbing the Jefferson Street hill between N Madison Street and N Clinton Street produce significant delay for transit, partially due to general purpose traffic interference and partially due to pedestrian crossings of Jefferson Street to and from University buildings (Figure 10-8). This location was highlighted by bus operators as problematic.

Figure 10-8 Buses in Mixed Traffic Climbing the Jefferson Street Hill at the Pentacrest



Source: Nelson\Nygaard



It is recommended that a transit-only lane be considered for the southern of the two general purpose lanes to provide transit priority for buses in this congested area. A transit-only lane in this location will also reduce rider frustration, as buses with high occupancy levels often climb the Jefferson Street hill more slowly than walking pace, and within eyesight of riders' destination.

A transit-only lane in this location would benefit 297 CAMBUS, 58 Coralville Transit, and 23 Iowa City Transit trips each weekday. At peak hours, this transit-only lane would serve a bus every one to two minutes.

It is likely that waiting times for general purpose traffic at the pedestrian crossing would increase with this treatment, but prioritizing transit will move more people faster through this area.

Newton Road

Newton Road, between S Riverside Drive and Elliott Drive, was also identified by agency staff and bus operators as an area with significant transit vehicle delay, particularly during peak commute periods. Future University of Iowa campus planning efforts are recommended to study limiting general purpose traffic through-access on Newton Road. These restrictions would dramatically improve the speed and reliability of the 286 CAMBUS, 68 Coralville Transit, and 88 Iowa City Transit weekday bus trips that currently use this road.



Signal and Intersection Improvements

There are several locations in the ICATS area where changes to signalization could improve bus flows with minimal impacts to other users. Each of these options should be studied further to confirm feasibility and more accurately quantify benefits.

Pentacrest Downtown Interchange

General purpose vehicle and pedestrian traffic on roadways adjacent to the Pentacrest Downtown Interchange contribute significant delay to transit. Many transit trips serving the Pentacrest circumnavigate the Old Capitol megablock in the clockwise direction and incur the greatest delay when making right turns through high volumes of pedestrians in the E Jefferson Street, Clinton Street, and E Washington Street crosswalks. During periods of high pedestrian volume, only one or two buses can make a right turn per signal phase, as pedestrians continue to enter the intersection during the flashing “don’t walk” phase.

To safely move more transit riders through these high-volume pedestrian crossings, many communities balancing pedestrian mobility and vehicular turning movements shorten conflicting pedestrian crossing “walk” times and add right-turn arrows to signals. In this type of signalization (technically called a lagging protected right turn phase), the pedestrian signal shows “Don’t Walk,” thus allowing right-turning vehicles to turn without pedestrian conflict. This improves pedestrian safety by reducing conflicts and reduces delay to turning vehicles. Figure 10-9 shows this type of signal improvement in Seattle, WA.

Figure 10-9 Lagging Protected Right Turn Phase in Seattle, WA



Source: Nelson\Nygaard

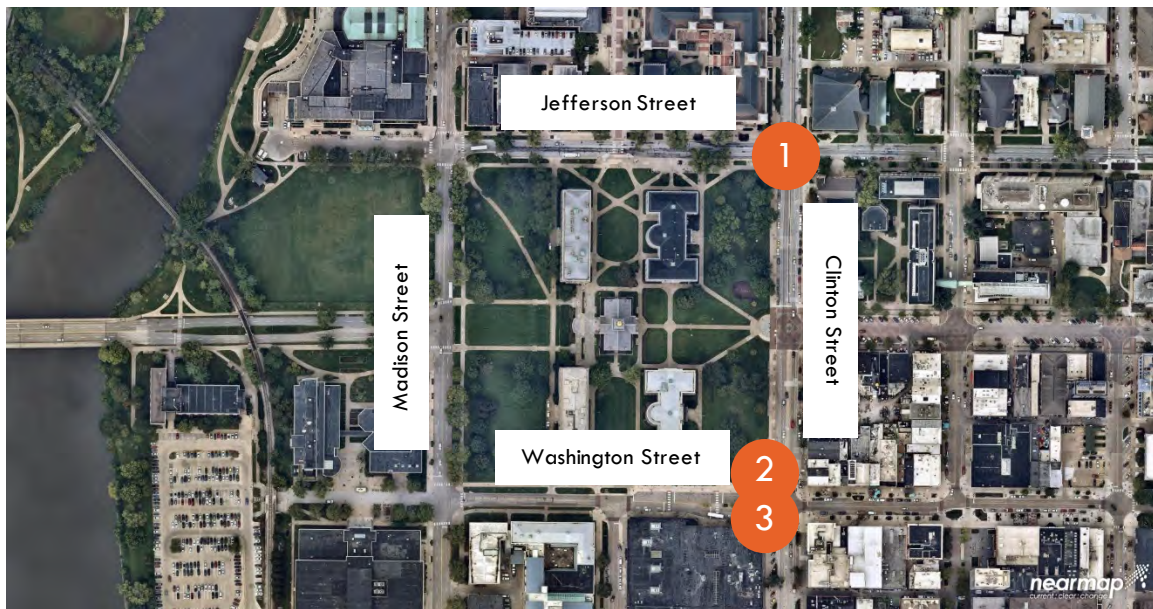


This lagging protected right turn phase approach could improve pedestrian safety and reduce vehicle delay at the following intersections, where 295 CAMBUS, 58 Coralville Transit, and 127 Iowa City Transit trips operate each weekday:

1. E Jefferson Street eastbound, turning on to N Clinton Street
2. S Clinton Street southbound, turning on to E Washington Street
3. E Washington Street eastbound, turning on to S Clinton Street

These three locations are shown as orange circles in Figure 10-10.

Figure 10-10 Pentacrest Downtown Interchange Potential Signal Improvement Locations



Source: Nearmap



Hawkins Road

The Hawkins Road corridor between Elliott Drive and Highway 6 was also identified by agency staff, riders, and bus operators as an area of severe transit delay, particularly northbound in the p.m. peak. Implementing a transit vehicle queue jump in the northbound direction on this roadway would likely produce significant savings for the 79 CAMBUS and 68 Coralville Transit weekday trips that currently conduct this turning movement in service.

A commonly applied transit priority treatment for this type of delay is the queue jump, which dedicates one lane approaching an intersection for transit vehicles, allowing them to advance to the front of a general purpose queue. This is typically implemented with an exclusive signal phase or leading interval for transit vehicles. A likely application of a queue jump to Hawkins Road at Highway 6 would involve rechannelization of Hawkins Road in both directions, converting the current northbound right-turn lane to transit-only, and extending it to Finkbine Commuter Drive. This lane addition may require widening the right-of-way or repurposing an eastbound lane, and would require changes in signalization at Highway 6 to allow transit vehicles to access Highway 6's two receiving lanes without conflict. Figure 10-11 identifies the general area of Hawkins Road that is recommended for further analysis of northbound queue jump lane placement.

Figure 10-11 Hawkins Road at Highway 6 Potential Queue Jump



Source: Nearmap



ZERO-EMISSIONS VEHICLES

This section of the chapter highlights the most important considerations for a transit agency considering converting fossil fuel-powered vehicles to battery-electric or fuel cell-electric alternatives. Key findings are:

- For battery-electric buses (BEBs), the type/number of vehicles and charging logistics are the primary considerations when building or upgrading a maintenance facility/bus depot.
- Maintenance facilities currently serving diesel buses should remain useful for BEB maintenance. As BEB technology matures, the reduction in BEB maintenance needs should free capacity in maintenance facilities.
- Handling, storage, and replacement of batteries is likely to have minor impacts on maintenance facilities. As greater numbers of BEB batteries in North America reach their midlife replacement date, more robust data on this subject will become available.
- Hydrogen fueling impacts the design of base facilities for fuel cell-electric buses (FCEBs). Even in small-scale applications, transit agencies must at least install storage tanks, compressors, and dispensers for a few buses.
- A large FCEB fleet will require a hydrogen generation facility, likely using methane reforming or water electrolysis.
- Because hydrogen is highly flammable, FCEB base operation involves regulations requiring leak sensors/alarms, fire extinguishing equipment, and other infrastructure construction guidelines.
- FCEB bases require larger footprints to accommodate equipment and meet regulations.



Battery-Electric Buses (BEB)

Battery-electric buses (BEBs) use an electric motor and electricity stored in an on-board battery pack. BEBs eliminate tailpipe emissions and are entirely zero-emissions when renewable energy sources (such as wind power) generate their electricity. Typically, BEBs are more energy-efficient than diesel buses, and have lower per-mile maintenance costs. Electric motors are more efficient than diesel internal combustion engines because they do not lose energy through heat dissipation, and require less maintenance because they have fewer moving parts.

Figure 10-12 summarizes major differences between BEB and diesel bus maintenance.⁵ In general, maintenance components in the 'Other' category will not change in a transition to BEBs. Everyday activities, such as washes, tire inspection, and lighting tests will be the same. Checking suspension, steering, axles, and HVAC will use most of the same tools and equipment. Facilities at a depot for welding and sheet metal work will still support cab, frame, and body maintenance and repair.

In the 'Brakes' category, a regenerative system will likely reduce brake pad wear and extend their scheduled replacement. Although regenerative brakes will require more maintenance than traditional brakes, it is unlikely significant facility changes are needed to accommodate this work.

Some adjustments to maintenance facilities to service BEB propulsion system are expected. Although service of electric motor, transmission, and other elements will require staff training, only marginal facility adjustments are likely. Often, BEB manufacturers will assign a technician to work under warranty at a BEB base.⁶ The BEB elements most likely to affect maintenance facility planning are managing battery pack capacity and installing charging infrastructure.

Planned **charging, parking, and shifting of buses inside a depot** is a critical consideration for building or adapting a BEB transit base. Instead of fueling (generally at an on-site diesel station) and then parking diesel buses, BEBs must either be charged for a long period of time while parked, or charged quickly and then driven to a parking location. Selection of one of these charging methods will impact base design, particularly yard or indoor bus storage space. If BEBs are to be charged for a long period of time using depot chargers, additional space will be required. If BEBs are to be rapidly charged and then moved to a parking stall, additional labor will be required.

Handling batteries and high-voltage electrical cables will require maintenance facilities to meet special fire protection construction standards established by the National Fire Protection Association (NFPA).⁷ Battery storage and charging locations should be well ventilated to quickly evacuate gases released during charging, and facilities may need to upgrade smoke and heat detectors near charging areas, and/or install automatic shut-offs for chargers that may overheat.

⁵ BEB evaluations reviewed in this memo used these maintenance categories to highlight differences with diesel buses. Each category may contain preventive/scheduled maintenance, unscheduled maintenance, and other repairs.

⁶ Zero-Emission Bus Evaluation Results: King County Metro Battery Electric Buses. (2018). Federal Transit Administration.

⁷ Tracking Costs of Alternatively Fueled Buses in Florida. (2013). National Center for Transit Research, University of Florida.



Figure 10-12 Primary Differences in Maintenance between Diesel Buses and BEBs by System Category

Category	Components	BEB Differences vs. Diesel Buses	Overall Impact on Maintenance
Propulsion System	<ul style="list-style-type: none"> Exhaust Engine Air intake system Cooling system Transmission 	<ul style="list-style-type: none"> BEB propulsion is simpler than internal combustion engines BEB motors do not require air intake and exhaust BEB motors do not need motor oil and oil filters 	<ul style="list-style-type: none"> Reduced scheduled maintenance to change oil and filters As electric technology matures, unscheduled repairs should also decrease in frequency
	<ul style="list-style-type: none"> Battery pack 	<ul style="list-style-type: none"> BEBs must have a battery pack on board Because battery capacity degrades over time, a mid-life battery replacement is required Day-to-day operations require battery state-of-charge management 	<ul style="list-style-type: none"> Increased scheduled maintenance, particularly at bus mid-life for battery replacement Increased maintenance of systems tracking battery state-of-charge
	<ul style="list-style-type: none"> Fueling/Charging 	<ul style="list-style-type: none"> Charging BEBs requires more time than diesel fueling More depot chargers are required than diesel pumps 	<ul style="list-style-type: none"> Increase maintenance (charging infrastructure is the most significant factor)
Brakes	<ul style="list-style-type: none"> Brake pads Brake relines 	<ul style="list-style-type: none"> No significant difference in general braking components 	<ul style="list-style-type: none"> Reduced scheduled maintenance Less wear-and-tear, due to regenerative braking
	<ul style="list-style-type: none"> Brake regenerative system 	<ul style="list-style-type: none"> When BEBs brake/decelerate, the motor reverses its field and generates electricity, which is stored in the battery 	<ul style="list-style-type: none"> Increased maintenance of regenerative system Extended life cycle of braking components
Other	<ul style="list-style-type: none"> Cab and body Frame, steering, and suspension Heating, ventilation, and air conditioning (HVAC) Lighting Axles, wheels, and driveshaft Tires 	<ul style="list-style-type: none"> Most of these components are common to BEBs and diesel buses 	<ul style="list-style-type: none"> No major change expected to maintenance of these components

Sources: California Air Resources Board. (2016) Literature Review on Transit Bus Maintenance Cost.
 Analysis of Electric Drive Technologies for Transit Applications. (2005) U.S. DOT.



In cold weather, indoor vehicle storage may be needed to preserve BEB battery charge. Even in temperatures above freezing, warming the inside of the bus at the start of service can take a considerable toll on battery energy, which limits vehicle range.⁸ Recent research from AAA shows that using the HVAC system to heat the inside of an electric vehicle from 20°F to passenger-ready temperature reduces the driving range by 41% of nameplate estimates. To reduce the impacts of onboard heater energy consumption, many agencies operating BEBs in cold-weather climates have installed supplemental fossil fuel-powered heaters.

As transit agencies start moving from small-scale BEB implementations to medium- and large-scale deployments, they will require upgrades to the power infrastructure at their operating bases. Southeastern Pennsylvania Transportation Authority (SEPTA), for example, installed a two-megawatt substation at their maintenance facility to support the energy demands of its 25-BEB fleet.

It is common for BEBs to have components mounted on the roof of the bus, including the battery pack, HVAC equipment, and charging terminals or pantograph (in the case of overhead charging buses). Because of this, transit agencies should ensure they have appropriate lift and fall protection equipment for safe maintenance.

⁸ New MBTA Bus Maintenance Facilities & Evolving Battery Electric Bus Technology. (2019). A Better City.



Charging Infrastructure

BEBs use three primary charging systems: plug-in charging, overhead inverted pantograph charging, and wireless induction charging. Of these three, only plug-in and inverted pantograph chargers are in widespread use. A summary table for each charger type, with pros and cons and images of each charger type, is in Figure 10-13. Figure 10-14 includes pictures of each charger type.

Figure 10-13 Charging Infrastructure Summary Table

Charger Type	Pros	Cons
Inverted Pantograph	<ul style="list-style-type: none"> Can charge buses on-route Can charge buses faster Can provide buses with functionally unlimited range 	<ul style="list-style-type: none"> Typically costs more than other options Requires substantial supportive infrastructure Can incur demand charges Siting can be difficult Can restrict route adjustments
Plug-in	<ul style="list-style-type: none"> Typically lower cost than other options Can charge more slowly to avoid demand charges 	<ul style="list-style-type: none"> Must be manually plugged in Typically cannot charge vehicles on-route Typically slower than other chargers
Wireless Induction	<ul style="list-style-type: none"> Can charge buses on-route Relatively small footprint Siting can be easier than other options Very few moving parts 	<ul style="list-style-type: none"> Slightly less efficient than conductive charging Typically higher cost than other options Requires substantial supportive infrastructure Can incur demand charges Can restrict route adjustments

Figure 10-14 BEB Charging Methods



Left to right: Plug-in charger, overhead inverted pantograph charger, and wireless induction charger. Source: Nelson\Nygaard



Charger Types

Plug-in chargers are typically used in a depot or base setting. Drivers or mechanics must manually plug the charger in to the bus to charge batteries. The primary advantages of plug-in chargers are that they are relatively inexpensive and can be networked and programmed to manage charging costs. The primary disadvantages of the system are that they charge vehicles more slowly so require more time (multiple hours or an overnight period) and must be manually plugged into and removed from the vehicle.

Overhead inverted pantograph chargers are used in both depot and on-route contexts, where they automatically extend and retract from an overhead system, making contact with a receiver on the roof of the bus for the conductive charging process (this can be as short a time period as a few minutes). This apparatus is closely related to the pantographs that have been used on trolleybuses, electric streetcars, and high-speed rail for decades, meaning that many aspects of the technology have fully matured. Inverted pantographs may or may not require workers to charge the vehicles, depending on base infrastructure.

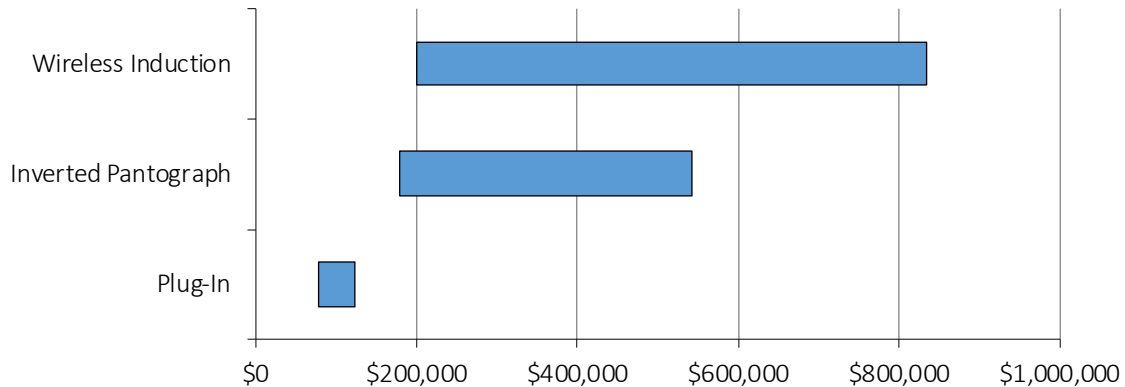
These chargers can be used at transit maintenance or storage facilities to charge BEBs when they are out of service, and in an on-line context to 'top up' batteries and extend a vehicle's range. Because buses can charge more frequently throughout the day, BEBs using this type of charging usually have smaller battery packs (smaller batteries are lower cost, helping to offset the higher cost of overhead chargers). To be effective, this type of connection typically requires fast chargers that can deliver 175 kW of power or more, but at this rate a large number of buses charging simultaneously might require the installation of an electric substation at the depot. The main advantage of overhead charging is that it allows BEBs to be deployed in a similar fashion to conventional diesel buses. The main disadvantage is cost; overhead charging systems are expensive and high-speed charging requires high-voltage power, which can incur higher costs (especially during peak periods).

Induction chargers are a relatively new technology that wirelessly transmit electricity from a charger embedded in the ground to receivers on the bottom of a BEB. These chargers have few moving parts, which may drastically reduce their operating and maintenance costs. They also typically have fewer visual impacts. Early implementations of these chargers have been in layover zones.

The cost to purchase and install these charging systems ranges dramatically, depending on power or wattage of the charger, amount of electrical infrastructure required, general site conditions, and the extent to which indirect services and costs are required (e.g., consulting, engineering, and design). Figure 10-15 shows an approximate range of costs for each primary charger type, based on U.S. transit agency implementations.



Figure 10-15 Charging Infrastructure Element Approximate Cost Range



Sources: Various project engineering cost estimates, agency budgets, press releases, and agency interviews.

Note: Most costs in above cost ranges are fully installed but plug-in charger maximum and inverted pantograph minimum are unit only.

Additional potential costs that may be incorporated into a BEB charging system are in Figure 10-16. These costs vary dramatically, depending on the site chosen, charging needs, quantity of chargers installed, power of the chargers, quality of the goods and services, and labor market. Equipment and supportive infrastructure will influence maintenance facility configuration.

Figure 10-16 Charging Infrastructure Cost Variables

Equipment	Supportive Infrastructure	Labor
Transformers	Foundations	Architecture
Switchgear	Gantries	Electrical engineering
Power units	Cable trays	Consulting
Charging units	Cabling	Environmental engineering
Energy storage	Lighting	General contracting
	Grounding	Subcontracting
	Ductwork	Administrative

Source: Foothill Transit, 2019. In Depot Charging and Planning Study.



Fuel Cell-Electric Buses (FCEBs)

Fuel-cell electric buses (FCEBs)—like BEBs—are propelled by an electric motor. The difference between a FCEB and a BEB, however, is that FCEBs generate on-board power using hydrogen and a fuel cell. In other words, they do not need charging. The only tailpipe emission produced by this process is water vapor; if the hydrogen consumed by a FCEB is produced using renewable energy, then the upstream emissions are close to zero. FCEBs are still in development; only a handful of transit agencies are testing a small number of buses.

Since FCEBs have a similar electric-drive architecture to BEBs, the maintenance analysis presented in the BEB section above is also applicable to FCEBs, with the exceptions of the battery pack and charging infrastructure. FCEBs only need a small battery pack to store energy for the immediate use of the motor and auxiliary systems. As an FCEB operates, its battery will continuously obtain electricity from the fuel cell. In turn, the fuel cell can generate electricity as long as there is hydrogen, just as a conventional bus runs as long as there is diesel in the tank.

The implications of this difference are important. Because fueling buses with hydrogen can be as fast as with diesel, the disadvantages of lengthy electric charging periods (e.g., with BEBs) can also be eliminated, including the need to build charging infrastructure and optimize bus movements inside the depot. However, procuring hydrogen is challenging, and its production is energy-intensive. It also requires special handling and safety measures, given its high flammability and lighter-than-air weight. Because of this, transit agencies pursuing an FCEB fleet will need to invest considerable effort in building a hydrogen fueling station and adjusting maintenance facilities to applicable regulations.

The alternatives for hydrogen delivery/generation available to transit agencies are:⁹

- **Liquid or gaseous hydrogen delivery:** The hydrogen is generated at an off-site location (usually by an industrial gas firm) and delivered by truck to the transit agency's fueling facility. Hydrogen can be delivered in a liquid state and stored on-site cryogenically. It can also be transported in a gaseous form and put into on-site pressure tanks.
- **On-site reformation of methane:** accounts for 95% of hydrogen production in the U.S. This process uses natural gas,¹⁰ water, and extreme heat to separate hydrogen from carbon in the natural gas. This process can be used at a smaller scale to produce hydrogen from pipeline natural gas at the fueling facility.
- **Pipeline delivery of hydrogen:** less common than vehicular hydrogen delivery or on-site generation, hydrogen is distributed through approximately 700 miles of hydrogen pipelines in the U.S. This mode is limited by the high cost and the need for fueling facilities to be near a pipeline.
- **On-site electrolysis of water:** this produces hydrogen by applying an electric current to water and splitting the oxygen from the hydrogen. This process requires water purification equipment and consumes high levels of electricity.

⁹ Sokolsky, Steven, Jasna Tomic, and Jean-Baptiste Gallo. "Best practices in hydrogen fueling and maintenance facilities for transit agencies." *World Electric Vehicle Journal* 8, no. 2 (2016): 553-556.

¹⁰ Natural gas is mainly composed of methane (carbon and hydrogen).



- **Mobile fueler:** these portable stations are relatively easy to move and feature on-board fuel storage in need of periodic replenishment. Because they incorporate both storage and dispensing capabilities into one unit, a mobile fueler is a solution for smaller fleets.

Given that most transit agencies are only testing a few FCEBs, the most common method for procuring hydrogen is liquid delivery. If transit agencies are interested in deploying FCEBs on a larger scale, it will likely be necessary to construct a fueling station using reformation of methane or water electrolysis. Figure 10-17 shows the fueling characteristics of transit agencies currently testing FCEBs.

Figure 10-17 Select FCEB Fleet Fueling Station Characteristics

Transit agency	Hydrogen source	Station dispensing capacity (kg/day)	FCEBs in fleet	Public use available	Station capital cost
AC Transit (Bay Area, CA)	Liquid Delivery*	600	12	Yes	\$10 million
SunLine (Riverside, CA)	Natural Gas Reformer	216	5	Planned	\$750,000**
VTA (Santa Clara, CA)	Liquid Delivery	Not reported	3	No	\$640,000
SARTA (Canton, OH)	Liquid Delivery	300	11	Planned	\$2.2 million
CMRTA (Columbia, SC)	Gaseous Delivery	120	1	Yes	Not reported

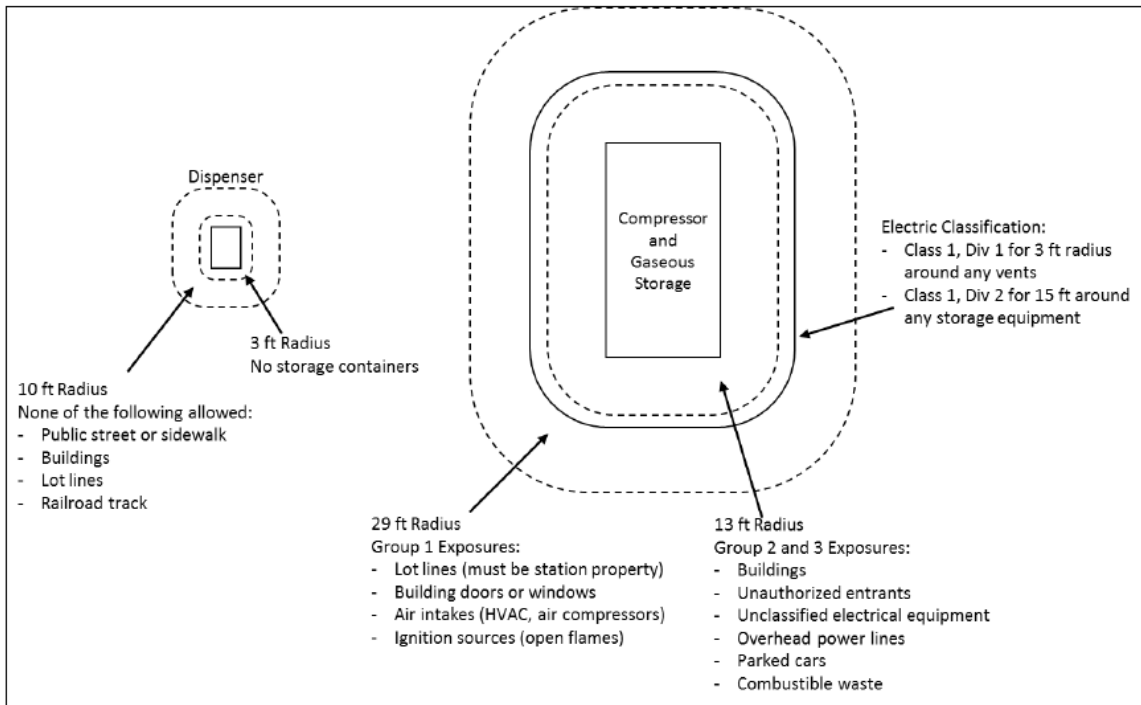
Sources: Calstart (2016) Best practices in hydrogen fueling and maintenance facilities for transit agencies. MassDOT (2017) Zero-Emission Transit Bus and Refueling Technologies and Deployment Status. Sunline Transit Agency. <https://www.sunline.org/hydrogen-cng-construction-project>.
 Notes: * AC transit also has an on-site electrolyzer with a capacity of 65kg/day. This production is only available for light-duty vehicles.

** SunLine is building a large electrolyzer that will be open to the public. Estimated cost is approximately \$5 million.

After selecting a fueling station type, most transit facility conversion efforts are focused on reducing the risk of fire and explosion. Hydrogen stations must meet the minimum separation distance requirements set by the Hydrogen Technologies Code (NFPA 2). The separation distances depend on the pressure of the stored hydrogen and the size of the equipment's tubing. Figure 10-18 shows an example of required clearance for a compressor, storage, and dispenser.



Figure 10-18 Minimum Separation Distances Guidelines for Hydrogen Stations (NFPA 2)



Source: Calstart (2016) Best practices in hydrogen fueling and maintenance facilities for transit agencies. This example is based on a 3,000 - 7,000 pound-force per square inch (PSI) hydrogen system and 0.288 inches of tubing diameter.

The NFPA 2 also sets requirements to minimize the risk of explosion in vehicle repair garages, as follows:

- Defueling is required for all work on the fuel system. Also, welding or open flame work cannot occur within 18 inches of the bus' hydrogen tanks.
- A gas detection system must be installed that activates the following if hydrogen levels exceed 25% of the lower flammability limit:
 - Initiation of audible and visual signals
 - Deactivation of heating systems
 - Activation of the exhaust system
- Facilities must remove all open-flame heaters or heating equipment with a temperature over 750°F in areas subject to ignitable concentrations of gas.



11 VISION FOR TRANSIT

INTRODUCTION

The Preferred Alternative developed as part of the Iowa City Area Transit Study (ICATS) will improve public transit service in the Iowa City area but is fiscally constrained and does not propose many of the service improvements that the community voiced support for during the ICATS outreach process. The outreach process uncovered significant public support for expansions of and improvements to service that would require additional resources, both in terms of operating funds and one-time or ongoing capital expenditures.

This chapter summarizes the unfunded transit improvements that the community expressed support for and makes planning-level estimates of required operating and capital costs. These improvements are collectively referred to as the Iowa City area “Vision for Transit”.

THE VISION FOR TRANSIT

The ICATS Vision for Transit is based on public feedback and is not cost-constrained. The Vision for Transit imagines a transit system that connects most parts of the Iowa City area, operates frequently, and serves riders early in the morning and late at night. The Vision for Transit imagines a transit system that is free to Iowa City Transit riders and includes on-demand service for people living in lower-ridership neighborhoods.

Figure 11-1 summarizes these improvements. Annual operating costs and capital costs are estimated using 2020 dollars and should be considered planning estimates. None of the estimated capital or operating costs assume matching federal or local grants. Cost estimates for heavy-duty transit vehicles are assumed for battery-electric vehicles.

A more detailed description of the Vision for Transit improvements follows Figure 11-1.

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Figure 11-1 Vision for Transit Summary Table

Improvement	Description	Coralville Transit		Iowa City Transit		Total	
		Annual Operating Costs	One-Time Capital Costs	Annual Operating Costs	One-Time Capital Costs	Annual Operating Costs	One-Time Capital Costs
Zero-Fare Iowa City Transit Service	Zero-fare service on Iowa City Transit fixed-route and demand-responder services.	-	-	\$2,300,000	\$4,900,000	\$2,300,000	\$4,900,000
15-Minute Service on Multiple Corridors	Bus routes with 15-minute frequency on two major corridors in Coralville and nine major corridors in Iowa City and University Heights.	\$1,700,000	\$4,000,000	\$3,800,000	\$11,000,000	\$5,500,000	\$15,000,000
Sunday Service	Hourly Sunday service from 6:00 a.m. to midnight on Coralville Transit and Iowa City Transit routes in the Preferred Alternative.	\$320,000	-	\$1,170,000	-	\$1,490,000	-
Improved Saturday Service	All-day Saturday service on Coralville Transit routes in the Preferred Alternative. Saturday service from 7:00 p.m. to midnight on Iowa City Transit routes in the Preferred Alternative.	\$200,000	-	\$260,000	-	\$460,000	-
Late-Night Weekday Service	Service until midnight on Coralville Transit and Iowa City Transit routes in the Preferred Alternative.	\$300,000	-	\$540,000	-	\$840,000	-
On-Demand Night Owl Service	Subsidized ride-hail trips during late night periods near Coralville Transit and Iowa City Transit fixed routes.	-	-	\$130,000	-	\$130,000	-
On-Demand Service in Low-Density Neighborhoods	Subsidized ride-hail trips to places outside the fixed-route service area but within Coralville, Iowa City, and University Heights city limits.	-	-	\$560,000	-	\$560,000	-
A New Crosstown Route	A new crosstown Iowa City Transit fixed route operating with 30-minute headways on weekdays from 6:00 a.m. to midnight and weekends from 7:00 a.m. to midnight.	-	-	\$1,300,000	\$2,000,000	\$1,300,000	\$2,000,000
A New South Iowa City Route	A new route to south Iowa City that serves growing neighborhoods off Sycamore Street and helps provide more frequent service on the S Gilbert Street corridor. This route would have 30-minute peak hour headways and operate from 6:30 a.m. to 10:00 p.m. on weekdays and 7:00 a.m. to 7:00 p.m. on weekends.	-	-	\$600,000	\$1,000,000	\$600,000	\$1,000,000
Total		\$2,520,000	\$4,000,000	\$10,660,000	\$18,900,000	\$13,180,000	\$22,900,000

Note: Heavy-duty transit bus costs assume battery-electric buses are purchased.



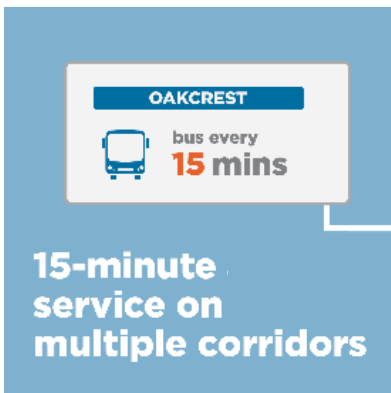
ELEMENTS OF THE VISION FOR TRANSIT



Fare-Free Iowa City Transit Service

Fare-free service is an increasingly common fare model in the United States. Small- to medium-sized cities such as Chapel Hill, NC; Corvallis, OR; Missoula, MT; and Olympia, WA now operate with zero fares paid by riders. Communities that have switched to fare-free service have seen ridership increase by between 40% and 60%. Operating fare-free is one of the most cost-effective ways Iowa City Transit could contribute to achieving its goal of doubling ridership in the next 10 years.

The cost estimates for fare-free service on Iowa City Transit's demand-response and fixed-route services are from the ICATS Fare Study Report, which is included as Appendix D in this report. The additional annual operating cost is estimated to be approximately \$1,402,000 for fixed-route service and \$872,000 for demand-response service. The one-time capital costs for new vehicles to support zero-fare service is estimated to be \$4,000,000 for battery-electric fixed-route vehicles and \$900,000 for demand-response vehicles.



15-Minute Service on Multiple Corridors

Improving frequency means providing transit that comes more often. More frequent service is more convenient, thereby attracting and retaining more riders. Currently, most bus routes in the Iowa City area operate with headways greater than 15 minutes, reducing the attractiveness of the service. Many routes in the Iowa City area operate hourly at off-peak periods, which does not attract many discretionary riders. Frequent service corridors in the Iowa City area would provide service every 15 minutes on weekdays at peak hours and 30 minutes at off-peak hours.

If these corridors operated every 15-minutes, approximately 65% of all Coralville and Iowa City residents would be within a ½-mile walk of 15-minute service. This service is estimated to cost Coralville Transit and Iowa City Transit \$5,500,000 per year in operating costs and \$15,000,000 in one-time capital costs, which would be used to pay for new battery-electric vehicles that would be needed to provide frequent service.

Figure 11-2 Cost Estimates by Agency for 15-Minute Service on Multiple Corridors

Agency	Annual Operating Costs	One-Time Capital Costs
Coralville Transit	\$1,700,000	\$4,000,000
Iowa City Transit	\$3,800,000	\$11,000,000
Total	\$5,500,000	\$15,000,000



The cost estimates in the Vision for Transit assume the following corridors operate with 15-minute headways for two three-hour peak periods each weekday, and every 30 minutes for seven weekday off-peak hours.

Coralville Corridors:

- Downtown Iowa City/Iowa River Landing
- Downtown Iowa City/5th Street/Coral Ridge Mall

Iowa City Corridors:

- N Dubuque Street
- Westwinds Drive/Melrose Avenue/downtown Iowa City
- Westside Drive/Highway 6/downtown Iowa City
- E Court Street
- E Jefferson Street/E Market Street between downtown Iowa City and N Dodge Street
- Oakcrest route
- South Iowa City/downtown Iowa City
- Lower Muscatine/Kirkwood route
- Towncrest route

Note: "/" in the above bullet points indicates separate portions of the same corridor. E.g., "Downtown Iowa City/Iowa River Landing" indicates the corridor extends from downtown Iowa City to Iowa River Landing.

Sunday Service

Adding Sunday service is a popular desired service improvement in Iowa City and Coralville. Although CAMBUS already operates Sunday service, its routes are primarily limited to the University of Iowa campus. Adding Sunday service to Coralville Transit and Iowa City Transit would provide mobility for people without other travel options and would allow more people to shop, work, recreate, and attend some religious services without using personal vehicles.

The Vision for Transit estimates that Sunday service would cost \$1,490,000 per year in operating costs. These costs would fund all-day hourly Coralville Transit service from 6:00 a.m. to midnight, and all-day Sunday hourly Iowa City Transit service from 8:00 a.m. to midnight. These costs are estimated for the Preferred Alternative alignments and include ADA paratransit.

Figure 11-3 Cost Estimates by Agency for Sunday Service

Agency	Annual Operating Costs	One-Time Capital Costs
Coralville Transit	\$320,000	-
Iowa City Transit	\$1,170,000	-
Total	\$1,490,000	-

Sunday service





Improved Saturday Service

Current Saturday service on Coralville Transit and Iowa City Transit routes ends in the early evening, meaning later-night trips are not possible by public transit. Expanding Saturday service hours later in the evening will help serve workers with late shifts, people eating out, and other people that need to make late-night trips. Expanding Saturday service was a common theme uncovered in ICATS public outreach.

**Upgraded
Saturday service**



The Vision for Transit estimates operating Coralville Transit with hourly headways from 7:00 a.m. to midnight on Saturdays would cost approximately \$200,000 per year and operating Iowa City Transit routes with hourly headways until midnight would cost \$200,000 per year. Complementary ADA paratransit is estimated to cost \$60,000 a year and is included in Iowa City Transit operating costs in Figure 11-4.

Figure 11-4 Cost Estimates by Agency for Improved Saturday Service

Agency	Annual Operating Costs	One-Time Capital Costs
Coralville Transit	\$200,000	-
Iowa City Transit	\$260,000	-
Total	\$460,000	-



Late-Night Weekday Service

Extending public transit's span of service later into the evening was a common theme in feedback received during ICATS outreach. Late-night service will help Coralville Transit and Iowa City Transit serve people working different types of jobs, tap into new markets, and provide mobility for non-commute trips. It will also give customers the ability to utilize transit for non-work evening purposes.

The current span of service provided by Coralville Transit and Iowa City Transit is oriented to serve peak-hour commute trips and does not support all employment types and potential trip markets. There is public support for improving span of service. During the ICATS community outreach process, adding weekday evening service was among the top community priorities.



The ICATS Vision for Transit estimates that late-night weekday service would cost approximately \$840,000 in annual operating costs. This estimate assumes all Coralville Transit and Iowa City Transit routes operate until midnight each weeknight (except Route 3 Eastside Loop and Route 22 North Liberty, which would remain peak-only routes). This estimate is based on the ICATS Preferred Alternative and includes complementary ADA paratransit costs.

Figure 11-5 Cost Estimates by Agency for Late-Night Weekday Service

Agency	Annual Operating Costs	One-Time Capital Costs
Coralville Transit	\$300,000	-
Iowa City Transit	\$540,000	-
Total	\$840,000	-

On-Demand Night Owl Service

Providing late-night on-demand service was a common theme in the feedback received during ICATS public outreach. Iowa City area residents understood that providing fixed-route transit after midnight would be expensive and likely see few riders but still desired a way to travel at this time without using personal vehicles. For many shift workers without access to a vehicle, on-demand night owl service would allow them to commute either to or from work when fixed-route public transit does not operate.

The Vision for Transit estimates an on-demand night owl service would cost approximately \$130,000 per year and would be available only in Iowa City and University Heights, and financially supported by Iowa City Transit. This assumes trips are provided by a private ride-hail service such as a taxi, Uber, or Lyft vehicle, and the chosen provider would have an ADA-accessible vehicle. The estimate assumes a transit agency subsidy of \$7.00 per trip and an average of 50 trips per day.



On-Demand Service in Low-Density Neighborhoods

Many parts of Iowa City are low density and will not support efficient fixed-route transit service. Residents of these communities still desire public transit service and feedback during the outreach ICATS process revealed there is community support for an on-demand transit service in these areas.

The Vision for Transit estimates on-demand service in low-density neighborhoods within the City of Iowa City borders would cost approximately \$560,000 per year and be supported by Iowa City Transit. This assumes trips are provided by a private ride-hail service such as a taxi, Uber, or Lyft vehicle, and the chosen provider would have an ADA-accessible vehicle. The estimate assumes a transit agency subsidy of \$7.00 per trip and an average of 200 trips per day, as well as \$50,000 in annual administrative costs.



A New Crosstown Route

Many comments received during the ICATS public outreach process described riders' frustration with needing to transfer to make cross-town trips, particularly between west and east Iowa City. A crosstown bus route that does not stop at the Pentacrest Downtown Interchange would allow these riders to make trips without traveling through the congested Pentacrest area and without transferring from one bus route to another.

The Vision for Transit does not propose a specific alignment for a new crosstown bus route. Options could include service along Highway 1, Scott Boulevard, 1st Avenue in Iowa City, and Mormon Trek Boulevard/1st Avenue. The vision includes the estimated required operating and one-time capital costs for Iowa City Transit to operate one such route. These estimates assume this route would operate at 30-minute headways on every day of the week, with service from 6:00 a.m. to midnight on weekdays and 7:00 a.m. to midnight on weekends. This service would cost approximately \$1,300,000 in annual operating costs and would require two new battery-electric transit vehicles, which are estimated to cost \$2,000,000 in total.

A New South Iowa City Route

The ICATS outreach process uncovered public support for a new Iowa City Transit fixed route serving the furthest south areas of Iowa City that have seen greenfield development in recent years. Such a route would provide residents of this neighborhood access to shopping at the Hy-Vee and other businesses on Highway 6, the S Gilbert Street corridor, and downtown Iowa City, where they could transfer to other Iowa City Transit, CAMBUS, and Coralville Transit routes.

This route would travel bi-directionally on the Sycamore Street corridor south of Burns Avenue and could be called 'Route 14 Sycamore'.

Specific streets served by Route 14 include Washington Street, Gilbert Street, Highway 6, Boyrum Street, Southgate Avenue, Keokuk Street, Sandusky Drive, Taylor Drive, Burns Avenue, Sycamore Street, Langenberg Avenue (or McCollister Boulevard, when the extension is open), S Riverside Drive, and Old Highway 218. The new South Iowa City Route would operate in conjunction with Route 2 South Iowa City to provide a bus every 15 minutes on weekdays between the Sycamore Street area and downtown Iowa City. This would support high-need neighborhoods and provide capacity for projected residential growth.

The Vision for Transit Route 14 Sycamore route is estimated to cost \$600,000 in operating costs and would require one additional battery-electric vehicle at a total one-time cost of \$1,000,000. It is assumed this route would replace the Preferred Alternative Route 13 South Gilbert and would also serve Terry Trueblood Park and Cole's mobile home community. It is assumed this route would operate every 30 minutes during peak periods and the mid-day period, and every 60 minutes during late evening and Saturday service.



COSTS ESTIMATES BY AGENCY

Vision for Transit projects are imagined as primarily built and operated by Coralville Transit and Iowa City Transit. The financial resources needed for these projects, however, are not shared equally between the agencies, as significantly more future transit service is planned for the larger, more populous Iowa City. Figure 11-6 is based on the element-level agency splits included above and shows the total estimated one-time capital and annual operating costs for the Vision for Transit by agency.

Figure 11-6 Vision for Transit One-Time Capital and Annual Operating Cost Estimates by Agency

Agency	Estimated Annual Operating Costs	Estimated One-Time Capital Costs
Coralville Transit	\$2,520,000	\$4,000,000
Iowa City Transit	\$10,660,000	\$18,900,000
Total	\$13,180,000	\$22,900,000

A Appendix Ridership Maps

Figure A-1 CAMBUS Blue Route Average Weekday Boardings

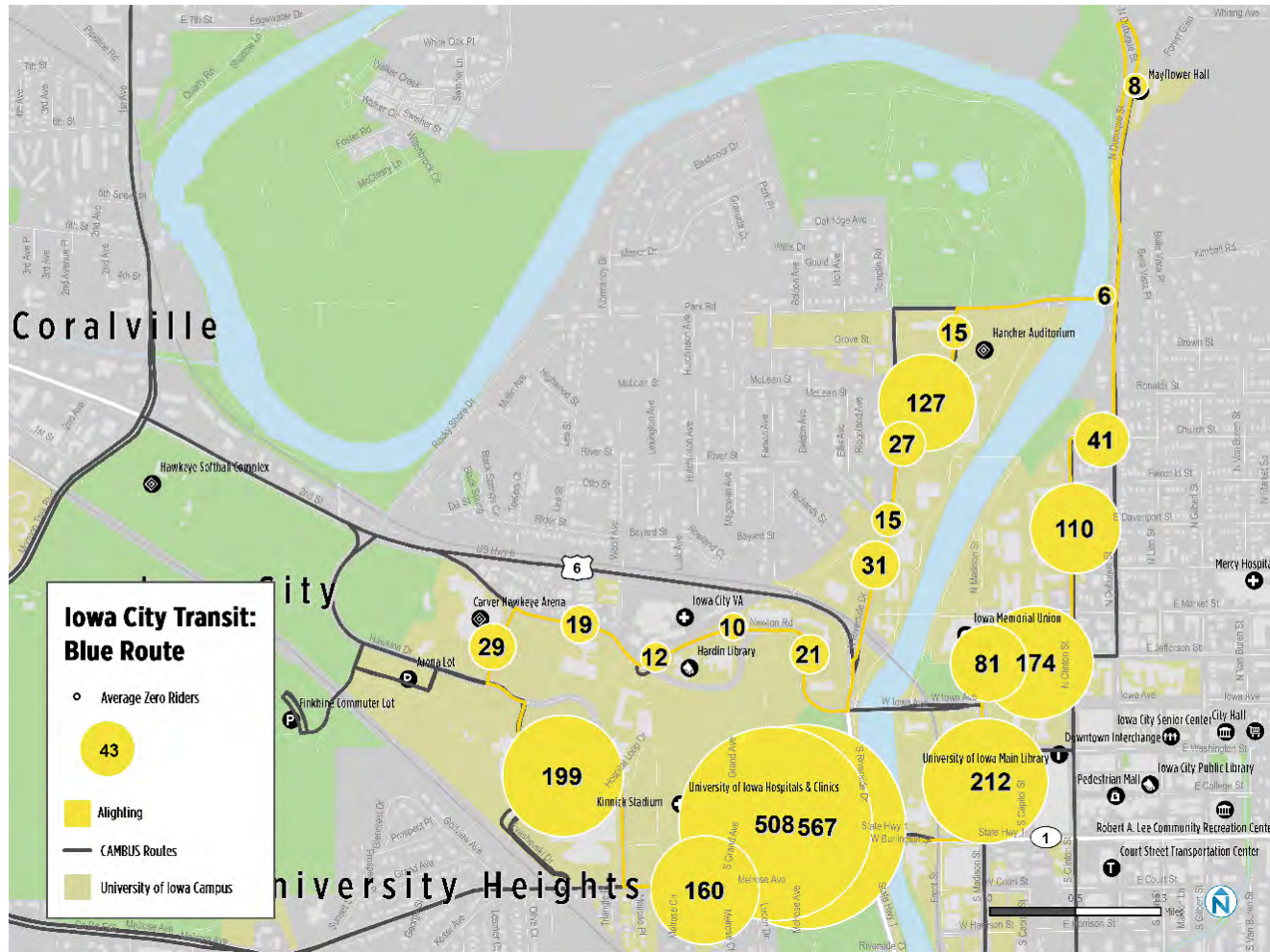




Figure A-2 CAMBUS East Campus Shuttle Average Weekday Boardings

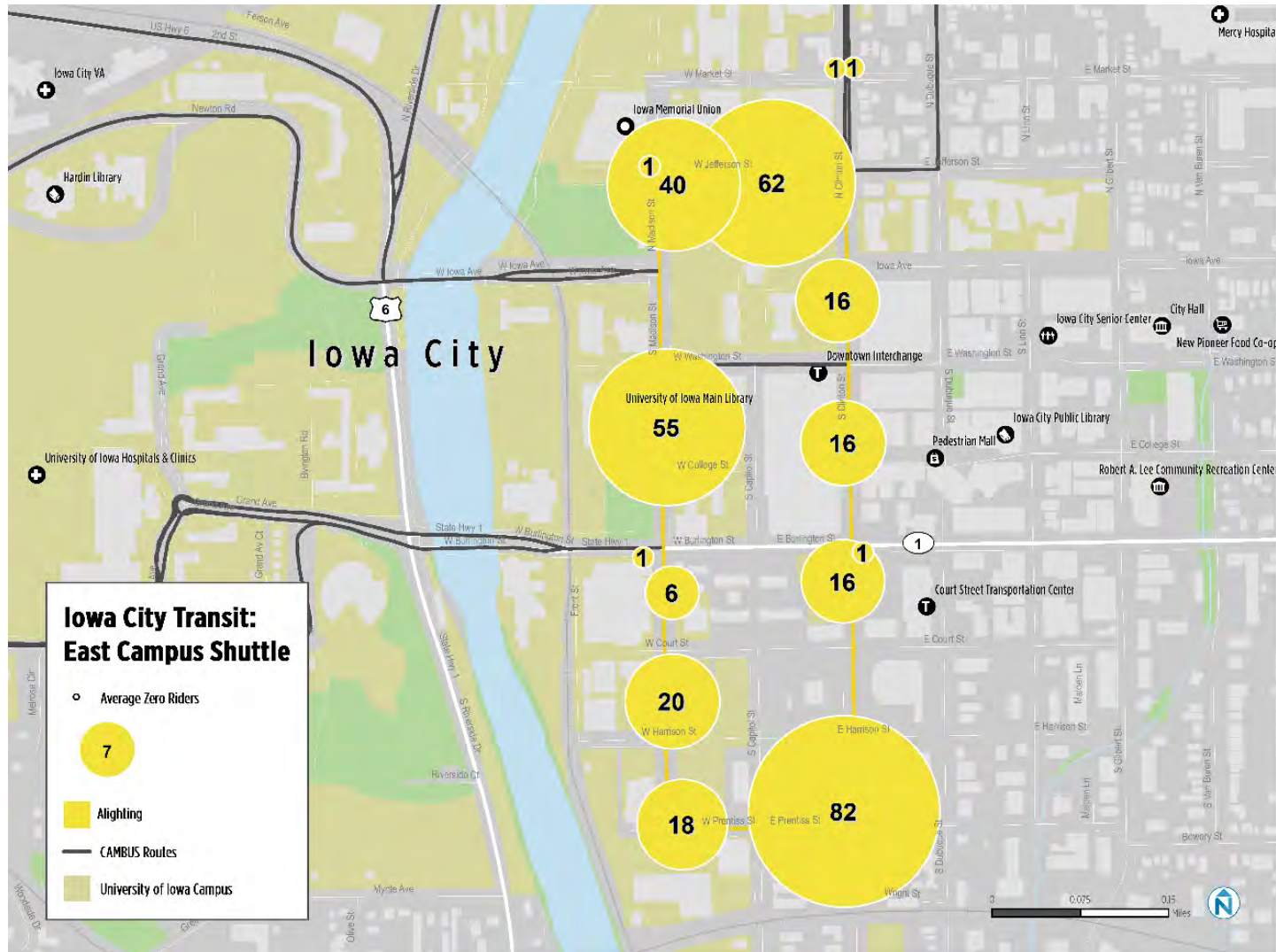
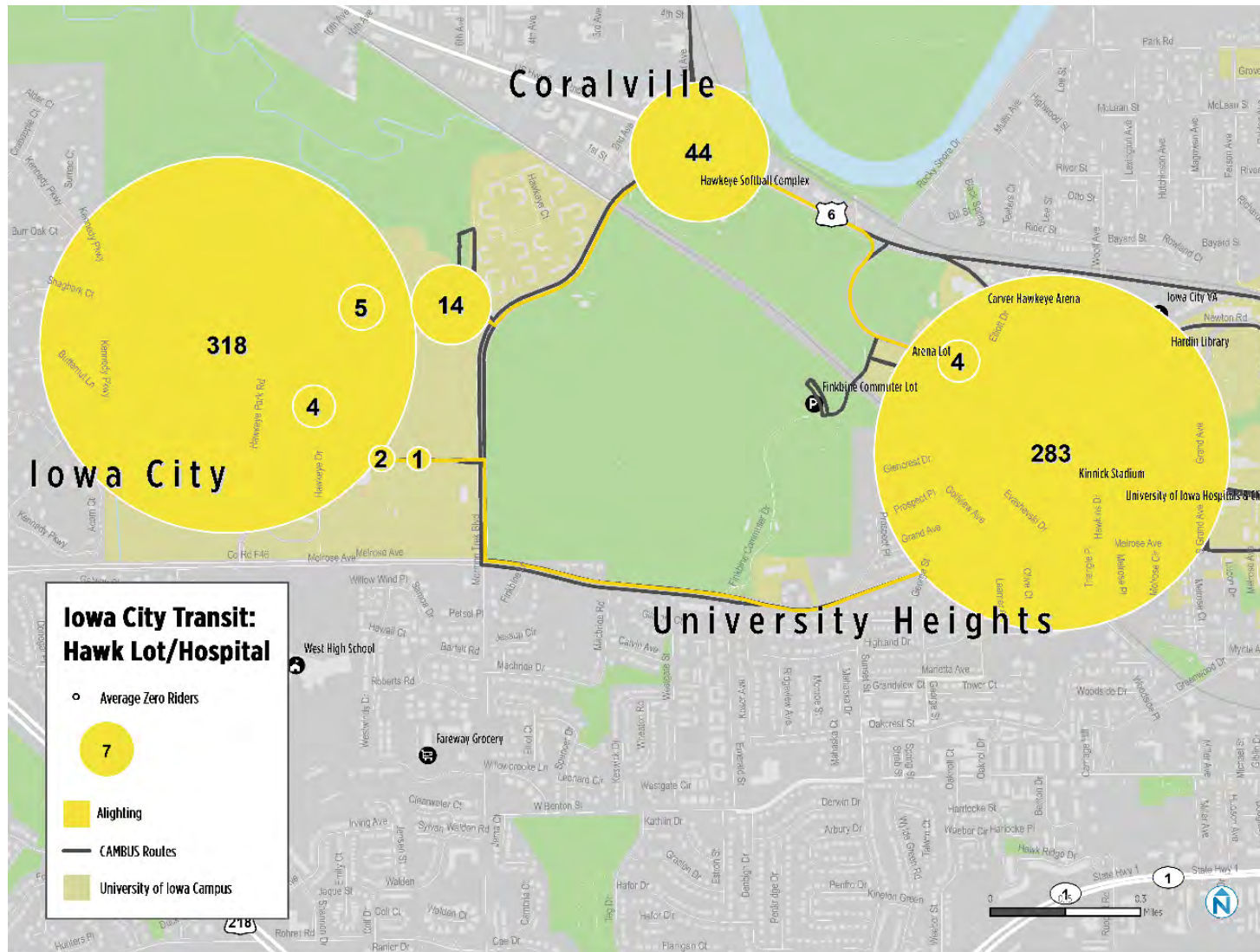




Figure A-3 CAMBUS Hawk Lot/Hospital Average Weekday Boardings





Iowa City Transit: Hawkeye Express

- Average Zero Riders
- 7 (in yellow circle)
- Alighting
- CAMBUS Routes
- University of Iowa Campus

Map Labels:

- Coralville
- Iowa City
- University Heights
- Hawkeye Softball Complex
- Carver-Hawkeye Arena
- Hardin Library
- University of Iowa Hospitals & Clinics
- University of Iowa Main Library
- Hancher Auditorium
- Iowa Memorial Union
- Pedestrian
- Walmart Supercenter
- Iowa City Municipal Airport

Ridership Data (Average Number of Riders):

- 19
- 14
- 40
- 2
- 1
- 1
- 5
- 1
- 3
- 231
- 1
- 2
- 11
- 6
- 29
- 1
- 9



Figure A-5 CAMBUS Hawkeye Interdorm Average Weekday Boardings

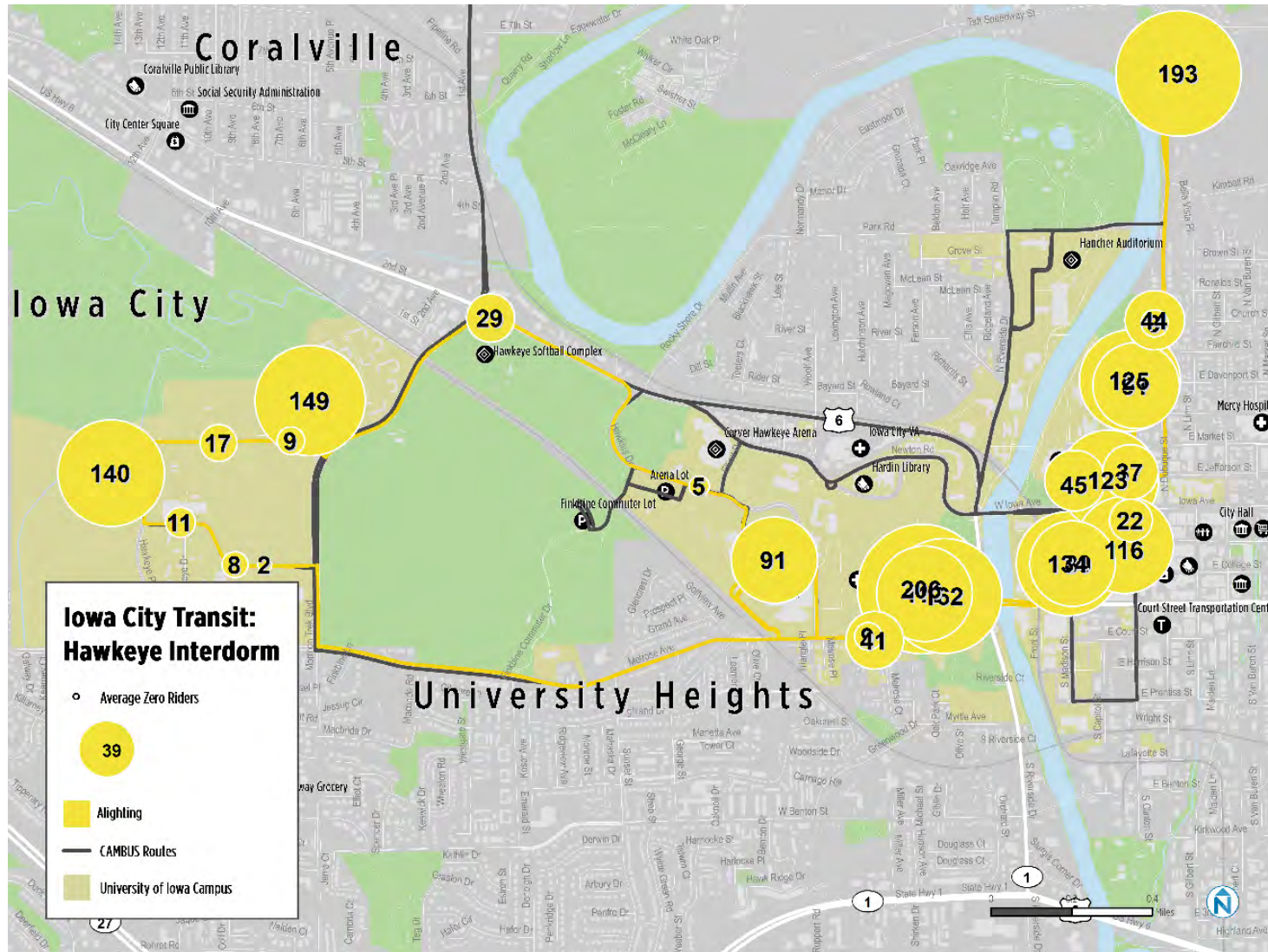




Figure A-6 CAMBUS Hawkeye-Hospital Average Weekday Boardings

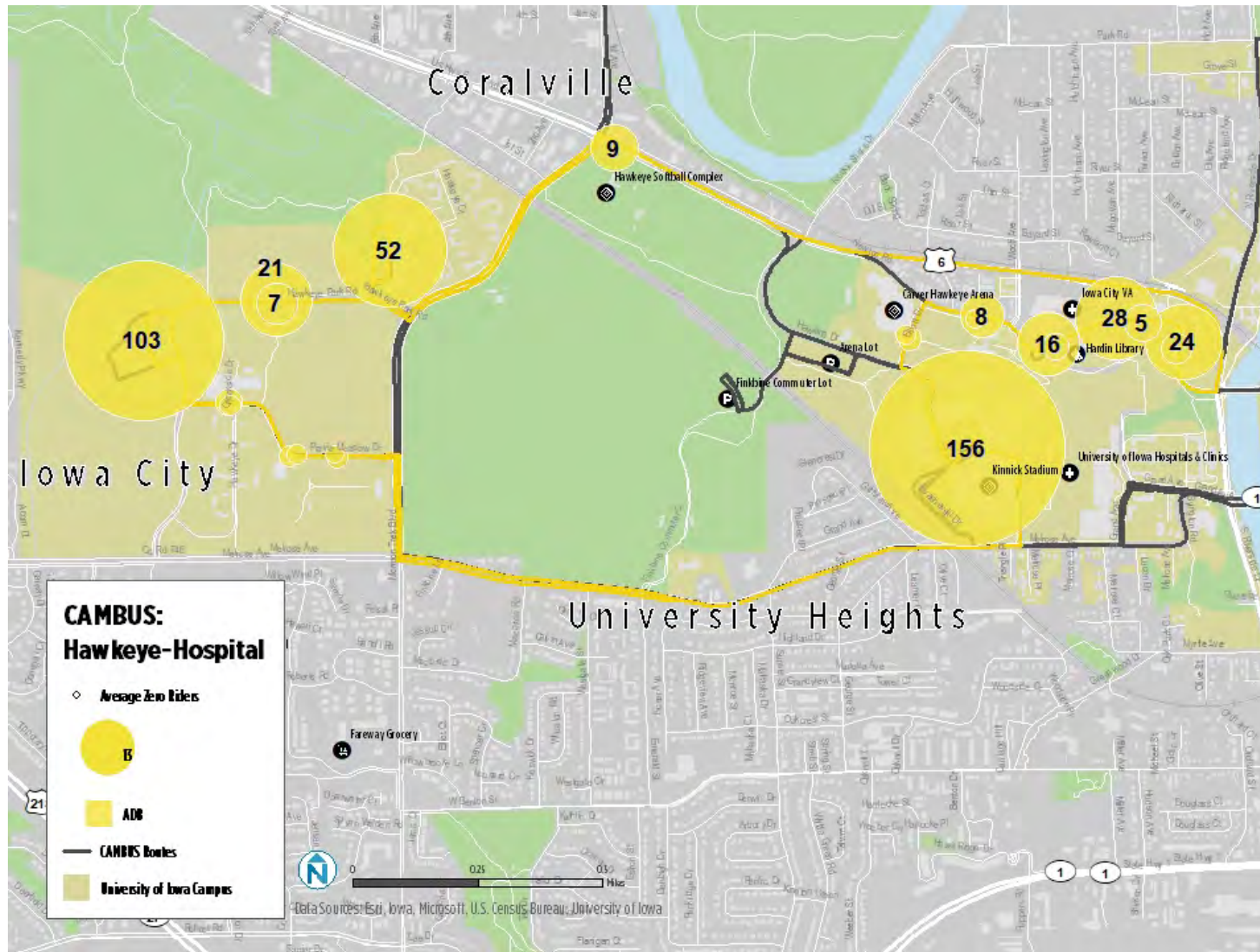




Figure A-7 CAMBUS Hospital Finkbine/Arena Average Weekday Boardings

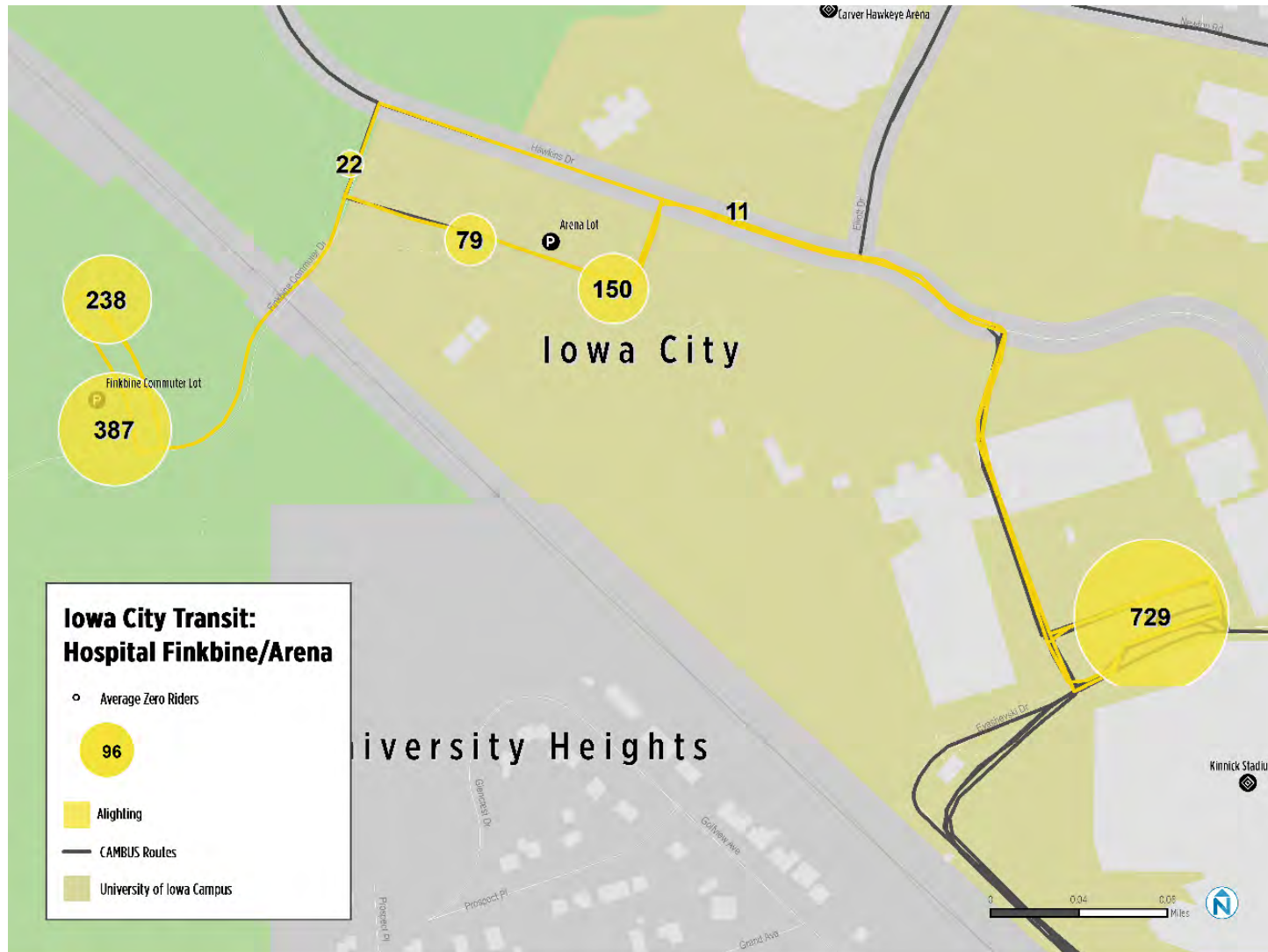




Figure A-8 CAMBUS Hospital via Hancher Average Weekday Boardings

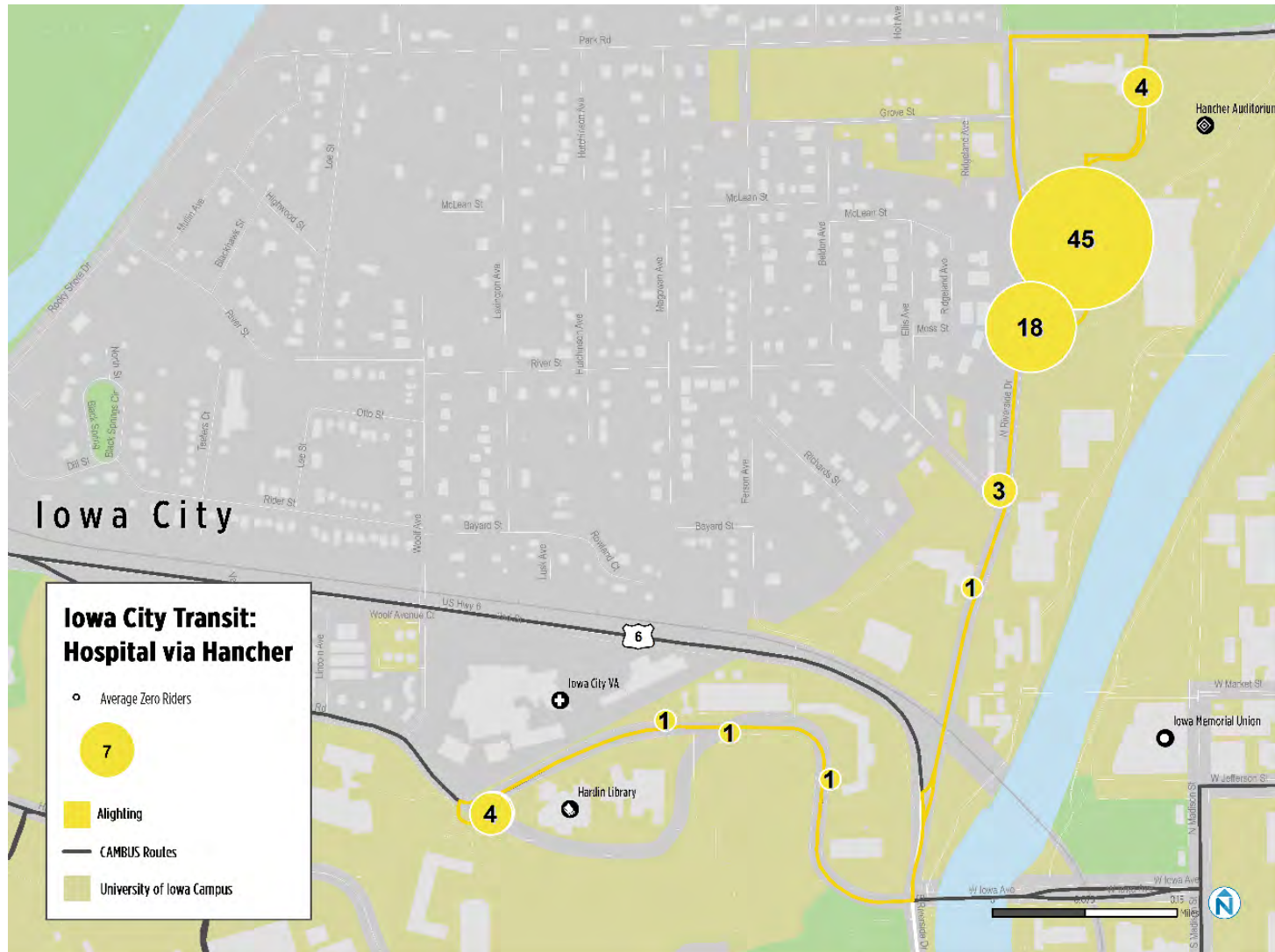




Figure A-9 CAMBUS Interdorm Average Weekday Boardings

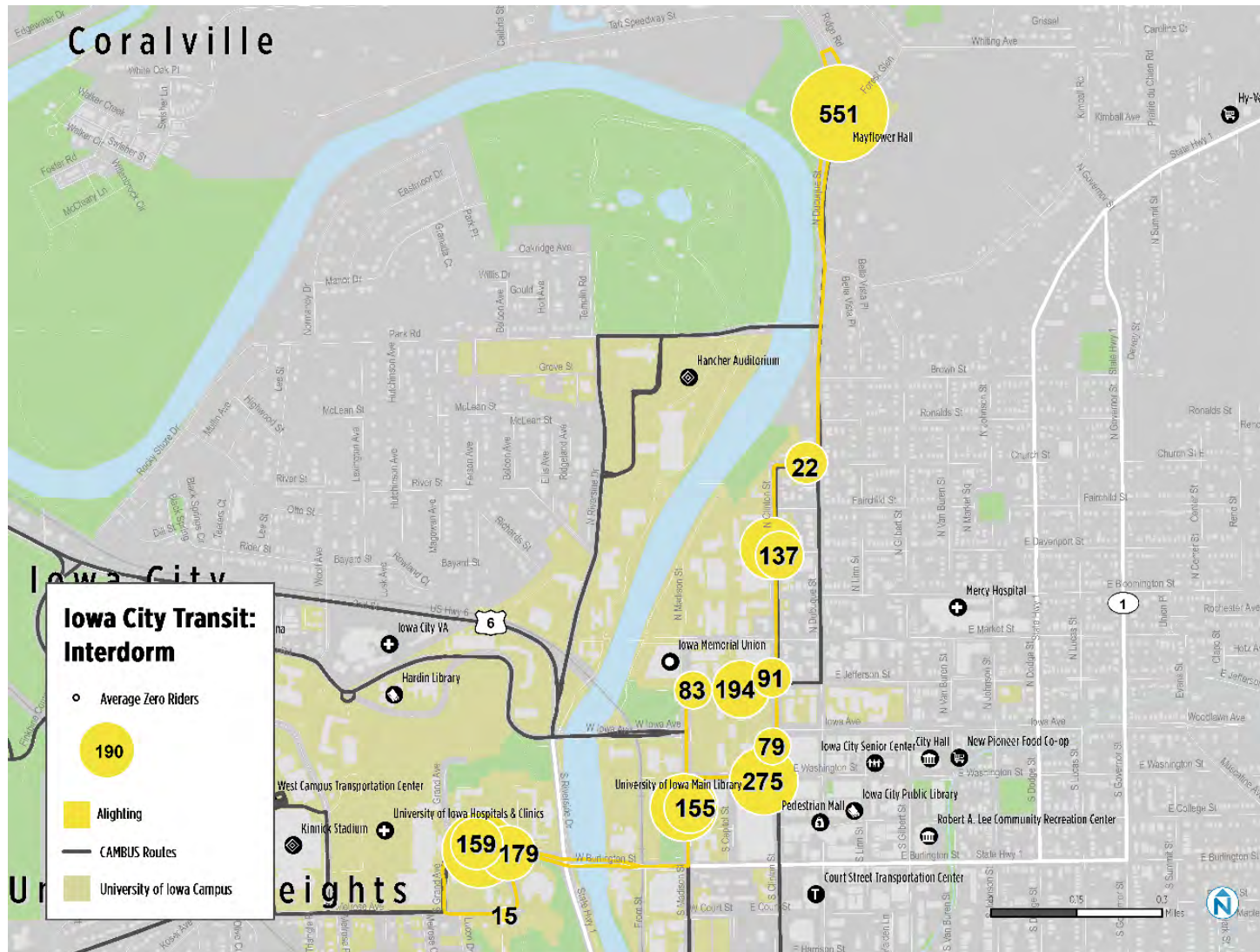




Figure A-10 CAMBUS Mayflower Shuttle Average Weekday Boardings

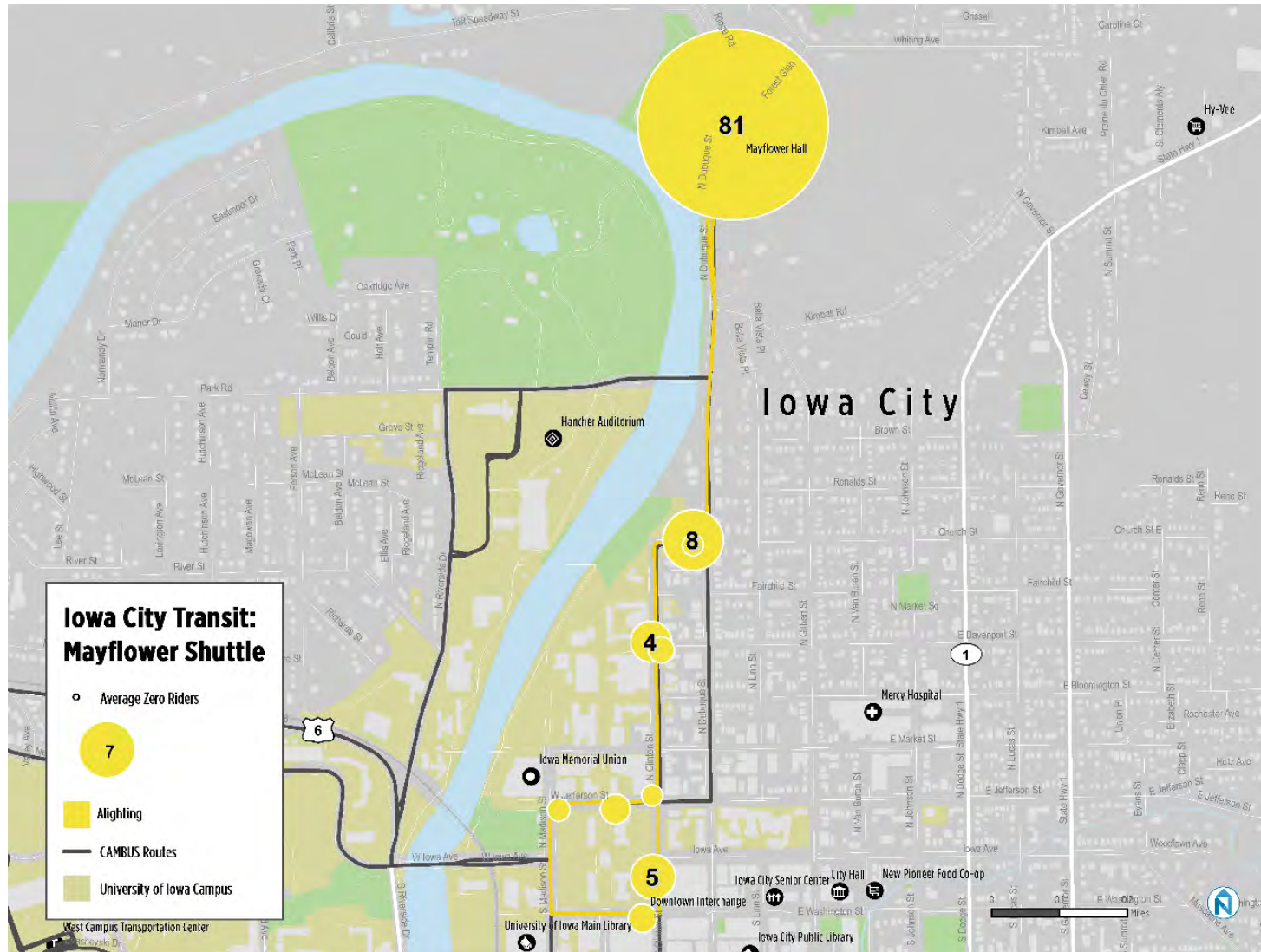




Figure A-11 CAMBUS North Hospital Shuttle Average Weekday Boardings

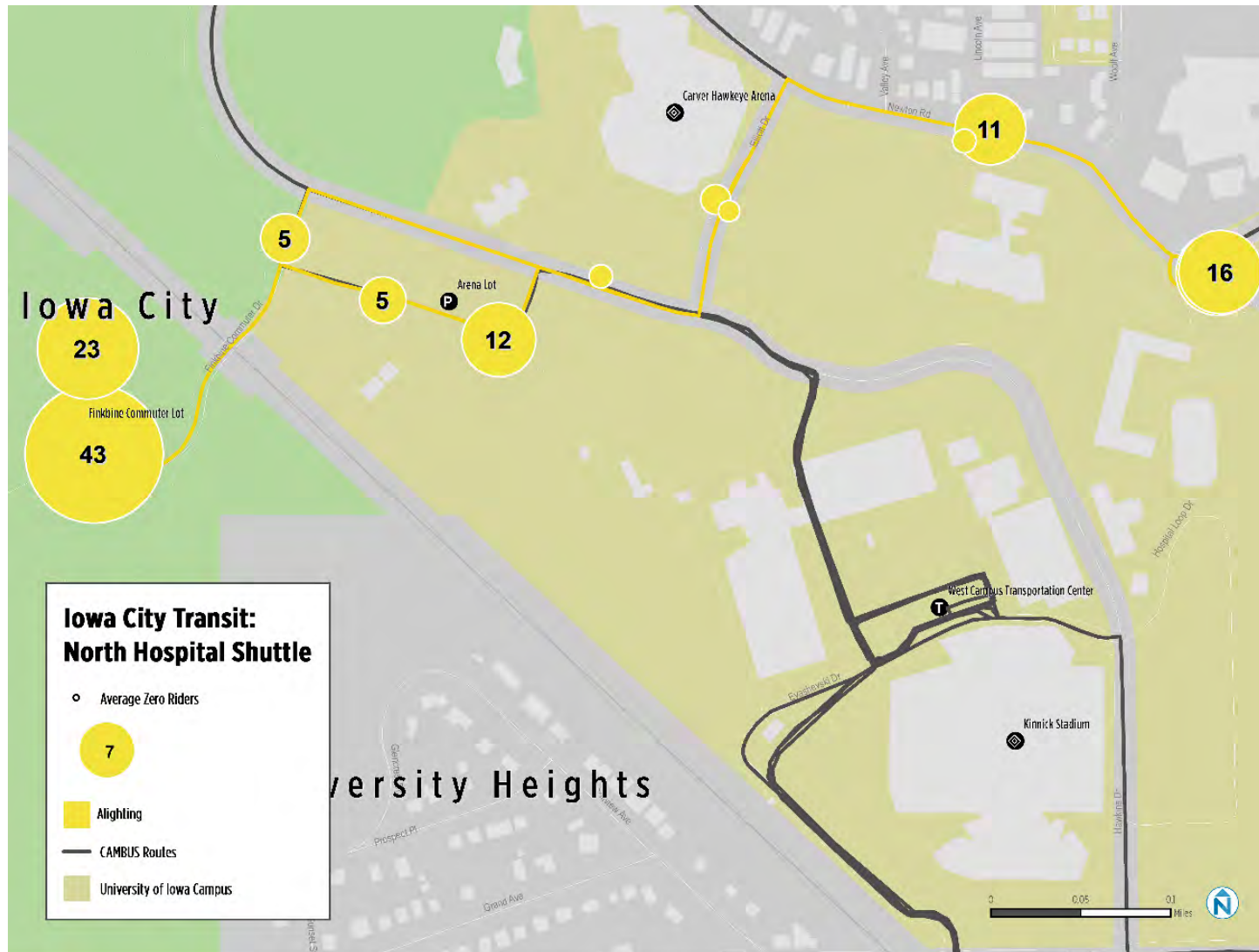




Figure A-12 CAMBUS Pentacrest Average Weekday Boardings

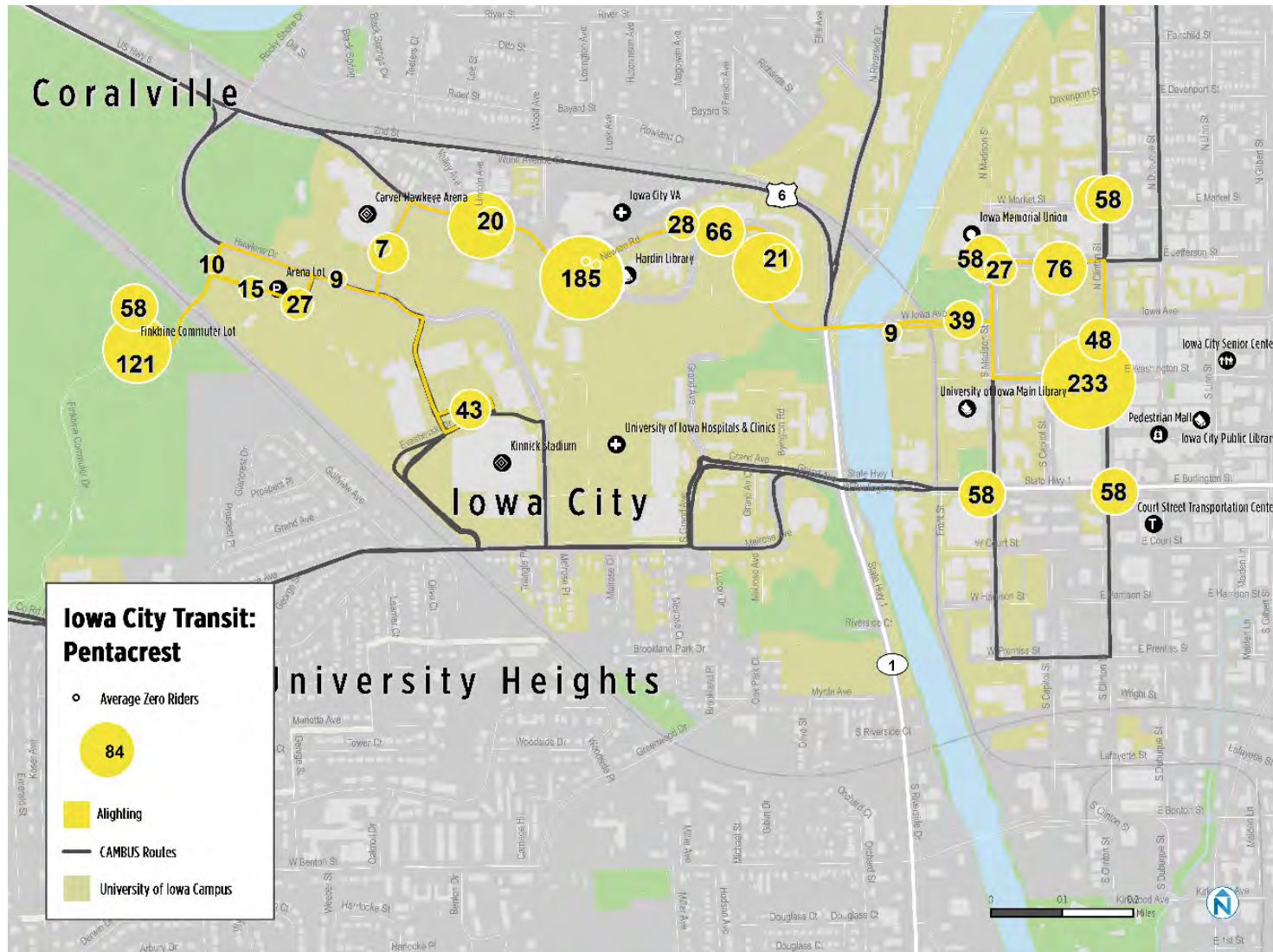




Figure A-13 CAMBUS Red Route Average Weekday Boardings

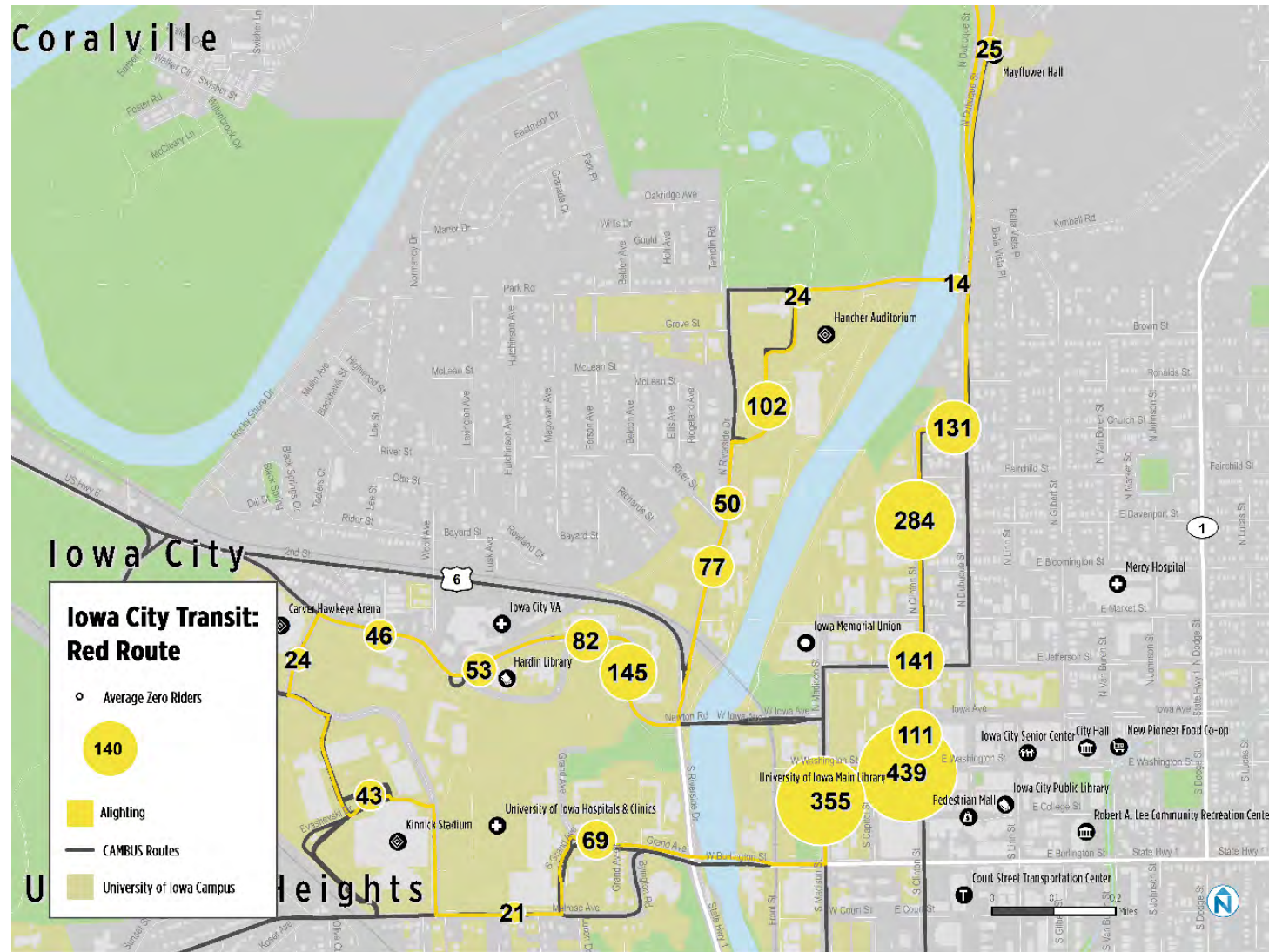




Figure A-14 CAMBUS Research Park Average Weekday Boardings

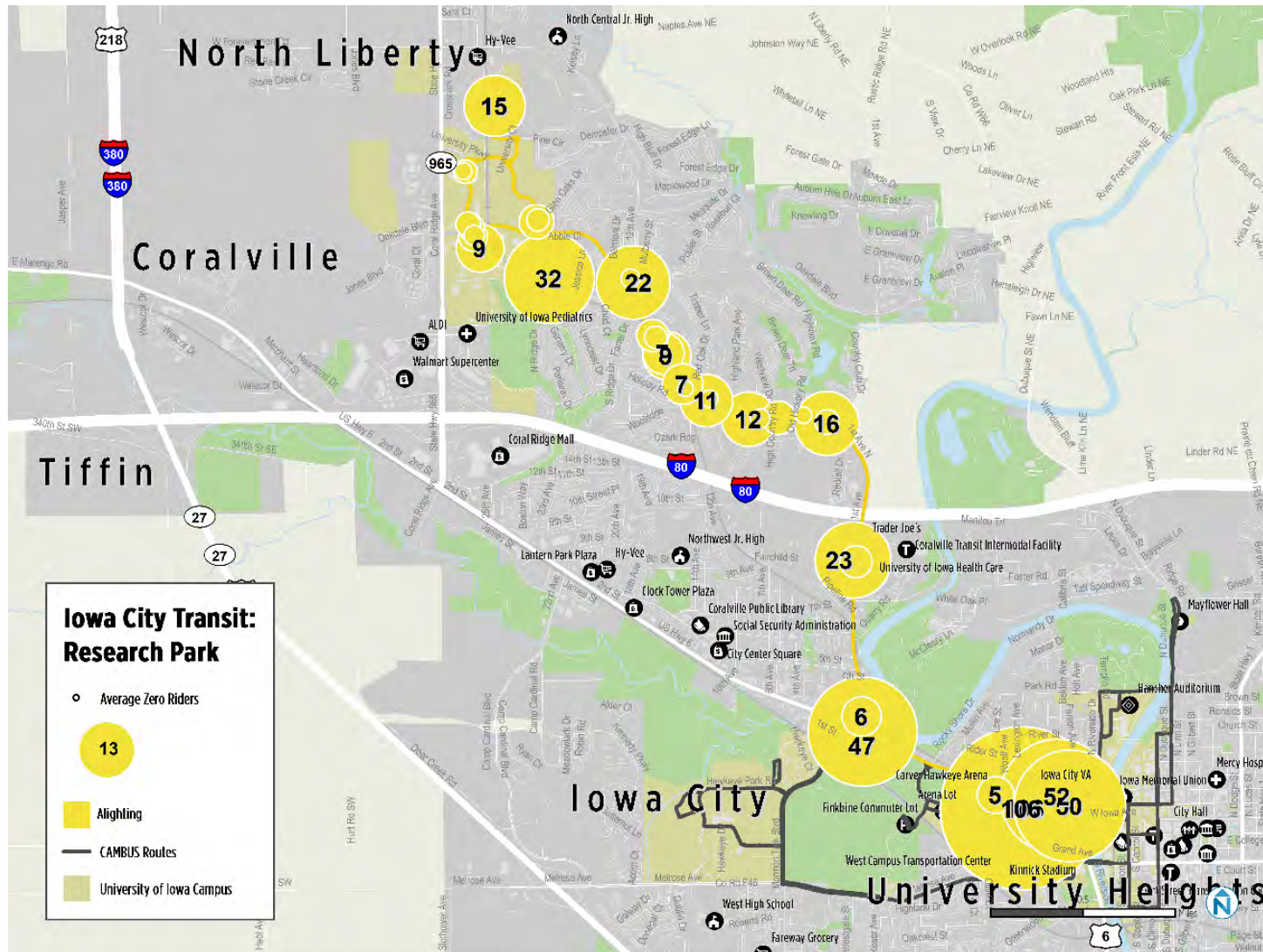




Figure A-15 Coralville Transit 10th Street (Inbound) Average Weekday Boardings

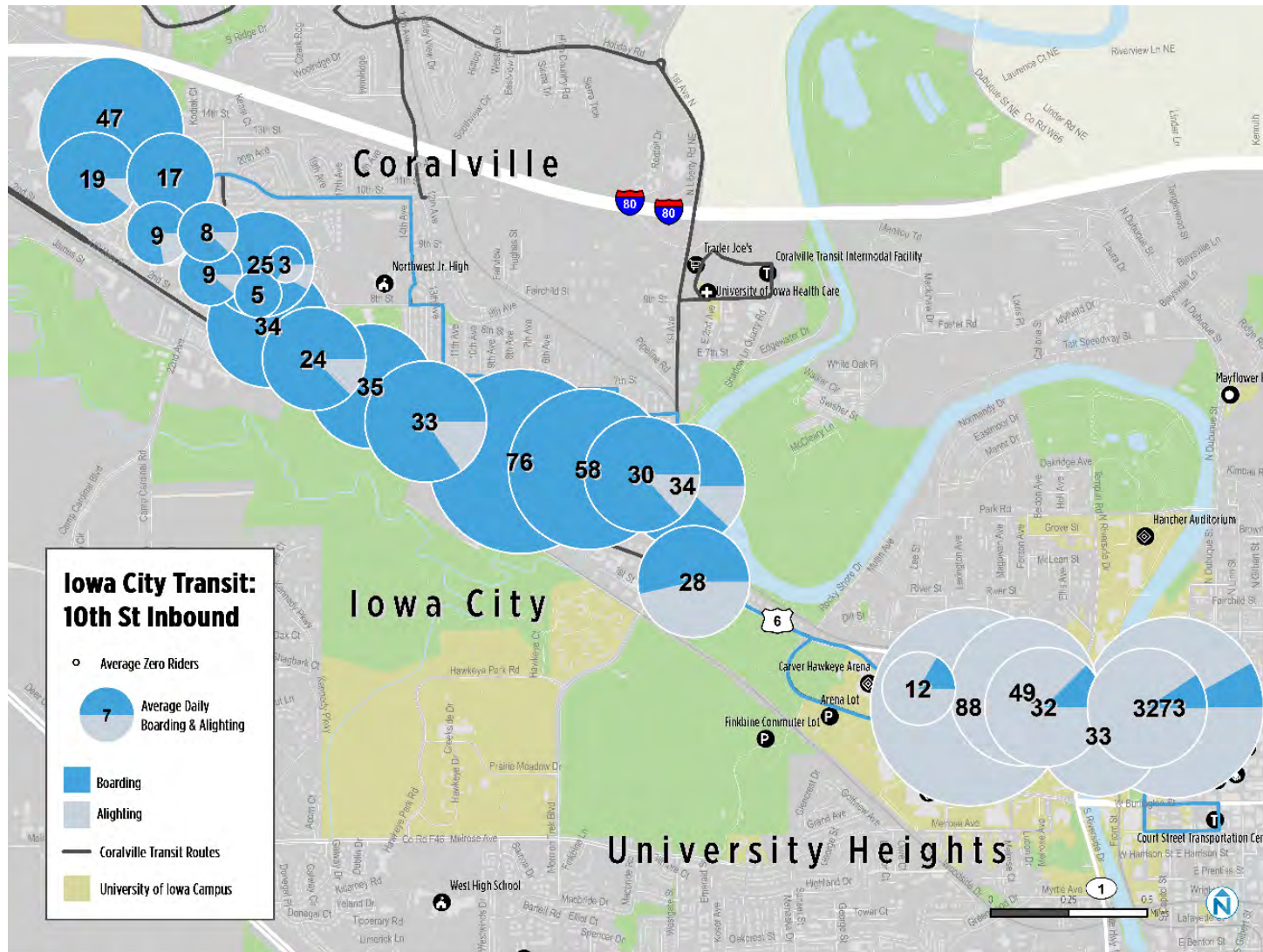




Figure A-16 Coralville Transit 10th Street (Outbound) Average Weekday Boardings

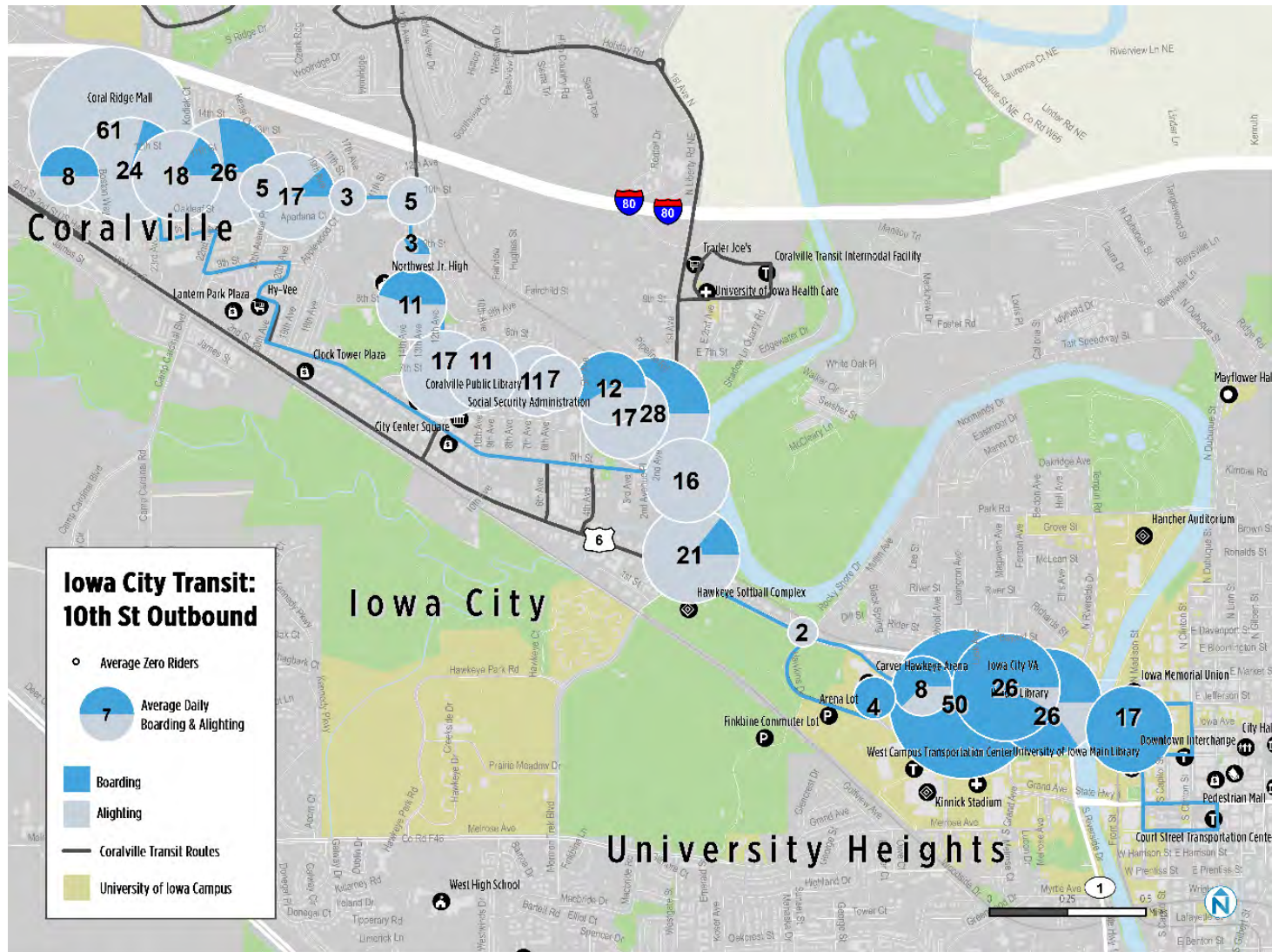




Figure A-17 Coralville Transit 1st Ave (Inbound) Average Weekday Boardings

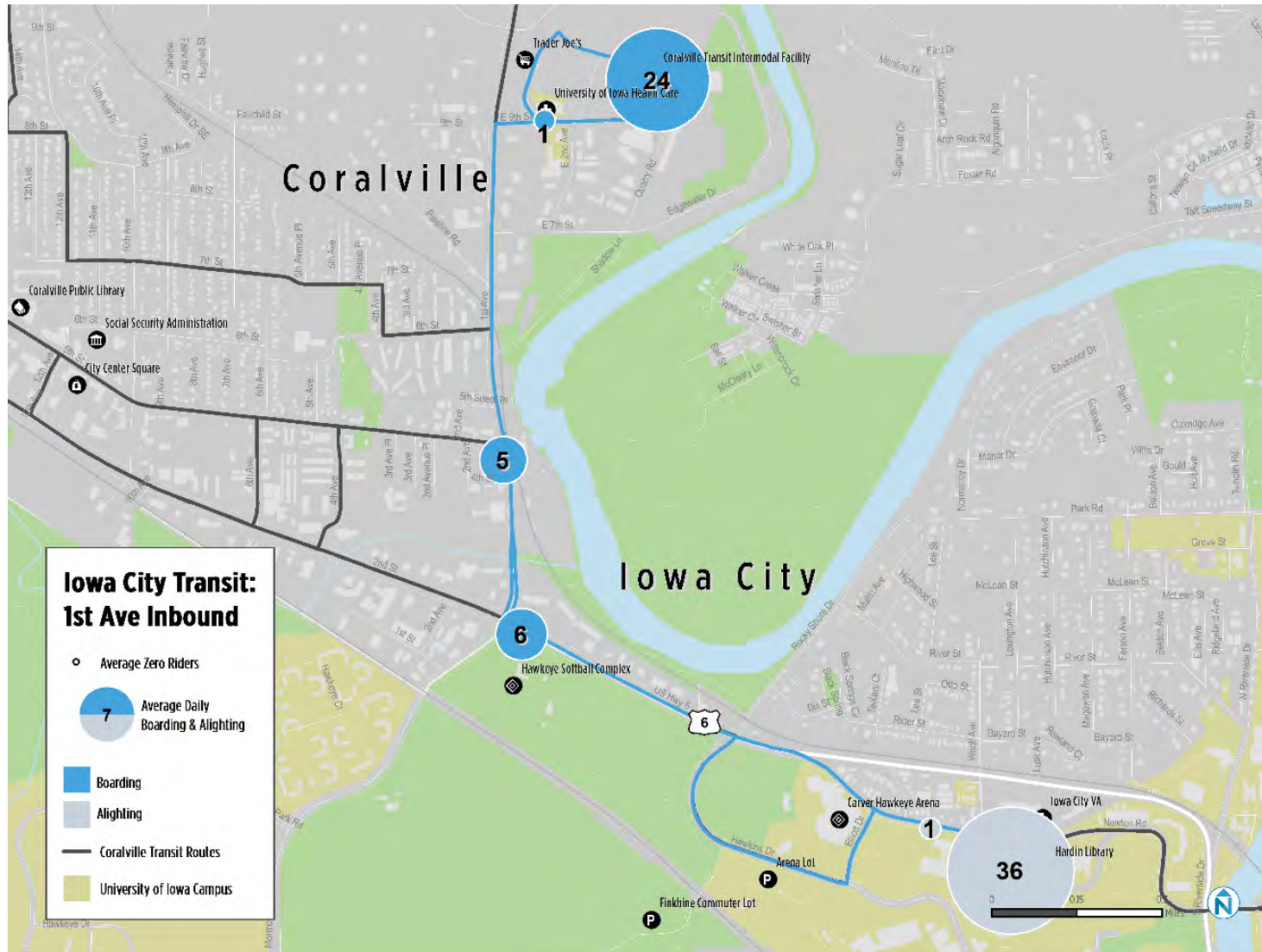




Figure A-18 Coralville Transit 1st Ave (Outbound) Average Weekday Boardings

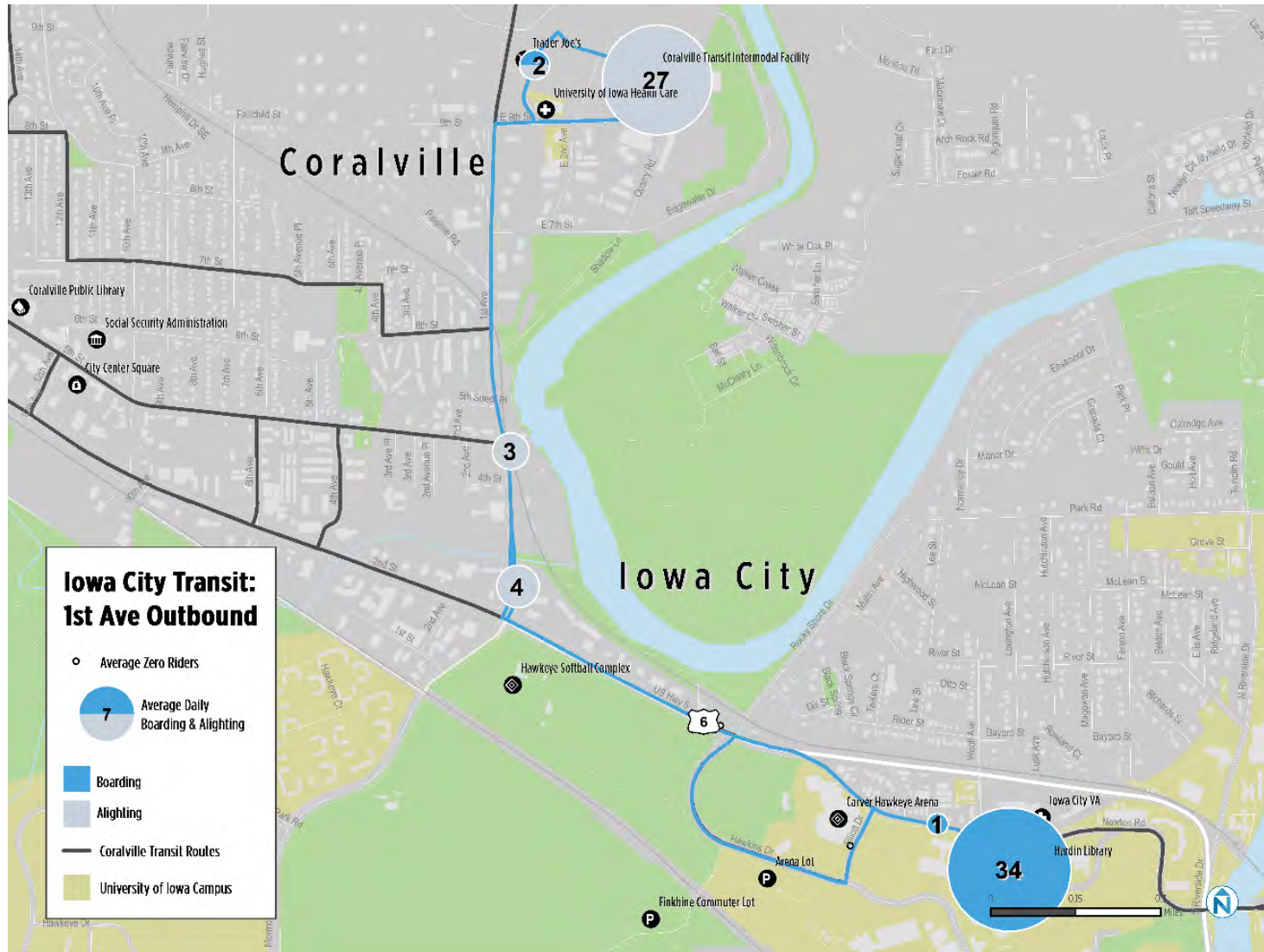




Figure A-19 Coralville Transit AM Express (Inbound) Average Weekday Boardings

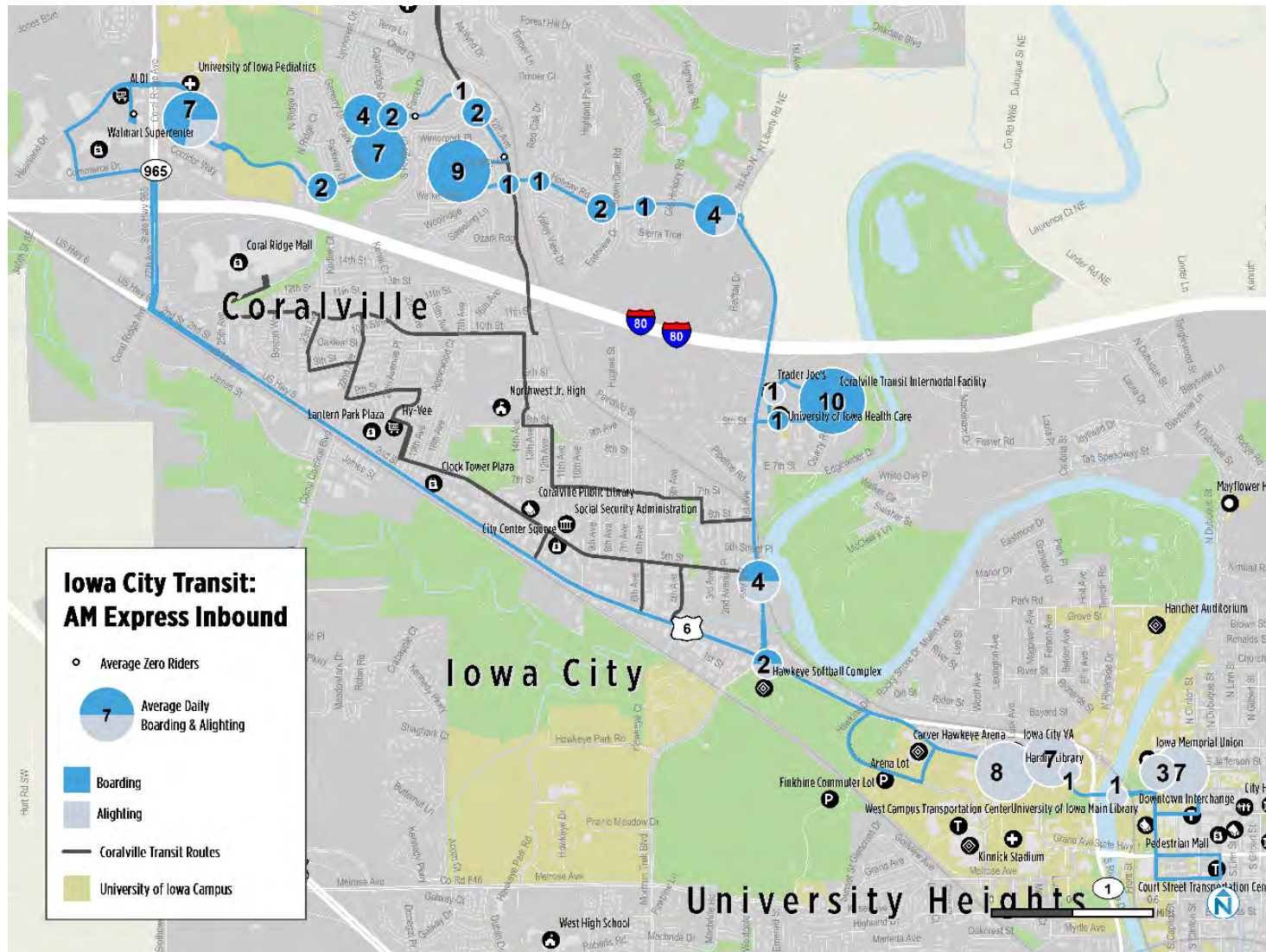




Figure A-20 Coralville Transit AM Express (Outbound) Average Weekday Boardings

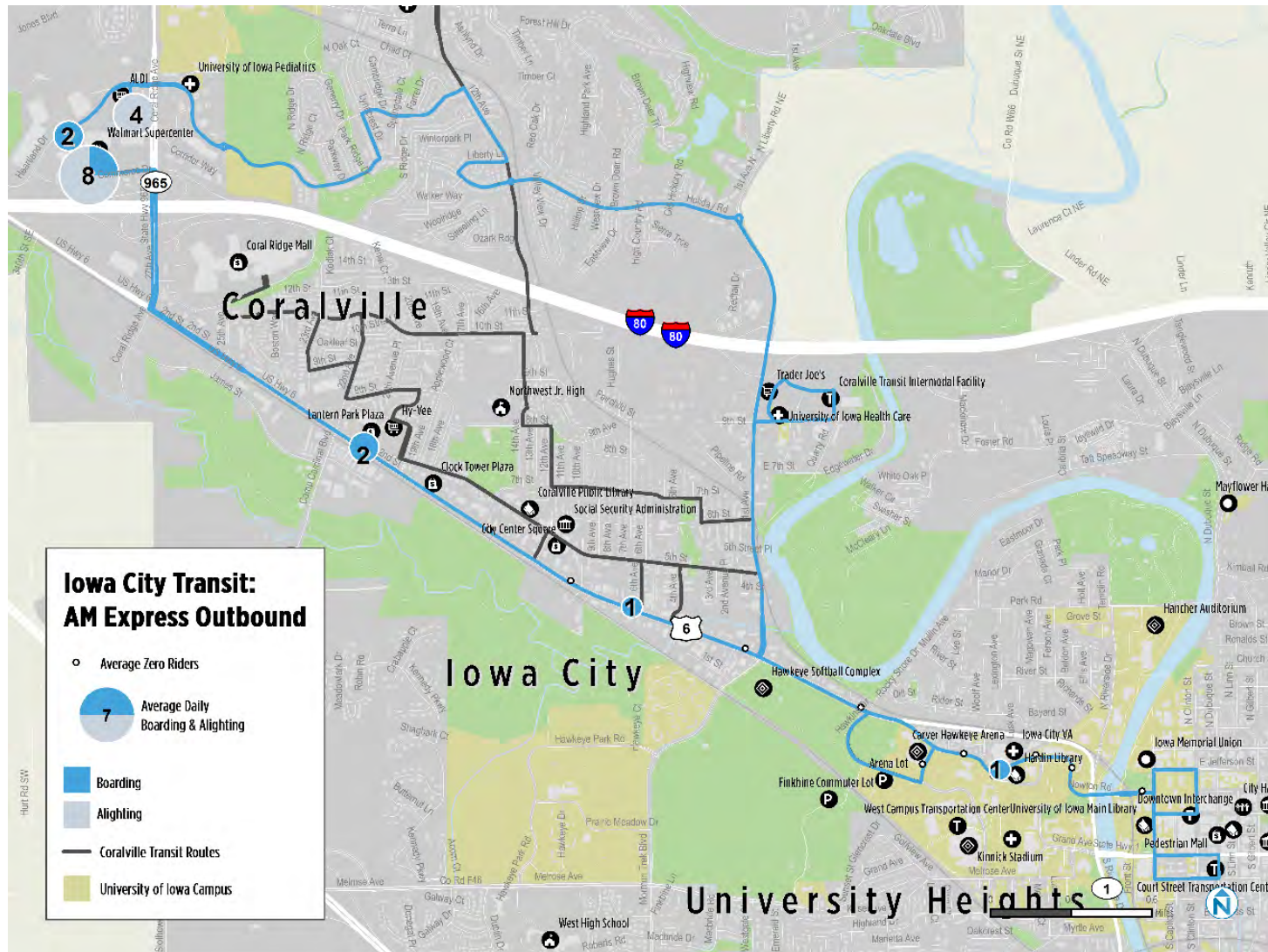




Figure A-21 Coralville Transit Express (Inbound) Average Weekday Boardings

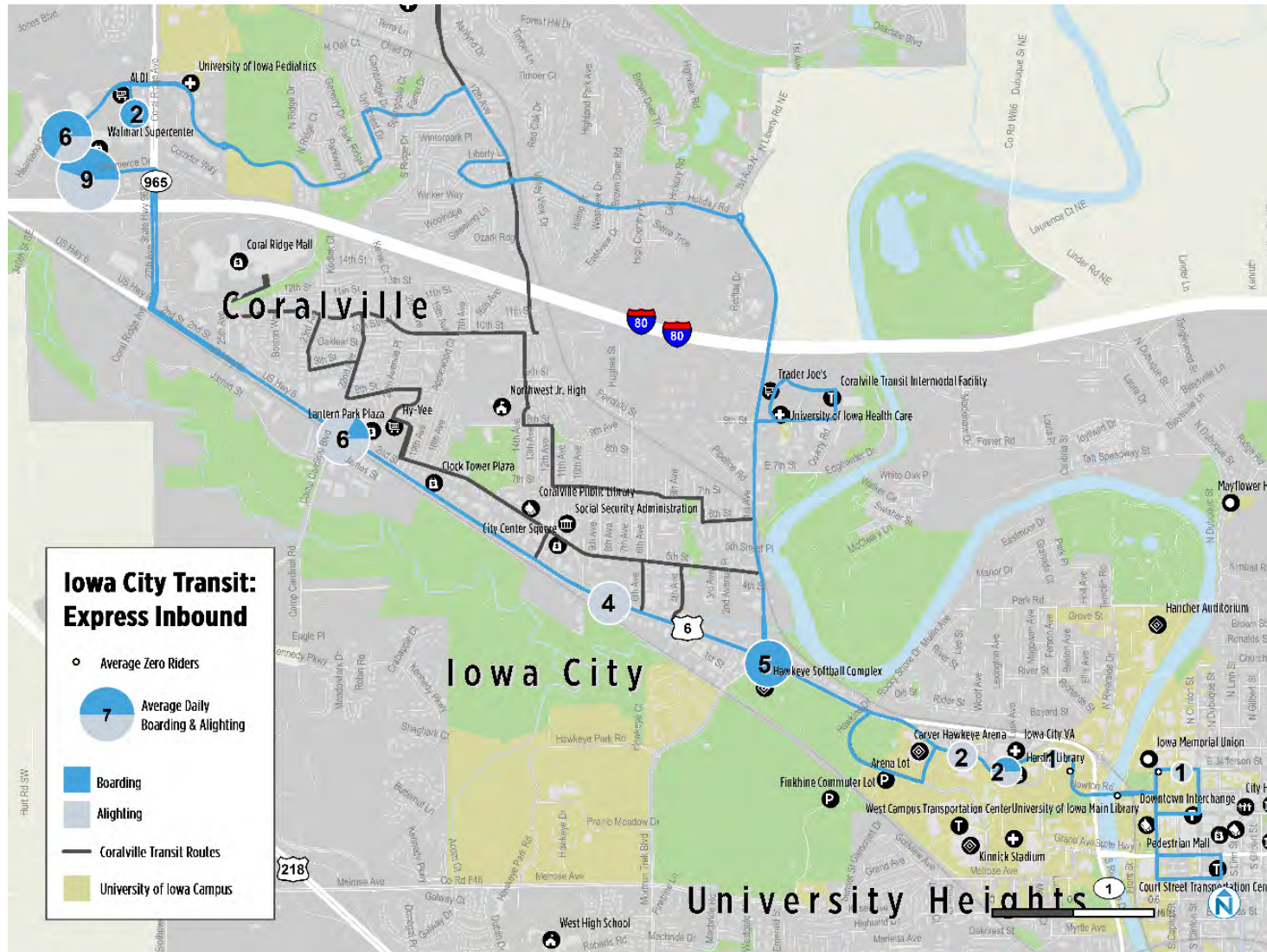




Figure A-22 Coralville Transit Express (Outbound) Average Weekday Boardings

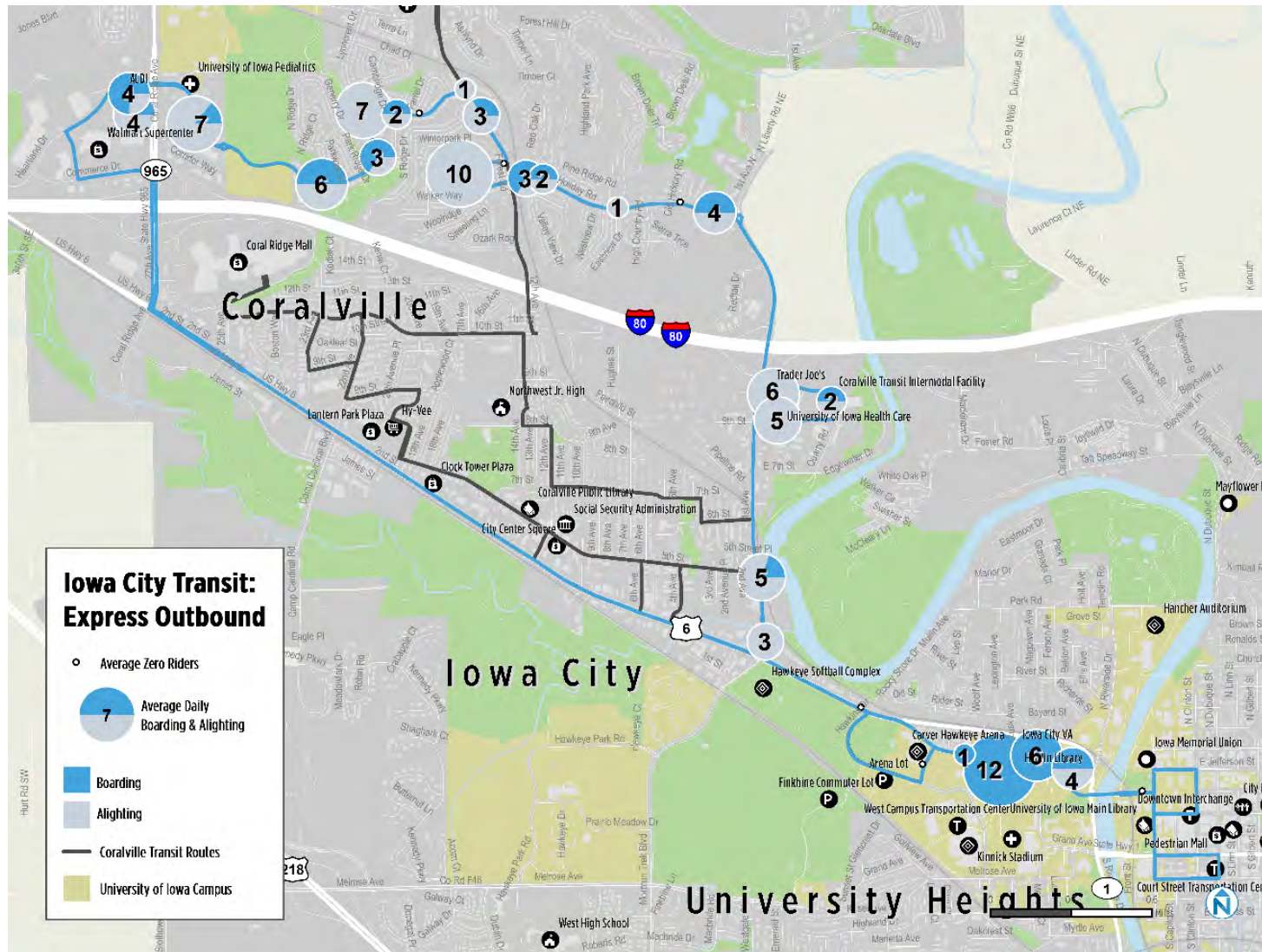




Figure A-23 Coralville Transit Lantern Park (Inbound) Average Weekday Boardings

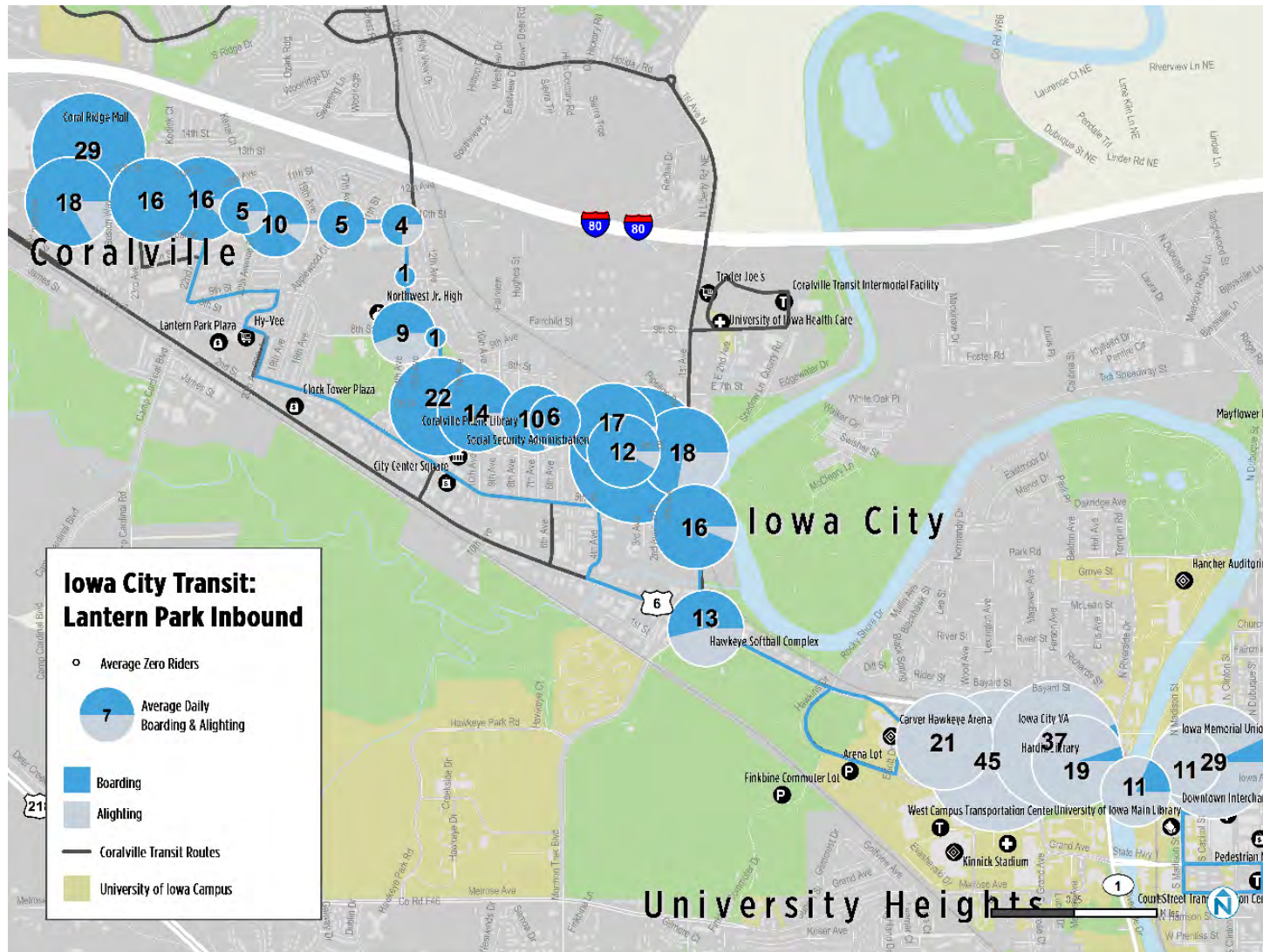




Figure A-24 Coralville Transit Lantern Park (Outbound) Average Weekday Boardings

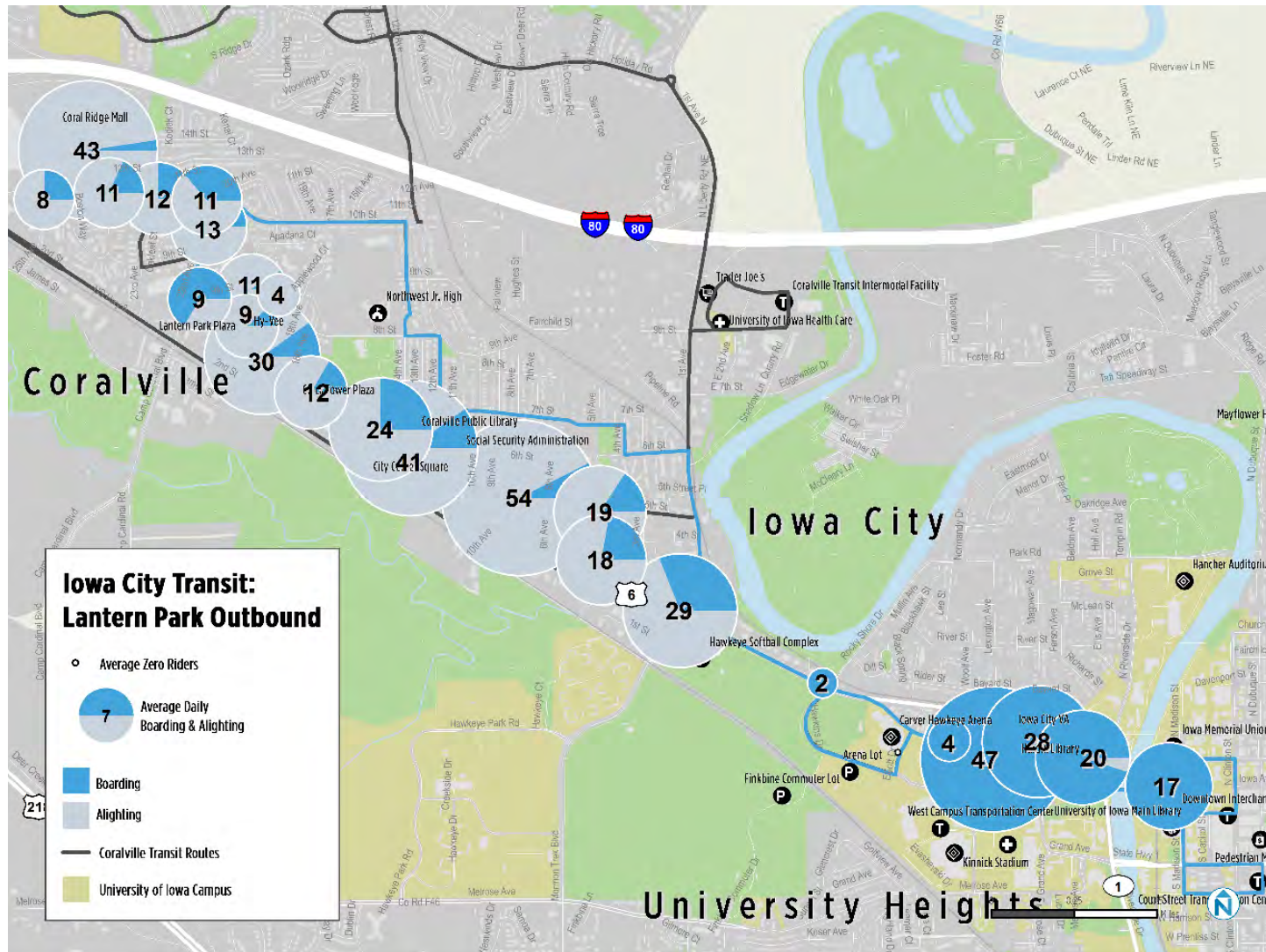
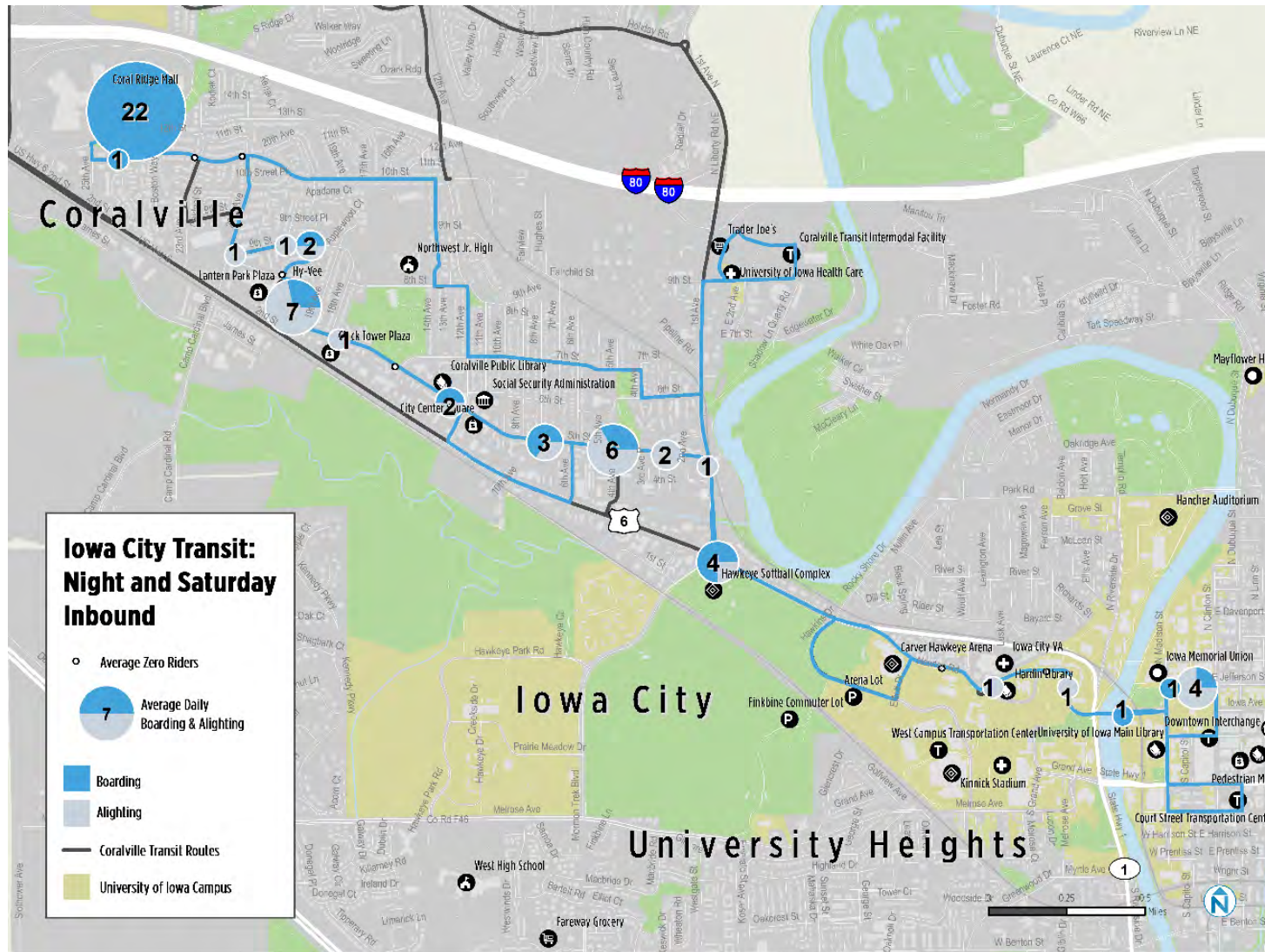




Figure A-25 Coralville Transit Night (Inbound) Average Weekday Boardings



[illegible]



Figure A-27 Coralville Transit North Liberty (AM) Average Weekday Boardings

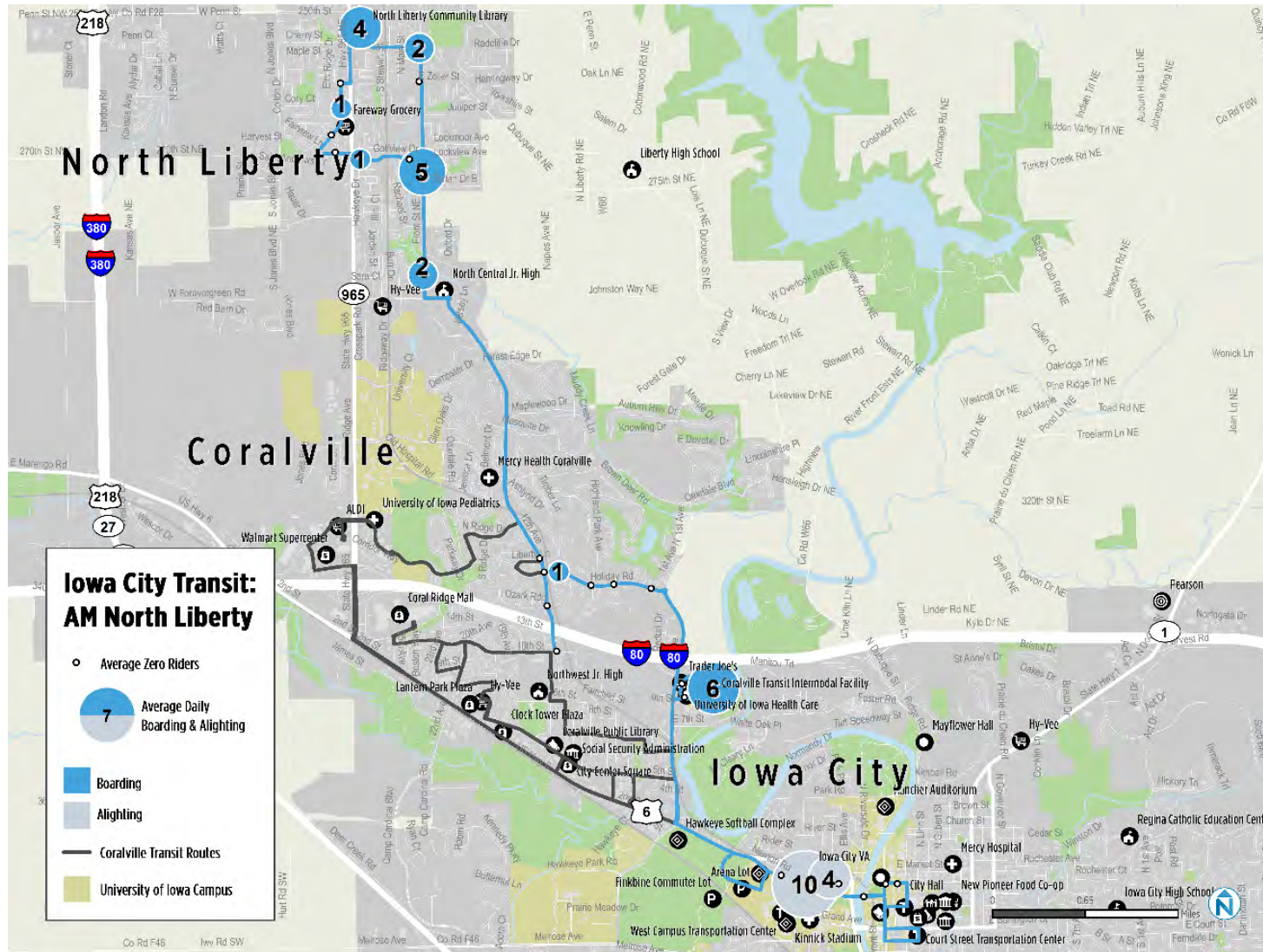




Figure A-28 Coralville Transit North Liberty (PM) Average Weekday Boardings

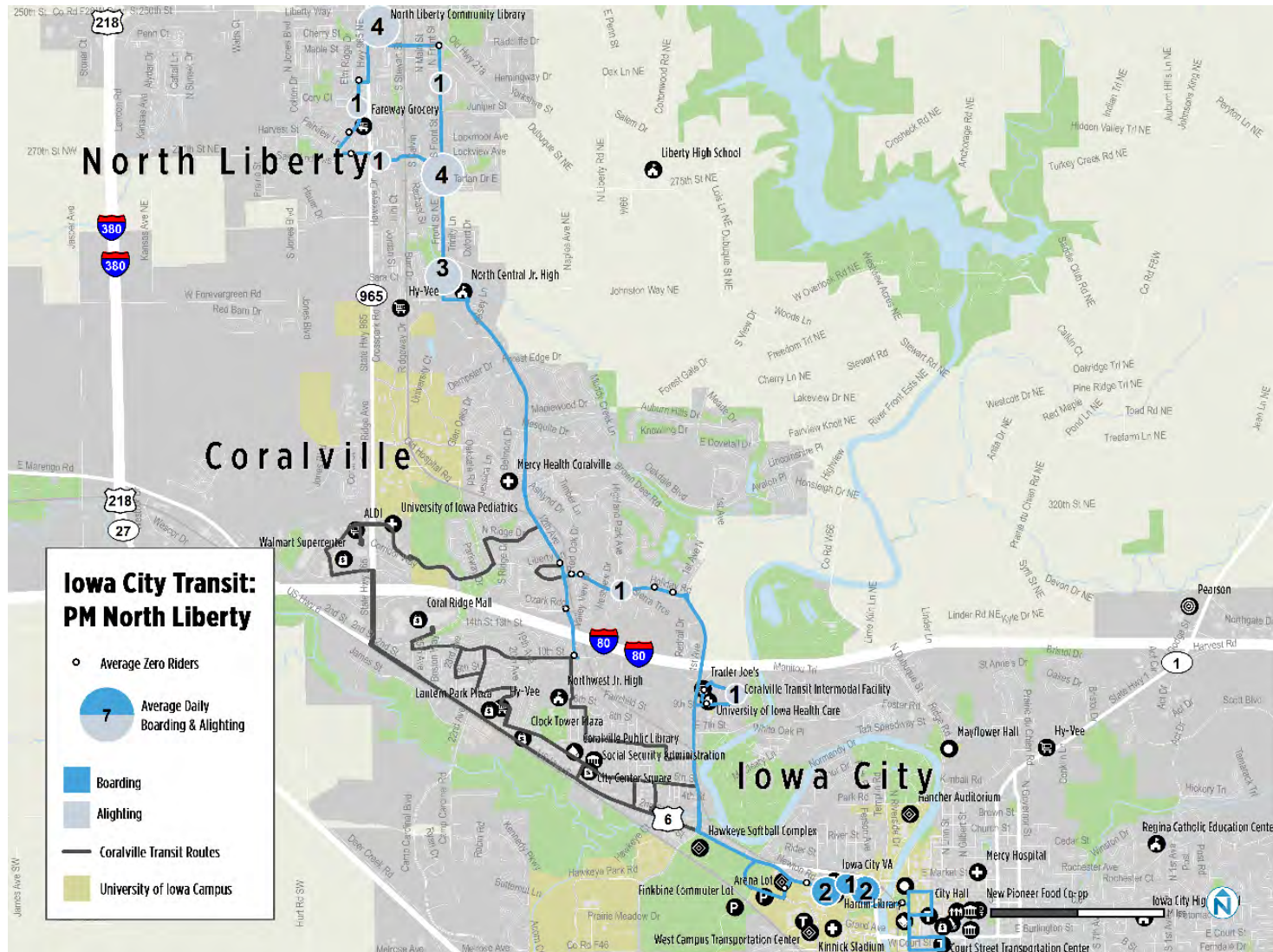




Figure A-29 Iowa City Transit 7th Avenue (Inbound) Average Weekday Boardings

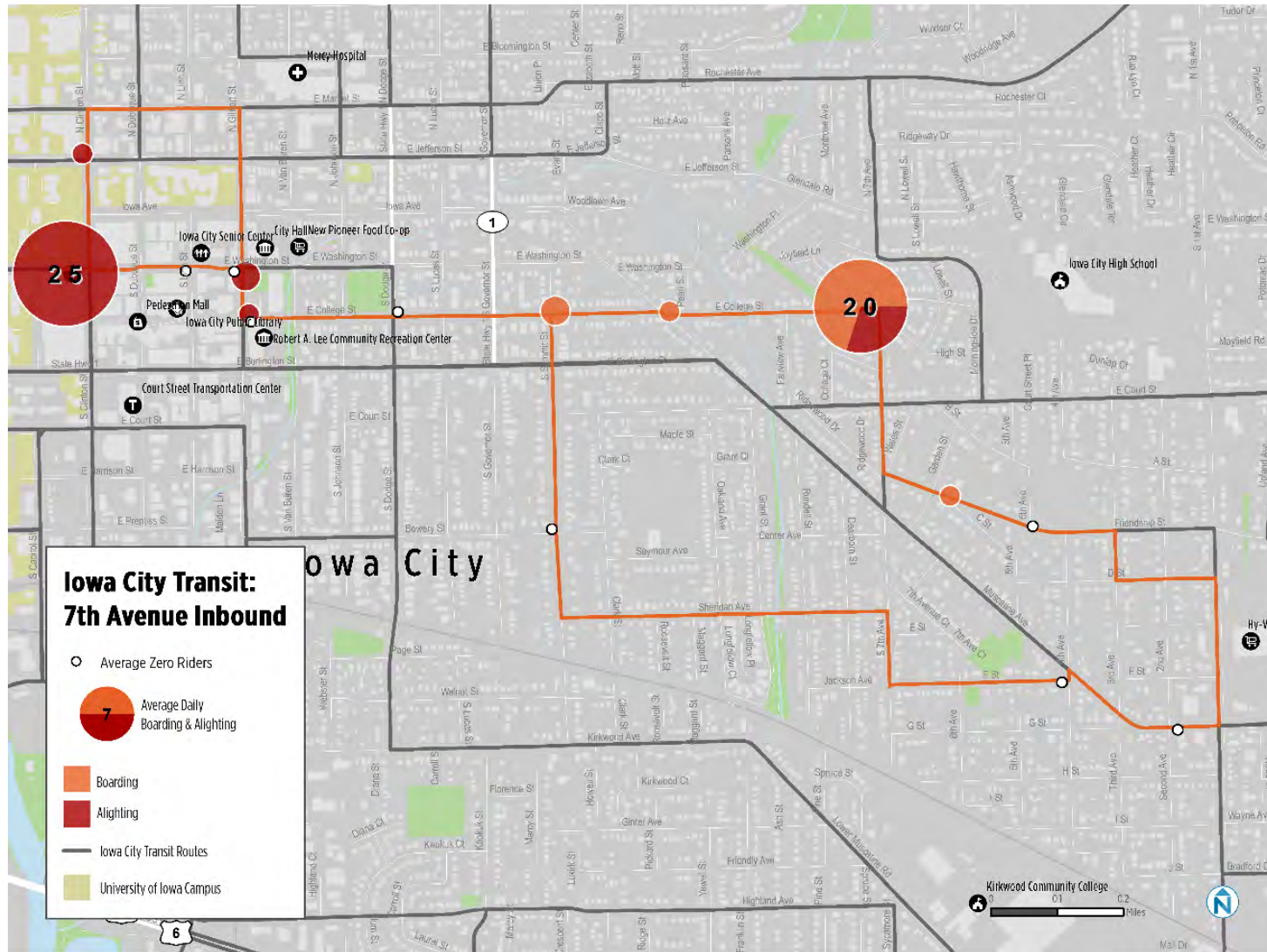




Figure A-30 Iowa City Transit 7th Avenue (Outbound) Average Weekday Boardings

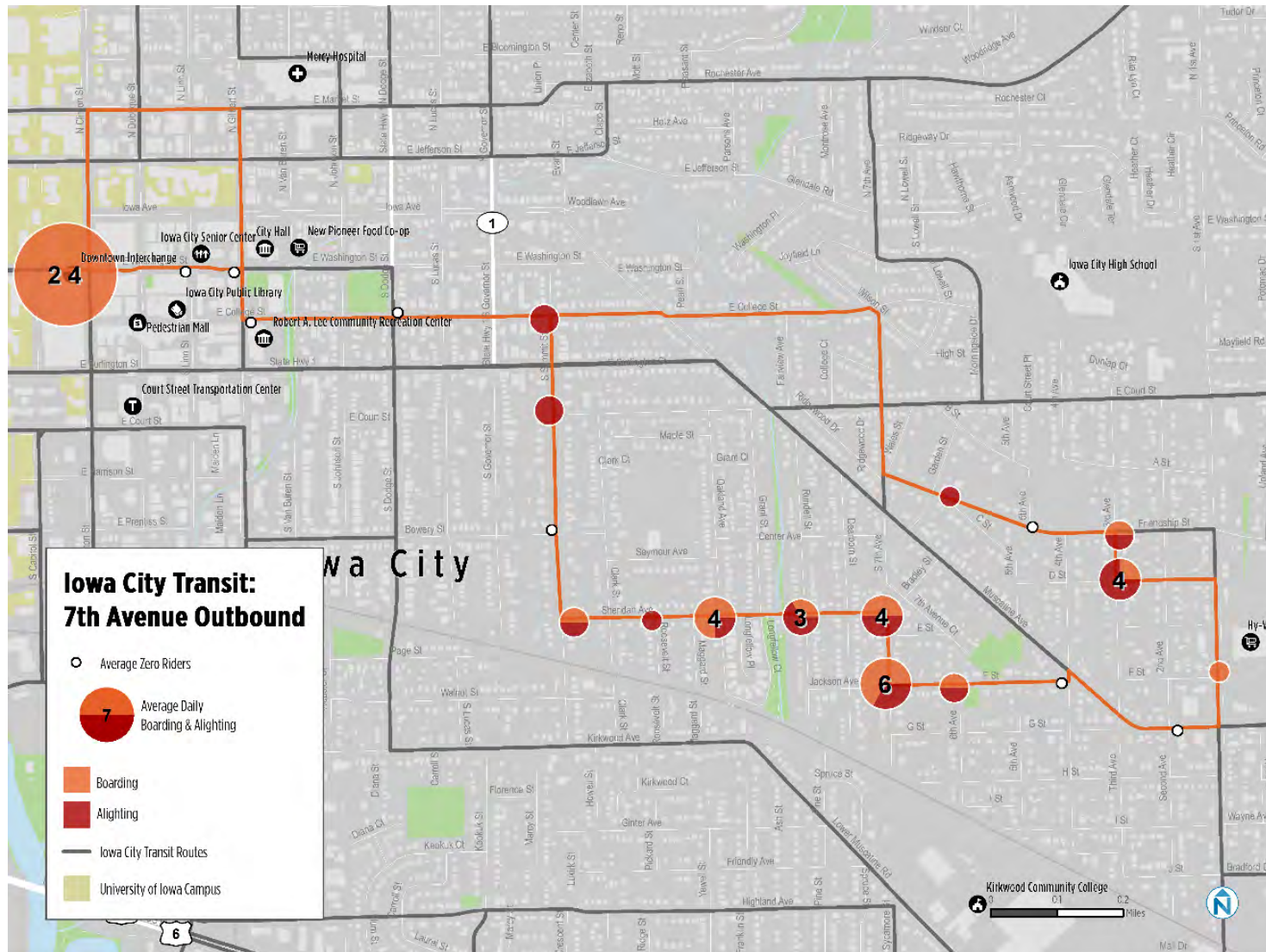




Figure A-31 Iowa City Transit Broadway (Inbound) Average Weekday Boardings

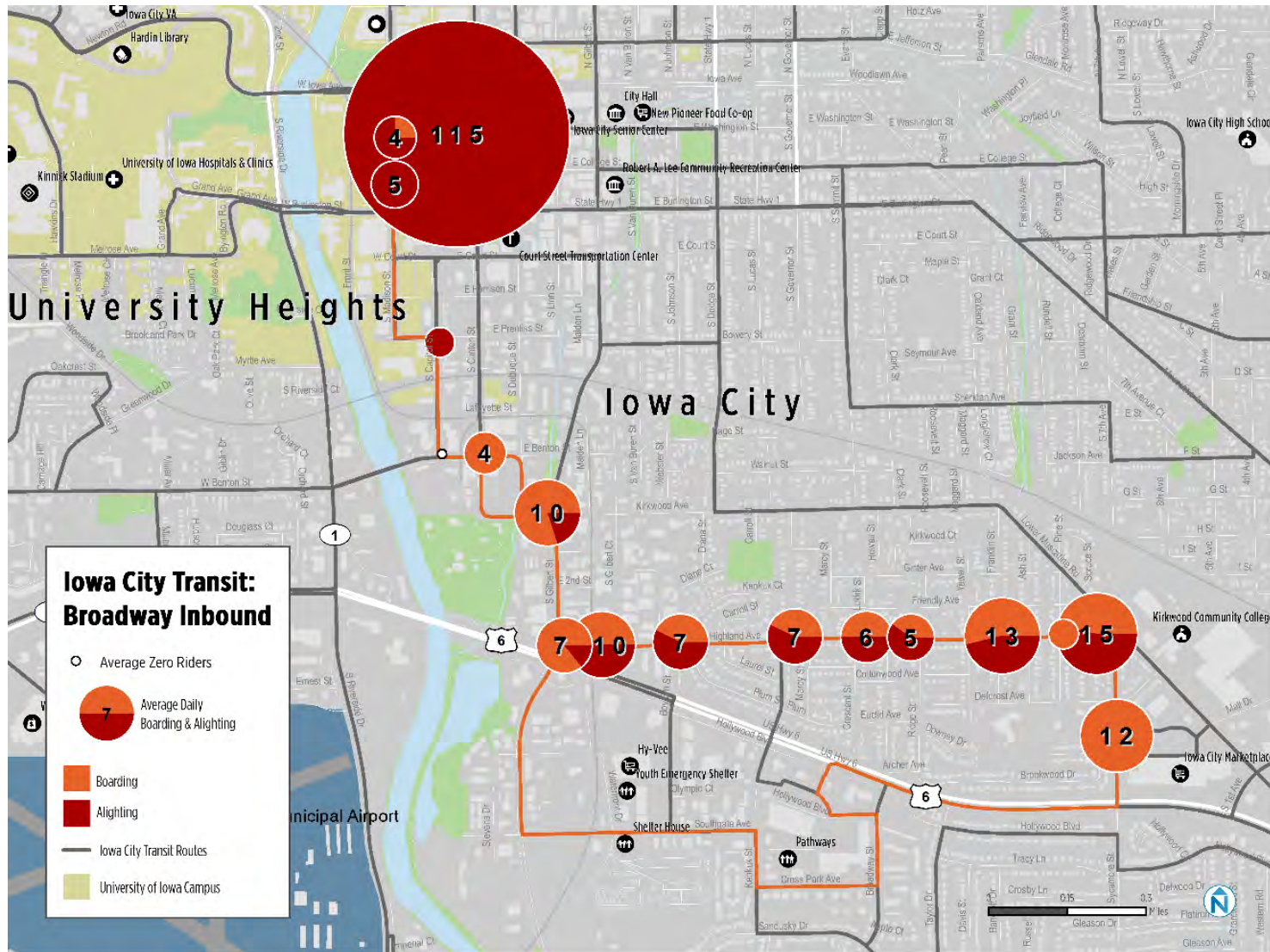




Figure A-32 Iowa City Transit Broadway (Outbound) Average Weekday Boardings

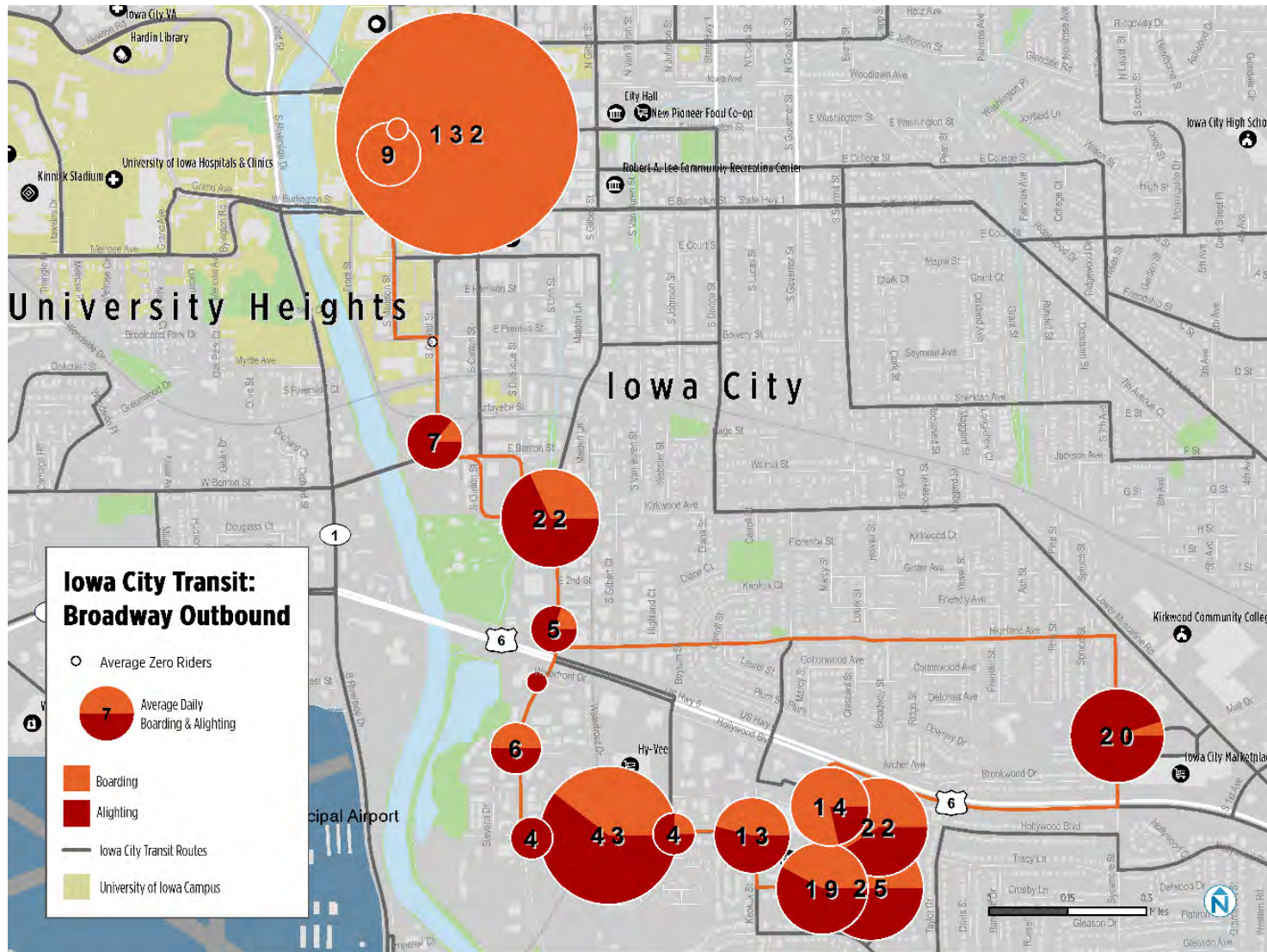




Figure A-33 Iowa City Transit Court Hill (Inbound) Average Weekday Boardings

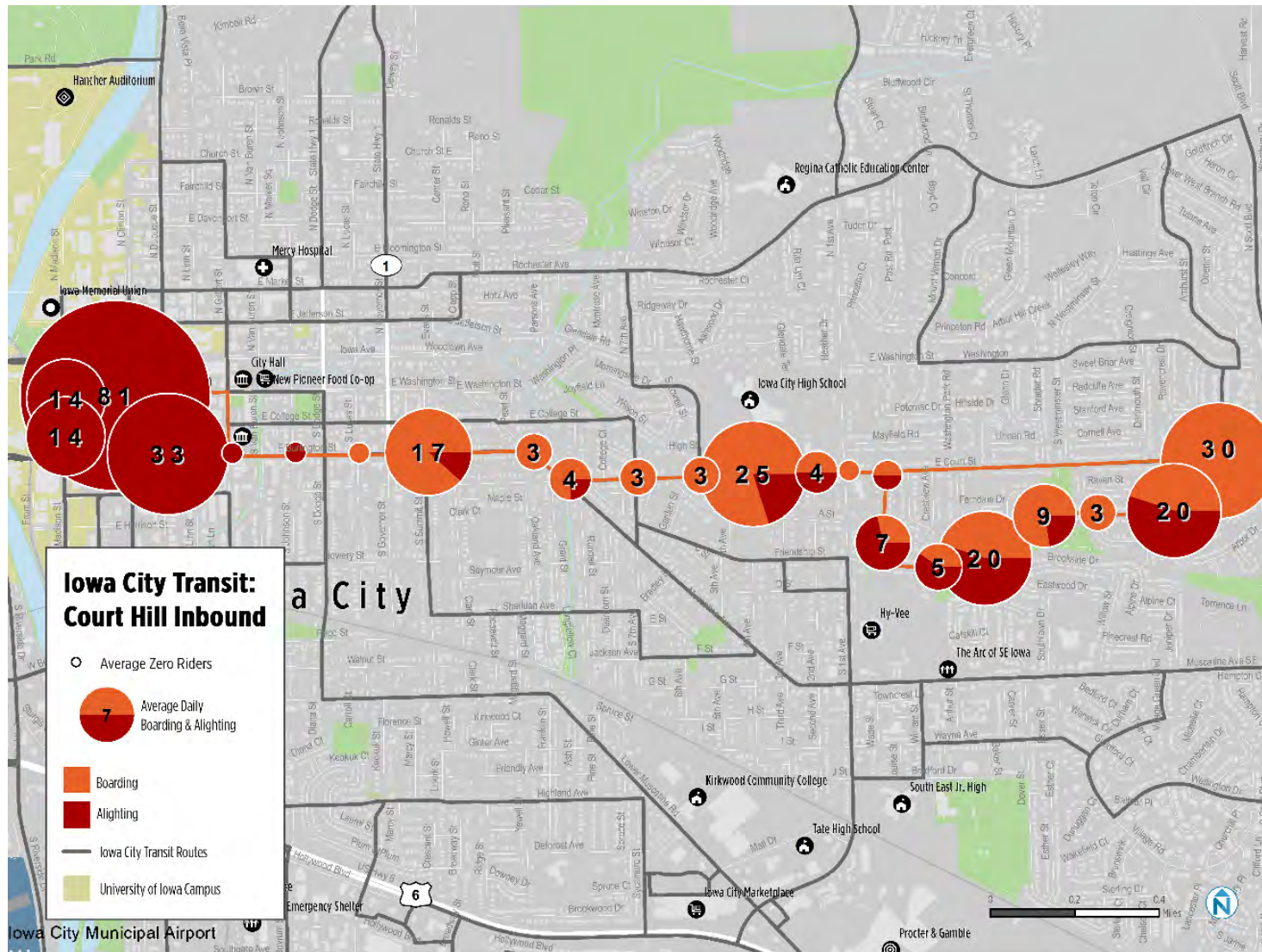




Figure A-34 Iowa City Transit Court Hill (Outbound) Average Weekday Boardings

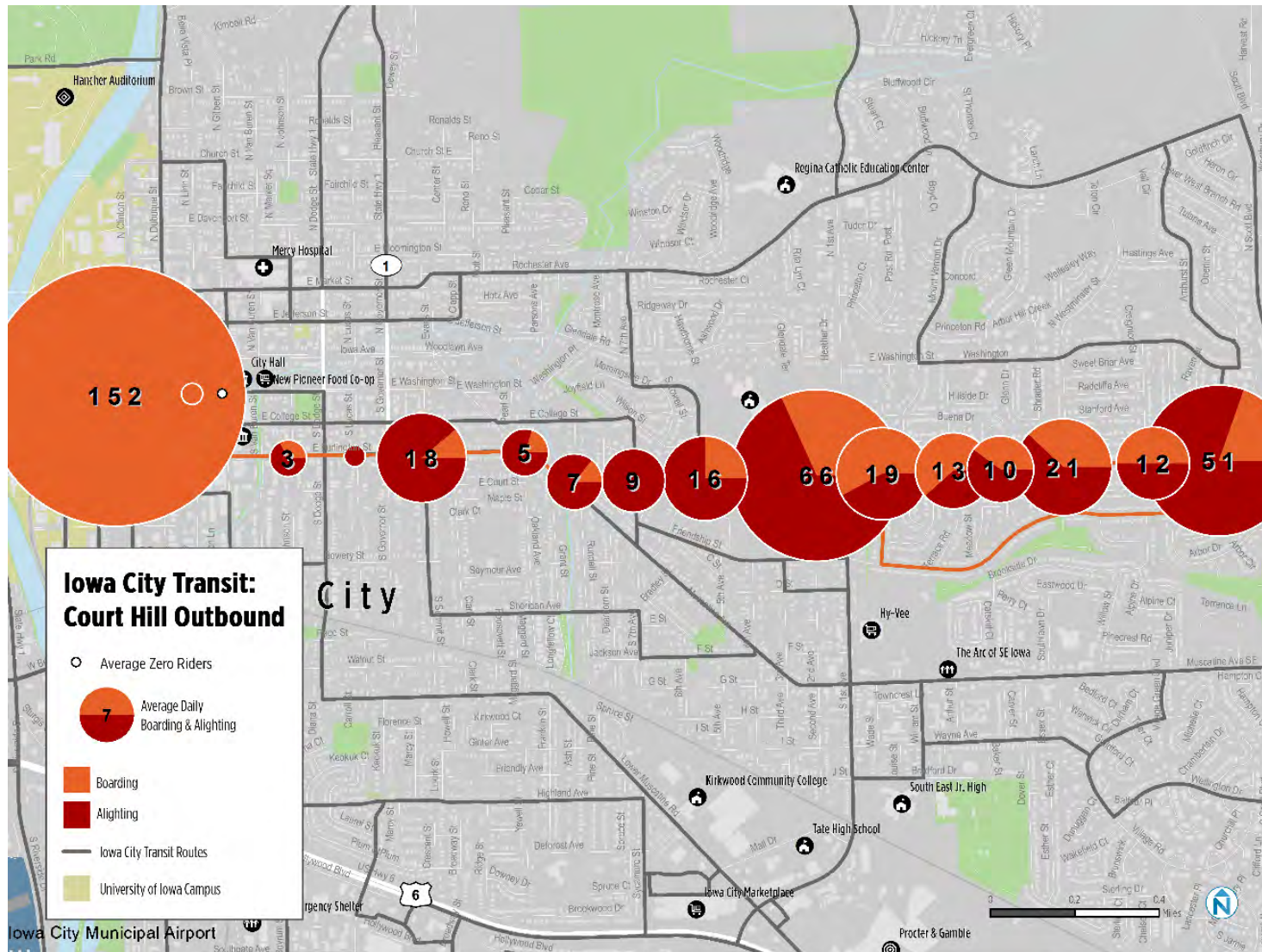




Figure A-35 Iowa City Transit Cross Park (Inbound) Average Weekday Boardings

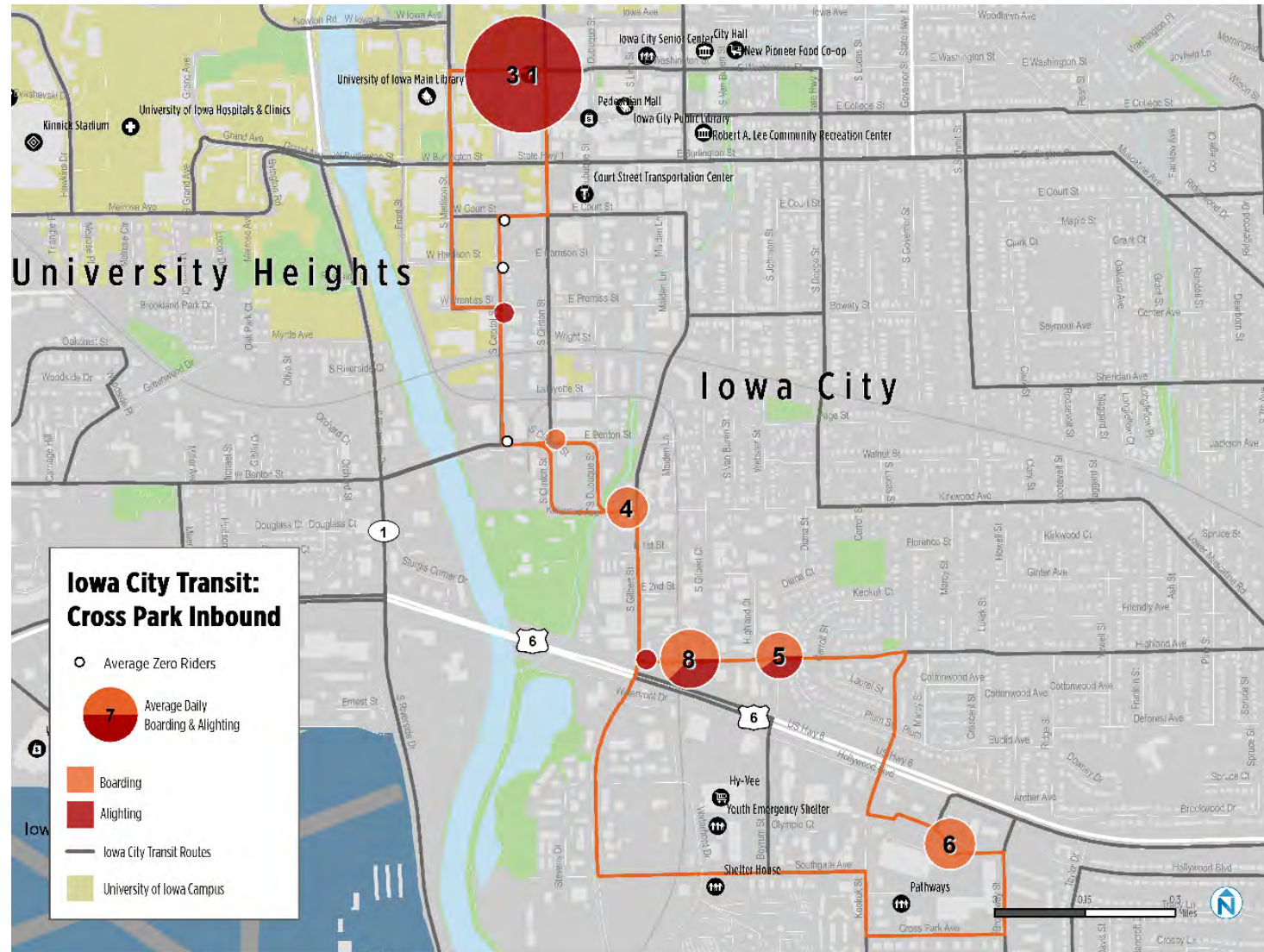




Figure A-36 Iowa City Transit Cross Park (Outbound) Average Weekday Boardings

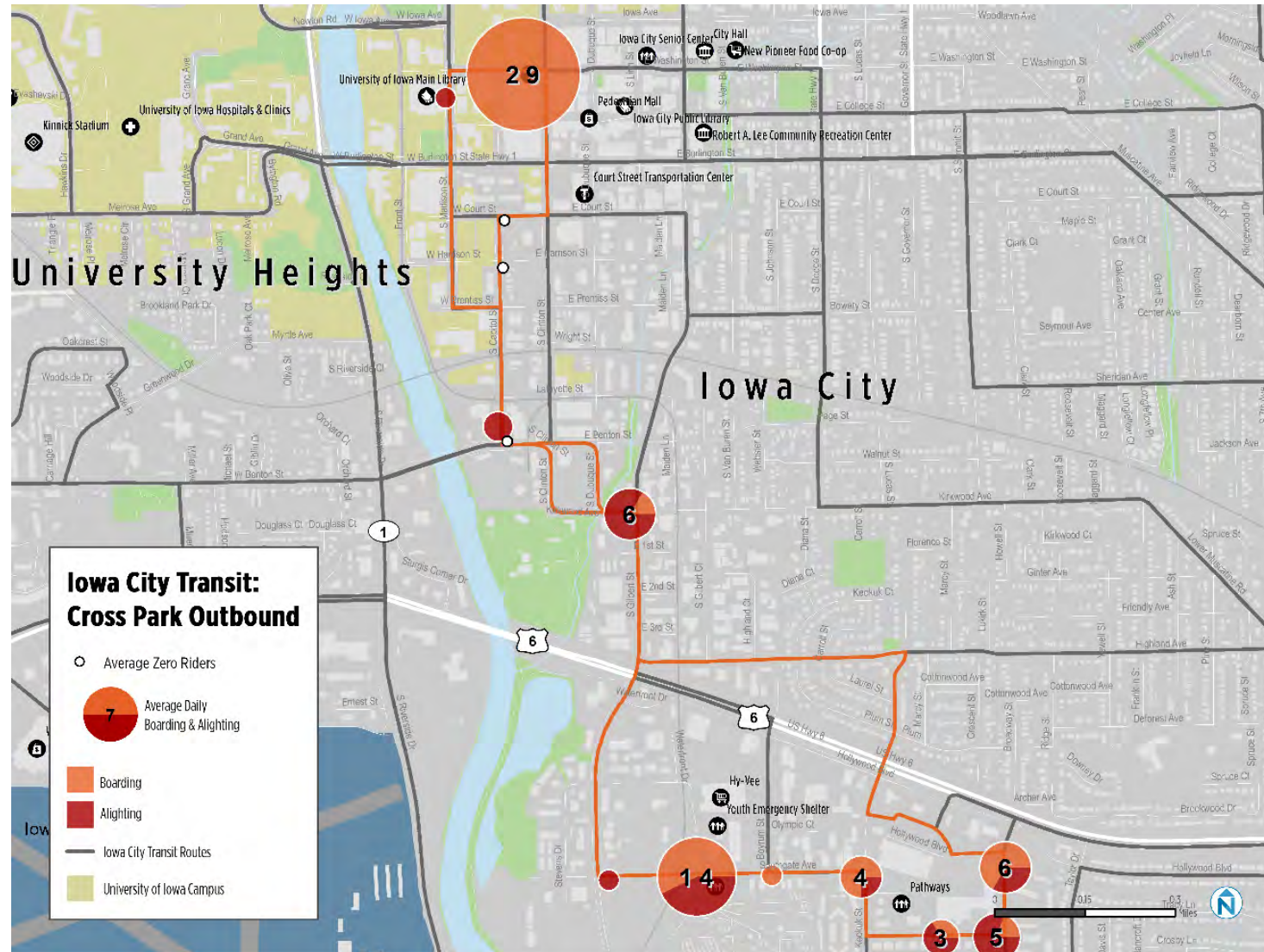




Figure A-37 Iowa City Transit Eastside Express (Inbound) Average Weekday Boardings

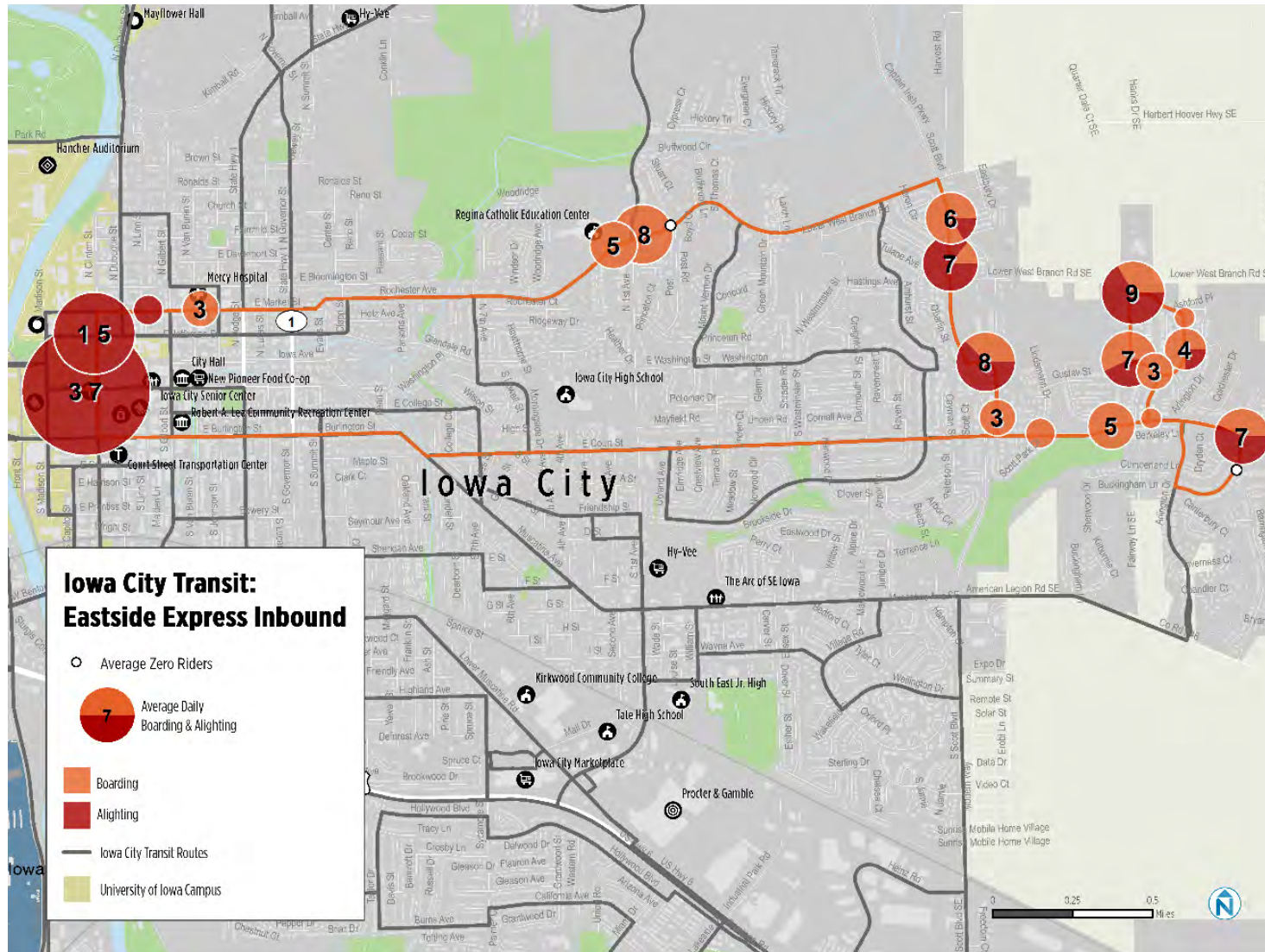




Figure A-38 Iowa City Transit Eastside Express (Outbound) Average Weekday Boardings

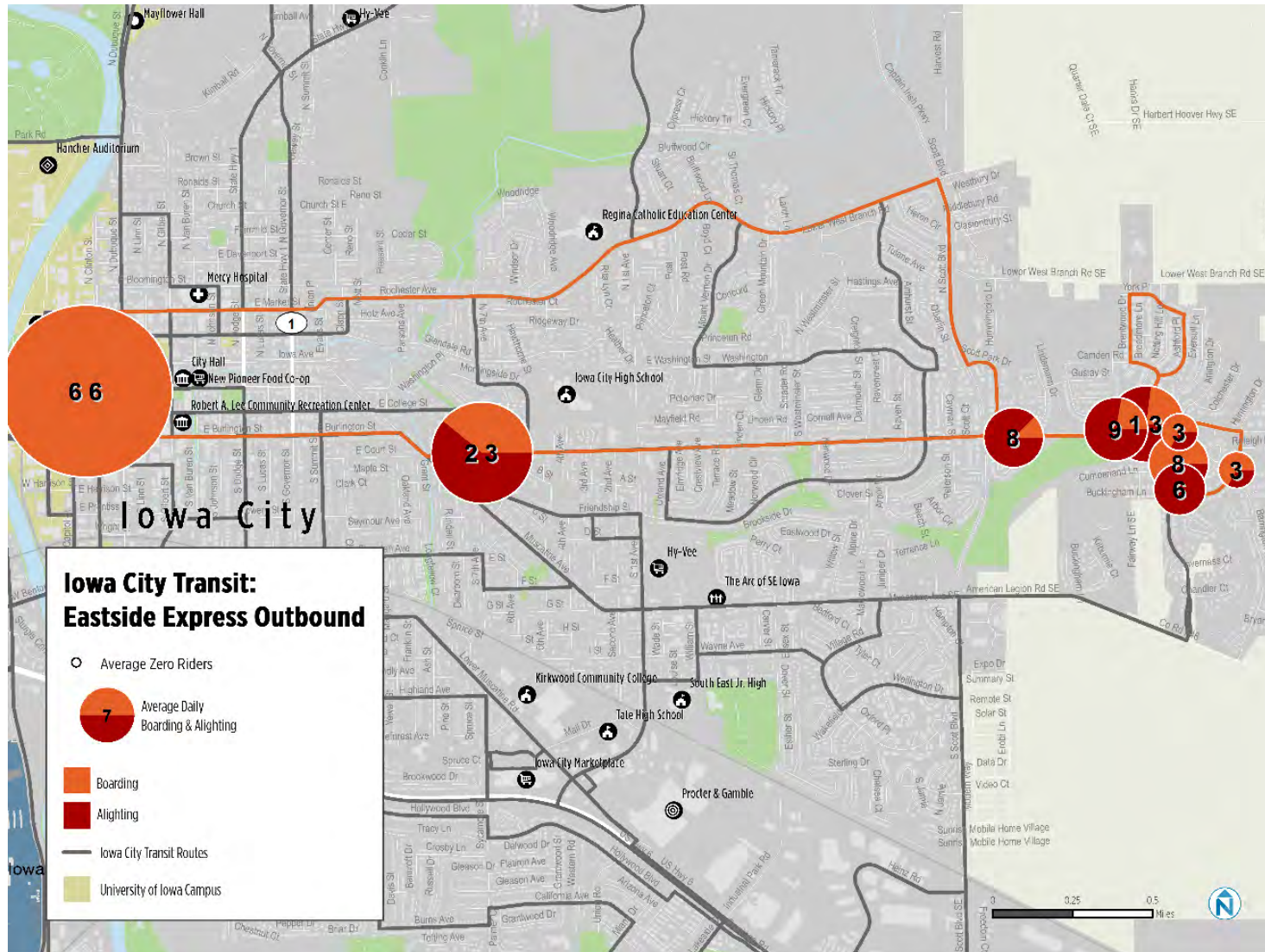
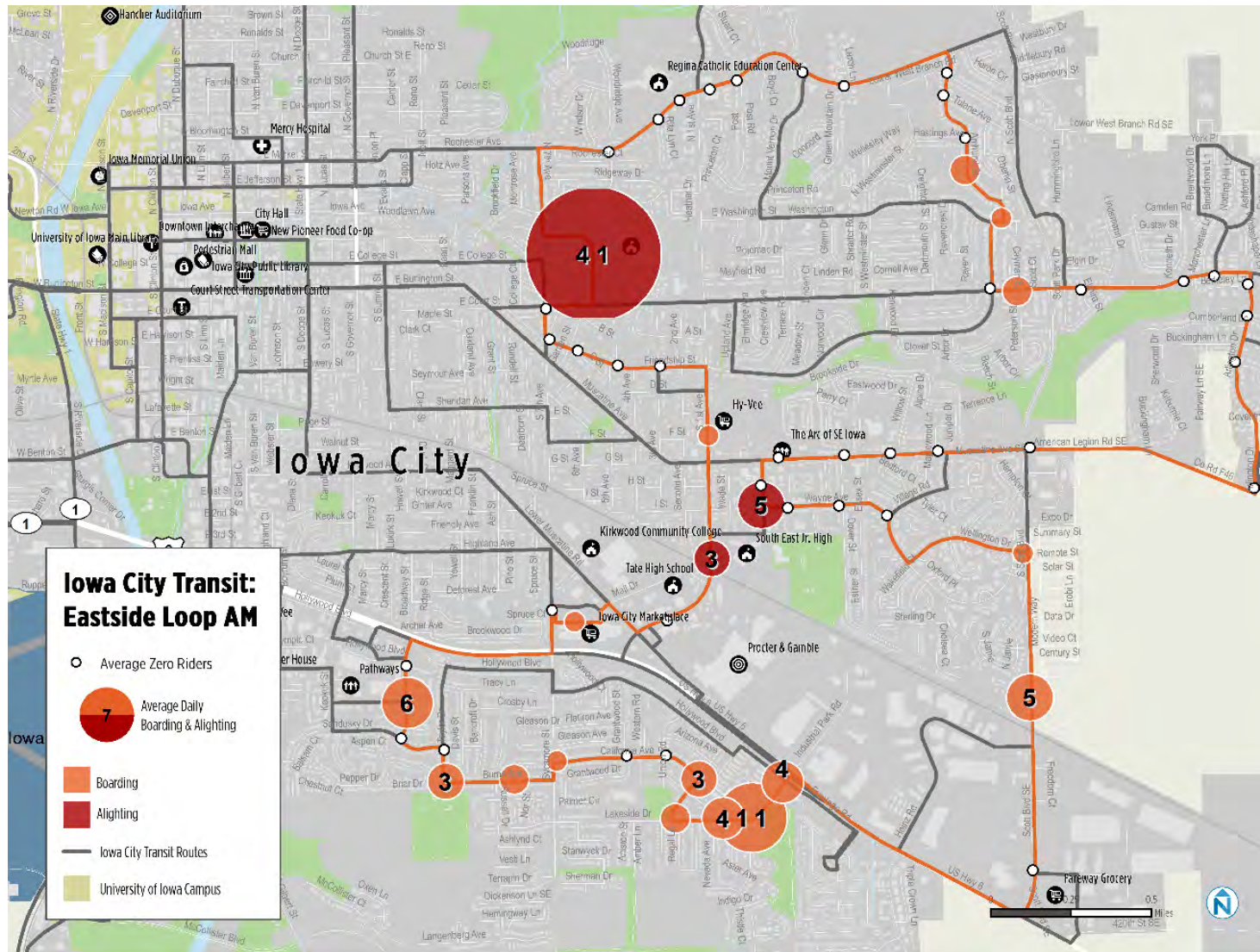




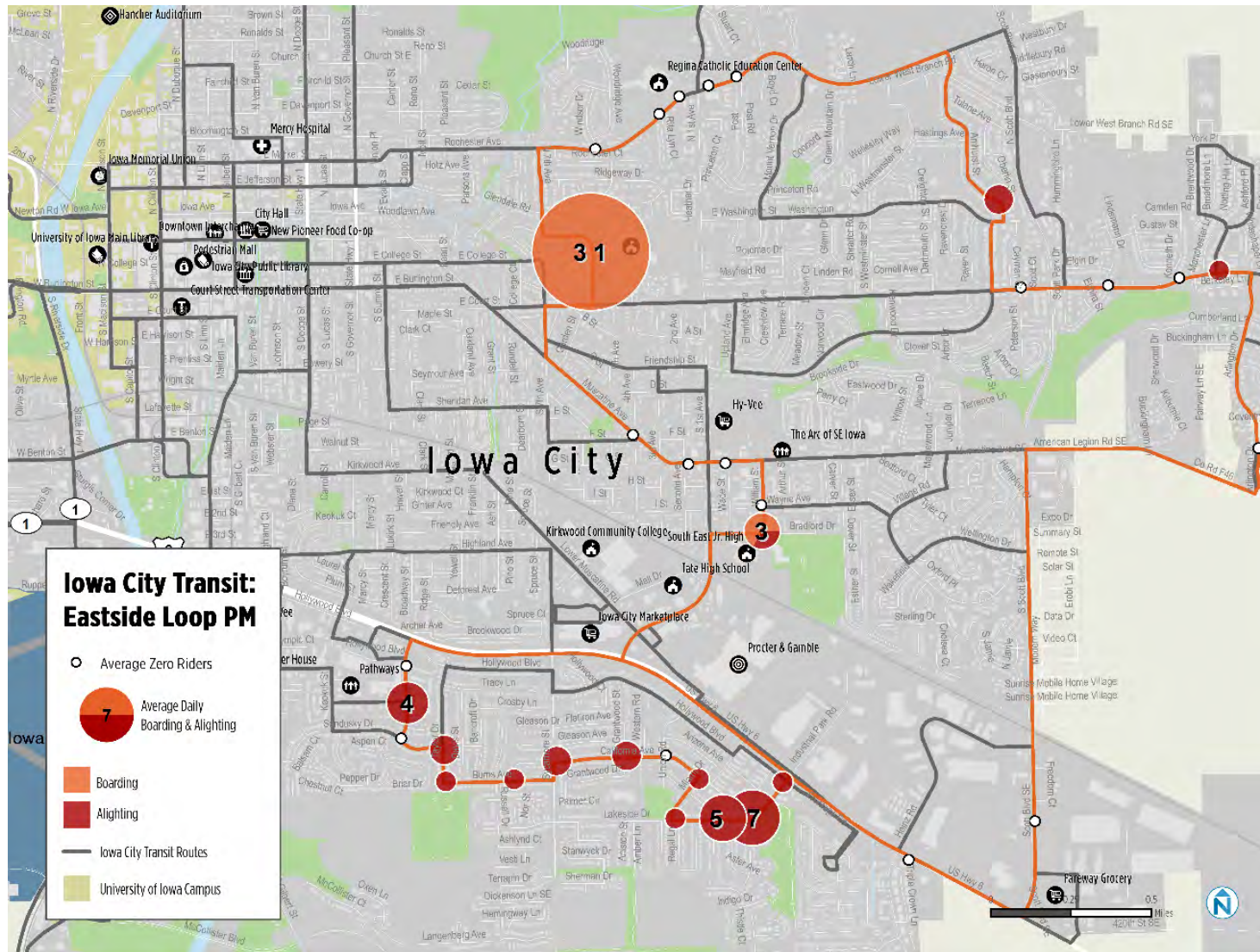
Figure A-39 Iowa City Transit Eastside Loop (AM) Average Weekday Boardings



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Figure A-40 Iowa City Transit Eastside Loop (PM) Average Weekday Boardings



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Figure A-41 Iowa City Transit Lakeside (Inbound) Average Weekday Boardings

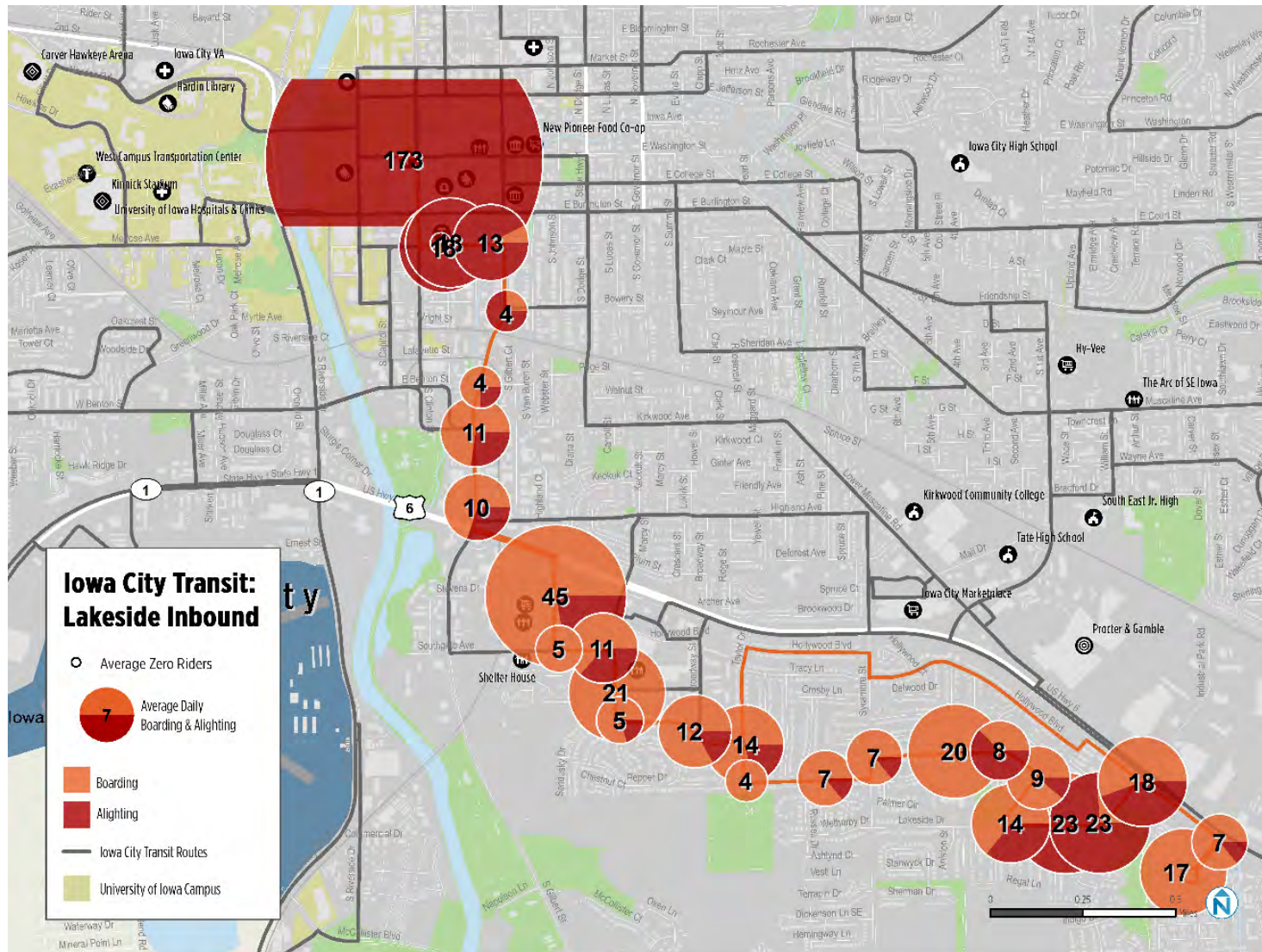




Figure A-42 Iowa City Transit Lakeside (Outbound) Average Weekday Boardings

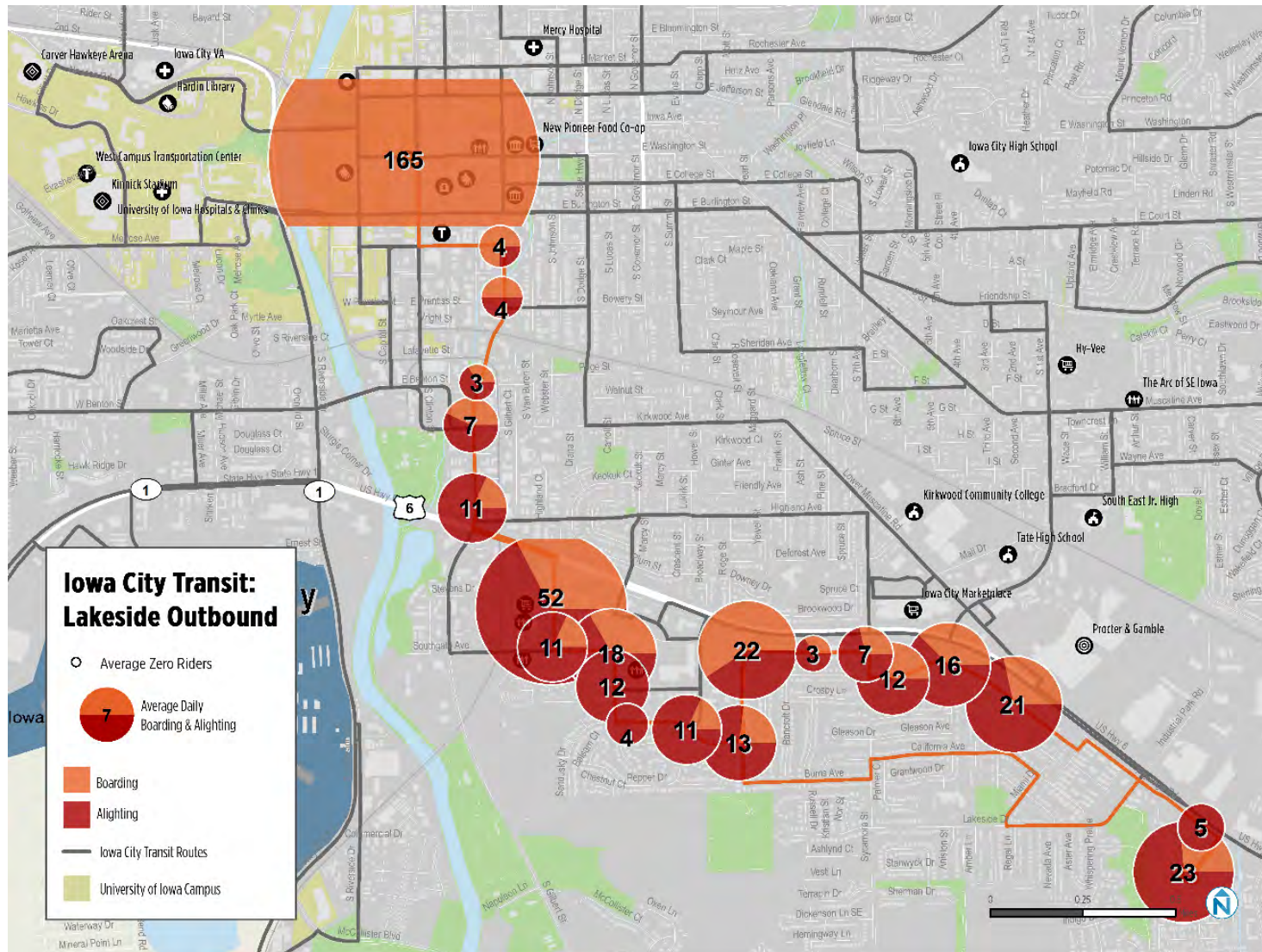




Figure A-43 Iowa City Transit Mall (Inbound) Average Weekday Boardings

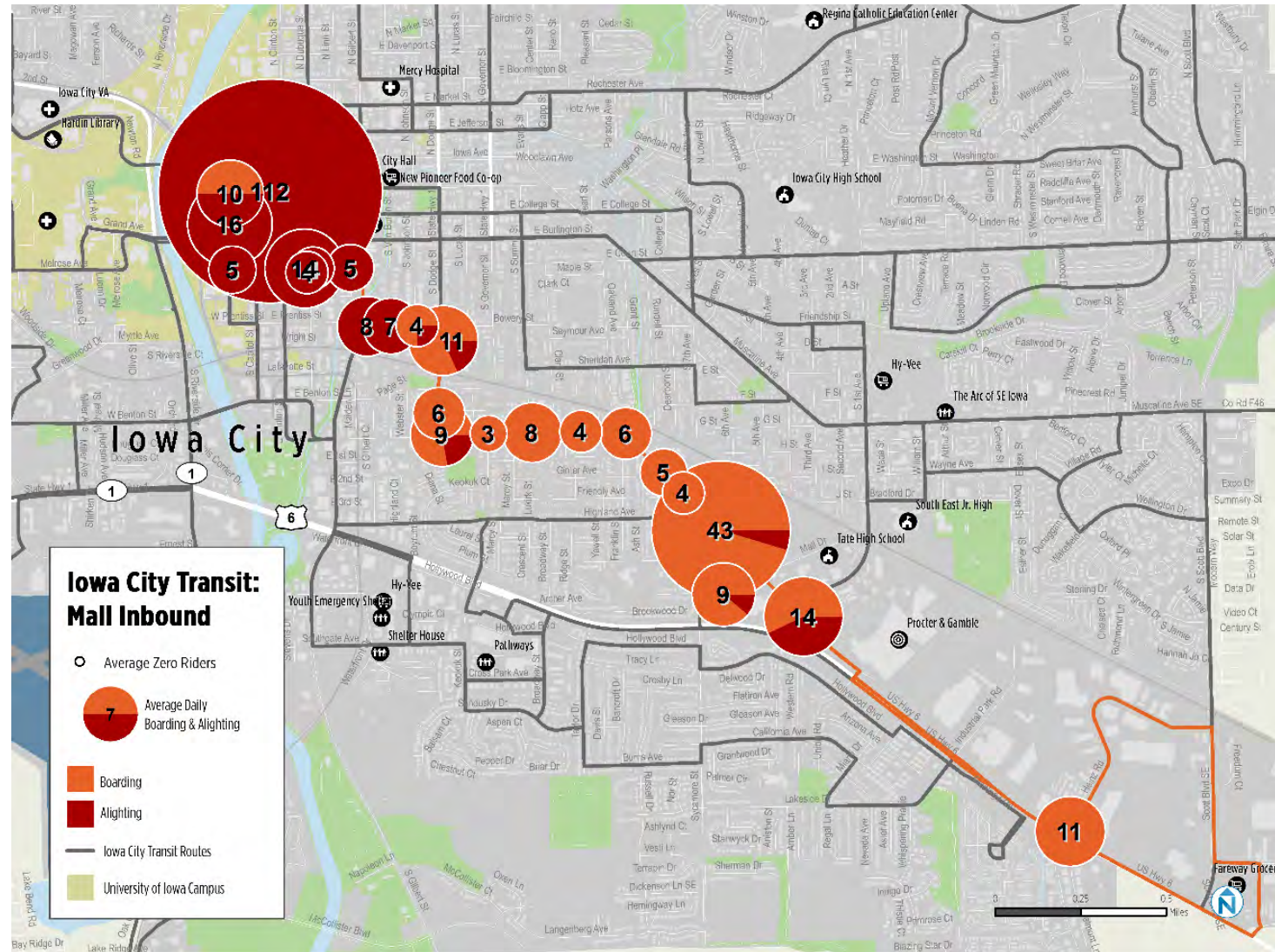




Figure A-44 Iowa City Transit Mall (Outbound) Average Weekday Boardings

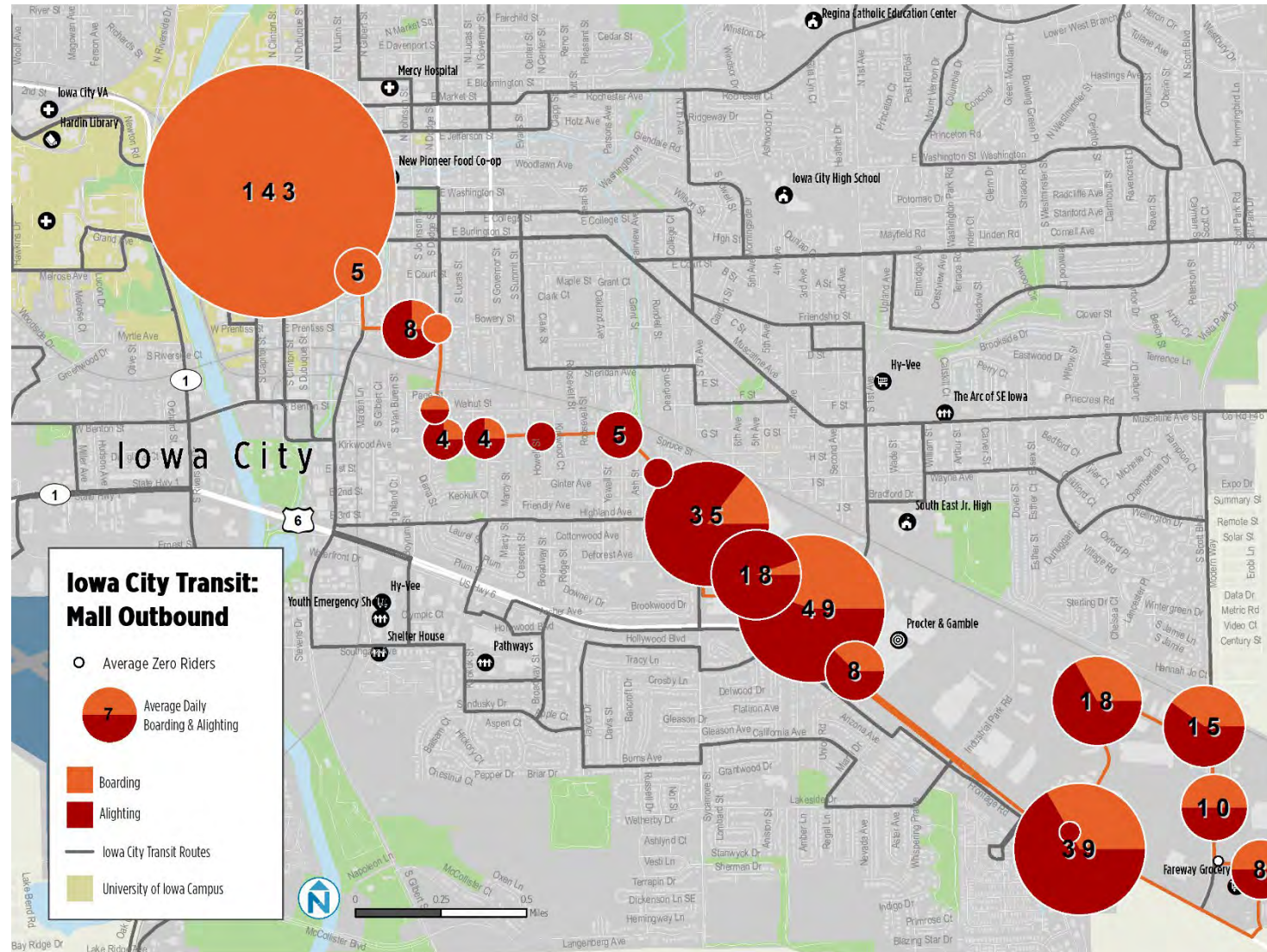




Figure A-45 Iowa City Transit Manville Heights (Inbound) Average Weekday Boardings

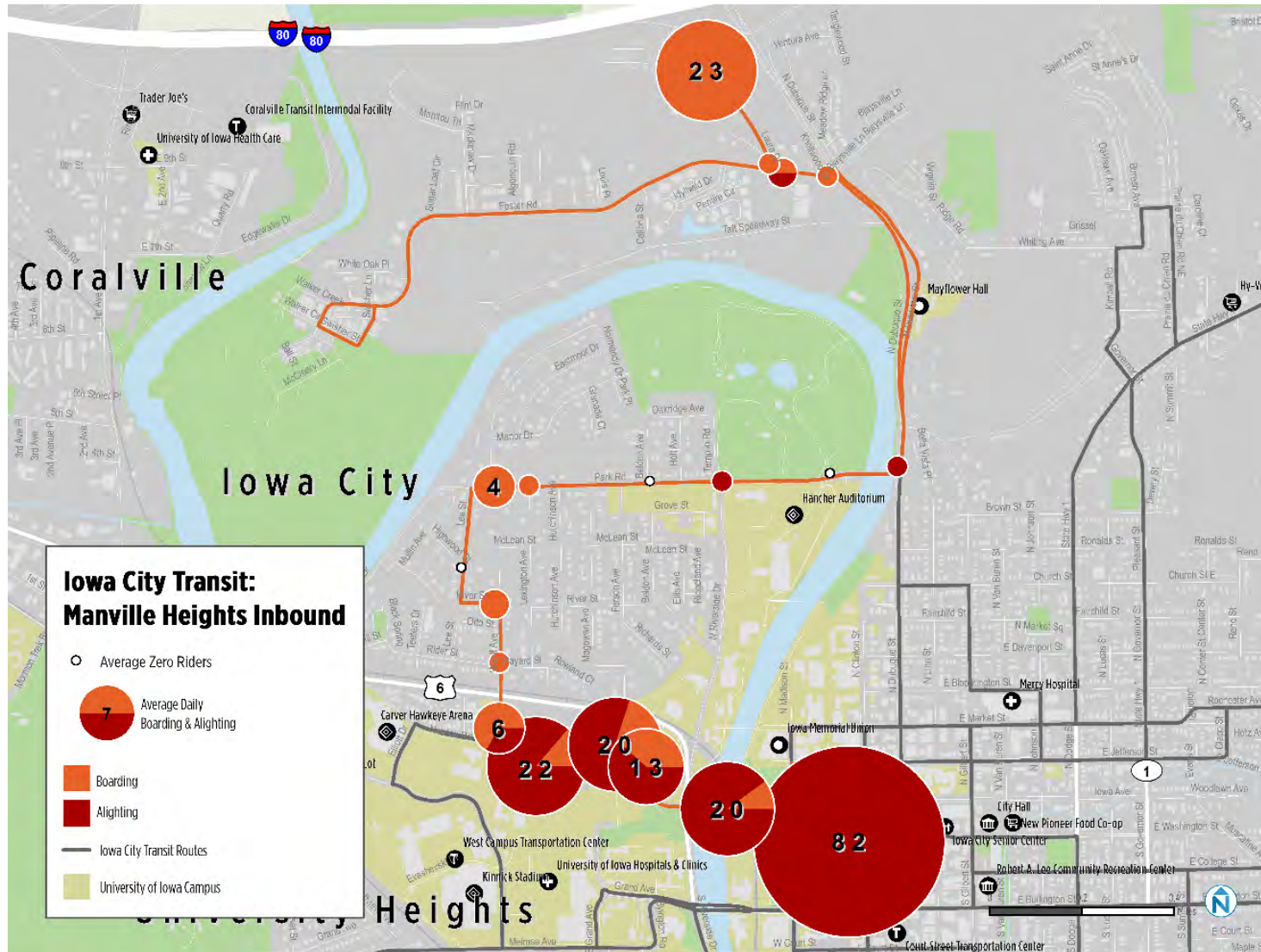




Figure A-46 Iowa City Transit Manville Heights (Outbound) Average Weekday Boardings

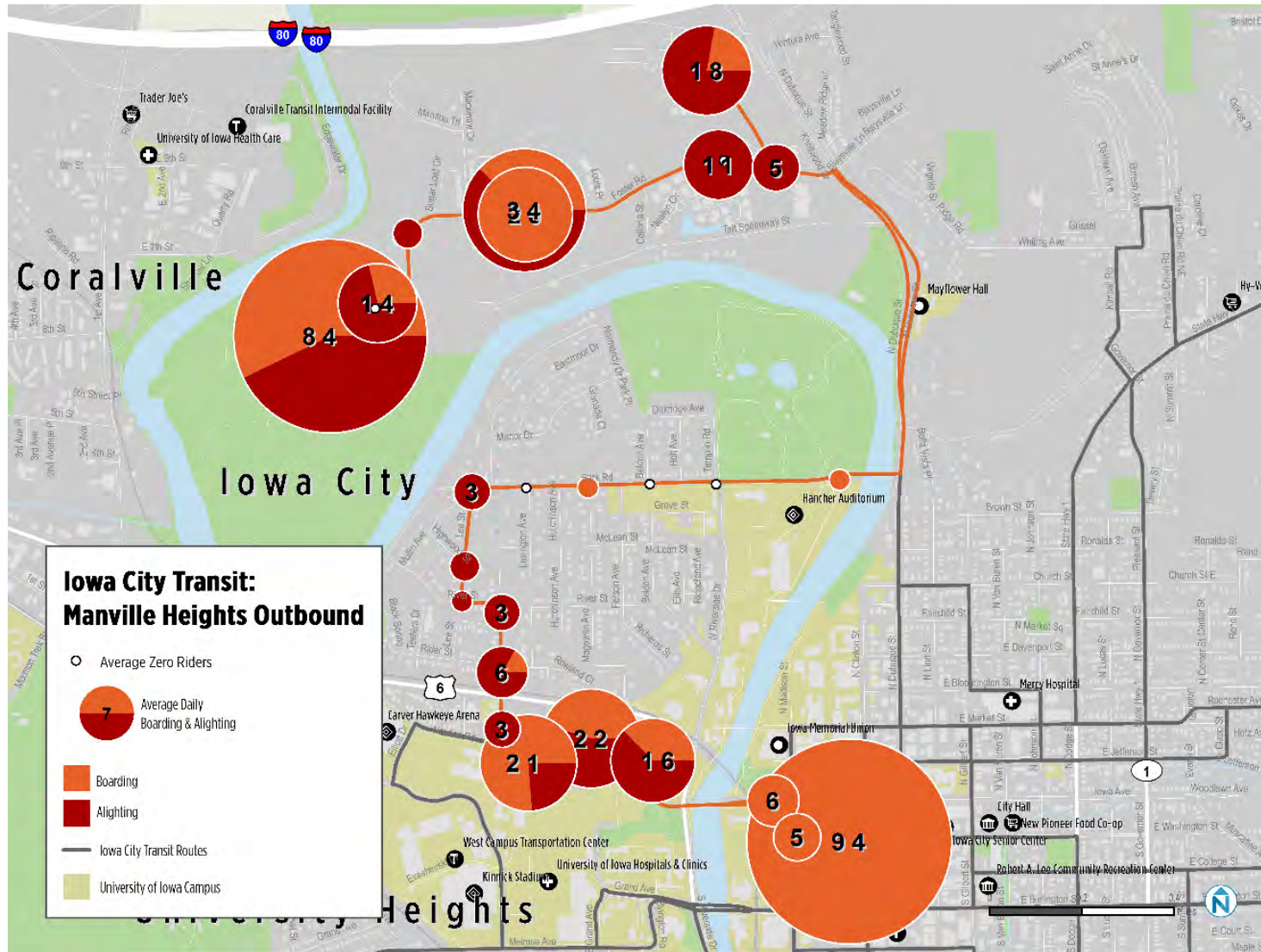




Figure A-47 Iowa City Transit Melrose Express (Inbound) Average Weekday Boardings

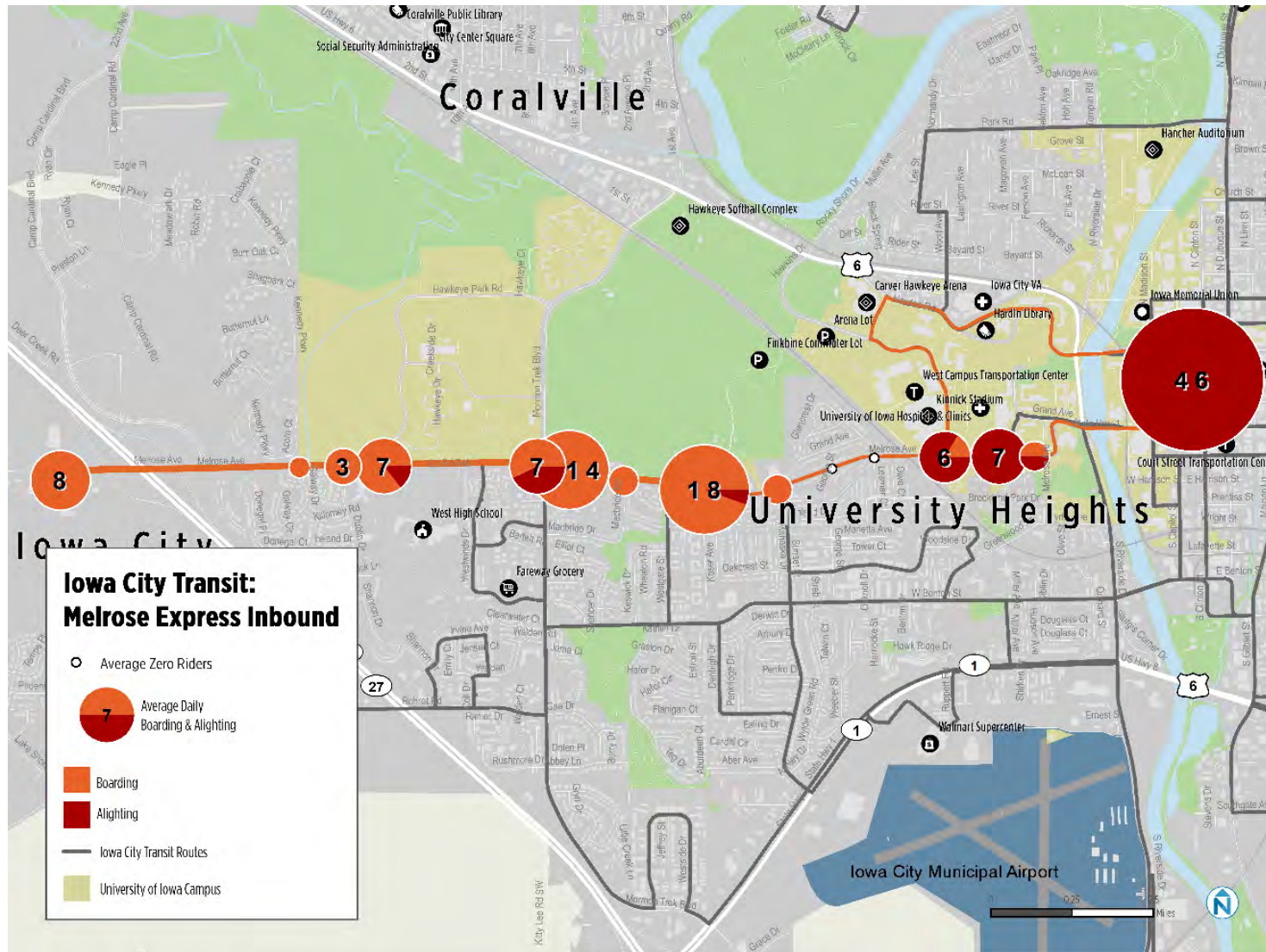




Figure A-48 Iowa City Transit Melrose Express (Outbound) Average Weekday Boardings

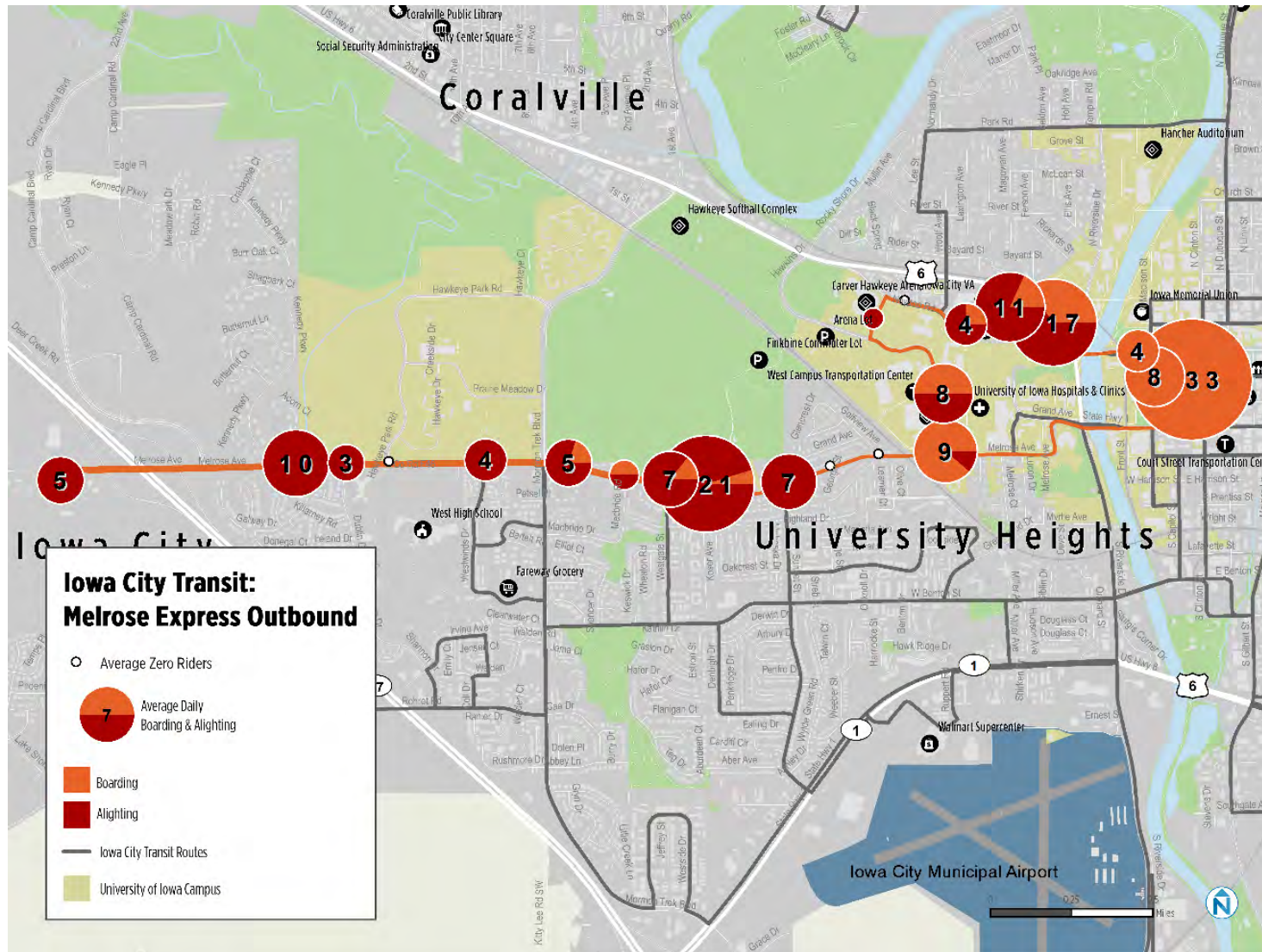
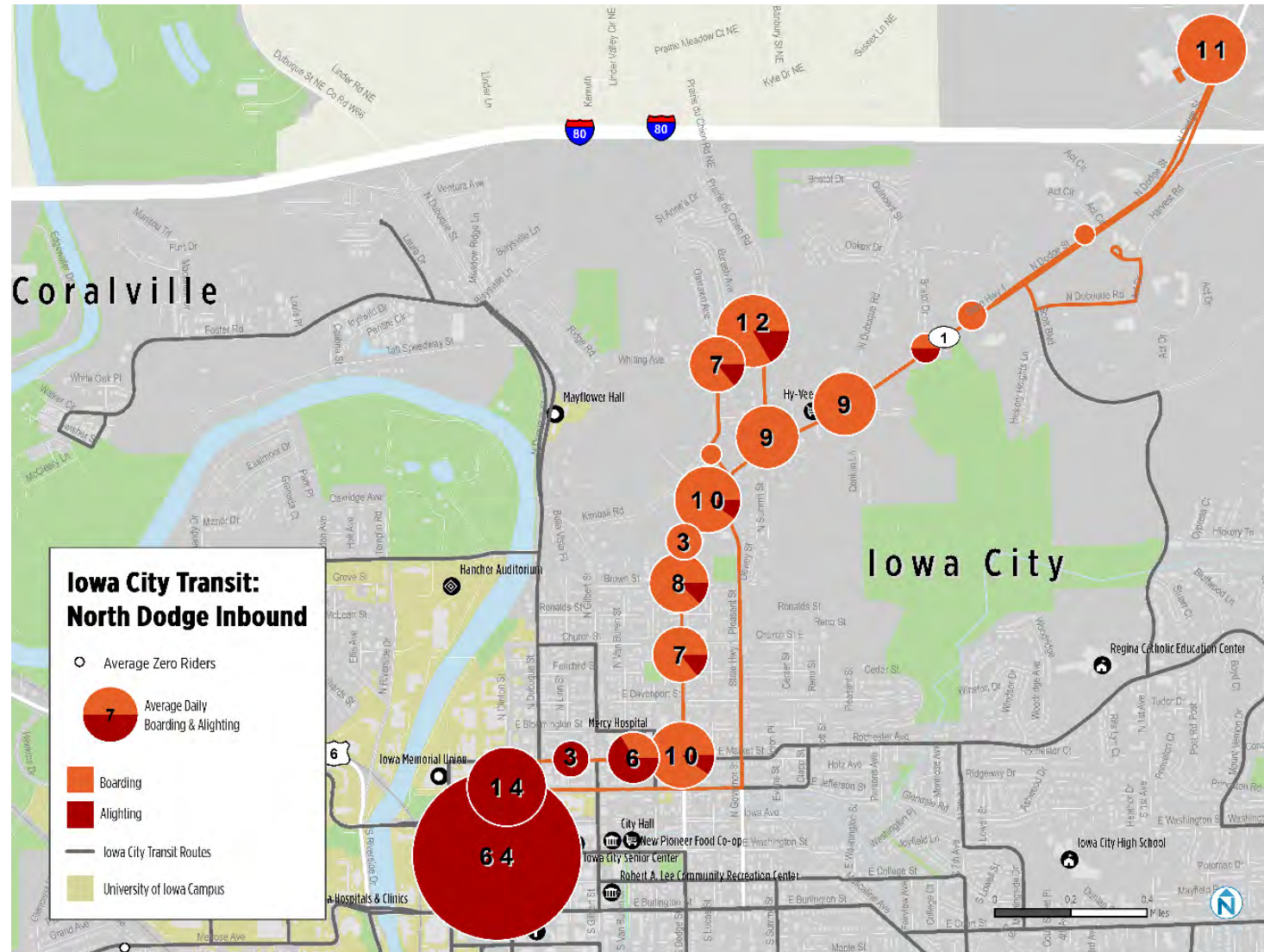




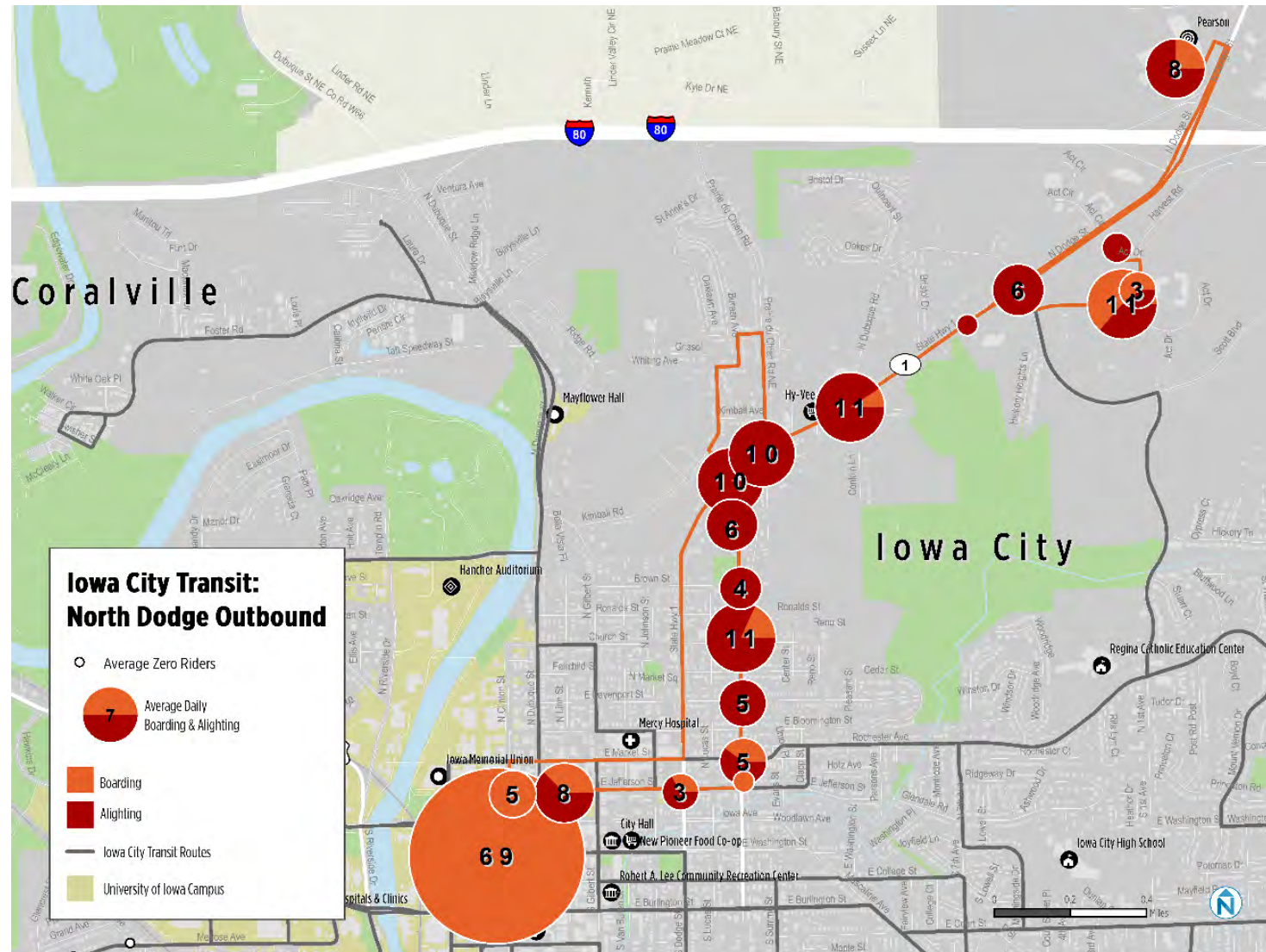
Figure A-49 Iowa City Transit North Dodge (Inbound) Average Weekday Boardings



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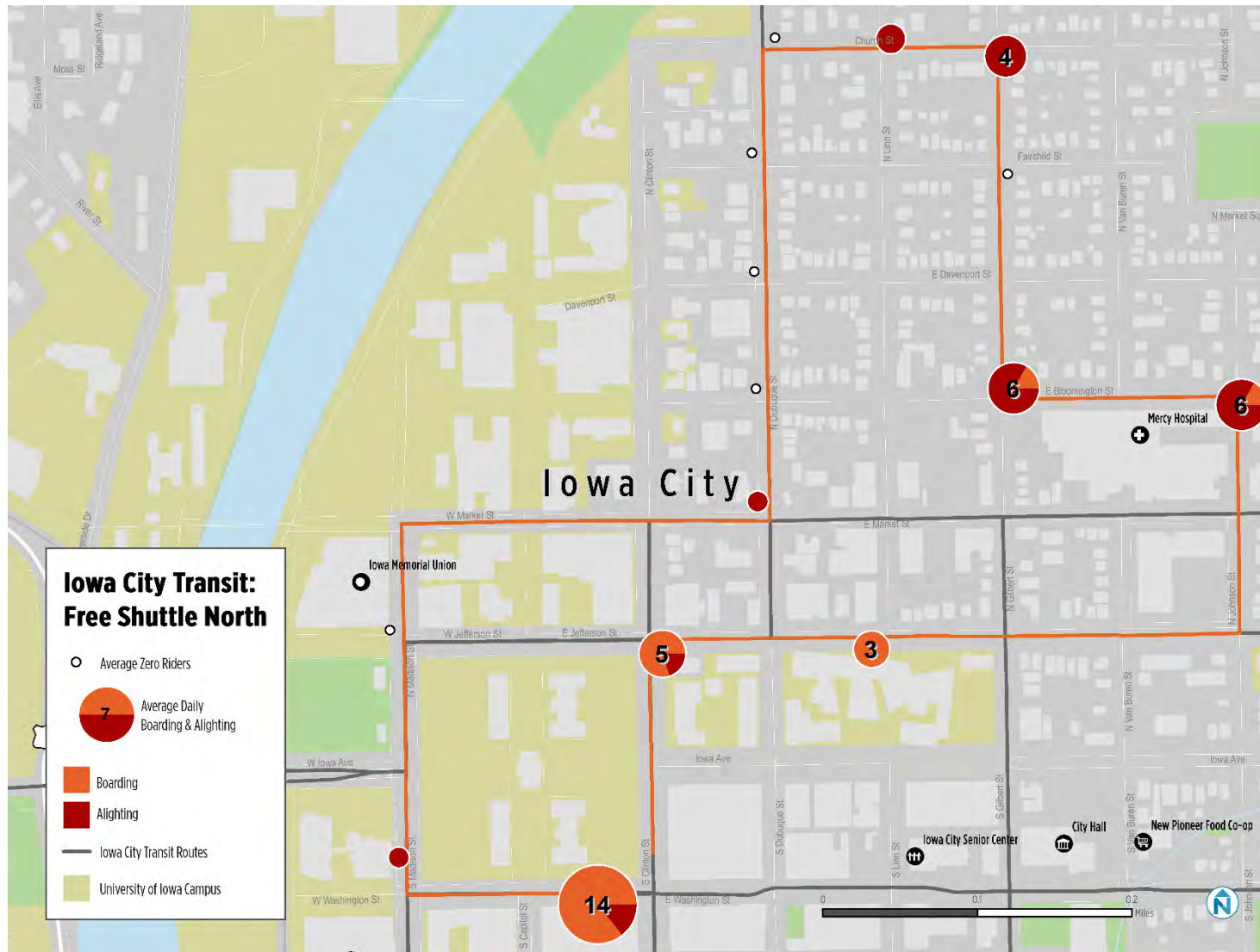
Figure A-50 Iowa City Transit North Dodge (Outbound) Average Weekday Boardings



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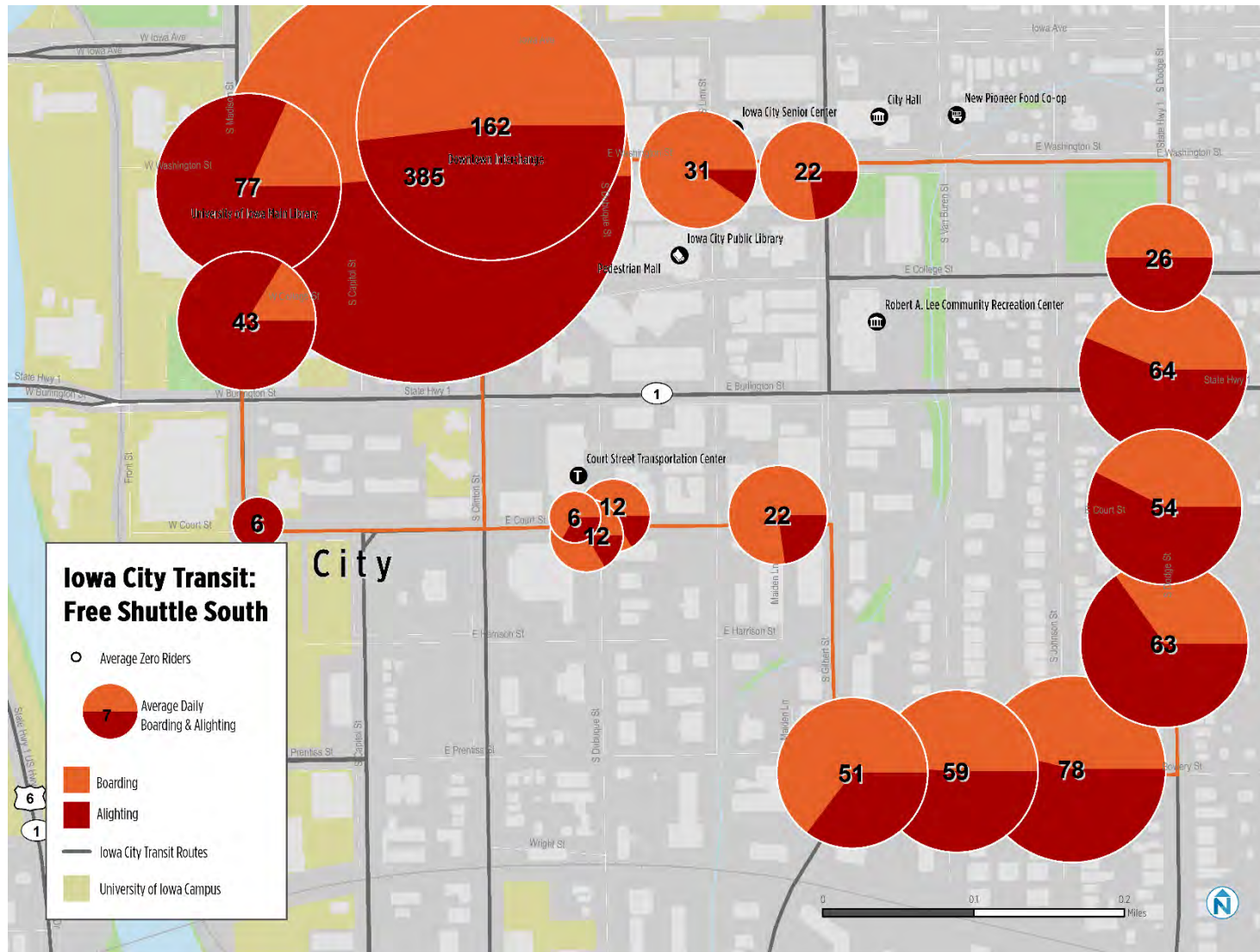
Figure A-51 Iowa City Transit Free Shuttle (North) Average Weekday Boardings



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Figure A-52 Iowa City Transit Free Shuttle (South) Average Weekday Boardings



Iowa City Transit: Oakrest Inbound

- Average Zero Riders
- Average Daily Boarding & Alighting (7)
- Orange: Boarding
- Red: Alighting
- Iowa City Transit Routes
- University of Iowa Campus

University Heights

Iowa City

Iowa City Municipal Airport

Walmart Supercenter

Key Locations: Carver Hawkeye Arena, Arena Lot, Finkbine Commuter Lot, West Campus Transportation Center, Kinrick Stadium, Iowa City VA, Hardin Library, Morley Hospital, City Hall, Youth Center, Hy-Vee, Shelter, University of Iowa Campus.

Map Data:

- University Heights: 12, 3, 10, 12, 126, 48, 39, 61, 31, 86, 14, 44, 193, 53
- Iowa City: 7, 1, 6



Figure A-54 Iowa City Transit Oakcrest (Outbound) Average Weekday Boardings

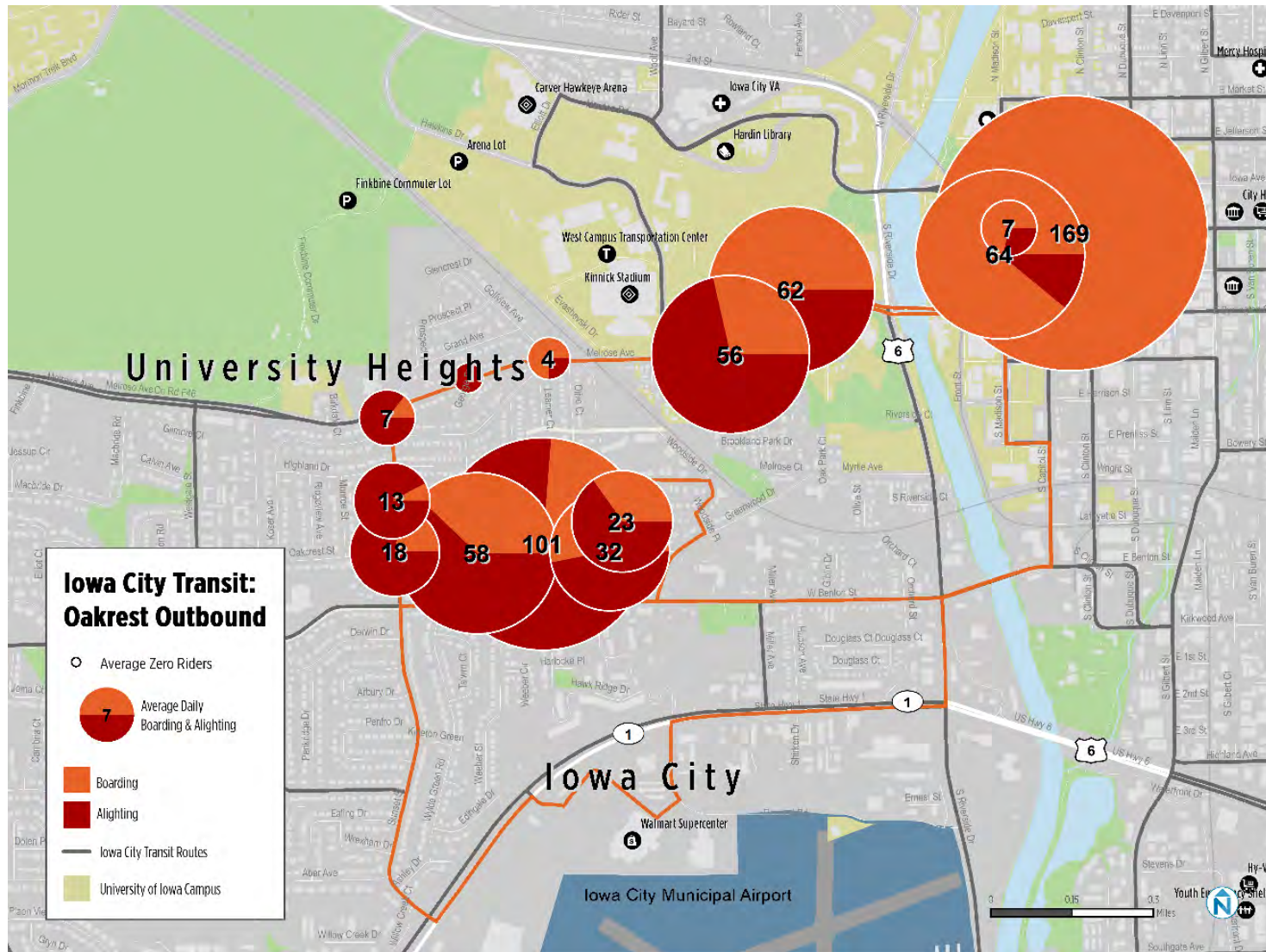




Figure A-55 Iowa City Transit Plaen View (Inbound) Average Weekday Boardings

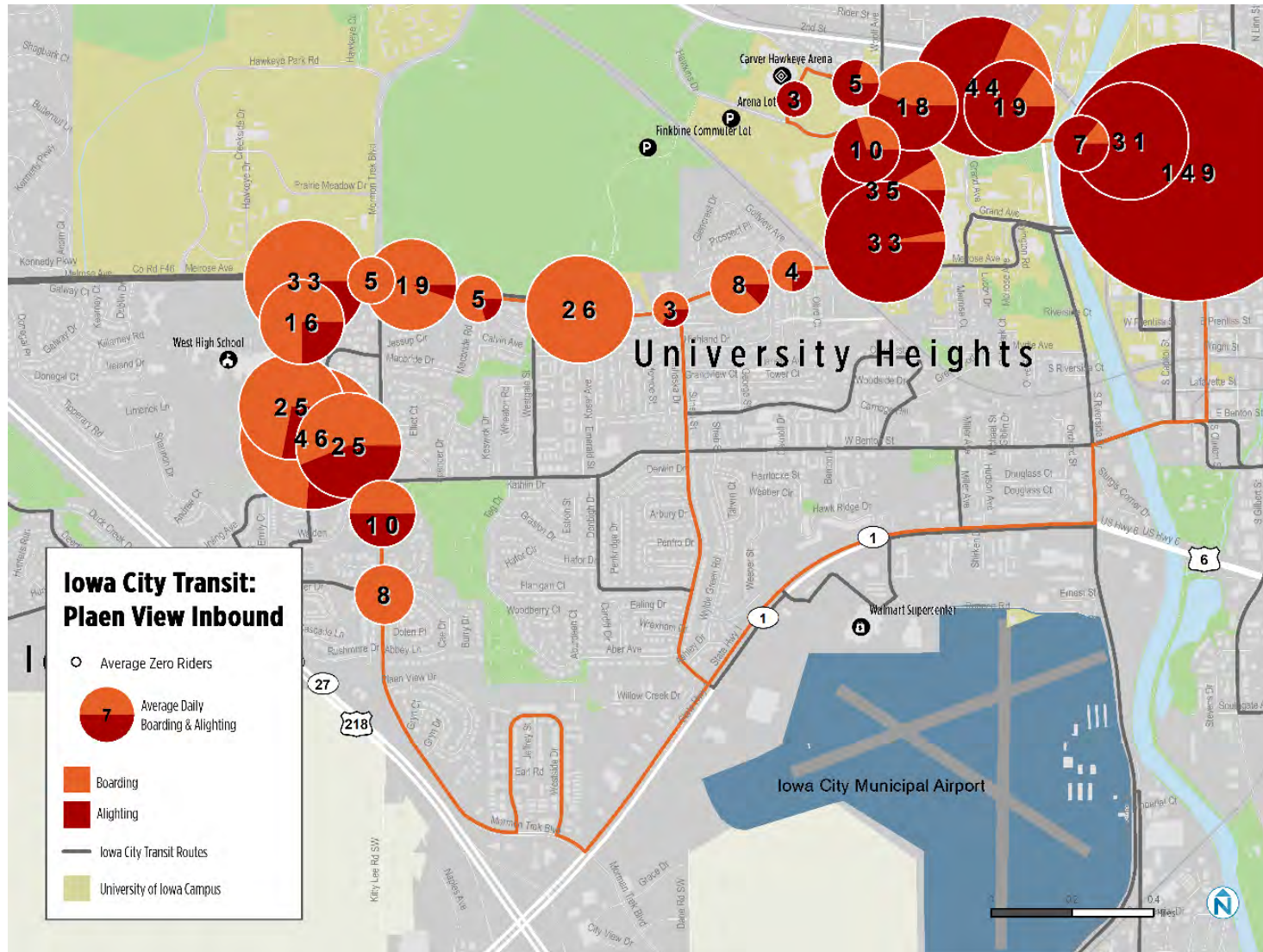




Figure A-56 Iowa City Transit Plaen View (Outbound) Average Weekday Boardings

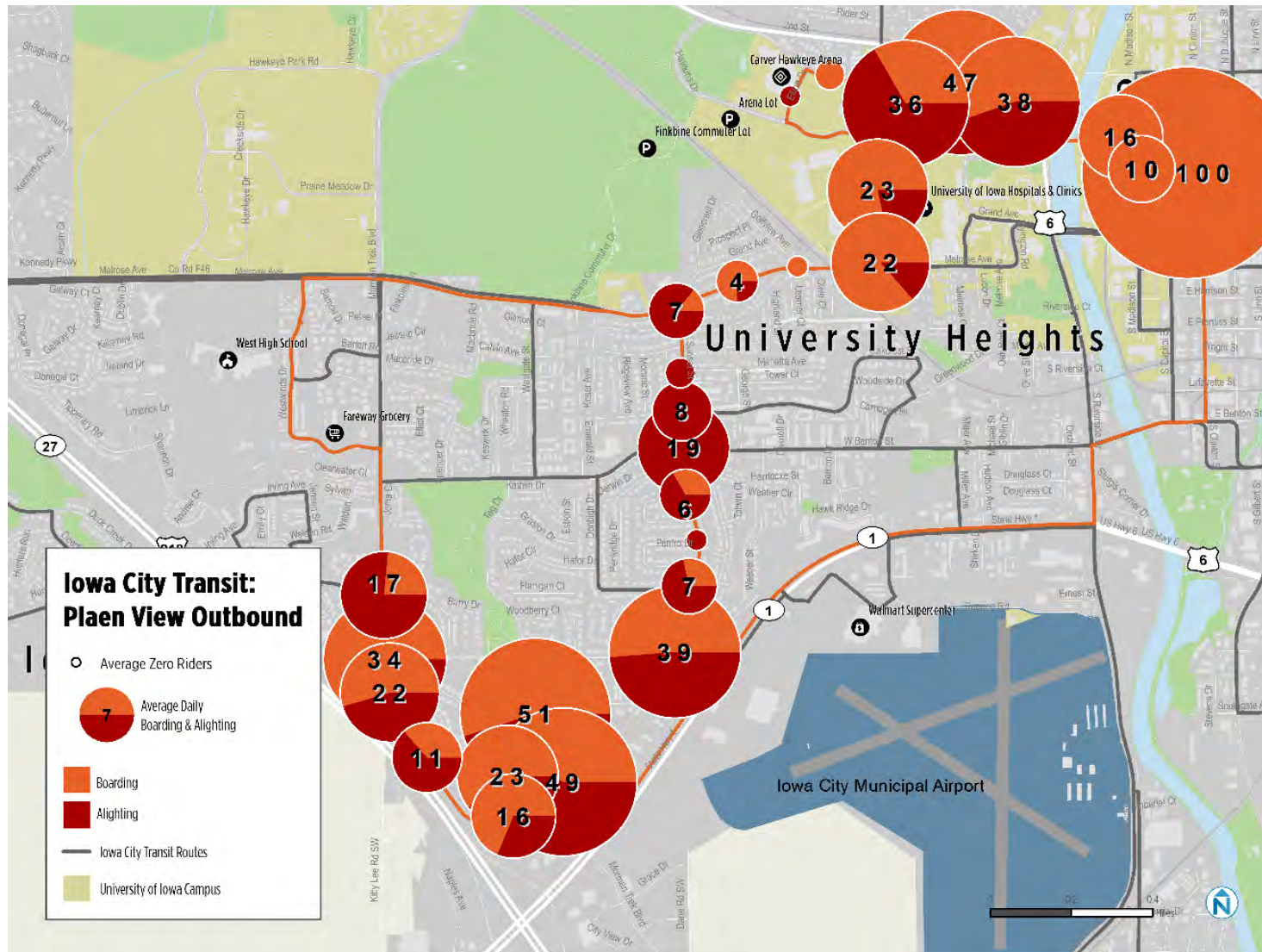




Figure A-57 Iowa City Transit Rochester (Inbound) Average Weekday Boardings

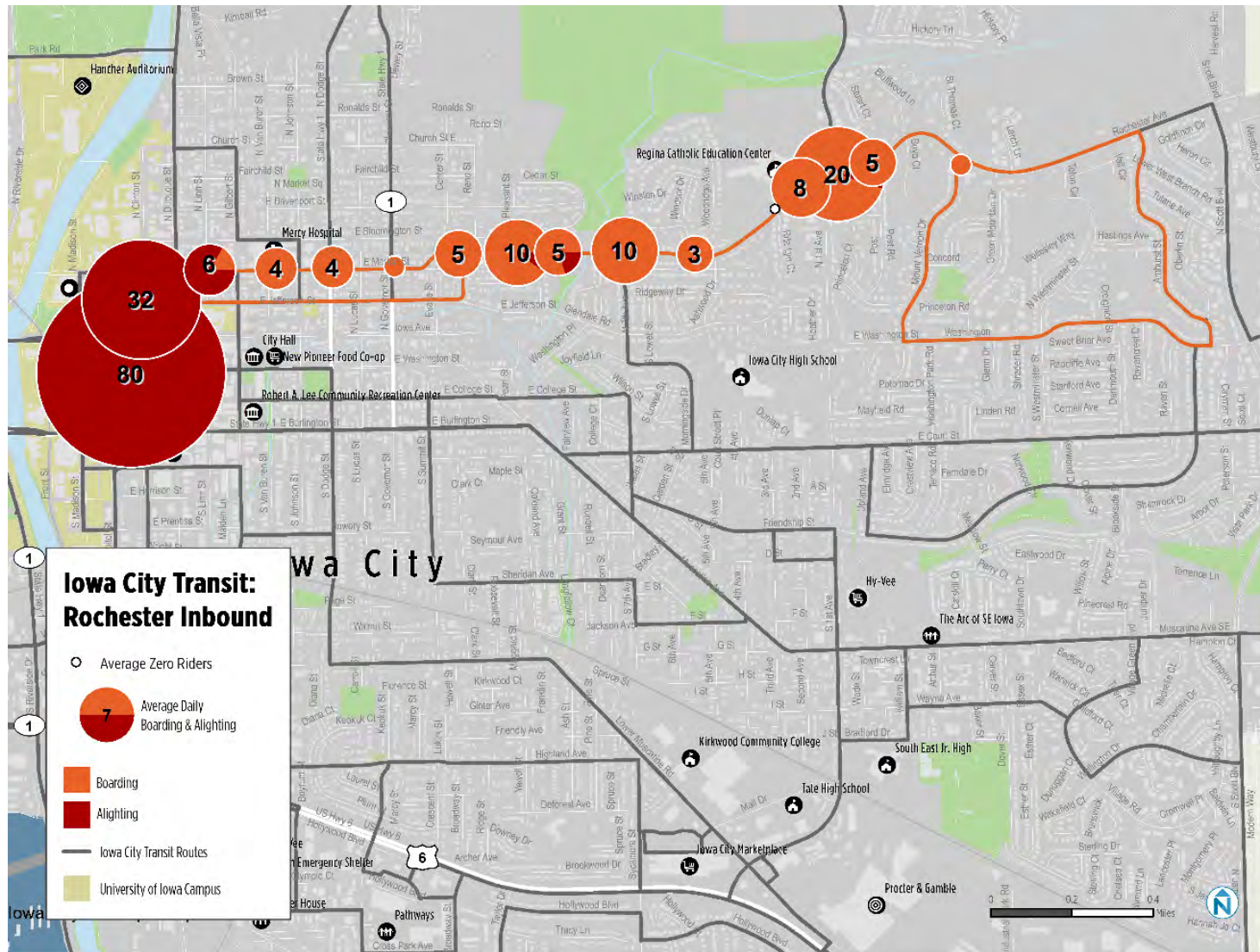




Figure A-58 Iowa City Transit Rochester (Outbound) Average Weekday Boardings

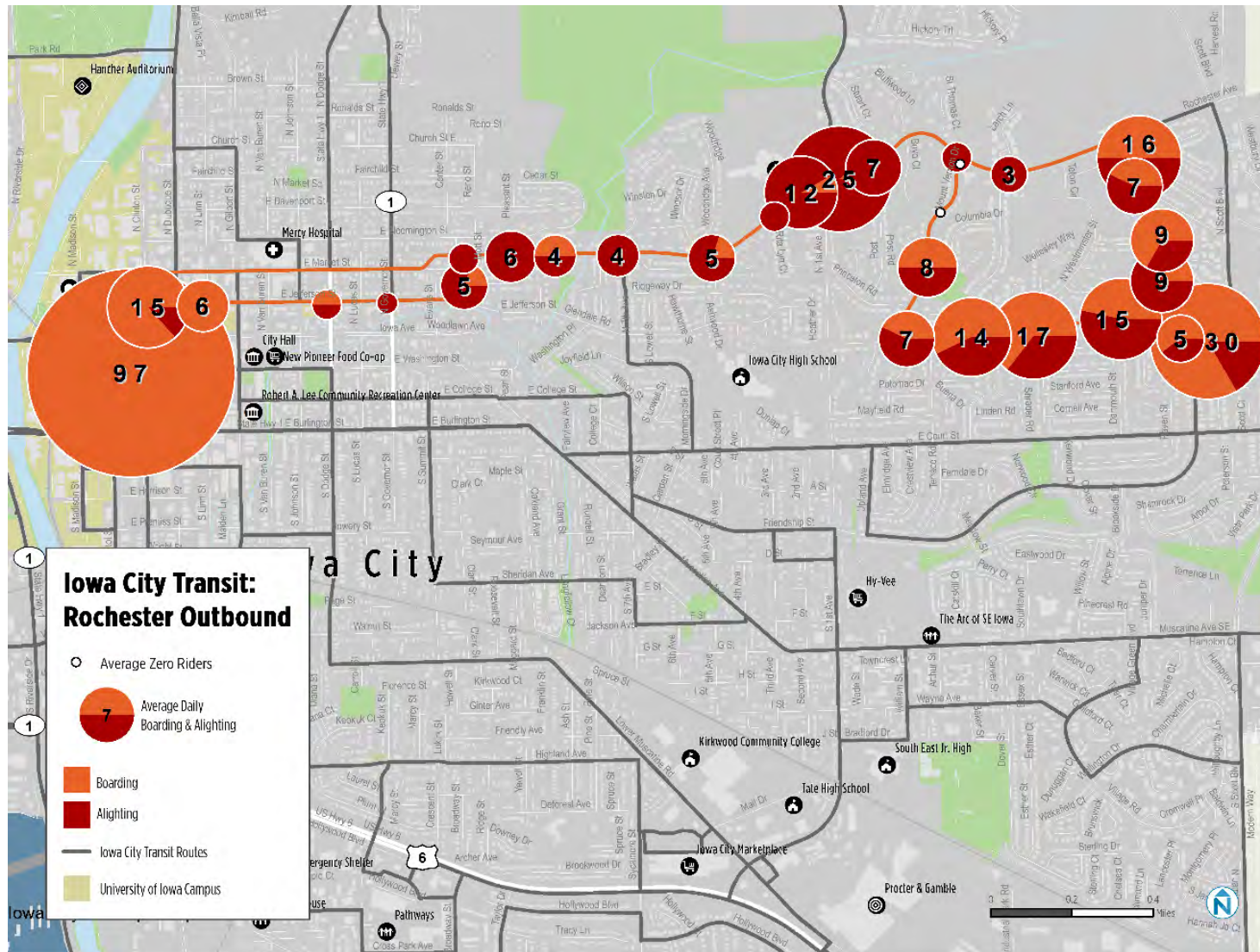




Figure A-59 Iowa City Transit Towncrest (Inbound) Average Weekday Boardings

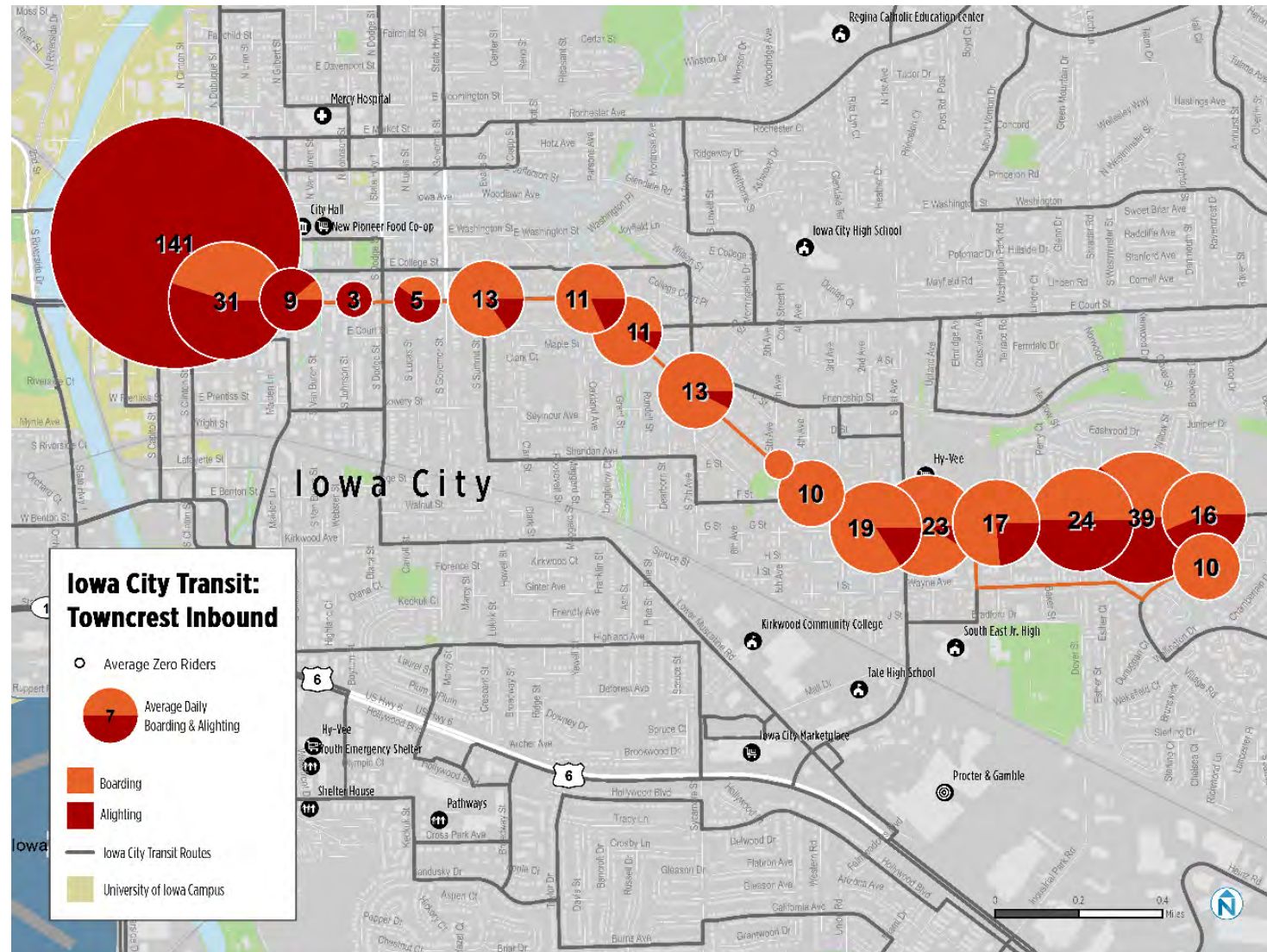




Figure A-60 Iowa City Transit Towncrest (Outbound) Average Weekday Boardings

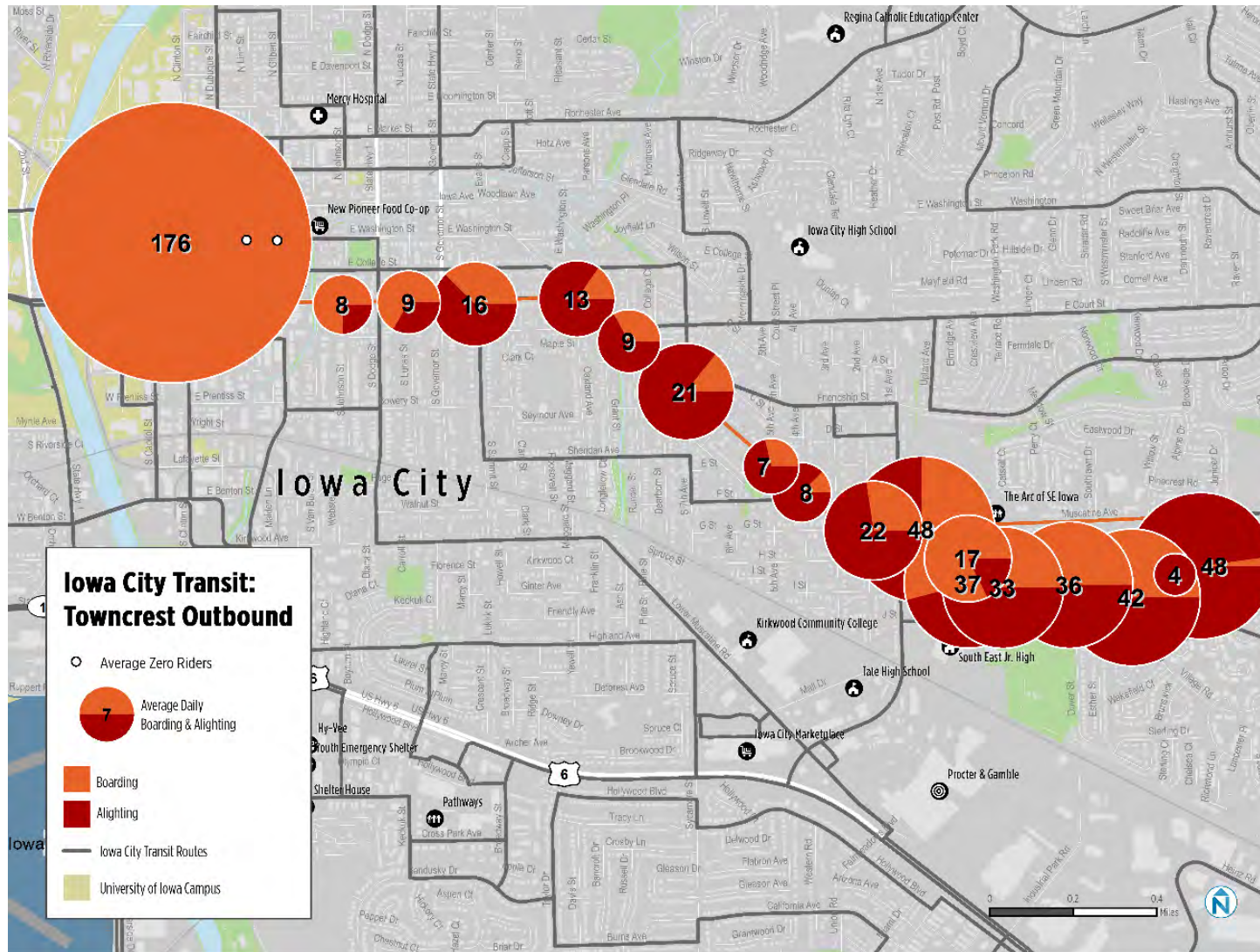




Figure A-61 Iowa City Transit Westport Plaza (Inbound) Average Weekday Boardings

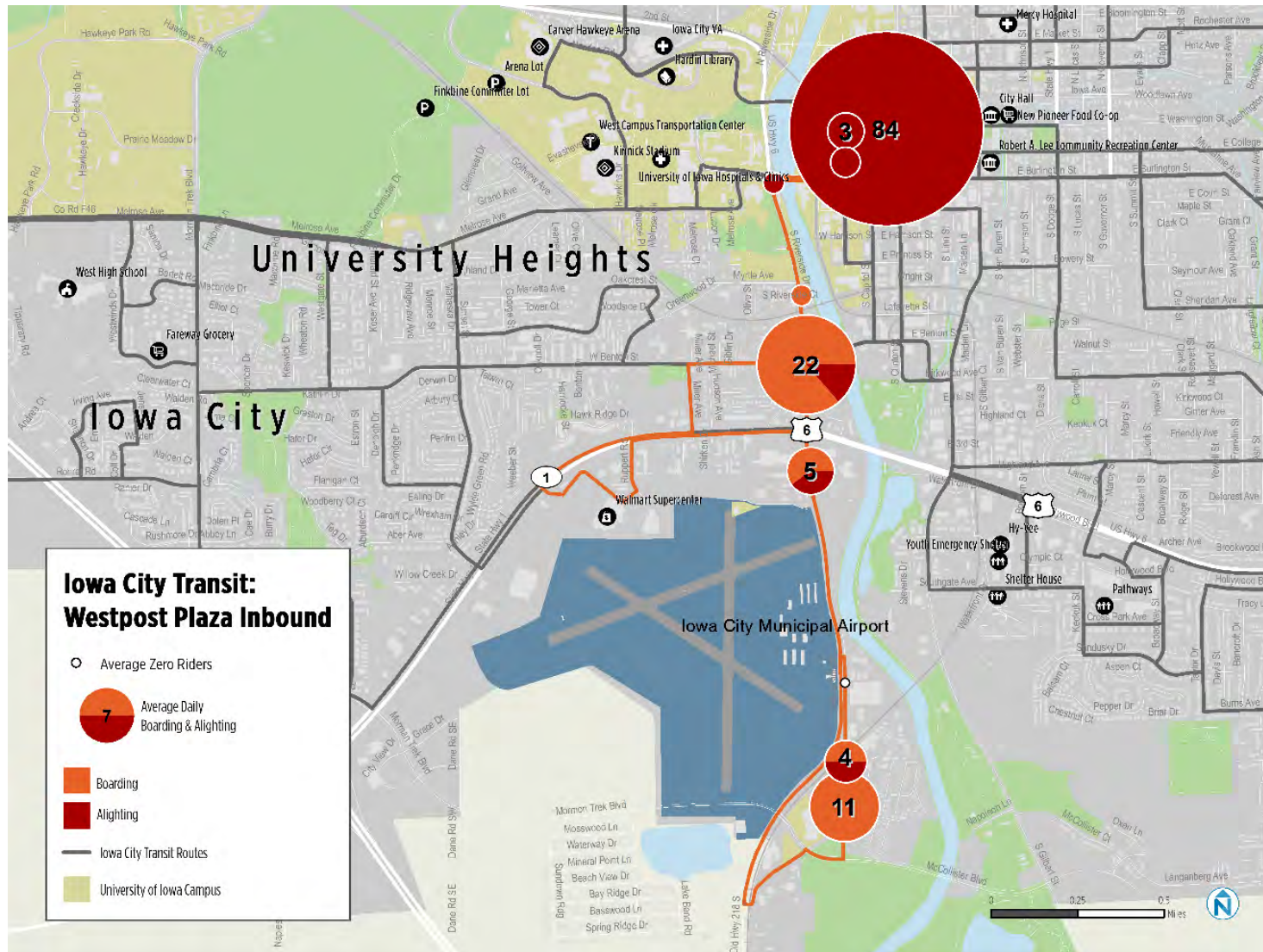




Figure A-62 Iowa City Transit Westport Plaza (Outbound) Average Weekday Boardings

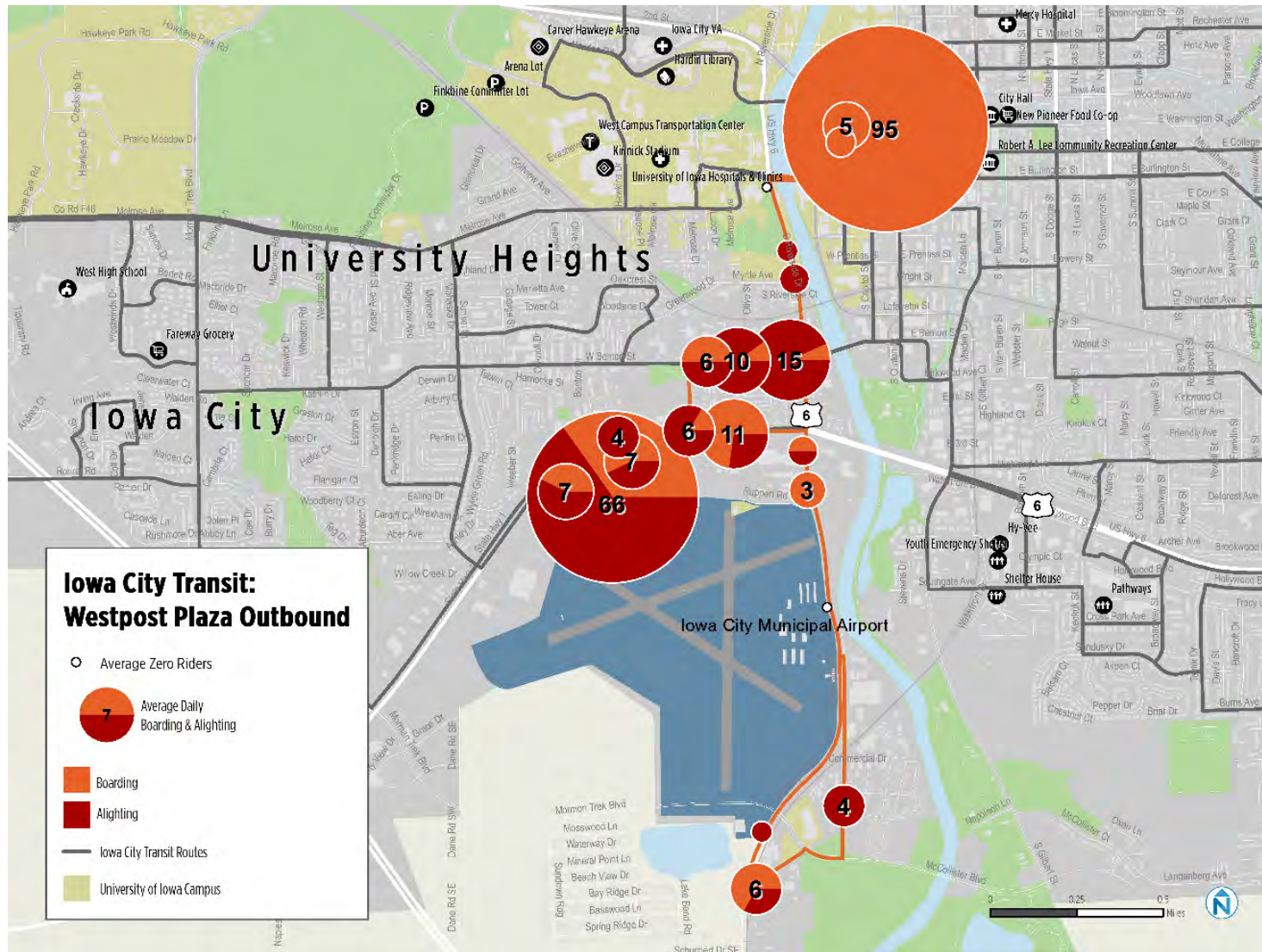
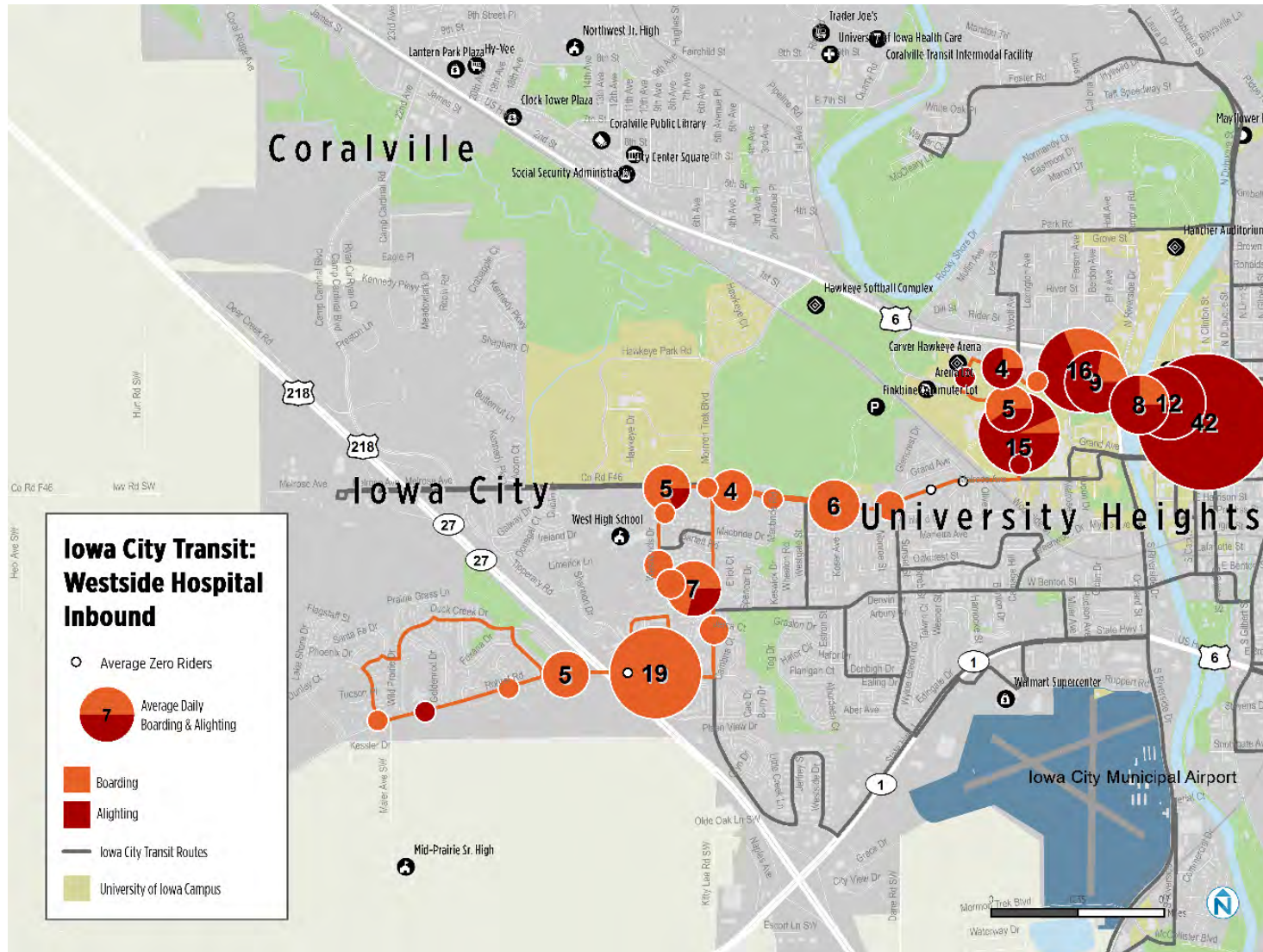




Figure A-63 Iowa City Transit Westside Hospital (Inbound) Average Weekday Boardings





Iowa City Transit: Westside Hospital Outbound

- Average Zero Riders
- 7 Average Daily Boarding & Alighting
- Boarding
- Alighting
- Iowa City Transit Routes
- University of Iowa Campus

The map displays the following locations and transit features:

- Coralville:** Includes locations like Northwest Jr. High, Clock Tower Plaza, Coralville Public Library, and Social Security Administration.
- Iowa City:** Includes locations like Carver Hawkeye Arena, Finkbine Center Lot, and West High School.
- University Heights:** Includes the University of Iowa Campus and Walmart Supercenter.
- Iowa City Municipal Airport:** Located in the southeast corner of the map.

Transit routes are shown as lines connecting various stops. Bubbles of different sizes and colors (orange for boarding, red for alighting) are placed at specific locations to indicate the number of average daily boarding and alighting passengers. The size of the bubble represents the average number of zero riders at that location.



Figure A-65 Iowa City Transit Westwinds (Inbound) Average Weekday Boardings

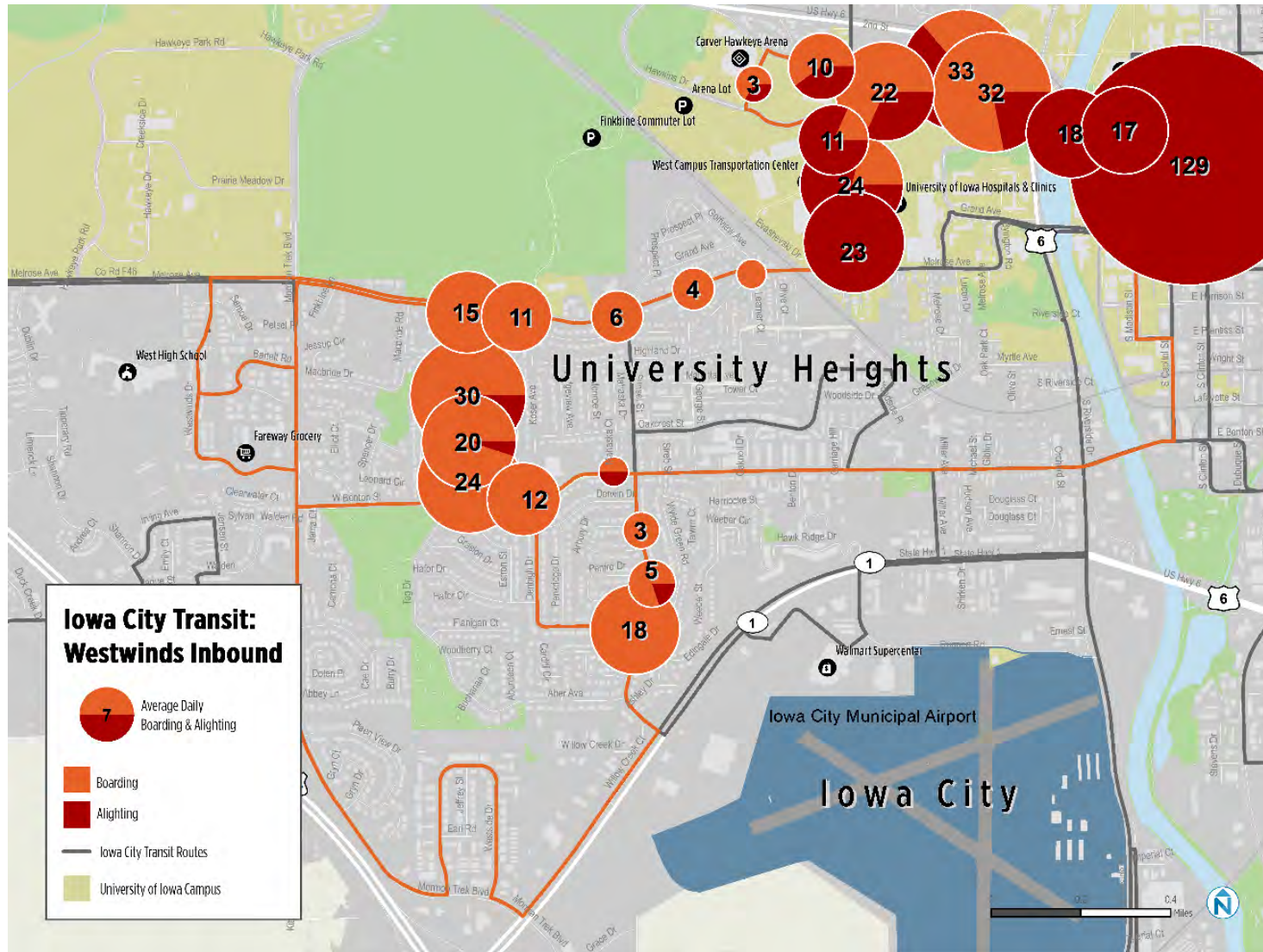
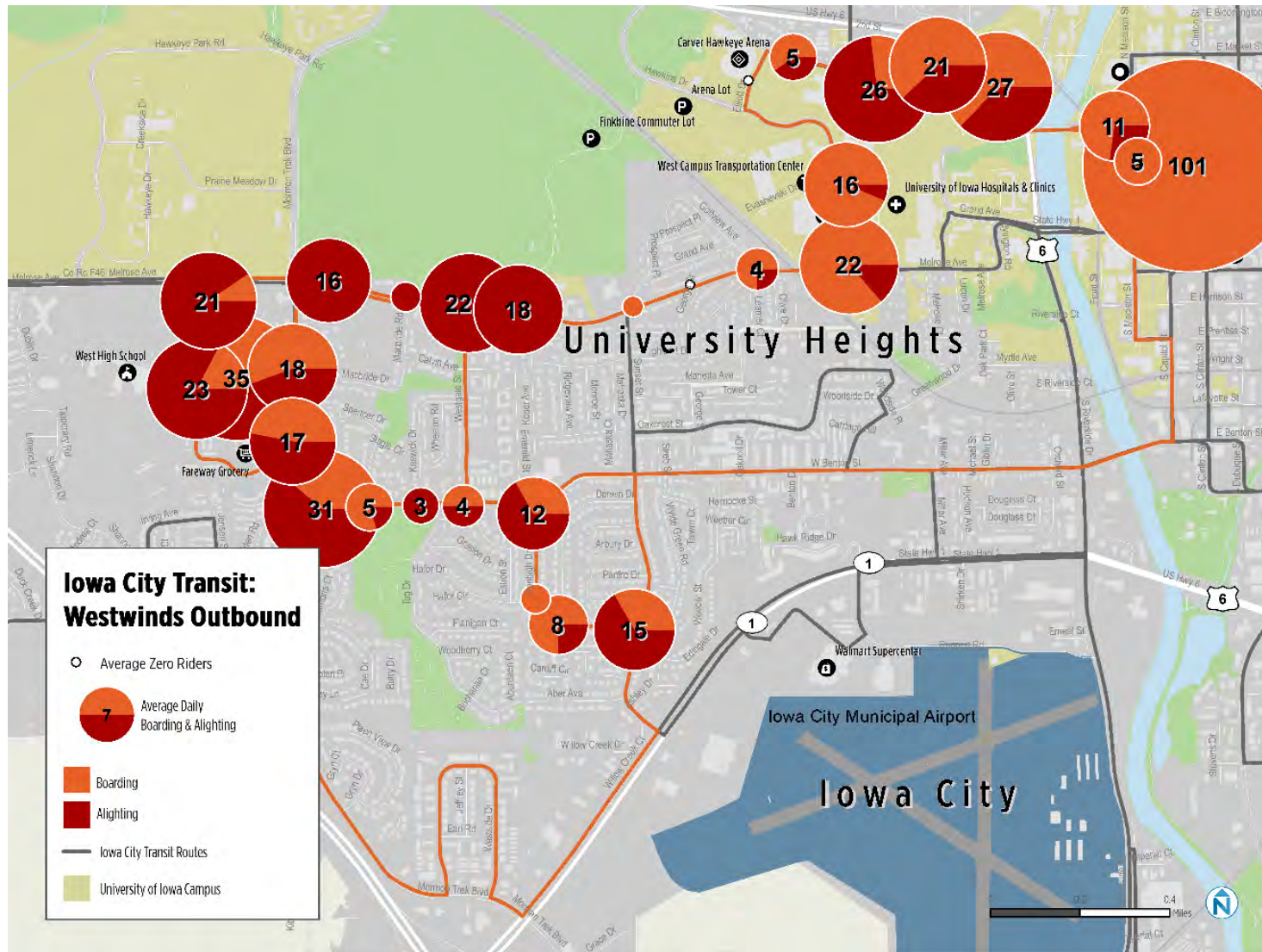





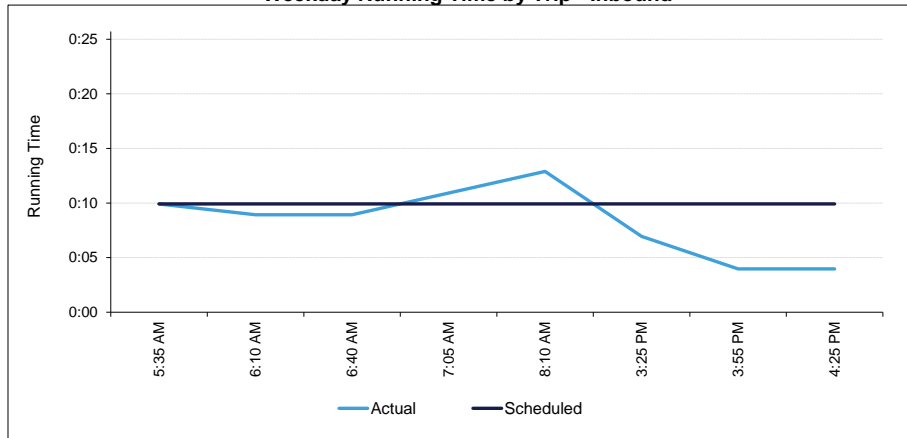
Figure A-66 Iowa City Transit Westwinds (Outbound) Average Weekday Boardings



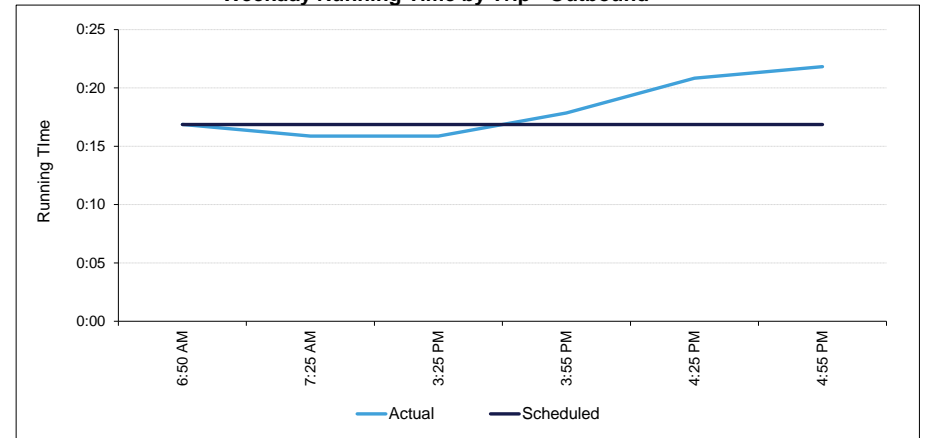
Route 1st Avenue Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
					
Total		72	72	2.0	35.4
Inbound		36	37	1.3	27.0
Outbound		36	35	0.7	51.4
By Segment					
1	Coralville Transit Intermodal Facility to 1st Ave	26	31	1.1	23.6
2	1st Ave to VA Loop	46	41	1.9	23.8
By Time Period					
Early AM		3	3	0.2	18.0
AM		31	31	0.9	34.4
PM		38	38	1.0	39.3

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
56%	36%	8%	37	Softball Complex	I
67%	33%	0%	37	Softball Complex	I
44%	39%	17%	35	Newton Rd	O
64%	29%	7%			
43%	57%				
			3	1st Ave	I
			30	Softball Complex	I
			34	Newton Rd	O

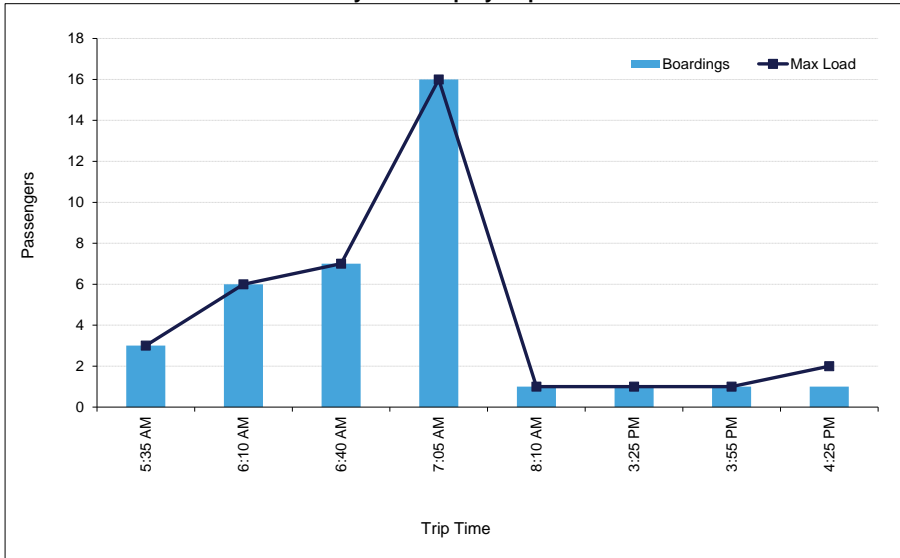
Weekday Running Time by Trip - Inbound



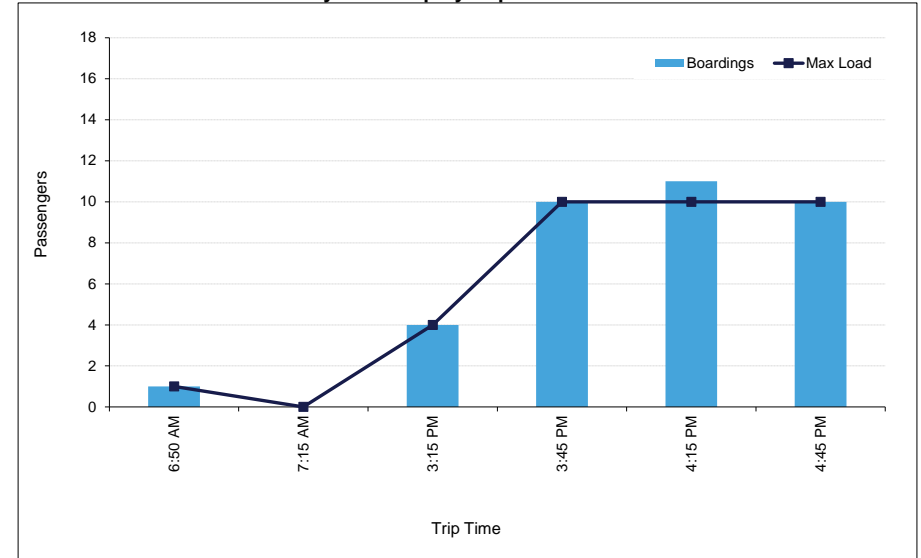
Weekday Running Time by Trip - Outbound



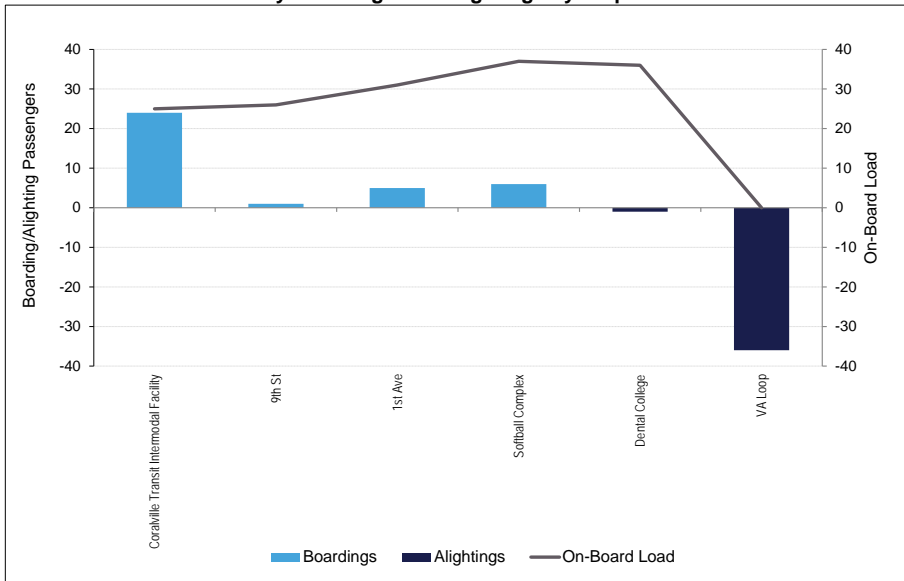
Weekday Ridership by Trip - Inbound



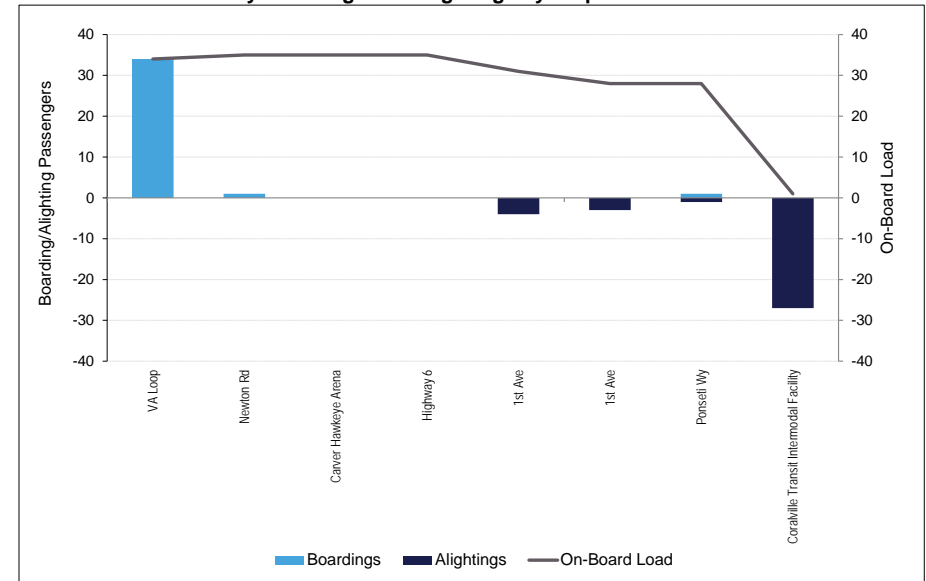
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



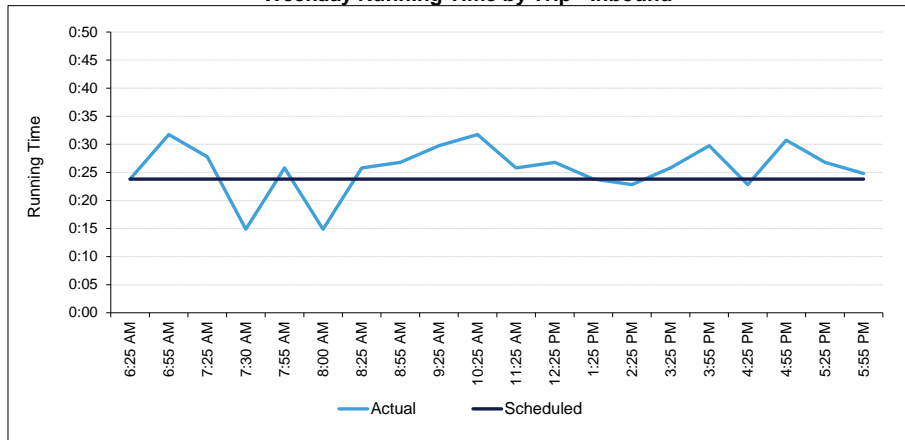
Weekday Boardings and Alightings by Stop - Outbound



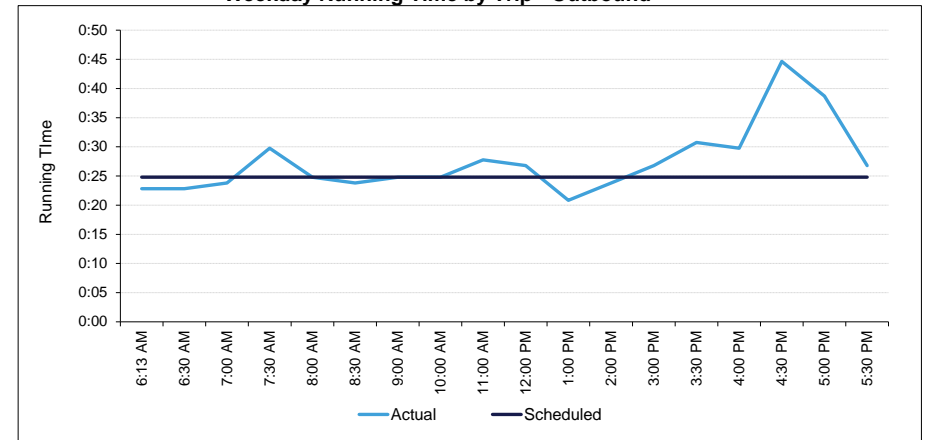
Route 10th Street Weekday		Route Productivity Summary						
		Activity		Service Hours	Productivity			
		Boardings	Alightings	Service Hours	Boardings per Service Hour			
Total	777					777	15.3	50.8
Inbound	460					491	8.0	57.5
Outbound	317					286	7.3	43.5
By Segment								
1 Coral Ridge Mall to 5th St	269					180	5.4	49.8
2 5th St to Hardin Library	278					164	6.3	44.1
3 Hardin Library to Downtown Interchange	230					433	3.8	60.5
By Time Period								
AM	256					255	5.1	50.4
Midday	266	267	5.3	50.2				
PM	252	251	4.5	56.0				
Eve	3	4	0.4	7.5				

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
52%	6%	42%	425	Softball Complex	I
42%	3%	55%	425	Softball Complex	I
61%	10%	29%	266	Carver Hawkeye Arena	O
32%	13%	55%			
53%	3%	45%			
54%	8%	38%			
			221	Softball Complex	I
			173	1st Ave	I
			198	Carver Hawkeye Arena	O
			3	5th St	I

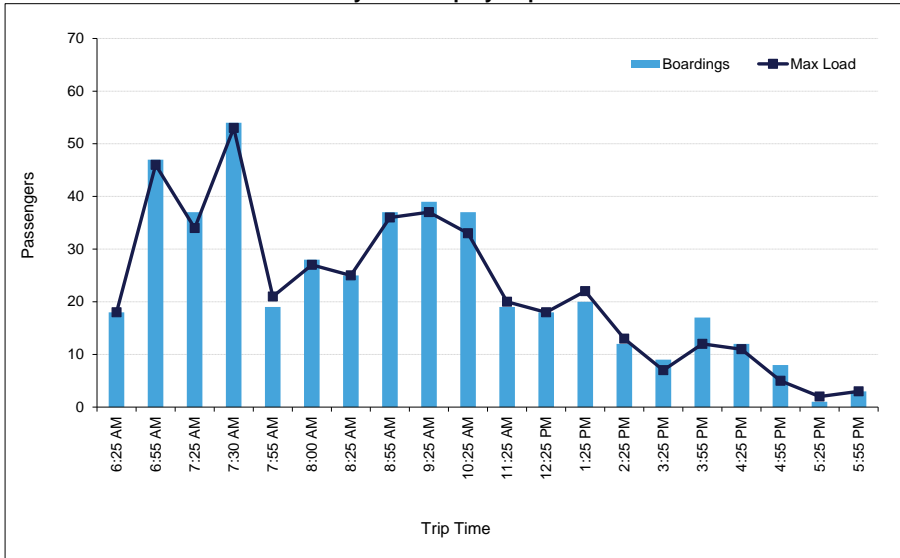
Weekday Running Time by Trip - Inbound



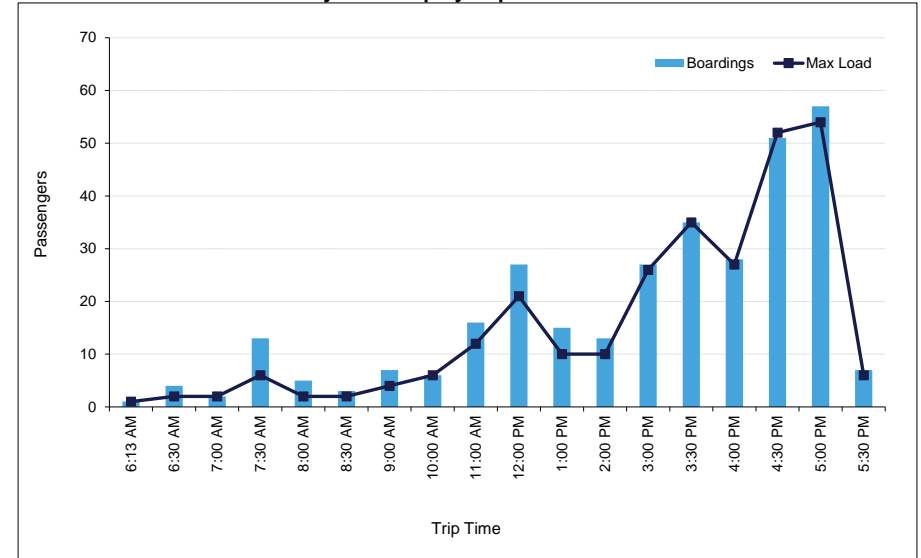
Weekday Running Time by Trip - Outbound



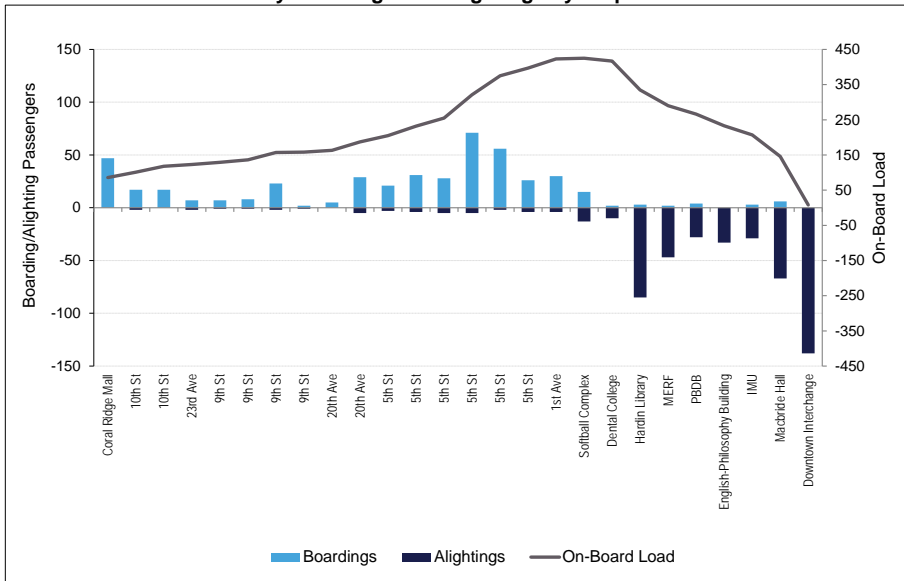
Weekday Ridership by Trip - Inbound



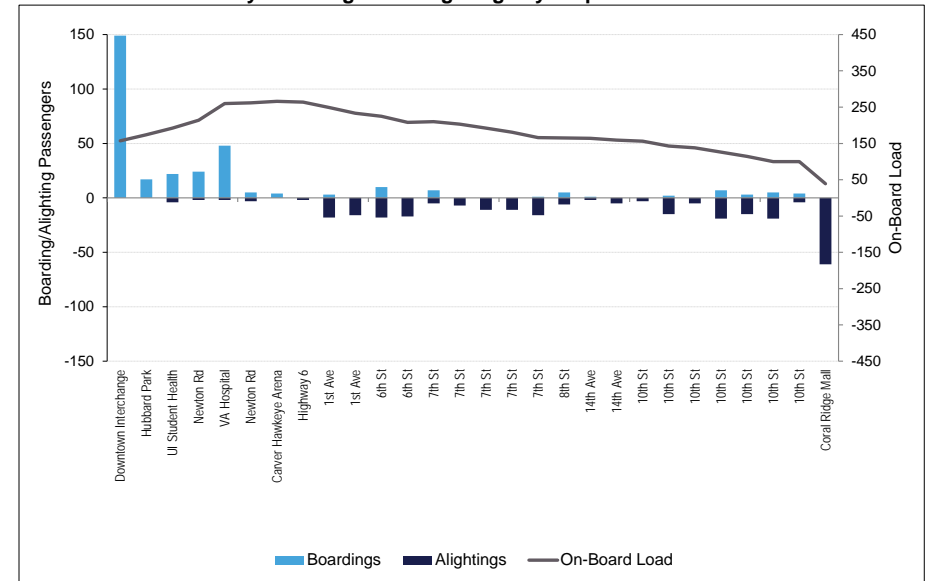
Weekday Ridership by Trip - Outbound



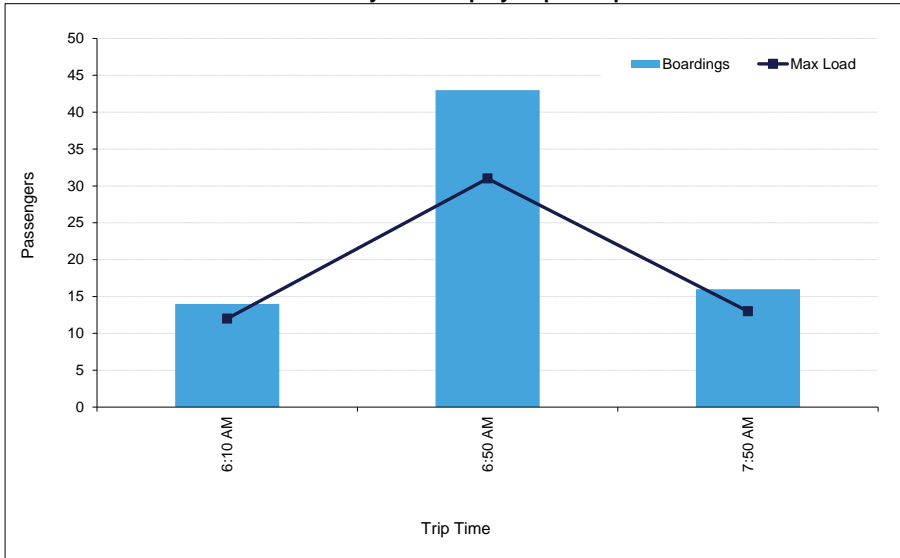
Weekday Boardings and Alightings by Stop - Inbound



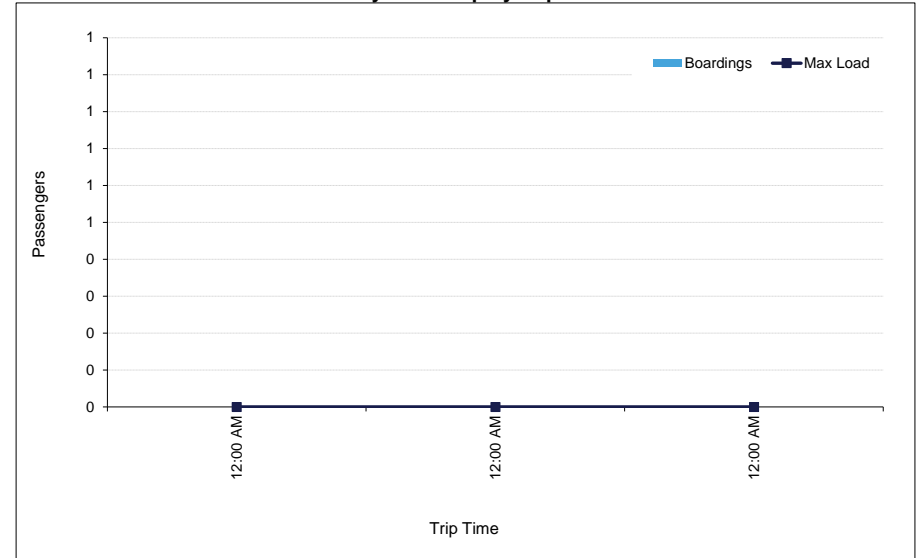
Weekday Boardings and Alightings by Stop - Outbound



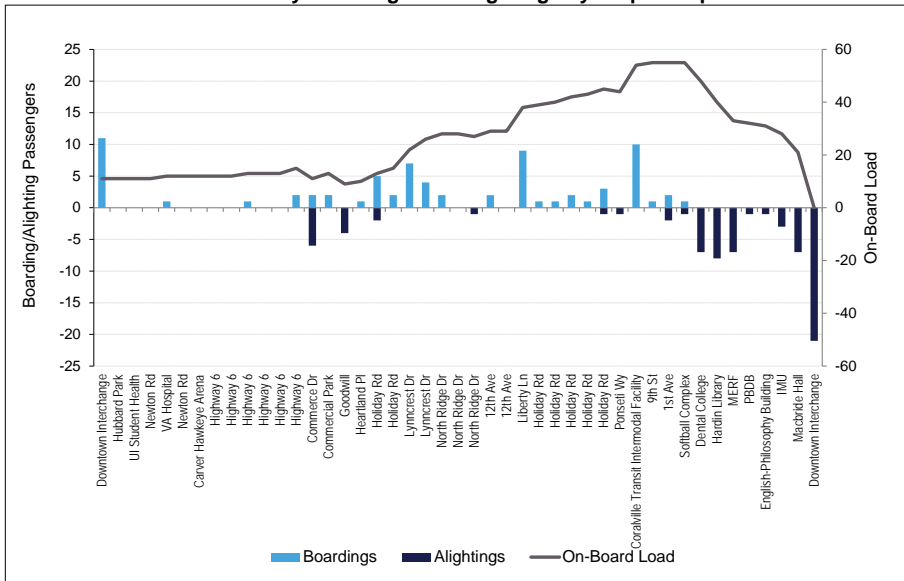
Weekday Ridership by Trip - Loop



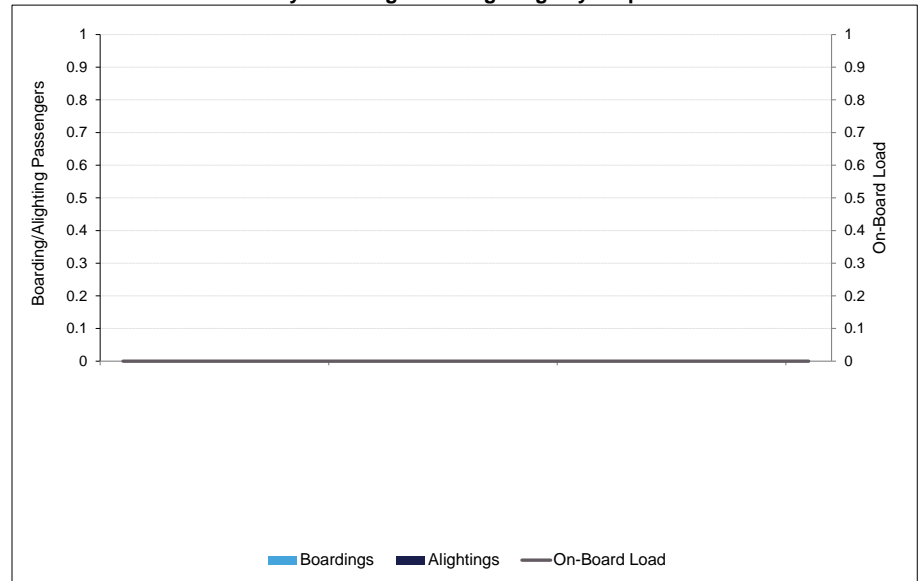
Weekday Ridership by Trip -




Weekday Boardings and Alightings by Stop - Loop



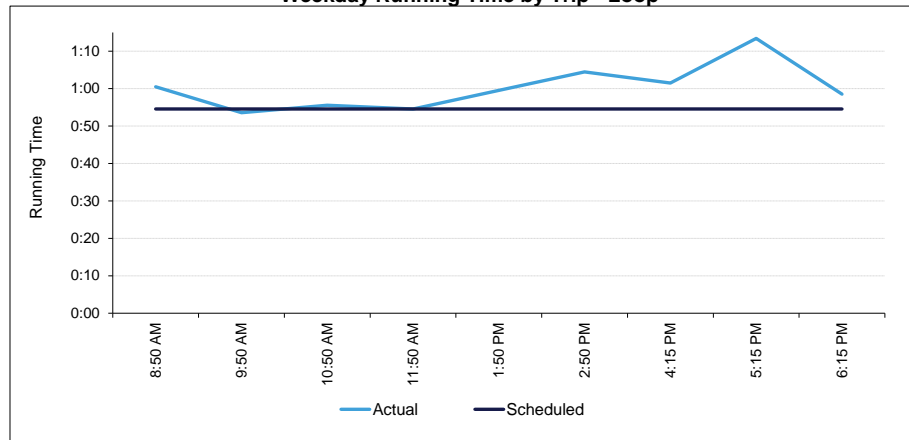
Weekday Boardings and Alightings by Stop -



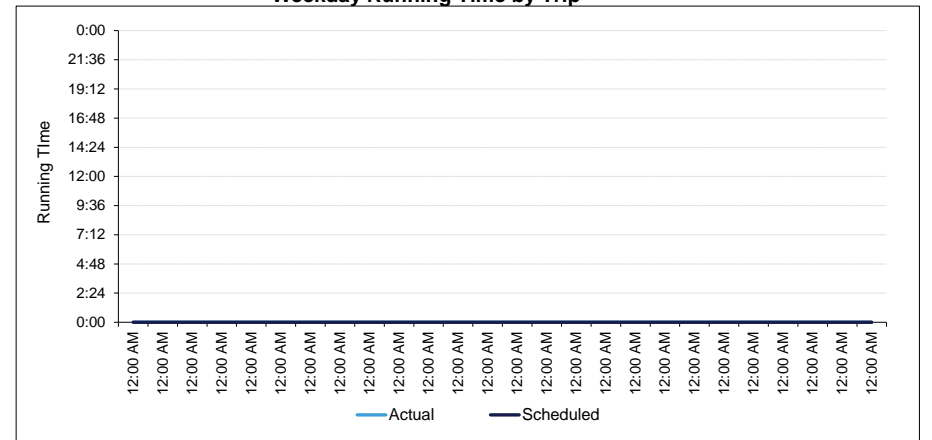
Route Express Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
	Total	109	109	9.2	11.9
	Loop	109	109	9.2	11.9
	By Segment				
1	Downtown Interchange to VA Hospital	60	2	0.7	80.0
2	VA Hospital to Coralville Transit Intermodal Facility	14	13	1.5	9.3
3	Coralville Transit Intermodal Facility to 12th Ave	7	23	1.5	4.7
4	12th Ave to Goodwill	10	20	1.3	7.4
5	Goodwill to Softball Complex	12	15	1.6	7.3
6	Softball Complex to Downtown Interchange	6	9	1.5	4.0
	By Time Period				
	Midday	40	46	5.5	7.3
	PM	54	48	2.8	19.6
	Eve	15	15	0.9	16.4

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
60%	3%	37%	71	Newton	L
60%	3%	37%	71	Newton	L
67%		33%			
78%		22%			
67%		33%			
67%		33%			
44%	11%	44%			
33%		67%			
			22	Holiday Rd	L
			44	VA Hospital	L
			7	Newton	L

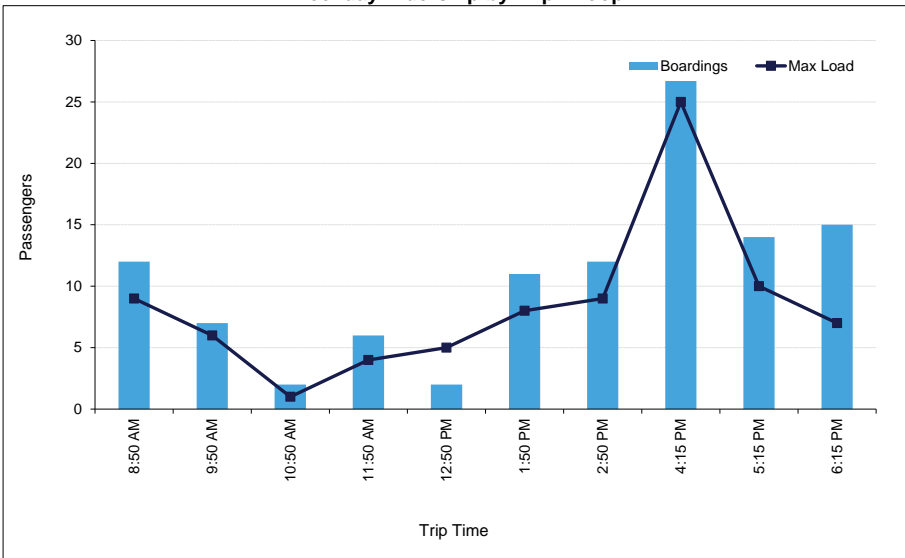
Weekday Running Time by Trip - Loop



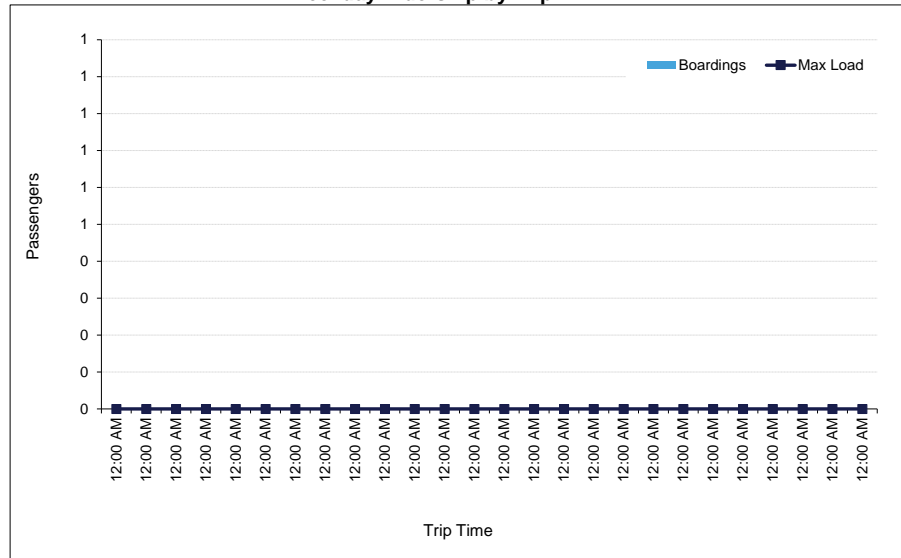
Weekday Running Time by Trip -



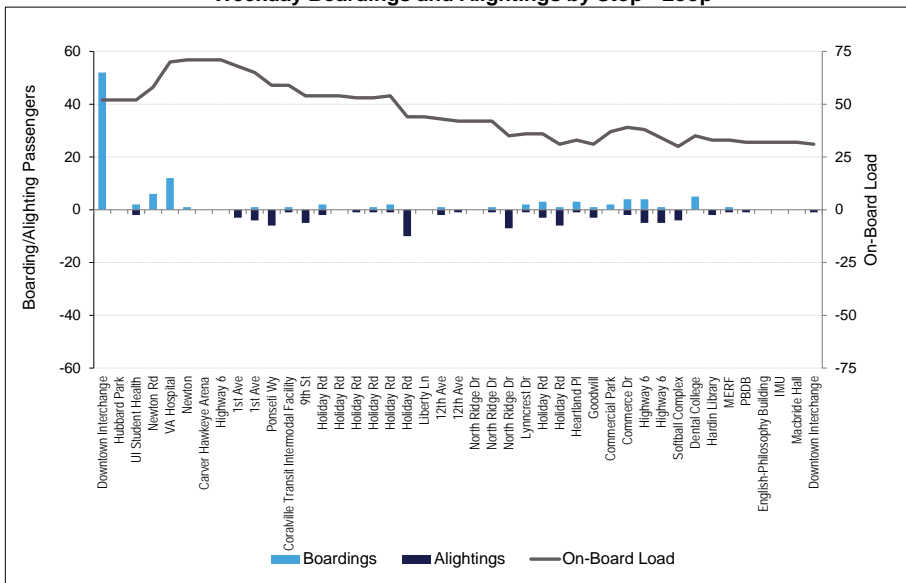
Weekday Ridership by Trip - Loop




Weekday Ridership by Trip -



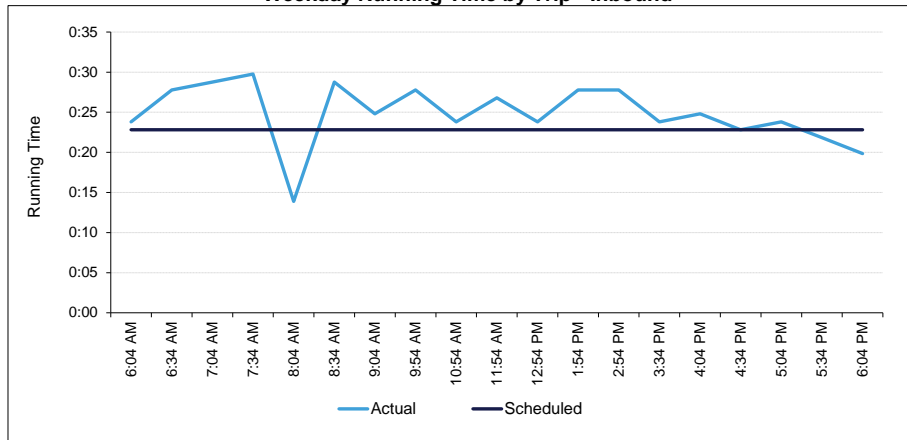
Weekday Boardings and Alightings by Stop - Loop

**Weekday Boardings and Alightings by Stop -**

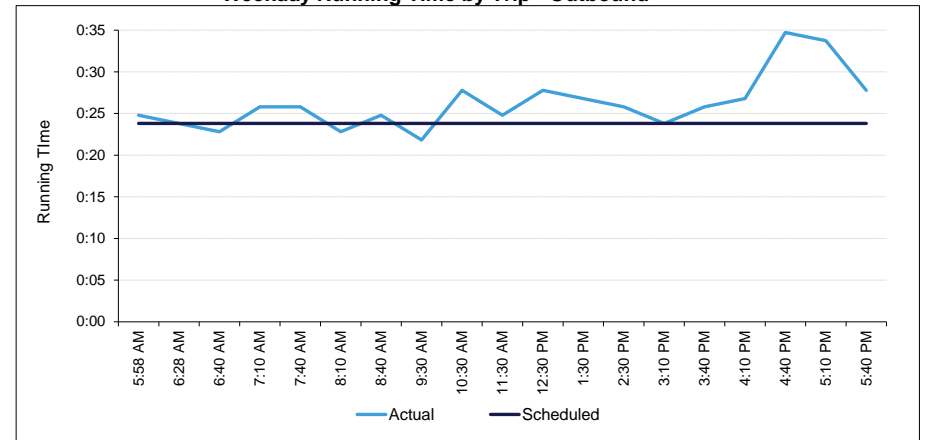
Route Lantern Park Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total					
Inbound					
Outbound					
By Segment					
1 Coral Ridge Mall to 14th Ave					
2 14th Ave to Hardin Library					
3 Hardin Library to Downtown Interchange					
By Time Period					
AM					
Midday					
PM					
Eve					

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
61%	16%	23%	274	Highway 6	O
61%	3%	37%	244	Softball Complex	I
61%	29%	10%	274	Highway 6	O
71%	8%	21%			
64%	8%	28%			
17%	44%	39%			
			152	Softball Complex	I
			71	1st Ave	I
			195	Highway 6	O
			3	6th St	I

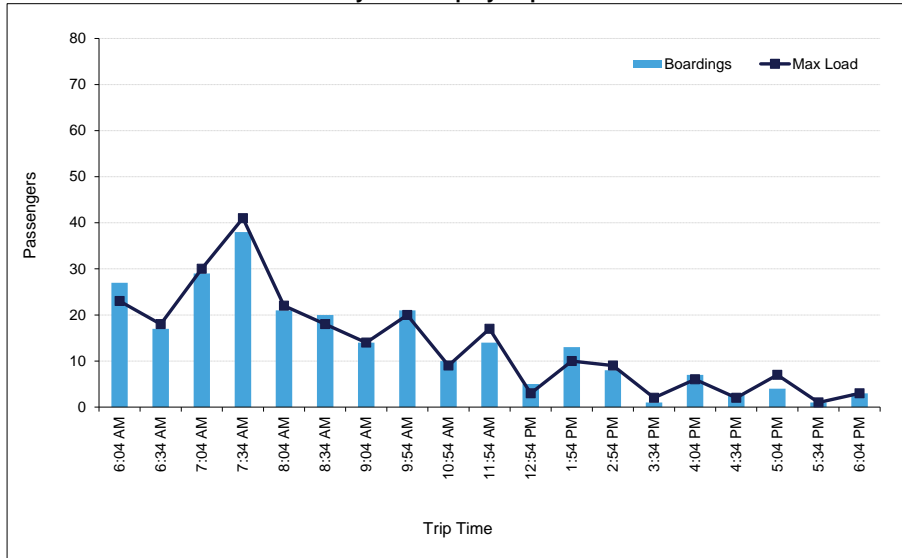
Weekday Running Time by Trip - Inbound



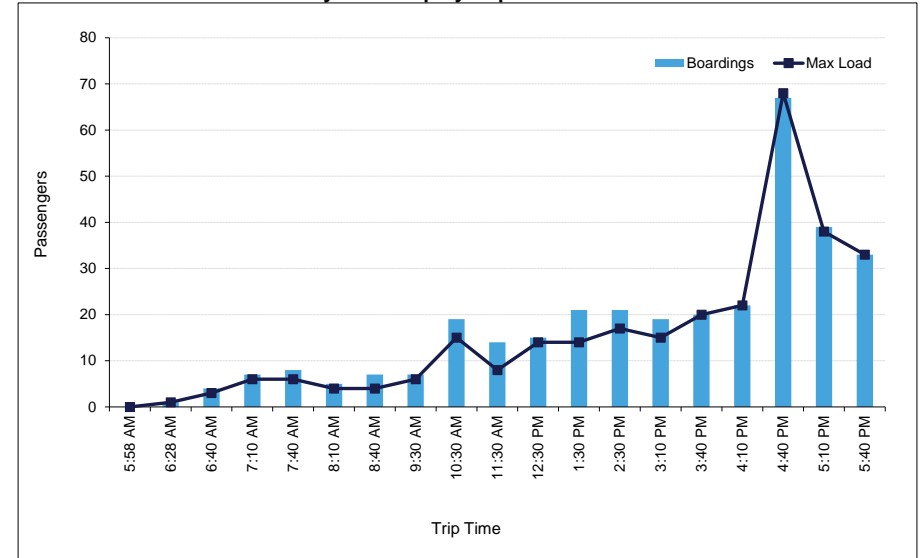
Weekday Running Time by Trip - Outbound



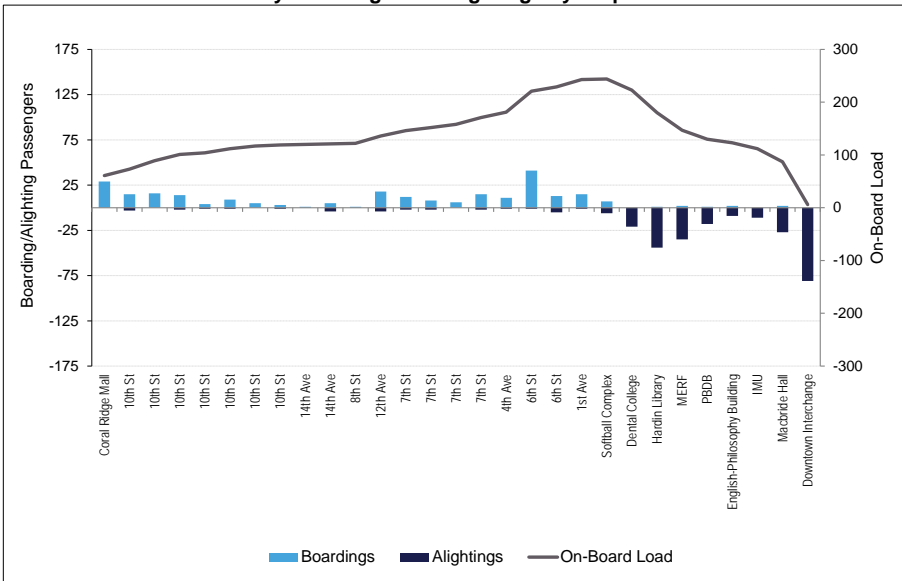
Weekday Ridership by Trip - Inbound



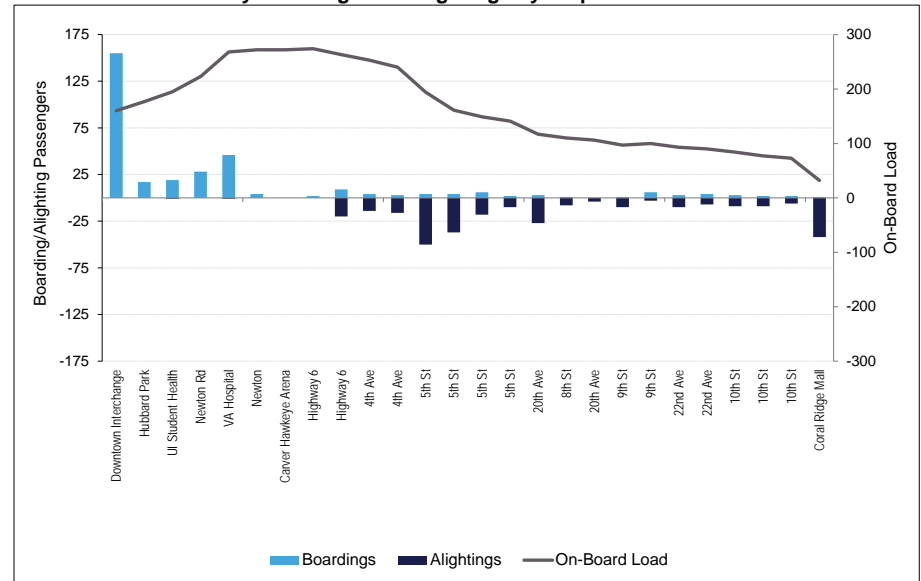
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



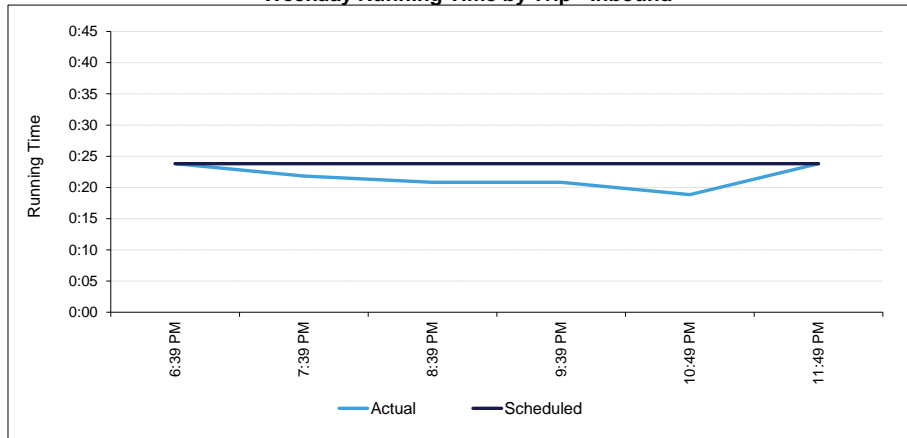
Weekday Boardings and Alightings by Stop - Outbound



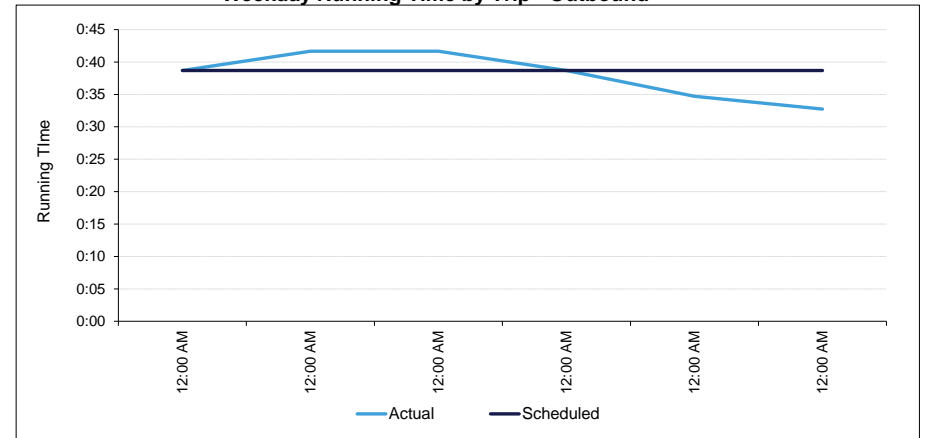
Route Night Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		155	156	5.3	29.2
Inbound		37	45	2.4	15.4
Outbound		118	111	2.9	40.7
By Segment					
1	Coral Ridge Mall to 9th St	27	45	1.4	19.3
2	9th St to 5th St	9	54	2.5	3.6
3	5th St to Downtown Interchange	119	57	2.4	49.6
By Time Period					
Eve		116	116	2.7	43.8
Night		39	40	2.7	15

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
62%	33%	4%	116	Carver Hawkeye Arena	O
62%	38%	0%	35	10th St	I
62%	29%	8%	116	Carver Hawkeye Arena	O
50%	50%				
58%	42%				
42%	42%	17%			
			88	Carver Hawkeye Arena	O
			29	VA Hospital	O

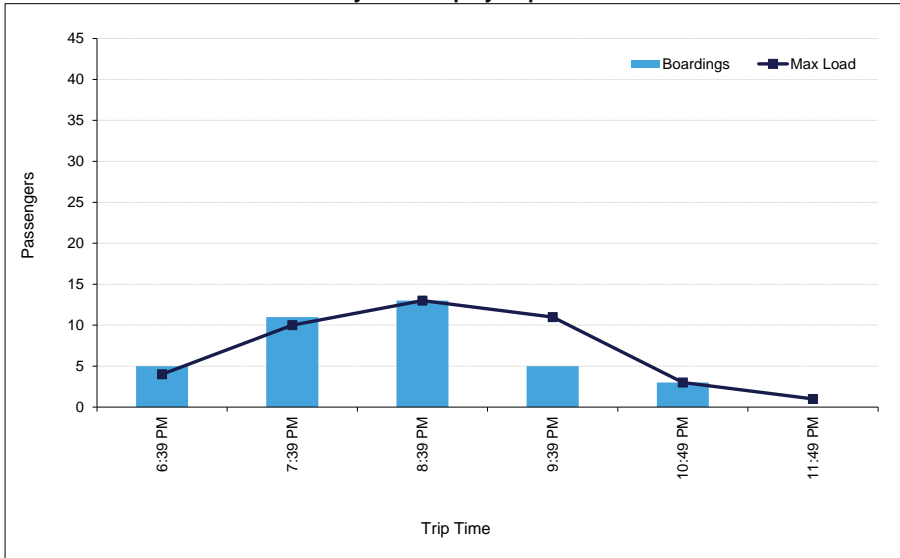
Weekday Running Time by Trip - Inbound



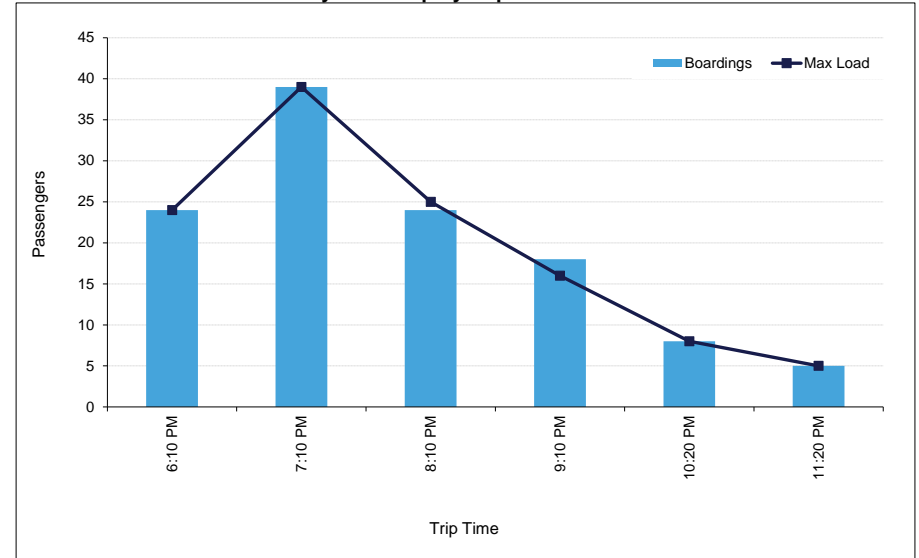
Weekday Running Time by Trip - Outbound



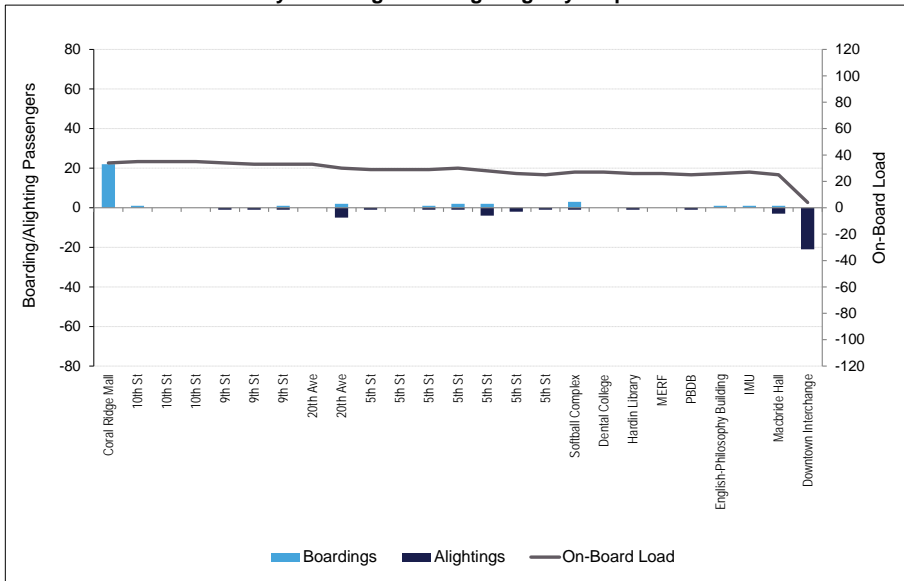
Weekday Ridership by Trip - Inbound



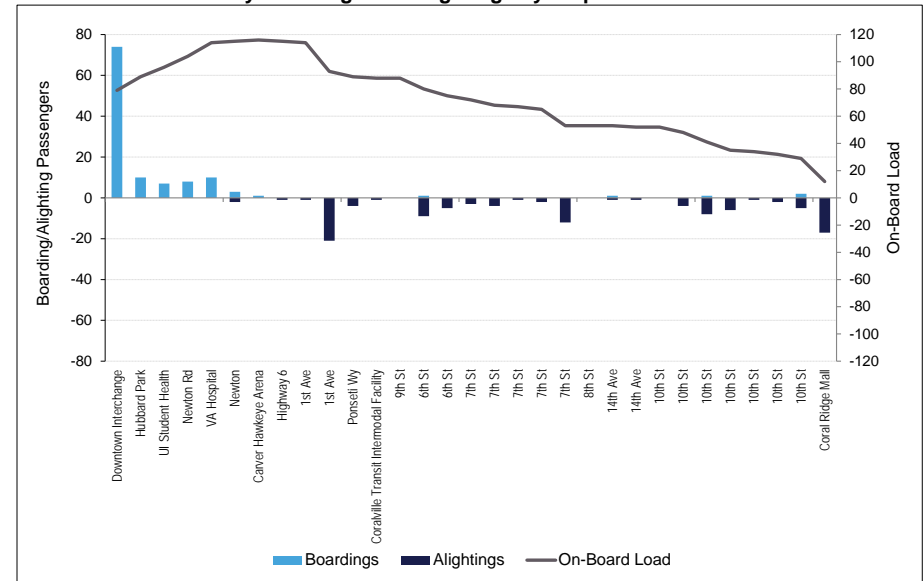
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



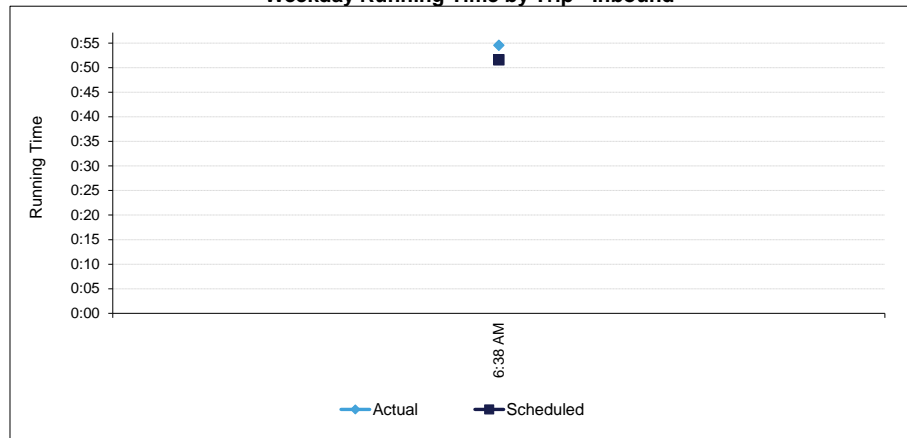
Weekday Boardings and Alightings by Stop - Outbound



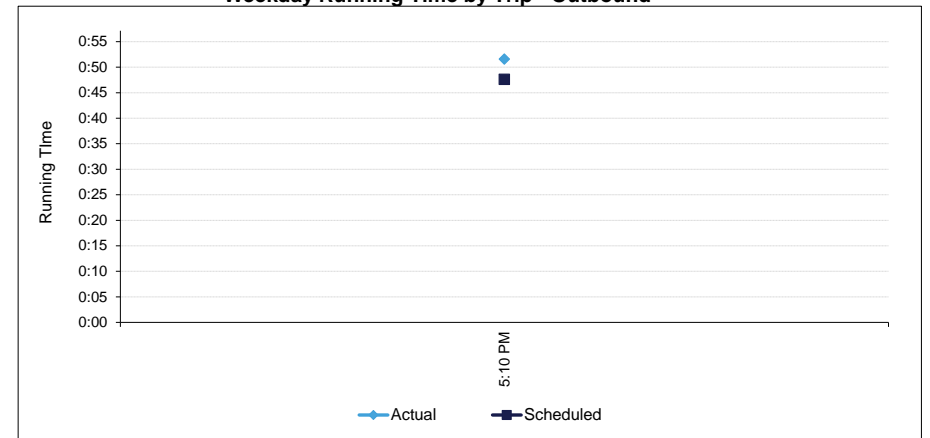
Route North Liberty Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
					
Total		38	38	1.9	19.7
Inbound		22	22	1.0	22.4
Outbound		16	16	0.9	16.8
By Segment					
1	10th St to Golf View Dr			0.2	
2	Golf View Dr to Sugar Creek Ln	2	2	0.2	8.6
3	Sugar Creek Ln to Front St	4	4	0.3	15.0
4	Front St to 12th Ave	9	8	0.3	30.0
5	12th Ave to Coralville Transit Intermodal Facility	1	2	0.3	3.3
6	Coralville Transit Intermodal Facility to Hardin Library	8		0.3	24.0
7	Hardin Library to Downtown Interchange	14	22	0.1	168.0
By Time Period					
AM		22	22	1.0	22.4
PM		16	16	0.9	16.8

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
71%	0%	29%	22	Coralville Transit Intermodal Facility	I
100%	0%	0%	22	Coralville Transit Intermodal Facility	I
43%	0%	57%	16	VA Hospital	O
100%					
100%					
		100%			
50%		50%			
50%		50%			
50%		50%			
			22	Coralville Transit Intermodal Facility	I
			16	VA Hospital	O

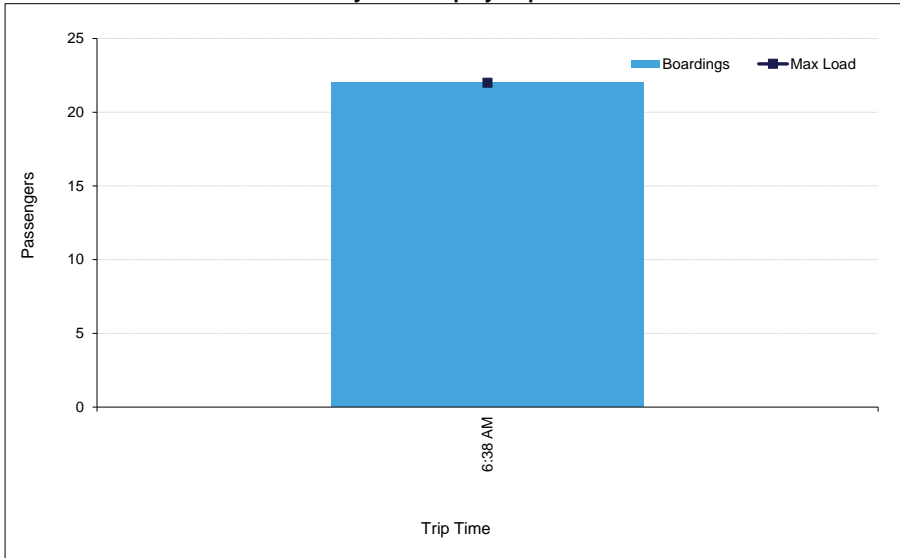
Weekday Running Time by Trip - Inbound



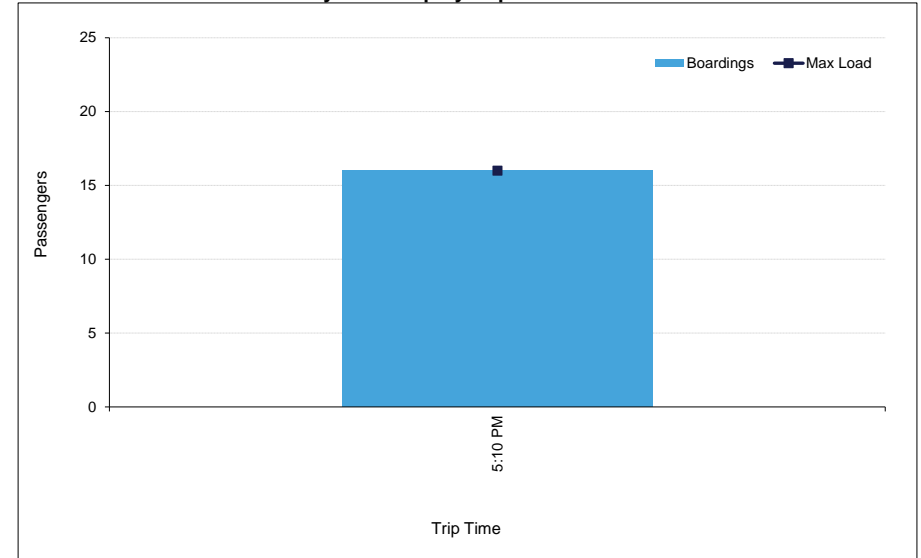
Weekday Running Time by Trip - Outbound



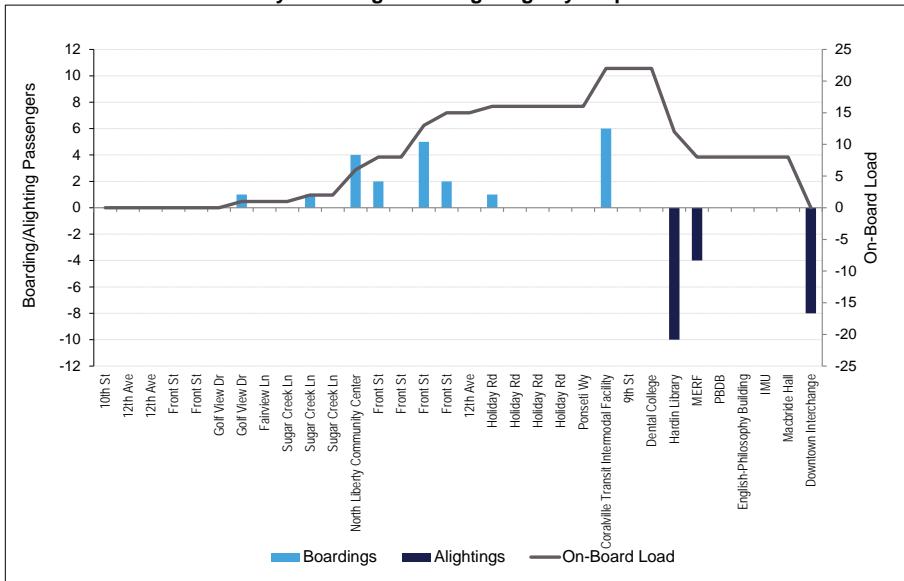
Weekday Ridership by Trip - Inbound



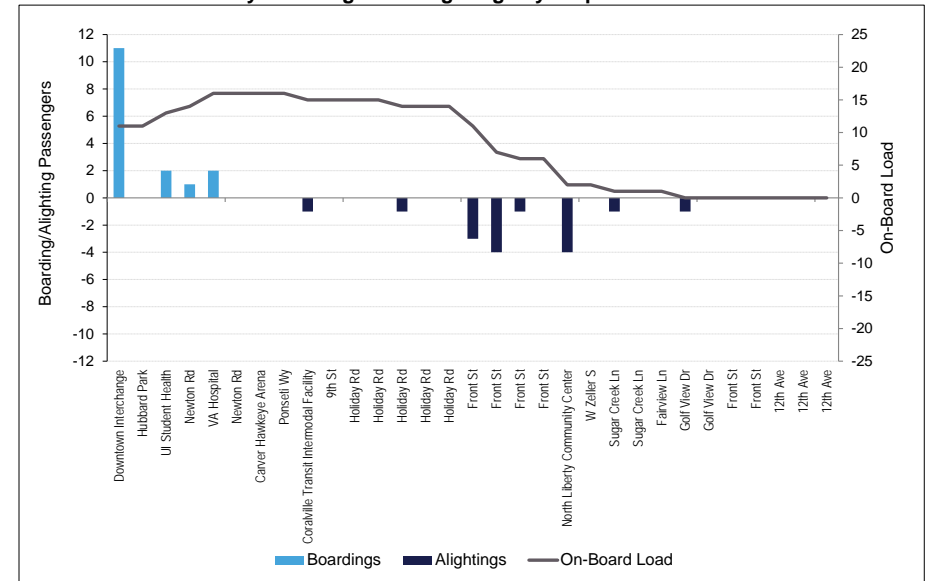
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



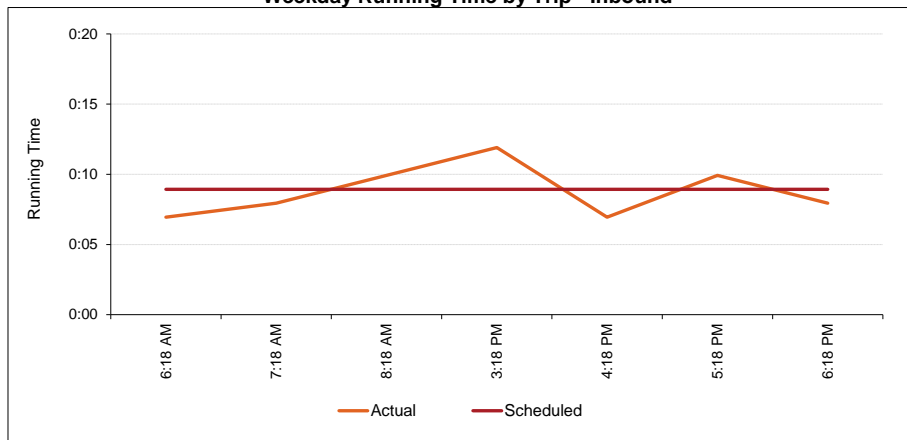
Weekday Boardings and Alightings by Stop - Outbound



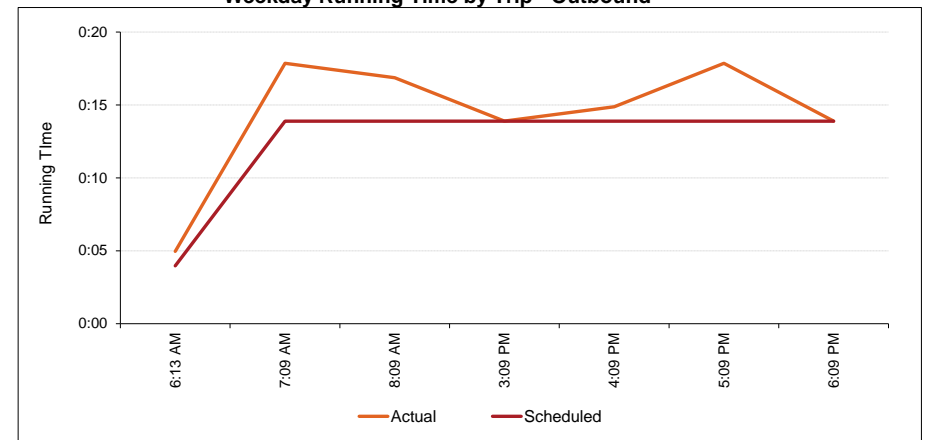
Route 7th Avenue Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
					
Total		57	54	2.5	22.6
Inbound		18	35	1.1	17.1
Outbound		39	19	1.5	26.6
By Segment					
1	Friendship & Garden St to College St & Summit St	26	16	1.0	25.2
2	College St & Summit St to Downtown Interchange	31	38	1.5	20.9
By Time Period					
AM		21	21	1.0	21.4
Midday					
PM		35	32	1.2	30.4
Eve		1	1	0.4	2.6

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
66%	27%	8%	33	College St & Summit St	I
67%	33%	0%	33	College St & Summit St	I
65%	20%	15%	25	Downtown Interchange	O
71%	21%	7%			
71%	29%				
			17	Friendship & Garden St	I
					O
			21	Downtown Interchange	O
			1	Downtown Interchange	O

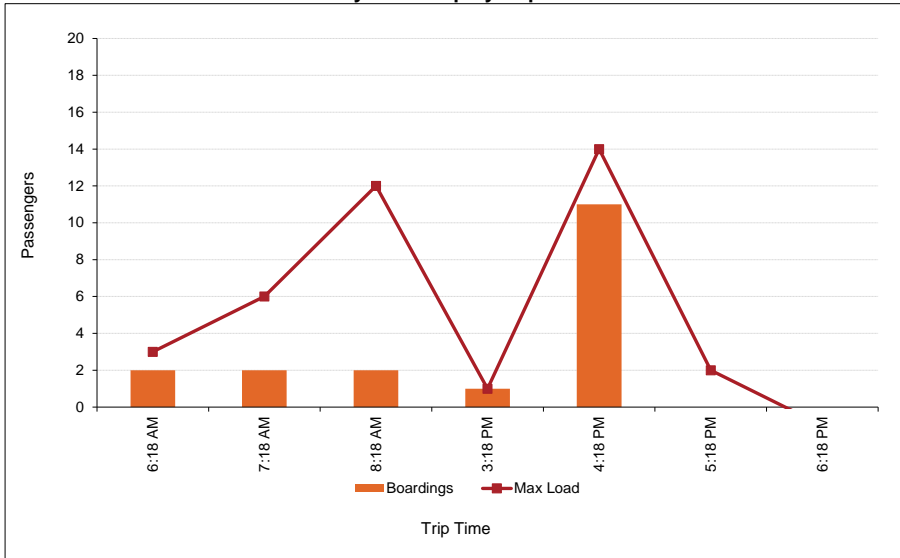
Weekday Running Time by Trip - Inbound



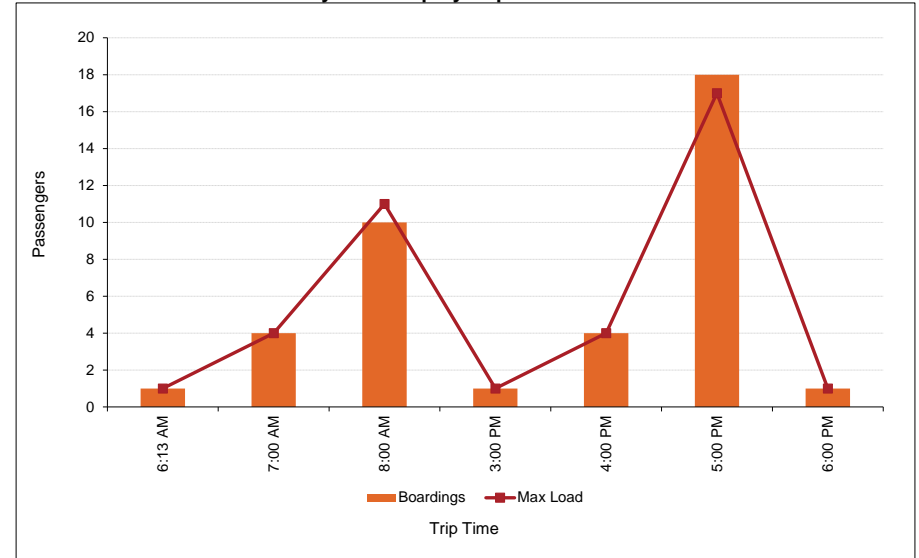
Weekday Running Time by Trip - Outbound



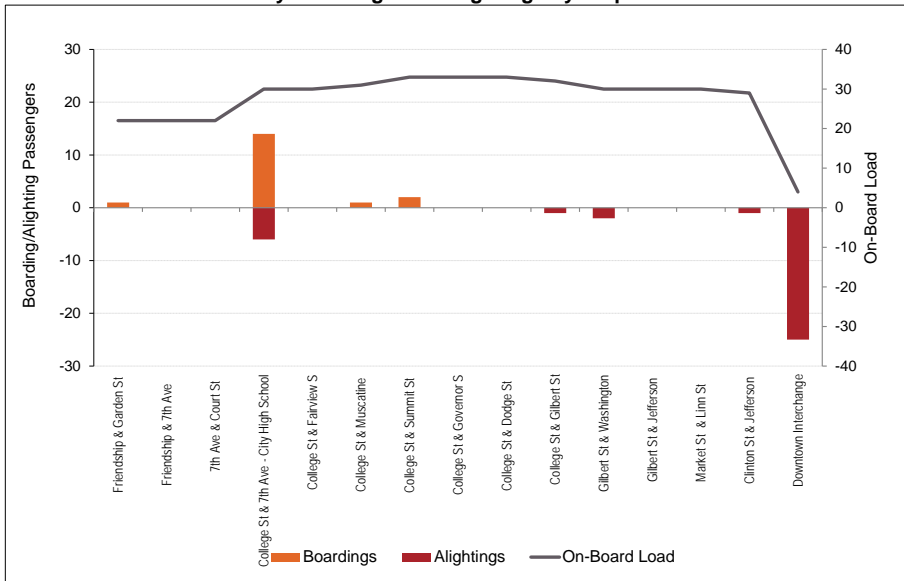
Weekday Ridership by Trip - Inbound



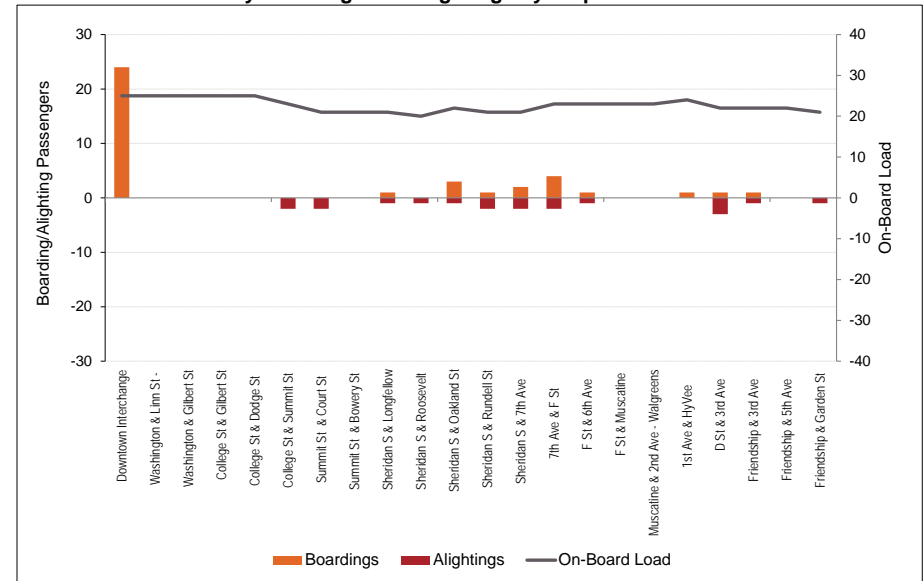
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



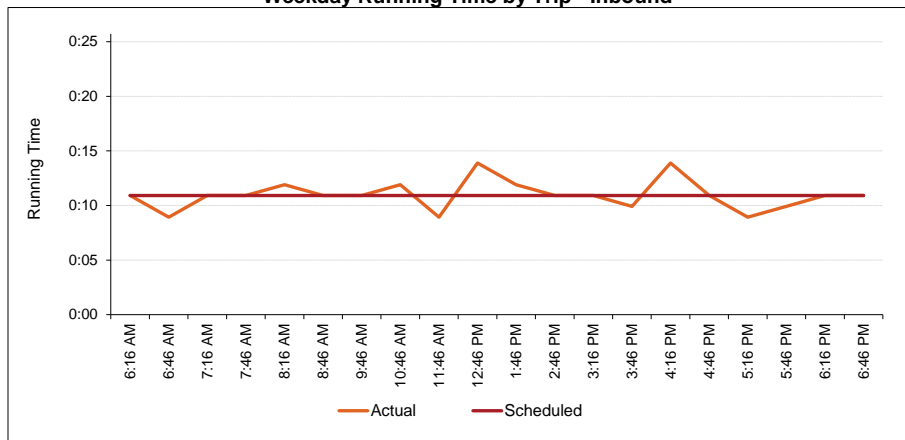
Weekday Boardings and Alightings by Stop - Outbound



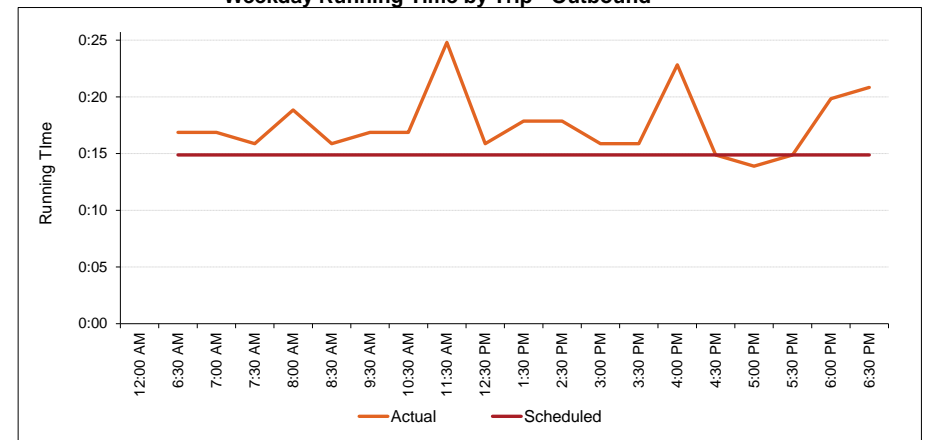
Route Broadway Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total					
Inbound		63	161	3.7	17.2
Outbound		225	122	4.8	46.7
By Segment					
1	Sycamore Mall to Kirkwood A & Gilbert St	132	150	5.2	25.5
2	Kirkwood A & Gilbert St to Downtown Interchange	156	133	3.2	48.2
By Time Period					
	AM	68	64	2.4	28.1
	Midday	108	108	2.6	41.5
	PM	91	90	2.6	35.0
	Eve	21	21	0.9	24.2

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
64%	22%	15%	144	UI Main Library	O
82%	3%	15%	131	Benton St & Clinton St	I
46%	40%	14%	144	UI Main Library	O
74%	5%	21%			
74%	15%	10%			
			49	Benton St & Clinton St	I
			55	UI Main Library	O
			52	UI Main Library	O
			20	UI Main Library	O

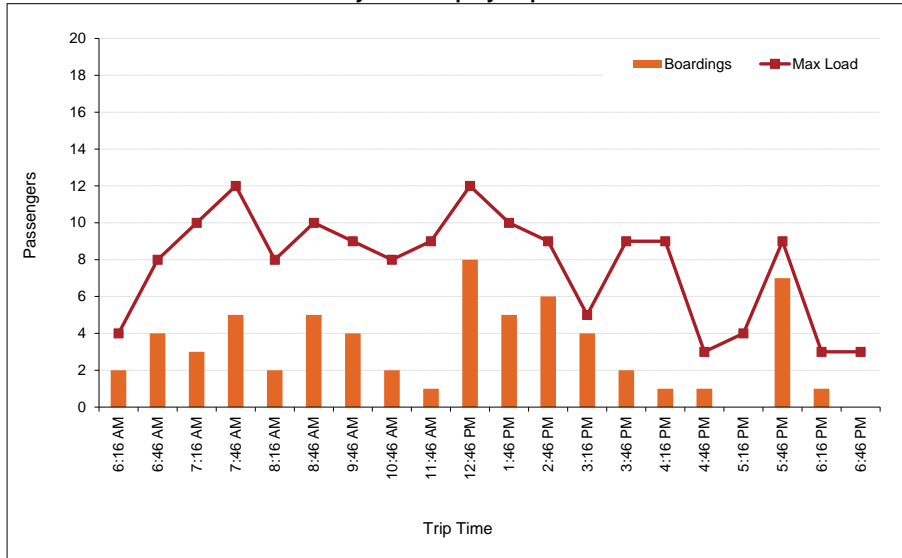
Weekday Running Time by Trip - Inbound



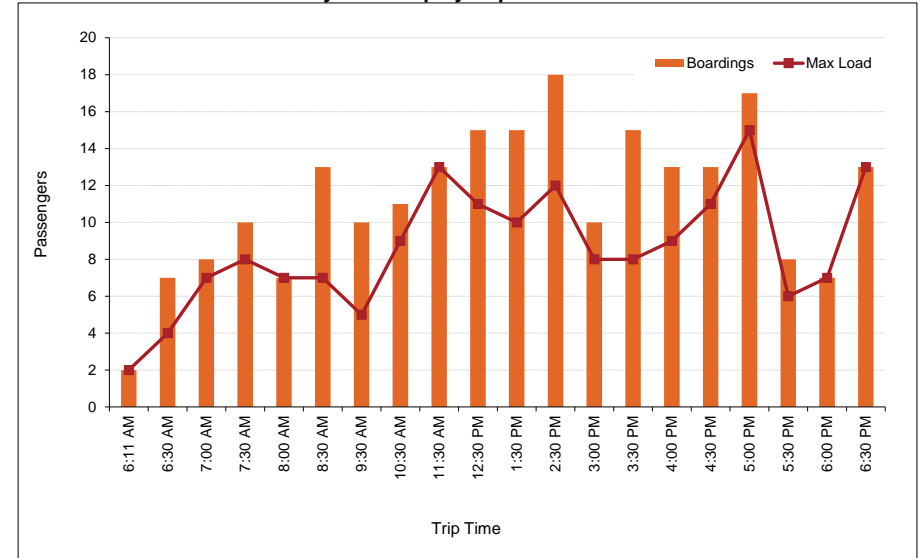
Weekday Running Time by Trip - Outbound



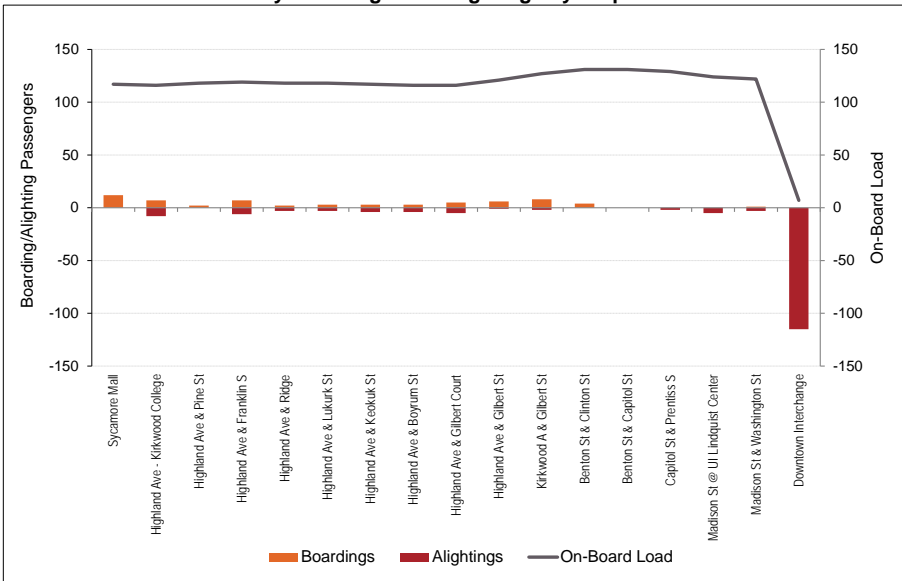
Weekday Ridership by Trip - Inbound



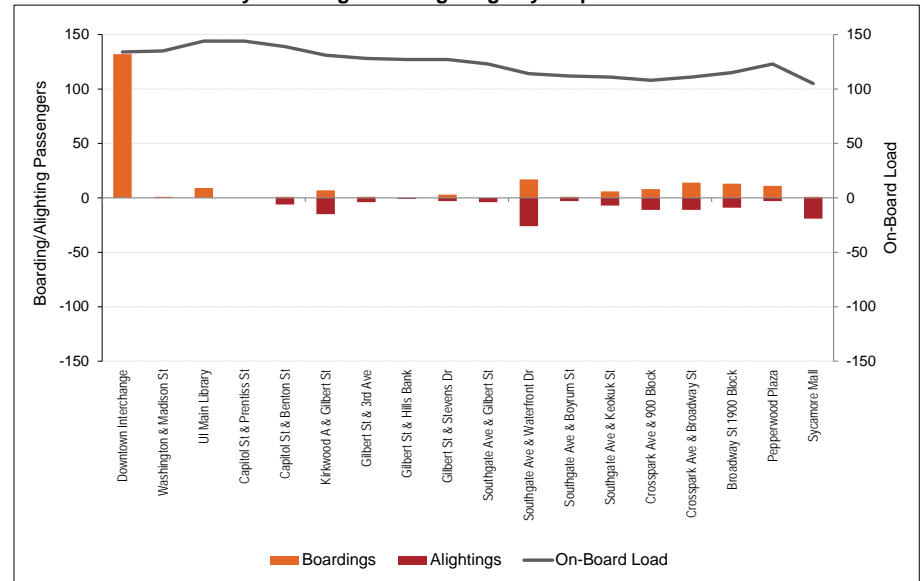
Weekday Ridership by Trip - Outbound



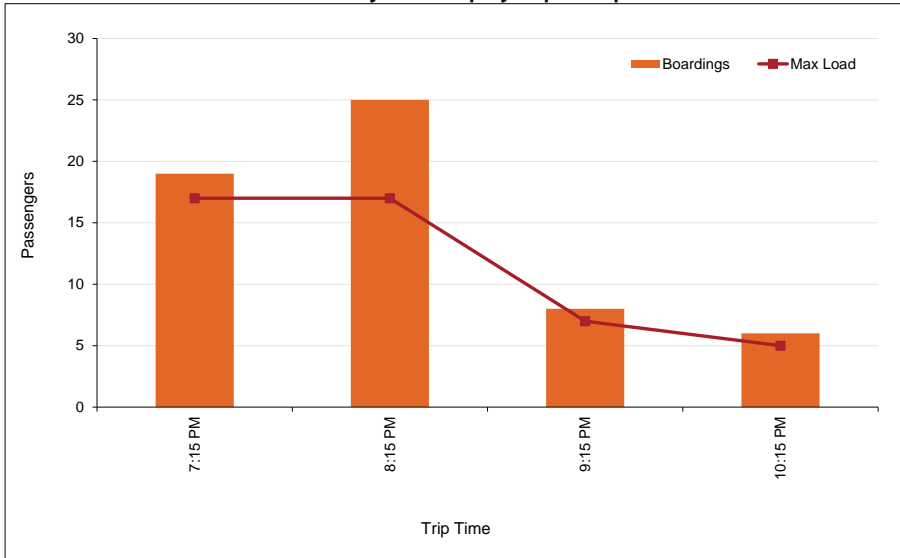
Weekday Boardings and Alightings by Stop - Inbound



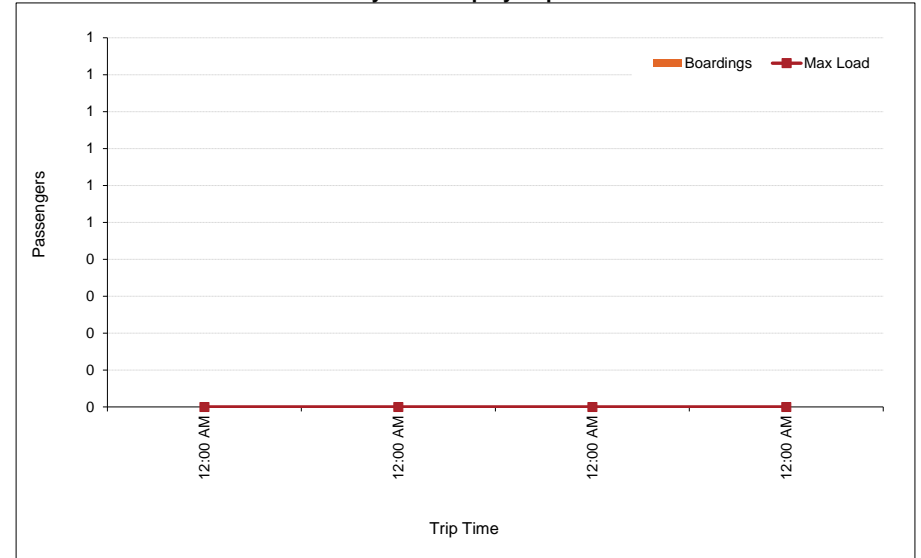
Weekday Boardings and Alightings by Stop - Outbound



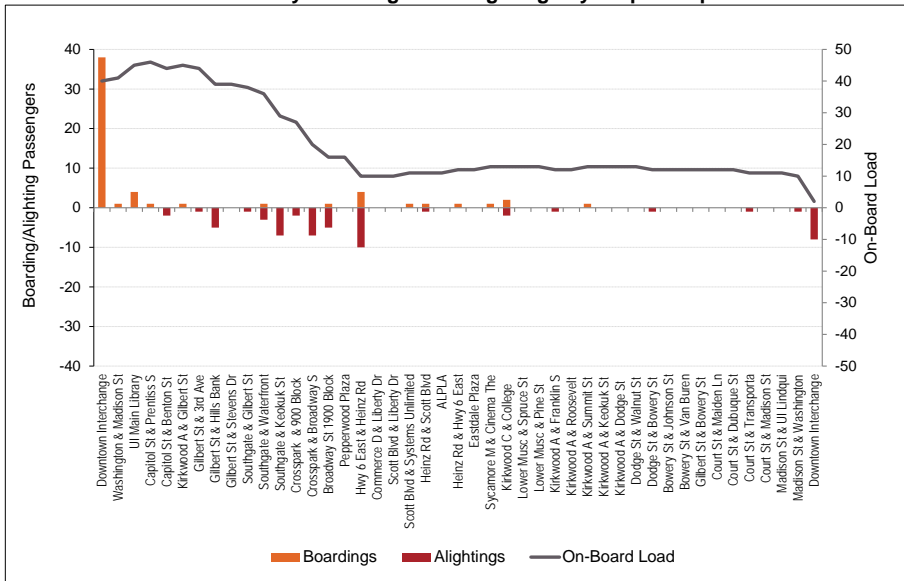
Weekday Ridership by Trip - Loop



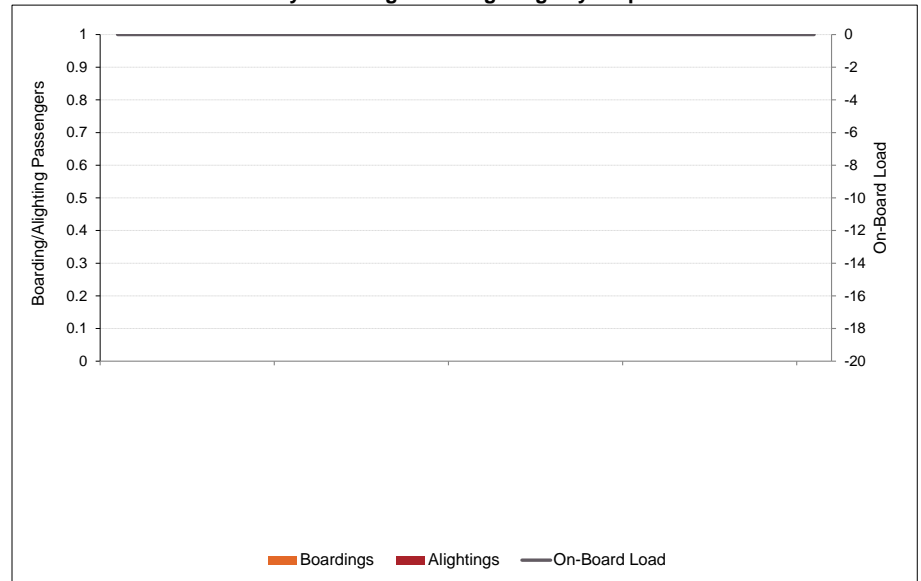
Weekday Ridership by Trip -




Weekday Boardings and Alightings by Stop - Loop



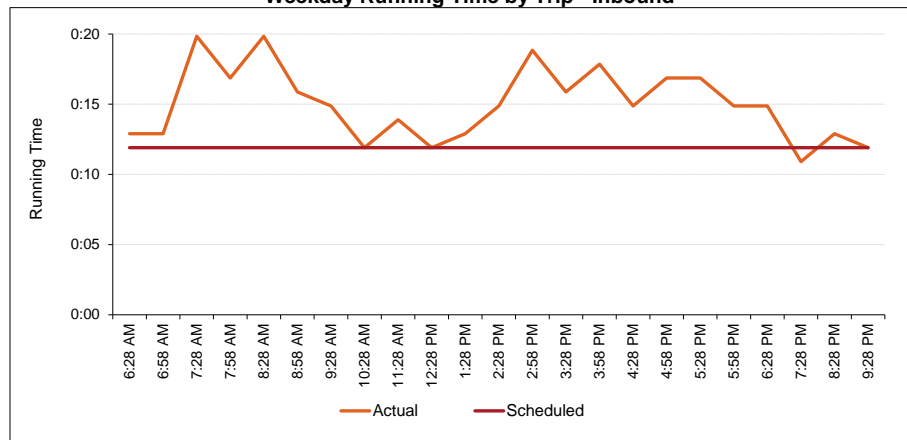
Weekday Boardings and Alightings by Stop -



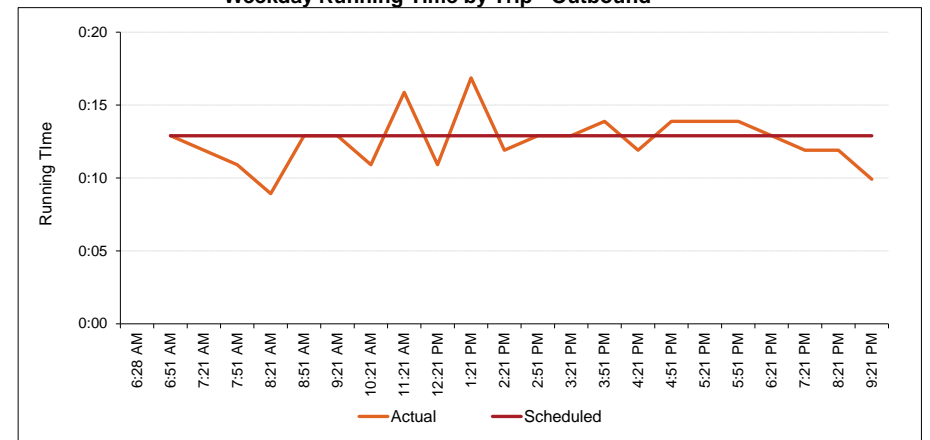
Route Court Hill Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		344	361	9.4	36.5
Inbound		114	187	4.6	24.8
Outbound		230	174	4.8	47.8
By Segment					
1	Court St & Friendship to Burlington & Summit St	108	82	5.2	20.6
2	Burlington & Summit St to Downtown Interchange	82	195	4.1	19.9
By Time Period					
AM		113	112	2.1	53.0
Midday		90	82	2.9	30.9
PM		107	130	2.5	42.8
Eve		30	33	1.4	20.7
Night		4	4	0.4	10

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
57%	25%	18%	185	Washington & Linn St - IC Library, Senior Center	O
72%	1%	26%	159	Burlington & Lucas St	I
42%	49%	9%	185	Washington & Linn St - IC Library, Senior Center	O
78%	9%	13%			
47%	22%	31%			
			66	Burlington & Summit St	I
			53	Burlington & Summit St	I
			100	Downtown Interchange	O
			23	Downtown Interchange	O
			4	Downtown Interchange	O

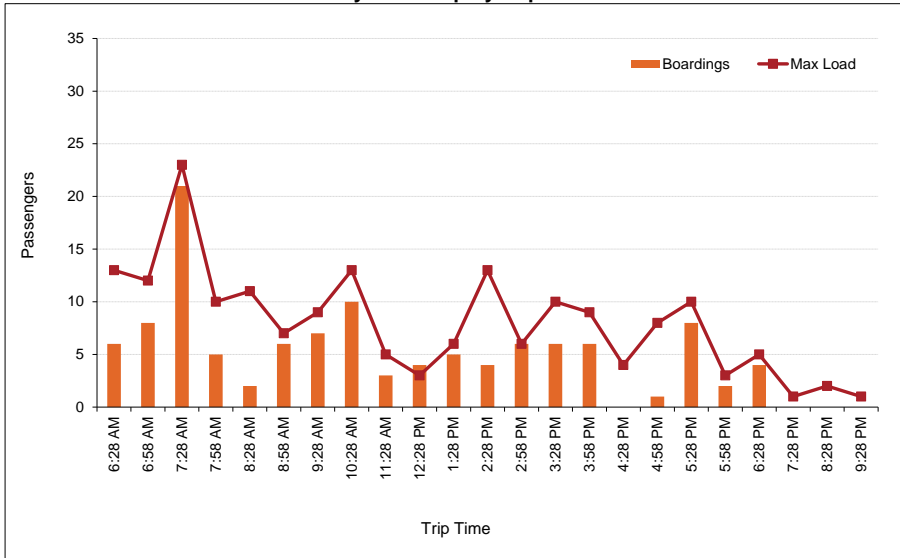
Weekday Running Time by Trip - Inbound



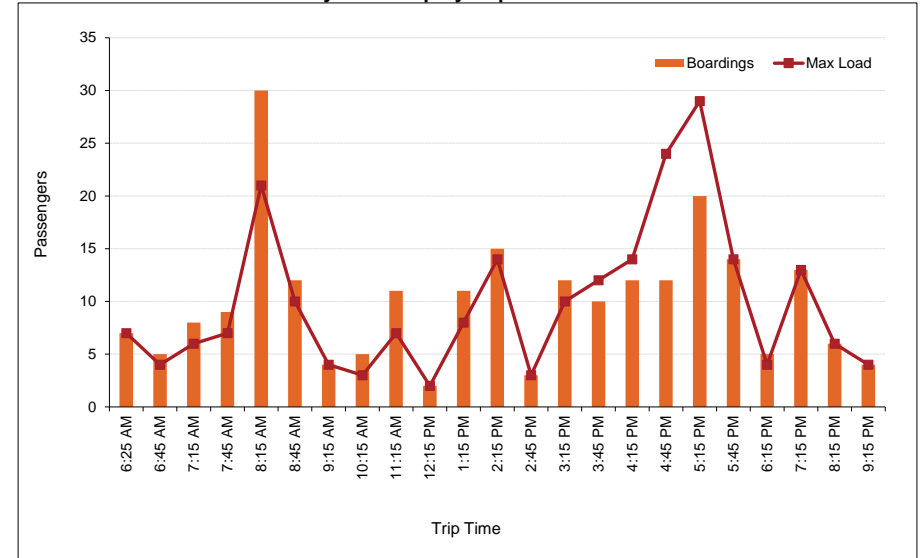
Weekday Running Time by Trip - Outbound



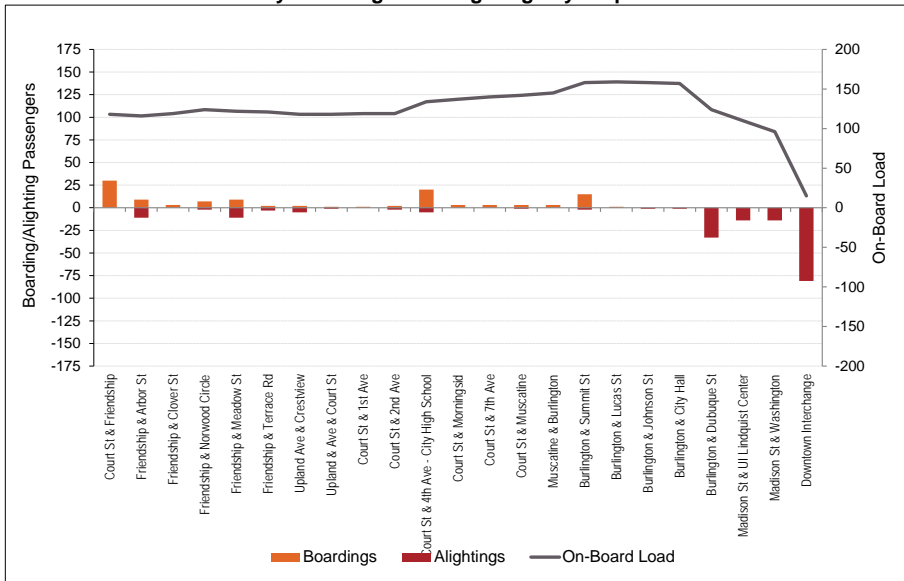
Weekday Ridership by Trip - Inbound



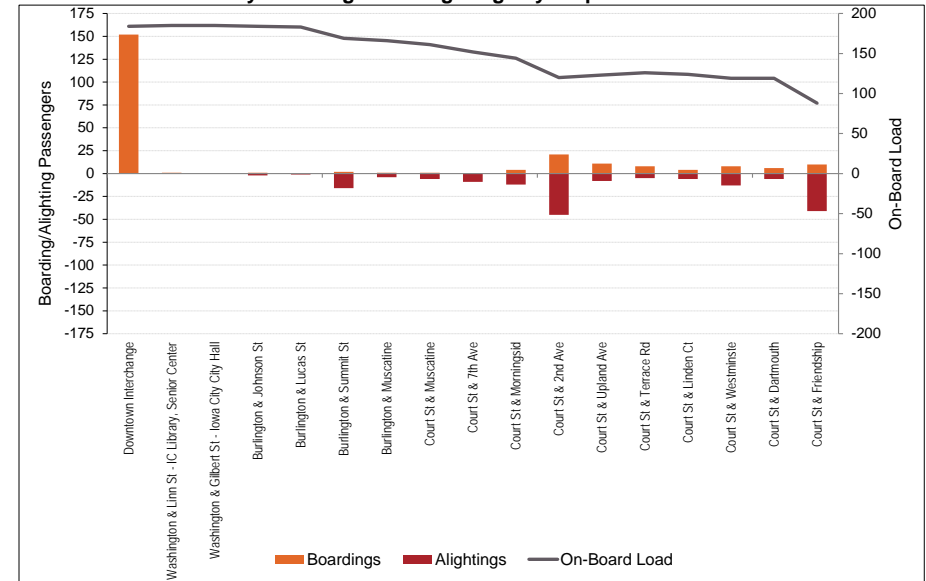
Weekday Ridership by Trip - Outbound



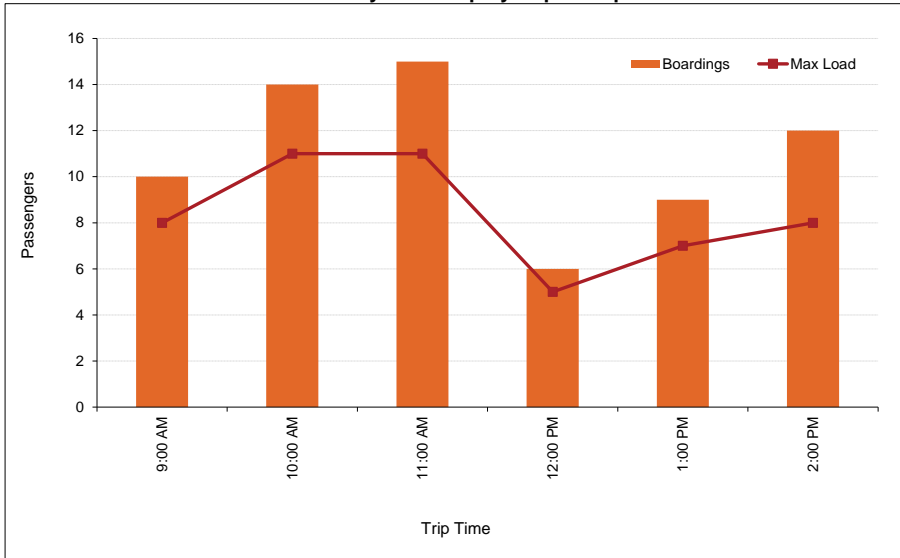
Weekday Boardings and Alightings by Stop - Inbound



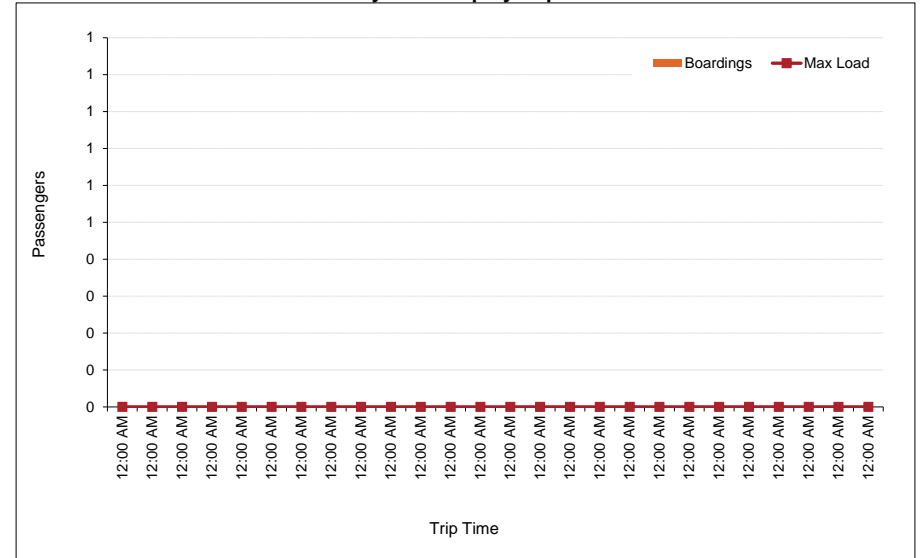
Weekday Boardings and Alightings by Stop - Outbound



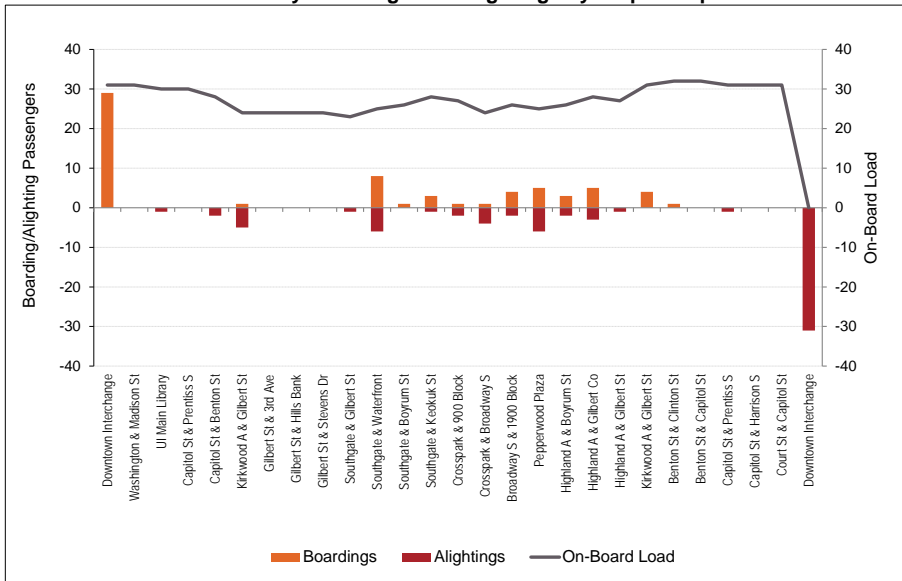
Weekday Ridership by Trip - Loop



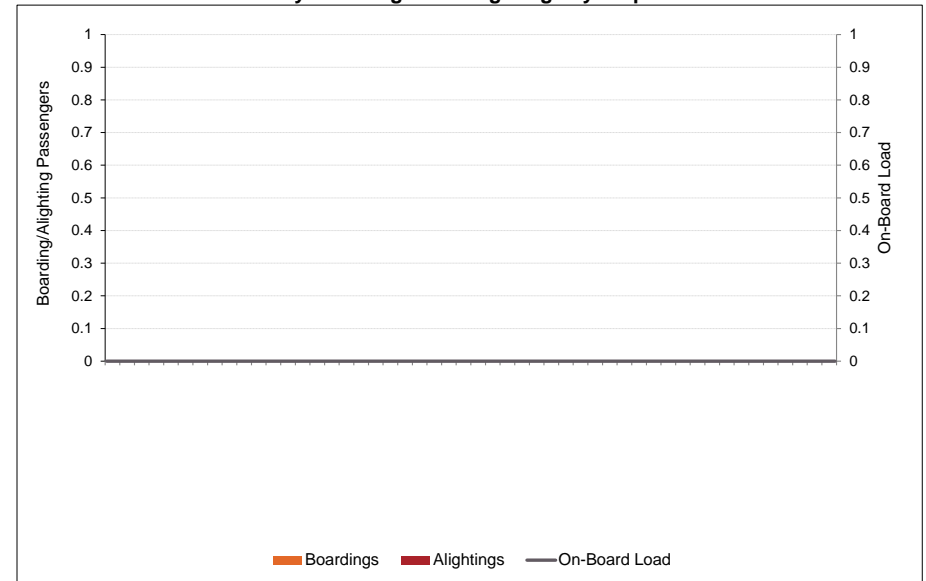
Weekday Ridership by Trip -




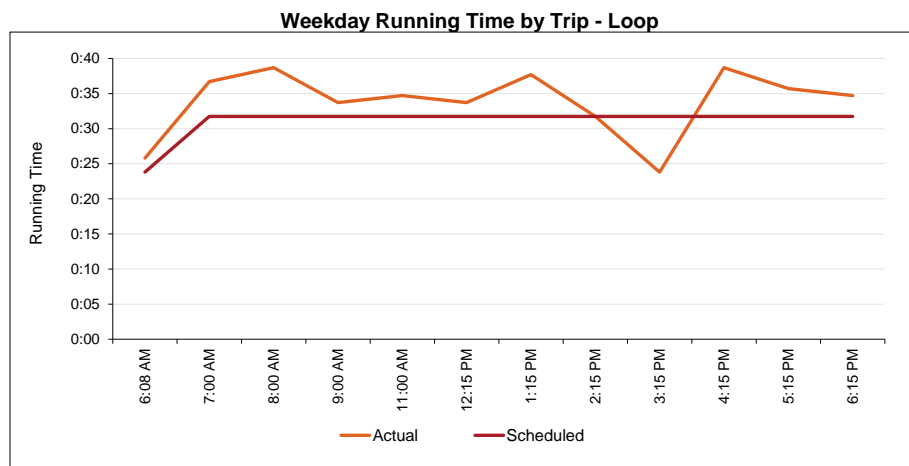
Weekday Boardings and Alightings by Stop - Loop



Weekday Boardings and Alightings by Stop -




Route Eastside Express Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		144	128	6.3	23.0
Loop		144	128	6.3	23.0
By Segment					
1	Downtown Interchange to Court St & Peterson St	66		1.5	45.0
2	Court St & Peterson St to Huntington & Cardigan Ln	23	47	1.0	23.0
3	Huntington & Cardigan Ln to Rochester & 1st Ave	39	27	2.2	17.7
4	Rochester & 1st Ave to Downtown Interchange	16	54	1.6	10.0
By Time Period					
	AM	56	32	1.5	38.2
	Midday	40	42	2.7	15.0
	PM	41	45	1.6	25.6
	Eve	7	9	0.5	13.1



Trip Time	Boardings	Max Load
6:08 AM	9	9
7:00 AM	27	27
8:00 AM	20	19
9:00 AM	6	6
11:00 AM	9	6
12:15 PM	8	6
1:15 PM	13	7
2:15 PM	4	4
3:15 PM	7	7
4:15 PM	19	17
5:15 PM	15	17
6:15 PM	7	9

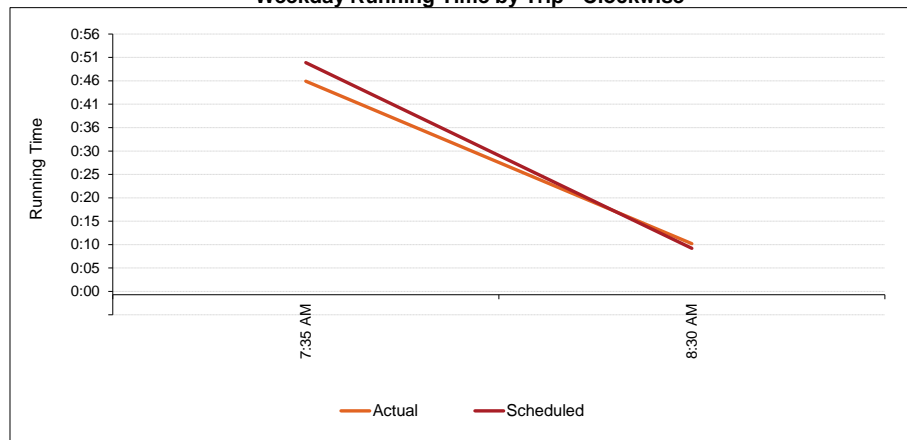
[illegible]

Route	Boardings	Alightings	On-Board Load
Downtown Interchange	65	-15	65
Court St & Pelissier St	9	-12	55
Court St & Elmira St	-1	-5	50
Court St & Kenneth Dr	-1	-5	45
Court St & Camden Rd	-4	-10	40
Arlington & Court St	5	-1	42
Arlington & Cumberland	5	-1	45
Huntington & Arlington	-1	-5	42
Huntington & Cardigan Ln	-1	-5	41
Huntington & Court St	-4	-5	41
Court St & Camden Rd	-1	-5	42
Ashford Pl & Chadwick Place	-1	-5	43
Ashford Pl & York Place	-1	-5	44
York Place & Brentwood	-4	-5	41
Brentwood & Camden St	4	-1	43
Camden Rd & Ashford Pl	-4	-5	45
Court St & Kenneth Dr	-1	-5	48
Court St Lindeman Dr	-1	-5	50
Scott Park & Elgin Dr	-4	-5	46
Regency Hse & Apartments	-1	-5	45
Scott Blvd & Lower W Branch Rd	-4	-5	48
Lower W Br & Middlebury	4	-1	50
Rochester & Post Rd	-1	-5	55
Rochester & 1st Ave	7	-1	60
Regina Edu & Center	-4	-5	65
Mercy Hospital	-1	-5	68
Market St Lin St	-1	-5	65
Clinton St & Jefferson St	-12	-15	50
Downtown Interchange	-45	-15	25

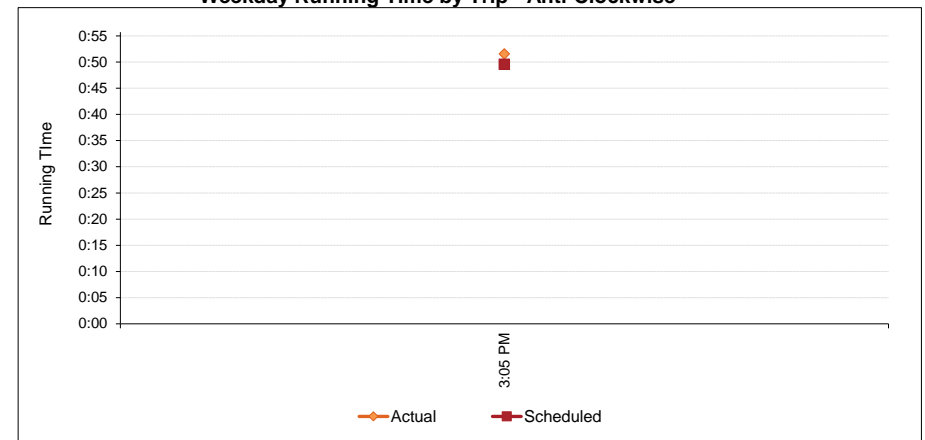
Route Eastside Loop AM Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		82	82	1.9	43.2
Clockwise		49	49	1.1	45.9
Anti-Clockwise		33	33	0.8	39.6
By Segment					
1	Sycamore Mall Cinema Theater to City Hill School	2	6	0.5	4.0
2	City Hill School to Friendship St	3	43	0.3	10.6
3	Friendship St to Wellington Dr	2	15	0.4	5.5
4	Wellington Dr to California Ave	32	18	0.3	91.4
5	California Ave to Sycamore Mall Cinema Theater	43		0.3	129.0
By Time Period					
AM		49	49	1.1	45.9
PM		33	33	0.8	39.6

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
50%	25%	25%	43	Sycamore Mall Cinema Theater	C
50%	50%	0%	43	Sycamore Mall Cinema Theater	C
50%	0%	50%	32	William St	A
67%	33%				
50%	50%				
	50%	50%			
50%		50%			
50%		50%			
			43	Sycamore Mall Cinema Theater	C
			32	William St	A

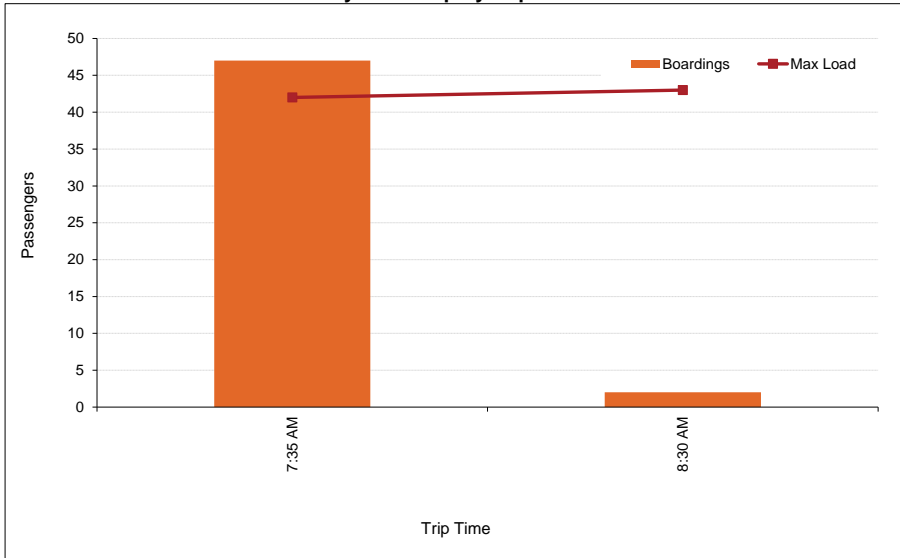
Weekday Running Time by Trip - Clockwise



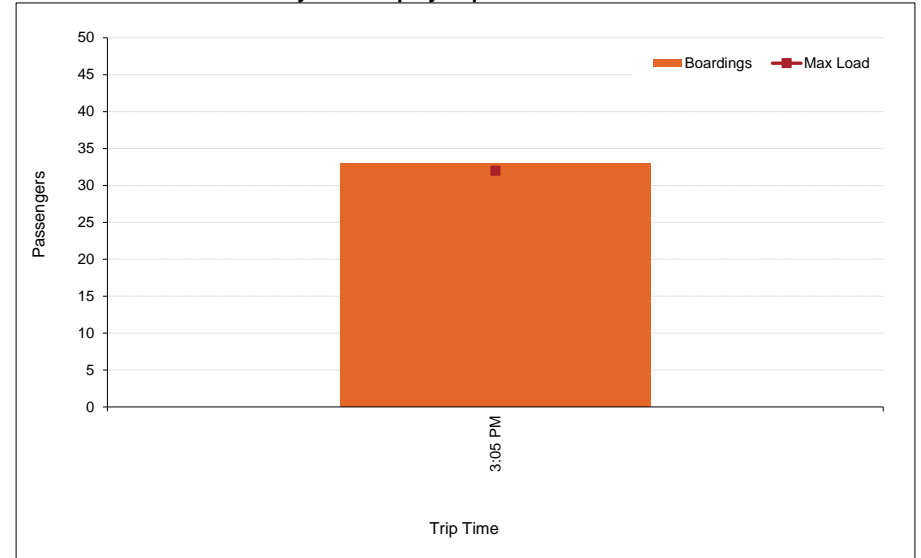
Weekday Running Time by Trip - Anti-Clockwise



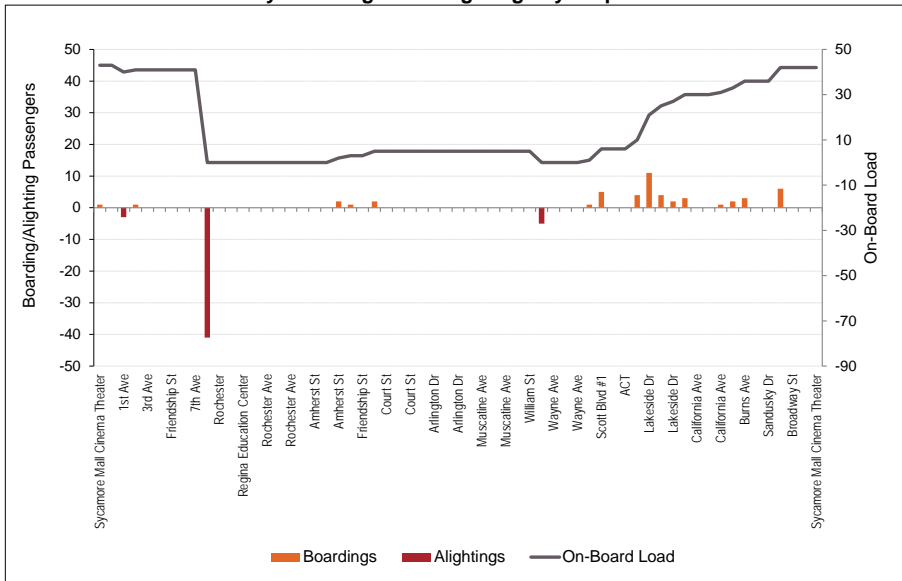
Weekday Ridership by Trip - Clockwise



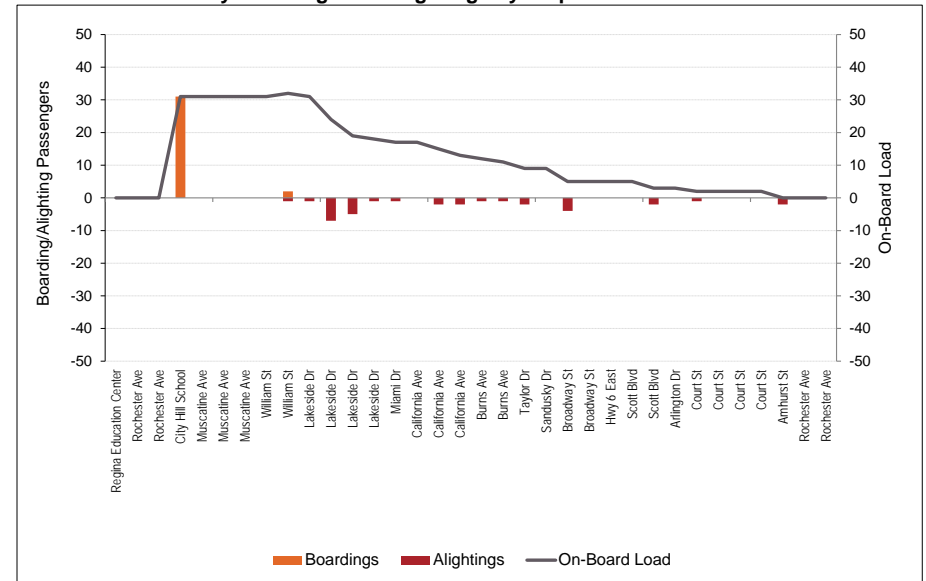
Weekday Ridership by Trip - Anti-Clockwise




Weekday Boardings and Alightings by Stop - Clockwise



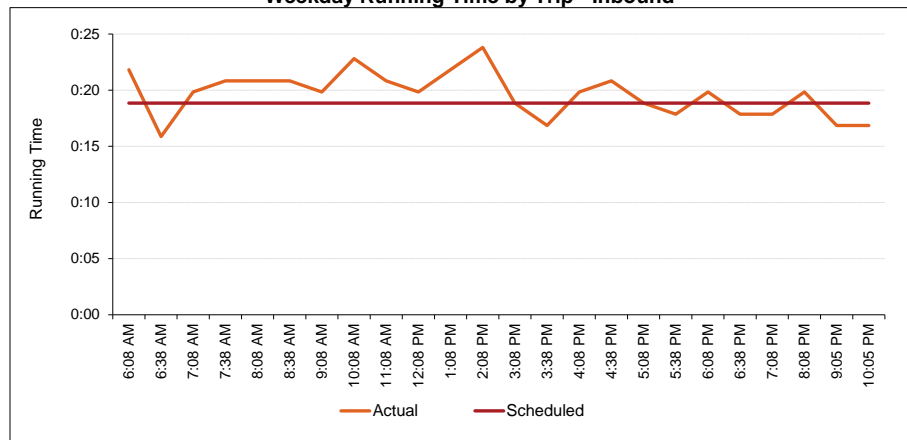
Weekday Boardings and Alightings by Stop - Anti-Clockwise



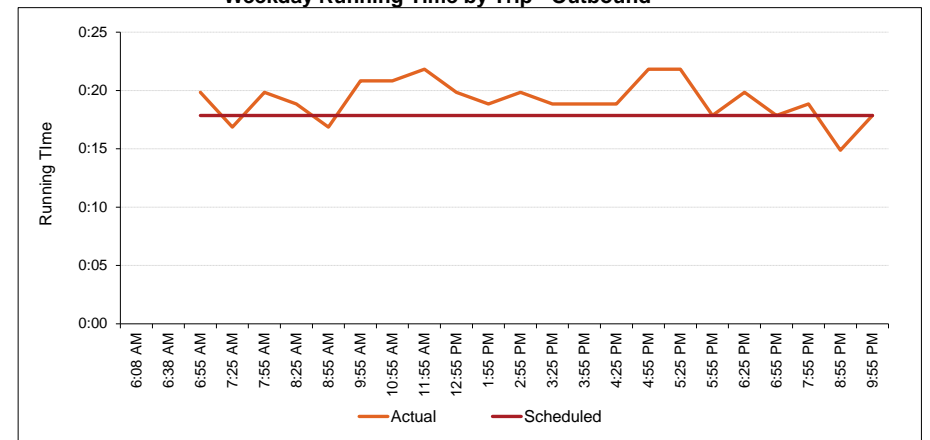
Route Lakeside Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		477	462	14.3	33.4
Inbound		221	283	7.6	29.1
Outbound		256	179	6.7	38.2
By Segment					
1	Bon Aire Mobile Home Lodge to Southgate & Keokuk St	203	173	6.5	31.1
2	Southgate & Keokuk St to Downtown Interchange	274	289	7.7	35.7
By Time Period					
AM		116	90	3.5	33.1
Midday		142	146	3.7	38.4
PM		149	152	3.7	40.3
Eve		56	58	2.5	22.7
Night		14	16	0.9	15

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
59%	25%	17%	233	Gilbert St & Benton St	I
74%	15%	11%	233	Gilbert St & Benton St	I
44%	34%	22%	193	Court St & Gilbert St	O
65%	10%	25%			
65%	20%	15%			
			98	Gilbert St & Kirkwood A	I
			70	Gilbert St & Benton St	I
			86	Court St & Dubuque St	O
			32	Gilbert St & Prentiss S	O
			10	Downtown Interchange	O

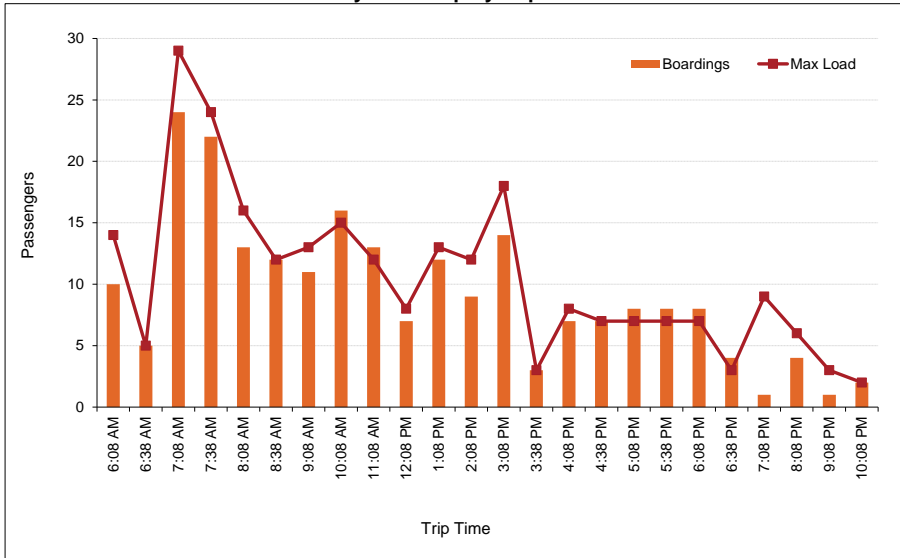
Weekday Running Time by Trip - Inbound



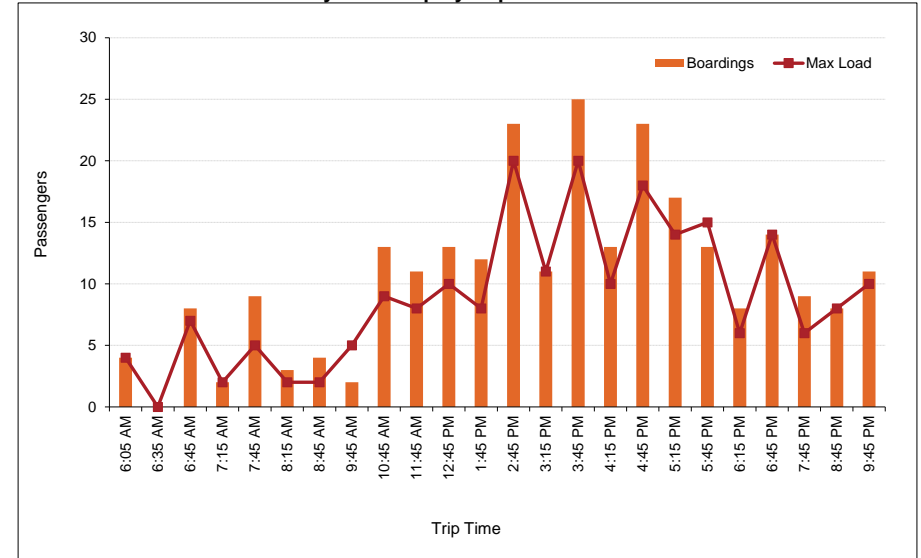
Weekday Running Time by Trip - Outbound



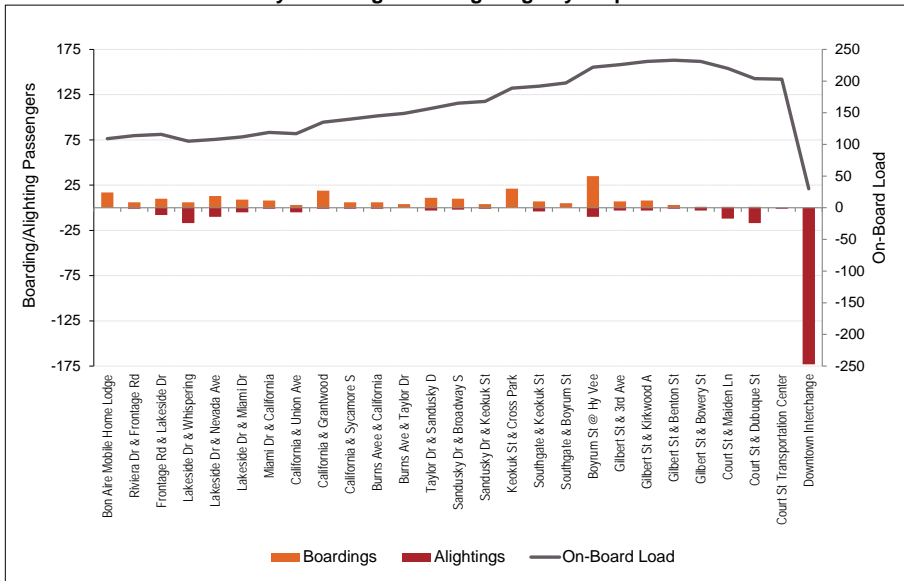
Weekday Ridership by Trip - Inbound



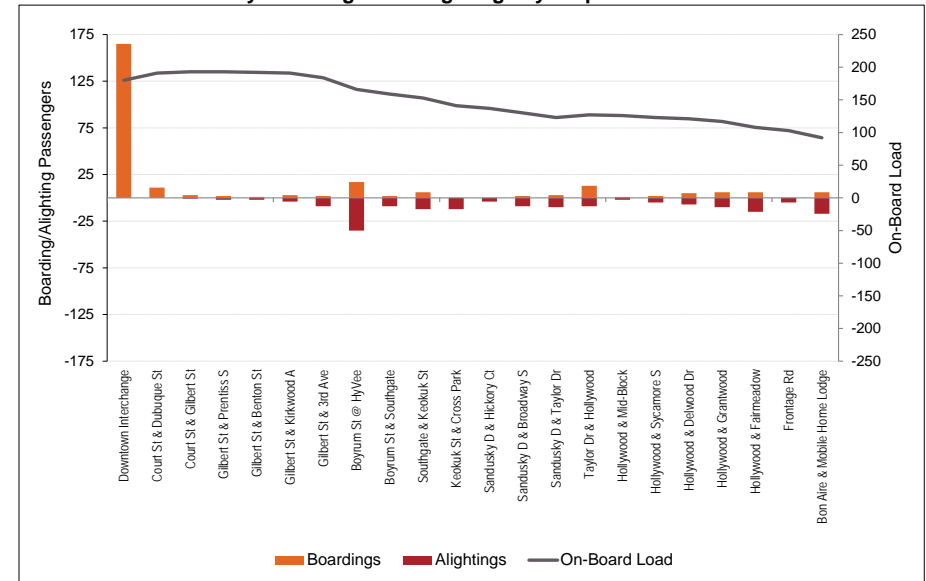
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



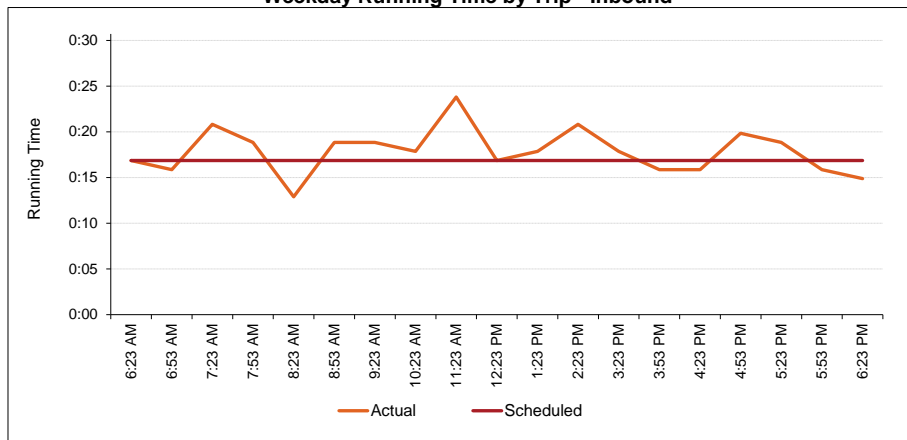
Weekday Boardings and Alightings by Stop - Outbound



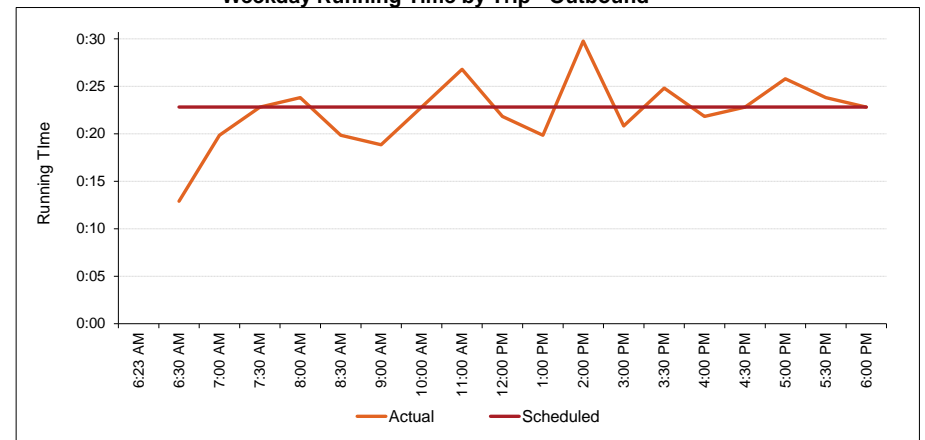
Route Mall Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		353	350	12.3	28.6
Inbound		129	189	5.4	24.0
Outbound		224	161	7.0	32.2
By Segment					
1	Heinz Rd & Hwy 6 East to Kirkwood Ave & Dodge St	168	161	8.3	20.3
2	Kirkwood Ave & Dodge St to Downtown Interchange	185	189	4.0	46.1
By Time Period					
	AM	89	85	3.4	26.3
	Midday	137	144	4.3	32.0
	PM	114	107	3.7	30.7
	Eve	13	14	0.9	13.7

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
67%	21%	12%	181	Bowery St & Johnson St	I
79%	5%	16%	181	Bowery St & Johnson St	I
55%	36%	9%	161	Court St & Gilbert St	O
74%	13%	13%			
81%	5%	14%			
			52	Gilbert St & Bowery St	I
			85	Dodge St & Bowery St	I
			66	Court St & Gilbert St	O
			9	Bowery St & Johnson St	O

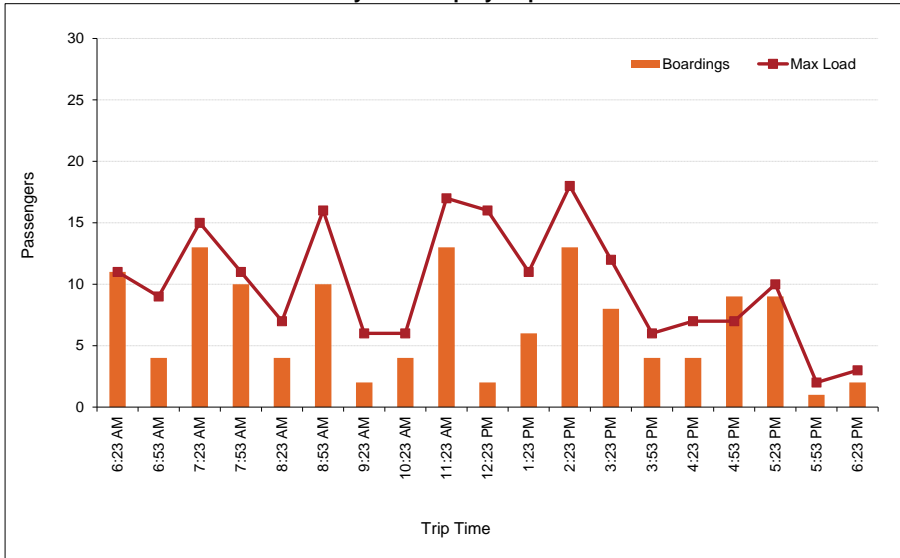
Weekday Running Time by Trip - Inbound



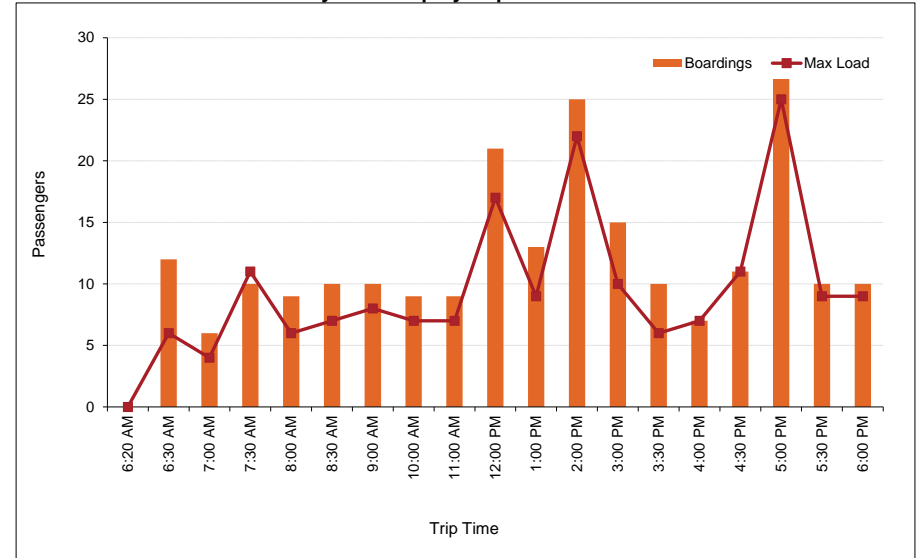
Weekday Running Time by Trip - Outbound



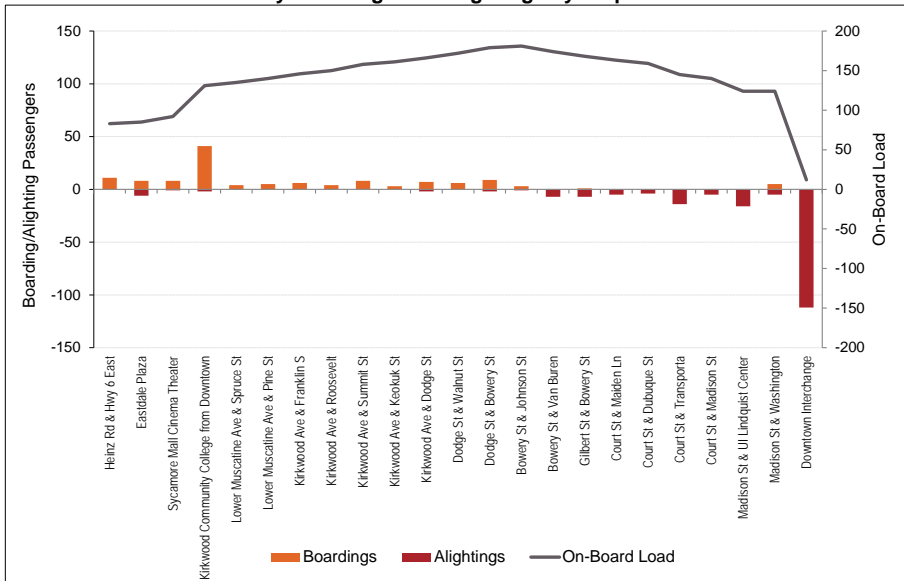
Weekday Ridership by Trip - Inbound



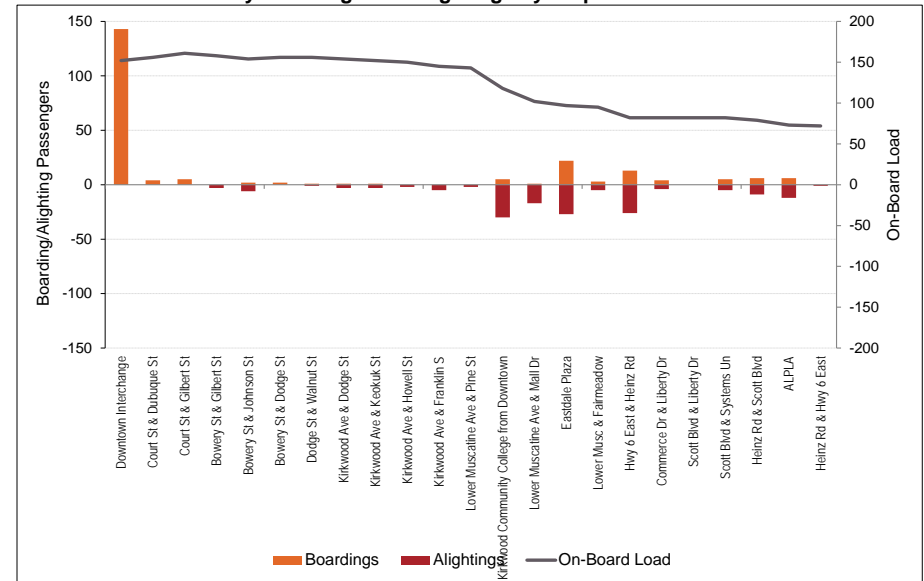
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



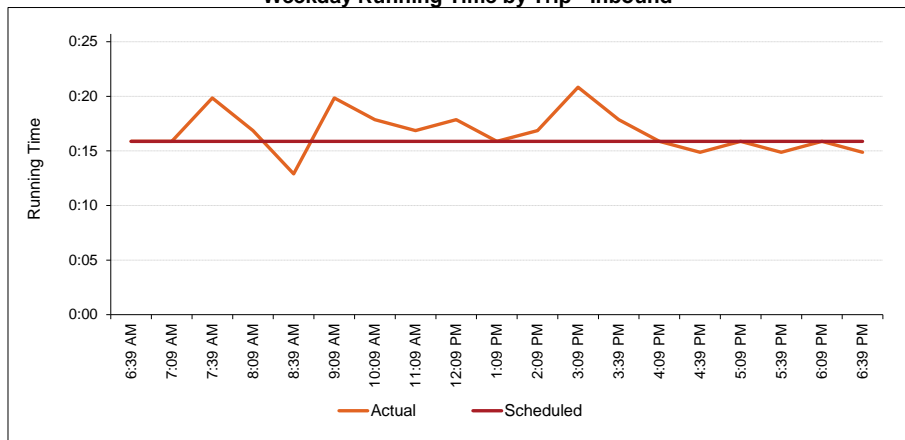
Weekday Boardings and Alightings by Stop - Outbound



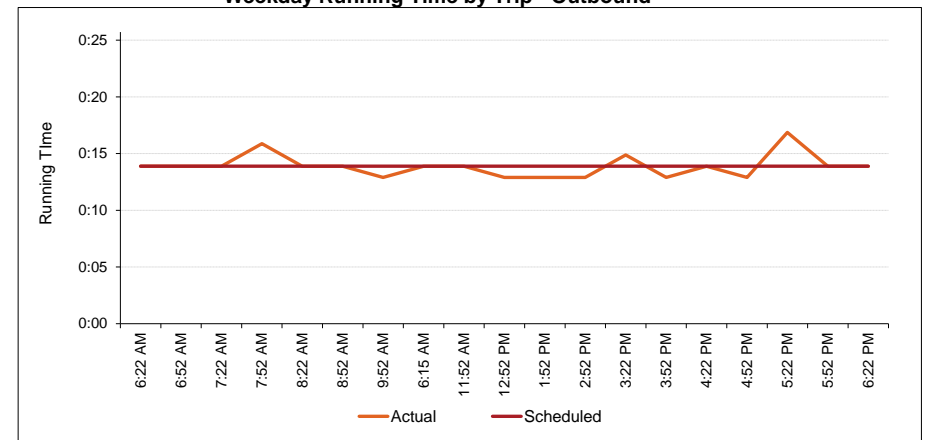
Route Manville Heights Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
					
Total		282	291	12.7	22.3
Inbound		53	148	5.1	10.5
Outbound		229	143	7.6	30.1
By Segment					
1	Forest View Trailer Park to Park Rd & Normandy Dr	119	105	3.8	31.3
2	Park Rd & Normandy Dr to Downtown Interchange	163	186	5.7	28.6
By Time Period					
AM		101	103	3.7	27.1
Midday		78	81	4.0	19.5
PM		95	99	4.0	23.8
Eve		8	8	0.9	8.6

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
67%	30%	4%	131	Woolf Ave - VA Hospital	I
86%	12%	2%	131	Woolf Ave - VA Hospital	I
47%	47%	5%	121	Newton Rd & VA Hospital	O
74%	26%				
76%	21%	3%			
			75	Woolf Ave & Rider St	I
			46	Laura Dr & Foster Rd	I
			75	Newton Rd & VA Hospital	O
			6	Iowa Ave & English Philosophy Building, IMU	O

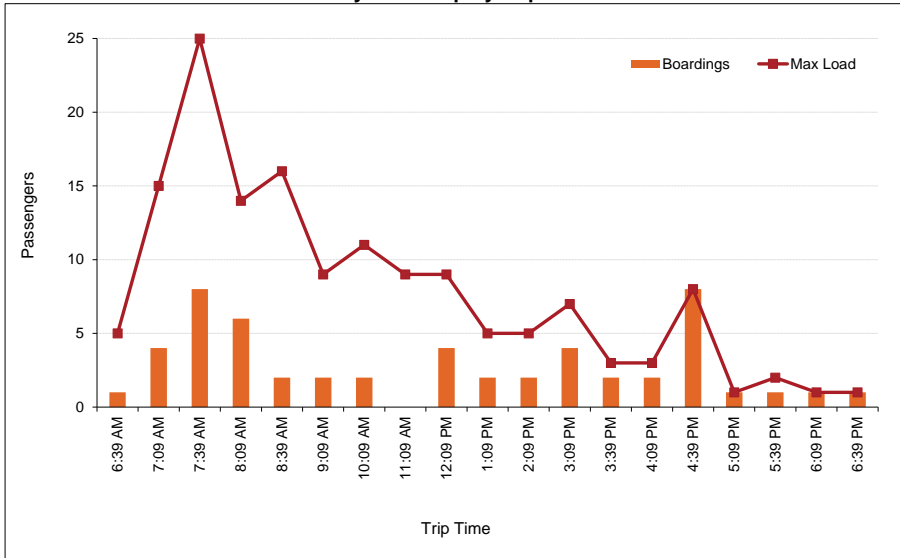
Weekday Running Time by Trip - Inbound



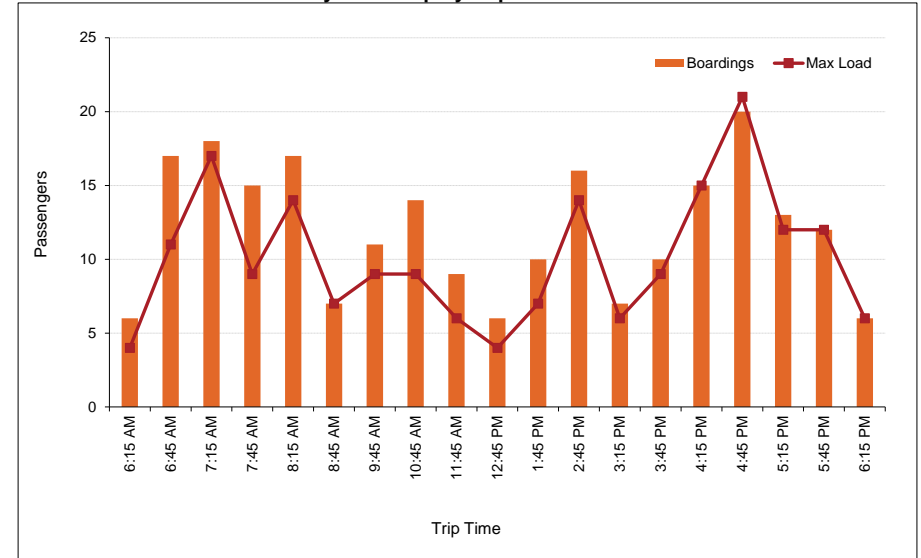
Weekday Running Time by Trip - Outbound



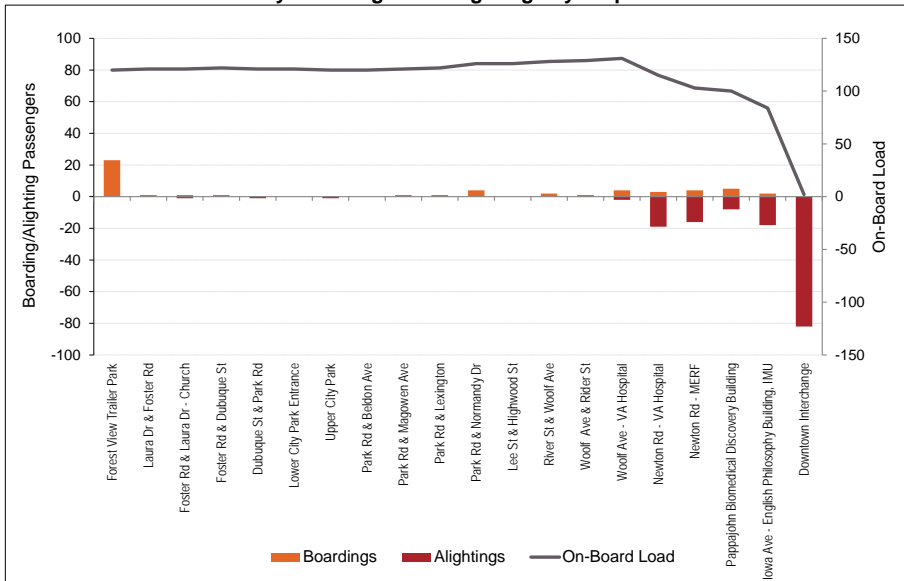
Weekday Ridership by Trip - Inbound



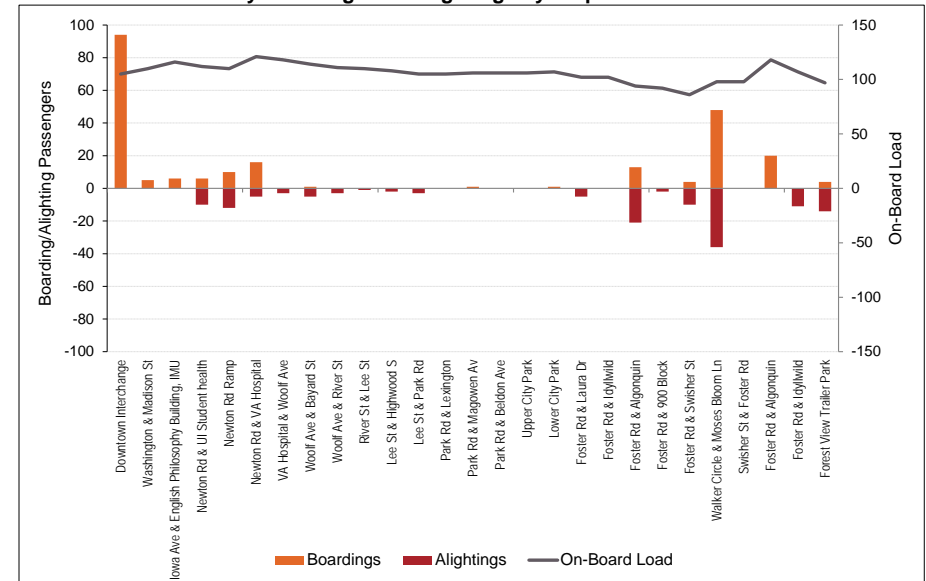
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



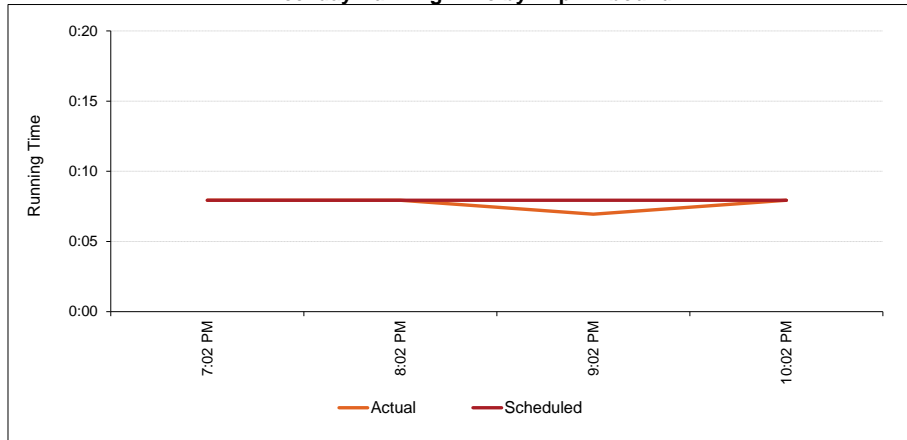
Weekday Boardings and Alightings by Stop - Outbound



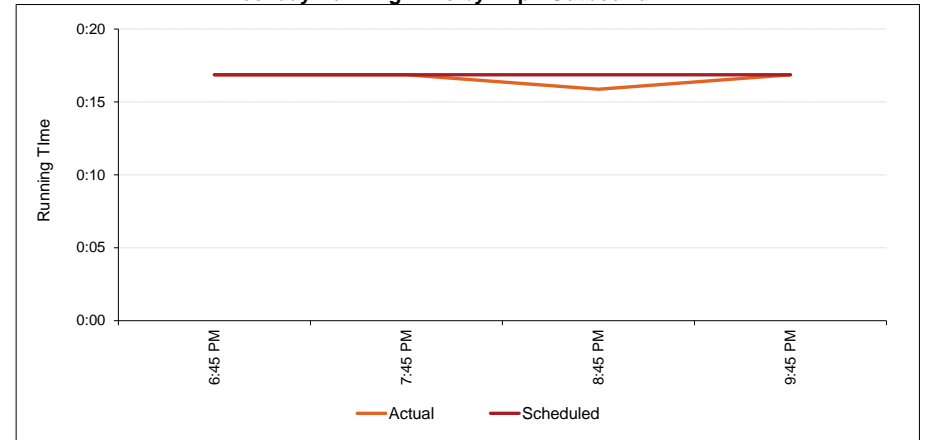
Route Manville Heights (Night) Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total		26	25	1.7	15.6
Inbound		3	2	0.5	5.6
Outbound		23	23	1.1	20.3
By Segment					
1	Forest View Trailer Park to Downtown Interchange	26	25	1.7	15.6
By Time Period					
Eve		19	19	1.1	17.0
Night		7	6	0.5	13

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
71%	21%	8%	24	Washington & Madison St	O
75%	25%	0%	4	Laura Dr & Foster Rd	I
67%	17%	17%	24	Washington & Madison St	O
75%	25%				
			19	Washington & Madison St	O
			5	Downtown Interchange	O

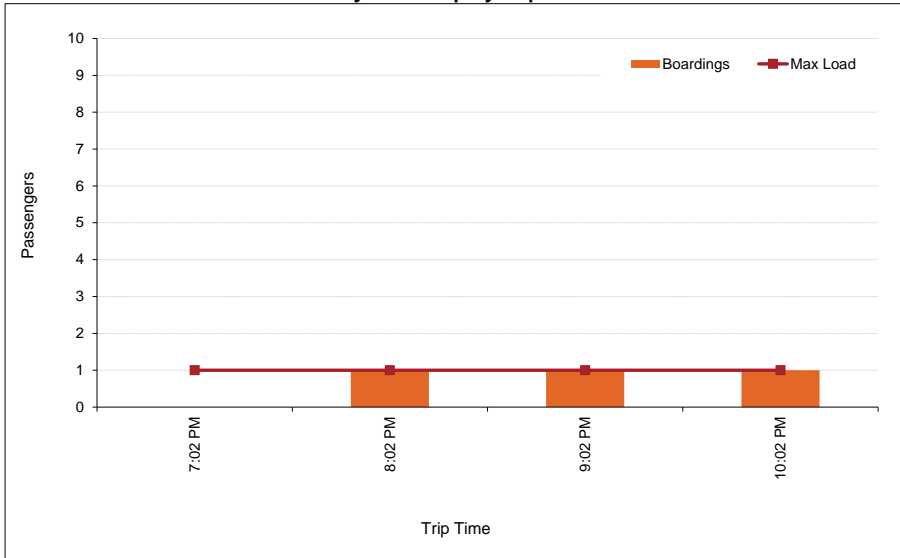
Weekday Running Time by Trip - Inbound



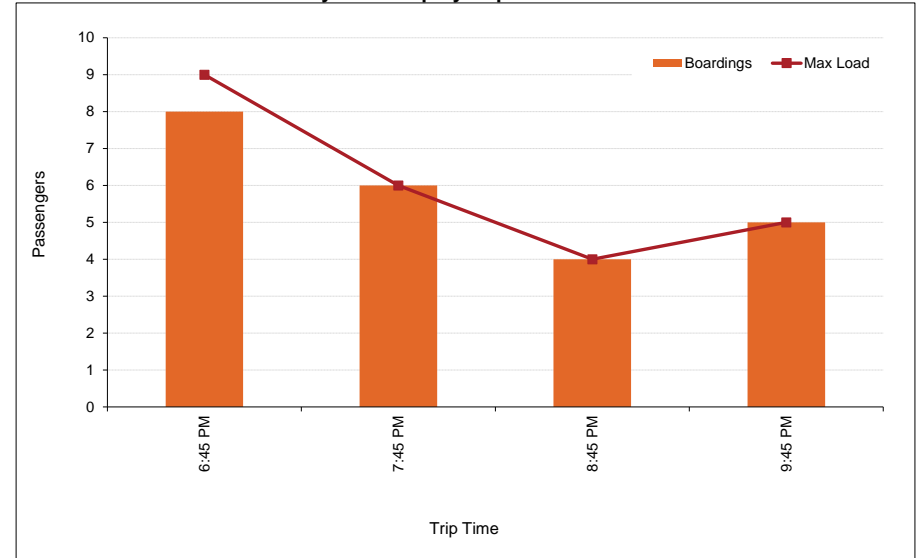
Weekday Running Time by Trip - Outbound



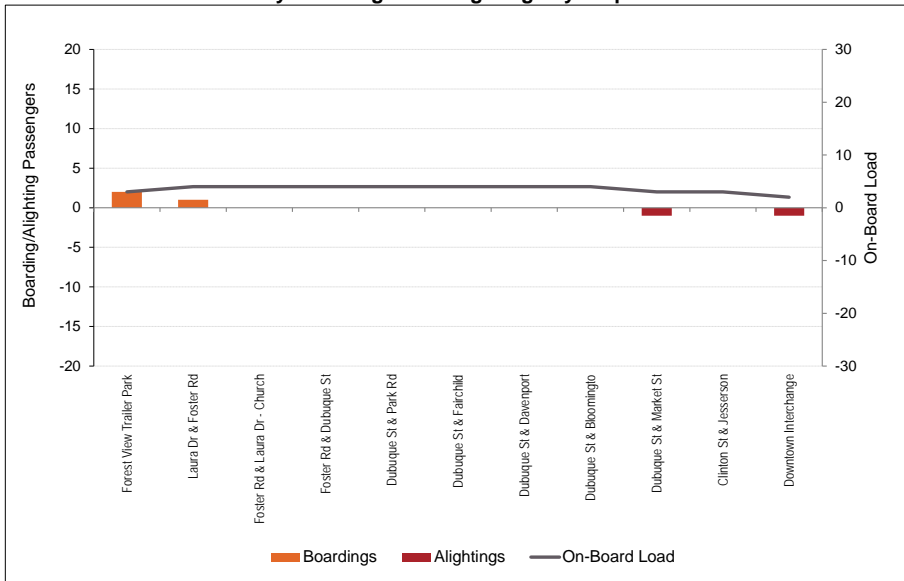
Weekday Ridership by Trip - Inbound



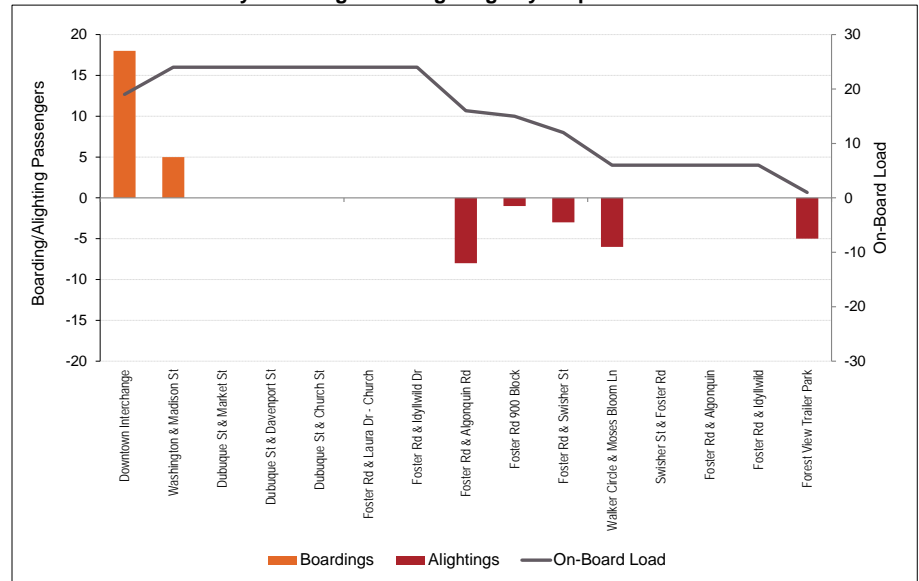
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



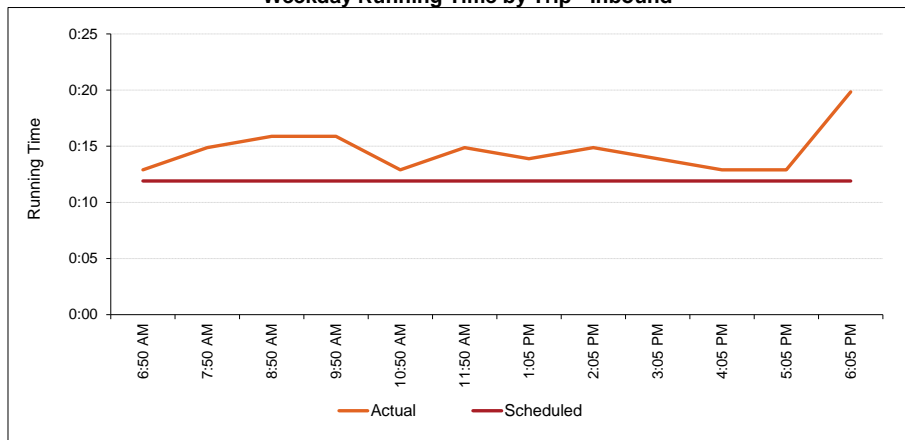
Weekday Boardings and Alightings by Stop - Outbound



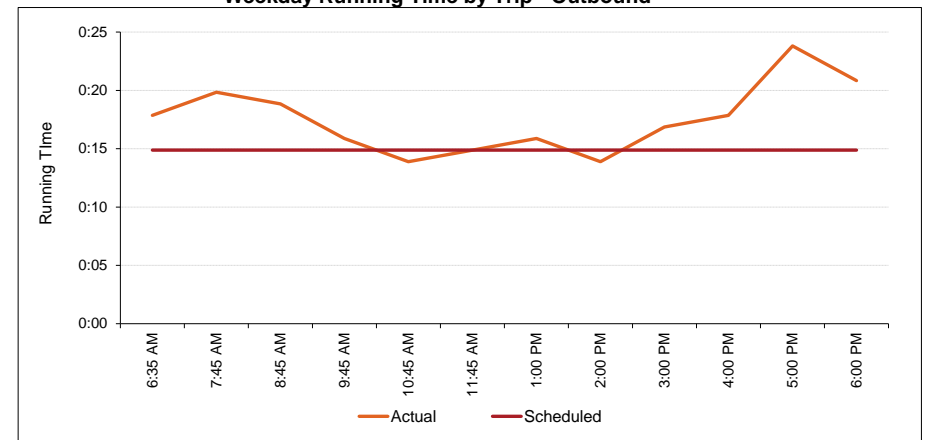
Route Melrose Express Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total					
Inbound		59	64	2.4	24.6
Outbound		70	89	3.0	23.3
By Segment					
1	Chatam Oak Residential Facility to Melrose Ave & Hawkins Dr	69	66	2.4	28.8
2	Melrose Ave & Hawkins Dr to Downtown Interchange	60	87	3.0	20.0
By Time Period					
AM		32	56	1.4	23.7
Midday		49	48	2.5	19.6
PM		47	48	1.4	34.8
Eve		1	1	0.2	5.0

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
28%	17%	56%	70	Iowa Ave - English Philosophy Building	O
25%	0%	75%	58	Melrose Ave & Sunset St	I
31%	33%	36%	70	Iowa Ave - English Philosophy Building	O
38%		63%			
25%	13%	63%			
			28	Downtown Interchange	O
			25	Melrose Ave & IC Fire St	I
			38	Hawkins Dr & Melrose Ave-UI Childrens Hospital	O
			1	Melrose Ave & IC Fire St	I

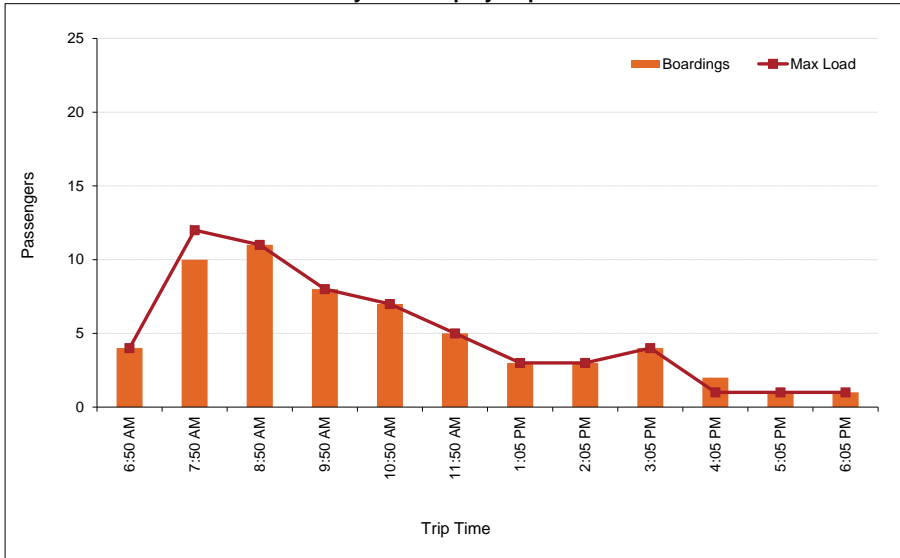
Weekday Running Time by Trip - Inbound



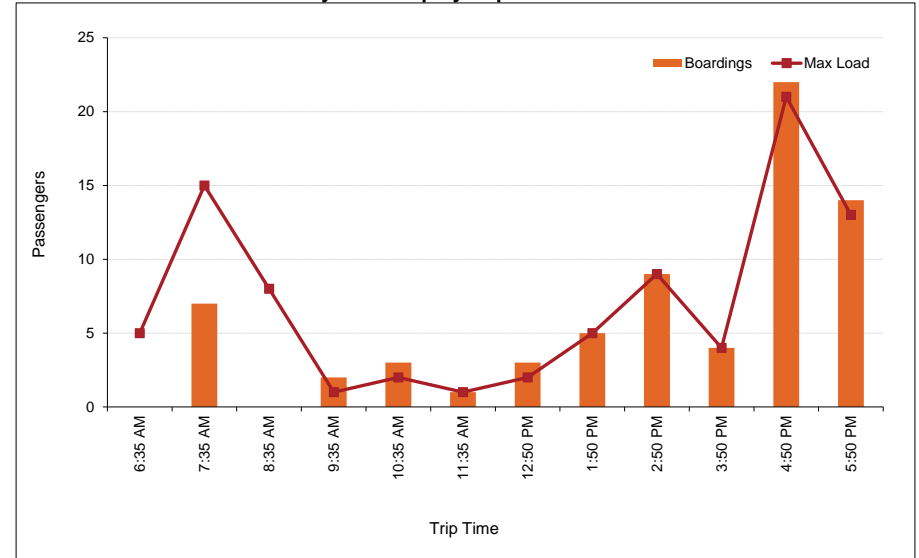
Weekday Running Time by Trip - Outbound



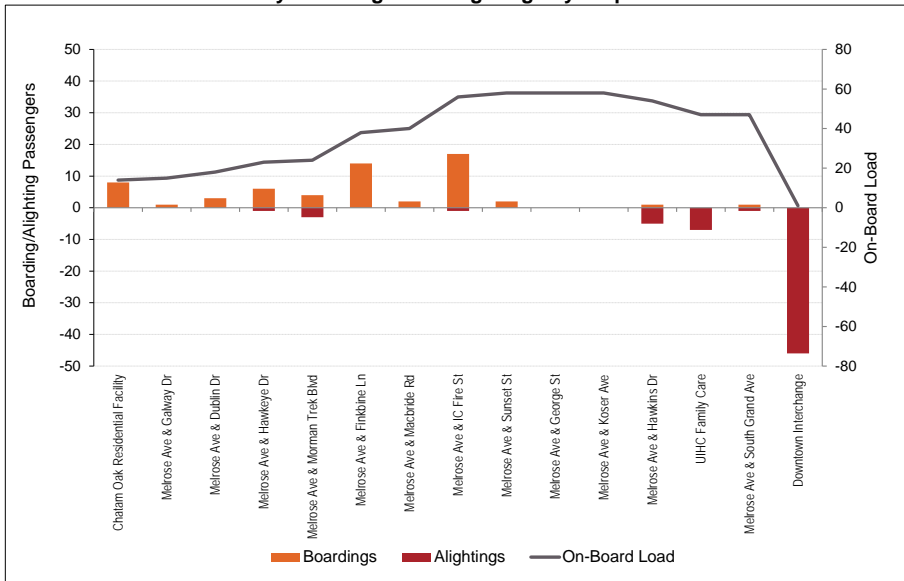
Weekday Ridership by Trip - Inbound



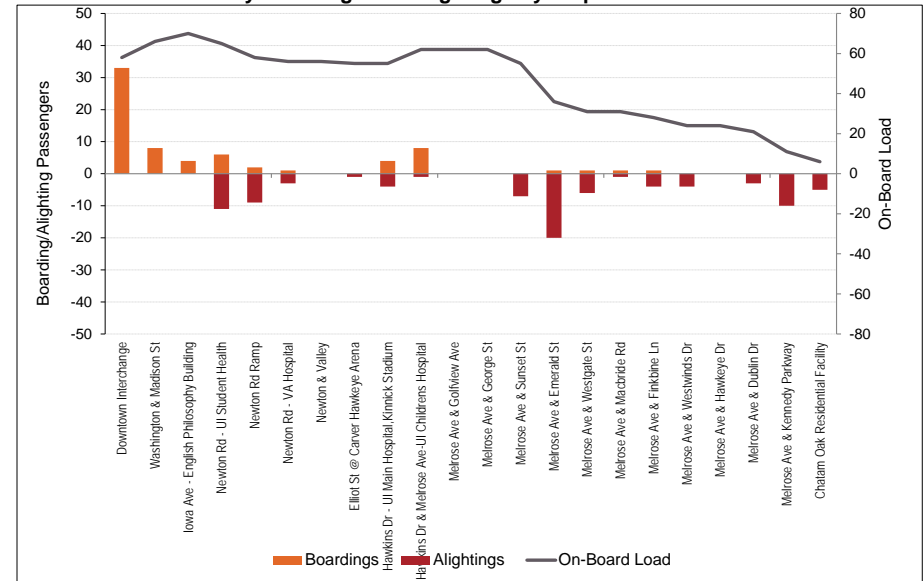
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



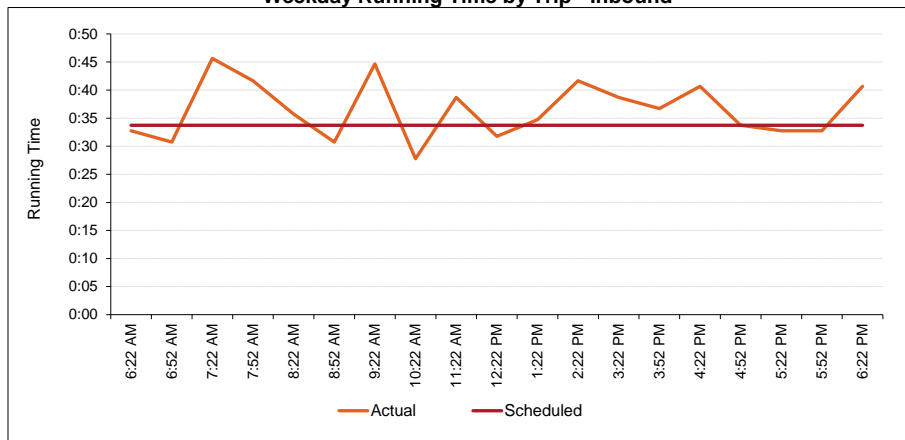
Weekday Boardings and Alightings by Stop - Outbound



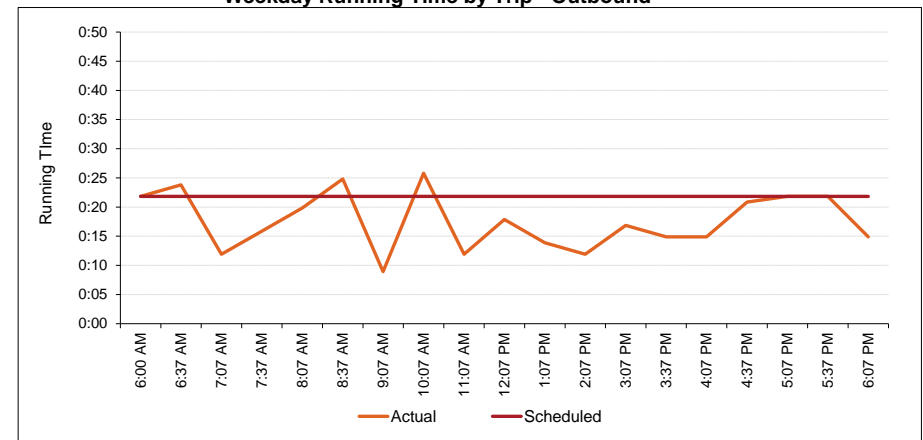
Route North Dodge Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
					
Total		185	245	12.7	14.6
Inbound		86	157	5.7	15.1
Outbound		99	88	7.0	14.2
By Segment					
1	Pearson Main Entrance to Caroline Ave	46	50	12.4	3.7
2	Caroline Ave to Downtown Interchange	139	131	5.4	25.8
By Time Period					
	AM	63	83	3.7	17.0
	Midday	44	62	4.3	10.2
	PM	68	89	3.7	18.4
	Eve	10	11	1.0	10.3

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
40%	51%	9%	95	North Dodge	I
46%	49%	5%	95	North Dodge	I
35%	53%	12%	82	Clinton St	O
45%	50%	5%			
55%	32%	13%			
			42	North Dodge	I
			25	North Dodge	I
			40	Jefferson St	O
			6	Downtown Interchange	O

Weekday Running Time by Trip - Inbound



Weekday Running Time by Trip - Outbound



The chart displays the relationship between passenger boardings and the maximum load on a bus route. Boardings are represented by orange bars, and the maximum load is shown as a red line with square markers. The data points are as follows:

Trip Time	Boardings	Max Load
6:22 AM	4	4
6:52 AM	4	5
7:22 AM	14	14
7:52 AM	9	9
8:22 AM	11	10
8:52 AM	5	5
9:22 AM	2	2
10:22 AM	1	1
11:22 AM	3	5
12:22 PM	3	3
1:22 PM	2	3
2:22 PM	7	7
3:22 PM	10	11
3:52 PM	0	-1
4:22 PM	2	2
4:52 PM	4	8
5:22 PM	1	6
5:52 PM	0	-1
6:22 PM	4	4

Trip Time	Boardings	Max Load
6:00 AM	1	1
6:30 AM	2	4
7:00 AM	4	5
7:30 AM	8	8
8:00 AM	4	4
8:30 AM	2	2
9:00 AM	2	3
10:00 AM	7	6
11:00 AM	2	2
12:00 PM	2	2
1:00 PM	2	3
2:00 PM	6	6
3:00 PM	3	3
3:30 PM	5	4
4:00 PM	9	9
4:30 PM	11	7
5:00 PM	14	9
5:30 PM	9	9
6:00 PM	6	6

The chart displays the following data series:

- Boardings:** Represented by orange bars, showing the number of passengers boarding at each location.
- Alightings:** Represented by red bars, showing the number of passengers alighting at each location.
- On-Board Load:** Represented by a grey line, showing the total number of passengers on board between locations.

The X-axis locations are: Pearson Main Entrance, Pearsons Dr, Iowa City School District Office, North Dodge St, North Dodge St, Prairie du Chien Rd, Prairie du Chien Rd, Caroline Ave, Whiting Ave, Kimble Rd, Governor St, 919 North, 900 North, North Dodge, North Dodge, North Dodge, Mercy Hospital, Market St, Clinton St, and Downtown Interchange.

This chart displays the passenger volume and on-board load for various bus stops. The left Y-axis measures Boarding/Alighting Passengers, while the right Y-axis measures On-Board Load. Boardings are shown as orange bars, Alightings as dark red bars, and the On-Board Load as a grey line.

Stop	Boardings	Alightings	On-Board Load
Downtown Interchange	70	0	60
Clinton St	5	0	65
Jefferson St	3	-5	62
Jefferson St	3	-5	60
Jefferson St	1	-2	58
Governor St	1	-2	58
Governor St	2	-5	58
Governor St	0	-5	55
Governor St	2	-10	48
Governor St	0	-2	45
Governor St	0	-5	42
Governor St	0	-10	35
North Dodge	0	-10	28
North Dodge	0	-10	22
Iowa City School District Office	0	-1	18
North Dodge	0	-5	15
ACT #1	8	-5	18
ACT #2	2	-2	18
ACT #3	0	-2	15
Pearson Main Entrance	0	-5	12


A bar and line chart titled 'Weekly Roundtrip by Trip Time' showing passenger data for three trip times: 7:00 PM, 8:00 PM, and 9:00 PM. The y-axis is labeled 'Passengers' and ranges from 0 to 18. The x-axis is labeled 'Trip Time'. The legend indicates that orange bars represent 'Boardings' and a dark red line with square markers represents 'Max Load'.

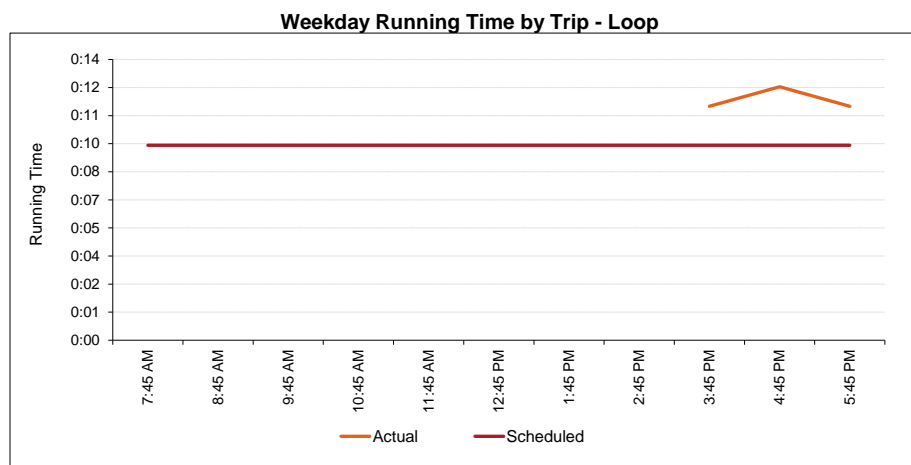
Trip Time	Boardings	Max Load
7:00 PM	16	13
8:00 PM	17	13
9:00 PM	1	2

[illegible]

Secondary Boarding and Alighting by Stop

Stop	Boardings	Alightings	On-Board Load
Downtown Interchange	20	0	15
Jefferson St & Linn St	4	0	18
Jefferson St & Dodge St	1	0	19
Clapp St & Hwy Ave	0	-1	19
Rochester Ave & Pleasant St	0	-1	18
Rochester Ave & 7th Ave	0	-2	18
Rochester Ave & Rita Lyn Court	0	-3	17
Rochester Ave & 1st Ave	1	-6	10
Rochester Ave & Mount Vernon Dr	0	0	9
Amhurst St & Lower West Branch Rd	0	0	9
Amhurst St & Hastings Ave	0	-1	8
Amhurst St & Washington St	0	-1	7
Washington St @ Lemme Elementary School	0	0	6
Washington St & Green Mountain Dr	0	0	6
Mount Vernon Concord Circle	0	0	6
Mount Vernon & Rochester Ave	0	0	6
Rochester Ave & 1st Ave	1	0	7
Pearson Main Entrance	0	0	8
North Dodge & ACT Circle	0	0	8
North Dodge & Bristol Dr	0	0	6
North Dodge & North Dodge St	5	-4	8
Prairie du Chien Rd & North Dodge St	0	0	8
Caroline Ave & Prairie du Chien Rd	0	0	8
Kimble Rd & Kimble Ave	0	-3	8
919 North Dodge St	0	0	7
North Dodge & Brown St	0	0	7
North Dodge & Market St	1	-2	6
Market St & Linn St	0	-1	5
Downtown Interchange	0	-8	0

Route Northside Shuttle Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
	Total	22	24	1.8	12.0
	Loop	22	24	1.8	12.0
	By Segment				
1	Downtown Interchange to Gilbert St & Church St	22	14	0.9	24.0
2	Gilbert St & Church St to Downtown Interchange		10	0.9	
	By Time Period				
	AM	7	8	0.3	21.0
	Midday	12	11	1.0	12.0
	PM	3	5	0.5	6.0



Trip Time	Boardings	Max Load
7:45 AM	6	6
8:45 AM	1	2
9:45 AM	1	1
10:45 AM	6	6
11:45 AM	1	1
12:45 PM	1	1
1:45 PM	1	1
2:45 PM	2	2
3:45 PM	0	0
4:45 PM	1	3
5:45 PM	2	2

[illegible]

The chart displays the following data series:


- Boardings:** Represented by orange bars. The highest boarding volume is at Downtown Interchange (approx. 12 passengers).
- Alightings:** Represented by red bars. The highest alighting volume is at Johnson St & Bloomington St (approx. 5 passengers).
- On-Board Load:** Represented by a dark blue line. The peak load occurs at Jefferson St & Lin St (approx. 20 passengers).

Location	Boardings	Alightings	On-Board Load
Downtown Interchange	12	0	14
Clinton St & Jefferson St	4	1	18
Jefferson St & Lin St	3	0	20
Jefferson St & Van Buren St	1	3	16
Johnson St & Bloomington St	1	5	12
Bloomington St & Gilbert St	1	5	6
Gilbert St & Fairchild	0	0	6
Gilbert St & Church St	0	4	4
Church St & Lin St	0	2	3
Church St & Dubuque St	0	0	3
Dubuque St & Fairchild St	0	0	3
Dubuque St & Davenport St	0	0	3
Dubuque St & Bloomington St	0	0	3
Dubuque St & Market St	0	1	2
Madison St & IMU	0	0	2
Madison St & UI Main Library	0	1	1
Downtown Interchange	0	2	0

The chart displays three data series for the 2019-2020 season:

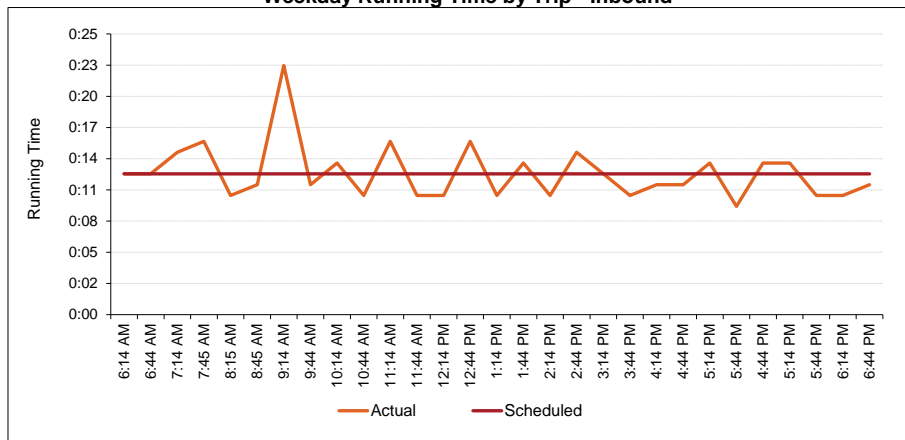
- Boardings:** Represented by an orange line, showing a very low and stable level of passenger boardings throughout the year.
- Alightings:** Represented by a red line, showing a very low and stable level of passenger alightings throughout the year.
- On-Board Load:** Represented by a grey line, showing a very low and stable level of on-board load throughout the year.

The x-axis represents the months from July to June. The left y-axis represents Boarding/Alighting Passengers (0 to 1), and the right y-axis represents On-Board Load (0 to 1).

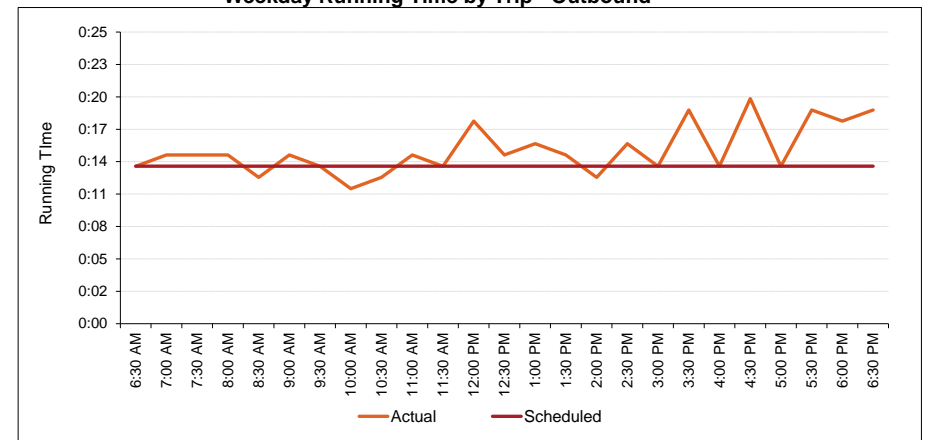
Route Oakcrest Weekday		Route Productivity Summary		
		Activity	Service Hours	Productivity
		Boardings	Alightings	Service Hours
				Boardings per Service Hour
Total		732	741	10.9
Inbound		365	492	6.3
Outbound		367	249	4.6
By Segment				
1	Oakcrest St & Woodside Dr to Sunset St & Melrose Ave	365	308	4.9
2	Sunset St & Melrose Ave to Downtown Interchange	367	433	7.2
By Time Period				
AM		226	264	2.9
Midday		266	261	4.8
PM		180	156	2.4
Eve		60	60	0.8

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
69%	19%	12%	342	Melrose Ave & Koser Ave	I
56%	31%	13%	342	Melrose Ave & Koser Ave	I
83%	7%	11%	294	Grand Ave - UIHC Emergency Entrance	O
56%	30%	15%			
59%	30%	11%			
			200	Melrose Ave & Koser Ave	I
			117	Melrose Ave & Koser Ave	I
			136	Melrose Ave & Golfview Ave	O
			48	Grand Ave - UIHC Emergency Entrance	O

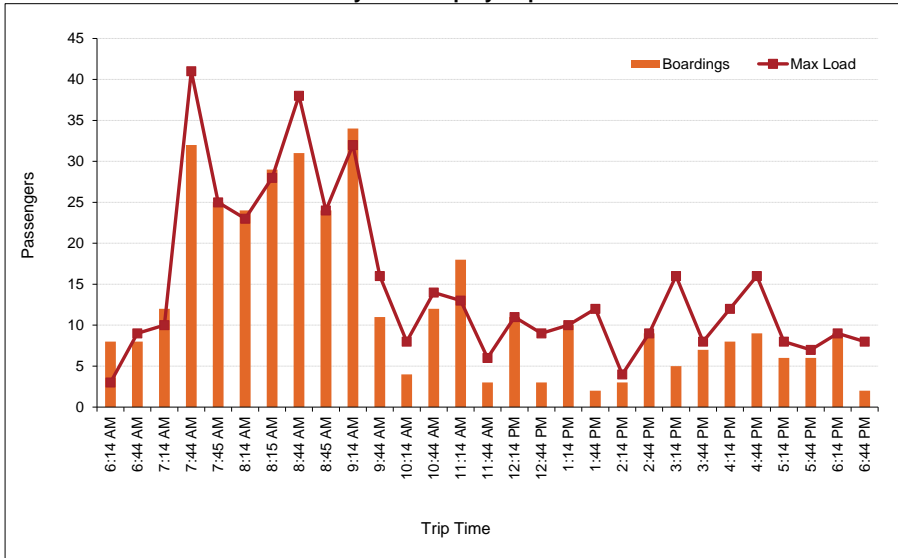
Weekday Running Time by Trip - Inbound



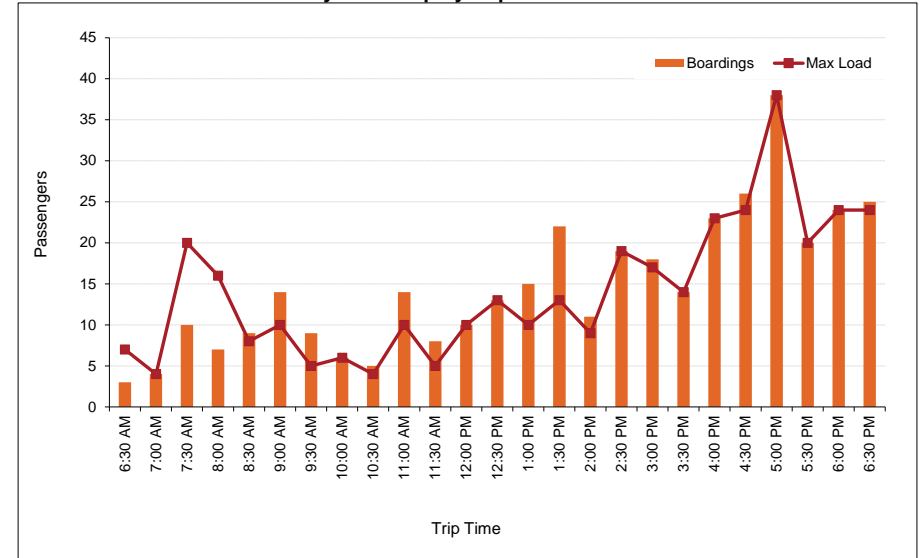
Weekday Running Time by Trip - Outbound



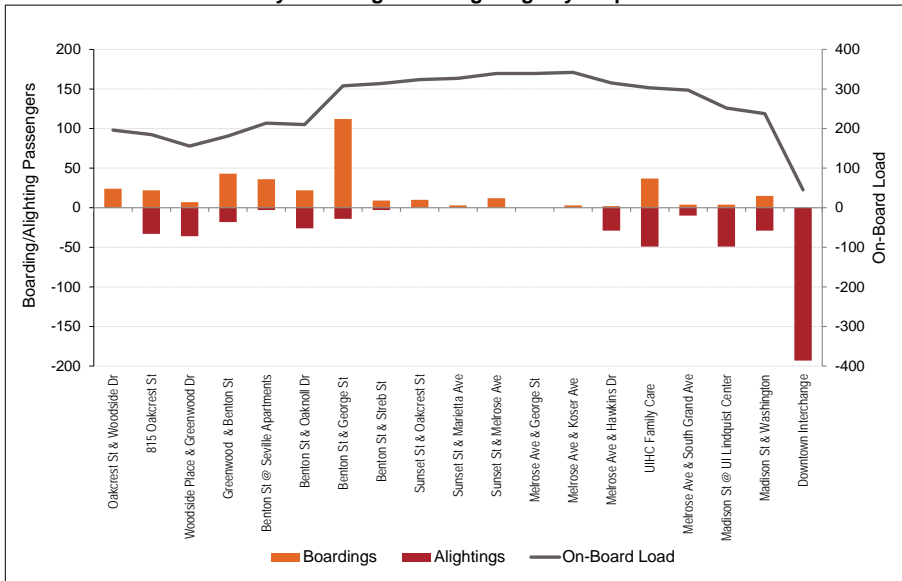
Weekday Ridership by Trip - Inbound



Weekday Ridership by Trip - Outbound



Weekday Boardings and Alightings by Stop - Inbound



Weekday Boardings and Alightings by Stop - Outbound



The chart displays the relationship between trip time and passenger volume. Boardings are highest at 7:00 PM and 8:00 PM, while the maximum load is highest at 7:00 PM and 8:00 PM, and lowest at 9:00 PM.

Trip Time	Boardings	Max Load
7:00 PM	33	29
8:00 PM	30	25
9:00 PM	13	8
10:00 PM	14	11

[illegible]

Secondary Loading and Unloading at Deep Loop

Route	Boardings	Alightings	On-Board Load
Downtown Interchange	45	0	0
Washington & Madison St	0	0	30
UI Main Library	15	0	30
Grand Ave. - UJHC Emergency Entrance	10	0	45
UI Family Care	0	0	45
Metrose Ave & Gollwiew Ave	0	-2	45
Metrose Ave & George St	0	-2	45
Sunset St & Melrose Av	0	-2	42
Sunset St & Marietta A	0	-2	40
Sunset St & Oakcrest St	0	-18	22
Oakknoll Retirement Center # 1	0	-15	22
Oakknoll Retirement Center # 2	2	0	18
945 Oakcrest St	0	-15	18
Oakcrest St & Woodside Dr	0	-15	15
815 Oakcrest St	0	-15	15
Woodside Place & Greenwood Dr	0	-15	12
Greenwood Dr & Benton St	0	-15	10
Benton St & Seville Apartments	0	-15	10
Benton St & Oakknoll Dr	0	-15	10
Benton St & George St	0	-15	10
Benton St & Strib St	0	-15	10
Sunset St & Strib St	0	-15	10
Sunset St & Penfro Dr	0	-15	10
Sunset St & Denbigh Dr	0	-15	10
Sunset St & Aber Ave	0	-15	8
Westport Plaza 1	0	-15	8
Walmart	0	-15	7
Walmart Interchange	5	0	12
Ruppert Rd & Hwy 1 West	0	-2	10
Hwy 1 West & Miller Ave	0	-2	10
Hwy 1 West @ Slogers	0	-2	10
Riverside & Benton St	0	-2	10
Riverside & Myrtle Ave	0	-2	10
Hydraulics Lab, Boyd Law School	0	-2	10
Madison St @ UI Lindquist Center	0	-2	10
Madison St & Washington	0	-18	10
Downtown Interchange	0	0	0

The chart displays the monthly passenger volume for three categories: Boardings (orange), Alightings (red), and On-Board Load (grey). The Y-axis represents the number of passengers, ranging from -80 to 80. The X-axis represents the month, from January to December. Boardings and Alightings are plotted as stacked bars, while On-Board Load is a line graph. The chart shows a significant peak in Boardings and Alightings in January, followed by a sharp decline in February, and then a steady increase in March and April.

Month	Boardings	Alightings	On-Board Load
January	75	75	75
February	25	25	25
March	50	50	50
April	75	75	75
May	50	50	50
June	25	25	25
July	25	25	25
August	25	25	25
September	25	25	25
October	25	25	25
November	25	25	25
December	25	25	25

Boardings

Max Load

Passengers

Trip Time

Trip Time	Boardings	Max Load
6:30 AM	14	14
6:45 AM	38	34
7:15 AM	22	15
7:30 AM	29	29
7:45 AM	44	33
8:15 AM	21	21
8:30 AM	29	27
8:45 AM	30	28
9:15 AM	23	22
10:15 AM	14	9
11:15 AM	25	14
12:15 PM	19	10
1:15 PM	26	15
2:15 PM	19	11
2:45 PM	18	11
3:15 PM	35	18
3:45 PM	38	23
4:15 PM	53	30
4:45 PM	33	24
5:15 PM	49	35
5:45 PM	30	22
6:15 PM	24	15

The chart displays two data series over time:

- Boardings**: Represented by orange bars.
- Max Load**: Represented by red squares connected by a line.

The Y-axis is labeled "Passengers" and ranges from 0 to 1. The X-axis is labeled "Trip Time" and shows multiple instances of "12:00 AM". Both metrics remain at zero throughout the entire duration shown.

Boarding/Alighting Passengers

On-Board Load

Legend:

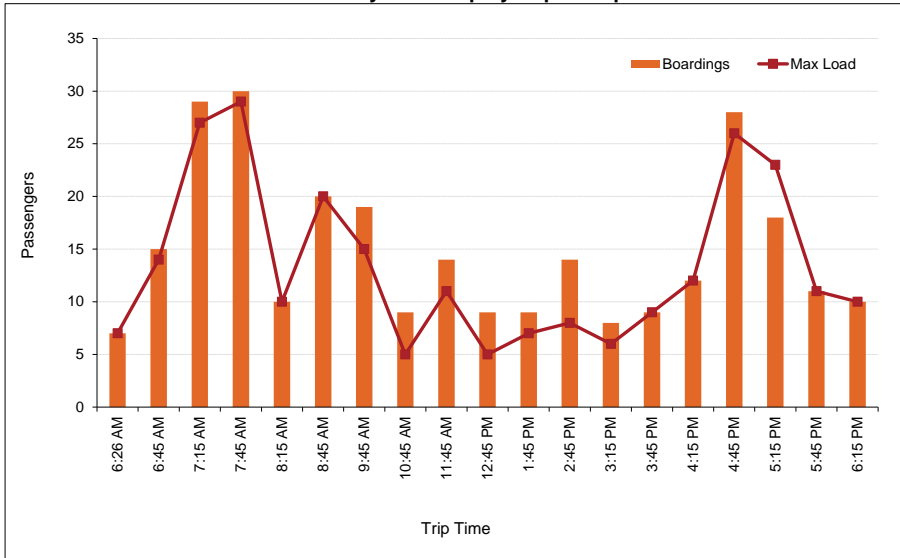
- Boardings (Orange bars)
- Alightings (Red bars)
- On-Board Load (Dark grey line)

Route	Boardings	Alightings	On-Board Load
Downtown Interchange	100	0	50
Iowa Ave - English Philosophy Building	0	0	50
Newton Rd Ramp	0	0	75
Newton & Valley	0	0	70
Hawkins Dr - UJ Main Hospital	0	0	75
Melrose Ave & Gateway Ave	0	0	80
Sunset St & Melrose Ave	0	0	80
Sunset St & Oakcrest St	0	0	75
Sunset St & Albany Dr	0	0	70
Sunset St & Denbigh Dr	0	0	70
Westside Dr & Earl Rd	0	0	65
Westside Dr & Earl Rd	0	0	70
Morman Trek & Gwyn Dr	0	0	70
Morman Trek & Abbey	0	0	70
Morman Trek & Benton St	0	0	100
Westwinds Dr #2	0	0	110
Westwinds & Hawaii Court	0	0	120
Westwinds & Morman Trek Blvd	0	0	130
Melrose Ave & MacBride Rd	0	0	140
Melrose Ave & Sunset St	0	0	145
Melrose Ave & Koser Ave	0	0	145
Hawkins Dr - UJ Main Hospital	0	0	120
Elliot St @ Carver Hawkeye Arena	0	0	110
Newton Rd - VA Hospital	0	0	100
Pappaghion Biomedical Discovery Building	0	0	80
Iowa Ave & Madison St	0	0	30

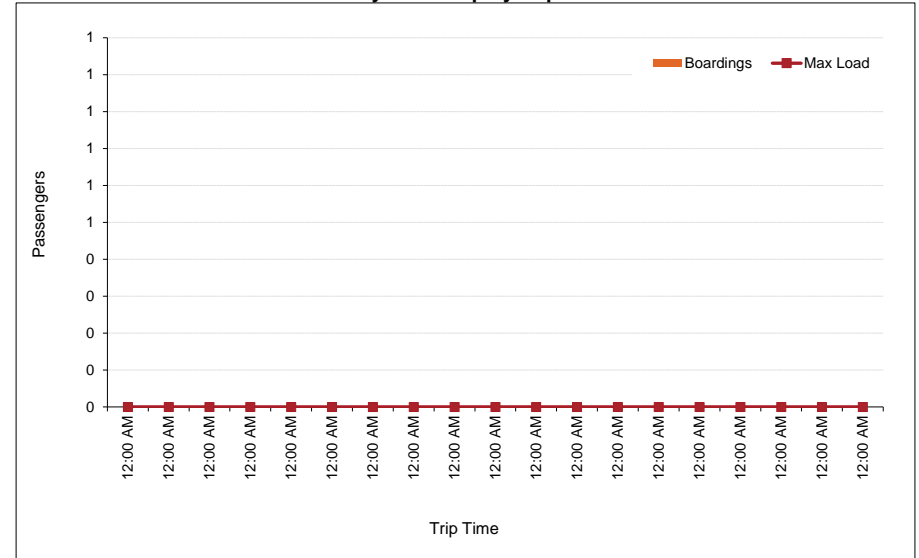
The chart displays the monthly passenger volume and on-board load for the 2019-2020 season. Boardings and alightings are relatively stable, with a slight increase in the winter months. The on-board load remains consistently near zero throughout the year.

Month	Boardings (Passengers)	Alightings (Passengers)	On-Board Load
July	245	245	-0.5
August	245	245	-0.5
September	245	245	-0.5
October	245	245	-0.5
November	245	245	-0.5
December	245	245	-0.5
January	245	245	-0.5
February	245	245	-0.5
March	245	245	-0.5
April	245	245	-0.5
May	245	245	-0.5
June	245	245	-0.5

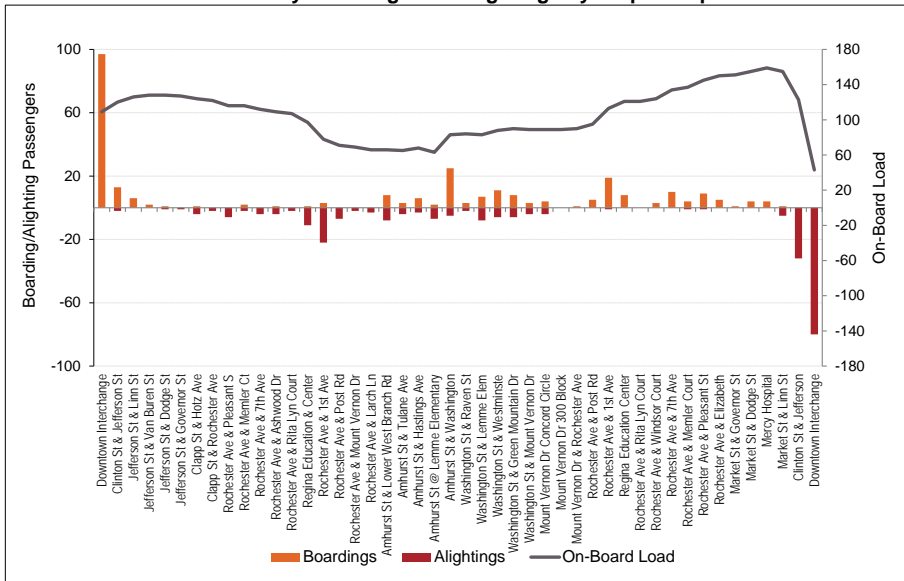
Weekday Ridership by Trip - Loop



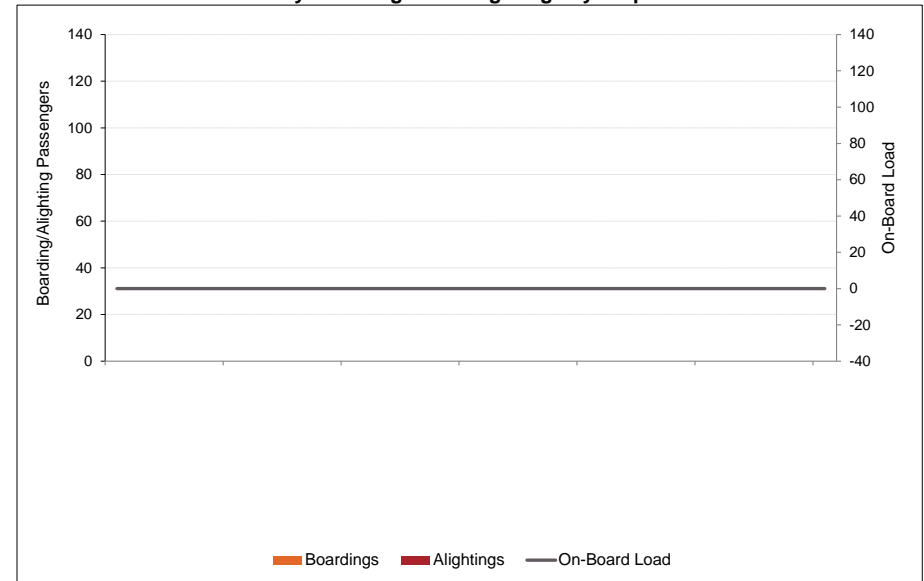
Weekday Ridership by Trip -



Weekday Boardings and Alightings by Stop - Loop



Weekday Boardings and Alightings by Stop -




The chart illustrates the passenger volume and maximum load for a bus route over a 10-hour period. The Y-axis represents the number of passengers, ranging from 0 to 70. The X-axis represents the trip time, starting at 7:30 AM and ending at 6:15 PM. The legend indicates that orange bars represent Boardings and the red line with square markers represents Max Load.

Trip Time	Boardings	Max Load
7:30 AM	0	32
8:00 AM	49	32
8:15 AM	0	5
8:30 AM	0	19
9:00 AM	65	65
9:15 AM	0	8
9:30 AM	11	8
10:00 AM	12	11
10:15 AM	11	9
10:30 AM	38	33
11:00 AM	28	17
11:15 AM	0	3
11:30 AM	0	6
12:00 PM	26	24
12:15 PM	3	9
12:30 PM	13	9
1:00 PM	0	4
1:15 PM	0	6
1:30 PM	25	19
2:00 PM	14	11
2:15 PM	0	7
2:30 PM	10	10
3:00 PM	27	15
3:15 PM	16	10
3:30 PM	23	23
4:00 PM	15	11
4:15 PM	0	4
4:30 PM	28	20
5:00 PM	31	22
5:15 PM	0	14
5:30 PM	13	9
6:00 PM	14	10
6:15 PM	0	11

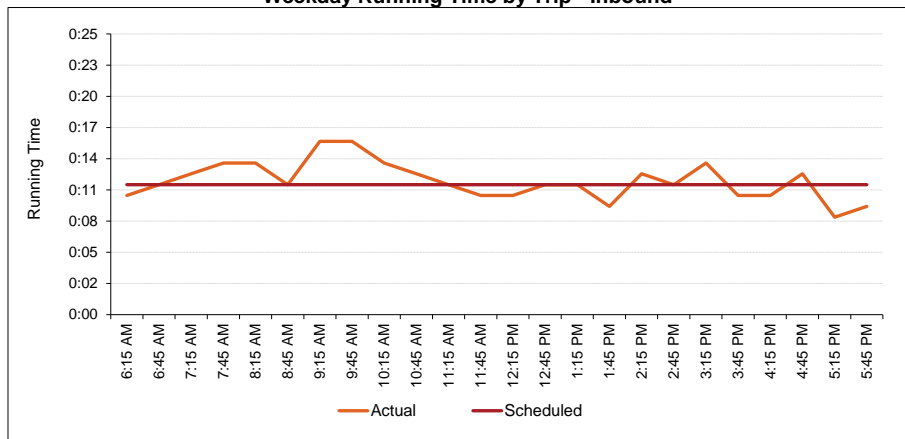
[illegible]

Stop	Boardings	Alightings	On-Board Load
Downtown Interchange	195	-180	230
Washington St @ Van St - LC Library, Senior Center	25	-10	240
Washington St & Gilbert St	15	-15	250
Washington St & Van Buren	15	-10	260
Washington St & Dodge St	18	-12	275
Dodge St & College St	25	-35	275
Dodge St & Burlington	25	-35	270
Dodge St & Court St	22	-38	265
Dodge St & 500 Block	20	-40	250
Dodge St & Bowery St	85	-125	245
Bowery St & Johnson St	35	-40	250
Bowery St & Van Buren	30	-30	255
Gilbert St & Bowery St	32	-15	270
Court St & Maiden Ln	15	-5	275
Court St & Dubuque St	10	-5	275
Court St Transportation Center	5	-5	265
Court St & Madison St	-5	-10	240
Madison St @ UI Lindquist Center	-5	-35	220
Madison St & Washington	15	-65	180
Downtown Interchange	-180	0	100

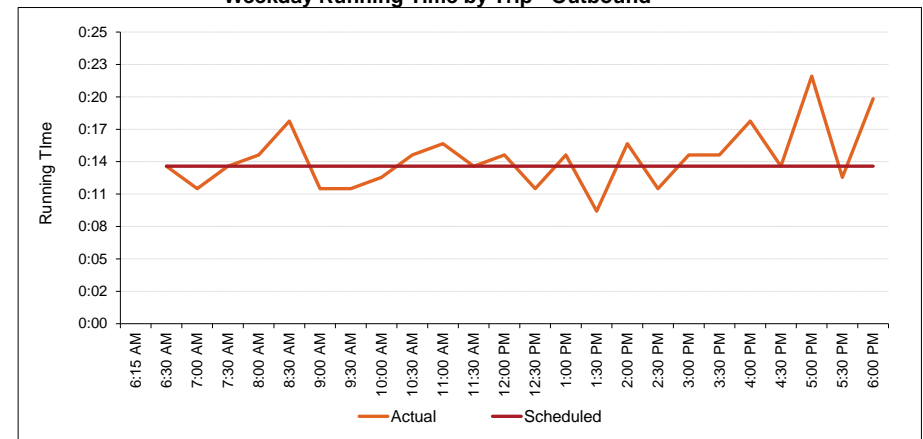
Route Towncrest Weekday		Route Productivity Summary		
		Activity	Service Hours	Productivity
		Boardings	Alightings	Boardings per Service Hour
Total		480	471	10.7
Inbound		166	231	5.0
Outbound		314	240	5.7
By Segment				
1	Village Rd & Village Green Blvd to Muscatine Ave & 7th Ave	222	261	3.7
2	Muscatine Ave & 7th Ave to Downtown Interchange	258	210	6.9
By Time Period				
AM		142	104	2.4
Midday		179	184	5.2
PM		149	168	2.6
Eve		10	15	0.4

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
71%	18%	11%	222	Burlington St & Lucas St	O
73%	13%	13%	203	Burlington St & Summit St	I
68%	22%	10%	222	Burlington St & Lucas St	O
68%	20%	12%			
53%	33%	14%			
			82	Burlington St & Lucas St	I
			79	Burlington St & Summit St	I
			124	Burlington St & Johnson St	O
			10	Downtown Interchange	O

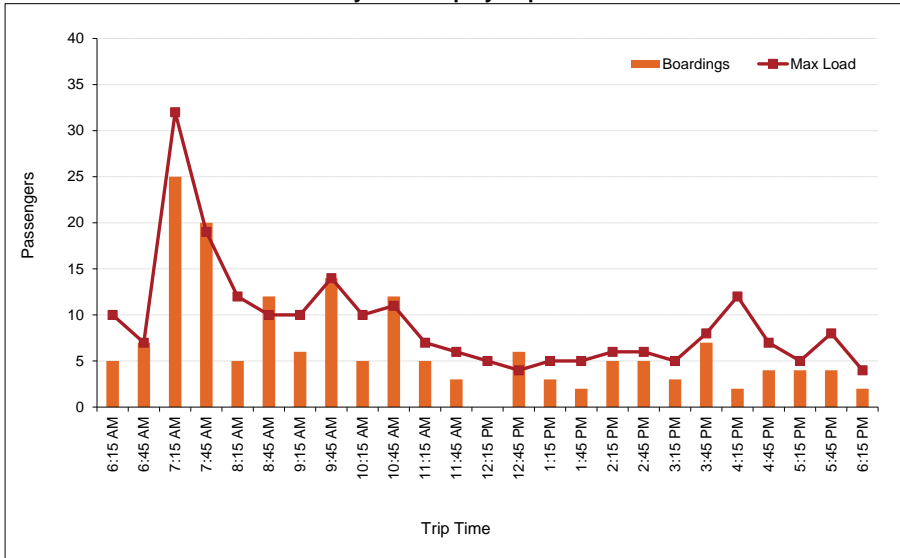
Weekday Running Time by Trip - Inbound



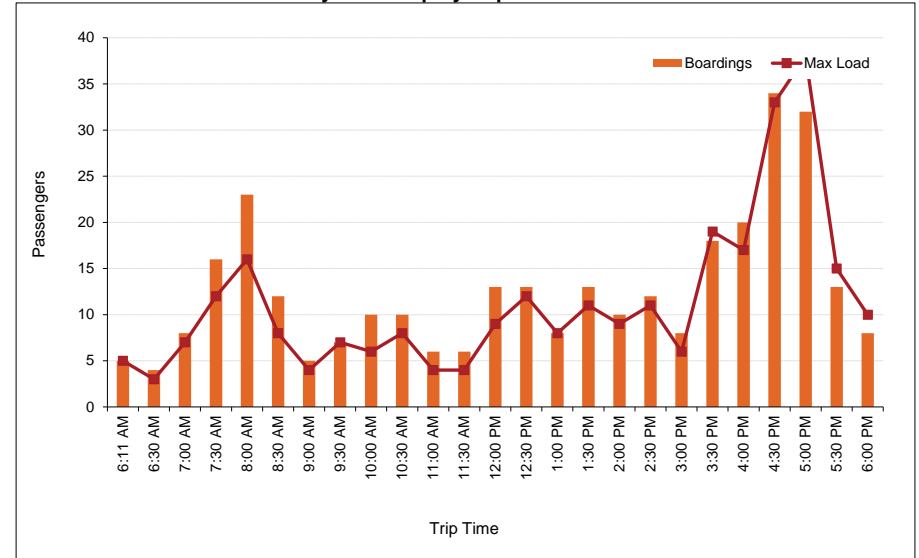
Weekday Running Time by Trip - Outbound



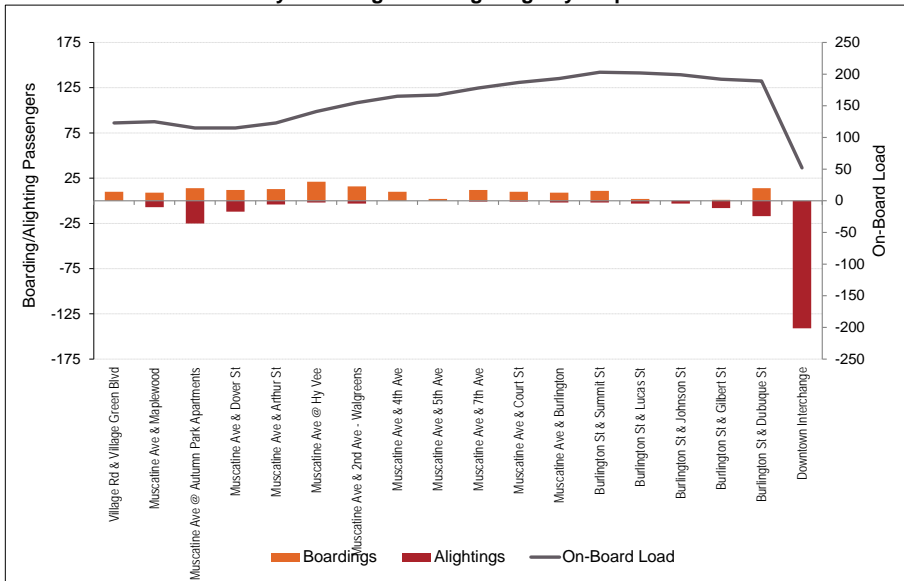
Weekday Ridership by Trip - Inbound



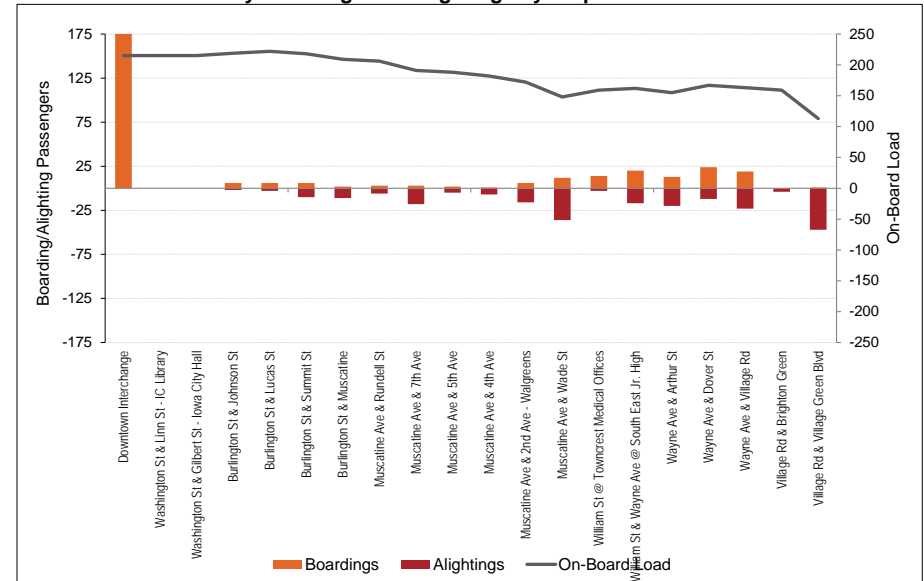
Weekday Ridership by Trip - Outbound



Weekday Boardings and Alightings by Stop - Inbound



Weekday Boardings and Alightings by Stop - Outbound



Trip Time	Boardings	Max Load
6:30 PM	16	12
7:30 PM	14	13
8:30 PM	21	17
9:30 PM	5	5

[illegible]

Boarding/Aighting Passengers

On-Board Load

Stop	Boardings	Alightings	On-Board Load
Downtown Interchange	48	0	48
Washington St & Linn St - IC Library/Senior Center	0	0	47
Washington St & Gilbert St	0	0	46
College & Gilbert	0	0	45
College St & Summit St	0	-1	44
Summit St & Court St	0	-1	43
Summit St & Bowers St	0	0	42
Sheridan St - Longfellow Elementary	0	0	41
Sheridan St & Rosewell	0	-3	40
Sheridan St & Oakland St	0	0	38
Sheridan St & Rundell St	0	0	37
Sheridan St & 7th Ave	0	0	36
7th Ave & F St	0	0	35
F St & 6th Ave	0	0	34
F St & Muscaline Ave	0	-1	34
Muscaline Ave & 2nd Ave - Walgreens	0	-4	33
Muscaline Ave & Wade St	0	-2	32
Muscaline Ave & 4th Ave	0	-1	31
William St @ Towncrest Medical Offices	0	0	30
William St & Wayne Ave @ South East Junior High	0	0	28
Wayne Ave & Arthur St	0	-4	25
Wayne Ave & Dover St	0	0	22
Wayne Ave & Village Rd	0	-3	18
Village Rd & Brighton Green	0	-3	15
Village Rd & Village Green Blvd	0	0	14
Muscaline Ave & Maplewood Ln	0	0	13
Muscaline Ave & Autumn Park Apartments	0	-1	12
Muscaline Ave & Dover St	0	0	12
Muscaline Ave & Arthur St	0	0	12
Muscaline Ave @ Hy Vee	0	0	12
Muscaline Ave & 2nd Ave - Walgreens	0	1	12
Muscaline Ave & 4th Ave	0	0	12
Muscaline Ave & 5th Ave	0	0	12
Muscaline Ave & 7th Ave	0	0	12
Muscaline Ave & Court St	0	0	12
Muscaline Ave & Burlington	0	0	12
Burlington St & Summit St	0	0	12
Burlington St & Lucas St	0	0	12
Burlington St & Johnson St	0	0	12
Burlington St & City Hall/Rec. Center	0	0	12
Burlington St & Dubeau St	0	-2	12
Downtown Interchange	0	0	10

The graph displays three data series for the 2019/2020 season. The left y-axis represents Boardings/Alighting Passengers (0 to 1.0), and the right y-axis represents On-Board Load (0 to 1.0). The x-axis represents time from 0 to 100. Boardings (orange line) and Alightings (red line) are both plotted at 0.0. The On-Board Load (grey line) is plotted at 0.0.

Time	Boardings	Alightings	On-Board Load
0	0.0	0.0	0.0
100	0.0	0.0	0.0

Weekly Roundtrip by Trip Loop

Trip Time	Boardings	Max Load
6:30 AM	5	5
7:30 AM	15	11
8:30 AM	14	10
9:30 AM	10	7
10:30 AM	14	8
11:30 AM	8	5
12:30 PM	22	17
1:30 PM	12	7
2:30 PM	17	11
3:30 PM	15	9
4:30 PM	25	16
5:30 PM	14	13
6:30 PM	20	14

[illegible]

Secondary Boarding and Alighting by Stop/Loop


Stop/Loop	Boardings	Alightings	On-Board Load
Downtown Interchange	90	0	115
Washington St & Madison St	0	0	118
UI Main Library	5	0	118
Hydraulics Lab, Boyd Law School	0	0	118
Riverside Dr & Riverside Court	0	0	118
Riverside Dr & Myrtle Ave	0	0	118
Benton St & Riverside	0	-15	115
Benton St & Glavin Dr	0	-10	105
Benton St & Hudson Ave	0	-5	95
Miller Ave & Hwy 1 West	0	-5	95
Hwy 1 & Ruppert Rd	0	-5	95
Westport Plaza 1	0	-5	95
Walmart	0	-45	85
Ruppert Rd & Hwy 1 West	0	-5	85
Hwy 1 West & Miller Ave	0	0	85
Hwy 1 West @ Stagers	0	0	85
Riverside Dr & Hwy 6 - Gateway Center	0	0	85
Riverside Dr & Ruppert Rd	0	0	85
Iowa City Airport	0	0	85
Colonial Lns	0	0	85
Riverside Dr/Old Hwy 218 & South Riverside Dr	0	0	85
Riverside & McCollister Blvd	0	0	85
Thatcher/Baculus Trailer Park	0	0	85
South Riverside Dr & Commercial Dr	0	0	85
S. Riverside Dr	0	0	85
Riverside Dr & Hwy 6 - Gateway Center	0	0	85
Riverside Dr & Benton St	0	0	115
Riverside & Myrtle Ave	0	0	115
Hydraulics Lab, Boyd Law School	0	0	115
Madison St @ UI Lindquist Center	0	0	115
Madison St & Washington	0	0	115
Downtown Interchange	0	-90	0

Monthly Boarding and Alighting by Stop

Boarding/Alighting Passengers

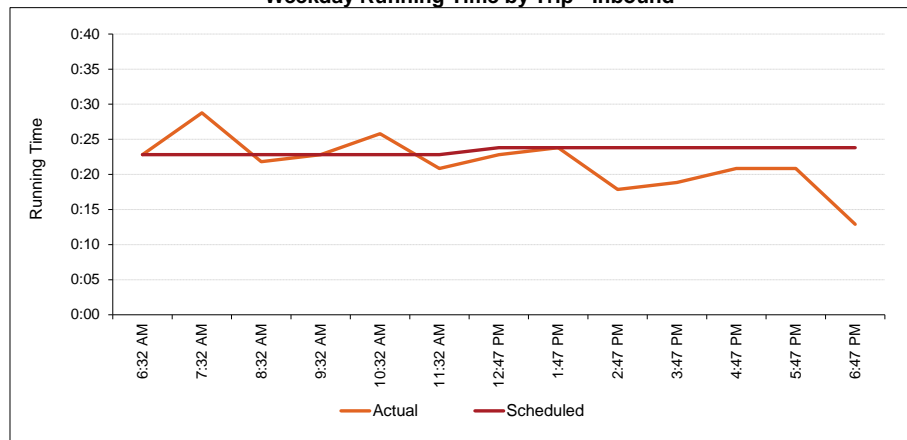
On-Board Load

Boardings Alightings On-Board Load

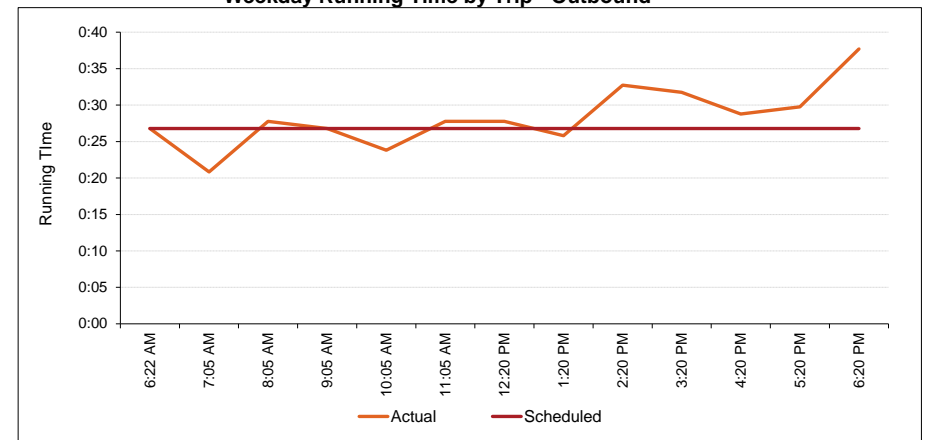
Route Westside Hospital Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
Total					
Inbound		71	145	5.1	13.9
Outbound		186	146	5.6	33.4
By Segment					
1	Phoenix Dr to Morman Trek Blvd	63	79	3.5	18.2
2	Morman Trek Blvd to Hawkins Dr	62	68	3.6	17.3
3	Hawkins Dr to Downtown	132	102	3.9	33.8
By Time Period					
AM		59	79	2.2	26.6
Midday		79	98	5.1	15.6
PM		103	98	2.6	40.4
Eve		16	16	0.9	18.8

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
41%	11%	48%	142	Hawkins Dr & Melrose Ave -	O
46%	0%	54%	93	Melrose Av	I
35%	22%	43%	142	Hawkins Dr & Melrose Ave -	O
42%	4%	54%			
42%		58%			
28%	40%	32%			
			53	Melrose Av	I
			39	Melrose Av	I
			91	Hawkins Dr & Melrose Ave -	O
			15	Hawkins Dr & Melrose Ave -	O

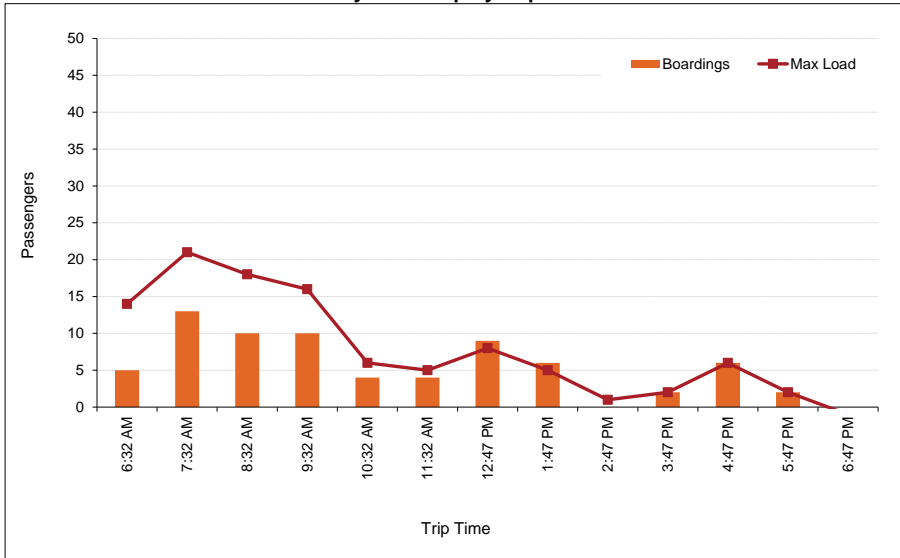
Weekday Running Time by Trip - Inbound



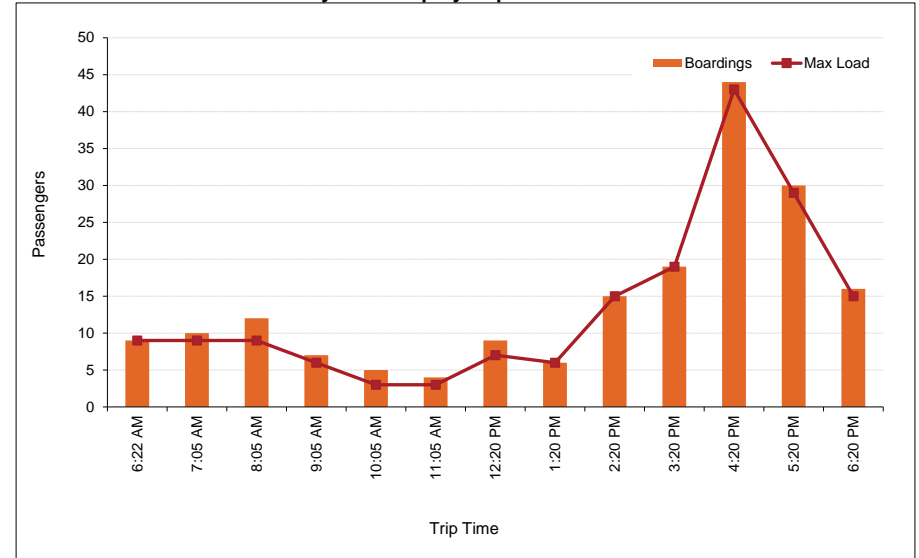
Weekday Running Time by Trip - Outbound



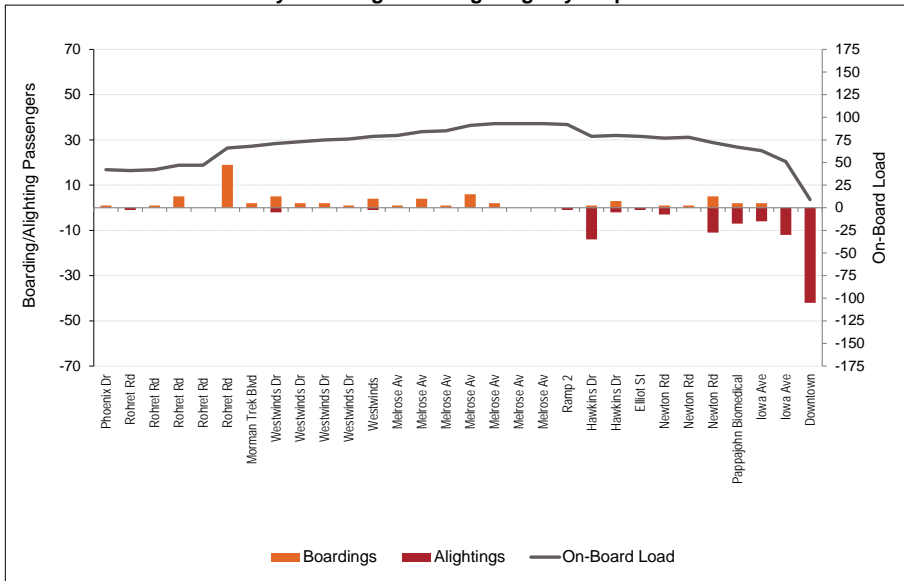
Weekday Ridership by Trip - Inbound



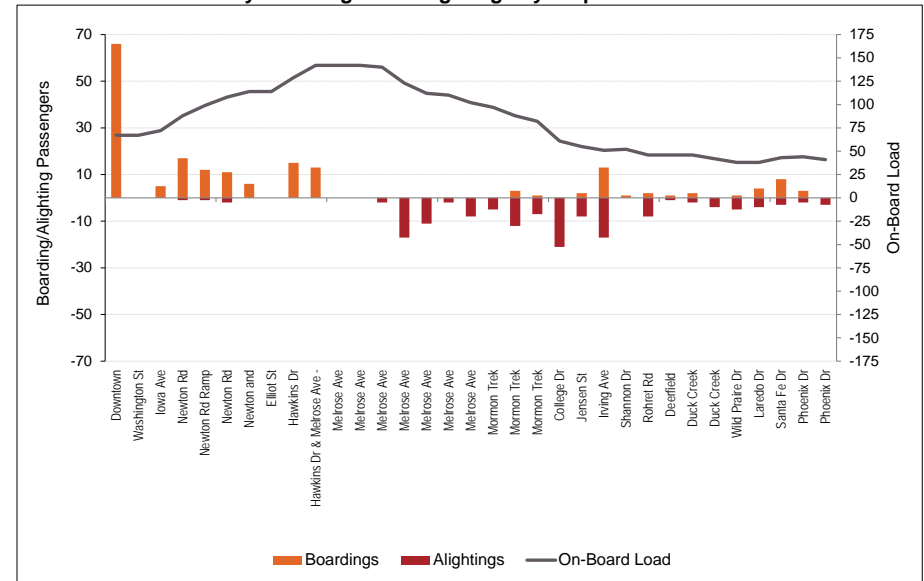
Weekday Ridership by Trip - Outbound




Weekday Boardings and Alightings by Stop - Inbound



Weekday Boardings and Alightings by Stop - Outbound



Route Westwinds Weekday		Route Productivity Summary			
		Activity		Service Hours	Productivity
		Boardings	Alightings	Service Hours	Boardings per Service Hour
	Total				
	Loop	485	481	12.7	38.3
By Segment					
1	Downtown Interchange to Melrose Ave & Sunset St	191	47	3.0	63.7
2	Melrose Ave & Sunset St to Pheasant Ridge Neighborhood Center	7	96	2.7	2.6
3	Pheasant Ridge Neighborhood Center to Denbigh Dr & Sunset St	69	66	1.3	54.5
4	Denbigh Dr & Sunset St to Hawkins Dr - UI Main Hospital	151	40	2.8	53.0
5	Hawkins Dr - UI Main Hospital to Downtown Interchange	67	223	2.8	23.5
By Time Period					
	AM	178	201	3.8	47.0
	Midday	125	124	4.1	30.5
	PM	176	150	4.1	42.9
	Eve	6	6	0.7	8.8

Route Operations Summary					
On-Time Performance			On-Board Load		
% On-Time	% Early	% Late	Max Passengers On Board	Max Load Location	Direction
63%	13%	23%	219	Melrose Ave & Koser Ave	L
63%	13%	23%	219	Melrose Ave & Koser Ave	L
56%	6%	39%			
63%	32%	5%			
74%		26%			
47%	21%	32%			
53%	21%	26%			
			147	Melrose Ave & Koser Ave	L
			63	Melrose Ave @ IC Fire Station #2	L
			111	Hawkins Dr & Melrose Ave - UI Childrens Hospit	L
			5	Downtown Interchange	L

Trip Time	Boardings	Max Load
6:19 AM	14	14
6:30 AM	16	13
6:45 AM	41	38
7:00 AM	45	37
7:15 AM	33	20
7:30 AM	26	25
7:45 AM	26	22
8:00 AM	15	9
8:15 AM	29	14
8:30 AM	15	7
8:45 AM	19	9
9:00 AM	20	13
9:15 AM	23	12
9:30 AM	33	18
9:45 AM	37	20
10:00 AM	42	30
10:15 AM	17	17
10:30 AM	22	21
10:45 AM	5	5

The chart displays two data series: 'Boardings' and 'Max Load'. Both series are represented by lines that remain at a value of 0 across all 24 time slots. The 'Boardings' series is an orange line, and the 'Max Load' series is a red line with square markers. The Y-axis is labeled 'Passengers' and has major ticks at 0 and 1. The X-axis is labeled 'Trip Time' and has ticks for every hour from 12:00 AM to 12:00 AM.

Trip Time	Boardings	Max Load
12:00 AM	0	0
1:00 AM	0	0
2:00 AM	0	0
3:00 AM	0	0
4:00 AM	0	0
5:00 AM	0	0
6:00 AM	0	0
7:00 AM	0	0
8:00 AM	0	0
9:00 AM	0	0
10:00 AM	0	0
11:00 AM	0	0
12:00 PM	0	0
1:00 PM	0	0
2:00 PM	0	0
3:00 PM	0	0
4:00 PM	0	0
5:00 PM	0	0
6:00 PM	0	0
7:00 PM	0	0
8:00 PM	0	0
9:00 PM	0	0
10:00 PM	0	0
11:00 PM	0	0
12:00 AM	0	0

Boarding/Alighting Passengers

On-Board Load

Legend:

- Boardings (Orange bars)
- Alightings (Red bars)
- On-Board Load (Dark blue line)

Route	Boardings	Alightings	On-Board Load
Downtown Interchange	100	0	80
Iowa Ave - English Philosophy Building	0	0	85
Newton Rd Ramp	15	0	90
Newton and Valley	0	-15	85
Hawkins Dr - UI Main Hospital	0	-10	95
Melrose Ave & Golfview Ave	15	0	105
Melrose Ave & Sunset St	0	-15	105
Melrose Ave & Westgate St	0	-15	85
Melrose Ave & Finkbine Ln	0	-15	80
Westwinds Dr & Roberts Rd	0	-15	55
Battell Rd & Merman Trek Blvd	15	-10	55
Benton St & Jema Court	0	-15	55
Benton St & Keswick Dr	0	-10	50
Denbigh & Darwin	0	-10	50
Denbigh Dr & Penridge Dr	0	-10	55
Sunset St & Khelton Green	20	-10	65
Benton St & Sunset St	0	-10	65
Westgate St & Westgate Circle	20	-10	95
Westgate St & Keswick Dr	25	-10	115
Melrose Ave @ IC Fire Station #2	10	-10	130
Melrose Ave & George St	10	-10	135
Ramp 2 Parpajohn & Pomeranz	0	-15	115
Hawkins Dr - UI Center for Disabilities	0	-15	105
Newton Rd - Dental College	0	-10	110
Newton Rd - MERE	15	-10	115
Iowa Ave - English Philosophy Building	0	-15	95
Downtown Interchange	0	-200	25

The graph displays three data series for 1000 passengers:

- Boardings (orange line):** All values are 0.
- Alightings (red line):** All values are 0.
- On-Board Load (grey line):** All values are 0.

Trip Time	Boardings	Max Load
6:30 PM	20	17
7:30 PM	23	21
8:30 PM	29	26
9:30 PM	21	20
10:30 PM	4	5

[illegible]

Stop	Boardings	Alightings	On-Board Load
Downtown Interchange	58	-10	40
Iowa Ave - English Philosophy Building	3	-2	45
Newton Rd Ramp	8	-2	50
Newton Rd and Valley	2	-2	55
Hawkins Dr - UI Main Hospital	5	-2	58
Metrose Ave & Golfview Ave	3	-2	59
Metrose Ave & Sunset St	2	-2	59
Westgate St & Gilmore Ct	0	-15	45
Westgate Villa	0	-10	58
Danbigh & Derwin	0	-10	35
Danbigh Dr & Pentridge	0	-10	30
Sunset St & Aber Ave	0	-10	30
Westside Dr & Jeffrey St	0	-10	25
Westside Dr & Morman Trk Blvd	0	-10	22
Morman Trk Blvd and Plain View	0	-10	20
Morman Trk Blvd & Cae Dr	0	-10	18
Westwinds Dr - Walden Plaza	0	-10	10
Westwinds Dr #3	0	-10	5
Bartell Rd & Morman Trk Blvd	3	-10	5
Metrose Ave & Finkbine Ln	0	-10	5
Metrose Ave @ IC Fire Station #2	0	-10	5
Metrose Ave & George St	0	-10	5
Ramp 2 Papajohns & Pomerantz	0	-10	5
Hawkins Dr UI Center for Disabilities	0	-10	5
Newton Rd - Dental College	0	-10	5
Newton Rd - MERF	0	-10	5
Iowa Ave - English Philosophy Building	0	-10	5
Downtown Interchange	0	-10	40

The chart displays the following data series:

- Boardings:** Represented by orange bars. The highest boarding count is at Stop 10 (approximately 0.95 passengers).
- Alightings:** Represented by red bars. The highest alighting count is at Stop 11 (approximately 0.95 passengers).
- On-Board Load:** Represented by a grey line. The load starts at 0, remains low until Stop 10, then rises sharply to a peak of approximately 0.95 at Stop 11, before decreasing to about 0.5 at Stop 15.

Appendix C Survey Instruments



TRANSIT RIDER SURVEY

Please help improve transit service by completing the survey below. Return to surveyor or any bus driver.



www.research.net/r/iowaCityBusSurvey

1. Which bus route are you currently riding? (write in route name)
Iowa City Transit Route _____
Coralville Transit Route _____
CAMBUS Route _____
2. Which bus route(s) did you (or will you) ride to complete your trip? (write in route name(s))
Iowa City Transit Route _____
Coralville Transit Route _____
CAMBUS Route _____
3. Where did you begin this one-way trip?
☐ Home/residence hall ☐ Medical appointment
☐ Work ☐ Restaurant/bar
☐ School/college ☐ Other _____
☐ Shopping/grocery store
4. Where is your final destination on this one-way trip?
☐ Home/residence hall ☐ Medical appointment
☐ Work ☐ Restaurant/bar
☐ School/college ☐ Other _____
☐ Shopping/grocery store
5. What type of fare did you use (or will you use) for your trip? (check one)
☐ Free (CAMBUS) ☐ U-PASS
☐ Adult cash fare ☐ Kirkwood semester pass
☐ Youth cash fare ☐ Research Park pass
☐ Senior/disabled (free or discounted) ☐ 24-hour pass
☐ 10-ride pass ☐ Low-income monthly pass
☐ 20-ride pass ☐ Other _____
☐ 31-day pass (youth/adult)
6. If this route didn't exist, how would you have made this trip?
☐ Another existing route ☐ Walk
☐ Drive alone ☐ Moped/scooter/motorcycle
☐ Get a ride/carpool ☐ Would not have made this trip
☐ Taxi/Lyft/Uber ☐ Other _____
☐ Bicycle/skateboard
7. Below are potential service improvements. Select the three improvements most important to you.
☐ More frequent bus service
☐ Less crowded buses
☐ Faster service (fewer stops)
☐ Faster service (more direct routes)
☐ Earlier bus service
☐ Later bus service
☐ Saturday service (where/when _____)
☐ Sunday service (where/when _____)
☐ More reliable service (on time)
☐ More comfortable stops (seating, shelter/bench, etc.)
☐ More reliable information about bus arrival time
☐ Service to new areas (where _____)
8. Are you a University of Iowa or Kirkwood Community College student, faculty, or staff? (check one)
☐ Yes, University of Iowa student
☐ Yes, University of Iowa faculty or staff
☐ Yes, Kirkwood Community College student, faculty, or staff
☐ No
9. Which best describes your racial or ethnic background? (check all that apply)
☐ White/Caucasian ☐ Asian
☐ Hispanic/Latino ☐ Native Hawaiian or Pacific Islander
☐ Black/African-American ☐ Other _____
☐ American Indian/Alaska Native
10. What is your approximate household income?
☐ Fewer than \$15,000 ☐ \$50,000-\$65,000
☐ \$15,000-\$25,000 ☐ \$65,000-\$75,000
☐ \$25,000-\$35,000 ☐ More than \$75,000
☐ \$35,000-\$50,000
11. What is your age?
☐ Under 18 ☐ 45-59
☐ 18-24 ☐ 60-74
☐ 25-29 ☐ 75 or older
☐ 30-44
12. How many people live in your household?
☐ 1 ☐ 2 ☐ 3 ☐ 4 or more
13. How many cars are in your household?
☐ 0 ☐ 1 ☐ 2 or more
14. How long have you been riding the bus in Coralville or Iowa City?
☐ First time/new rider ☐ 1-4 years
☐ Less than 1 year ☐ 5 or more years
15. When you plan a bus trip, check a schedule, or check on the status of an arriving bus, what do you use? (check all that apply)
☐ Transit agency website ☐ Bongo website or app
☐ Call agency office ☐ Bongo phone call or text feature
☐ Google Maps/Bing Maps ☐ Text message alert
☐ Paper/bus stop schedule
16. Within the past month, have you used any of the following? (check all that apply)
☐ Iowa City Transit ☐ 380 Express
☐ Coralville Transit ☐ Private bus (e.g., Quarters, Latitude, Hawks Ridge)
☐ CAMBUS
17. Do you have any other thoughts or suggestions?



ENCUESTA PARA PASAJEROS

Por favor ayúdenos a mejorar el servicio de transporte público respondiendo la siguiente encuesta. Regrésela a uno de los encuestadores o al chofer del autobús.



www.research.net/ri
IowaCityBusSurvey

- ¿En qué ruta de autobús está viajando en este momento?**
(Escriba el nombre de la ruta)
Iowa City Transit ruta _____
Coralville Transit ruta _____
CAMBUS ruta _____
- ¿Qué ruta(s) de autobús tomó (o tomará) para completar su viaje?** (Escriba el nombre de la(s) ruta(s))
Iowa City Transit ruta _____
Coralville Transit ruta _____
CAMBUS ruta _____
- ¿Dónde inicio este viaje (solo ida)?**
☐ Hogar/dormitorio universitario ☐ Cita Médica
☐ Trabajo ☐ Restaurante/bar
☐ Escuela/colegio ☐ Otro _____
☐ Centro comercial/tienda de comestibles
- ¿Cuál es el destino final de este viaje (solo ida)?**
☐ Hogar/dormitorio universitario ☐ Cita Médica
☐ Trabajo ☐ Restaurante/bar
☐ Escuela/colegio ☐ Otro _____
☐ Centro comercial/tienda de comestibles
- ¿Qué tipo de tarifa pagó (o pagará) por este viaje?**
(seleccione solo uno)
☐ Gratis (CAMBUS) ☐ U-PASS
☐ Tarifa adulto en efectivo ☐ Pase semestral Kirkwood
☐ Tarifa joven en efectivo ☐ Pase Research Park
☐ Adulto mayor/discapacitado
(gratis o con descuento) ☐ Pase 24 horas
☐ Pase de 10 viajes ☐ Pase mensual de bajos ingresos
☐ Pase de 20 viajes ☐ Otro _____
☐ Pase 31 días (adulto o adolescente)
- Si esta ruta no existiera, ¿cómo hubiera hecho este viaje?**
☐ En una ruta de autobús diferente ☐ Caminando
☐ Manejando automóvil ☐ Motoneta/monopatín (scooter)/
motocicleta
☐ Alguien me llevaría/compartir auto
☐ Taxi/Lyft/Uber ☐ No hubiera hecho este viaje
☐ Bicicleta/patineta ☐ Otro _____
- Las siguientes son mejoras potenciales al servicio. Seleccione las tres mejoras más importantes para usted.**
☐ Servicio de autobús más frecuente
☐ Autobuses menos saturados/llenos
☐ Servicio más rápido (menos paradas)
☐ Servicio más rápido (rutas más directas)
☐ Servicio más temprano
☐ Servicio más tarde por la noche
☐ Servicio los sábados (dónde/cuándo _____)
☐ Servicio los domingos (dónde/cuándo _____)
☐ Servicio más confiable (puntual)
☐ Paradas más cómodas (bancas, sombra, etc.)
☐ Información confiable sobre hora de llegada de autobuses
☐ Servicio en nuevas áreas (dónde _____)
- ¿Es usted estudiante, profesor o empleado de la University of Iowa o Kirkwood Community College?** (seleccione solo una)
☐ Si, estudiante de University of Iowa
☐ Si, profesor o empleado de University of Iowa
☐ Si, estudiante, profesor o empleado de Kirkwood Community College
☐ No
- ¿Cuáles de las siguientes opciones describe su identidad étnica/racial?** (seleccione una o más de una)
☐ Blanco/caucásico ☐ Asiático
☐ Hispano/Latino ☐ Nativo de Hawaii o De las Islas del Pacífico
☐ Negro/Afroamericano ☐ Otro _____
☐ Amerindio/Nativo de Alaska
- ¿Cuál es el ingreso anual aproximado de su hogar?**
☐ Menos de \$15,000 ☐ \$50,000-\$65,000
☐ \$15,000-\$25,000 ☐ \$65,000-\$75,000
☐ \$25,000-\$35,000 ☐ Más de \$75,000
☐ \$35,000-\$50,000
- ¿Cuál es su edad?**
☐ Menos de 18 ☐ 45-59
☐ 18-24 ☐ 60-74
☐ 25-29 ☐ 75 o mayor
☐ 30-44
- ¿Cuántas personas viven en su hogar?**
☐ 1 ☐ 2 ☐ 3 ☐ 4 o más
- ¿Cuántos automóviles hay en su hogar?**
☐ 0 ☐ 1 ☐ 2 o más
- ¿Desde cuándo ha estado usando el autobús en Coralville o Iowa City?**
☐ Primera vez/nuevo pasajero ☐ 1-4 años
☐ Menos de un año ☐ 5 o más años
- Cuando usted planea un viaje en autobús, revisa los horarios del autobús, o revisar la hora de llegada del siguiente un autobús, ¿qué utiliza?** (seleccione todas las que use)
☐ Sitio web de la agencia de tránsito ☐ Sitio web o aplicación de Bongo
☐ Llamada a la agencia ☐ Llamada o mensaje de texto a Bongo
☐ Mapas de Google/Mapas de Bing ☐ Bongo
☐ Horarios en papel/en parada de autobús ☐ Alerta de mensaje de texto
- Durante el mes pasado, ha utilizado alguno de los siguientes servicios** (seleccione todas los que apliquen)
☐ Iowa City Transit ☐ 380 Express
☐ Coralville Transit ☐ Autobús privado (e.g. Quarters, Latitude, Hawks Ridge)
☐ CAMBUS
- ¿Tiene usted algún otro comentario o sugerencia?**



APPENDIX D: Fare Study Report

September 2020



IOWA CITY AREA TRANSIT STUDY | FARE STUDY



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1 INTRODUCTION

The Iowa City Area Transit Study (ICATS) fare analysis is a comprehensive review of the current fare structure and policies for Iowa City Transit (ICT) and Coralville Transit. The fare analysis includes a review of:

- Existing fare policies
- Relevant fare-related best practices
- Implications of a fare free system for ICT
- Potential impact to ridership and revenue of modeled fare scenarios
- Fare and policy recommendations

Fare recommendations incorporate results from reviewing national best practices, evaluation of fare scenarios, and refining concepts with agency staff.

FARE ANALYSIS GOALS

Specific goals and objectives for the fare study are summarized as follows:

- **Increase Ridership while Balancing Revenue Goals.** ICT is seeking to double ridership in 10 years, and Coralville Transit is similarly hoping for increased ridership. At the same time, maintaining farebox revenue is important.
- **Improve Passenger Experience.** Simplifying fare pricing improves the passenger experience and makes the fare payment process more intuitive. A revised fare policy should help remove barriers and make transit easier to use.
- **Streamline Fare Structures and Policies.** Look for opportunities for fare integration and improved coordination between agencies, including opportunities for mobile ticketing.
- **Make Transit an Affordable Option.** Consider low-income and disadvantaged populations.

REPORT ORGANIZATION

The report is organized into four chapters in addition to this Introduction:

- **Chapter 02 Existing Conditions.** This chapter highlights fare policies, pricing, fare structure, and revenue and ridership trends.
- **Chapter 03 Fare Free Peer Review and Best Practices.** This chapter provides an overview of findings from other agencies operating fare free service.
- **Chapter 04 Fare Free Analysis.** This chapter summarizes the implications of converting ICT to a fare free system.



- **Chapter 05 Fare Scenarios.** This chapter summarizes the fare scenarios that were modeled and highlights the associated ridership and revenue impacts.
- **Chapter 06 Recommendations.** This chapter builds on the fare scenarios by identifying priority outcomes and combining scenarios into a single preferred recommendation. There is additional discussion of policy recommendations for consideration.



2 EXISTING CONDITIONS

This chapter reviews existing fare structure and policies for ICT and Coralville Transit, as well as summarizing revenue trends, fare media usage, other regional fare policies and practices, and rider demographics to determine opportunities for modifications to fare policies and structure.

KEY FINDINGS

- **There is opportunity for better integration of ICT and Coralville Transit passes, and existing pass interoperability is not well advertised.** Both agencies offer several different passes, some of which cannot be used on both systems and can only be used during specific off-peak hours. This information is not clearly communicated on either agency website and may be confusing for passengers.
- **The University of Iowa (UI) U-Pass is the most commonly used pass product and generates the majority of fare revenue** for both ICT and Coralville Transit.
- **Farebox recovery ratio is generally high for both ICT and Coralville Transit.** Since 2012, farebox recovery ratio has ranged from 21% to 28% for ICT and from 31% to 39% for Coralville Transit. Farebox recovery ratio for Coralville Transit has been steadily decreasing since 2015.
- **Cash fares are used more often and account for a larger portion of fare revenue on Coralville Transit than ICT.** Cash fares account for 32% of passengers and 31% of fare revenue on Coralville Transit, compared to 21% of passengers and 22% of revenue on ICT.

FARE STRUCTURE

Overview

Transit fares differ across the transit providers. Figure 2-1 compares the fare structure across agencies. Each agency has a unique fare structure and discount policies, which are discussed in greater detail below.

**Figure 2-1 ICT and Coralville Transit Fixed-Route Fare Structure**

Fare Type	ICT	Coralville
Cash Fares		
Adults	\$1.00	\$1.00
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)
Children under 5	FREE	FREE
Passes		
24-hour pass	\$2.00	N/A
10-ride pass	\$8.50	N/A
20-ride pass	N/A	\$20.00
31-Day adult pass	\$32.00	\$32.00
31-Day youth pass	\$27.00	N/A
Youth semester pass	\$100	N/A
Elderly low-income monthly pass	\$27	N/A
UI student U-Pass (12 months)	\$240 (\$168 without a University parking permit)	\$240 (\$168 without a University parking permit)
UI faculty/staff annual pass	\$28/month (\$15 without a University parking permit)	\$28/month (\$15 without a University parking permit)
Kirkwood semester pass	\$100	N/A
Intermodal Facility Pass	N/A	\$50

Pass Products

ICT and Coralville Transit each offer unique pass products, some of which are interoperable and some of which can only be used for a specific agency or at specific times.

Inter-Agency Passes

These passes are valid on both ICT and Coralville Transit service:

- **31-Day Pass** – Magnetic swipe cards that become valid the first time they are used in the farebox and are good for the next 31 days. These passes provide unlimited rides during the 31-day period.
- **31-Day Youth Pass** – Magnetic swipe cards that become valid the first time they are used in the farebox and are good for the next 31 days. Valid only for youth between the ages of 5 and 18. This pass is offered through ICT and accepted on both ICT and Coralville Transit.
- **U-Pass** – The combined category for the UI Annual Student Pass and Faculty/Staff Pass. The U-Pass is an RFID smartcard and provides unlimited rides.



- **Semester Pass** – Semester passes are available to Iowa City Community School District (ICCS) students and Kirkwood Community College students. The Semester pass is a magnetic strip card that provides unlimited rides over the duration of the semester. These passes are offered through ICT and accepted on both ICT and Coralville Transit.
- **ICT Disabled Off-Peak Pass** – The disabled off-peak pass is an RFID smartcard issued free of charge every two years to individuals with a temporary or permanent disability. The pass provides unlimited rides from 9:00 a.m. to 3:30 p.m. and after 6:30 p.m. on weekdays, as well as all day on Saturday. This pass is offered through ICT and accepted on both ICT and Coralville Transit.
- **ICT Senior and Senior Low-Income Off-Peak Pass** – ICT offers senior citizens who are residents of Iowa City a magnetic swipe card that provides a 50% discount on fares during off-peak service. The senior off-peak low-income pass operates the same way as the senior off-peak pass except it allows the pass holder to ride for free during off-peak service. To qualify for the senior low-income off-peak pass, the customer must be at least 60 years of age, an Iowa City resident, and have proof from Social Security or Department of Human Services (DHS) of low-income status. These passes are offered through ICT and accepted on both ICT and Coralville Transit.
- **Coralville Intermodal Facility Pass** – The Coralville Intermodal Facility offers a park-and-ride commuter program which includes a parking space and unlimited bus trips for \$50 per month. This pass is offered through Coralville Transit and accepted on both Coralville Transit and ICT.
- **Coralville Senior and Disabled Pass** – These magnetic swipe card passes are free to Coralville residents 65 and older or with a temporary or permanent disability. This pass can be used on Coralville Transit anytime and on ICT during the off-peak hours of 9:00 a.m. to 3:30 p.m. and after 6:30 p.m. on weekdays, as well as Saturdays.

Iowa City Transit Passes

These passes are valid only on ICT service and cannot be used as payment for Coralville Transit service. ICT exclusive passes include the 24-hour pass, 10-ride pass, and strip tickets.

- **10-Ride Pass** – The 10-ride pass is a magnetic swipe card encoded with 10 single trips for use on ICT service.
- **Strip Tickets** – Orange strip tickets are individual tear-off paper tickets that are sold or donated by ICT to local social service agencies. Each ticket is good for one ride.

Coralville Transit Passes

These passes are valid only on Coralville Transit service and cannot be used as payment for ICT service. The only Coralville Transit exclusive pass is the 20-ride pass.

- **20-Ride Pass** – The 20-ride pass is a magnetic swipe card encoded with 20 single trips and is only valid on Coralville Transit service.

Rider Information and Communication

The primary source of public information for fares, pass products, and discounts are the agency websites. While most pass products are accepted by both ICT and Coralville Transit, neither agency makes this particularly clear. The Coralville Transit website marks each pass product that



is honored by ICT with an asterisk, and ICT does not provide any information on interagency passes. The lack of clarity on pass product availability and interoperability may be confusing to passengers and create a barrier for using the service. Clearly indicating passes that are accepted by both agencies and those that are exclusive to specific agencies would make the systems easier to understand for passengers and improve the customer experience. In the future, there is opportunity to better integrate and streamline pass offerings.

Pass Multipliers

Pass multipliers are the number of single trips that a rider must purchase to “break even” on the cost of a given pass product. For example, a day pass with a 2x multiplier means that a passenger would need to ride transit twice in a day to break even. Pass multipliers can be adjusted to make passes more attractive fare options for riders or to raise additional revenue for the agency. ICT and Coralville Transit pass products and multipliers are shown in Figure 2-2.

ICT offers day passes, monthly passes, and discounted monthly youth and low-income passes. Coralville Transit only offers monthly passes. The 31-day monthly passes are priced consistently between the two agencies. There is an opportunity to further improve consistency between the agencies by standardizing other pass products.

Figure 2-2 Agency Pass Multipliers

	Iowa City Transit		Coralville Transit	
	Fare	Multiplier	Fare	Multiplier
Base Fare	\$1.00		\$1.00	
Day Pass	\$2.00	2	n/a	n/a
Monthly Pass	\$32.00	32	\$32.00	32
Monthly Youth Pass	\$27.00	27	n/a	n/a
Monthly Low-Income Pass	\$27.00	27	n/a	n/a

Discount Policies

Discount policies vary between ICT and Coralville Transit, as shown in Figure 2-3. Generally, there is an opportunity to standardize discount policies by aligning the discounts offered for youth, seniors, and people with disabilities.

Youth

Both ICT and Coralville Transit currently offer free rides for children under age 5. Both agencies offer 25% discounted fares for youth. However, ICT defines youth as ages 5-18 while Coralville Transit defines youth as ages 5-15. Additionally, on Coralville Transit service, youth fare discounts are only valid during off-peak times, between 6:00 p.m. and midnight and all-day Saturday.



Disabilities

Both agencies offer free service for people with disabilities. Free service for people with disabilities on ICT is only offered during off-peak times—weekdays between 9:00 a.m. to 3:30 p.m., weekdays after 6:30 p.m., and Saturdays. Free service for people with disabilities is available at all times on Coralville Transit service.

Seniors





ICT offers 50% discounts for seniors age 60 and older during off-peak periods only, weekdays between 9:00 a.m. to 3:30 p.m., weekdays after 6:30 p.m., and Saturdays. Coralville Transit offers free service to seniors age 65 and older at all times.

Other Discounts

There are a number of other discount policies that are unique to ICT and Coralville Transit, including:

- **ICT Saturday Family Fare** – Entire families may ride ICT services for a fare of \$1 on Saturdays. This discount is not offered on Coralville Transit service.
- **ICT Elderly Low-Income Discount** – In addition to the 50% off-peak discount offered to seniors on ICT service, seniors with low incomes are eligible for free service during off-peak service.
- **Medicare Cardholders** – Medicare cardholders are eligible for a 50% discount during off-peak periods on both ICT and Coralville Transit.
- **SEATS Cardholder** – Passengers who qualify for ADA paratransit service provided by Johnson County SEATS receive a 50% discount on ICT during off-peak times and ride for free on Coralville Transit.

Figure 2-3 Available Fare Discounts

	Iowa City Transit	Coralville Transit
 Under Age 5	Free	Free
 Youth ICT – Age 5-18 Coralville – Age 5-15	25%	25% Off-Peak Only
 Disabilities	Free Off-Peak Only	Free
 Seniors ICT – Age 60+ Coralville – Age 65+	50% Off-Peak Only	Free



Interagency Transfers

Due to the differences in fare structure and eligibility requirements, transfers between agencies must follow different sets of rules:

- ICT riders may transfer for free between ICT routes. Transfers are available when it is necessary to use two routes to complete a trip. To receive a transfer, the rider must inform the driver when they pay their fare upon boarding the first bus.
- Coralville Transit riders may transfer for free between Coralville Transit routes.
- Riders can transfer for free between ICT and Coralville and vice versa when they have paid a cash fare. Some of each agency's passes are valid on the other system, while some are not.
- Riders eligible for Johnson County SEATS paratransit service may transfer to ICT for free during off-peak periods and to Coralville Transit for free at any time.

Pass Distribution

The existing pass distribution network (Figure 2-4) varies by pass type and agency. The ICT 24-hour pass is only available on-board vehicles. The 31-day passes for both ICT and Coralville Transit are available at respective city halls and Hy-Vee stores. U-Pass and Kirkwood semester pass are available at university locations. The remaining pass products are only available at city hall locations. There is an opportunity to develop a consistent pass distribution network which offers the same passes at the same locations for both agencies. Such a distribution network would enhance the customer experience by allowing for purchase of all pass types in a greater variety of locations.

Figure 2-4 Existing Pass Distribution Network

Agency	Fare Type	Onboard	Transit/ Government Building*	University Building	Hy-Vee Stores
Iowa City Transit	24 Hour Pass	✓			
	10-Ride Pass		✓		✓
	31-Day Pass		✓		✓
	U-Pass			✓	
	Kirkwood Semester Pass			✓	
	Youth Semester Pass		✓		
Coralville Transit	20-Ride Pass		✓		
	31-Day Pass		✓		✓

*Government Buildings include Coralville City Hall, Coralville Library, Coralville Recreation Center, Iowa City City Hall, and Iowa City Parking



Other Regional Services

CAMBUS

CAMBUS services are fare free and available to the general public. UI's specialized transportation service for persons with disabilities, Bionic Bus, is also fare free and available to disabled students, faculty, and staff within most areas of Iowa City and Coralville.

Johnson County SEATS Paratransit

The basic cost for a one-way ride is \$2.00 for any rural, Iowa City, University Heights, Coralville, and North Liberty trip (Figure 2-5). SEATS also offers a 10-punch card.

Figure 2-5 SEATS Paratransit Fare Structure

Fare Type	SEATS
Standard Cash Fare	\$2.00
10-Punch Card	\$20.00



FARE MEDIA AND TECHNOLOGY

ICT and Coralville Transit fare media are a combination of cash, paper tickets, magnetic strip cards, and RFID smartcards. Passengers interact with the farebox in a variety of ways:

- Passengers using the UI Faculty/Staff Pass, UI Student Pass, ICT Disabled Off-Peak Pass, Coralville/Research Park Bus Pass, or Coralville Senior & Disabled Pass pay with an RFID smartcard pass.
- Passengers paying with a 31-Day pass, ICT Semester pass, ICT Senior and Low-Income pass, ICT 10-Ride pass, Coralville 20-Ride pass, swipe a magnetic card at the farebox.
- Paper tickets are used for transfers, and single-ride strip tickets are circulated to local social services agencies.
- Passengers can pay with cash or coins at the farebox.
- When paying a cash fare, if more money than required is inserted, a change card is issued for the remaining balance. Change cards are valid toward the fare on future bus rides.

The majority of ICT and Coralville Transit fare passes are magnetic strip passes that are swiped through the farebox upon boarding. Currently, only the Student and Faculty/Staff U-Passes and the Disabled Passes are enabled with RFID technology.

Figure 2-6 Coralville Transit Fare Media



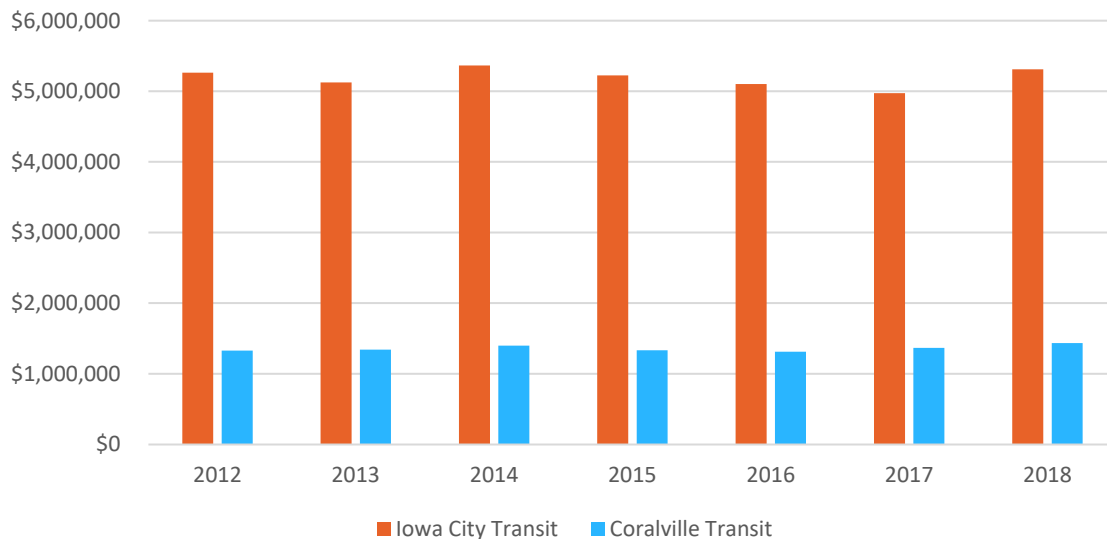


REVENUE TRENDS

Operating Cost

Figure 2-7 shows the total annual operating expenses for ICT and Coralville Transit. From 2012 to 2018, ICT operating expenses have been more than \$5 million per year—significantly higher than Coralville Transit. From 2012 to 2018, operating expenses have not significantly changed for either agency.

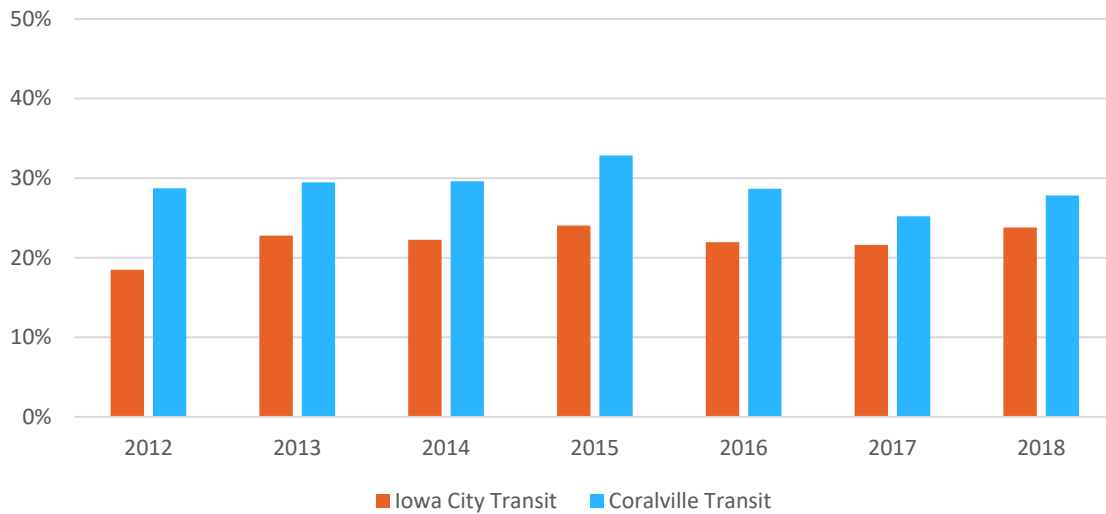
Figure 2-7 Annual Operating Expense by Agency, 2012-2018



Source: NTD 2012-2018

Farebox Recovery

Farebox recovery is a ratio of farebox revenues to operating expenses and is used to estimate the proportion of a transit agency's operations funded by rider fares. From 2012 to 2018, farebox recovery rates peaked in 2015 for both Coralville Transit and ICT and declined for two years before recovering in 2018. Because operating costs are not significantly increasing for these agencies, the decline in farebox recovery ratio may be due to falling ridership.

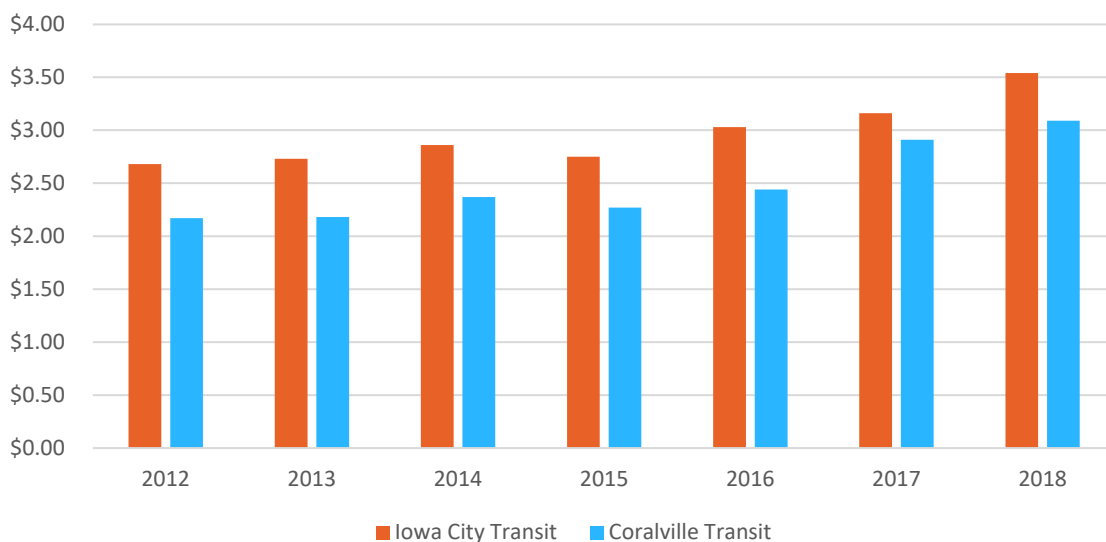
**Figure 2-8 Farebox Recovery Ratio by Agency, 2012-2018**

Source: NTD 2012-2018

Operating Cost per Trip

Operating cost per passenger trip is a common measure of a transit agency's cost of providing service. From 2012 to 2018, operating expense per passenger trip increased significantly for all three agencies (Figure 2-9). During the seven-year study period, ICT has typically had the higher cost per passenger trip.

From 2012 to 2018, Coralville Transit's cost per passenger trip increased by 42%, and ICT's cost per passenger trip increased by 32%. Because the amount of service offered by the agencies has not significantly increased, this is likely driven by ridership losses.

Figure 2-9 Operating Expense per Passenger Trip by Agency, 2012-2018

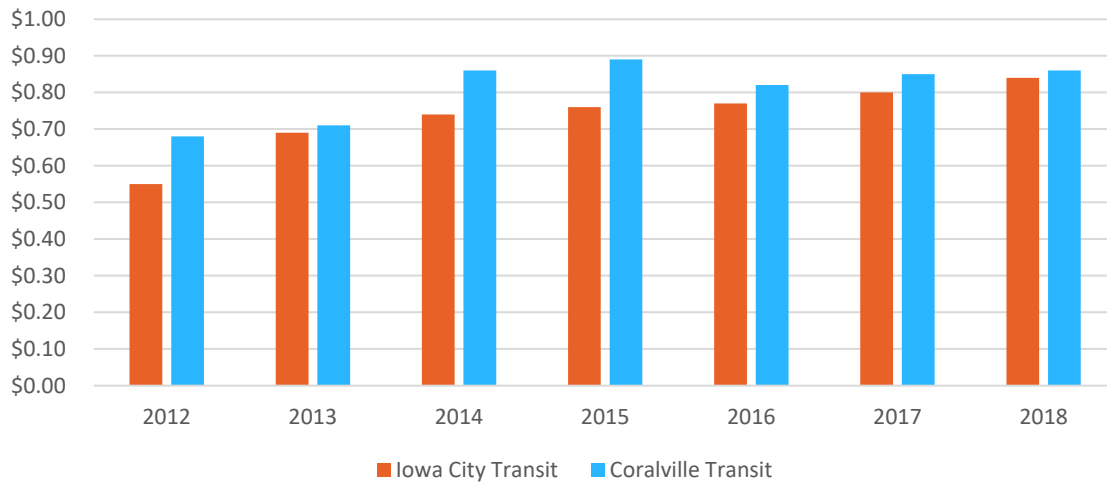
Source: NTD 2012-2018



Average Fare

Due to discount policies, fare discounts, and fare evasion, the full base fare for service is not always paid for every trip—instead, the average fare paid is often lower. From 2012 to 2018, the average fare paid by riders peaked for Coralville Transit in 2015 and declined afterwards (Figure 2-10). The average fare paid by riders on ICT increased steadily from 2012 to 2018.

Figure 2-10 Average Fare by Agency, 2012-2018

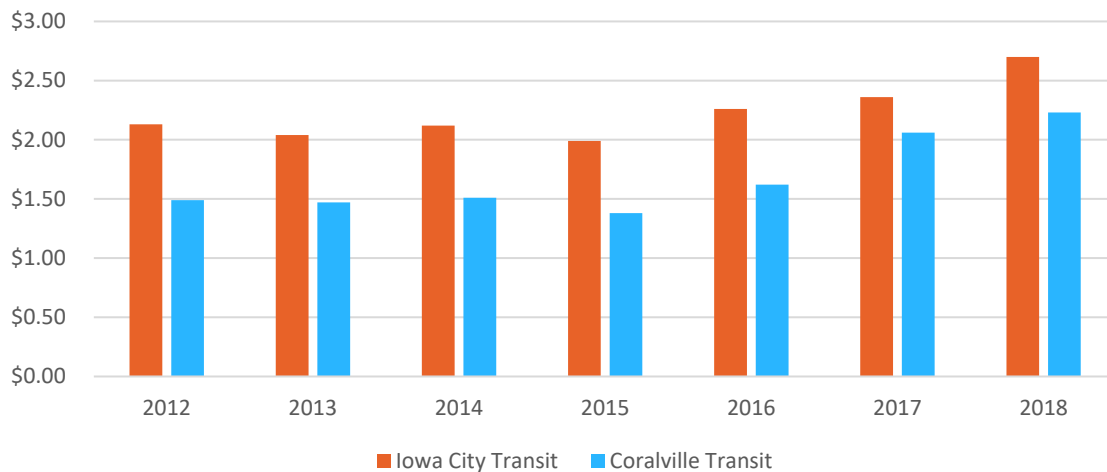


Source: NTD 2012-2018

Subsidy per Trip

The subsidy per trip measures the operating cost per trip paid for by the transit agency (operating cost per trip minus average fare). ICT's subsidy per trip has hovered around \$2.25 but has been increasing since 2015. Coralville Transit's per-trip subsidy has increased about \$0.75 in the past seven years.

Figure 2-11 Average Subsidy per Trip by Agency, 2012-2018



Source: NTD 2012-2018



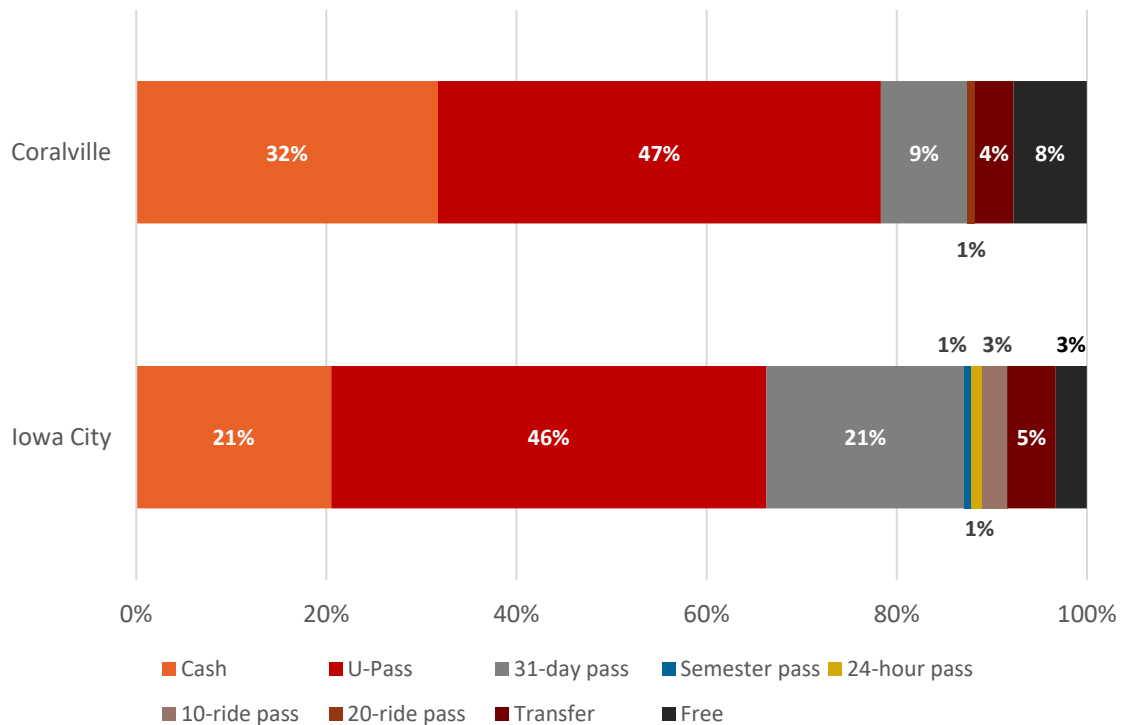
FARE MEDIA USE

A breakdown of ridership and revenue by fare media type for ICT and Coralville Transit provides insight into how riders are currently paying for their transit trips and how much revenue each pass product is generating for the agency.

Passengers on both ICT and Coralville Transit service predominantly use pass products to pay their fare (Figure 2-12). Cash boardings account for 21% of ICT passengers, while U-Passes account for 46% of ICT passengers. Cash payments are made by 32% of Coralville Transit passengers—more than 10% higher than for ICT passengers. U-Passes account for 47% Coralville Transit passengers, a similar breakdown as ICT.

An additional 21% of passengers on ICT paid their fare with a 31-day pass, compared to only 9% percent of Coralville Transit. Transfers, 10-ride passes, 20-ride passes, semester passes, and 24-hour passes are relatively underutilized fare media for both agencies.

Figure 2-12 Ridership by Fare Media Type



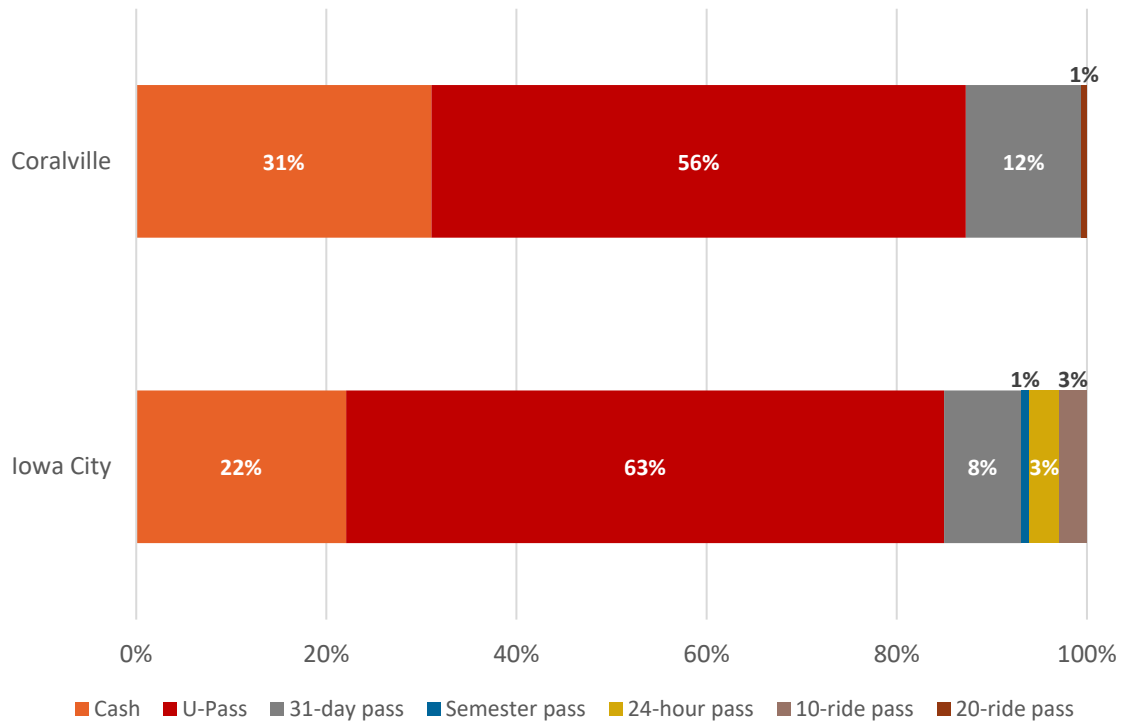
Source: ICT 2018, Coralville Transit 2018

IOWA CITY AREA TRANSIT STUDY | FARE STUDY



The majority of fare revenue for both ICT (63%) and Coralville Transit (56%) is generated by the U-Pass program, as shown in Figure 2-13. Cash revenue for ICT (22%) and Coralville Transit (31%) is generated proportionately with ridership for both agencies. 31-day passes account for 8% of ICT revenue, despite being used by 21% of passengers. On Coralville Transit, 31-day passes are used by 9% of passengers but account for 12% of revenue. Semester passes, 10-ride passes, 20-ride passes, and 24-hour passes each generate between 1% and 3% of fare revenue for the agencies.

Figure 2-13 Revenue by Fare Media Type



Source: ICT 2018, Coralville Transit 2018



3 FARE FREE PEER REVIEW AND BEST PRACTICES

Successes with fare free transit in Corvallis, Chapel Hill, and Missoula indicate it can be a transformative way to increase public transit use. This memo explores findings from recent interviews regarding fare free transit with three peer agencies: Chapel Hill Transit (Chapel Hill, NC), Corvallis Transit System (Corvallis, OR), and Missoula Urban Transportation District (Missoula, MT).

Key lessons learned from interviews with the three agencies include:

- The agencies used various funding techniques to replace fare revenue in going fare free, including property taxes, university fees, utility service fees, and community partnerships.
- Ridership increased by 30-100% for each agency's fixed-route system. Productivity also increased for all three agencies.
- Increased ridership leads to more frequent stops, which may negate the dwell time savings gained from faster boarding. All door boarding and bus stop consolidation are solutions to consider for reducing dwell time.
- Each agency experienced greater staffing needs than anticipated. Staffing should be indexed to any increases in revenue hours.
- Ridership, revenue hours, and staffing increases for paratransit service should also be anticipated. Additional local partnerships and demand response eligibility are important considerations for managing demand.
- Going fare free has been a largely positive experience and success for each peer agency, including the following benefits:
 - Simplified administration
 - Ridership and productivity increases
 - Travel time and dwell time savings
 - Achievements in livability and public health objectives
 - More repeat riders and mode share shifts
 - Increase in community recognition and pride



Peer Overview



Chapel Hill Transit (CHT), Chapel Hill, NC. CHT transitioned from charging fares to operating with a “prepaid fare” in 2002, funded through an agreement with the Town of Chapel Hill, Town of Carrboro, and University of North Carolina (UNC). Shortly after this change, annual ridership began to increase and ultimately doubled in 10 years. CHT credits this growth in part to its decision to operate fare free.



Corvallis Transit System (CTS), Corvallis, OR. CTS began operating with prepaid fares in 2011, funded through a Transit Operations Fee (TOF) on utility services. The change was linked to a 43% increase in ridership within the first two months with no increase in service hours.



Missoula Urban Transportation District (Mountain Line), Missoula, MT. In January of 2015, all fares on Mountain Line were eliminated for a three year zero-fare demonstration project funded by community partners. After community investment replaced fare revenue, ridership increased about 30-40%. Mountain Line continues to gather data and study the benefits and challenges of the zero-fare demonstration project.

Funding

The agencies used various funding techniques to replace fare revenue in going fare free, including property taxes, university fees, utility service fees, and community partnerships.

Chapel Hill Transit. The decision to go fare free started as a handshake agreement between the Town of Chapel Hill, Town of Carrboro, and UNC. UNC had already been contributing funding to the agency through a university pass agreement, making fares free for the majority of riders. In order to simplify fare payment, the decision was made to make the system to be prepaid for everyone. To make up funding gaps from fares, the Towns of Chapel Hill and Carrboro raised property taxes, and UNC has increased contributions through student and employee fees.

Corvallis Transit System. The idea for prepaid fares was promoted by the Corvallis Sustainability Coalition as a strategy to make the city more livable. This strong local champion helped establish a new utility services fee on water bills to provide dedicated funding not subject to fluctuations in the economy, unlike CTS’s former funding through the city’s property-tax funded general fund.

The TOF is tied to fuel prices with a floor of \$2.75 per household, allowing the agency to earn additional revenue as fuel prices increase. This new funding stream was made possible because Oregon law allows transit to be taxed and treated as a public utility. The TOF is reviewed annually by City Council, so Council has the option to adjust the fee every year. Revenue at the “floor” level is approximately \$900,000 annually, with 76% of the fee replacing the general fund and 21% replacing fares. The remaining 3% is intended for increase in service. The TOF also provides a source for local matching fund requirements for the purchase of new equipment. In addition to TOF contributions levied on a per-bed basis, Oregon State University (OSU) continues to support



transit with a long-standing annual direct contribution of \$130,000. Of the three peer agencies we reviewed, the TOF funding strategy is the simplest.

Mountain Line. Community investment from numerous partners, along with the City of Missoula, replaced the majority of fare revenue. Prior to the zero-fare demonstration project, the agency contracted with University of Montana to provide free rides to students, faculty, and staff. Annual partner revenue is approximately \$500,000, which replaces about \$465,000 in fare revenue. As of March 2019, the agency had 24 funding partners, with a goal of 40. The growing list of community partners includes public schools, senior services organizations, government organizations, downtown associations, and medical centers. Major partners are the University of Montana, City of Missoula, and two hospitals. The City of Missoula's contribution is separate from other levies, so funding is guaranteed.

Partnership with the agency is a big benefit to local organizations because their name is associated with something so popular. To broaden the types of agencies that are able to participate, Mountain Line offers a tiered contribution structure that allows non-profits and other groups to participate (Figure 3-1). Mountain Line asks for a three-year commitment from partners, which allows for everyone to re-convene every three years to see if the structure still makes sense for the community.

Figure 3-1 Mountain Line Partner Pricing and Benefits Structure



Initial Challenges

The three agencies experienced a few initial challenges, including marketing coordination and confusion about funding.

- **Chapel Hill Transit** continued to order buses with fareboxes until 2012 (10 years after going fare free). Now the agency intentionally orders the buses without fareboxes, which sends a clear message about the agency's intent to continue operating fare free.



- **Corvallis Transit System** provided refunds for passes purchased in advance of the fare free change. They defined a time limit for people to turn in coupons and bus passes to receive a refund. This involved an outreach campaign and an update to all marketing materials about the change.
- **Mountain Line** rolled out zero fare and service improvements at the same time, causing public confusion about how the changes were paid for. The service improvements were funded by a mill levy, but zero fare was funded through partnerships.

Value Proposition

The agencies use value propositions to clarify the reasoning behind going fare free and continue demonstrating program benefits to the public.

- **Chapel Hill Transit** promotes the idea that a citizen's freedom is a huge benefit compared to having to worry about fares.
- **Corvallis Transit System** promotes the value proposition at every tabling event they go to, including the many sustainability events in town. Fare free education is mostly for new residents and OSU students.
- For **Mountain Line**, articulating the value proposition is essential for expanding partnerships. The agency is constantly trying to collect stories from people about how their lives are better because of zero fares, as well as how zero fare contributes to a reduced need for parking, reduced traffic, and improved air quality.

Fixed-Route Service

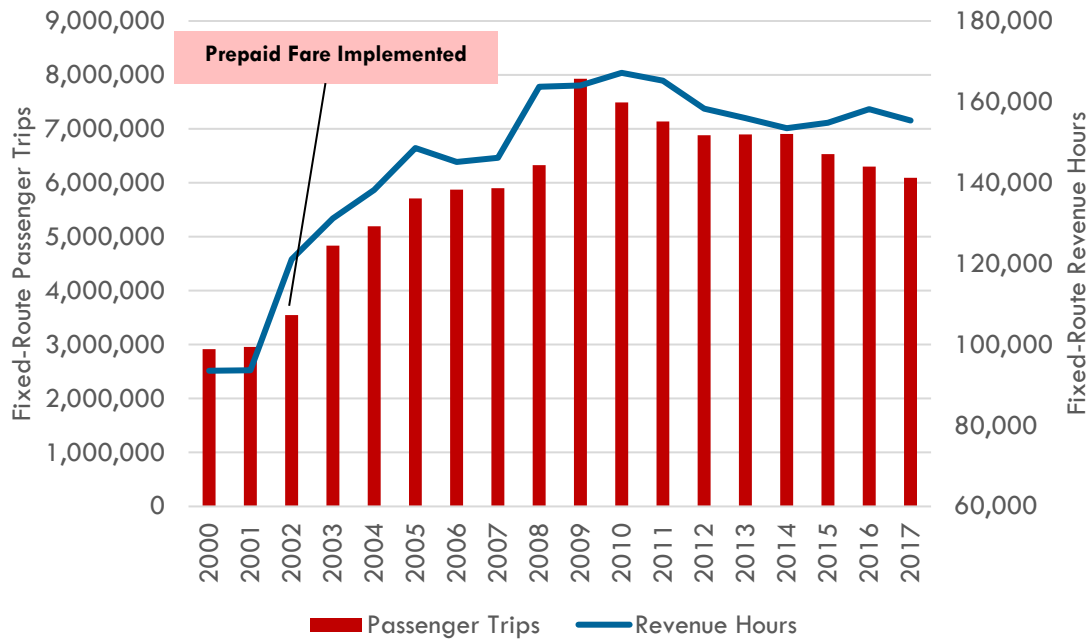
Ridership and Productivity

Ridership increased dramatically for all three agencies after going fare free. Additionally, each agency saw notable improvements to productivity (Figure 3-5, Figure 3-6, and Figure 3-7).

- **Chapel Hill Transit** ridership increased by 56% between 2002 and 2003 when fare free was implemented and continued to increase steadily in the years following the switch to fare free. Between 2002 and 2012, ridership doubled (from approximately 3.5 million to nearly 7 million). As a result, CHT increased service to accommodate new ridership demand (Figure 3-2).
- **Corvallis Transit System** ridership increased 39% in the first year and continued to climb for another two to three years before leveling off (Figure 3-3). New service is expected to continue increasing ridership.
- With no additional service, **Mountain Line** ridership has seen a 70% increase, far surpassing the anticipated 40% increase over three years (Figure 3-4). As of March 2019, fixed-route ridership has leveled off.

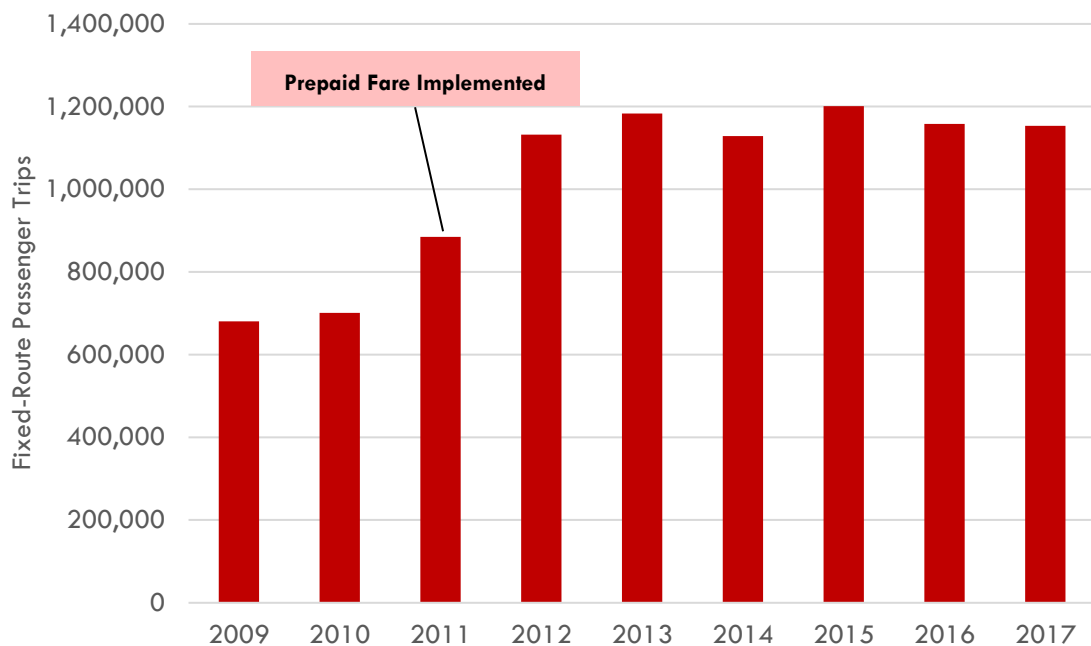


Figure 3-2 Chapel Hill Transit Fixed-Route Passenger Trips and Revenue Hours (2000-2017)



Source: National Transit Database

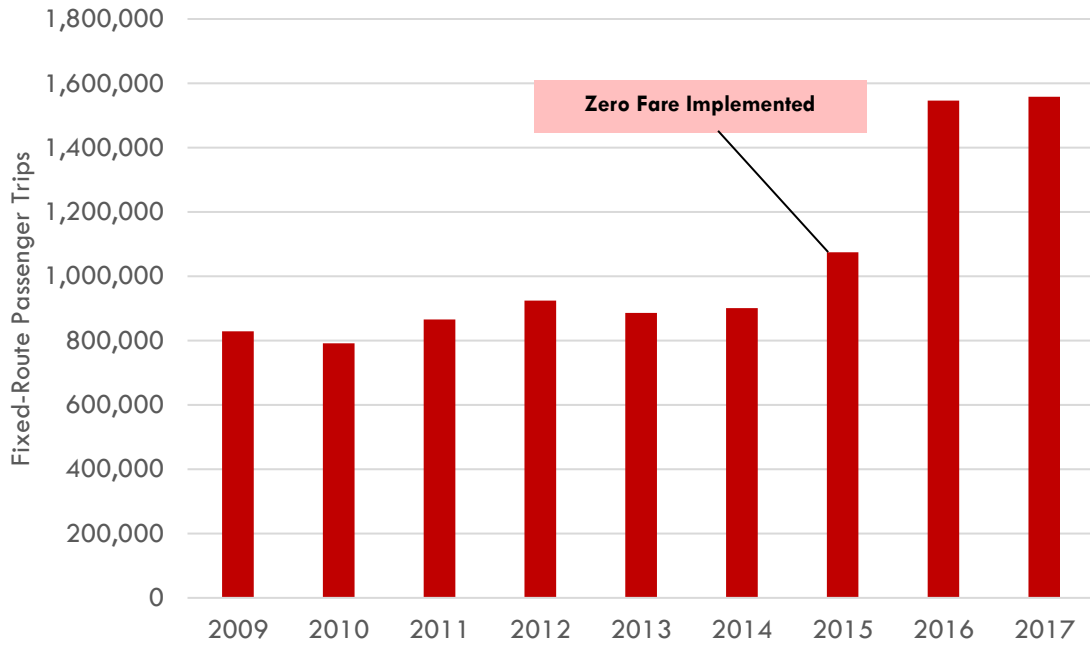
Figure 3-3 Corvallis Transit System Fixed-Route Passenger Trips (2009-2017)



Source: National Transit Database

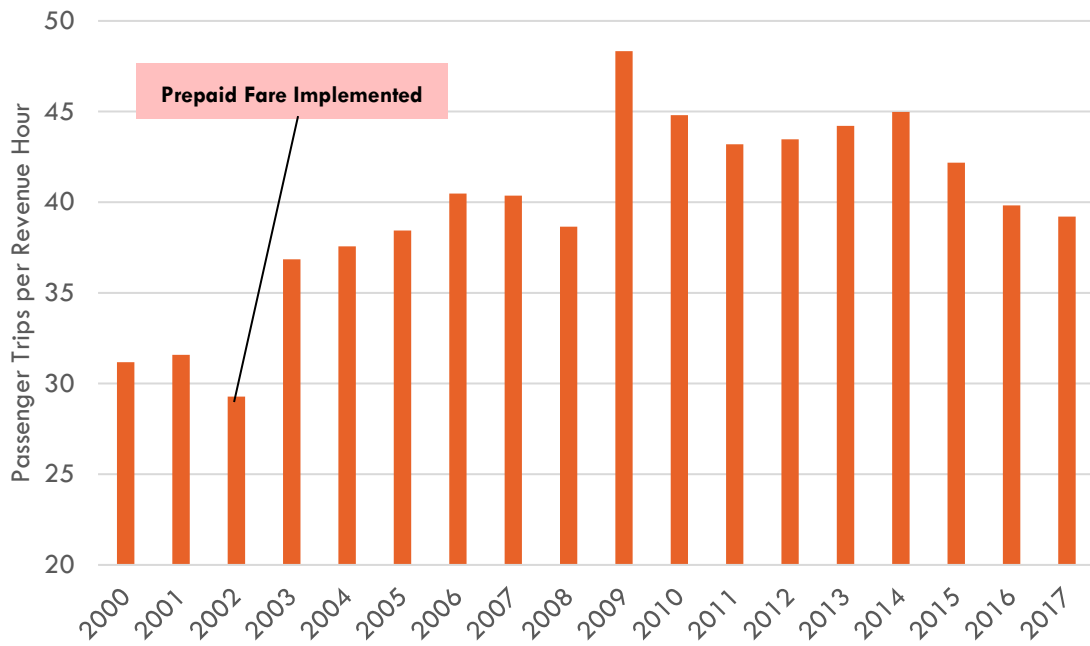


Figure 3-4 Mountain Line Fixed-Route Passenger Trips



Source: National Transit Database

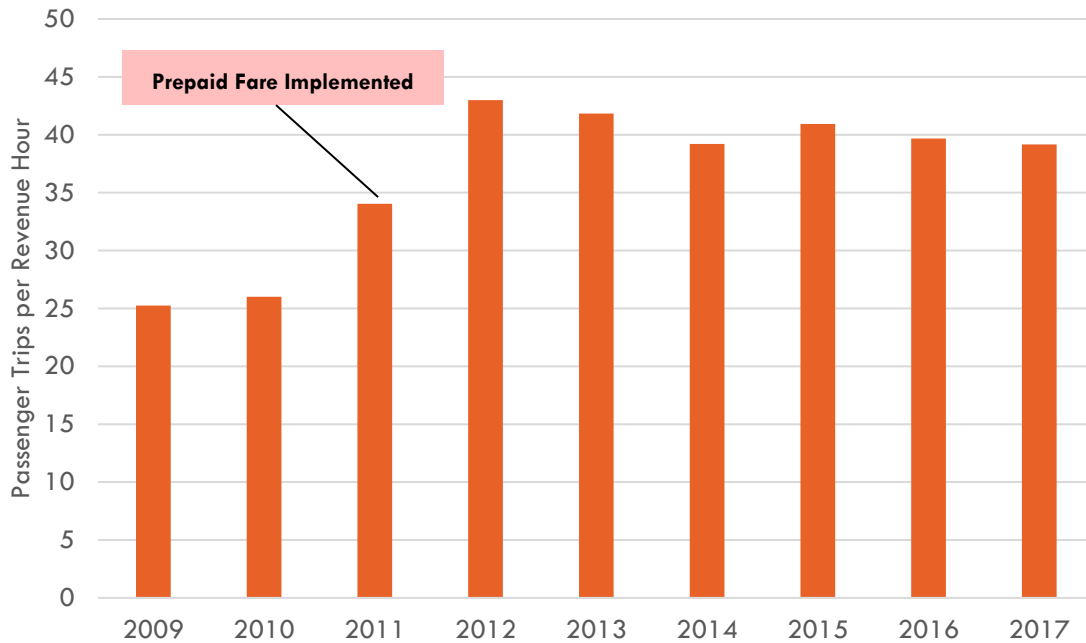
Figure 3-5 Chapel Hill Transit Passenger Trips per Revenue Hour



Source: National Transit Database

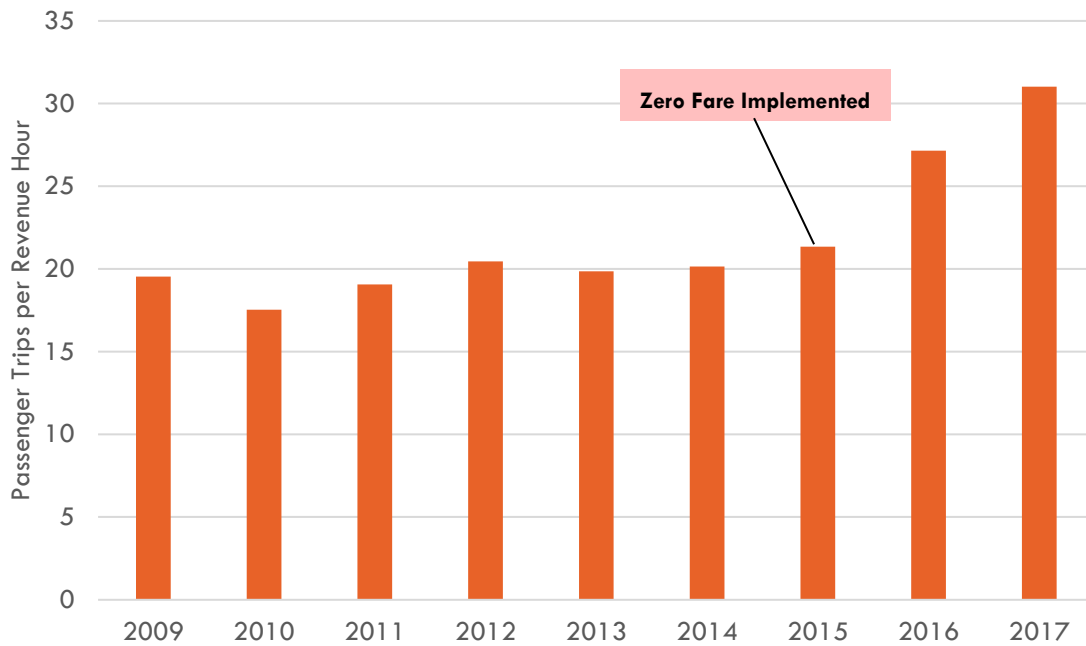


Figure 3-6 Corvallis Transit System Passenger Trips per Revenue Hour



Source: National Transit Database

Figure 3-7 Mountain Line Passenger Trips per Revenue Hour



Source: National Transit Database



Dwell Time Savings

Increased ridership as a result of fare free operations can also lead to more frequent stops, which can potentially negate dwell time savings from passengers not paying a fare. Impacts to each agency's dwell times as a result of going fare free are outlined below.

- **Chapel Hill Transit.** While buses do stop more frequently with more riders, CHT recognizes they would need to re-build their schedules if they started collecting fares again to allow for additional running time.
- **Corvallis Transit System.** CTS has seen a travel time savings from not collecting fares, though now buses stop at almost every stop, which has impacted on-time performance.
- **Mountain Line.** While the agency has found that dwell time is lower, time savings are likely balanced out by the increase in ridership.

Bus Stop Consolidation

Because increased ridership can lead to more frequent stops, agencies looking to go fare free can consider consolidating bus stops, including evaluation of existing stop spacing, removing stops that are too close together while still providing adequate access to riders, and setting standards for future stop spacing. For the three peer agencies, bus stop consolidation was a separate process from going fare free.

- **Chapel Hill Transit** did not conduct a bus stop consolidation analysis as part of their system change.
- **Corvallis Transit System** felt bus stop consolidation was challenging to implement at the same time as fare free implementation. While a few stops were removed on a case-by-case basis, CTS felt it was not palatable to give riders a new incentive to use the bus, while also telling them the stop closest to them was being eliminated. The agency did conduct a consolidation study in conjunction with expanding service in September 2019.
- **Mountain Line** is addressing stop consolidation as part of their bus stop master plan update, but that has been approached as a process unrelated to fare free implementation.

All-Door Boarding

An additional way to reduce dwell time is to implement all-door boarding policies. Because no fare payment is needed, riders can quickly board the bus at all available entrances, reducing the potential for queues at the front door. To implement, APCs are required on both the front and back doors to maintain accurate ridership counts.

- **Chapel Hill Transit** has recently adopted all door boarding as part of an effort to reduce dwell time and improve on-time performance. As a result, the customer experience has improved. Operators, however, have safety concerns about not being able to check passengers at the front boarding door.
- **Corvallis Transit System** still requires front door boarding because they have APCs that only count boardings through the front door. The agency also feels that it is a safety issue to have passengers board through the back door.
- **Mountain Line** did not adopt a policy on all-board boarding, but some drivers do allow riders to get on at all doors, especially when snow build-up requires it.

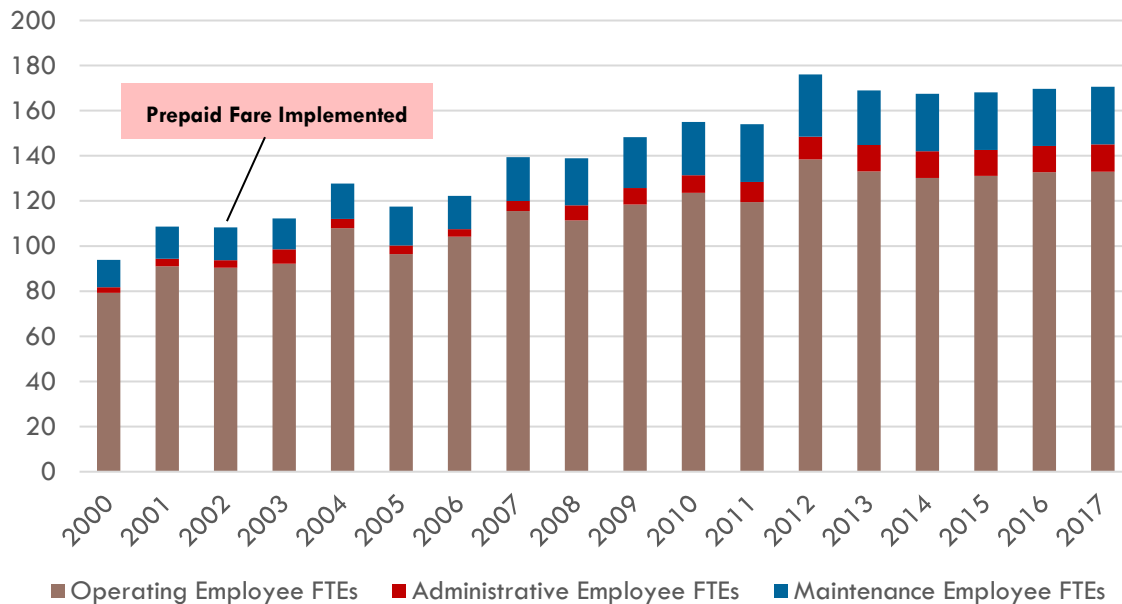


Increased Staffing

Upon going fare free, each agency has experienced increasing staffing needs. It is essential to consider the need for expanded staffing levels as part of fare free implementation.

- **Chapel Hill Transit** did not plan well for this, and staffing did not keep pace with revenue hour and ridership increases. It took the agency approximately 10 years to increase staffing to be in line with levels prior to fare free implementation (Figure 3-8 and Figure 3-9).
- **Corvallis Transit System** notes that they were able to save administrative time by not selling group passes, fare media, and counting fares. However, the agency is still short-staffed and was unable to complete some planning efforts as a result. CTS is hoping to hire new staff with additional funding.
- **Mountain Line** has doubled the number of supervisors and in March 2019 was recruiting for more paratransit schedulers (Figure 3-10). There has been pushback from older operators who were used to low-ridership routes and have had to become accustomed with dealing with more people. The agency notes that it has been difficult to hire new staff given the strong economy.

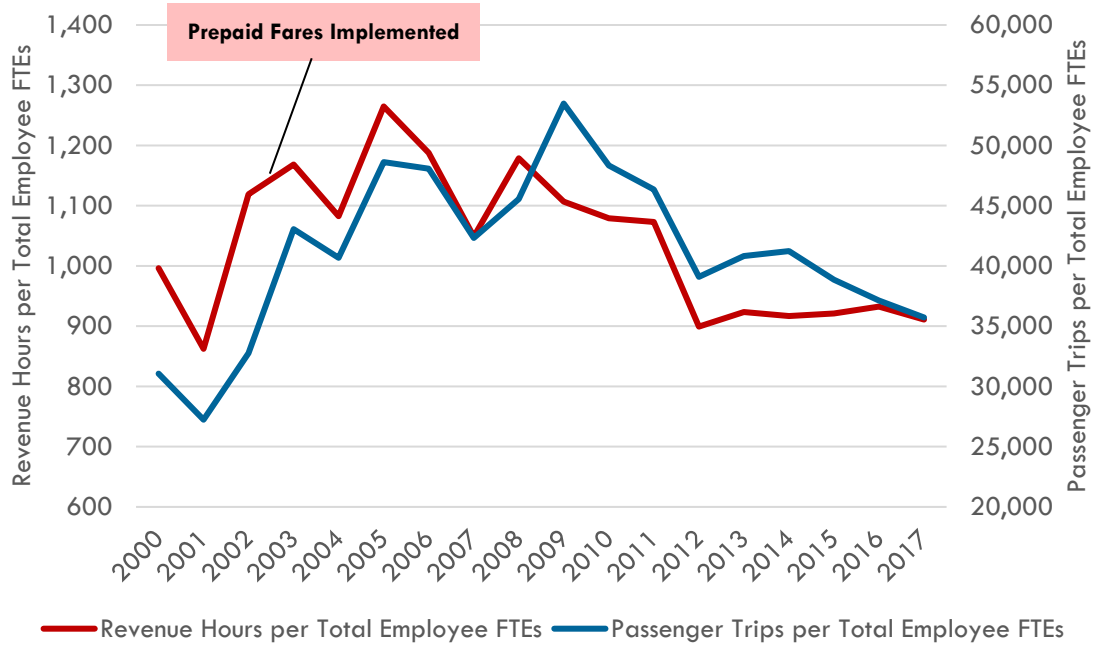
Figure 3-8 Chapel Hill Transit Fixed-Route Employee FTEs



Source: National Transit Database

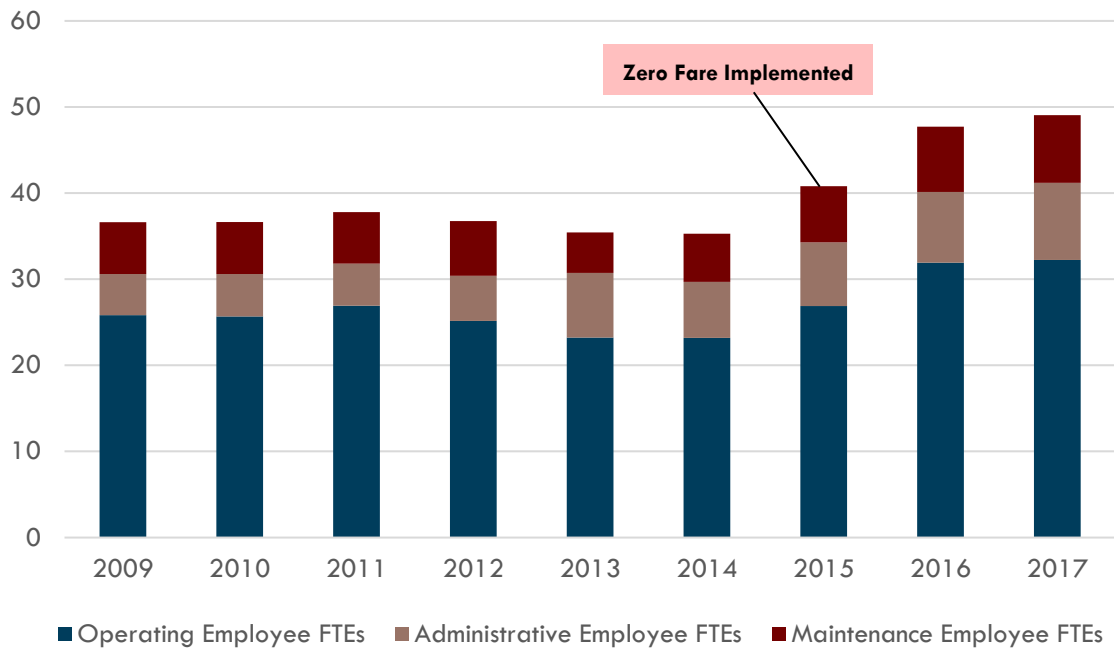


Figure 3-9 Chapel Hill Transit Revenue Hours and Ridership per Employee FTEs



Source: National Transit Database

Figure 3-10 Mountain Line Fixed-Route Employee FTEs



Source: National Transit Database



Passenger Disturbances

With increased ridership comes the potential for increased passenger disturbances. Agency policies such as origin-to-destination policies can reduce the potential for on-board passenger disturbances.

- **Chapel Hill Transit** has worked to mitigate disturbances by allowing passengers a maximum of one complete round-trip ride. This is enforced by the operator but is rarely an issue, and as such, the rule has been removed from the agency literature. Overall, there has been no significant increase in passenger disturbances in relation to fare free implementation.
- **Corvallis Transit System** has a similar origin-to-destination policy for their riders. The agency has empowered drivers to do something if they feel there is an issue with a particular passenger. Drivers have noticed that the prepaid fare has eliminated conflicts that can occur with paying the fare. The agency also installed cameras on the buses, which they reported have helped cut down on the investigation process about 80%.
- **Mountain Line** has strict policies about passengers loitering at transit centers. There are several policies in place that existed before zero fare, such as a “one-trip” policy and strict policies about weapons and behavior. The agency feels that the problems do not seem to be any worse, there are just more people on the buses overall, which makes more work for the operators than in the past.

Paratransit

Ridership increases for demand response service should also be anticipated. Agencies studying going fare-free are often concerned that paratransit costs could increase due to increased demand for free service. By law, 100% of demand for paratransit service must be met, regardless of cost. In a fare-free system, this can result in high costs to the transit provider. Fare-free paratransit is attractive and can become costly to provide. Each agency has varying strategies for managing paratransit growth. These strategies are outlined below.

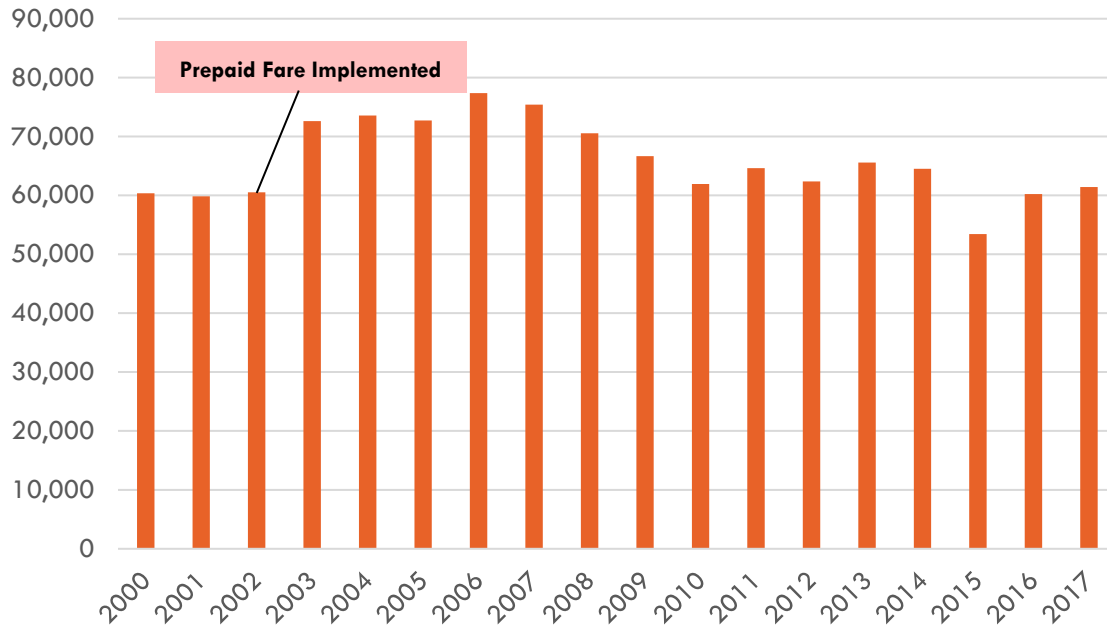
- **Chapel Hill Transit.** Paratransit ridership saw a 20% increase within one year, and paratransit revenue hours also saw an initial increase but have since flattened. Until 2010, the agency allowed rides outside of the $\frac{3}{4}$ mile zone required by the ADA. The agency had to cut back to a $\frac{3}{4}$ mile boundary for paratransit rides to reduce paratransit service hours. As a result, ridership decreased, and people were not able to move as freely. More recently, CHT relaxed some certification policies at direction of leadership, which came at a moderate cost. As a result of increased ridership and revenue hours, the agency has hired additional operating, administrative, and maintenance employees for paratransit service (Figure 3-13).
- **Corvallis Transit System.** Paratransit has seen a 30% increase in ridership since implementing prepaid fares. As of April 2019, the agency had not implemented any specific strategies to deal with this increase.¹
- **Mountain Line.** Demand response trips and revenue hours have increased steadily since the agency went fare free and continued to increase into 2019 (Figure 3-14 and Figure 3-15). To prepare for the increase in ridership, the agency tightened up eligibility

¹ Comparable data from the National Transit Database was not available for CTS demand response service and is not included in this section.



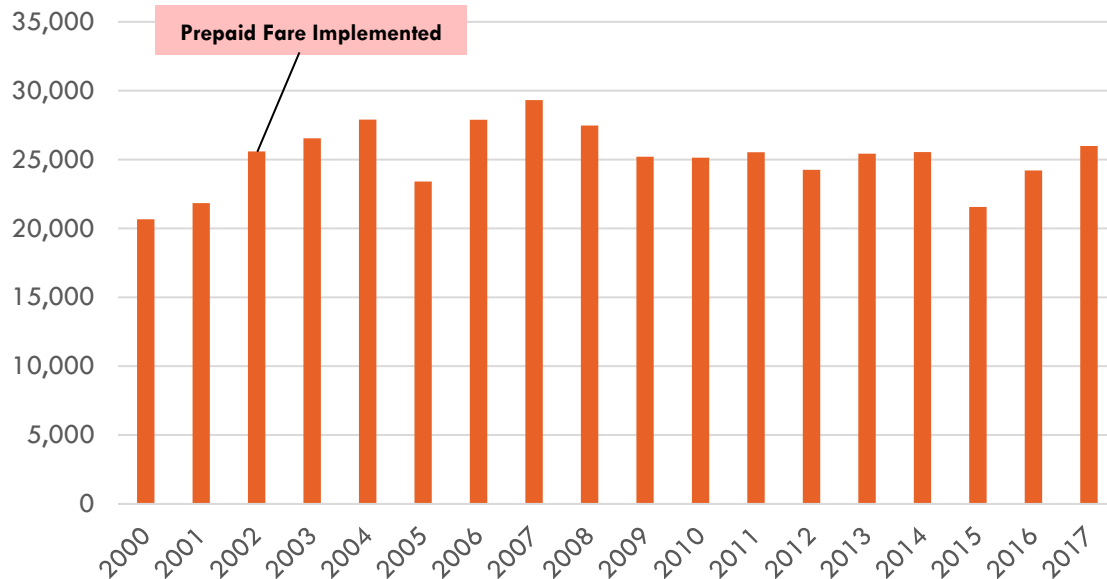
before implementing fare free service. They are currently planning to make a marketing push to promote fixed-route service for those who can use it in an effort to reduce paratransit ridership. To handle the additional service and ridership, the agency increased their demand response staffing, primarily in operations.

Figure 3-11 Chapel Hill Transit Demand Response Passenger Trips



Source: National Transit Database

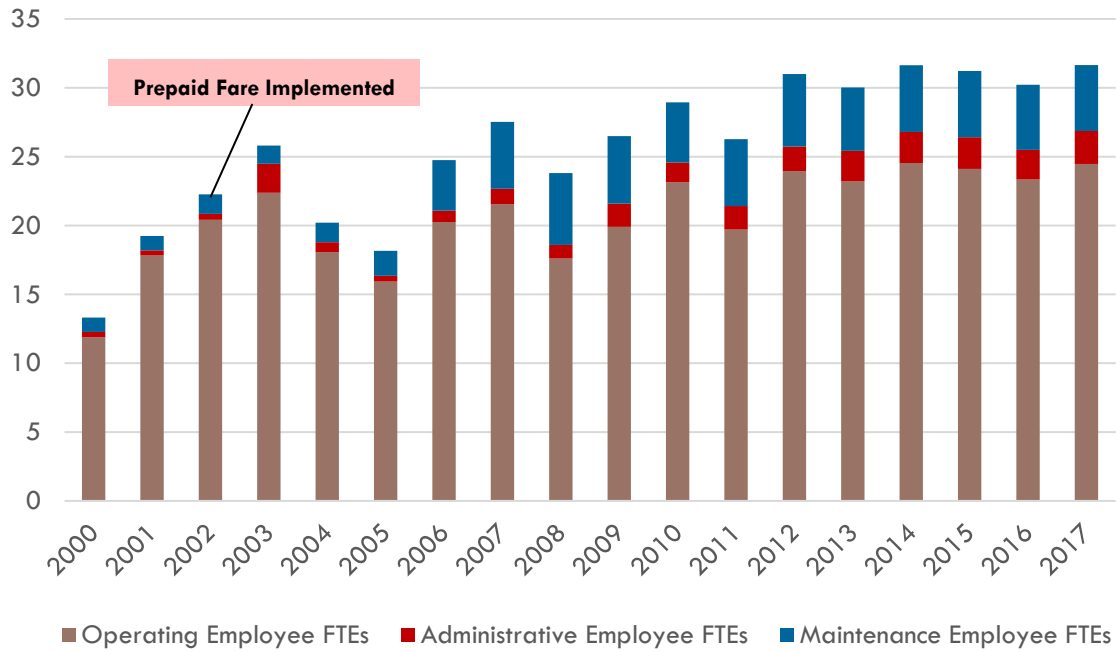
Figure 3-12 Chapel Hill Transit Demand Response Revenue Hours



Source: National Transit Database

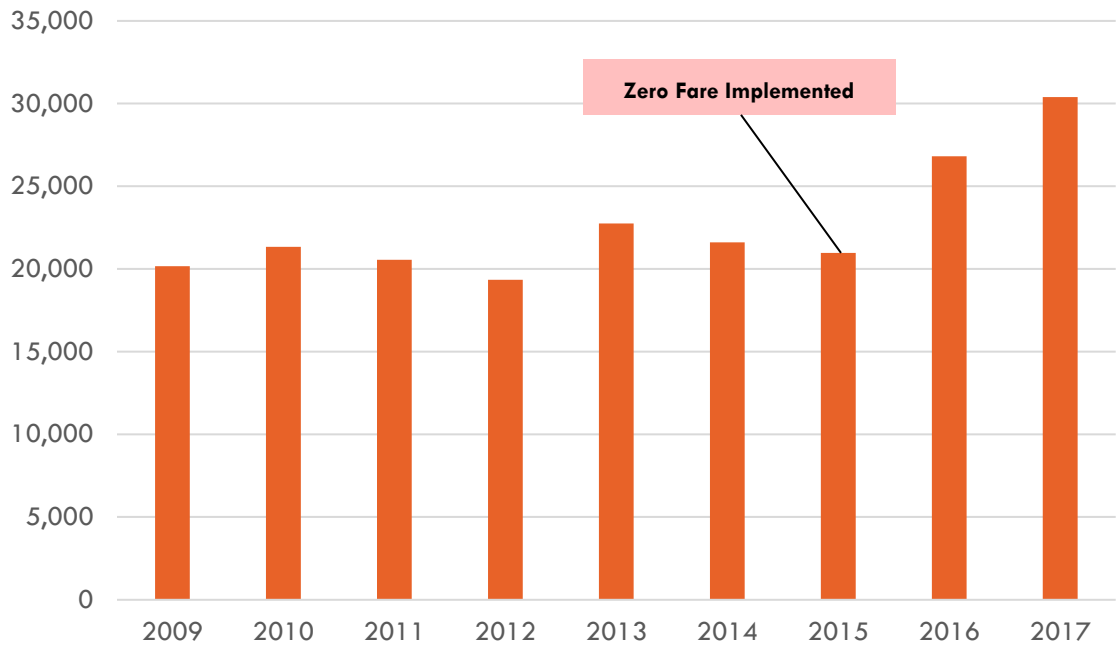


Figure 3-13 Chapel Hill Transit Demand Response Employee FTEs



Source: National Transit Database

Figure 3-14 Mountain Line Demand Response Passenger Trips

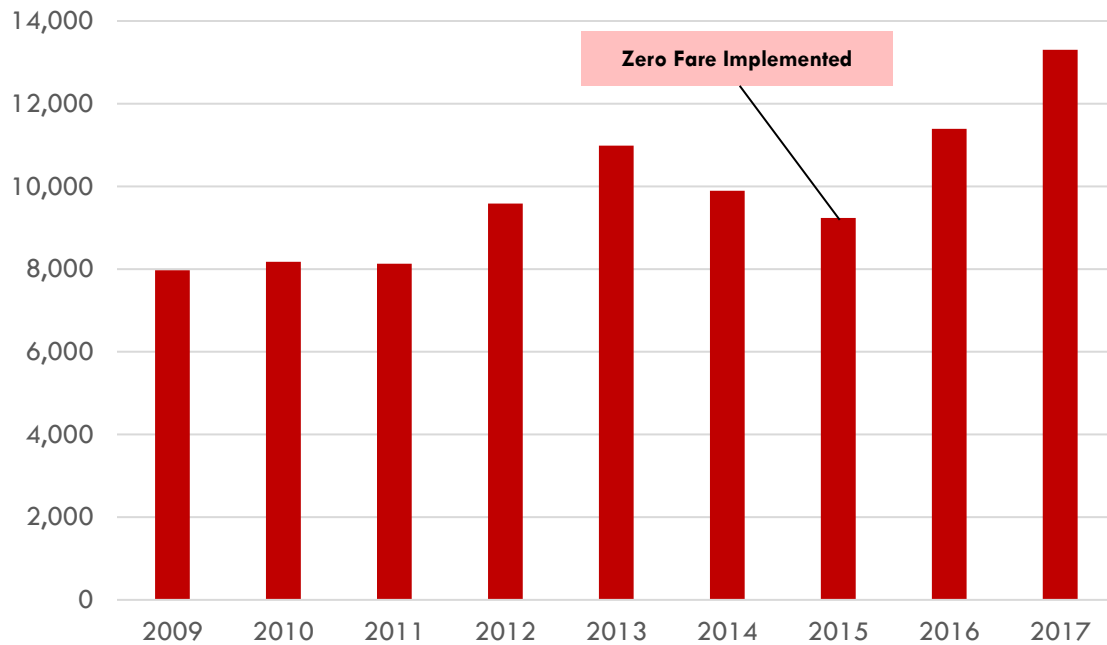


Source: National Transit Database

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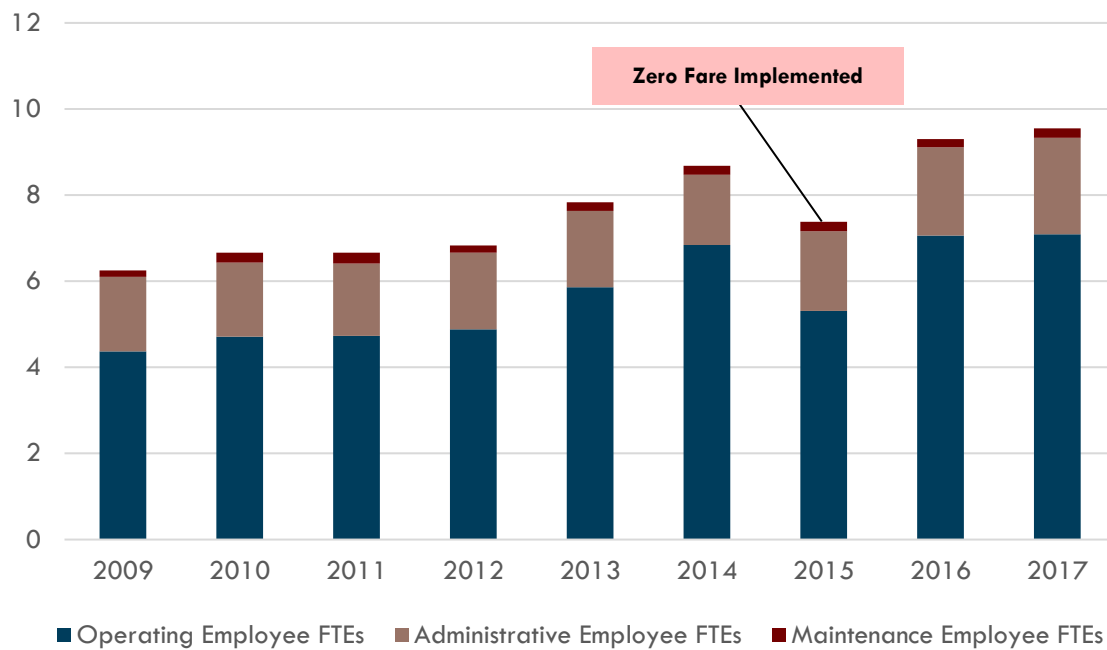


Figure 3-15 Mountain Line Demand Response Revenue Hours



Source: National Transit Database

Figure 3-16 Mountain Line Demand Response Employee FTEs



Source: National Transit Database



Outcomes

Overall, the shift to fare free has been a positive experience for all three peer agencies.

- **Chapel Hill Transit's** funding partners and the public are not interested in returning to charging fares.
- **Corvallis Transit System** has had overwhelming support from social service agencies, students, and environmentalists. They cannot imagine going back to a paid fare system. The agency was able to anticipate most of what was going to happen, and most of what went wrong was not substantial.
- Going fare free has transformed **Mountain Line** into the best transit system in Montana. Zero fare has improved community connectivity for those who use Mountain Line service. Additionally, the ridership increases bumped the agency into a higher tier of systems for grants. Grants received include "no-low" emissions and bus/bus facilities grants. In the last few years, they have brought in roughly \$3 million in grant funding.

Words of Wisdom

Some words of wisdom from the three agencies for other agencies looking to implement a fare free system include:

- **A fare free system benefits the whole community.** Mountain Line has seen that free fares lead to greater community mobility and improve affordability for households that may now need one less car. Everyone participates in the economy regardless of how much money they have, and zero fare service frees up people's money for other things.
- **Community input is extraordinarily important.** CTS warns of backlash from a small group of people resulting in having to undo the program. There must be overwhelming support for this type of service for it to go over well.
- **Properly communicate changes and how they are happening.** Mountain Line recommends implementing zero fare separately from other improvements so it's clear who's paying for it and how it's happening. CHT recommends presenting the change as "prepaid" rather than "fare free" to remind people that they do pay for the service, just not at the farebox.



4 FARE FREE ANALYSIS

Charging a fare—or not charging a fare—encompasses a wide range of costs and benefits. Some of the key benefits associated with collecting a fare include generating revenue, reducing reliance on federal and state funding, and supporting the perception that the public helps pay for public transportation services.

At the same time, there are costs associated with charging a fare. Operating fare free is less complex because it simplifies accounting systems and reduces the need for secure storage of cash; additionally, management and distribution of fare media are not required. Additional benefits include the potential for increased ridership and enhanced operating efficiency.

KEY FINDINGS

- **If ICT intends to double ridership in 10 years, adopting a fare free policy is recommended** as the most cost-effective way to achieve that goal.
- Eliminating on-board fares for ICT could:
 - **Increase ridership** between 40% (700,000 passengers) and 60% (1,000,000 passengers).
 - Require **adding between five and nine additional trips** per day.
 - **Increase annual operating costs** in the range of \$1.3 million to \$1.4 million.
 - Depending on actual ridership increases, would **require adding two to four vehicles** to the fleet at an estimated capital cost of \$1 million to \$2 million.
 - Require an **additional one to three full-time employees (FTEs)**.
- Eliminating on-board fares for ICT could also impact affiliated service on Johnson County SEATS Paratransit (SEATS) service:
 - **Increase ridership** on SEATS by 20% (19,000 passengers) to 40% (39,000 passengers).
 - **Require adding two and six additional vehicles** to the fleet at an estimated capital cost of \$300,000 to \$900,000.
 - **Increase annual operating costs** by between \$745,000 and \$872,000.
 - Require an **additional one to two FTEs**.



EXISTING FARE COSTS AND REVENUE

Transitioning to fare free service typically results in a decrease in revenue for the agency; collecting fares directly generates revenue for the agency, but has ongoing operating and administrative costs, including farebox equipment maintenance, accounting, and other services. Identifying the tradeoffs between fare revenue and collection costs is the first step in determining the financial impacts of providing fare free service.

ICT earned approximately \$1.3 million in total fare revenue for Fiscal Year (FY) 2019, as shown in Figure 4-1. The estimated annual cost of collecting fares for ICT, as shown in Figure 4-2, is approximately \$85,000 per year.

Figure 4-1 Iowa City Transit Fare Revenue by Source (FY2018-FY2019)

	FY2018	FY2019
Bus Fares (Cash)	\$268,254	\$391,577
Bus Passes	\$920,466	\$916,655
Bus Stored Rides	\$35,063	\$31,311
Misc. Bus Rides	\$1,905	\$797
Total	\$1,225,688	\$1,340,339

Source: Iowa City Transit

Figure 4-2 Iowa City Transit Estimated Annual Fare Collection Costs

Estimated Annual Fare Collection Costs	
Supervisory Staff Time (Fare Counting)	\$16,596
Supervisory Staff Time (Farebox Maintenance)	\$17,406
Forgone Revenue	\$15,120
Fare Media Production Costs plus Parts and Maintenance	\$22,570
Armored Car Service	\$3,500
Customer Service Rep Staff Time	\$2,659
Night Maintenance Time	\$7,064
Total	\$84,915

Source: Iowa City Transit



Farebox recovery is the ratio fare revenue compared to total operating expenses. This metric is widely used in the transit industry to identify the percentage of operating costs that are paid for directly by passenger fares. ICT fare revenues account for 22% of annual operating expenses, as shown in Figure 4-3. represents a significant revenue loss that would need to be replaced by alternative funding mechanisms.

Figure 4-3 Iowa City Transit Farebox Recovery (FY2016-FY2017)

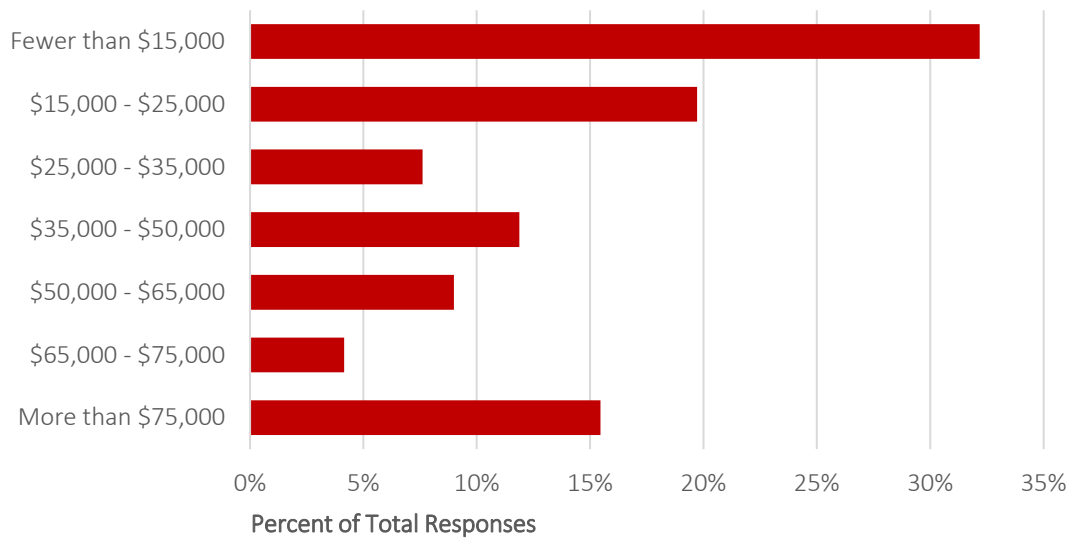
	FY2016	FY2017
Passenger Fare Revenue	\$1,467,138	\$1,426,395
Total Operating Expenses	\$6,687,991	\$6,601,336
Farebox Recovery Ratio	22%	22%

Source: NTD 2017

EQUITY CONSIDERATIONS

Transitioning to fare free service has the potential to eliminate barriers for low-income passengers and improve equity in the service area. Understanding the income levels and combined housing and transportation costs of the region is a key factor for determining how fare free service will affect the community. ICT riders are disproportionately lower-income earners, as shown in Figure 4-4. Over half of transit riders have an annual household income below \$25,000, and more than 30% of riders have an annual household income below \$15,000.

Figure 4-4 Iowa City Transit Ridership by Income Level

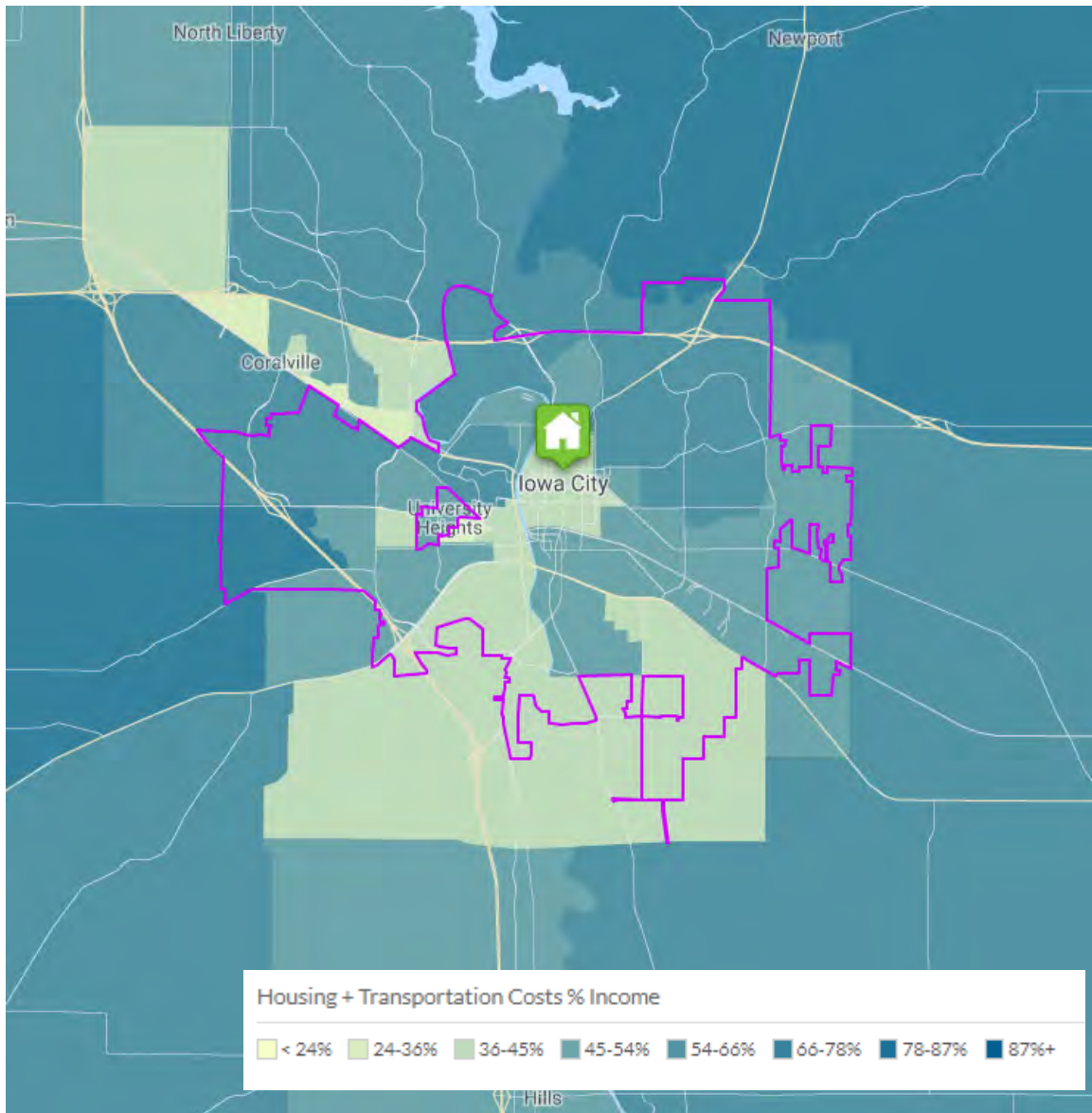


Source: 2019 Iowa City Transit On-Board Survey



Additionally, many Iowa City residents are considered housing and transportation burdened. Over half of Iowa City households spend more than 45% of income on housing and transportation costs, as shown in Figure 4-5. The average annual transportation cost for Iowa City residents is \$11,549, and approximately 4% of workers in Iowa City take transit to work. Eliminating fares on ICT would reduce this transportation burden for some of the lowest-income households in the service area.

Figure 4-5 Iowa City Housing and Transportation Costs as a Percent of Income



Source: Housing and Transportation Index (H+T Index), Center for Neighborhood Technology (CNT)

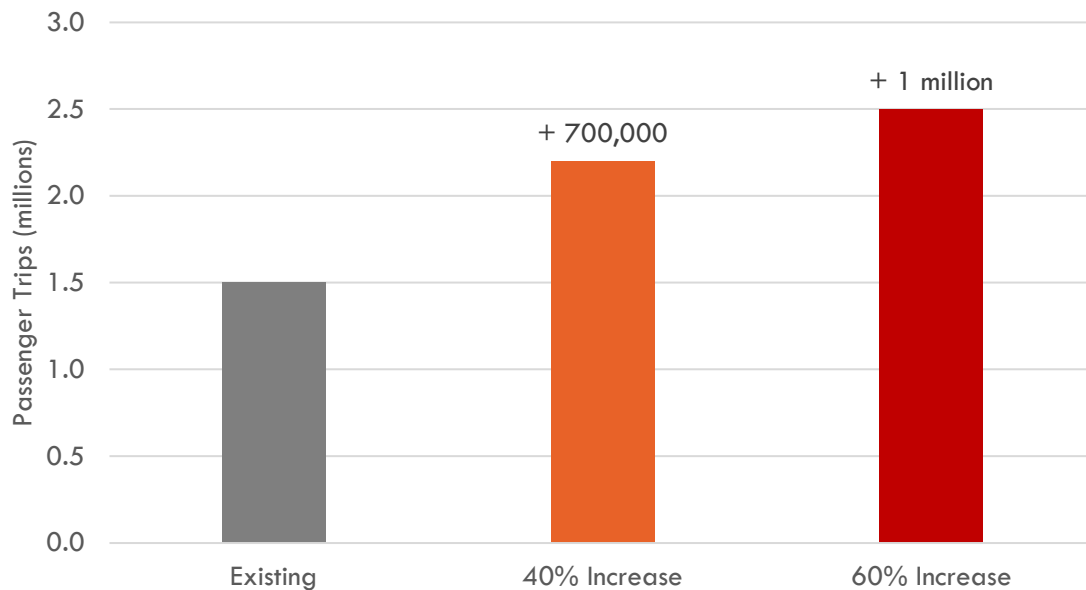


FIXED-ROUTE RIDERSHIP AND COST IMPLICATIONS

Ridership

Increasing ridership is often a high priority for transit agencies, and providing fare free service has been shown to consistently and quickly accomplish this goal. Transit ridership is elastic relative to fares—the more fares are reduced, the higher ridership will increase. Based on the experience reported from peer agencies, transitioning to fare free service can increase transit ridership between 40% and 60%. For ICT, this represents a range of increased ridership between 700,000 and 1 million additional passengers per year, as shown in Figure 4-6. As transit ridership increases following a transition to fare free service, there are several implications including the potential for improved travel times, increased operating costs, and increased capital costs.

Figure 4-6 Iowa City Transit Projected Fixed-Route Ridership Increase



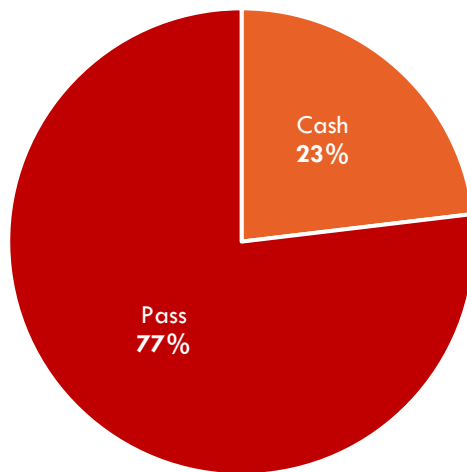
Source: NTD 2017



Travel Time Savings

Fare free service may reduce dwell time spent at bus stops waiting for passengers to board and pay their fare. Research has shown that it takes passengers on average about 3.9 seconds to pay their fare with cash, 3.7 seconds to pay their fare with a swipe card pass, and 2.0 seconds to board without paying a fare.¹ Ridership by fare media, as shown in Figure 4-7, indicates that the majority of ICT passengers pay their fare with pass products.

Figure 4-7 Iowa City Transit Ridership by Fare Media



Source: 2019 Iowa City Transit On-Board Survey

Based on recent experience from Intercity Transit (Olympia, WA), significant travel time savings can be anticipated after implementation of zero-fare service, including relief for routes with previous on-time performance issues. Applying the estimated dwell time savings to the existing ridership and projected increase in ridership yields the average daily travel time savings for each route, as shown in Figure 4-8. Travel time savings at existing ridership levels amount to more than 2.3 hours per day. Oakcrest, the route with the most significant travel time savings, is expected to save over 20 minutes of travel time per day. Initially, ICT should be prepared to adjust scheduled runtimes after implementing fare free service to account for these travel time savings.

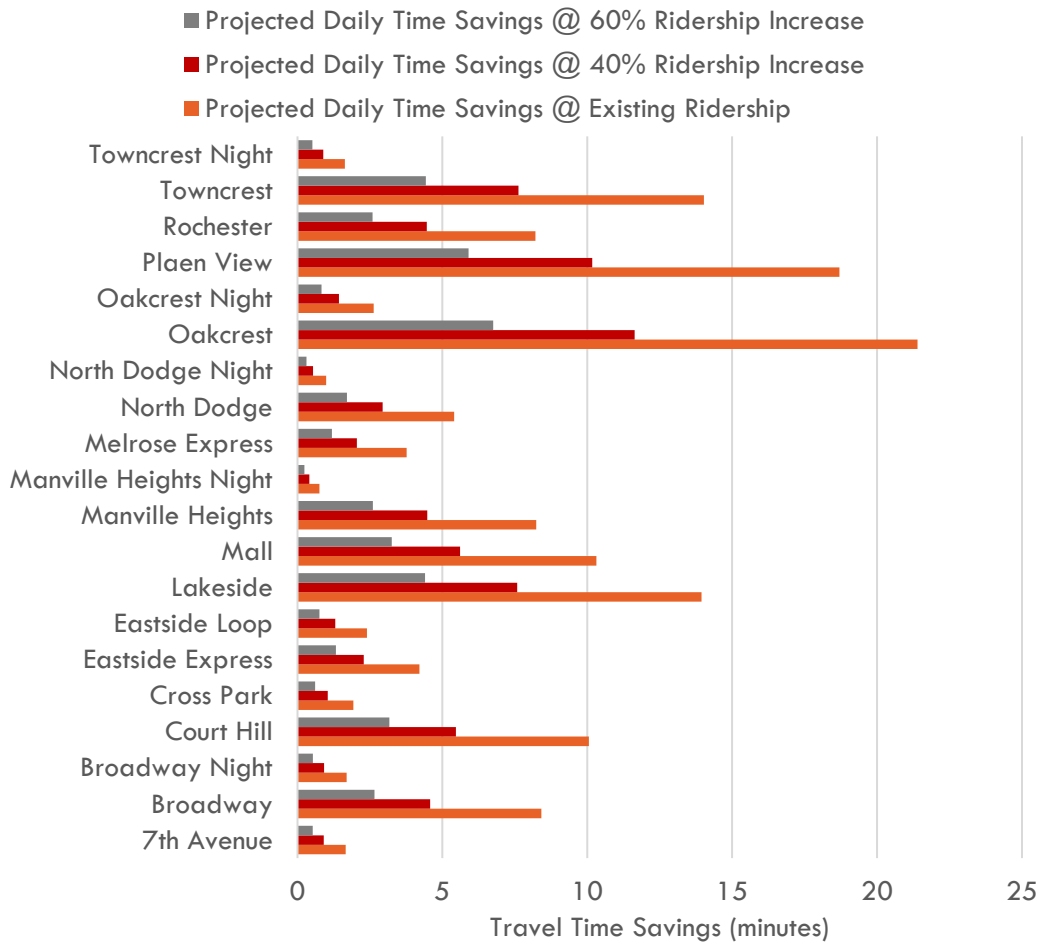
However, initial travel time savings are likely to degrade over time as more people start riding the bus in response to zero fare service. As ridership increases, travel time savings are anticipated to become relatively modest—the route with the highest projected travel time savings is estimated to save approximately 12 minutes of travel time per day with a 40% increase in ridership and approximately six minutes of travel time per day with a 60% increase in ridership. Systemwide, transitioning to fare free would result in between 0.7 and 1.3 hours of travel time savings per day.

¹ Transit Cooperative Research Program, Report 100: Transit Capacity and Quality of Service Manual – 2nd Edition, 2017

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Figure 4-8 Iowa City Transit Projected Daily Time Savings



Source: Iowa City Transit



Operating Cost Implications

As ridership increases, vehicles on specific trips or routes may exceed capacity, requiring the agency to provide additional trips. The existing maximum on-board passenger loads for every trip of each route were used to project the theoretical maximum loads based on a 40% and 60% increase in ridership. It is assumed that projected maximum on-board loads exceeding 50 passengers would require an additional trip. The results of this analysis, shown in Figure 4-9, suggest that ICT would need to operate between five and nine additional trips per day depending on the anticipated ridership increase. Specific impacts include:

- One to two additional trips on Eastside Loop
- Three additional trips on Oakcrest
- Up to three additional trips on Plaen View
- One additional trip on Towncrest

Figure 4-9 Iowa City Transit Additional Trips Required

Route	Direction	Full Trip Time*	40% Ridership Increase	60% Ridership Increase
Eastside Loop	IB	7:35 AM	Add one AM trip	Add on AM trip
		8:30 AM		
	OB	3:05 PM	--	Add one PM trip
Oakcrest	IB	7:44 AM	Add one AM roundtrip	Add on AM roundtrip
		8:44 AM		
		9:14 AM	Add second AM roundtrip	Add second AM roundtrip
	OB	5:00 AM	Add on PM roundtrip	Add one PM roundtrip
Plaen View	IB	6:45 AM	--	Add one AM roundtrip
		7:45 AM	--	
		5:15 PM	--	Add one PM roundtrip
Towncrest	IB	7:15 AM	--	Add one AM roundtrip
	OB	4:30 PM	Add one PM roundtrip	Add one PM roundtrip
		5:00 PM		

*Trips with >50 passenger max load with projected ridership increase



Operating costs associated with the additional trips necessary to accommodate increased ridership are shown in Figure 4-10. The low estimate results in an increased annual operating cost of \$62,000, and the high estimate results in an increased annual operating cost of \$147,000. Combining these increased operating cost estimates with the foregone annual farebox revenue and the estimated annual fare collection costs results in a total annual operating cost increase of between \$1.3 million and \$1.4 million.

Figure 4-10 Iowa City Transit Projected Operating Cost Increase

Operating Costs	40% Ridership Increase	60% Ridership Increase
Additional Annual Revenue Hours Needed	681	1,619
Annual Operating Cost Increase	\$62,000	\$147,000
Forgone Farebox Revenue*	\$1,340,000	\$1,340,000
Existing Annual Fare Collection Costs	(\$85,000)	(\$85,000)
Total Annual Operating Cost	\$1,317,000	\$1,402,000

*Iowa City Transit provided farebox revenue for 2019

Capital Cost Implications

Adding peak trips to accommodate increased ridership results in a capital cost component for ICT, as shown in Figure 4-11. The low estimate for ridership increase would require the agency to operate two additional peak vehicles, and the high estimate would require four additional peak vehicles. This results in additional capital expenditures between \$1,000,000 and \$2,000,000. While these capital expenditures appear as one-time line items, they would need to be replaced on an ongoing basis along the same timelines as the existing vehicle fleet.

Figure 4-11 Iowa City Transit Additional Peak Vehicles Required

Capital Costs	40% Ridership Increase	60% Ridership Increase
Additional Peak Vehicles Needed	2	4
Total Cost*	\$1,000,000	\$2,000,000

*Assumes \$500,000 per vehicle



Staffing Levels

As revenue hours increase to accommodate higher demand for transit service, it may be required to hire additional FTEs to operate vehicles, provide maintenance vehicles, or perform administrative functions for the higher level of service and additional riders. Projecting the hiring needs for an agency is less straightforward than projecting the required revenue hour increases. The observed trends for increasing revenue hours and FTEs for Chapel Hill Transit and Mountain Line are discussed in greater detail in Chapter 3.

A summary of observed and estimated trends for fare free impacts to FTEs for fixed-route service is shown in Figure 4-12. For every additional 1,000 revenue hours, Chapel Hill Transit and Mountain Line hired between one and three additional FTEs. Assuming a similar ratio of new FTE's to increased revenue hours, ICT would need to hire an additional 1 to 5 FTEs, a 2% to 9% increase in their workforce.

Figure 4-12 Peer Agency Fare Free Impacts Summary

Agency	Revenue Hours Change (% Change)	FTE Change (% Change)	New FTEs per 1,000 Additional Revenue Hours
Chapel Hill Transit	61,762 (66%)	62 (57%)	1.00
Mountain Line	5,096 (12%)	14 (39%)	2.55
Iowa City Transit (Estimate)	681 (1%) – 1,619 (3%)	1 (2%) – 5 (9%)	1.00 – 3.00



PARATRANSIT RIDERSHIP AND COST IMPLICATIONS

Johnson County SEATS is the paratransit provider for both the ICT and Coralville Transit service areas. Transitioning to fare free fixed-route service means that complementary paratransit service must also be provided fare free. If ICT transitions to fare free service and Coralville Transit continues to charge an on-board fare, only SEATS trips within the ICT service area would be fare free.

Similar to fixed-route service, reducing or eliminating paratransit fares is expected to increase demand for the service. Peer agencies experienced an approximately 30% increase in revenue hours and passenger trips during the first three years of fare free service. A similar increase in demand for paratransit services in the ICT service area alone would result in approximately 31,000 new passenger trips, 11,000 additional revenue hours, and \$595,000 in additional operating costs.

An estimated ridership increase between 20% and 40% would result in a range of cost implications. Annual revenue hours would be expected to increase by between 9,500 and 11,800 hours, resulting in an increased annual operating cost between \$531,000 and \$658,000. Accounting for forgone fare revenue, transitioning to fare free service would increase total annual operating costs for SEATS service by between \$745,000 and \$872,000, shown in Figure 4-13.

Figure 4-13 Paratransit Operating Cost Implications

	20% Ridership Increase	40% Ridership Increase
Additional Ridership Increase	19,000	39,000
Additional Annual Revenue Hours Needed	9,500	11,800
Annual Operating Cost Increase	\$531,000	\$658,000
Forgone Farebox Revenue	\$214,000	\$214,000
Total Annual Operating Cost	\$745,000	\$872,000

The increase in demand for paratransit service would require the agency to purchase between two and six additional vehicles at a cost of \$300,000 to \$900,000, shown in Figure 4-14 and hire one to two additional estimated FTEs.

Figure 4-14 Paratransit Capital Cost Implications

	20% Ridership Increase	40% Ridership Increase
Additional Vehicles Needed	2	6
Total Cost (\$150,000 each)	\$300,000	\$900,000



5 FARE SCENARIOS

The purpose of this section is to revisit the key findings from existing conditions and national best practices and introduce a range of fare concepts for further analysis and review. These scenarios are preliminary; options in some scenarios carried through to be part of the final recommendations while others did not.

Fare scenarios combine select concepts that can be compared against one another. This chapter describes the ridership and revenue impacts of six specific scenarios. Chapter 6 provides additional detail about fare structure and policy recommendations for ICT and Coralville Transit.

APPROACH AND ASSUMPTIONS

The fare model developed for this project is based on existing ridership and revenue data (FY 2018) and assumptions on average fare per passenger for each fare product. This information is then used as a baseline to understand order of magnitude changes to fare revenues and ridership as a result of pricing or structural changes.

Consumption of transit, like other goods and services, reacts to cost. Significant research over time has examined the sensitivity of transit ridership to fare increases. In transit, the standard measurement of sensitivity to fare changes means that for every 10% increase in fares, ridership will decrease by 3% (and vice-versa).

As such, elasticity factors are common in fare modeling, as they define the price sensitivity of riders to fare changes. An elastic factor suggests a larger change in ridership relative to a fare change. An inelastic factor suggests a relatively small change in ridership relative to a fare change. The model accounts for three elasticity factors¹:

- A relatively inelastic factor (-0.33), which is consistent with industry standards for regular fares
- A “reduced” elasticity factor (-0.21) to account for observations associated with student, elderly, and disabled patrons
- A “fare free” elasticity factor (-0.36) to account for observations associated with free fare categories, including youth, elderly, and disabled riders

Using these elasticity factors, ridership changes (on a fare product basis) are determined from the proposed fare increase or decrease. A new average fare for each fare product is also calculated from the percentage change in the fare product price. Finally, multiplying the new ridership estimate by the new average fare produces a revenue estimate for that fare product.

It should be cautioned that any estimation model is an approximation based on a set of assumptions and is highly dependent on accurate data inputs to ensure quality outputs. The fare

¹ Source: TCRP Report 95, Chapter 12, *Transit Pricing and Fares*.



model bases ridership and revenue changes strictly on price variation. Qualitative factors such as customer simplicity or other factors are not considered here but are certainly factors in reality that influence ridership and revenue levels. Based on the perceived simplicity gains, it is likely that ridership benefits in each alternative are understated. As a result, the findings from this analysis are simply estimates but offer a valuable means to compare different alternatives against one another.

EXISTING FARE AND PASS STRUCTURE

This section summarizes ICT and Coralville's existing fare and pass structure, as well as the transfer compatibility between agencies for the various payment types. The fare model analysis did not look at making changes to the pass programs with University of Iowa or the Kirkwood Community College.

Figure 5-1 ICT and Coralville Transit Fixed-Route Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	\$1 per family	N/A	No
Disabled/low-income elderly	FREE (off-peak only)+	FREE	Yes+
Senior/Elderly (Age 60+ = ICT, Age 65+ = Coralville)	\$0.50 (off-peak only)+	FREE	Yes+
Medicare Card	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
SEATS card holder	FREE (off-peak only)+	FREE	Yes+
Passes			
24-hour pass	\$2.00	N/A	No
10-ride pass	\$8.50	N/A	No
20-ride pass	N/A	\$20.00	No
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$27.00	N/A	Yes
Youth semester pass	\$100	N/A	Yes
Elderly low-income month pass	\$27	N/A	Yes

+ Off-peak hours include weekdays between 9:00 a.m. to 3:30 p.m., after 6:30 p.m., and all-day Saturday.



FARE SCENARIOS

Six different initial scenarios for fare structure and pricing changes were developed to evaluate potential impacts to ICT and Coralville Transit ridership and revenue. These fare scenarios are described below.

- Scenario 1: Simplify discount categories
- Scenario 2: Coralville match ICT fare structure
- Scenario 3: ICT match Coralville Structure
- Scenario 4: Optimize fare structure to emphasize simplicity
- Scenario 5: Offer inter-agency transfers for all fare types
- Scenario 6A, 6B, and 6C: Expand low-income fare program at 100%, 150%, and 200% of Federal Poverty Level (FPL)

Initial Fare Scenario Results Summary

The relative ridership and revenue changes for each scenario for ICT are shown in Figure 5-2, Figure 5-3, Figure 5-4. The relative ridership and revenue changes for each scenario for Coralville Transit are shown in Figure 5-5, Figure 5-6, and Figure 5-7. Impacts reported in this chapter are for fixed-route service only.

The fare structure and resulting ridership and revenue impacts for each scenario are described in further detail in the remainder of this chapter.

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Figure 5-2 Initial Fare Scenarios Ridership and Revenue Change - ICT

	Change in Ridership	Ridership % Change	Change in Revenue	Revenue % Change
1: Simplify discount categories	15,000	1.0%	-\$49,000	-3.9%
2: Coralville match ICT fare structure	-	-	-	-
3: ICT match Coralville Structure	9,000	0.6%	-\$31,000	-2.5%
4: Optimize fare structure to emphasize simplicity	16,000	1.1%	-\$49,000	-3.9%
5: Offer inter-agency transfers for all fare types	-	-	-\$1,000	-0.1%
6A: Expand low-income fare program at 100% of Federal Poverty Level	11,000	0.8%	-\$35,000	-2.8%
6B: Expand low-income fare program at 150% of Federal Poverty Level	13,000	0.9%	-\$40,000	-3.2%
6C: Expand low-income fare program at 200% of Federal Poverty Level	15,000	1.0%	-\$47,000	-3.7%

Figure 5-3 Initial Fare Scenarios Ridership and Revenue Net Change – ICT

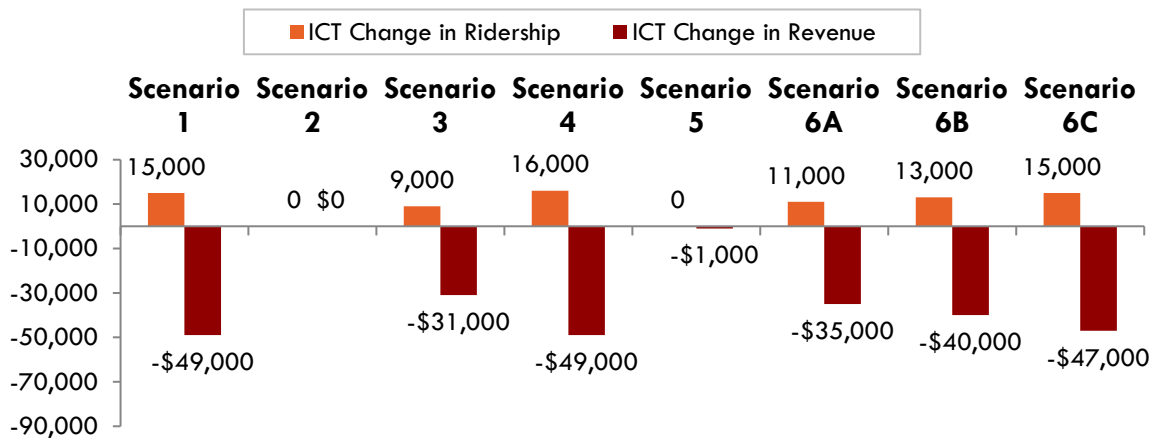


Figure 5-4 Initial Fare Scenarios Ridership and Revenue % Change – ICT

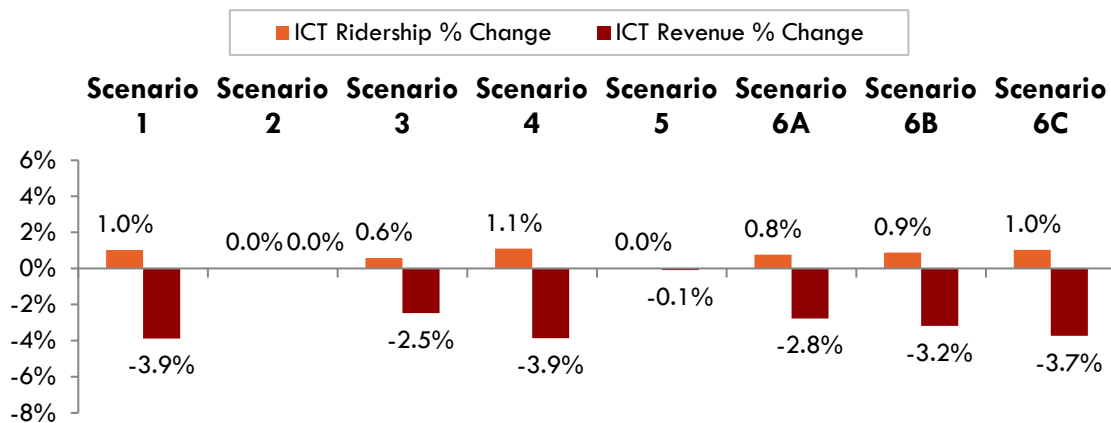




Figure 5-5 Initial Fare Scenarios Ridership and Revenue Change – Coralville Transit

	Change in Ridership	Ridership % Change	Change in Revenue	Revenue % Change
1: Simplify discount categories	-1,000	-0.2%	\$2,000	0.5%
2: Coralville match ICT fare structure	-3,000	-0.7%	\$11,000	2.7%
3: ICT match Coralville Structure	-	-	-	-
4: Optimize fare structure to emphasize simplicity	200	<0.1%	-\$300	-0.1%
5: Offer inter-agency transfers for all fare types	-	-	-\$1,000	-0.2%
6A: Expand low-income fare program at 100% of Federal Poverty Level	8,000	1.7%	-\$18,000	-4.5%
6B: Expand low-income fare program at 150% of Federal Poverty Level	8,000	1.7%	-\$18,000	-4.5%
6C: Expand low-income fare program at 200% of Federal Poverty Level	9,000	1.9%	-\$21,000	-5.1%

Figure 5-6 Initial Fare Scenarios Ridership and Revenue % Change – Coralville Transit

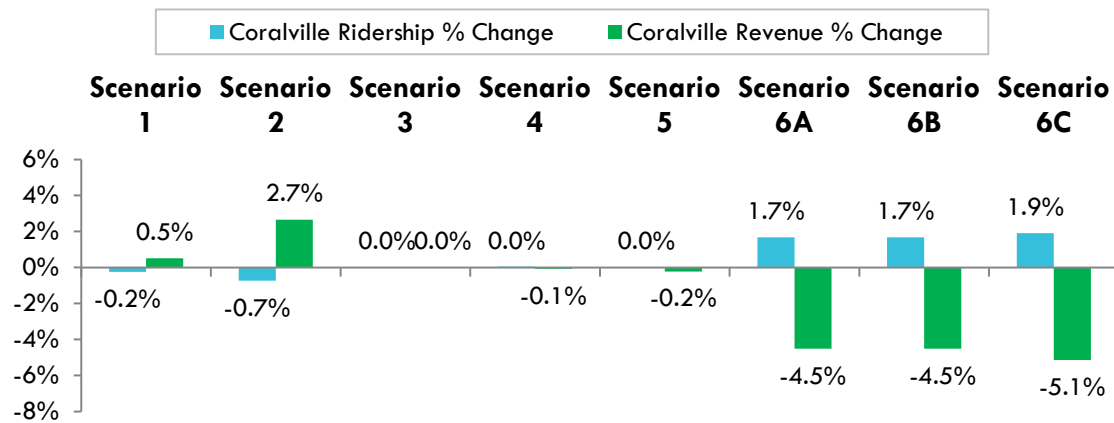
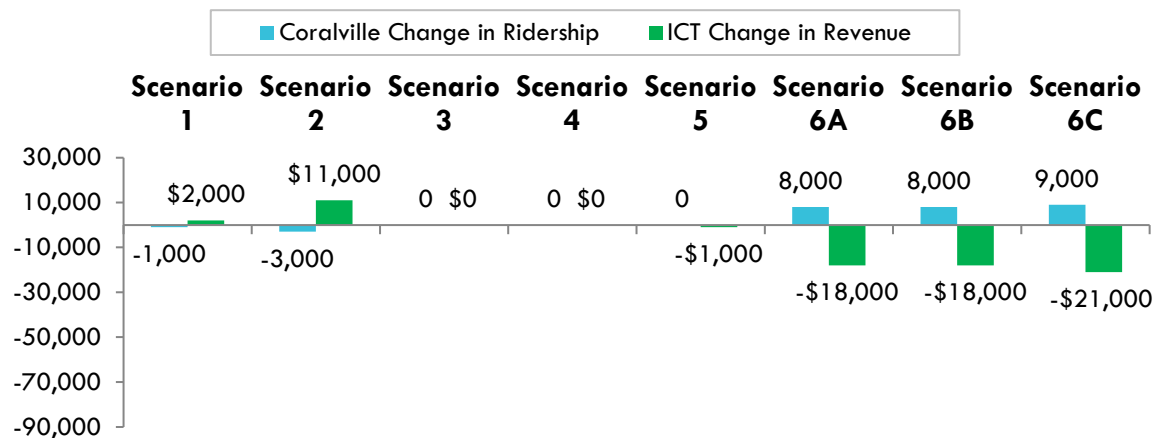


Figure 5-7 Initial Fare Scenarios Ridership and Revenue Net Change – Coralville Transit





Scenario 1: Simplify discount categories

This scenario evaluated the ridership and revenue impacts of simplifying the discount categories within the ICT and Coralville fare structures. This involved making transit fare free for disabled, elderly/senior low-income, Medicare card holders, and SEATS eligible riders at all times of day and providing a 50% for youth and elderly/senior riders at all times of day. Currently, ICT offers various discounts during off-peak hours to eligible riders, but charges those same riders full fare during peak hours. Coralville services are currently fare free for seniors and the disabled all day, but youth riders only have a discounted fare in the evenings and on Saturday.

The revision of the discount categories is estimated to result in:

- ICT: 15,000 (1%) ridership gain and \$49,000 (-3.9%) revenue loss
- Coralville Transit: 1,000 (-0.2%) loss in ridership and \$2,000 (0.5%) gain in revenue

A comparison of the existing fare structure and proposed fare structure for Scenario 1 is provided in Figure 5-8. Changes from existing are highlighted in **bold** text.

Figure 5-8 Scenario 1 Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.50	\$0.50	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	\$1 per family	N/A	No
Disabled/low-income elderly	FREE	FREE	Yes
Senior/Elderly (Age 60+ = ICT, Age 65+ = Coralville)	\$0.50	FREE	No
Medicare Card	FREE	FREE	Yes
SEATS card holder	FREE	FREE	Yes
Passes			
24-hour pass	\$2.00	N/A	No
10-ride pass	\$8.50	N/A	No
20-ride pass	N/A	\$20.00	No
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$27.00	N/A	Yes
Youth semester pass	\$100	N/A	Yes
Elderly low-income month pass	FREE	N/A	Yes



Scenario 2: Coralville match ICT fare structure

This scenario evaluated the ridership and revenue impacts of simplifying the regional fare structure by modifying Coralville Transit fares to match ICT more closely. This involved adding off-peak only discounts, a 24-hour pass, a 10-ride pass, a wider youth fare eligibility, new youth monthly and semester passes, and an elderly low-income monthly pass.

The revision of the Coralville Transit fare structure is estimated to result in a 3,000 (-0.7%) ridership loss and \$11,000 (2.7%) revenue gain.

A comparison of the existing fare structure and proposed fare structure for Scenario 1 is provided in Figure 5-9. Changes from existing are highlighted in **bold** text.

Figure 5-9 Scenario 2 Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75	\$0.75	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	\$1 per family	N/A	No
Disabled/low-income elderly	FREE (off-peak only)+	FREE (off-peak only)+	Yes
Elderly (Age 60+ = ICT, Age 65+ = Coralville)	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
Medicare Card	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
SEATS card holder	FREE (off-peak only)+	FREE (off-peak only)+	Yes
Passes			
24-hour pass	\$2.00	\$2.00	Yes
10-ride pass	\$8.50	\$8.50	Yes
20-ride pass	N/A	N/A	N/A
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$27.00	\$27.00	Yes
Youth semester pass	\$100	\$100	Yes
Elderly low-income month pass	\$27	N/A	Yes

+ Off-peak hours include weekdays between 9:00 a.m. to 3:30 p.m., after 6:30 p.m., and all-day Saturday.



Scenario 3: ICT match Coralville Structure

This scenario evaluated the ridership and revenue impacts of simplifying the regional fare structure by modifying ICT fares to match Coralville more closely. This involved adding a fare free Senior/Elderly/Disabled Pass and a 20-ride pass, while eliminating the Saturday Family Fare, 24-hour pass, 10-ride pass, 31-day youth pass, and youth semester pass.

The revision of the ICT fare structure is estimated to result in a 9,000 (0.6%) ridership gain and \$31,000 (-2.5%) revenue loss.

A comparison of the existing fare structure and proposed fare structure for Scenario 3 are provided in Figure 5-10. Changes from existing are highlighted in **bold** text.

Figure 5-10 Scenario 3 Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	N/A	N/A	No
Disabled/low-income elderly	FREE	FREE	Yes
Elderly (Age 60+ = ICT, Age 65+ = Coralville)	FREE	FREE	Yes
Medicare Card	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
SEATS card holder	FREE	FREE	Yes
Passes			
24-hour pass	\$2.00	N/A	No
10-ride pass	N/A	N/A	No
20-ride pass	\$20.00	\$20.00	No
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	N/A	N/A	Yes
Youth semester pass	N/A	N/A	Yes
Elderly low-income month pass	FREE	N/A	Yes



Scenario 4: Optimize fare structure to emphasize simplicity

This scenario evaluated the ridership and revenue impacts of simplifying the regional fare structure for both transit agencies by emphasizing simplicity for customer service and operations. This involved creating a consistent discounted youth cash fare and pass, a transferable discounted 10-ride pass, a fare free Senior/Elderly/Disabled pass, as well as eliminating the youth semester pass.

The revision of the fare structure simplification is estimated to result in:

- ICT: 16,000 (1.1%) ridership gain and \$49,000 (-3.9%) revenue loss
- Coralville Transit: 200 (<0.1%) ridership gain and \$300 (-0.1%) revenue loss

A comparison of the existing fare structure and proposed fare structure for Scenario 4 are provided in Figure 5-11. Changes from existing are highlighted in **bold text**.

Figure 5-11 Scenario 4 Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.50	\$0.50	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	N/A	N/A	No
Disabled/low-income elderly	FREE	FREE	Yes
Senior/Elderly (Age 60+ = ICT, Age 65+ = Coralville)	FREE	FREE	Yes
Medicare Card	FREE	FREE	Yes
SEATS card holder	FREE	FREE	Yes
Passes			
24-hour pass	\$2.00	N/A	No
10-ride pass	\$8.50	\$8.50	Yes
20-ride pass	N/A	N/A	N/A
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$27.00	\$27.00	Yes
Youth semester pass	N/A	N/A	Yes
Elderly low-income month pass	FREE	N/A	Yes



Scenario 5: Offer inter-agency transfers for all fare types

This scenario evaluated the revenue impacts of allowing inter-agency transfers for all fare types between ICT and Coralville Transit. According to the 2019 On-Board Survey, of those who transfer between agencies, the majority pay with an adult cash fare, 31-day pass, or a University of Iowa pass. All three pass types currently allow for a free transfer between agencies. Because only a small proportion of riders pay for a transfer between agencies, there would only be a small revenue loss for both agencies. This scenario does not assume a ridership increase due to the simplified transfers, but the agencies should expect to see a minor ridership increase.

The revision of the transfer policy is estimated to result in:

- ICT: \$1,000 (-0.1%) revenue loss
- Coralville Transit: \$1,000 (-0.2%) revenue loss

A comparison of the existing fare structure and proposed fare structure for Scenario 5 are provided in Figure 5-12. Changes from existing are highlighted in **bold text**.

Figure 5-12 ICT and Coralville Transit Fixed-Route Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)	No
Children under 5	FREE	FREE	Yes
Saturday Family Fare	\$1 per family	N/A	Yes
Disabled/low-income elderly	FREE (off-peak only)+	FREE	Yes
Senior/Elderly (Age 60+ = ICT, Age 65+ = Coralville)	\$0.50 (off-peak only)+	FREE	Yes
Medicare Card	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
SEATS card holder	FREE (off-peak only)+	FREE	Yes
Passes			
24-hour pass	\$2.00	N/A	Yes
10-ride pass	\$8.50	N/A	Yes
20-ride pass	N/A	\$20.00	Yes
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$27.00	N/A	Yes
Youth semester pass	\$100	N/A	Yes
Elderly low-income month pass	\$27	N/A	Yes

+ Off-peak hours include weekdays between 9:00 a.m. to 3:30 p.m., after 6:30 p.m., and all-day Saturday.



Scenario 6: Expand low-income fare program at 100%, 150%, and 200% of Federal Poverty Level

Finally, this scenario evaluated the ridership and revenue impacts of expanding the low-income fare program in the region. Offering a low-income fare category is another method for making transit a more affordable transportation option. This scenario analyzes the impacts of offering a discount to eligible adults making up to 200%, 150%, and 100% FPL. This scenario assumes that 35% of eligible riders would actually use the low-income fare program—the observed usage rate for the ORCA Lift low-income fare program in Seattle, WA.

Offering a low-income discount program with a threshold at 200% FPL is the current industry standard (although 150% FPL is also being used) and has the largest impacts to ridership and revenue. These thresholds coincide with eligibility for a number of other public benefit programs and may reduce administrative costs through streamlined income verification.

The expansion of the low-income fare program is estimated to result in:

- ICT:
 - 100% - 11,000 (0.8%) ridership gain and \$35,000 (-2.8%) revenue loss
 - 150% - 13,000 (0.9%) ridership gain and \$40,000 (-3.2%) revenue loss
 - 200% - 15,000 (1%) ridership gain and \$37,000 (-3.7%) revenue loss
- Coralville Transit:
 - 100% - 8,000 (1.7%) ridership gain and \$18,000 (-4.5%) revenue loss
 - 150% - 8,000 (1.7%) ridership gain and \$18,000 (-4.5%) revenue loss
 - 200% - 9,000 (1.9%) ridership gain and \$21,000 (-5.1%) revenue loss

A comparison of the existing fare structure and proposed fare structure for Scenario 6 are provided in Figure 5-13. Changes from existing are highlighted in **bold** text.

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Figure 5-13 Scenario 6 Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Low-income cash	\$0.50	\$0.50	Yes
Youth (Age 5-18 = ICT, Age 5-15 = Coralville)	\$0.75	\$0.75 (between 6:00 p.m. and midnight and all-day Saturday)	Yes
Children under 5	FREE	FREE	Yes
Saturday Family Fare	\$1 per family	N/A	No
Disabled/low-income elderly	FREE (off-peak only)+	FREE	No
Senior/Elderly (Age 60+ = ICT, Age 65+ = Coralville)	\$0.50 (off-peak only)+	FREE	No
Medicare Card	\$0.50 (off-peak only)+	\$0.50 (off-peak only)+	Yes
SEATS card holder	FREE (off-peak only)+	FREE	No
Passes			
24-hour pass	\$2.00	N/A	No
10-ride pass	\$8.50	N/A	No
20-ride pass	N/A	\$20.00	No
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day low-income pass	\$16.00	\$16.00	Yes
31-Day youth pass	\$27.00	N/A	Yes
Youth semester pass	\$100	N/A	Yes
Elderly low-income month pass	\$27	N/A	Yes

+ Off-peak hours include weekdays between 9:00 a.m. to 3:30 p.m., after 6:30 p.m., and all-day Saturday.



6 RECOMMENDATIONS

This chapter culminates the findings from the existing conditions analysis, peer review and best practices, and fare modeling effort to establish a set of fare policy, pricing, and product recommendations for ICT and Coralville Transit. The recommendations in this section are divided into two categories:

- **Fare Structure Recommendations:** Recommendations to specific fare products offered to the riding public and pricing of those products.
- **Fare Policy Recommendations:** Recommendations related to internally-adopted policies or procedures such as fare collection.

FARE RECOMMENDATIONS SUMMARY

Fare recommendations for ICT and Coralville Transit are comprised of fare structure changes and policy recommendations.

Figure 6-1 provides a summary of recommendations developed as part of the fare analysis.

Figure 6-1 Fare Recommendations Summary

Type	ICT Recommendations	Coralville Recommendations
Fare Structure Recommendations	<ul style="list-style-type: none"> ▪ Adjust discount eligibility and pricing <ul style="list-style-type: none"> – Reduce youth cash fare to \$0.50 – Lower 31-day youth pass to \$16 – Adopt Senior/Disabled pass that allows seniors, people with disabilities, Medicare card holders, and SEATS card holders to ride for free at all times of day – Raise senior eligibility to 65 years or older – Eliminate peak/off-peak fare distinction ▪ Consolidate regional transit passes <ul style="list-style-type: none"> – Eliminate Saturday Family Fare and Youth Semester Pass 	<ul style="list-style-type: none"> ▪ Adjust discount eligibility and pricing <ul style="list-style-type: none"> – Reduce youth cash fare to \$0.50 at all times of day – Adopt 31-day youth pass at \$16 – Raise youth eligibility limit to 18 years – Allow Medicare card holders to ride for free at all times of day – Eliminate peak/off-peak fare distinction ▪ Consolidate regional transit passes <ul style="list-style-type: none"> – Transition from 20-ride pass to 10-ride pass at \$8.50
Policy Recommendations	<ul style="list-style-type: none"> ▪ Offer inter-agency transfers for all fare types ▪ Implement mobile ticketing ▪ Consider adopting fare free policy 	



FARE STRUCTURE RECOMMENDATIONS

The recommended fare structure considers experience across the transit industry, fare study goals, as well as fare pricing at peer agencies. The recommended fare structure incorporates the following changes to both agency's existing structure:

ICT

- Adjust discount eligibility and pricing
 - Reduce youth cash fare to \$0.50
 - Lower 31-day youth pass to \$16
 - Adopt Senior/Disabled pass that allows seniors, people with disabilities, Medicare card holders, and SEATS card holders to ride for free at all times of day
 - Raise senior eligibility to 65 years or older
 - Eliminate peak/off-peak fare distinction
- Consolidate regional transit passes
 - Eliminate Saturday Family Fare and Youth Semester Pass

Coralville Transit

- Adjust discount eligibility and pricing
 - Lower youth cash fare to \$0.50 at all times of day
 - Adopt ICT 31-day youth pass at \$16
 - Raise youth eligibility limit to 18 years
 - Allow Medicare card holders to ride for free at all times of day
 - Eliminate peak/off-peak fare distinction
- Consolidate regional transit passes
 - Transition from 20-ride pass to 10-ride pass at \$8.50

The recommended fare structure is provided in Figure 6-2.

Figure 6-2 Recommended Fare Structure

Fare Type	ICT	Coralville	ICT to Coralville Transfer Compatibility?
Cash Fares			
Adults	\$1.00	\$1.00	Yes
Youth (Age 5-18)	\$0.50	\$0.50	Yes
Children under 5	FREE	FREE	Yes
Passes			
24-hour pass	\$2.00	\$2.00	Yes
10-ride pass	\$8.50	\$8.50	Yes
31-Day adult pass	\$32.00	\$32.00	Yes
31-Day youth pass	\$16.00	\$16.00	Yes
Senior/Disabled pass	FREE	FREE	Yes



Ridership and Revenue Impacts

As discussed in Chapter 5, consumption of transit—like other goods and services—reacts to cost. Significant research over time has examined the sensitivity of transit ridership to fare increases. In transit, the standard measurement of sensitivity to fare changes means that for every 10% increase in fares, ridership will decrease by 3% (and vice-versa). As such, elasticity factors are common in fare modeling and can help determine anticipated ridership and revenue changes from the proposed fare increase or decrease, and the fare modeling effort conducted as part of this study helped identify anticipated impacts of the suggested fare structure.

The ridership and revenue impacts for ICT and Coralville are shown in Figure 6-3 and Figure 6-4. Fare structure recommendations are estimated to result in:

- ICT: 19,000 (1.3%) ridership gain and \$55,000 (-4%) revenue loss
- Coralville Transit: 1,000 (-0.2%) ridership loss and \$2,000 (1%) revenue gain

Figure 6-3 Total Ridership and Revenue Impacts of Recommended Fare Structure

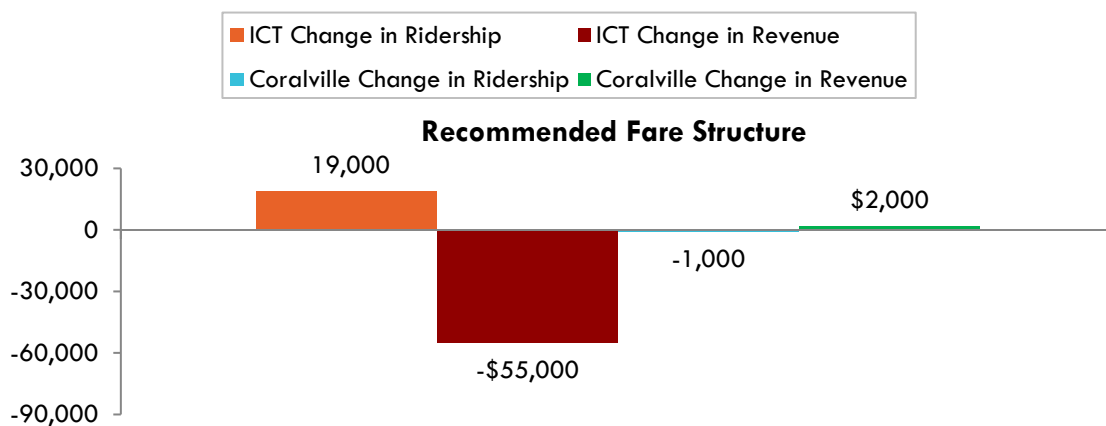
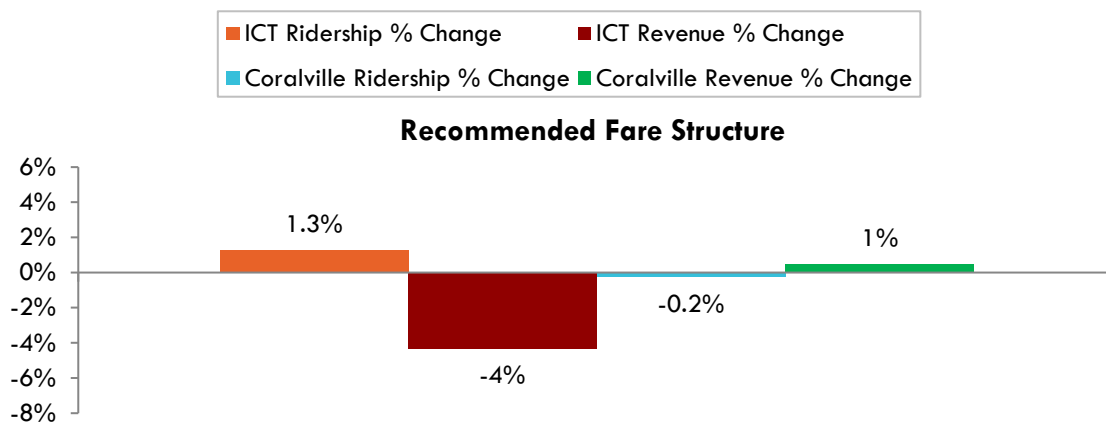


Figure 6-4 Percent Ridership and Revenue Impacts of Recommended Fare Structure





POLICY RECOMMENDATIONS

In conjunction with fare structure recommendations, it is recommended that ICT and Coralville Transit formalize inter-agency transfer policies and pursue implementation of mobile ticketing. Additionally, ICT should consider adopting a fare free policy to help meet local goals for ridership growth.

Offer Inter-Agency Transfers for All Fare Types

To allow for seamless transfers between the two agencies and encourage regional transit ridership, ICT and Coralville should offer free transfers between agencies with proof of cash payment or with a valid transit pass. As discussed in the Scenario 5 section of Chapter 5, only a small proportion of current riders pay for a transfer between agencies, which would result in a minor revenue loss for both agencies.

To ensure there is not a disproportionate impact to either agency, both agencies could consider tracking the number of transfers between agencies for each pass type. In the case that there is a disproportionate impact, the agencies may want to discuss an exchange of revenue equal to the estimated revenue impact in the future.

Implement Mobile Ticketing

Mobile ticketing is an emerging technology option that is rapidly being adopted by transit agencies of all sizes. Mobile ticketing can make the experience of boarding and paying for transit seamless and can lower the barrier of entry for new transit users. Start-up mobile ticketing companies such as Token Transit and HopThru offer a product that can be ready to launch within weeks.



The simplest form of mobile ticketing is to allow riders to use their phone as a “flash pass,” an animated ticket that is visually validated by the bus operator when they board the bus. This strategy does not require any additional hardware to be installed and can be implemented with few other hurdles. The primary drawback is that this method requires additional attention of the operator to validate fare media.

The example at right is from the TriMet system in Portland, which has launched a mobile payment app using a flash pass. Once a pass has been activated, the smartphone app uses colors, animation, and a date stamp to indicate the pass has been activated.

It is recommended that both ICT and Coralville Transit pursue the same vendor and mobile ticketing platform to facilitate regional integration.



Source: TriMet

Consider Adopting Fare Free Policy

The Iowa City Climate Action and Adaptation Plan calls for the city to reduce emissions by 80% over the next 30 years. By 2050, this includes replacing 55% of vehicle trips with sustainable

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transportation options, such as public transportation, bicycle, pedestrian, or clean vehicles. As part of this initiative, ICT plans to double ridership from 2018 to 2028.

If ICT intends to double ridership in 10 years, adopting a fare free policy is recommended as the most effective and cost-efficient way to achieve that goal.