Choices & Concepts Report

Reimagine DART

APRIL 2025

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transpogroup

dart

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1 Introduction

What is Reimagine DART?

Reimagine DART is a collaborative effort to transform public transit in Greater Des Moines. This initiative will be a continuous conversation with the public, stakeholders, and the Commission about what the future of DART's bus network could look like within a set budget.

This project will chart a fresh course for how DART can strengthen and connect communities within a growing region by having a clear conversation about the community's goals for transit and designing a new transit network based on those goals.

Since DART formed as the regional transit authority in 2006, it has adapted some service to shifting travel patterns, but many things have changed in the past few years:

- Where people live and work changed through the pandemic
- Communities have developed city centers and Downtown Des Moines has experienced residential growth
- More central Iowans are aging at home or choosing not to drive

In addition, the cost to provide service has increased due to inflation, supply chain challenges and workforce pressures while at the same time DART member communities are grappling with how to fund services with new limits restricting property tax revenue growth.

Reimagine DART will review the entire network and take a fresh look at the region's priorities for public transit. Through this process, the DART Commission will decide how DART can meet communities' and riders' needs of today—and tomorrow.

What is a transit system?

No single transit line or project can, by itself, transform a city. Transit is often referred to as a "system" because it is a combination of many parts, working together. The graphic to the right describes what makes a transit system. For DART, the system is made of:

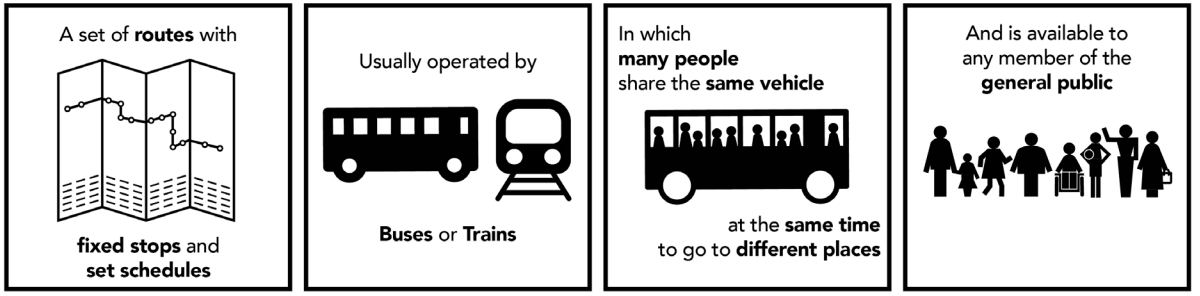
- Local buses.
- Express buses that have limited stops and operate over long distances, like Routes 92 and 98.
- Connecting on demand services like On Demand Ankeny, Flex Connect, and the on call services.
- Paratransit service, including DART Bus Plus and DART Bus Plus Premium.

DART has some heavily used lines and others that are lightly used. As this report will show, these differences are not hard to explain. Highly used lines tend to be:

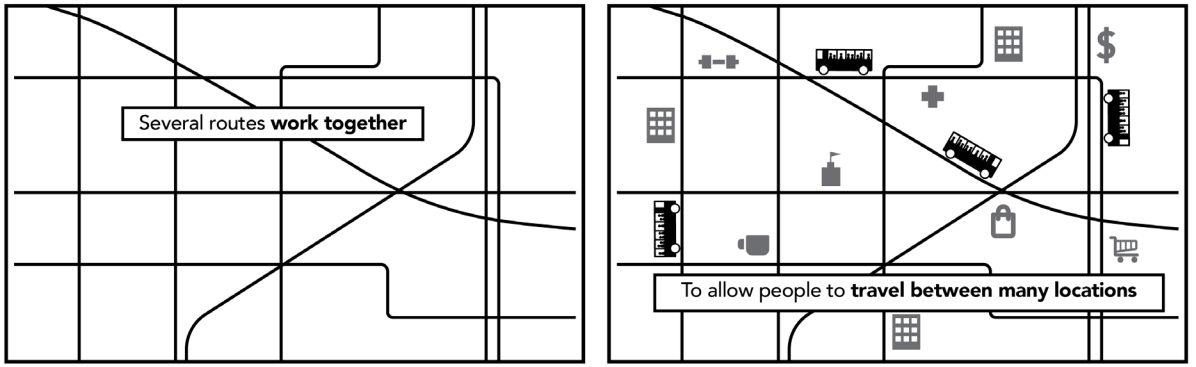
- more frequent, to reduce waiting time.
- running a longer service day, so that service is available whenever it is needed.
- focused on areas where more people are traveling, which maximizes demand at each stop.

However, lightly used lines may also serve important purposes in the community, as we discuss on the next page.

A transit system is...



A transit network forms when...



High Ridership is Not the Only Goal

If DART wanted to maximize transit ridership, it would focus its network around the busiest places where the greatest numbers of people live and work. If DART did this, it would be acting more like a business: delivering the best service in places with the most potential customers.

McDonald's is not obliged to provide a restaurant within 1/2 mile of everyone in the Greater Des Moines region. If it were, then the company would have to add many additional locations. Some locations would serve just a handful of homes, and most would operate at a loss because there are so few customers nearby.

People understand that less-inhabited areas will naturally have fewer McDonald's restaurants than more-inhabited areas. We don't describe this as McDonald's being unfair to places where few people live; they are just acting like a private business. McDonald's has no obligation to serve areas of low demand.

Transit agencies are not private businesses. Most transit agencies decide that they do have some obligation to cover places with fewer people in them even when this would not be a "good business decision."

The officials who ultimately make public transit decisions hear their constituents say things like "We pay taxes too" and "If you cut this bus line, I will be stranded" and they decide that coverage, even in low-ridership places, is an important transit outcome.

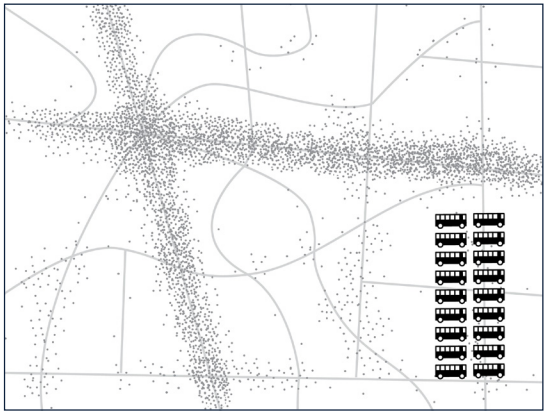
Transit agencies are often accused of failing to maximize ridership, as if that were their only goal. In fact, most agencies are intentionally operating some coverage services that are not expected to generate high ridership.

Do buses need to be full for transit to be "successful"? That depends on transit's purpose in the community.

Conflicting Goals

All transit agencies must balance the competing goals of high ridership and high coverage. Within a limited budget, if an agency wants to do more of one, it must do less of the other. This problem arises from the fact that the two goals produce opposite kinds of design. We explain this trade-off in the image at the right.

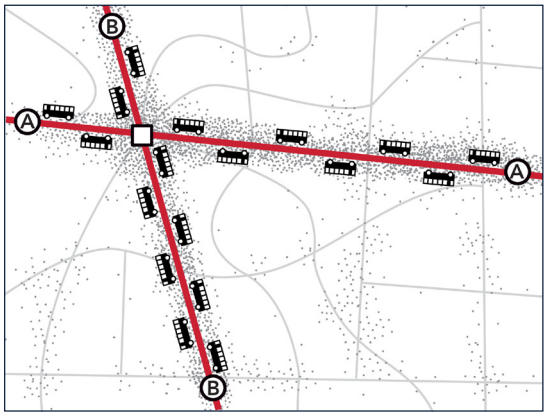
The "right" balance of ridership and coverage goals is different in every community.



Imagine you are the transit planner for this fictional town. The dots are people and jobs—most are concentrated around two roads, as in many towns.

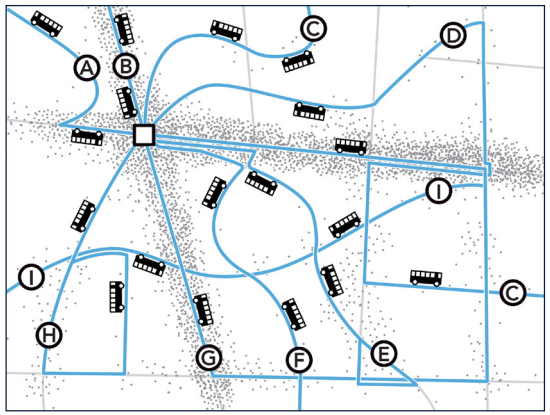
You have 18 buses to design a transit network.

Before you can plan transit routes, you must first decide: What is the purpose of your transit system?



High Ridership Goal

All 18 buses are focused on the busiest streets, so buses come frequently (maybe every 15 minutes). Waits are short but walks to service are longer for people in less populated areas. Frequency and ridership are high but some places have no service.



High Coverage Goal

The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop, but buses come infrequent (maybe every 60 minutes). Only a few people can bear to wait so long, so ridership is low.

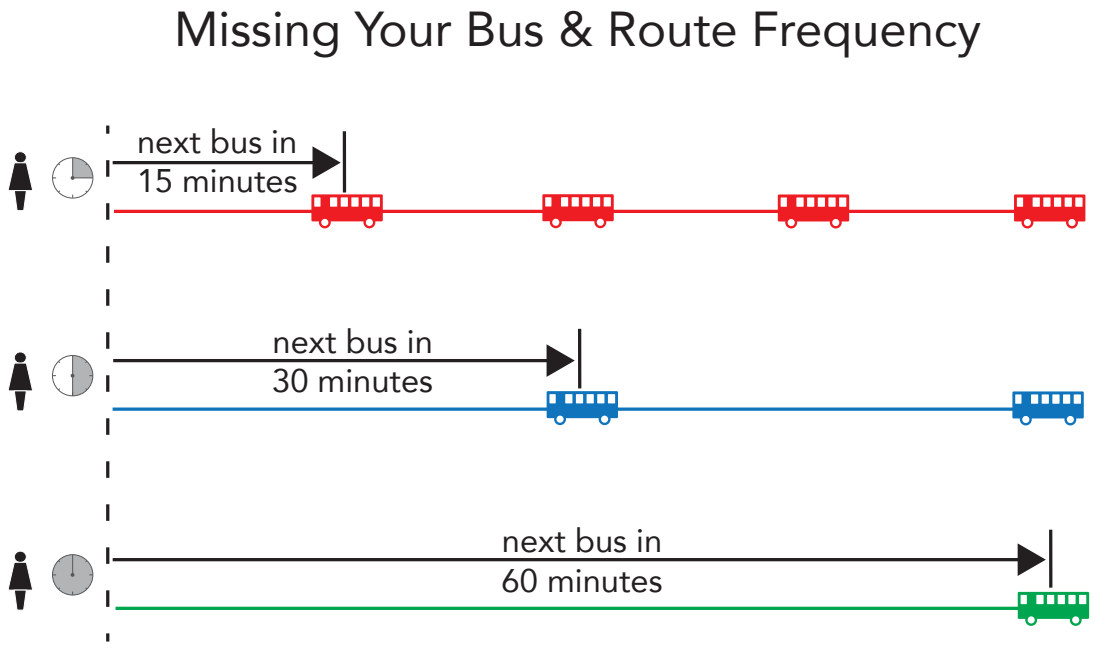
What causes high ridership?

When we say ridership, we refer to the number of people getting on the bus. Most transit agencies consider high ridership an important goal. **IF** DART wished to pursue high ridership, DART would make decisions about what type of service to offer, when, and where.

Many factors outside of DART's control can affect ridership, such as gas prices and the economy. In addition, city decisions outside of DART's control, such as land-use and street design can also have an impact on ridership.

Frequent service means the bus is always coming soon, so people don't have to wait a long time. Better frequency is associated with high ridership. A bus that is coming every 30 minutes will be more useful to more people than a bus that is coming every 60 minutes, so more people will ride.

This is especially true when people are traveling short distances. Poor frequencies mean long waits, and waiting time can be much longer than riding time!



With infrequent routes, missing a bus means an extremely long wait for the next one.

Frequency and waiting time don't just happen at the beginning of a trip, they also happen at the end. If you have to be at a medical appointment at a certain time, a 60 minute frequency may force you to choose between being 40 minutes early or 20 minutes late. In addition, missing an infrequent bus can mean an extremely long wait.

High transit ridership tends to arise on frequent, all-day and all-week service, in the places where street design and land use are conducive to transit.

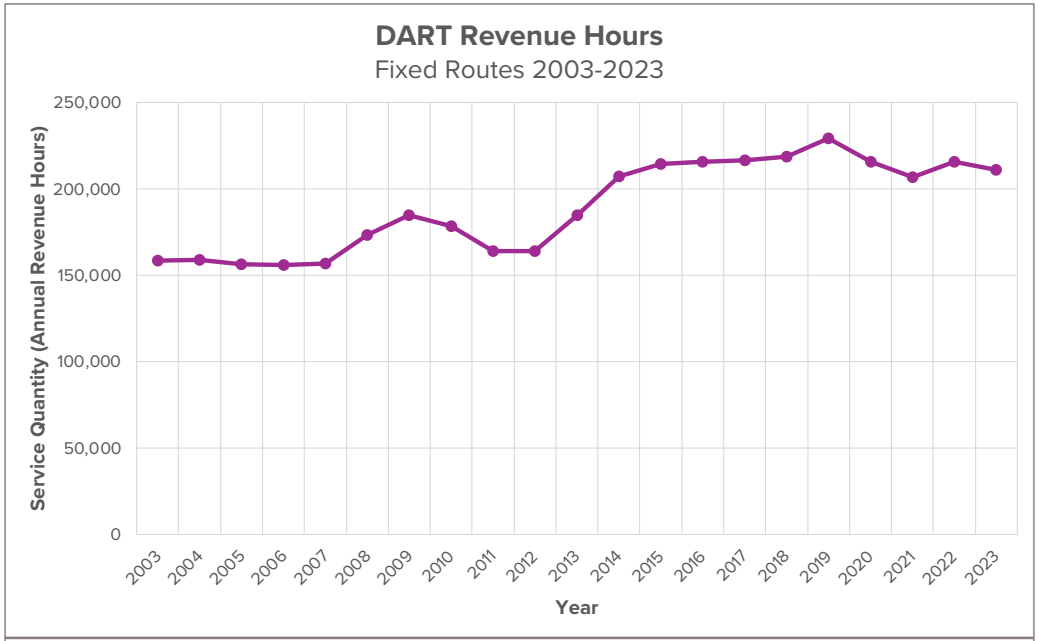
You can read more about how land use affect transit starting on page 19.

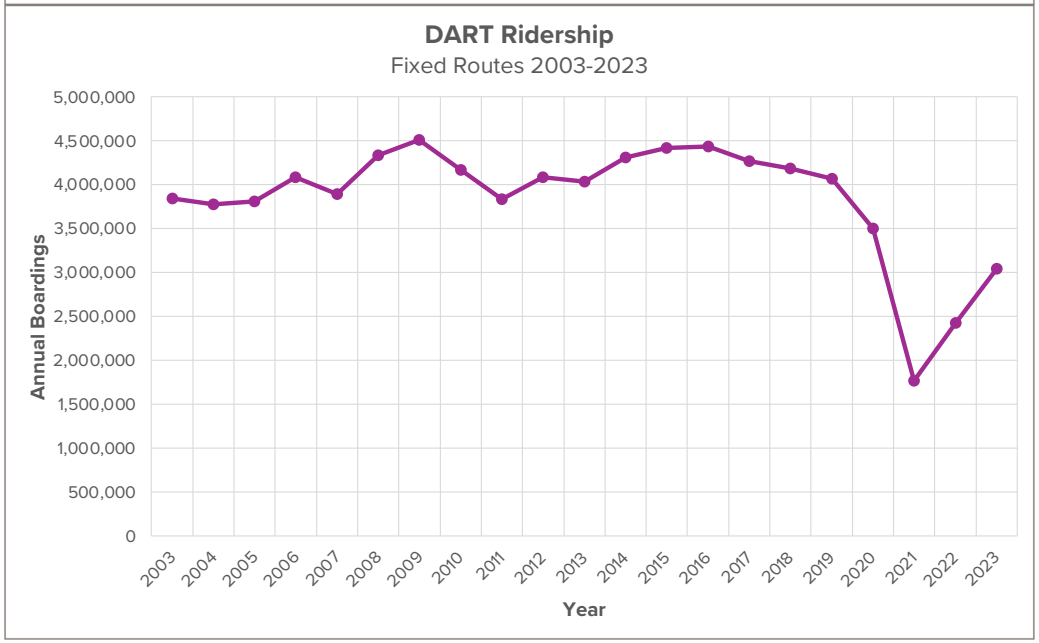
Recent Trends for DART

From 2005 to 2009, the quantity of service provided by DART increased, total annual revenue hours increased by 18%. A revenue hour is one bus operating for one hour. During the same period, ridership rose from 3.8 million riders per year to 4.5 million, also an 18% increase. A key driver of ridership is total service. More service means more transit is available for people to ride.

Between 2009 and 2011, revenue hours decreased by 11% and ridership decreased by 15%. Then there was another increase in revenue hours and ridership from 2011 to 2016.

Over the next few years, ridership slowly decreased even though revenue hours slightly increased. Then ridership declined significantly in 2020, in large part due to the economic and social challenges around Covid-19. Since then, ridership has recovered, but slowly, even though revenue hours have remained similar. These recent trends suggest that it's time to take a holistic look at the DART network.





Investment Compared to Peers

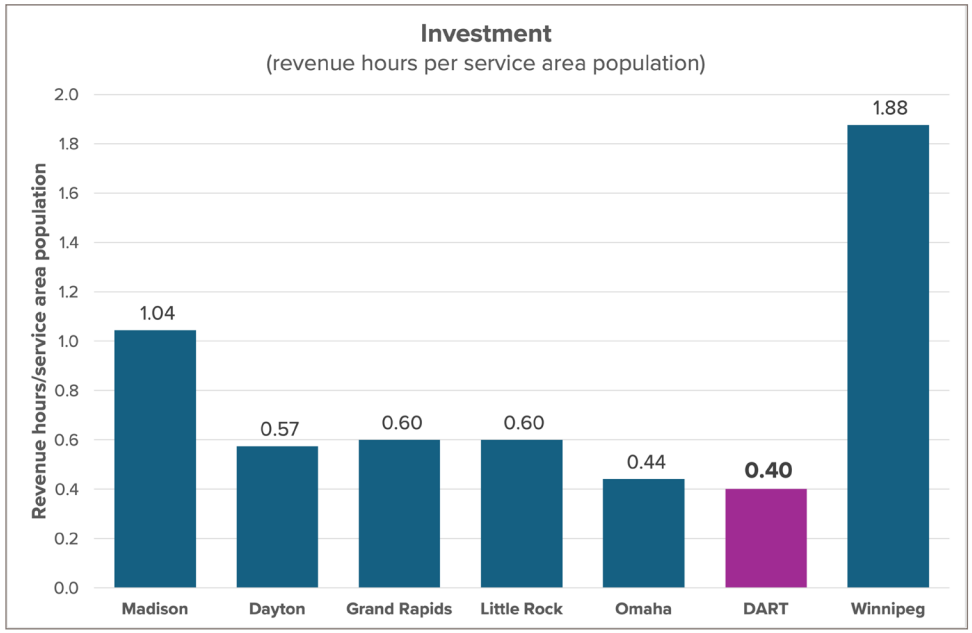
The charts starting on this page show the performance of the DART bus system in 2023, compared to systems with a similar population. Canadian cities have a similar urban form to American cities, so we have included Winnipeg as a comparable peer.

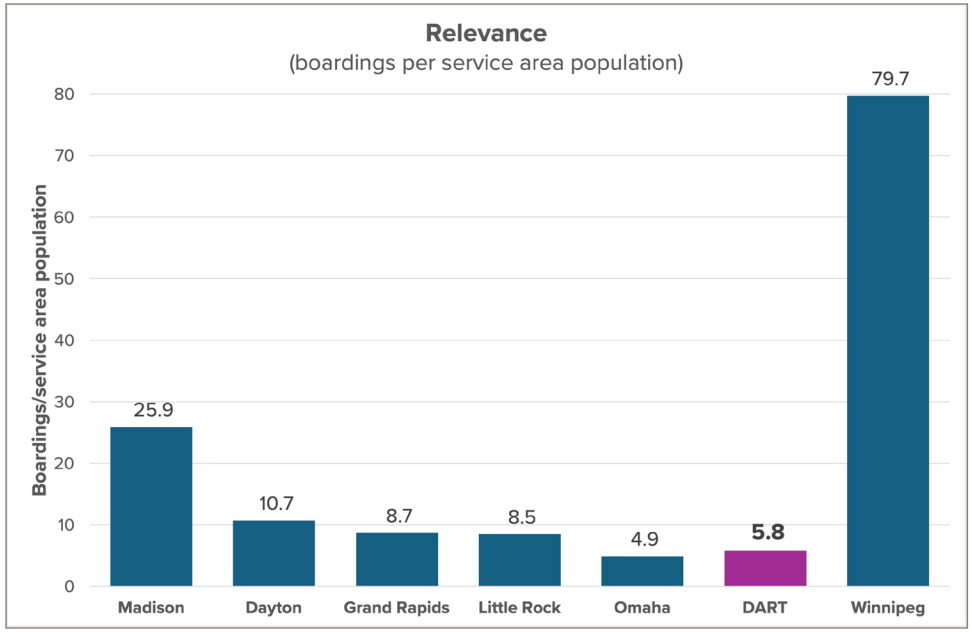
Investment

Investment measures the quantity of service relative to the population being served, specifically revenue hours per capita. DART provides about 0.40 revenue hours per capita, lower than its peers. Midwestern peers have a slightly higher level of investment, while Madison is much higher.

Relevance

Relevance is a measure of how many people ride transit relative to the total population, specifically the number of boardings divided by the service area population. Thus, this measure indicates how relevant transit is to the life of the city or region. With a few exceptions, relevance tracks very closely with investment, indicating that most agencies are getting what they pay for. Omaha has a lower relevance, but all other peers have higher relevance than DART.





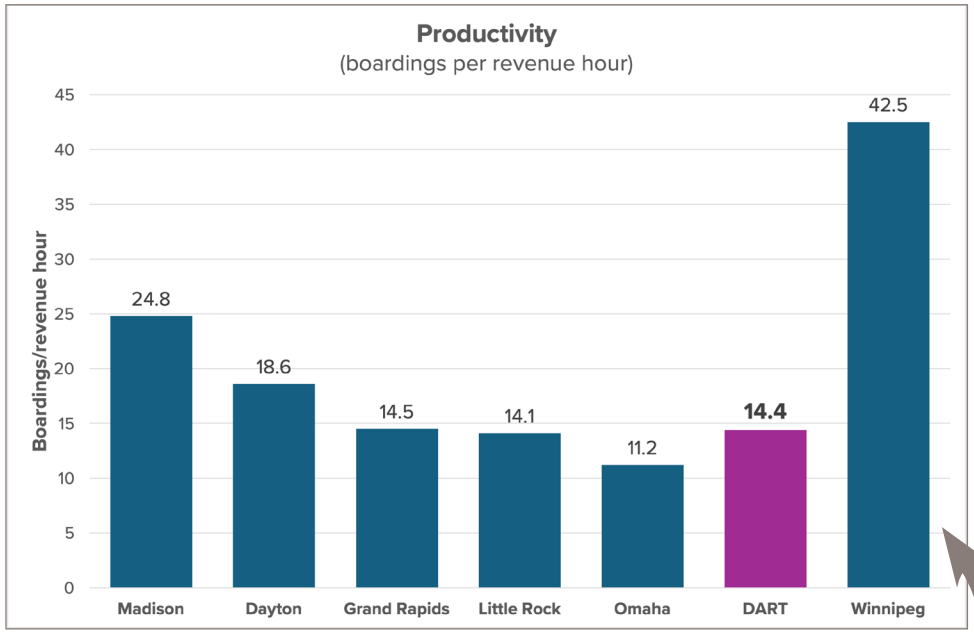
Productivity Compared to Peers

Productivity

People who value the environmental, business, or development benefits of transit will talk about ridership as the key to meeting their goals. However, the measure they should be tracking is not sheer ridership but **ridership relative to cost.** Ridership relative to cost is called "productivity." In this report, productivity is measured as boardings per revenue hour:

$$Productivity = \frac{Ridership}{Cost} = \frac{Boardings}{Revenue\ Hours}$$

DART's productivity ranks near the middle compared to its peers. Local factors like land use may be affecting this result, or it could be a result of decisions to pursue more coverage service compared to peers. **IF** ridership were the primary goal, DART should aim to increase productivity. **IF** coverage were the primary goal, DART should expect to see a decrease in productivity.



Why Winnipeg?

Canada is useful for comparison because while their cities are similar to ours, they run far more transit service and see the benefits of that. Winnipeg's metro area is very comparable to Greater Des Moines. It is the capital of Manitoba and has a major university. It is also by far the largest metro area for a mostly rural province.

Canada shows us that if a US city wanted higher benefits from transit at higher levels of investment, that might be possible.

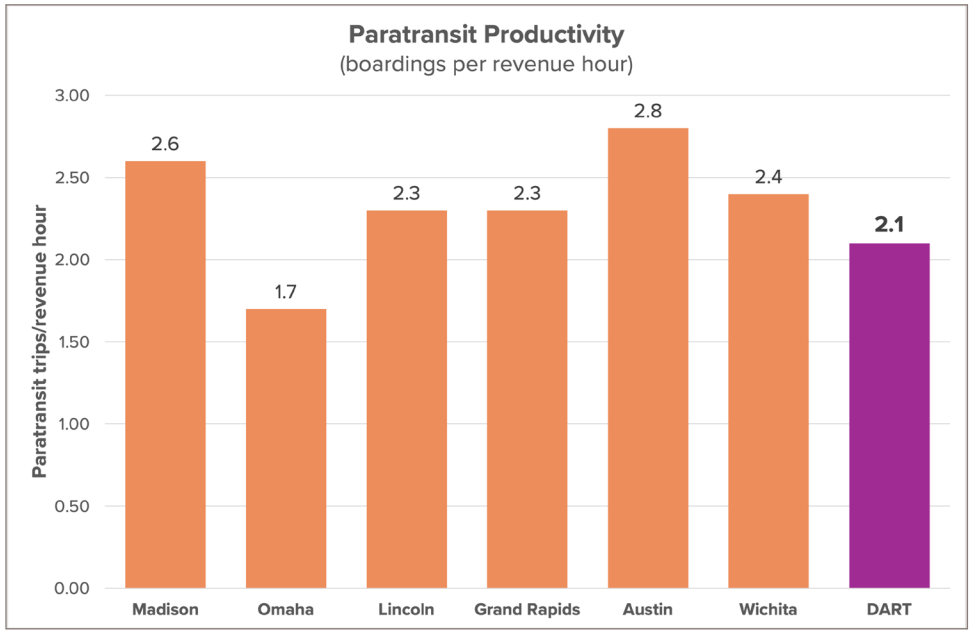
Paratransit: Productivity

Productivity

In addition to fixed-route transit service, DART provides paratransit services for persons with disabilities. Paratransit service is door-to-door and wheelchair accessible transportation for persons who are eligible and verified by a medical provider. Paratransit service is explained in more detail in Chapter 5.

The chart to the right, shows the productivity of DART's paratransit service compared to peers. The peers used on this chart are different because these agencies provide service that is more comparable to DART.

Productivity for paratransit is calculated the same as for fixed-route service (ridership per revenue hour). Compared to peers, DART's paratransit productivity is slightly lower. However, notice that even Austin, the peer with the highest productivity, only achieves 2.8 trips per hour. Since paratransit service drives every person from their requested pick-up spot to their requested drop-off spot, it's very hard to get high productivity. Paratransit has similar limitations to on demand service, which is explained in more detail on page 28.



What else is in this report?

Geometry of Transit

In Chapter 2, we summarize the basic principles of transit geometry, how they affect the access and opportunities that transit can provide to residents, workers, and visitors, and how the underlying geometry forces every community to grapple with some key value trade-offs in the design of its transit system.

Markets and Needs

In Chapter 3, we assess the markets for transit in Greater Des Moines, the potential for high ridership, and the areas where the need for transit is high but the density of demand is not.

By "market" we are referring specifically to the demands for transit that result in high ridership relative to cost. This way of thinking about a transit market is similar to the way a private business thinks about its market for sales – how many potential customers there are, how useful they will find the product, and how well the product competes for their business.

Existing Transit Network

In Chapter 4, we analyze the existing transit network's performance, including the frequency, spans, ridership, productivity, and specific observations about the structure of the network. In addition to the fixed-route network, we take a look at on demand services, including On Demand Ankeny, Flex Connect, and On Call services.

Paratransit Service

In Chapter 5, we analyze DART's two paratransit services: DART Bus Plus and DART Bus Plus Premium.

Key Questions

In Chapter 6, we summarize key value choices that only the community and its leaders can make about how transit should serve Greater Des Moines. These value choices cannot be answered by technical experts because they are questions about what goals and values the community prioritizes. There is not a technically correct answer to these value questions.

2 Geometry of Transit

What is the product of transit?

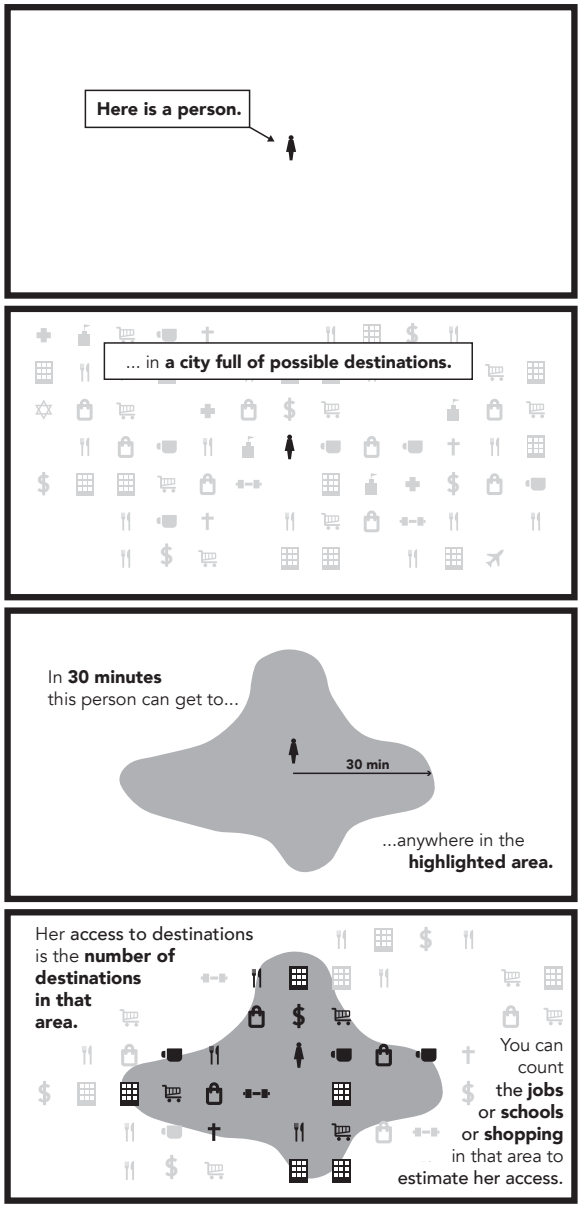
Public transit can achieve many goals, but a commonly held goal for transit is to help people access opportunities: work, shopping, medical needs, education, and all the economic, social, cultural, and natural riches that a community has. Everyone has a limited amount of time in their day and, therefore, can only spend so much time traveling to meet their needs. Maximizing the destinations that people can reach in a limited amount of time is something we can calculate in assessing how well transit is meeting this goal. The figure to the right shows how we calculate this.

What Access Achieves

When we expand access for as many people as possible, we achieve many important things:

- We **make service more useful** for the trips people are already making and for other trips people might want to make by transit.
- We **increase ridership potential**, as a result of service being more useful. When transit is more useful, more people use it.
- We increase transit's potential to help with **pollution and congestion**. Ridership is the key to how transit achieves these things, and improving access is the path to ridership.
- We **expand access to opportunity** (jobs, education, shopping, services) for people who need transit for that purpose.
- We **increase the economic attractiveness** of the urban area. Connecting people with opportunities is the whole point of cities, so improving those connections makes any community more effective.

WHAT IS ACCESS?



Access & Freedom

Wherever you are, there is a limited number of places you could reach in a given amount of time. These places can be viewed on a map as a bubble around your location.

Think of this bubble as "the wall around your life." Beyond these walls are jobs you cannot hold, places you cannot shop, and a whole range of things you cannot do because it simply takes too long to get there.

The technical term for this is access, but it's also fair to call it freedom, in the physical sense of that word. The extent of this bubble determines what your options are in life: for employment, school, shopping, or whatever places you want to reach.

If you have a bigger access bubble, you have more choices, so in an important sense, you are more free. That increase in freedom is also closely related to transit ridership.

Access Is a Matter of Geometry

The way these factors combine and determine access is geometry because freedom (and access) is about what you *could* do, not predictions of what you *will* do.

Access is a basic driver of ridership, but it can also be considered a worthy goal in itself. Access from a particular location is something that gives that a location value. Real estate firms routinely study where you can get to by car from a particular development, and we can do a similar analysis using transit. If you are deciding where to live based on whether you can get to your job, school, or relatives, you are asking about access.

How Transit Expands Access

When using transit, the extent of access is determined by:

- **The transit network.** This includes the frequency, speed, and spans of service. These features determine how long it takes to get from any point to any other point.
- **The layout of the community.** For each transit stop on the network, this determines how many useful destinations are near the stop or within easy walking distance.

Frequency is Freedom

Frequency refers to how often a bus comes, which determines maximum waiting time. Frequent service provides several related benefits for customers.

- **Short Waits.**
- **Fast Connections.** Transferring lets a rider reach many places along more than just one route. Frequency makes connections easy because the next bus is always coming soon.
- **Improves Reliability.** If a bus breaks down, the next bus is coming soon.
- **Spontaneity.** Rather than living around a bus schedule, customers can show up at the stop and go.

The payoffs of frequency are non-linear, with the highest ridership benefit usually being found in 5 to 15-minute frequencies.

This chart plots the frequency and productivity of routes operated by 45 US urban transit agencies.

- The horizontal axis shows frequency (better, more useful frequency means a lower wait time, so more frequent service is to the left).
- The vertical axis shows productivity—ridership compared to the quantity of service.
- A dark hexagon means that lots of transit routes share that combination of frequency and productivity.
- A light hexagon means less route examples share that frequency and productivity combination.

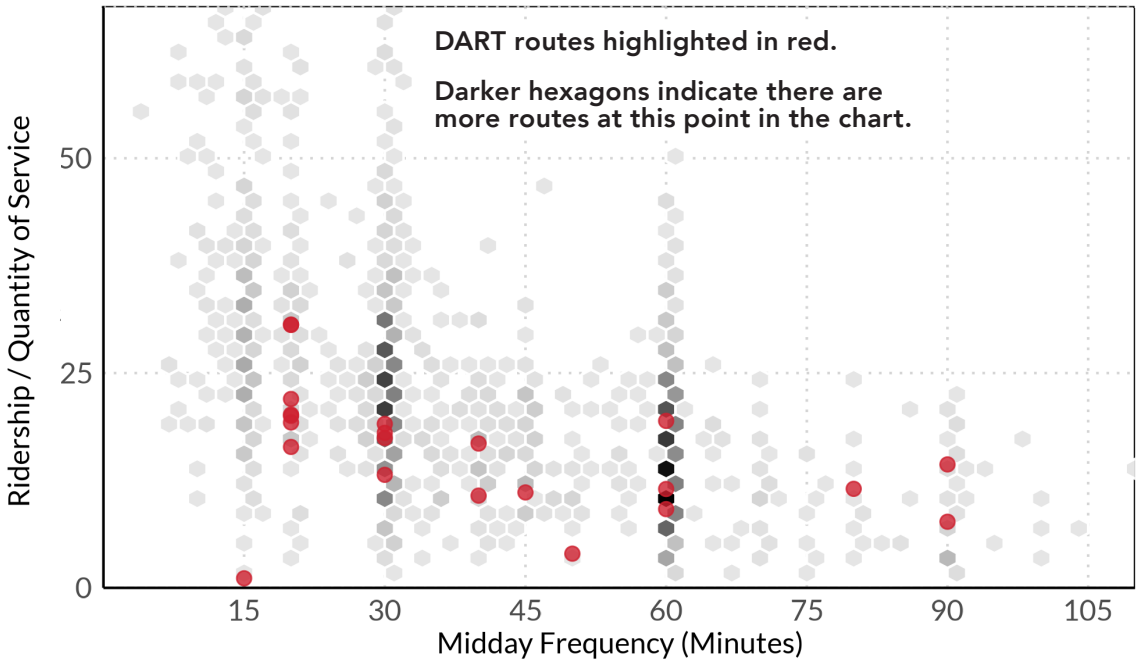
Following the hexagons, particularly the darker ones, we see that productivity increases with frequency even though better frequency costs more. The cost of frequency is part of Quantity of Service, so it should pull the productivity ratio down, but instead it goes up.

How much frequency is enough? Two points should be noted:

- **15 minutes or better has the best chance of being useful.** Here, the non-linear payoff begins to appear.
- Trip length matters because **it doesn't make sense to wait a long time to travel a short distance.** Very short routes, don't make sense unless they can be run at frequencies well under 10 minutes.

Productivity and Frequency

Data on individual routes from 45 cities.



Why do development patterns matter?

The layout of a community has an enormous impact on transit's ability to succeed there. These are purely geometric facts about a community's layout. In describing them, we are not saying anything about the people who live there. Four major features of a community determine transit potential. They are Density, Walkability, Linearity, and Continuity.

Density

Density is the number of residents or activity destinations in a fixed land area. For transit, what matters is the fixed land area round each transit stop.

The graphic on the right shows two identical bus routes. The route on the top is traveling in an area that has twice as many houses as the route on the bottom. All else being equal, places in Greater Des Moines that have higher density are likely to get higher transit ridership than places that are less dense, regardless of who lives there.

How many people, jobs, and activities are near each potential transit stop?

Why do development patterns matter?

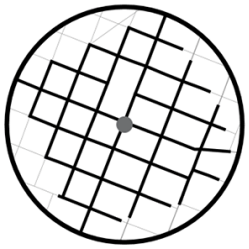
Walkability

To use transit, people need to be able to walk to the bus stop. The street design around a bus stop determines if people can reach the stop by walking.

The graphic on the right shows two bus stops with a 1/4 mile circle around each one. The black lines show the parts of the street network that are within 1/4 mile walk of the stop. Not all of the 1/4 mile circle is in a 1/4 mile walk.

The street network in the top example is a simple grid that allows many people to easily walk to the bus stop. The bottom example shows a disconnected street network where fewer places are within a 1/4 mile walk of the bus stop. Even though many people may live near this bus stop, some people have to walk a long distance to get there. To a transit planner who is trying to maximize ridership, the effect is the same as if the density were lower: fewer people who can benefit from the service.

Is it possible to walk between the stop and the activities around it?

\+ 

The dot at the center of these circles is a transit stop, while the circle is a 1/4 mile radius.

\- 

The whole area is within 1/4 mile, but only the black-shaded streets are within a 1/4 mile *walk*.

\+ It must also be safe to cross the street at a stop. You usually need the stops on both sides for two-way travel!

It is also important that people be able to cross the street to reach the bus stop. If a road is too dangerous to cross, people won't be able to ride transit in both directions. When they are dropped off on the opposite side of the street, they will be stuck.

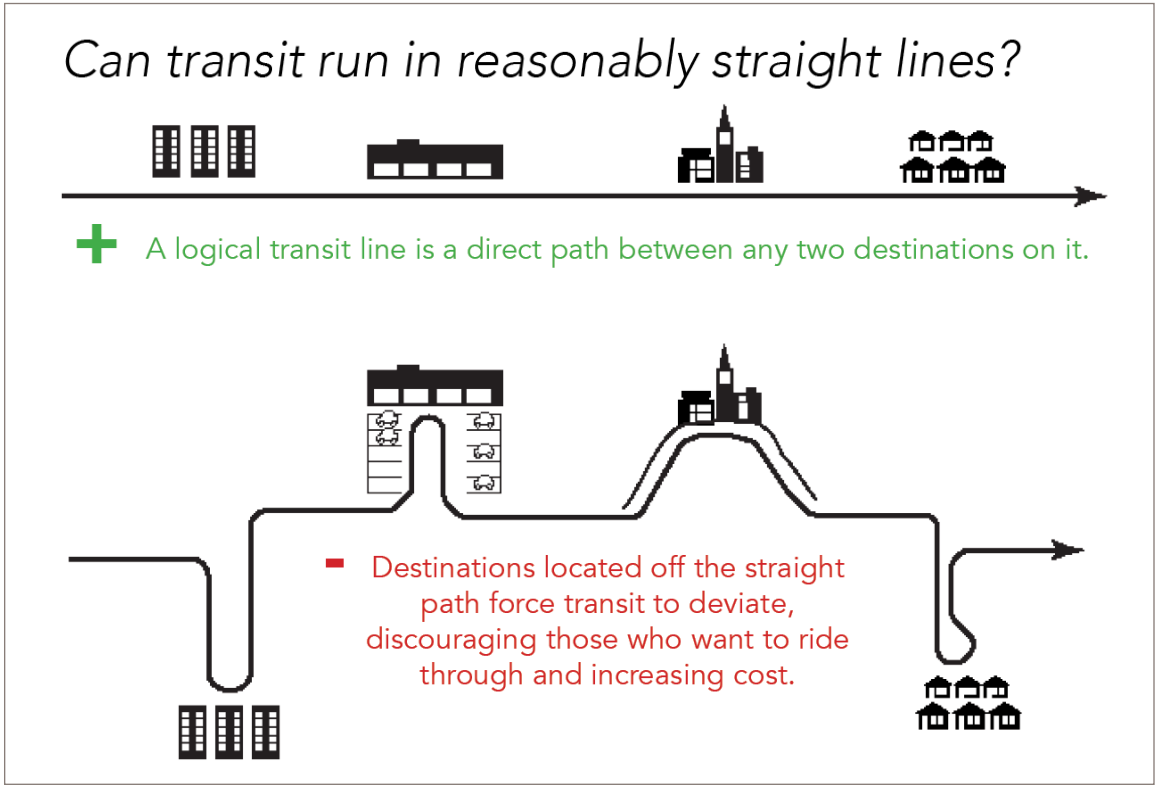
Why do development patterns matter?

Linearity

The graphic on the right shows four destinations aligned in different ways. In the town on the top, all destinations are located along the main road. Transit can serve all destinations with a line that everyone will experience as direct. People riding from one end to the other will find this service useful because they are always traveling towards their destination.

The town on the bottom has the same four destinations located far from the main road. To serve these places, a bus needs to deviate from the main road and then drive back to the main road. If this is your destination, this is great for you. But if you are traveling between any other two points, you are traveling out of the way before getting where you want to go.

Also, the route on the bottom example is much longer, which means it's more expensive to operate for the transit agency. Having long or circuitous routes like this one means that DART can't provide as much frequency, so people will have to wait longer for the bus.



Why do development patterns matter?

Continuity

In transit, distance is a major contributor to the cost of service. Connecting places that are far away, with long gaps, is more expensive than places that are close to each other.

Within a fixed budget, a more expensive route means that a bus can't come as frequently, so people have to wait longer. If waits are longer, less people are likely to find the service useful.

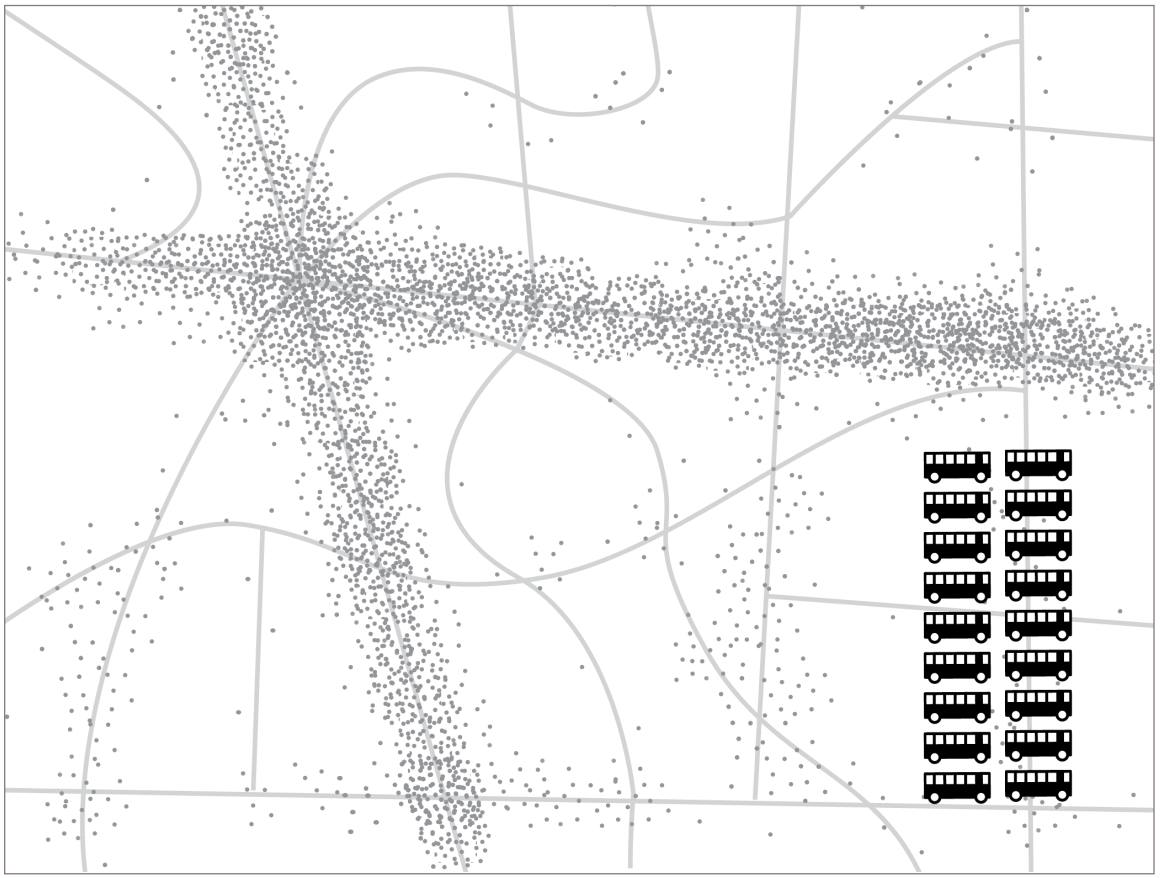
Does transit have to traverse long gaps?

\+ Short distances between many destinations are faster and cheaper to serve.

\- Long distances between destinations means a higher cost per passenger.

Goals of Transit

The previous pages describe how you would design a transit network **IF** your goal was high ridership—you would put frequent service in favorable development patterns. But at no point are we saying that you should want high ridership. Within any fixed budget, there is a decision to be made between providing service with the goal of getting high ridership vs. providing wide geographic coverage.



Ridership-Coverage Trade-off

Imagine you are the transit planner for this fictional town. On the map to the right, the lines indicate roads and the dots indicate people and jobs. Most people and jobs are concentrated along two main roads, as in many towns. So, these are places that more people want to travel to and from.

You have 18 buses to design a transit network. Before you can plan transit routes, you must first decide: What is the purpose of your transit system?

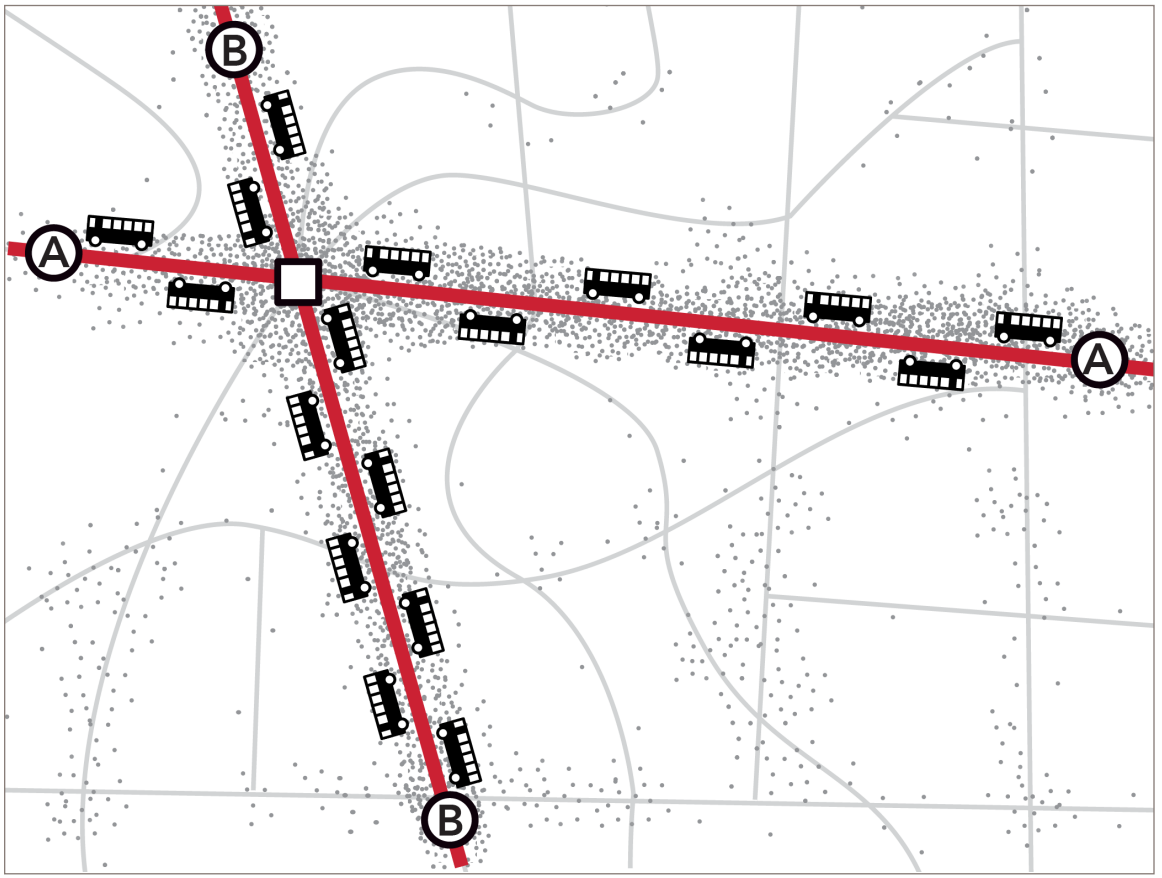
Goals of Transit: Ridership

If the goal is high ridership, you would concentrate all 18 buses on the busiest areas. You would only have two routes but waits for service are short.

Since the service is direct and frequent, many people would find the service useful, so many would use transit.

Frequent service is available in places with the greatest travel demand, but some places have no service.

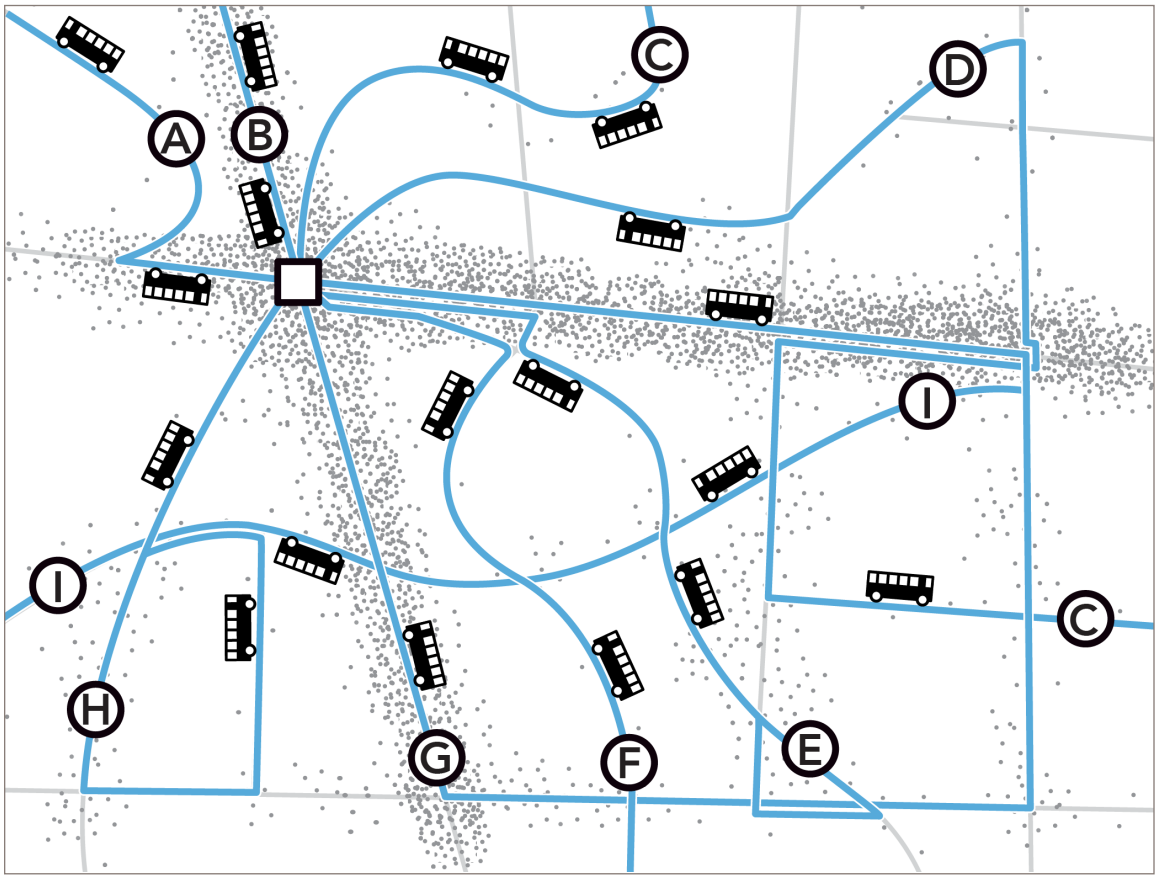
Performance Measure: ***Productivity***
Ridership relative to cost



Goals of Transit: Coverage

If the goal is high coverage, you would spread out the 18 buses so that every street has a route. Everyone lives near a bus stop, but every route is infrequent, so waits for service are long. Routes are looping and circuitous, so people spend a lot of time on the bus even when going a short distance. Only a few people can bear to wait or ride for so long, so ridership is low.

Performance Measure: ***Coverage***
Percentage of people near service



Conflicting Goals

All transit agencies must balance the competing goals of high ridership and high coverage. Within a limited budget, if an agency wants to do more of one, it must do less of the other. Ridership and coverage goals conflict with one another due to geometry and geography.

On a fixed budget, each bus that the transit agency runs down a main road, to provide more frequent and competitive service in that market, is not running on the neighborhood streets, providing coverage. While an agency can pursue ridership and provide coverage within the same budget, it cannot do both with the same dollar. The more it does of one, the less it does of the other.

A particularly clear way for transit agencies to set a policy balancing ridership and coverage is to decide what percentage of their service budget should be spent in pursuit of each. The "right" balance of ridership and coverage goals is different in every community.

Ridership Goal

If the goal is to get **high ridership**, you would put most routes in places that are dense, linear and walkable, as described by the indicators of high ridership on pages 19-22.

In a network designed for ridership, dense areas get very good service, with the next bus always coming soon. But when an agency focuses on making the high-ridership routes as useful as possible, it means it can't afford to run to a lot of other places.

Reasons to pursue a ridership goal include:

- Getting more riders
- Reduced vehicle trips
- Reduced emissions
- Less subsidy per ride

Coverage Goal

If the goal is **high coverage**, you would spread service out so that there's some service everywhere. But spreading it out means spreading it thin. Since there is such a huge area to serve, none of the buses can come very often, which means that fewer people find them useful. Some people who do use coverage services really need them, and will defend them. Other people may value having service available "just in case", even though they don't use it most of the time.

Reasons to pursue a coverage goal include:

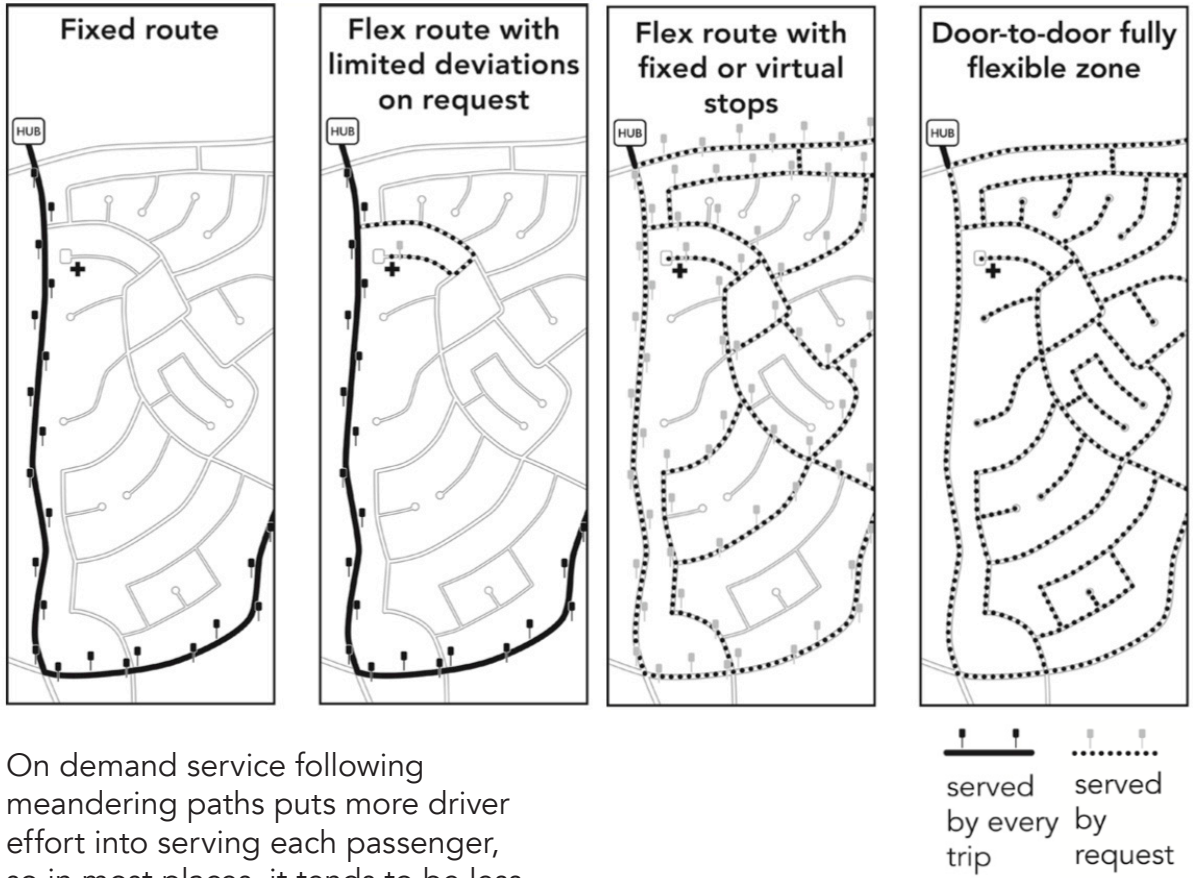
- "Access for all."
- Service for people with severe needs for transit, no matter where they live.
- Service to every member community.

What about on demand transit?

You may have heard about taxi-like services that pick you up when and where you request them, rather than running fixed routes. You may have even seen DART running this type of service. This is often referred to as "microtransit," "dial-a-ride," "flex-route," "on demand," or "demand-response." In this report, we'll refer to those services as "on demand."

These graphics show how on demand differs from fixed route transit. In fixed-route transit, people walk to bus stops and buses arrive based on a predetermined schedule. On demand service can pick up riders where and when they request it. On demand service can vary from a route that can provide some limited deviations on request, to an area with several fixed or virtual stops, to door-to-door service anywhere within a zone. These parameters can determine the service's attractiveness and cost.

On demand service is generally convenient for riders because it doesn't ask them to walk to a bus stop, and it often lets them travel at the time they prefer. But these features don't come free.



On demand service following meandering paths puts more driver effort into serving each passenger, so in most places, it tends to be less efficient than fixed routes.

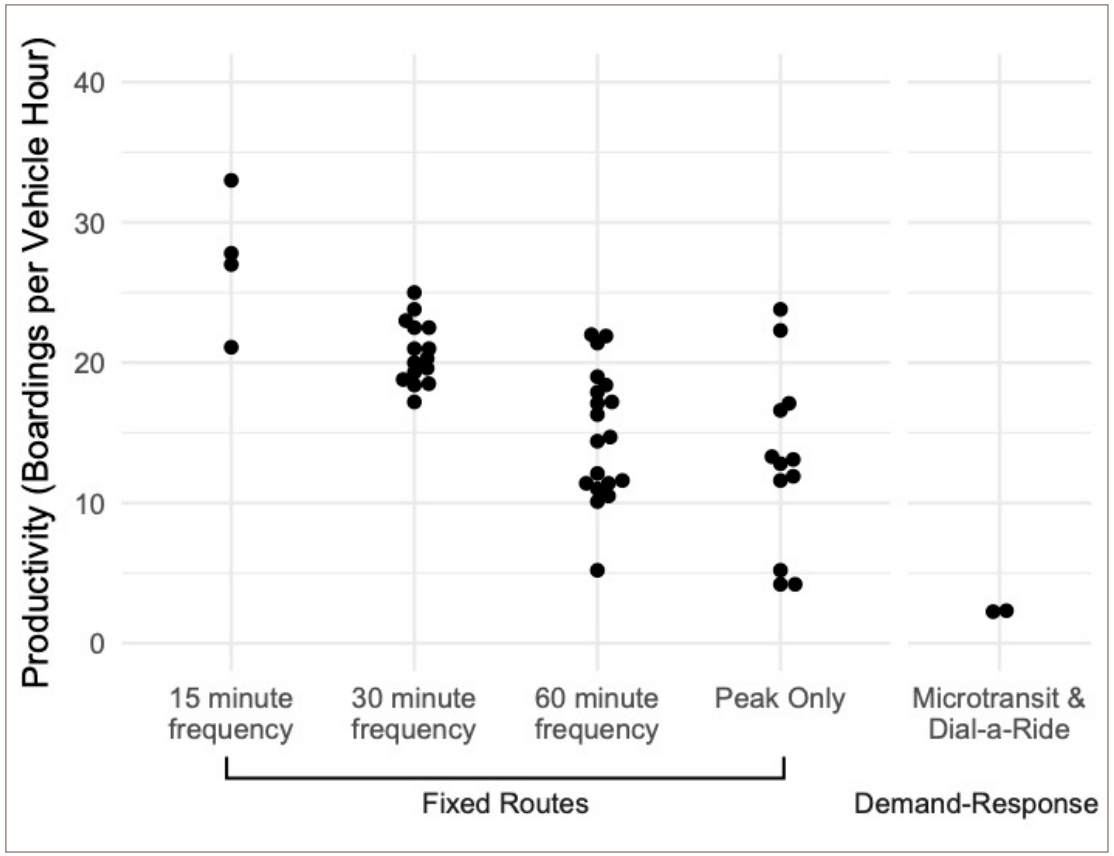
Limitations of On Demand

On demand trips can be more expensive, sometimes vastly more expensive, to provide than fixed route trips. This is why transit agencies are careful and thoughtful about where they offer on demand service and how they control its costs.

The cost of a fixed route is steady over time. It does not go up immediately when more people ride it. As a result, when more people ride, it becomes less expensive to provide each ride.

In contrast, the costs of on demand service can rise quickly as more people request trips. There is a low ceiling on how many rides per hour an on demand vehicle can serve before an additional vehicle and driver need to be deployed. **Almost no on demand services are able to average more than 5 boardings per vehicle, per hour.** If you think about what the vehicle has to do – driving around to each person's requested pick-up spot, then their requested drop-off spot – xthen it's clear why it would be so hard to do this very many times in an hour.

This scatterplot shows data for each route at a real mid-sized transit agency. Each dot is a route, and its height on the graph shows its average number of boardings per hour, per vehicle. On demand service (all the way to the right) handles many fewer rides per hour than even the lowest-ridership fixed routes.



This difference in potential ridership per vehicle, when comparing fixed routes to on demand, is quite typical, because of the basic math of how the two types of services work. This means that on demand service can be a useful tool to provide coverage in a place where you would not expect to get high ridership, such as a low density area that is hard to serve by fixed route.

3 Market & Needs

Market & Needs Assessment

In this chapter, we present and discuss data that inform two different types of considerations in transit planning:

- Where are the strongest markets for transit, where ridership is likely to be high relative to cost?
- Where are there moderate or severe needs for transit, regardless of potential ridership and cost?

The first of these helps us plan for high ridership. The second helps us deploy coverage services to best meet the needs.

Market Assessment

The transit market is mostly defined by **WHERE** people are, and **HOW MANY** of them are there, rather than by **WHO** they are.

On the following pages, these maps help us visualize the transit market:

- Residential density
- Job density
- Activity density (the sum of residents and jobs)
- Density of low-income residents

All else being equal, density matters more than income and age if you are trying to predict where transit will get high ridership.

This is not to say that who people are is not important. It is extremely important, especially when designing transit services to achieve a coverage goal.

Need Assessment

We learn about transit needs by examining **WHO** people are and what life situation they are in.

On the following pages, these maps help us visualize transit needs:

- Density of low-income residents
- Density of zero-vehicle households
- Density of seniors
- Density of youths

These measures cannot by themselves tell us that a person has a severe need for transit. For example, some people in a zero-vehicle household can afford to use Uber/Lyft. We must consider these measures to understand where people's needs for transit are likely to be severe.

Civil Rights

Another important map in this chapter is not strictly related to need but rather to civil rights. This map shows **where people of color live**.

Unequal treatment on the basis of race, ethnicity, or national origin is prohibited by the Civil Rights Act of 1964. Regulations by the Federal Transit Administration require that DART considers the benefits and burdens that people of color and people in poverty experience from transit service and in the process of planning for transit and transportation projects.

While a person's race or ethnicity does not tell us directly if they need transit, or if they have a propensity to use transit, we know that there is a correlation between race and ethnicity and income and wealth. People of color make up a higher proportion of a population that is low-income and doesn't own a car than the overall population.

Market: Residential Density

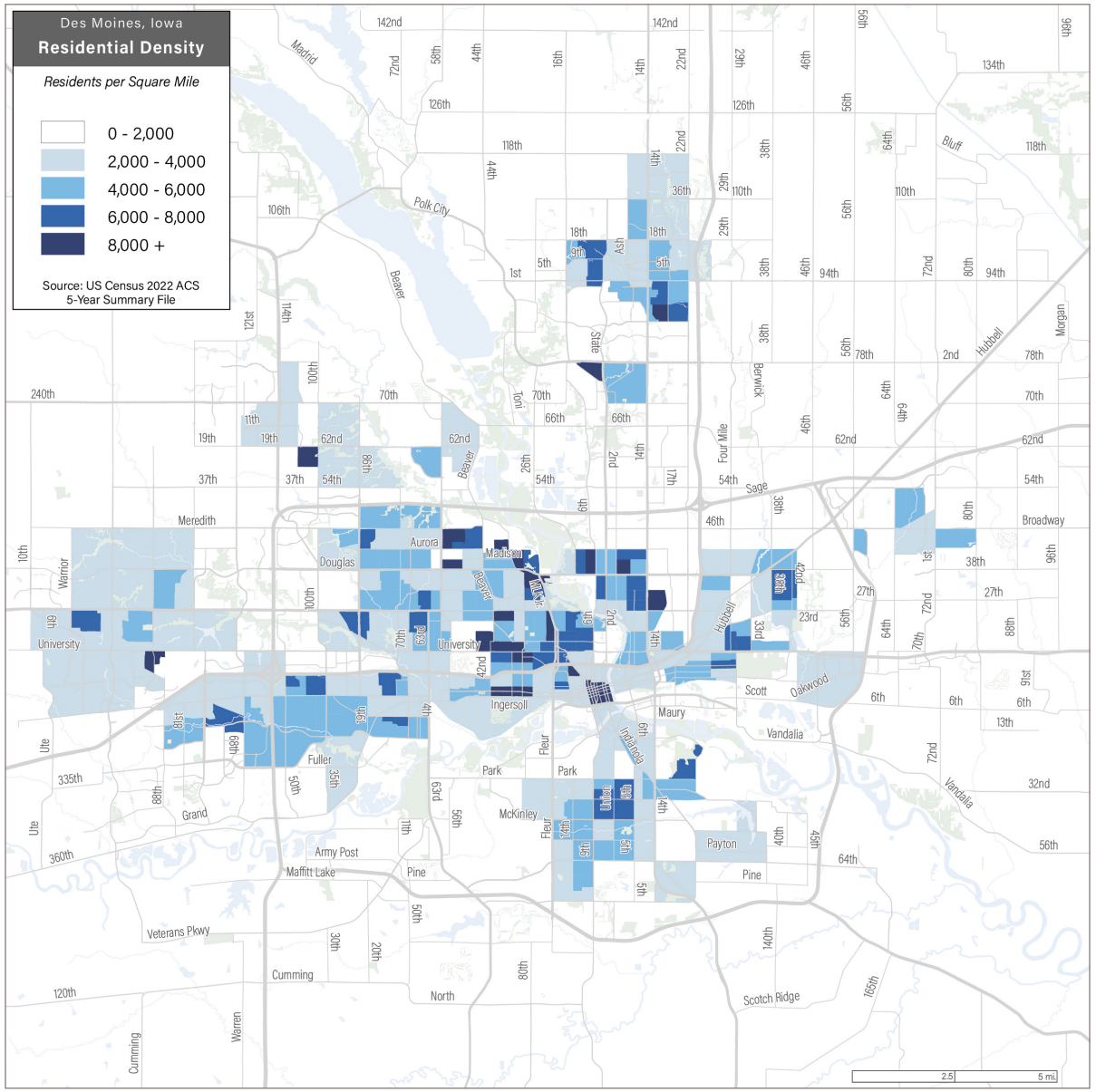
Most trips start or end at home. Further, places with many households are also destinations for other people, whether for visiting, worship, caring for family or home-based work.

This map shows the distribution of residential density in Greater Des Moines. The areas with the highest residential density are:

- Downtown Des Moines
- northwest of Downtown, particularly along Martin Luther King Jr Parkway, up to Douglas Avenue and Madison Avenue
- west of Downtown along Ingersoll Avenue and University Avenue
- along East 14th Street and Euclid Avenue

There are also relatively dense areas scattered throughout the region, including,

- the south side
- south of I-235 in West Des Moines
- west along Hickman Road
- east along Easton Boulevard
- in Ankeny along East 1st Street



Market: Job Density

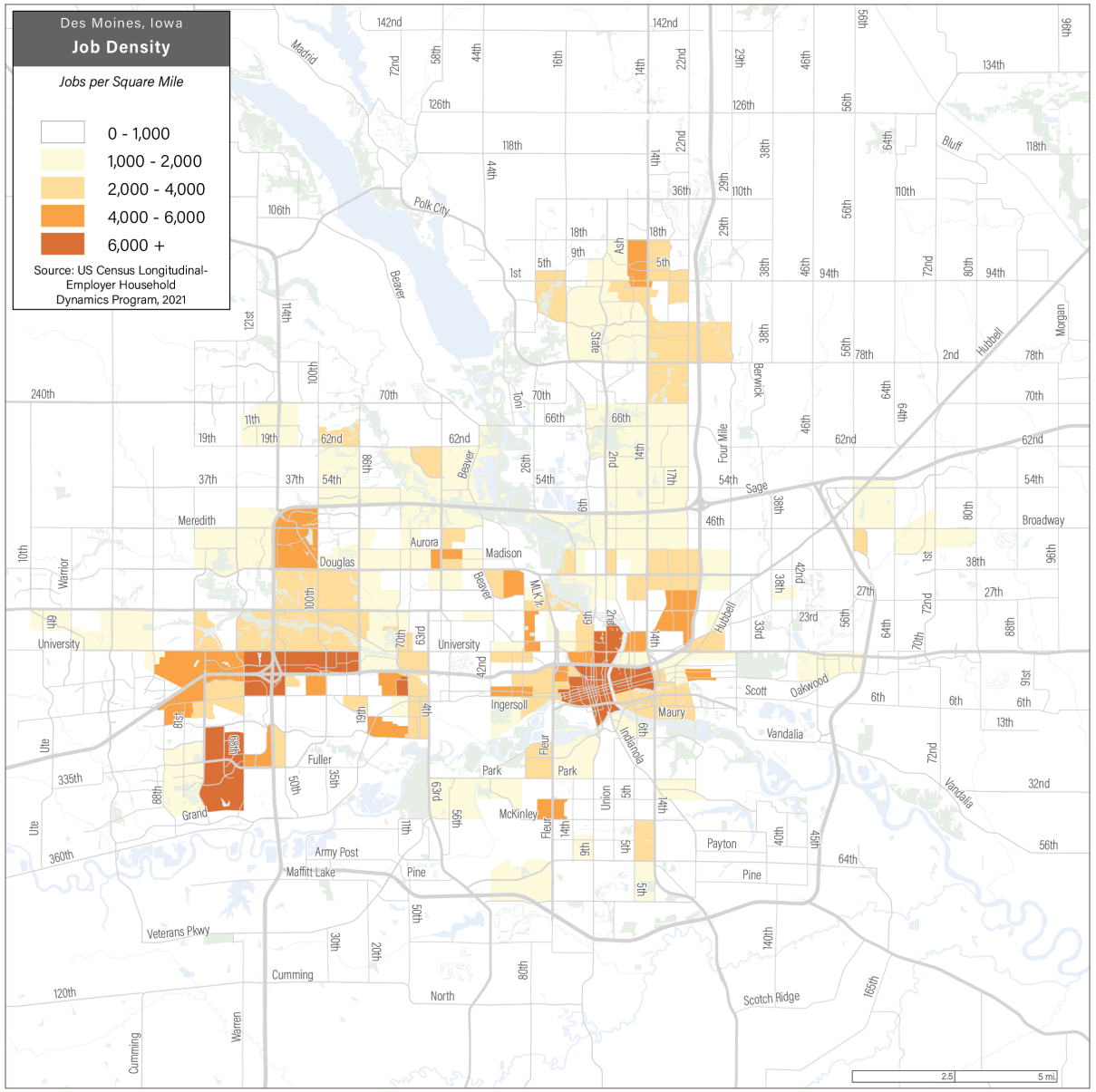
A map of job density shows us not only the places people travel for work, but also places people go for services, shopping, community, health care, and more. A person's workplace may be, throughout the day, a destination for dozens or even hundreds of people. For this reason, job density is typically an even better predictor of transit ridership than residential density.

This map shows the distribution of job density in Greater Des Moines. The area with the highest concentration of jobs is in and near **Downtown Des Moines**.

Additionally, there are a lot of jobs to the west in places that are not very walkable and difficult to get to. This includes

- The office parks along University Avenue, Westown Parkway
- The area surrounding Valley West Mall
- MercyOne West Des Moines Medical Center
- Jordan Creek Town Center
- Wells Fargo West Des Moines Campus

Other dense job centers include Drake University, the VA Medical Center, and Merle Hay Mall.

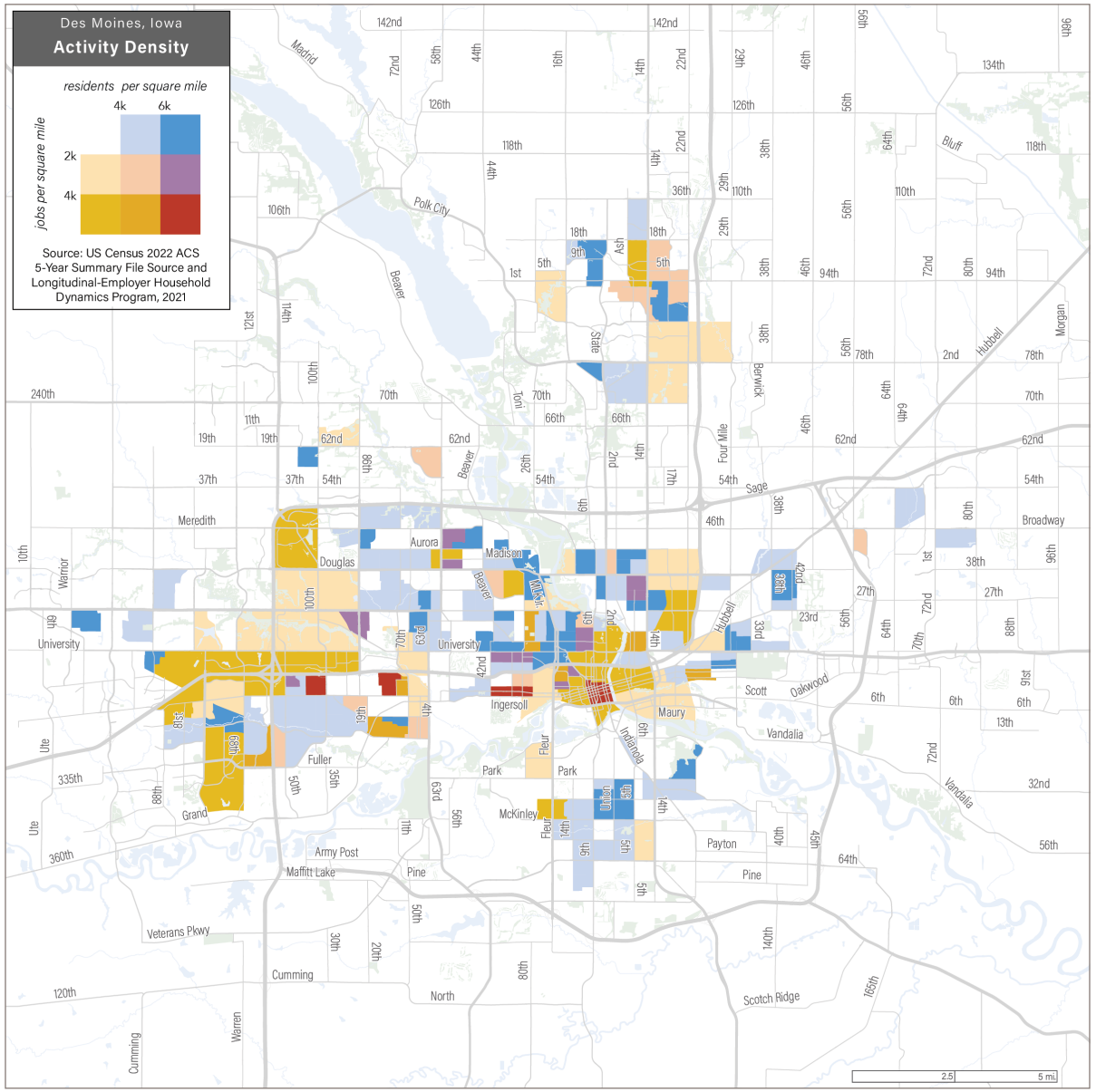


Market: Activity Density

Resident and jobs density are both critical measures of a place's potential transit market relative to other parts of the service area. Those two measures can be combined in a single map that shows the activity density—the density of both jobs and residents. Activity density helps visualize the overall potential transit market of an area. The map on the right shows activity density in Greater Des Moines.

Places with more residential density are shown in increasingly brighter shades of blue; areas of high employment density, in brighter shades of yellow. The areas shown with shades of red (also purple and orange) are places where there are high densities of both jobs and residents, and where there is likely to be a strong market for travel for most or all of the day.

This is because an area with a mix of housing, retail, services and jobs tends to generate more even demand for transit in both directions, throughout the day. Transit serving purely residential neighborhoods tends to be used in mostly one direction and mostly during rush hours—as residents leave in the morning, and return in the evening.

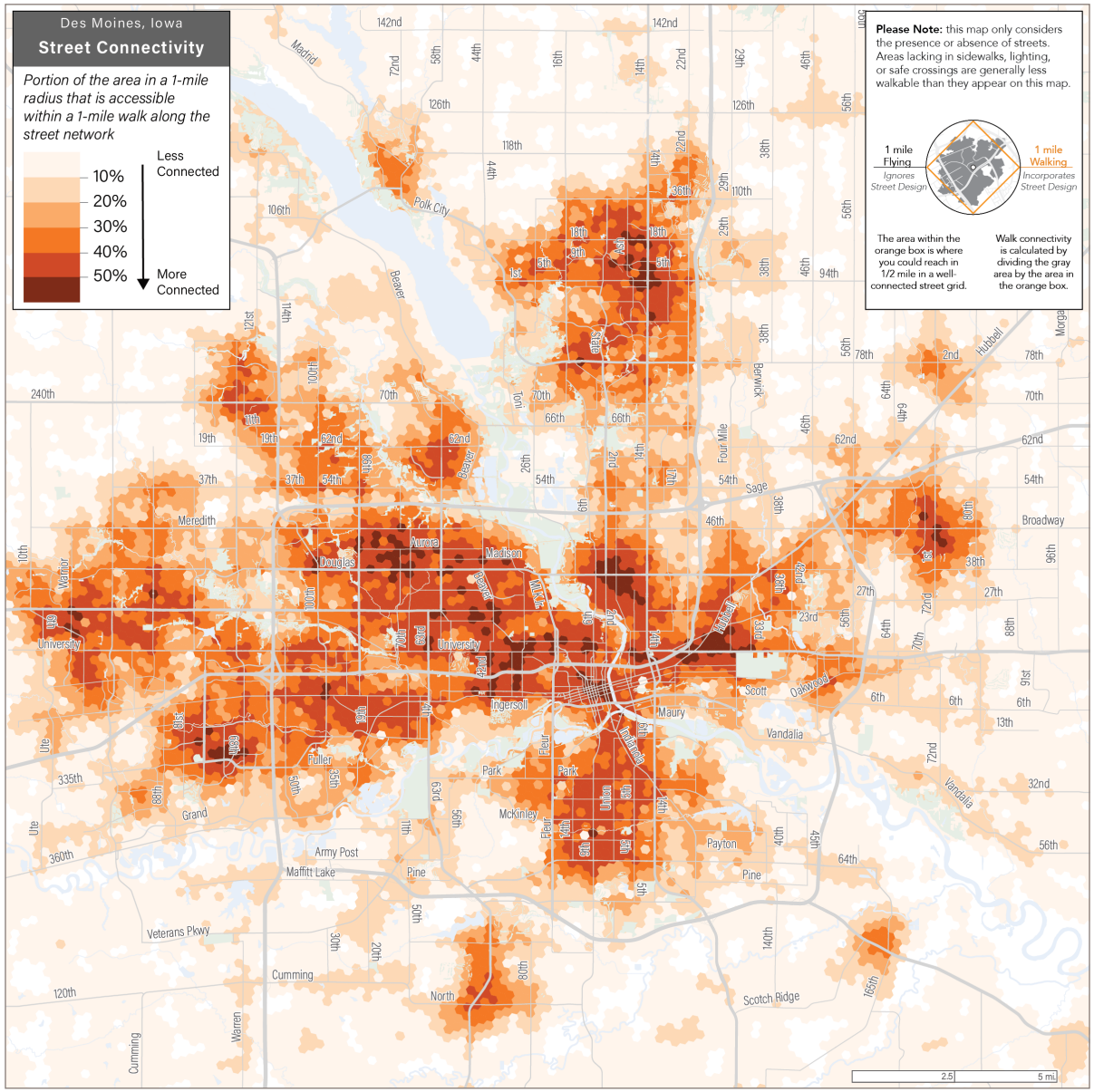


Market: Walkability

In most cases, transit trips begin and end by walking. Therefore, the ability to walk to transit is very important. The street pattern determines how much of the area around a stop is truly within a short walking distance.

Areas with highly-connected street patterns provide short and direct paths between any two locations. Areas with poorly-connected street patterns force long and circuitous paths and discourage walking. A lack of sidewalks and safe crossings can also mean that fewer people and jobs are within a short walk of transit because people may have to walk farther to cross the street to reach a bus stop.

The map on the right shows the proportion of area within a one-mile radius of locations that is accessible through the street grid in that location. Darker areas correspond to contiguous grid-like layouts, while lighter areas represent barriers to walkability, including restrictive street patterns. In some cases, the lack of street connectivity and limited walkability is a combination of both development pattern and natural topography that limits the ability to create more connected street networks.



Examples of Density & Walkability (1)

High Density & High Walkability

Ingersoll Avenue is among the densest parts in the region. Adjacent to Downtown, it features both many jobs and many residents. It features a traditional street grid, many street crossings, and sidewalks on most streets, making it one of the most walkable areas of the region.

High Density & Low Walkability

The area to the west between University Avenue and I-235 has a high concentration of jobs, including several office parks, medical offices, and many big box stores. Most buildings are surrounded by a sea of parking lots making it very uncomfortable to walk. The main streets have sidewalks, but walks are long and you often have to cross parking lots to reach the buildings.

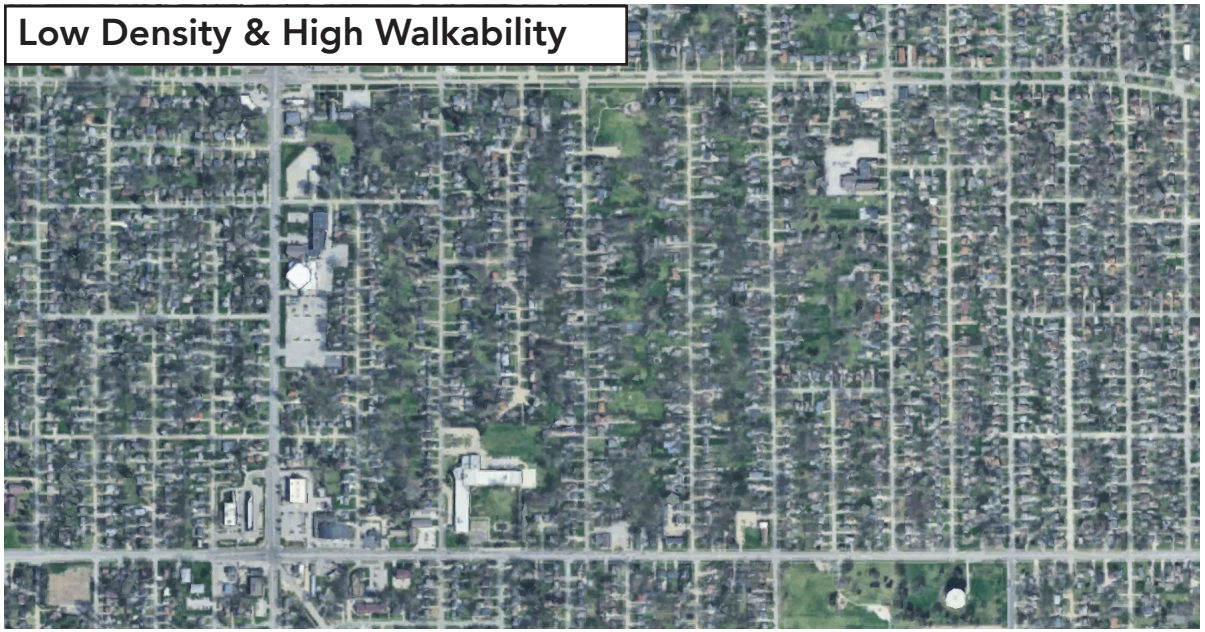
Examples of Density & Walkability (2)

Low Density & High Walkability

Merle Hay is a very walkable neighborhood with a gridded street network about 5 miles from Downtown Des Moines. Due to being primarily single family housing with few businesses, it has a much lower density, and therefore lower ridership potential, compared to a place like Ingersoll Avenue. Nevertheless, the highly walkable layout means it can more easily become a transit-oriented place than the office parks along I-235.

Low Density & Low Walkability

Most neighborhoods farther away from Downtown Des Moines were built with large lots with the presumption that most people would drive. The area along Douglas Parkway near 156th Street is an example of typical auto-oriented, single family residential area with low street connectivity. These kinds of neighborhoods have very low transit ridership potential.



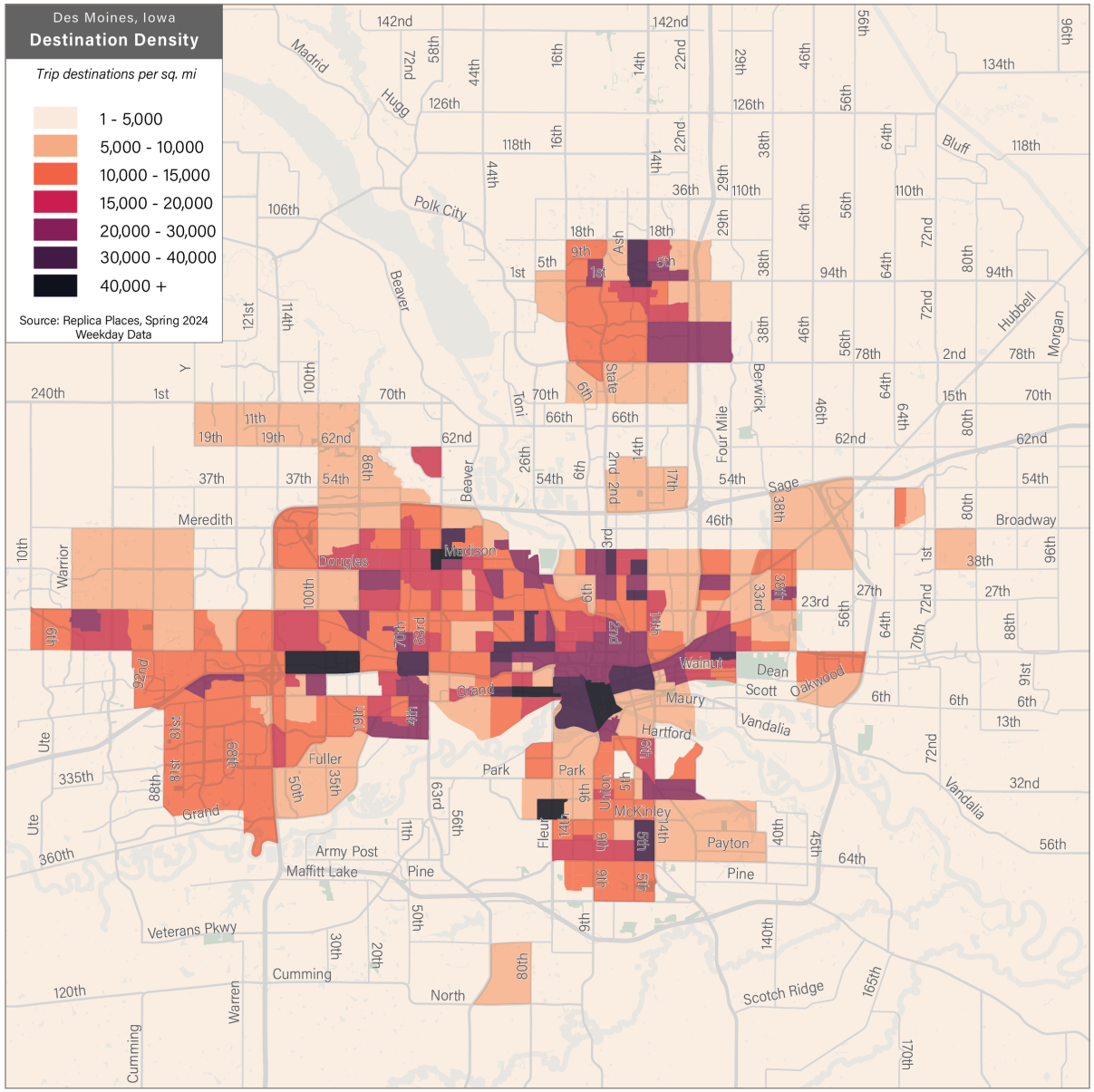
Market: Travel Patterns (destinations)

Looking at how people are traveling today can tell us a lot about demand. The map on the right shows the number of people traveling today to every census block using any mode. The source for this map is Replica.

Replica uses cell phone location data to feed its model and determine travel patterns. Replica only uses de-identified mobile location data.

This map shows the density of destinations of all trips during a weekday. Darker shades indicate more trips per square mile that end in that block group.

The biggest destinations are in and near Downtown Des Moines and along corridors like Ingersoll Avenue, University Avenue, Hubbell Avenue, and East Euclid Avenue. There are also a lot of trips to Merle Hay Mall, the jobs along I-235, and some pockets in Ankeny and the South Side of Des Moines.



Market: Travel Patterns (between cities)

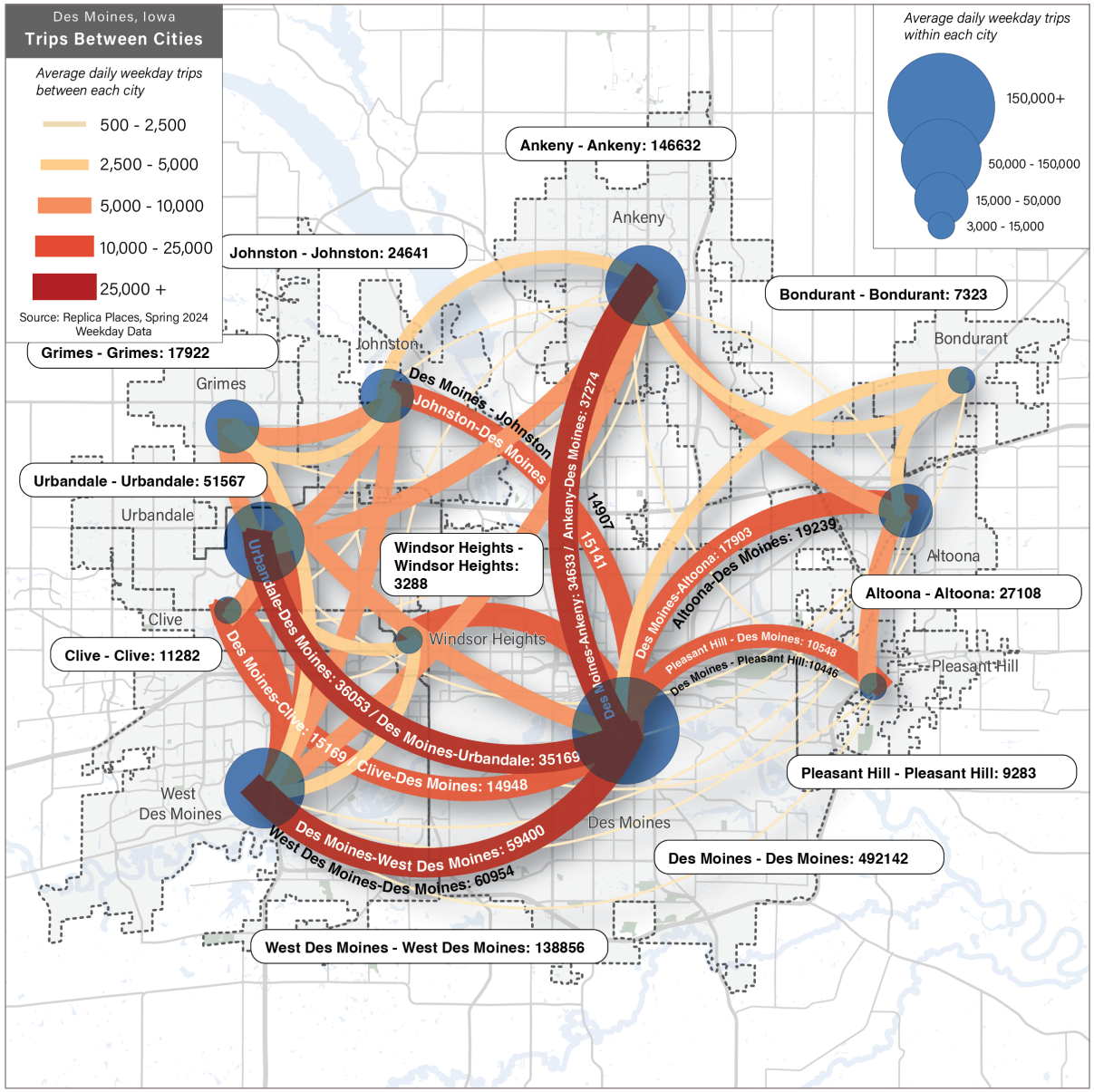
By using the same Replica dataset, we can looks at the flows between member communities in the region.

On this map, a line is thicker and darker when there are more trips between the two cities. The circles represent travel within each city—larger circles indicate more trips that start and end in that city.

Looking at this map, it is clear that Des Moines has the most trips. There are about 492,000 trips during weekdays within Des Moines, but there are about 424,000 trips happening between Des Moines and other cities.

The biggest intercity flows are between Des Moines and West Des Moines, Ankeny, and Urbandale. Those three cities also have a significant number of trips within each city.

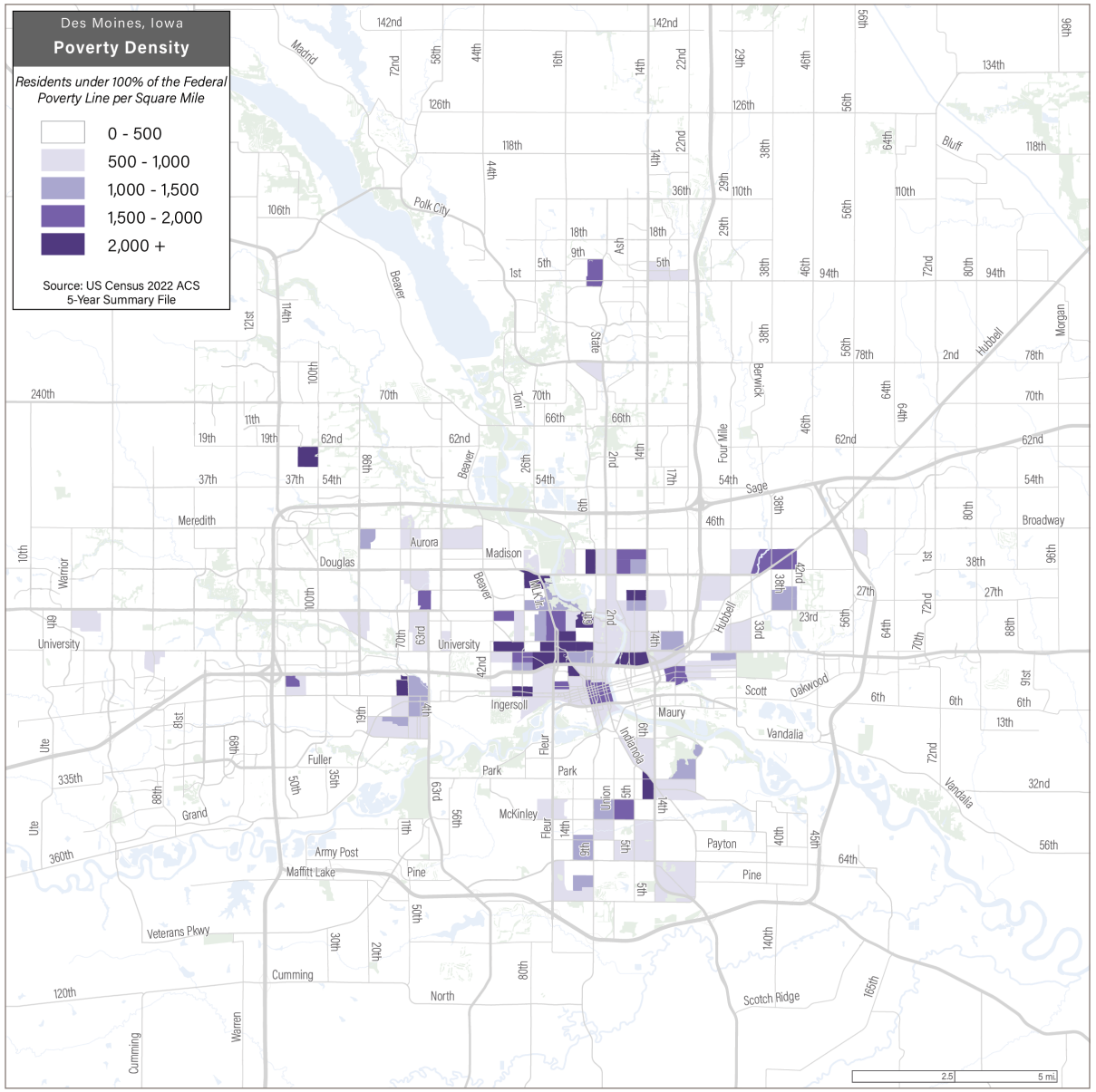
The next biggest flows are between Des Moines and four other cities: Clive, Johnston, Altoona, and Pleasant Hill. Despite their smaller size, these four cities have a large number of trips.



Market & Need: Low-Income Residents

This map shows the density of residents with family incomes below the federal poverty level. A frequently-cited goal for transit service is to provide affordable transportation for lower-income people. Understanding where low-income populations are located is also a key civil rights requirement.

Areas with medium to high low-income density, in walkable neighborhoods, can produce high ridership. However, if transit doesn't allow people to make the trips they need in a reasonable amount of time, even lower-income people won't use it. They'll seek other options like buying a used car or getting a ride from a friend.

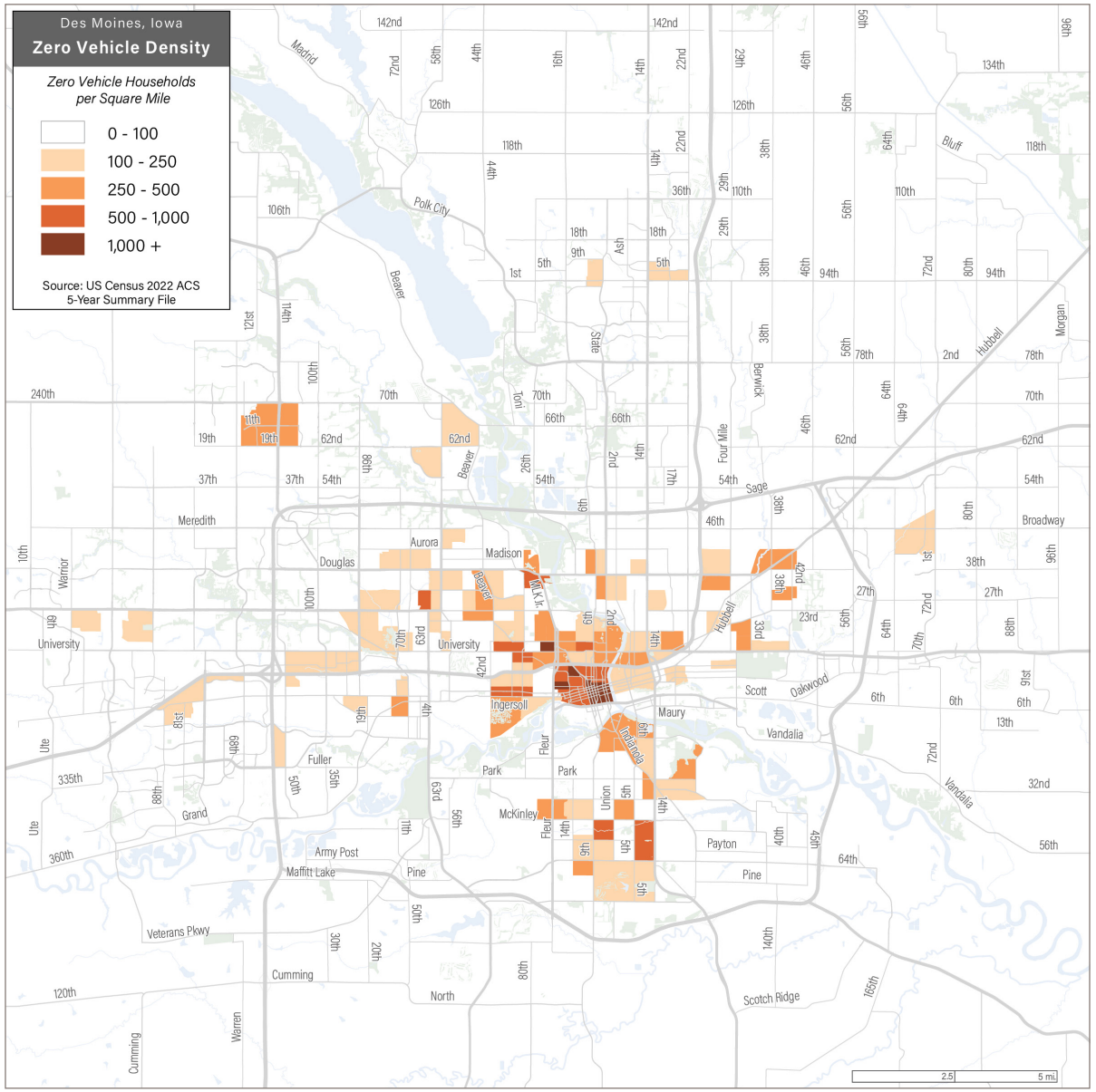


Market & Need: Households Without Cars

Another factor affecting transit's competitiveness and need is the availability of personal cars. People in households without vehicles are not necessarily "transit-dependent" but do have a greater inclination toward transit use because they don't have a car always ready to go. So if transit is useful, reasonably fast, reliable, and available when needed, it can be a compelling option.

If transit does not present a realistic travel option, then people without cars will find other ways to reach the places they need to go by getting rides from friends, cycling, walking, or using taxis. Alternatively, some people may not travel, thereby limiting their access to the economic, social, and other opportunities in the region.

The map on the right shows the density of households without cars. Note that this map shows households, not individual residents like the previous demographic maps. There are corridors with a high concentration of households without vehicles that closely correspond to people in poverty.



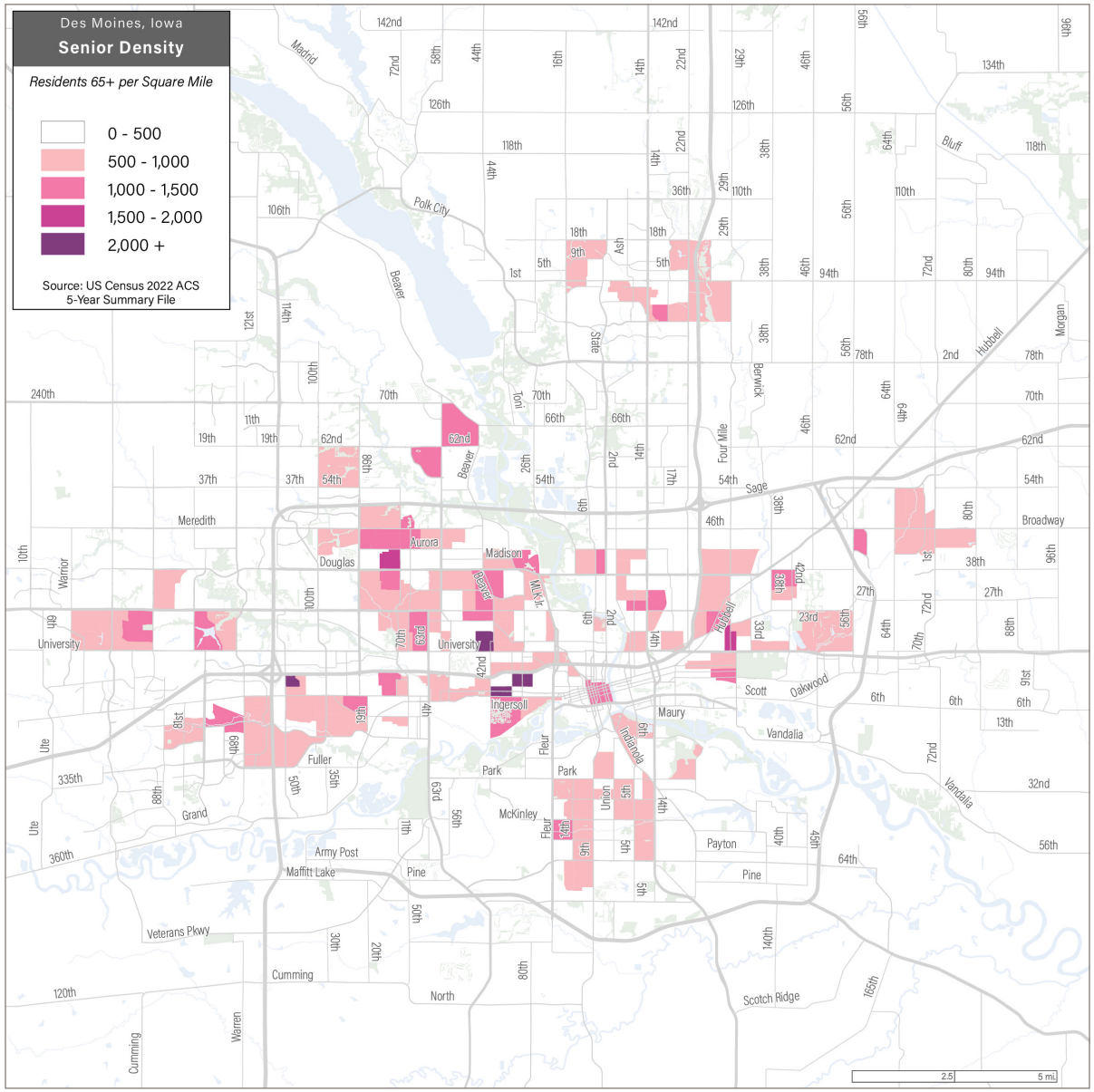
Need: Seniors

Seniors (65 and older) are an important constituency for transit because a major value of transit coverage is providing service for people who cannot drive, no matter where they live. Some seniors cannot drive and may be more likely to use transit. And as a group, senior-headed households are less likely to own cars than the general population.

Seniors tend to have different preferences for transit than younger people. On average, seniors are more sensitive to walking distance but less sensitive to long waits because many are retired and have flexible schedules.

Due to this, transit service designed to meet the needs of seniors rarely attracts high ridership relative to cost. Thus, the focus that transit agencies place on meeting the needs of seniors should be carefully balanced with the needs and desires of the rest of the community.

This map shows the density of senior residents. Compared to all residents, seniors are generally scattered throughout the region, but there are less near Downtown. Most seniors are between two and seven miles from Downtown.



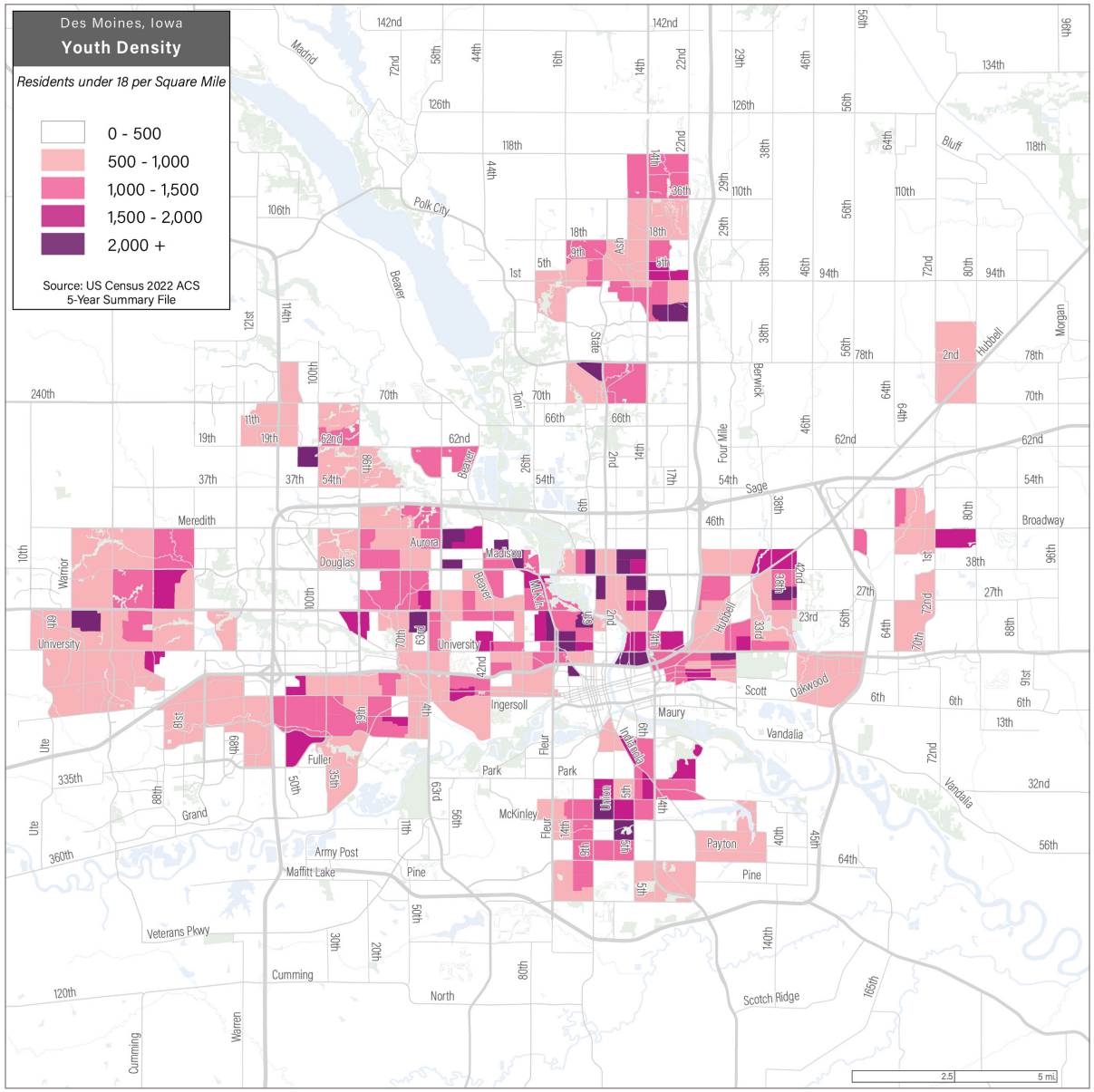
Need: Youth

Just as transit coverage can meet the needs of seniors who cannot or choose not to drive, transit coverage can also meet the needs of children and teenagers who are too young to drive.

The map on the right shows the density of residents under the age of 18. Young residents follow a very similar distribution to all residents.

Young people are like seniors in that they often live on a tighter budget than people of working age. For this reason, both are very sensitive to transit fares, and parents are sensitive to paying a fare for each child.

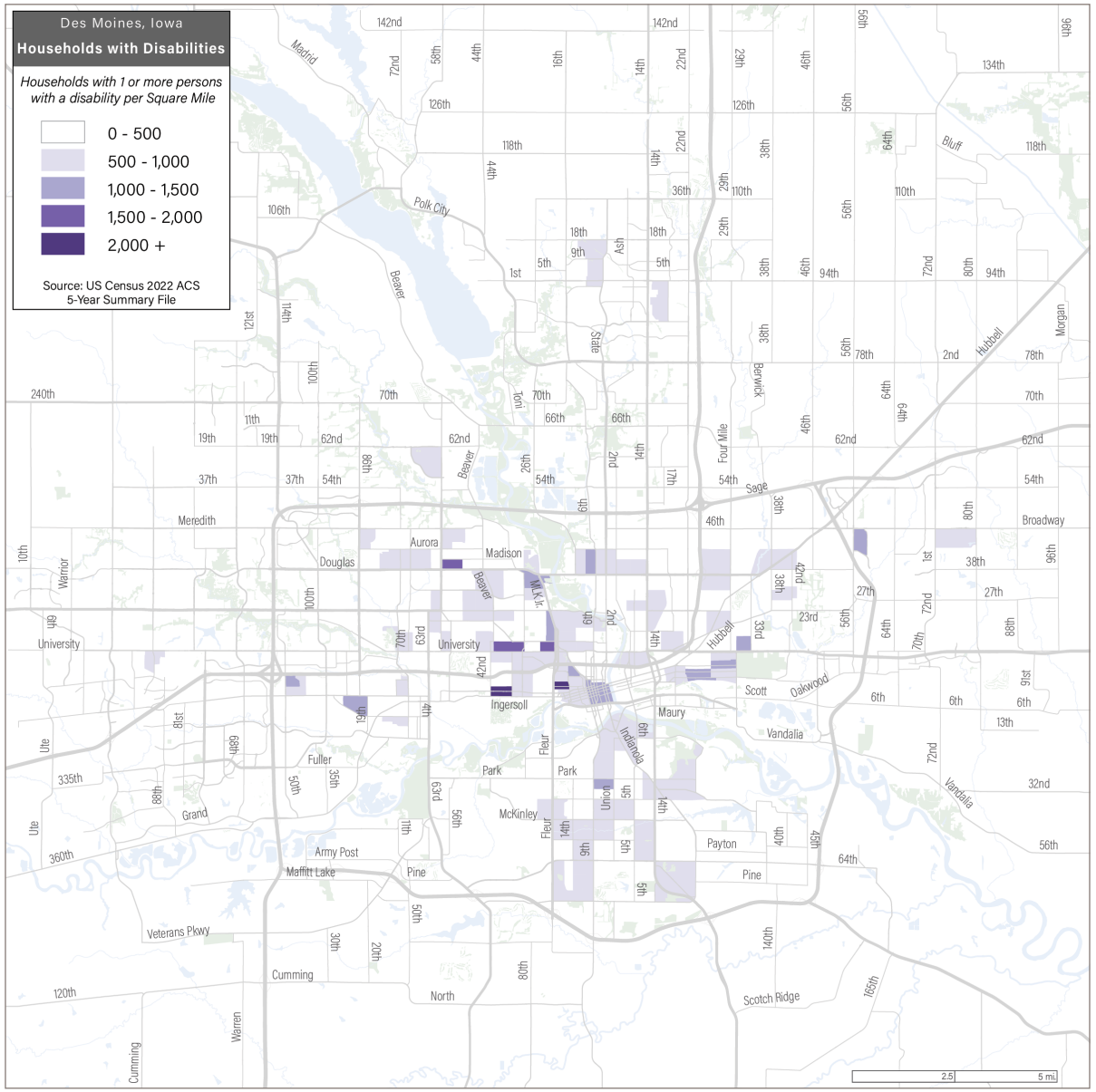
However, young people and seniors are very different in their ability and willingness to walk to transit service. Most young people can and will walk farther to reach service than seniors. Whatever effect an increase in price has on ridership among working age people, it will have an even stronger effect on ridership among young and old people. This is why many transit agencies, along with movie theaters and other for-profit businesses, offer a discounted price for seniors and children.



Need: Persons with Disabilities

Some persons with disabilities cannot drive and may be more likely to use transit. But similar to households without vehicles, this does not necessarily make them "transit-dependent." If transit is not a realistic travel option for them, they may find other ways to reach the places they need to go, or they may choose not to travel.

In addition to the transit service open to everyone, DART provides paratransit services for persons with disabilities. Paratransit service is door-to-door and wheelchair accessible transportation for persons that are eligible and verified by a medical provider. Paratransit service is explained in more detail in Chapter 5.

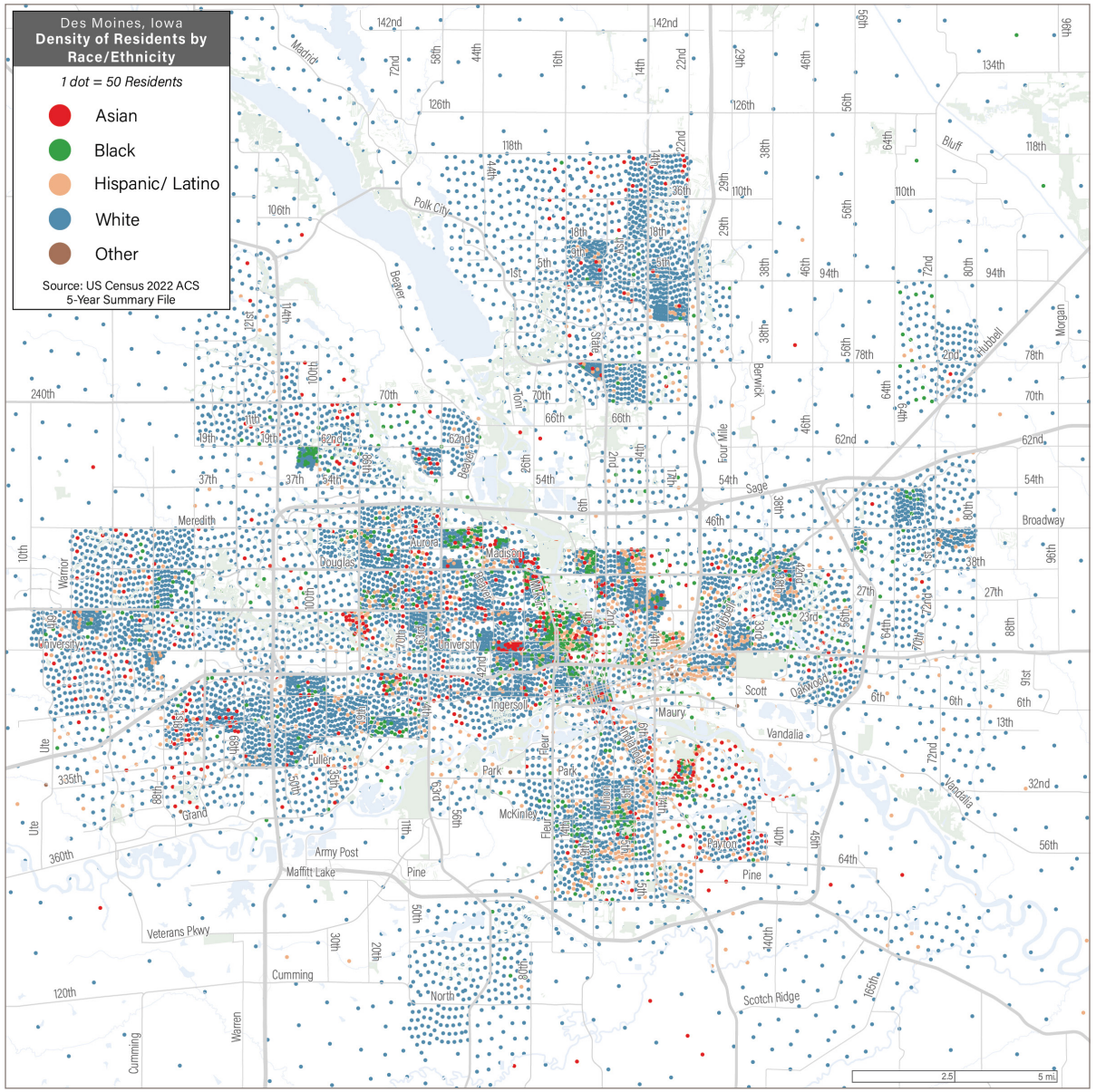


Civil Rights: People of Color

Data about ethnicity or race do not alone tell us how likely someone is to use transit. However, avoiding placing disproportionate burdens on people of color is essential to the transit planning process. Transit agencies are also required by Title VI of the Civil Rights Act of 1964 to ensure that services they provide do not discriminate on the basis of race, color or national origin.

This map shows the distribution of people by race and ethnicity. Each dot represents 50 residents. Where dots are close together, the overall density of residents is higher. Where dots of a single color predominate, people of a particular race or ethnicity make up most of that area's residents.

There is a high concentration of African American residents along the inner part of MLK Jr Parkway and along Madison Avenue, near Merle Hay Mall. Asian residents are more concentrated along the outer part of MLK Jr Parkway and near Drake University. Hispanic residents are scattered throughout the region, but are a little more concentrated east of Downtown.



4 Existing Transit Network

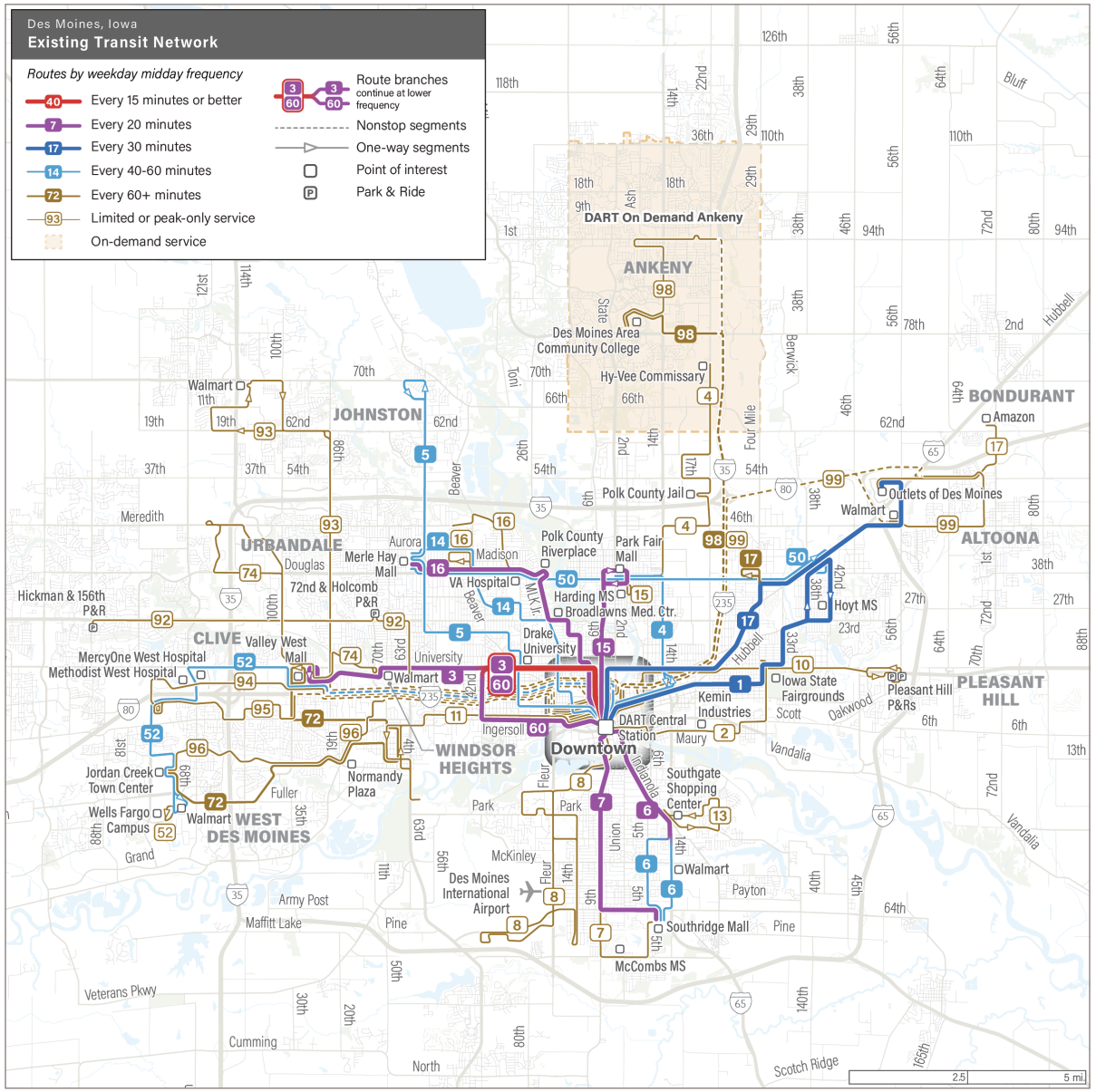
Where is service available?

Many conversations about transit focus on where services are provided, but often not enough attention is paid to when transit is coming. Waiting time is such an important component of any transit trip that it is essential to think about frequency when looking at a bus network. The routes in this maps are colored by their frequency during midday on a regular weekday.

- **Red routes** are routes that run every 15 minutes or better,
- **Purple lines** run every 20 minutes,
- **Dark blue lines** every 30 minutes,
- **Light blue lines** every of 40-60 minutes, and
- **Brown lines** are routes that run less frequently or only during peak periods.

Sometimes, two lines combine to create a higher frequency. The red line on West University is created by Routes 3 and 60, each every 20 minutes, with offset schedules to deliver a bus every 10 minutes.

More details about the core of the network are shown on page 58.



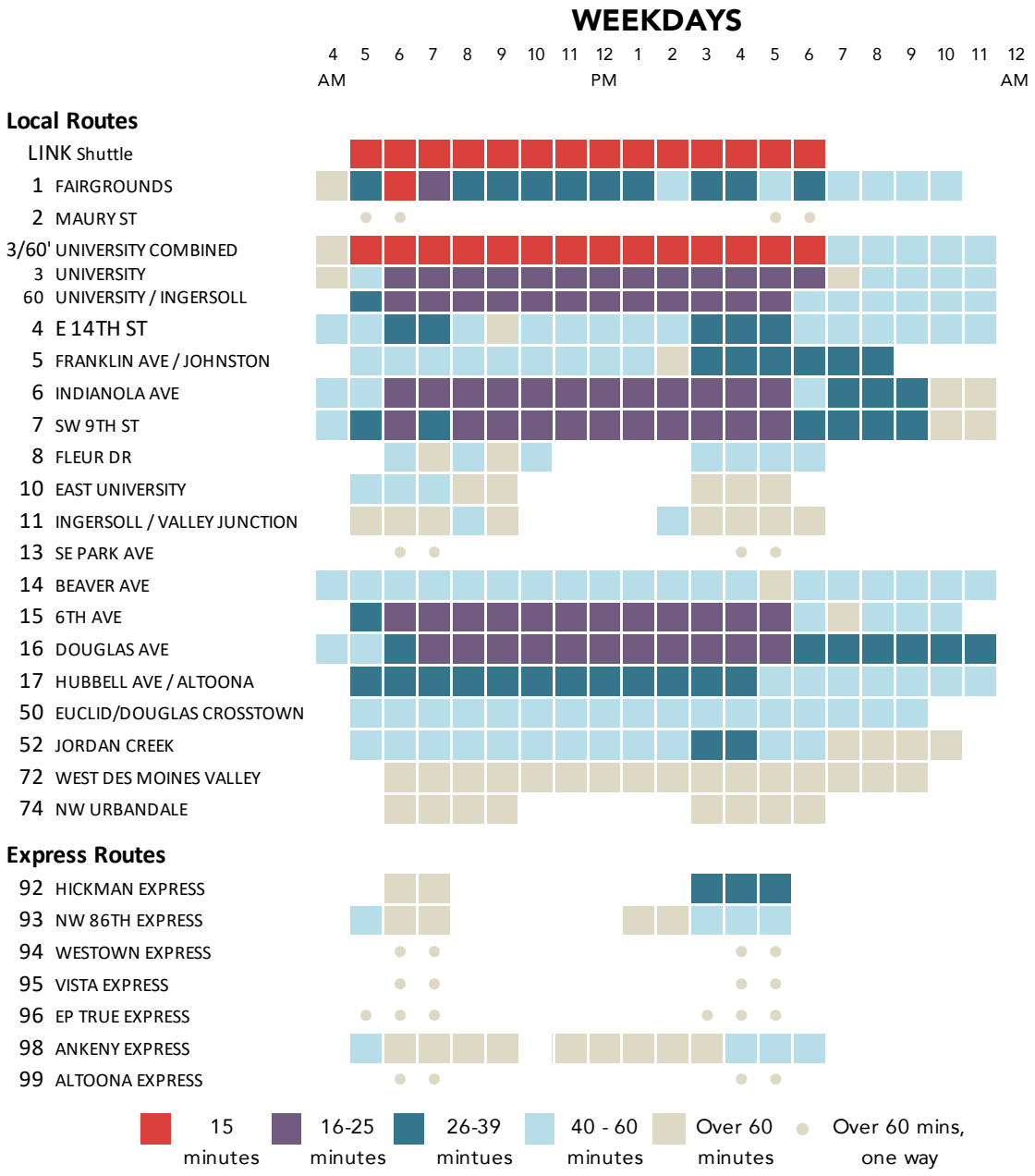
When is service available?

The chart on the right summarizes each route's frequency throughout a weekday. Every row represents a route and every column is an hour of the day. The color of each single block is the frequency of that route at that hour.

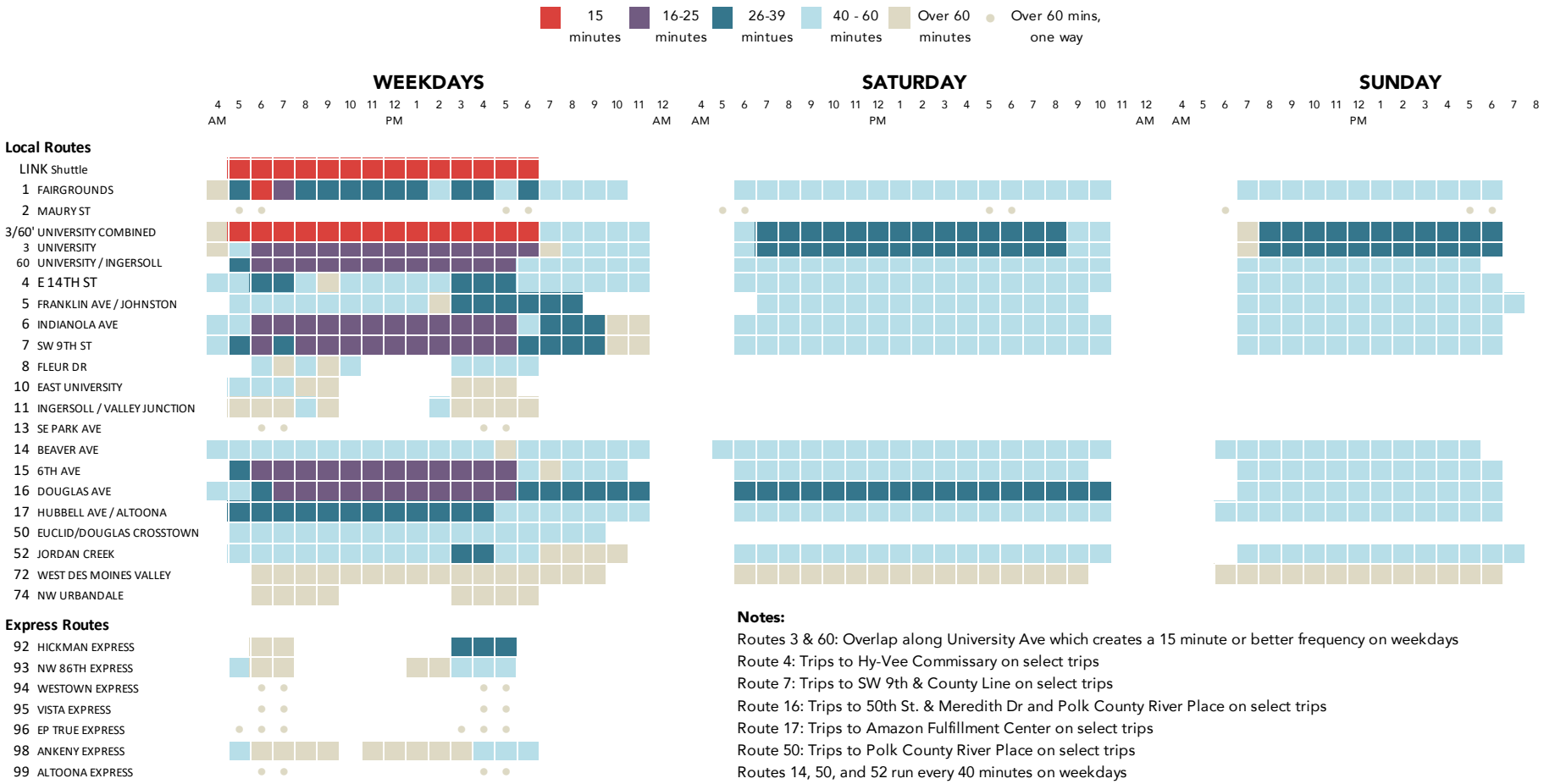
Many routes have lower frequencies in the evenings. Routes 3, 6, 7, 15 and 60 run every 20 minutes throughout the day, but every 60 minutes after 7pm. Only three routes run every 30 minutes after 7pm, Routes 5, 7, and 16.

Routes 3 and 60 run every 20 minutes north of Downtown and along University Avenue, but they are scheduled so that a bus comes every 10 minutes along that segment. That's why the combined row is red on this chart and the combined route is red on the previous map. The route schedules are not offset in the evenings. Most routes start around 5am and end around 11pm. Peak-only routes vary, but generally they run from 6am to 8am and from 4pm to 6pm.

The Link Shuttle was not shown on the previous page because the map is zoomed out, but we can see it here. It runs every 15 minutes from 5:30am to 6:30pm. The routing can be seen on page 58.



When is service available?



Notes:

Routes 3 & 60: Overlap along University Ave which creates a 15 minute or better frequency on weekdays
Route 4: Trips to Hy-Vee Commissary on select trips
Route 7: Trips to SW 9th & County Line on select trips
Route 16: Trips to 50th St. & Meredith Dr and Polk County River Place on select trips
Route 17: Trips to Amazon Fulfillment Center on select trips
Route 50: Trips to Polk County River Place on select trips
Routes 14, 50, and 52 run every 40 minutes on weekdays

This chart shows the same information as the previous page but includes Saturdays and Sundays. From left to right, the columns of blocks show service for each route during weekdays, Saturdays, and Sundays, respectively.

Bus service on Saturdays looks very similar to evenings, but Route 3 runs every 30 minutes and Routes 5 and 7 run every 60 minutes. On Saturdays, routes run roughly from 6am to 10pm.

Route frequencies on Sundays are very similar to Saturdays, except that Route 16 runs every 60 minutes. Spans of services are shorter on Sundays. Most routes run from 7am to 7pm.

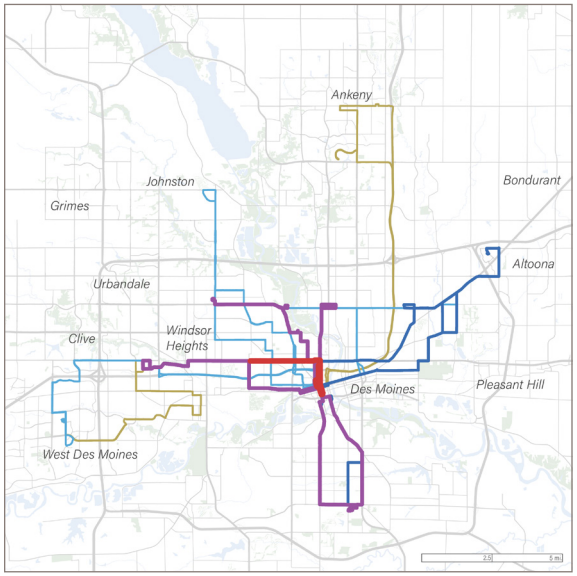
Evening and Weekend Service

The maps to the right show the service provided during weekday midday, evenings, Saturdays, and Sundays using the same color scheme as before. The weekday midday map is very similar to the main map on page 46, but it doesn't include the peak services.

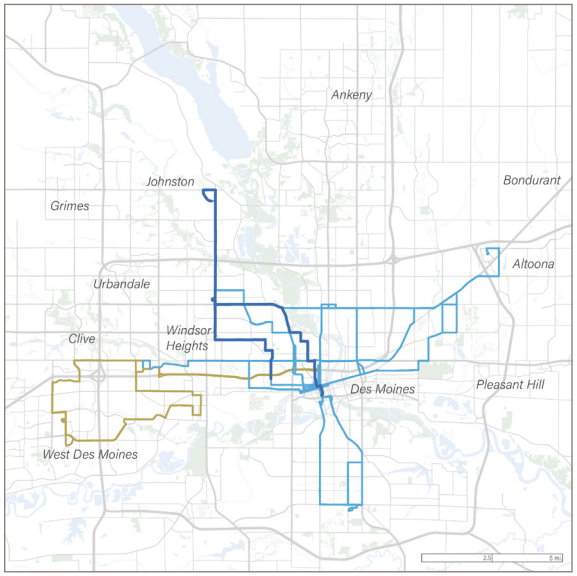
The maps for evenings, Saturdays and Sundays are quite similar to each other. There are no services that run more frequently than every 30 minutes, and the service to Ankeny doesn't run. Route 5 to Johnston runs every 30 minutes during the evenings but every 60 minutes during the weekends. Route 16 to Merle Hay mall runs every 30 minutes on evenings and Saturdays, but every 60 minutes on Sundays.

High ridership tends to arise from all-day, all-week service. Many people that work in retail of service jobs have shifts that are not Monday to Friday, 9 to 5. If a person has to be at work before or after transit service is provided, they are not likely to find transit useful. Additionally, people who work during the week value having a chance to do their shopping or visiting by transit on weekends.

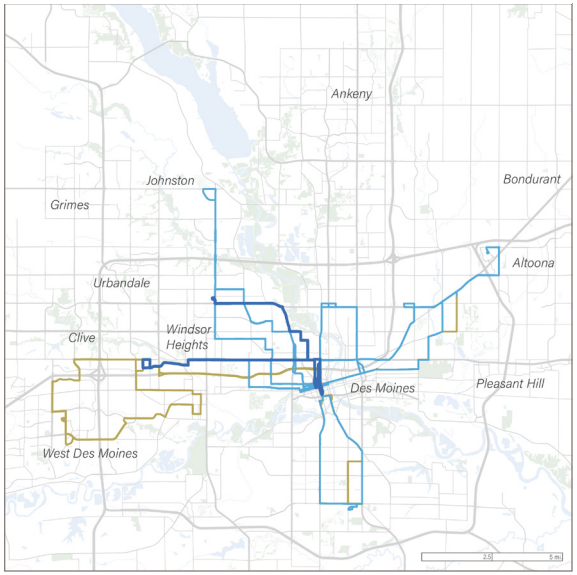
Weekday 12pm



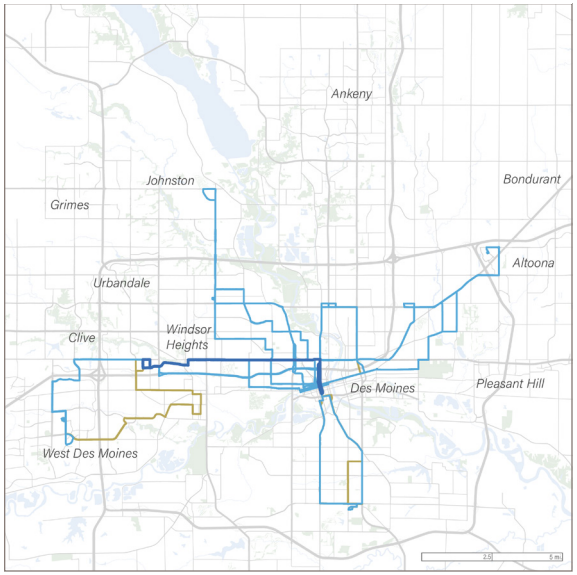
Weekday 8pm



Saturday 12pm



Sunday 12pm

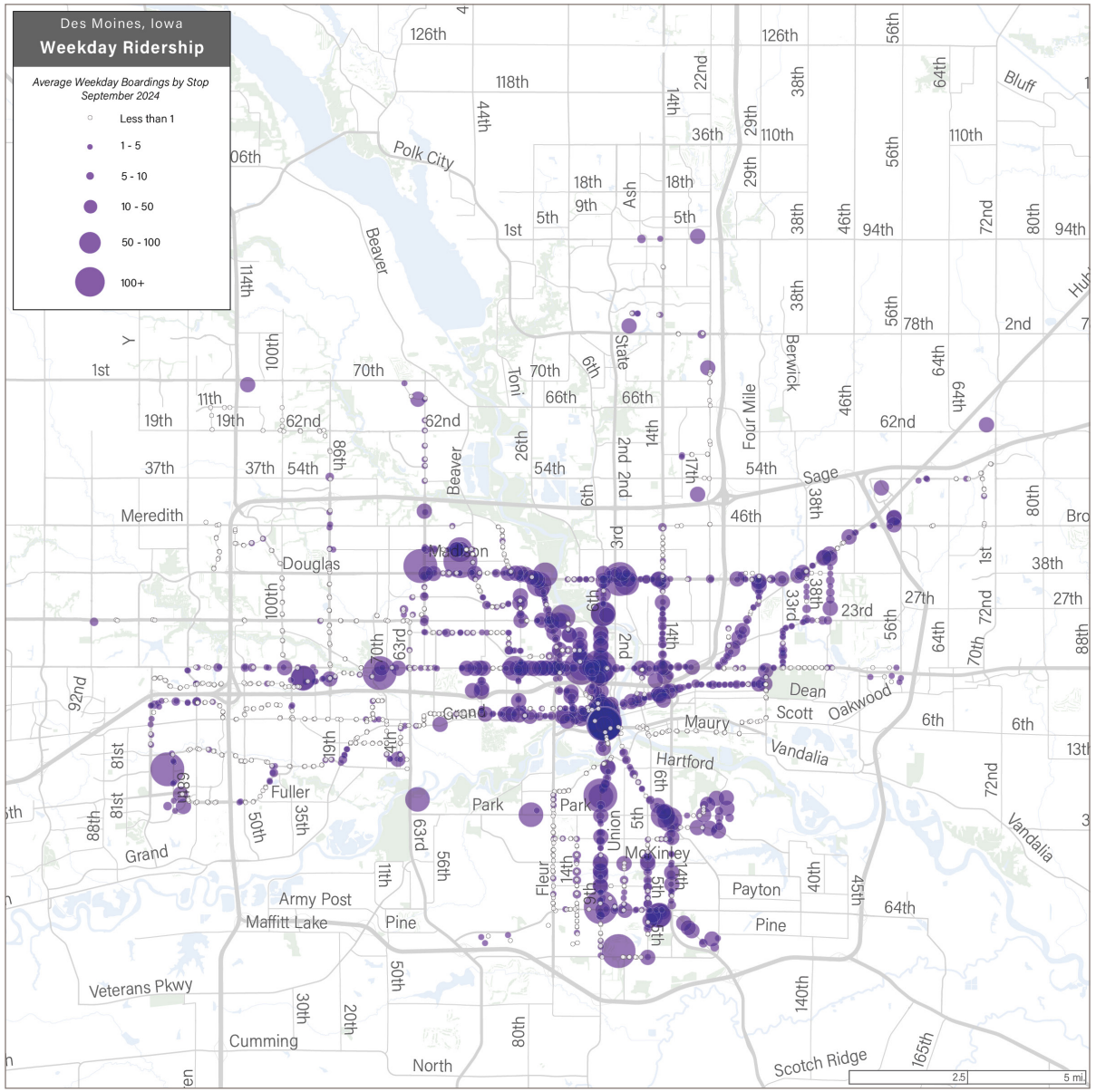


Where are people riding transit?

One measure of transit performance is the sheer amount of ridership it attracts. This can be made visible with a map of boardings at each transit stop, as shown on this map.

High ridership routes and areas can appear in two ways on this map: either as large dots or as multiple medium-sized dots that are very closely spaced. Looking for those patterns we can observe that the highest boardings occur:

- At hub stops where several routes converge or terminate and people can transfer between routes (e.g. Downtown, Park Fair Mall, Valley West Mall, Jordan Creek Mall, and Southridge Mall)
- At intersections where routes cross (e.g. University Avenue and 6th Avenue)
- Along higher-frequency routes (e.g. Routes 15, 16, and the combination of Routes 3 and 60 on University Avenue)
- Along dense, linear corridors (e.g. Route 60 on Grand and Routes 1 and 4 on East Grand Avenue)



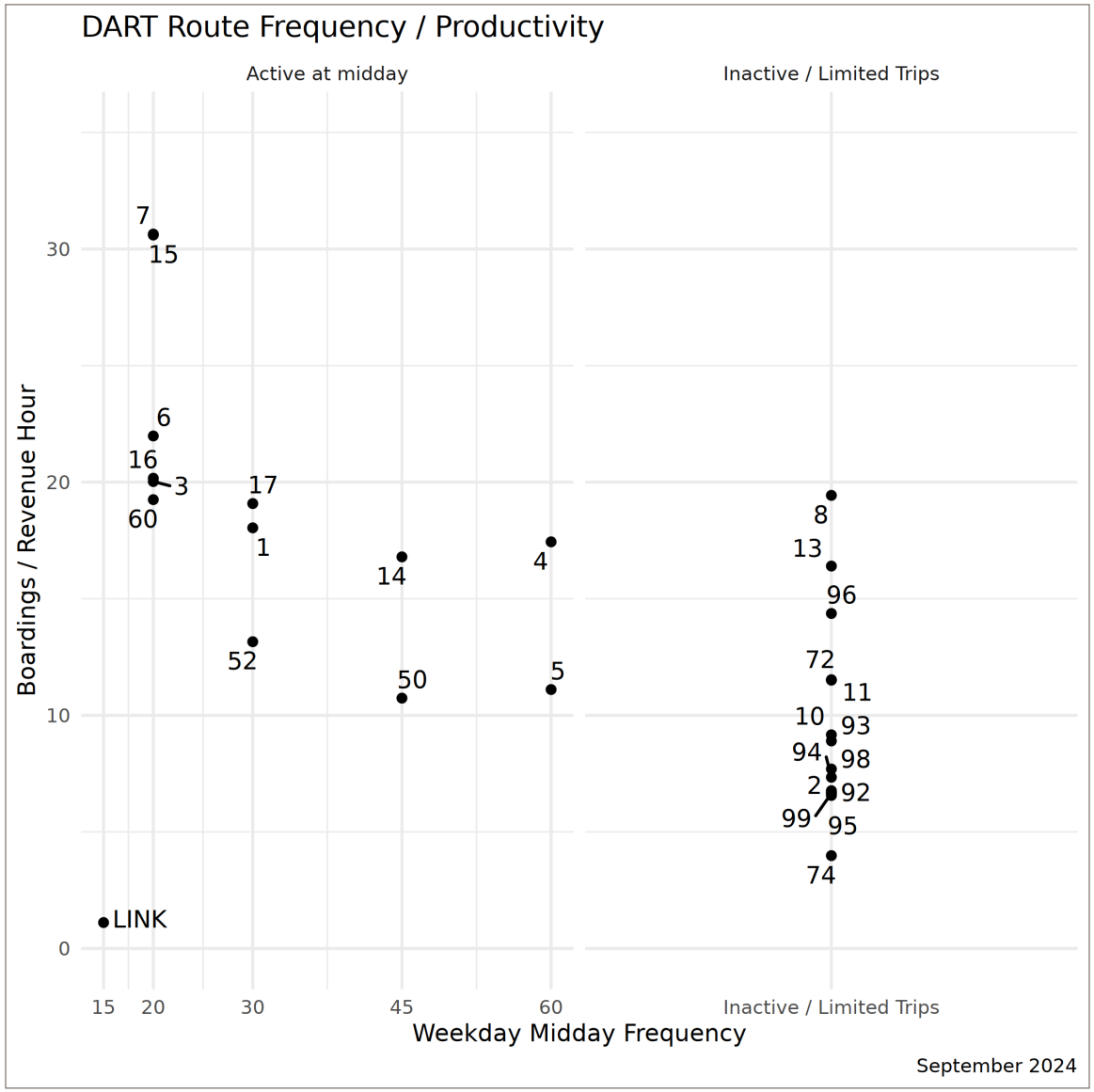
Productivity & Frequency

In addition to sheer ridership, we can look at **ridership relative to cost.** Ridership relative to cost is called "productivity."

The chart to the right shows the productivity (Y axis) of individual DART routes plotted against their "baseline" weekday midday frequency (X axis).

The chart to the right shows that, on average, 20-minute routes are more productive than 30-minute routes, which are more productive than most 60-minute routes.

This is a common trend across agencies (as shown on page 18). Higher frequency services often tend to have not just higher overall ridership, but also, higher overall productivity.

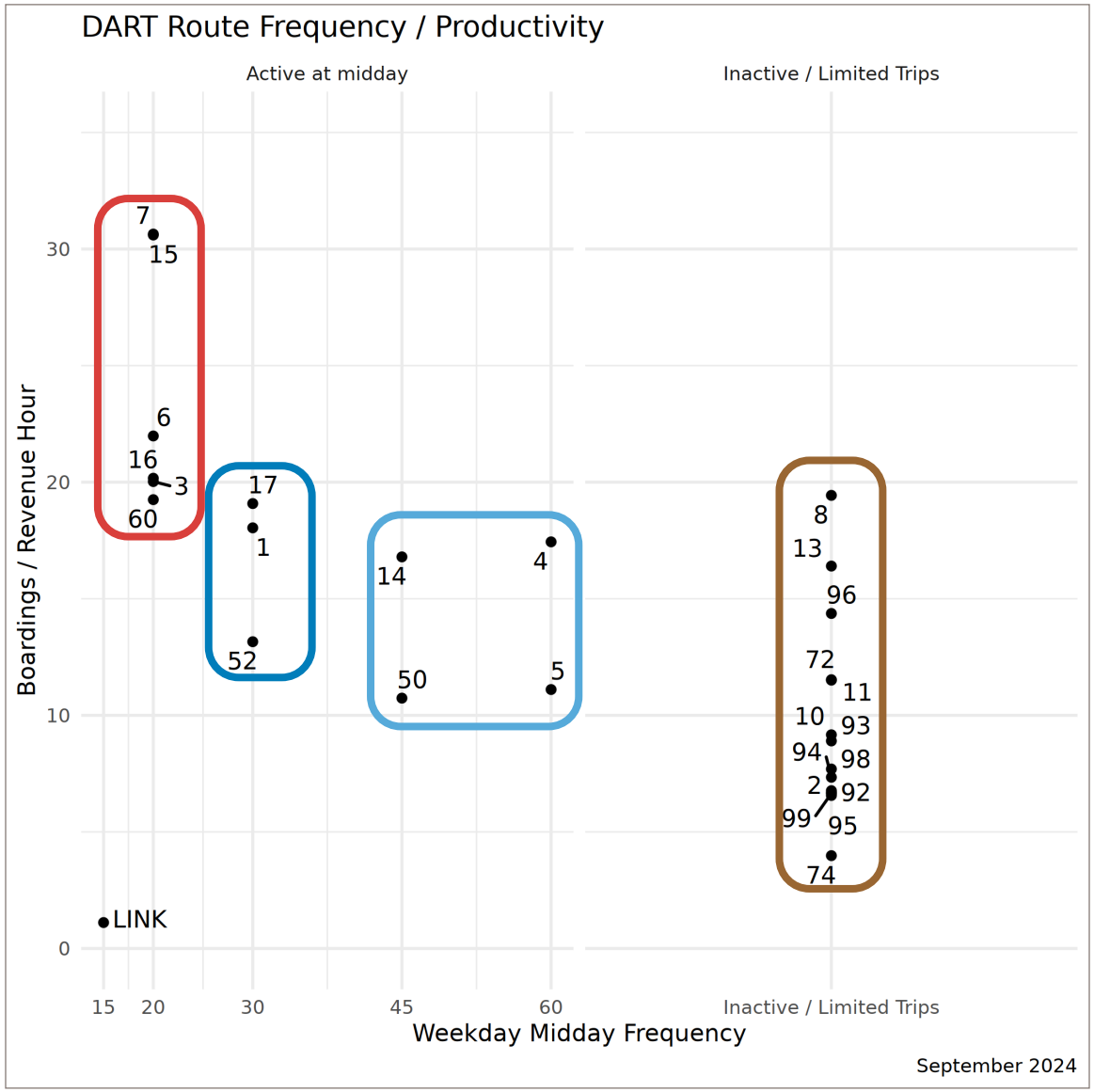


Peak-Only Routes

Historically, many people have been interested in transit to overcome the difficulty of commuting during rush hours, also called peak times. However, since the Covid-19 pandemic, travel patterns have changed a great deal. Many people are working from home permanently and others are not commuting during traditional peak hours. Because of this, many agencies are no longer running additional service during the peaks. Instead, they are reinvesting that money into more all-day service.

DART has 12 routes (and additional route patterns) that only run during the peak periods. The chart on the previous page shows that most of these routes are less productive than the rest of the network.

High ridership arises from all-day, all-week service. Even people that could use transit to get to their 9 to 5 jobs might need flexibility to travel during other times. They might have to work late or they may have to come home early if their child is sick. That's why, now that commute patterns are more flexible, services that run only briefly are tending to be less productive.



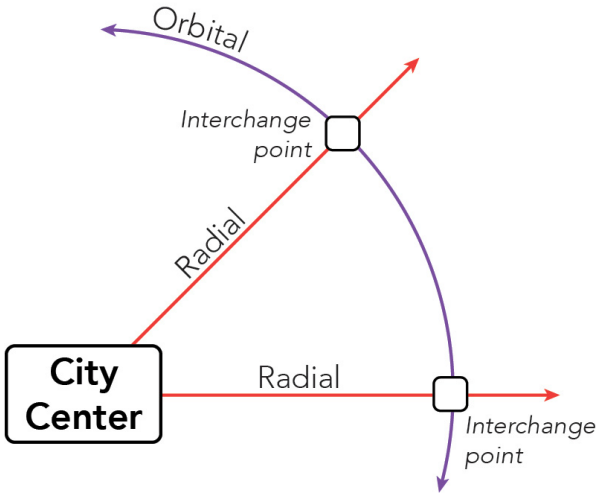
Orbital Routes

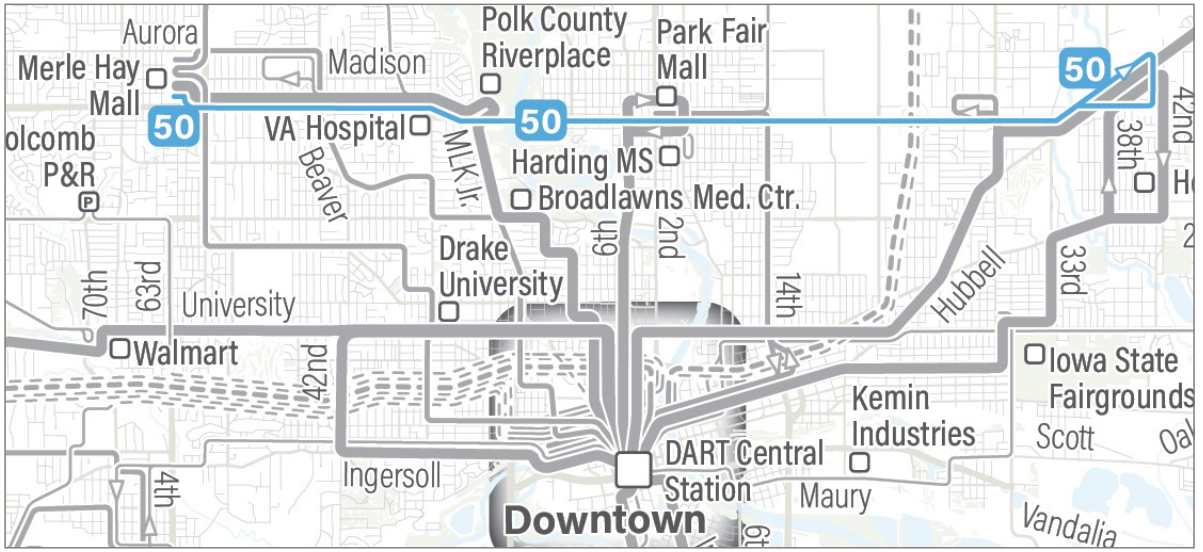
Today's network is laid out in a radial pattern. To connect between routes, most people have to travel to DART Central Station. This is fine for short distances, but what if someone wants to travel between two points far from Downtown?

While radial routes go Downtown, orbital routes connect radial routes together without having to go through Downtown. The DART network has Route 50, which functions as an orbital route.

Orbital routes generally work well if they are frequent and follow development patterns with high density and high walkability. If an orbital route is not very frequent, riders might be better off traveling Downtown to connect to other routes, particularly if that connection is timed so that transferring is fast.

Route 50 comes every 60 minutes and travels through some areas that are not very dense. While it is connecting some destinations far from Downtown, its low frequency requires long waits and provides less useful service. This is likely why Route 50 is the least productive all-day route (as shown on page 51). The network could potentially be designed without an orbital route and only rely on transfers Downtown. Given the relatively low resources that DART has to spend serving the region, a more frequent orbital service is unlikely to be a high productivity investment.





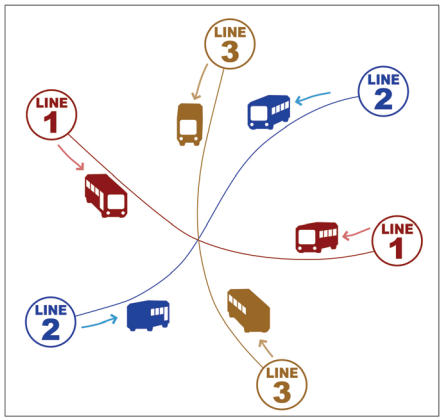
Timed Connections

It's unlikely that all the places you might want to go will be located on the bus line nearest to your home. Connections allow people to travel in many directions to reach more destinations. To facilitate connections between routes, a transit network can have a timed transfer, also called a pulse.

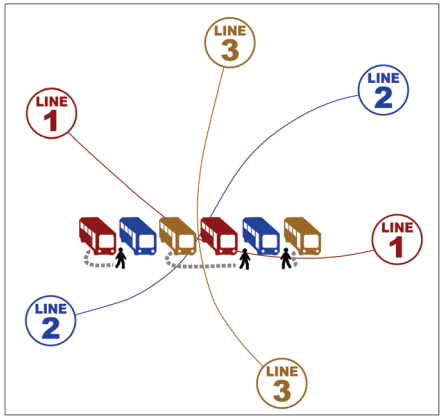
Normally, the amount of time a transfer takes depends largely on the frequency of the connecting routes. For an un-timed connection, transferring to a route that comes every 60 minutes requires a 30-minute wait, on average, and in the worst case a 59-minute wait.

With a timed connection, many routes reach a transit center at the same time and depart five minutes later. These five minutes allow passengers to connect between routes easily. Timed connections can turn a set of individual bus routes into a bus network.

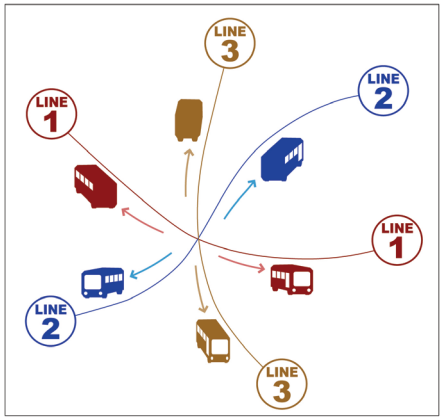
In a timed connection, it is extremely important that buses arrive on-time. The next page explores DART's on-time performance.



Routes are designed to come together at one central location. Buses can terminate here or simply stop along their route.



Buses come together and wait for 5 minutes allowing people to transfer from one bus to another.



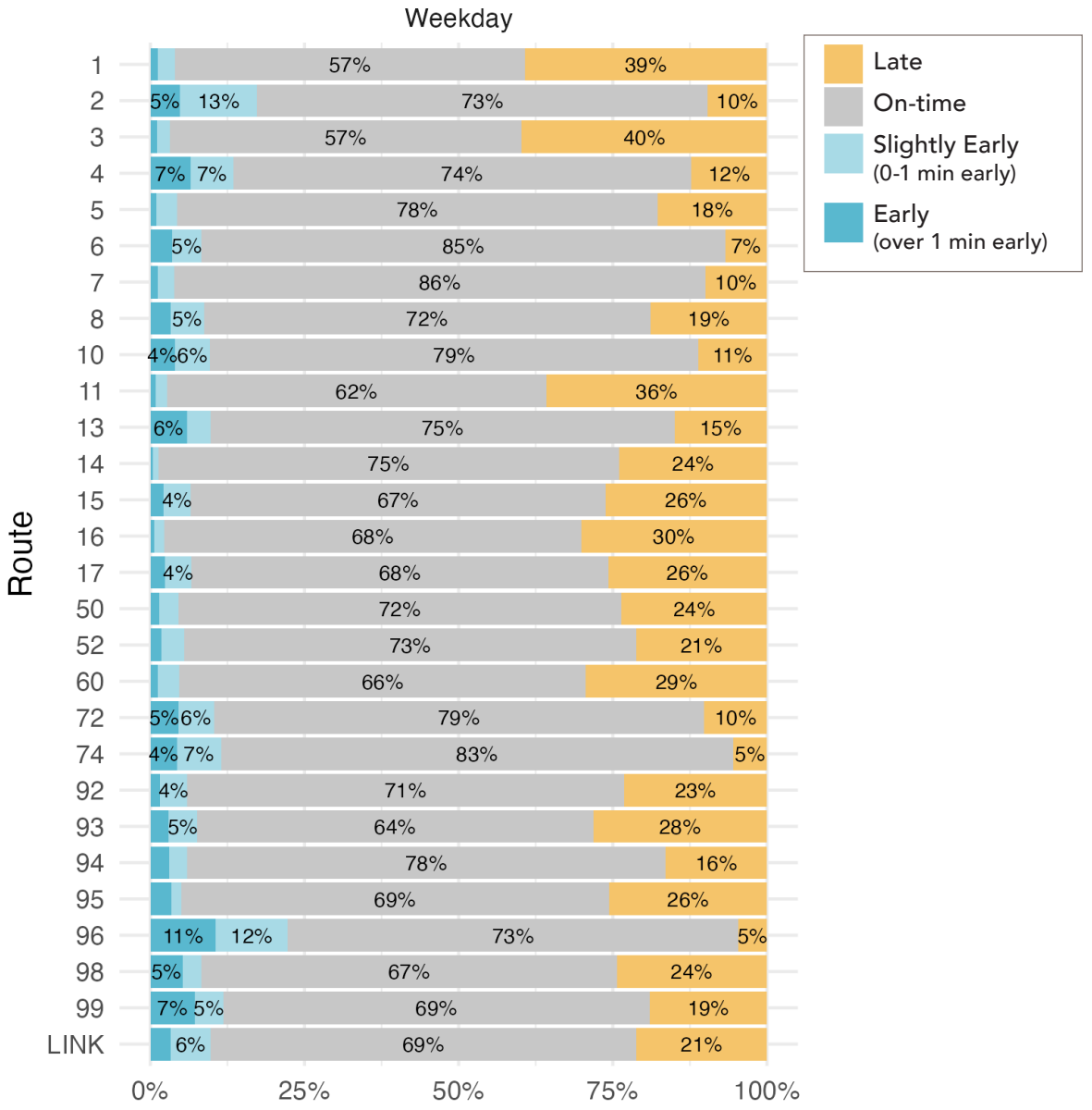
After 5 minutes, buses depart at the same time and continue their trip.

On-Time Performance

On-time performance is a measure of how reliably buses depart when customers expect them to depart. Reliability is particularly important when a transit network is built of infrequent routes. If another bus is not coming soon, the timeliness of each bus is extremely important.

On an infrequent route, an early departure can be much worse than a late one. If a route that comes every 60-minutes is 5 minutes late, someone might be 5 minutes late to work, and that is bad. But if it is 5 minutes early, they probably weren't at the bus stop in time to catch it, and they have to catch the next bus—which means they are now 60 minutes late.

DART considers a bus "on-time" if it departs at a timepoint up to 5 minutes after the scheduled time. With traffic signals, wheelchair boardings, and other inevitable delays, even the smoothest operation will routinely fluctuate in a 5-minute window.

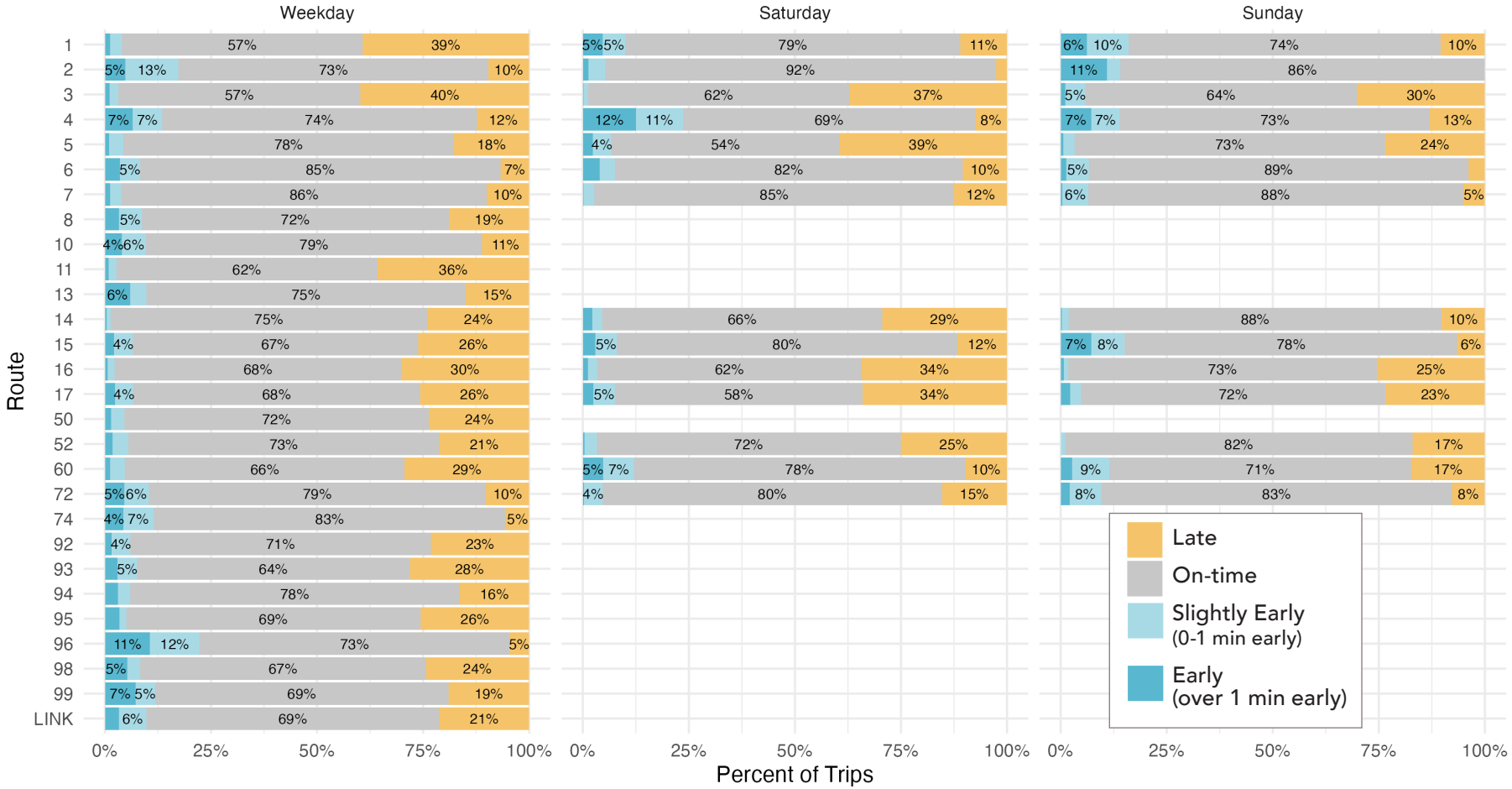


On-Time Performance

The chart below shows the percentage of times each route was observed to be (1) early, (2) on-time, or (3) late on Weekdays, Saturdays, and Sundays in September 2024. Buses that arrive within 1 minute early are categorized as "slightly early", and buses that arrive earlier are categorized as "early".

DART has a systemwide on-time performance of 67%, with 4% of trips arriving early and 28% arriving late.

Over time, traffic in the region has increased and driving speeds have gone down. That means that each bus can cover less distance in the same amount of time. As a result, buses arrive later than scheduled at each stop, hence the high percentage of late trips. To keep the same frequency and improve on-time performance, DART must either add a bus (which costs more) or find a way to increase speeds.

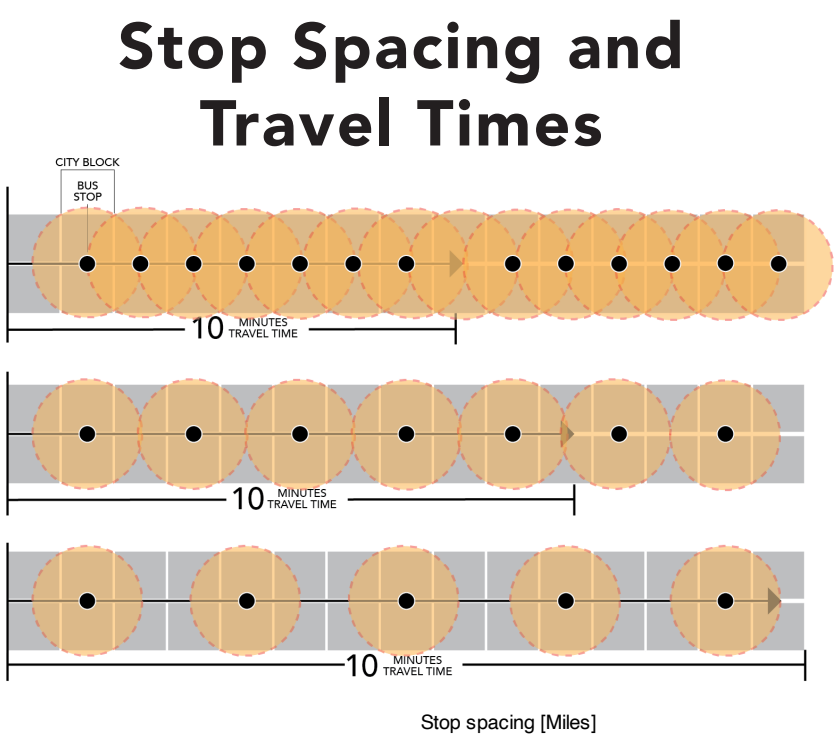


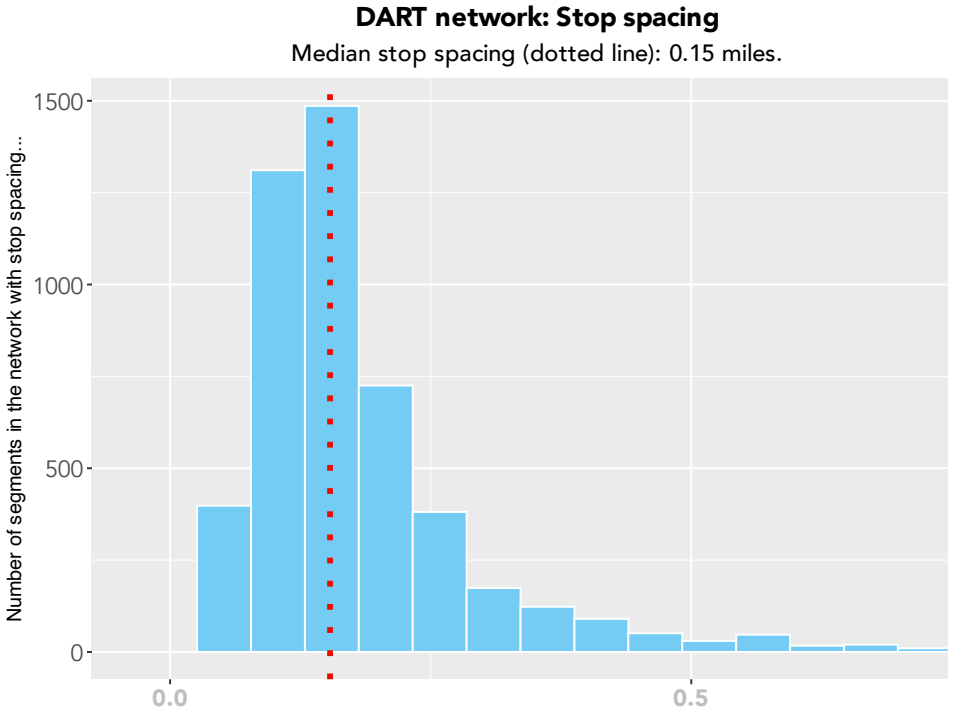
Stop Spacing

There is a geometric trade-off between closer stop spacing and faster bus speeds. The figure on the bottom-left shows the basic trade-off in conceptual terms. As stops are placed farther apart, buses can travel faster and cover more distance in the same time. Much of the time lost when stopping for passengers is the time to slow down, open the door, and pull back out into traffic. That time is about the same for 1 passenger or 50.

On average for DART, bus stops are about every 0.15 miles (800 feet) apart. For many people along a route, it is easy to walk to any of several stops on a route. Several stops are not necessarily better. The chart at the bottom-right shows the distribution of stops in the DART bus network.

When there are many stops, passengers spread themselves out among them, so the bus stops more for the same number of people. When passengers gather at fewer stops, stopping time is used more efficiently, resulting in faster operations.

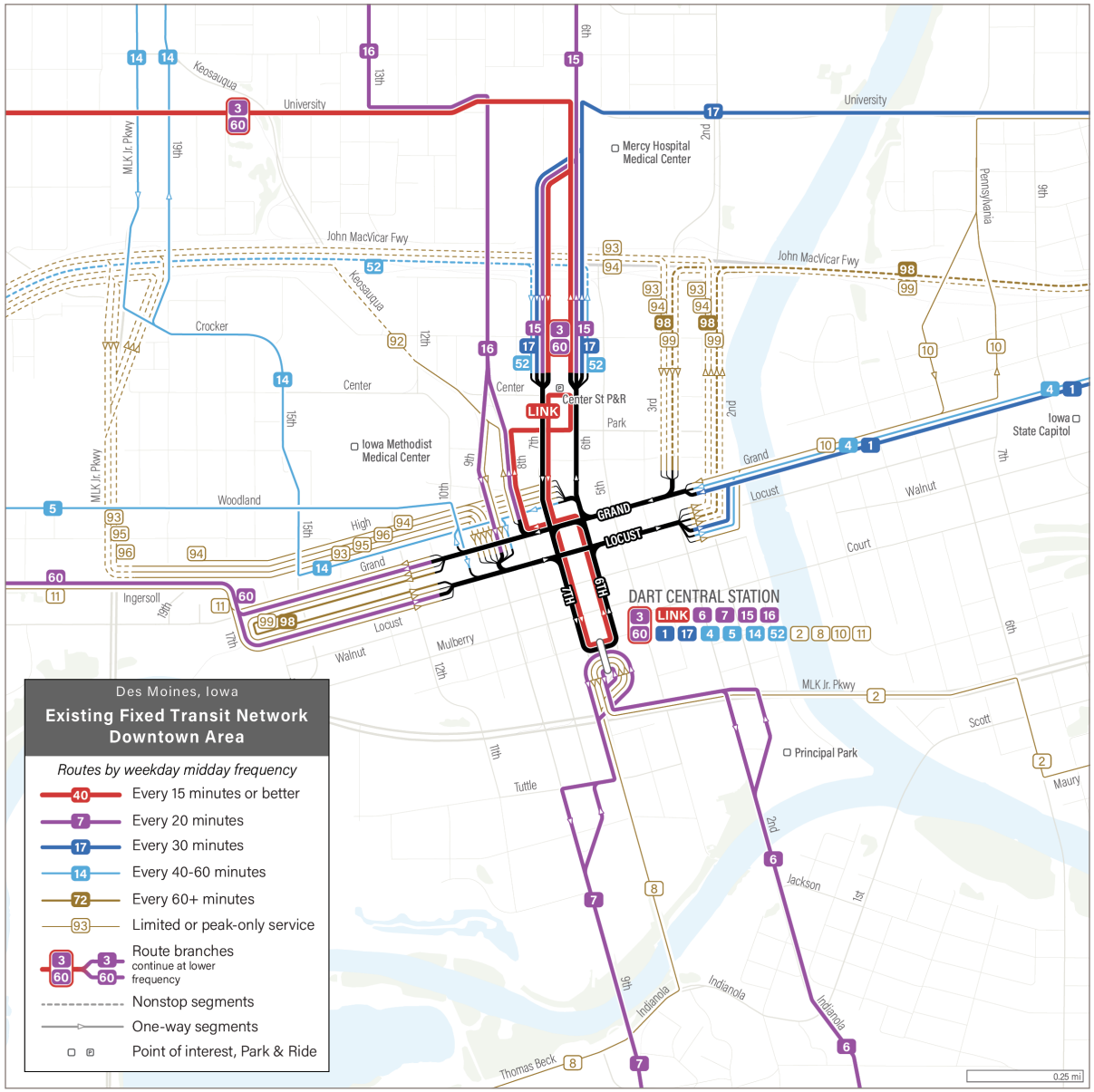




Downtown Des Moines

Downtown Des Moines has the strongest offering of transit service in the region. Most routes come into DART Central Station to provide an opportunity for customers to transfer from one route to another. This convergence of lines means that Downtown Des Moines is where most transfers in the DART system happen.

Adding to this concentration of radial routes, DART operates one short connector route, the LINK. The LINK is relatively frequent, but it's so short that if you miss a bus, you can likely walk to your destination before the next bus arrives. That is why the LINK is the route with the lowest productivity, as shown on page 51. It's also mostly duplicative with five other routes.



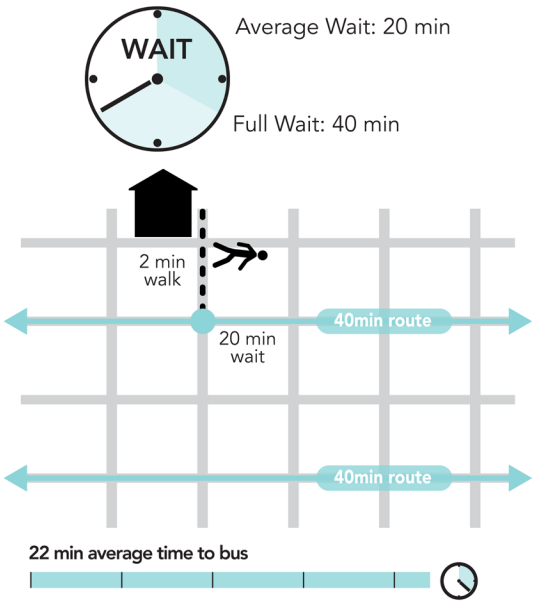
Shorter Walks or Shorter Waits?

Transit service being divided among more streets inevitably leads to lower frequencies on each street, and therefore longer waits. This is used as a coverage tool to get buses as close to people as possible. However, if someone misses their bus, the wait is quite long.

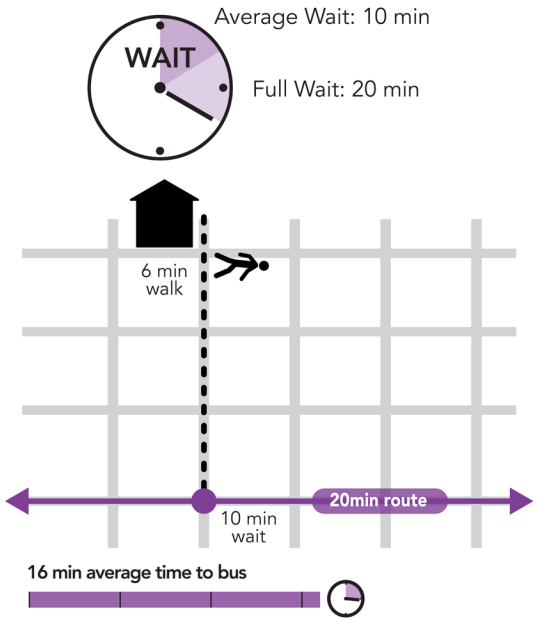
If two routes on parallel streets come every 40 minutes, then they can be combined onto the same street to arrive exactly 15 minutes apart, and someone traveling a short distance could wait at a single stop for either bus.

This is a similar case with Route 60 on Ingersoll Avenue and Route 5 on Woodland Avenue west of Downtown where they are only 900 feet apart. If they were combined, they could provide more frequent service. This is one approach to increasing frequency on some corridors without significantly sacrificing coverage. Some people on Woodland Avenue may already be walking to Ingersoll Avenue because the bus is coming sooner.

Shorter Walk, Longer Wait
Closely spaced routes with buses coming every 40 min



Longer Walk, Shorter Wait
Wider spaced routes with buses coming every 20 min



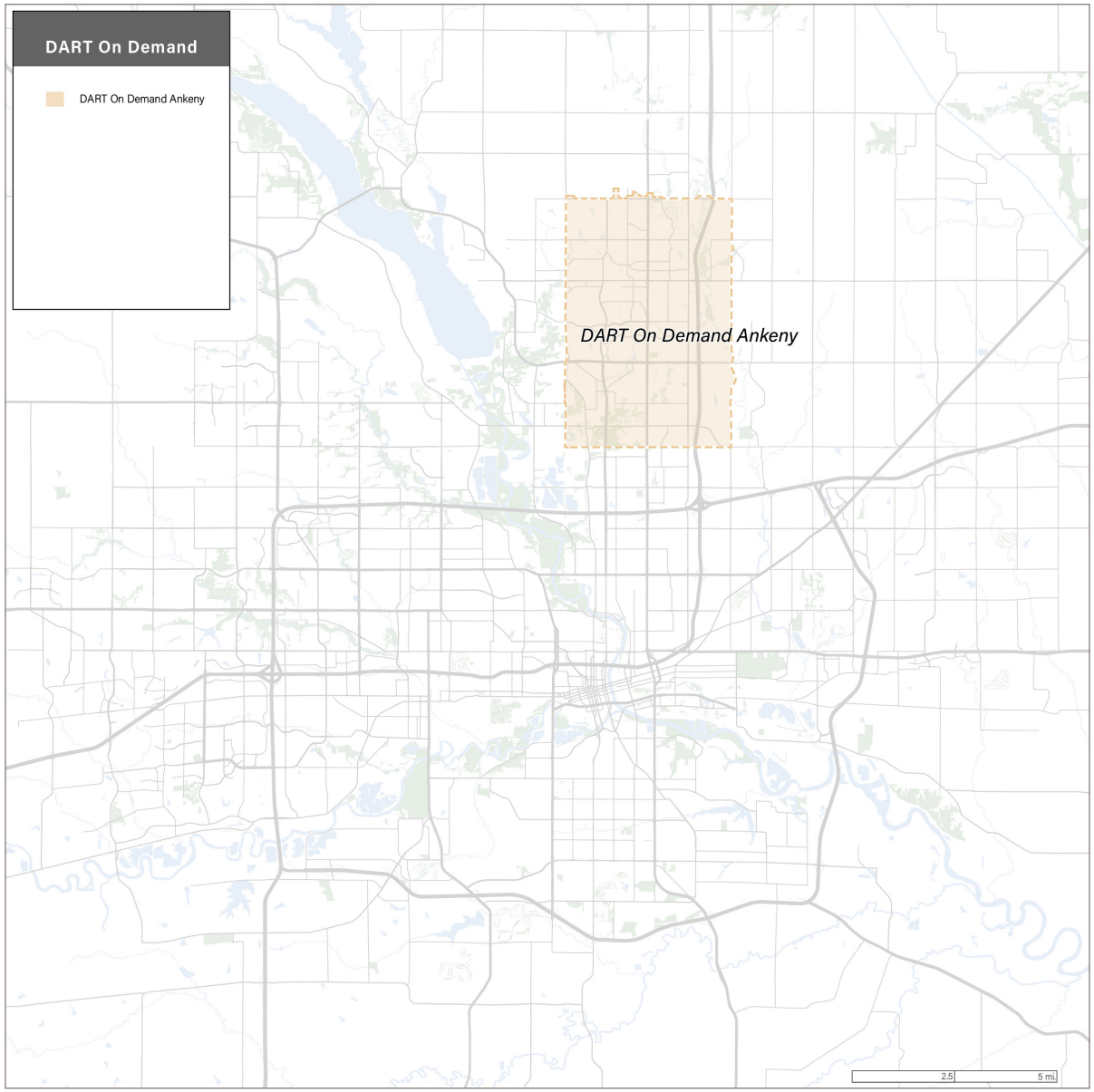
DART On Demand Ankeny

The On Demand Ankeny service zone includes most of the city of Ankeny, as well as parts of unincorporated Polk County. This service uses smaller buses for in-zone travel only, and buses can be shared by travelers on separate bookings.

Bookings can be made in real time, or up to seven days in advance via a smart phone app, a web portal, or by calling DART customer service. Service is offered Monday-Friday from 6:00am-6:30pm.

Rides are $3.50 per passenger, except for children aged 6-10, people over 65 years old, those with disabilities, refugees, and students, all of whom qualify for half fare and pay $0.75. Payment can be made in cash, via the DART On Demand or MyDART apps, or by using a monthly pass or DART tokens. The service can be used to connect to the rest of the DART network by booking a trip to a fixed route bus stop.

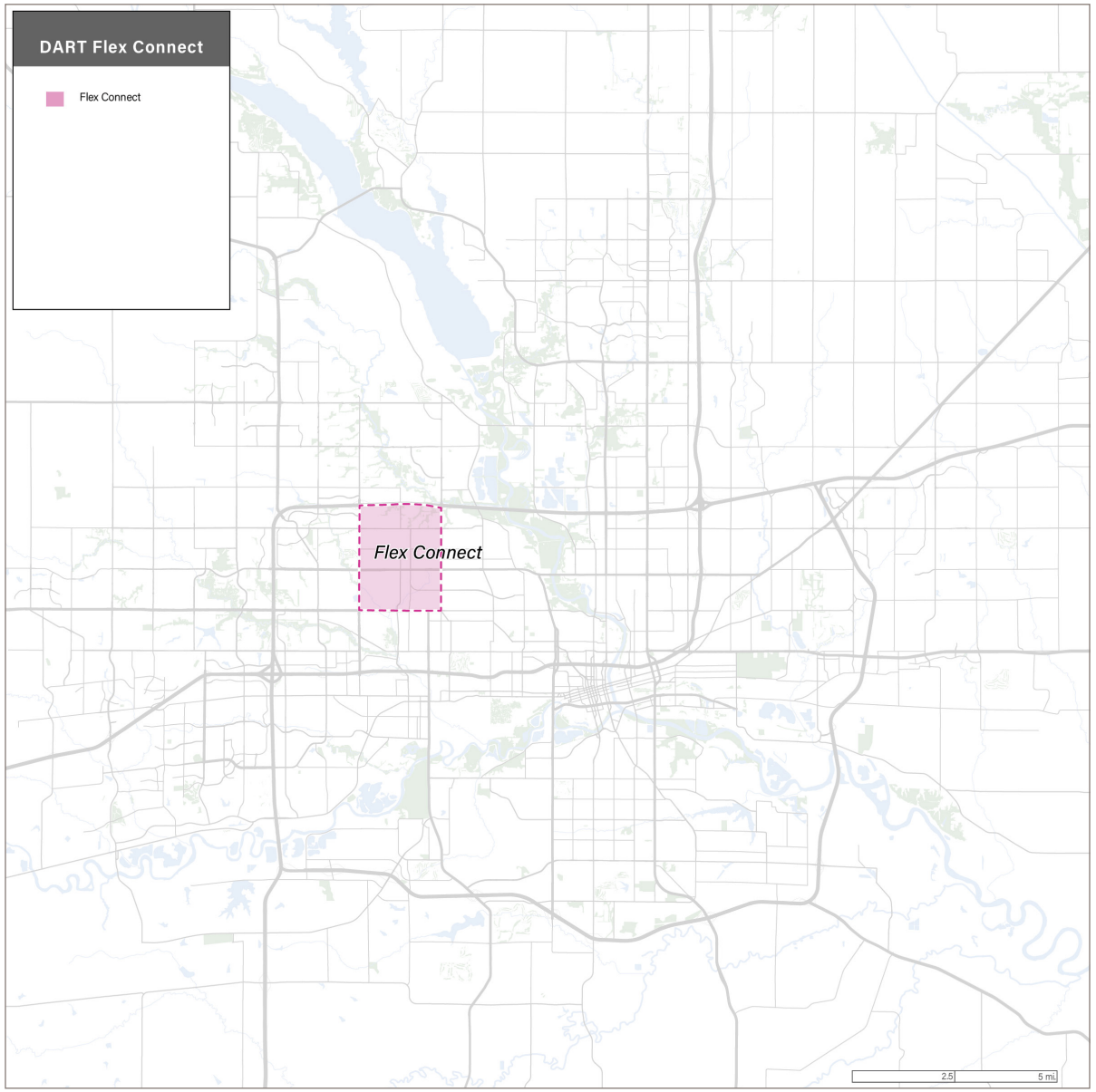
DART provided 20,575 trips to 486 unique riders in FY24, a 33% increase from the prior year.



Flex Connect

Flex Connect is a free, on demand service with an area that includes eastern Urbandale and northwest Des Moines. Service is provided by UberX, Yellow Cab Co, or by DART wheelchair accessible vehicles.

The service provides trips to and from Gloria Dei Park & Ride, Buccaneer Arena Park & Ride, or Merle Hay Mall, allowing riders to make connections to DART fixed-route services. Flex Connect operates Monday-Friday from 5:30am-6:30pm. Trips can be booked using either the Uber App using a Flex Connect Voucher, or by calling DART customer service. In FY24, there were 2,092 rides on Flex Connect.

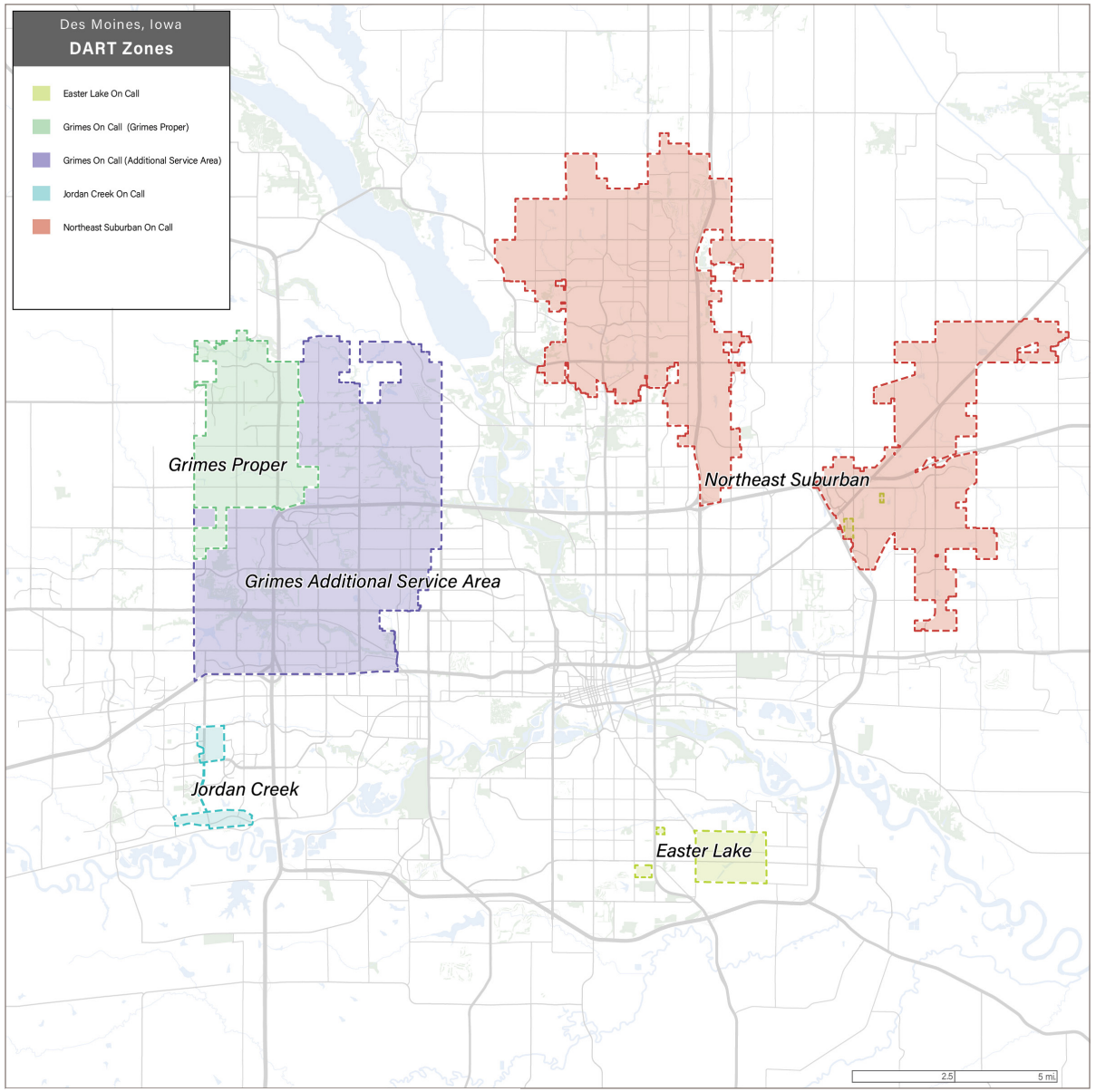


On Call Services

DART operates On Call shuttle services in four zones. Service is available on a first-come, first-served basis, and reservations must be made at least one day in advance. Fares are $3.50 per trip for adults, $0.75 for qualifying half-fare riders (adults 65+, persons with disabilities, and Medicare card holders), and free for veterans. For pass holders, each trip costs an additional $1.75.

- The Northeast Suburban zone includes Bondurant, Ankeny, and Altoona with service within or between each city, Mondays, 8:30am-3:00pm.
- The Grimes zone operates between Grimes, Johnston, Clive, Urbandale, and parts of West Des Moines and will take riders from their home or work to the nearest transit stop or other destination in the service area, Monday-Friday, 6:00am-6:00pm.
- The Jordan Creek service provides trips between Jordan Creek Town Center, DMACC West Campus, the MidAmerican Energy Company RecPlex, and Des Moines University Monday-Friday, 7:00am-6:00pm.
- The Easter Lake service operates between the Easter Lake neighborhood and destinations in Altoona and Southridge Mall, Thursdays and Fridays, 8:30am-3:00pm.

Ridership for the On Call services is very low (only 8 rides across all On Call services in FY24).

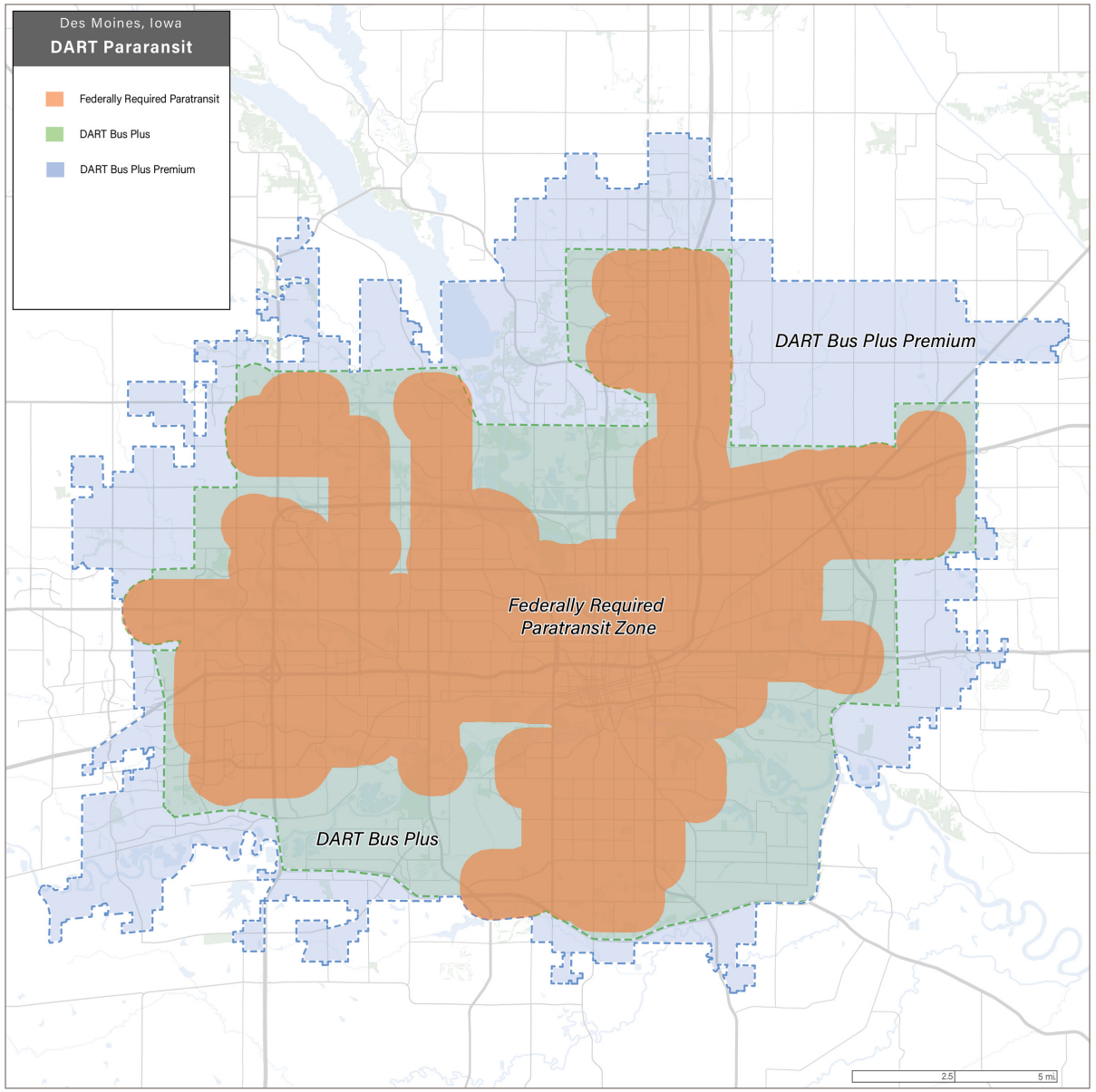


5 Paratransit

Paratransit Services

DART paratransit service is above what is required to fulfill DART's obligations under the Americans with Disabilities Act (ADA).

DART provides paratransit services within a large proportion of the overall DART service area boundaries under the names "Bus Plus" and "Bus Plus Premium." The Bus Plus zone includes the area within a ¾ mile radius of DART fixed-route service, as required by the ADA. However, in many areas the service boundaries extend to include parts of Des Moines, West Des Moines, Urbandale, Grimes, Johnston, and additional unincorporated areas within Polk County that are farther than ¾ of a mile from fixed-route DART service. The Bus Plus Premium zone extends beyond the Bus Plus zone and allows ADA-eligible passengers to make trips to and from these areas for an additional cost per trip.



Paratransit Parameters

Eligibility

Eligibility for all Bus Plus service is determined via an application with an additional verification form filled out by a qualified medical professional; once approved, users must re-certify their eligibility every three years. In addition, Bus Plus services are extended to ADA eligible visitors for a period of up to 21 days per year. Bus Plus customers may ride DART's regular fixed routes free of charge, and Bus Plus pick-up and drop-off locations may include any location within the Bus Plus service area, including any stop along DART's fixed-route lines.

Booking and Cancelations

Reservations for Bus Plus service must be made one day in advance of the requested pick-up time but can be made as many as seven days in advance. For Bus Plus Premium, reservations must be made at least 48 hours before the requested service but can be booked up to five days in advance. Upon arrival, drivers will wait up to five minutes beyond the scheduled pick-up time and will assist passengers with mobility needs between the building and the vehicle. Service may be canceled up to 1 hour before scheduled pickup. Cancelations within one hour of scheduled service or failure to appear at the pick-up location are considered no-shows, and repeated no-shows may result in suspension of service eligibility.

Service Span

Service for Bus Plus and Bus Plus Premium is offered Monday-Friday 5:00am-11:00pm, Saturday 6:00am-10:00pm, and Sunday 7:00am-7:00pm, which is comparable to the fixed-route bus service.

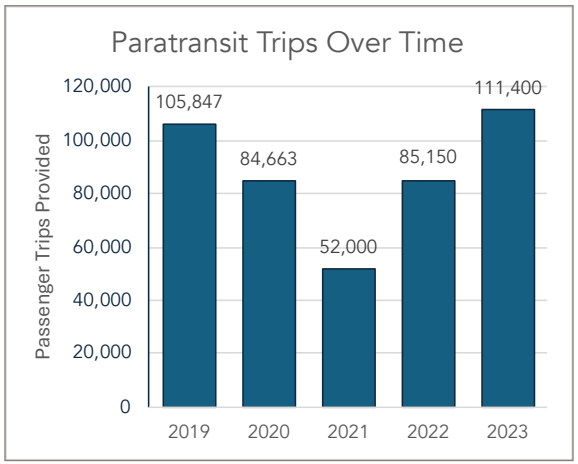
Fares and Fare Payment

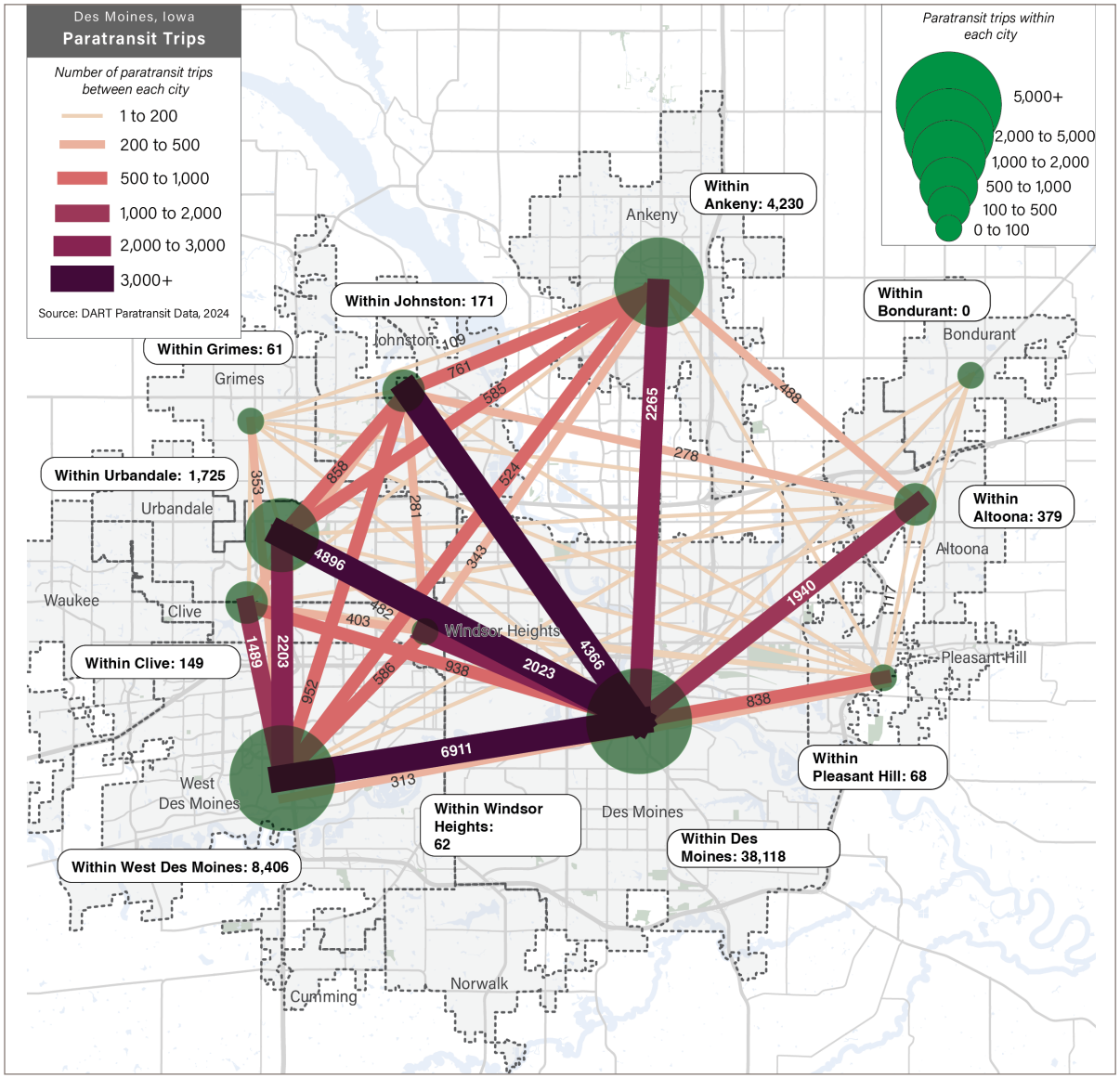
Fares for Bus Plus regular service are $3.50 per trip, while Bus Plus Premium fares are $30 per trip. Payment can be made using cash, credit, or debit cards via the MyDART mobile app, DART tokens, or personal check. Accompanying passengers are allowed to ride along with ADA users for the same fare per trip, but no additional payment is required for authorized care attendants.

Paratransit Trips

The map to the right shows paratransit trips in September 2024. About 60% trips started within the federally required zone (¾ mile radius of DART fixed-route service), but the rest started outside that zone.

Ridership across DART's paratransit services fell in 2020 and 2021 due to the COVID-19 pandemic, which reduced overall demand for transit services and increased concern for driver and passenger safety. Since that time, DART demand-response services, including paratransit, have seen a gradual return to pre-pandemic levels, with ridership at a 5-year high of 111,400 passenger trips in 2023.





6 Key Choices

Key Choice: Ridership vs Coverage

This project is a unique opportunity for the region to consider and clearly define the right balance between desirable but competing goals for transit. The most difficult choice for the public, stakeholders, and the Commission will be between providing **high ridership** and providing **wide coverage**. This trade-off is explained in detail starting on page 23.

Recall that high ridership serves several popular goals for transit, including:

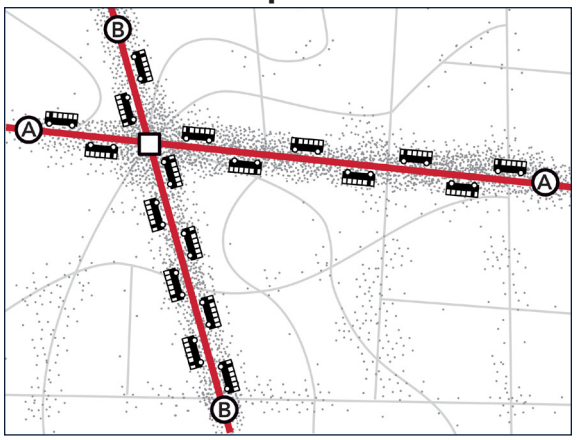
- Competing more effectively with cars, so that the region can grow without increasing traffic congestion.
- Collecting more fare revenue, increasing the budget paid by fares.
- Making more efficient use of tax dollars by reducing the cost per ride.
- Improving air quality by replacing vehicle trips with transit trips.
- Supporting dense and walkable development and redevelopment.
- Extending the most useful and frequent services to more people.

On the other hand, many transit goals are achieved not by ridership but by providing higher coverage, including:

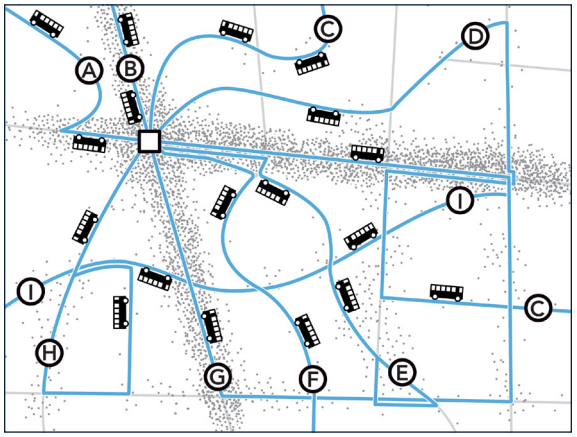
- Ensuring that as many people as possible in the service area have access to some transit service, no matter where they live.
- Providing basic transit access for people who cannot use personal vehicles.
- Serving newly developing places, even if they don't yet have the size or density to constitute a large transit market.

This choice is not binary. A transit agency can pursue high ridership and extensive coverage at the same time, but the more it pursues one, the less it can provide of the other. Every dollar that is spent providing very high frequency along a dense mixed use corridor is a dollar that cannot be spent bringing transit closer to each person's home or reaching residential areas in the less dense parts of the region, and vice versa.

Ridership Network



Coverage Network



Key Choice: Walking vs Waiting

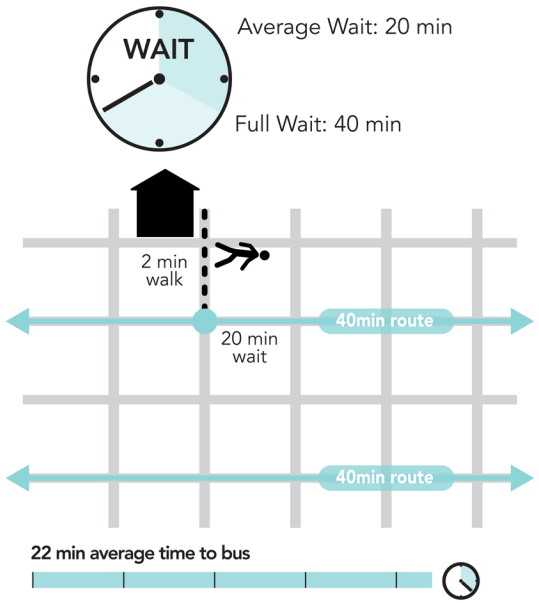
Another way to think about the question of ridership and coverage is to think specifically about how far a person should have to walk to reach a bus stop, and how long they should have to wait, on average, before the next bus comes.

Walking and waiting are important to consider on their own, because both of these activities add time and inconvenience to any transit trip, and different people have different preferences regarding each.

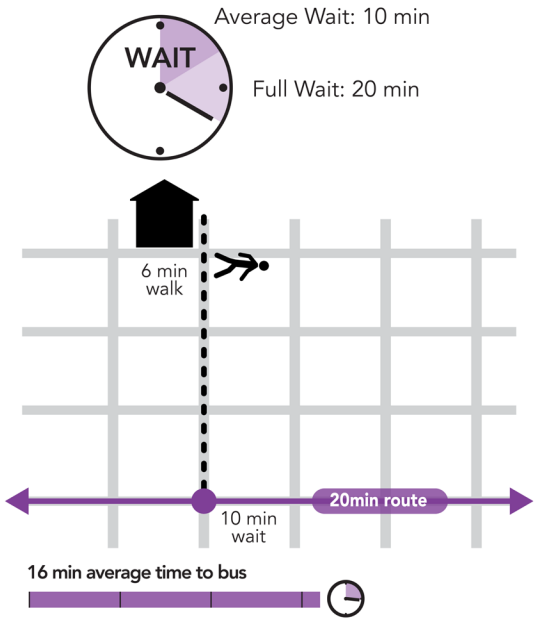
If parallel routes can be consolidated onto a few main streets, frequency can be made better and waits can be shorter. However, longer walks would be required. This is why walking distance and waiting time are linked in any transit network, and trade-off against one another.

Does the community want people to have a short walk to transit but a long wait or a longer walk for a shorter wait?

Shorter Walk, Longer Wait
Closely spaced routes with buses coming every 40 min



Longer Walk, Shorter Wait
Wider spaced routes with buses coming every 20 min



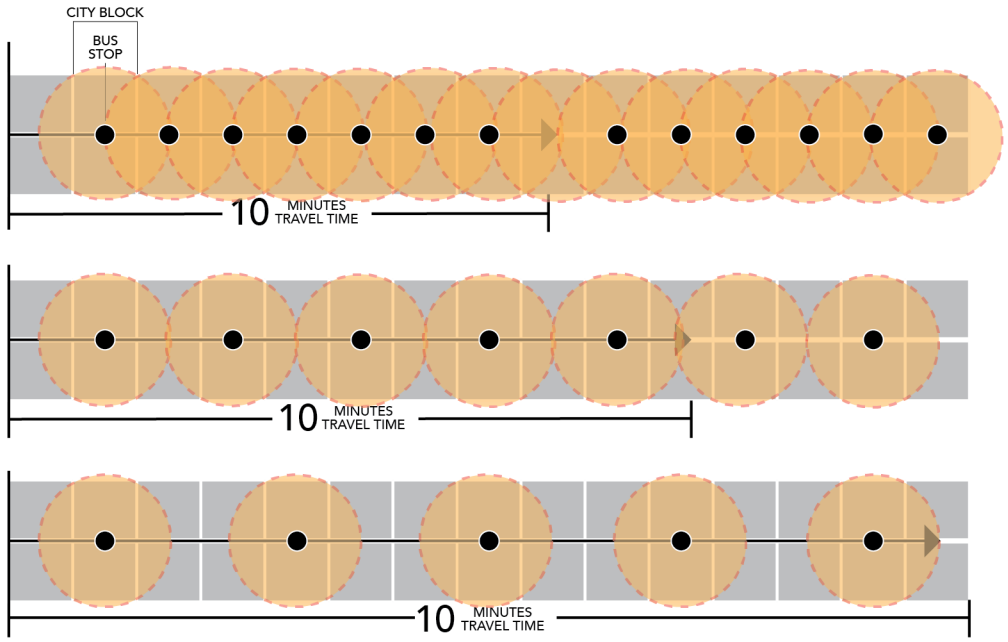
Key Choice: Stop Spacing

There is a geometric trade-off between closer stop spacing and faster bus speeds. As stops are placed farther apart, buses can travel faster and cover more distance in the same time. DART's bus stops are, on average, 0.15 miles (800 feet) apart, which is quite close.

Increased speed has two benefits. First, riders can get farther faster and reach their destinations sooner. Second, as speeds increase across the entire transit system, more service can be provided for the same cost. This can help DART improve its on-time-performance for the same cost.

There are two major downsides to widening stop spacing. First, some people have difficulty walking and will be inconvenienced by a longer walk. Second, as stops are spaced farther apart, transit becomes less useful for very short trips because it may be faster to walk or bike.

One key to a successful revision of stop spacing is for it to be a consistent policy applied in all comparable circumstances, and tied to a clear system-wide benefit in travel times. Many transit agencies have successfully widened stop spacing where these benefits were clear.



Close stop spacing means:

- Shorter walks to a stop
- Slower bus speeds
- Longer travel time
- Less reliable service

Wider stop spacing means:

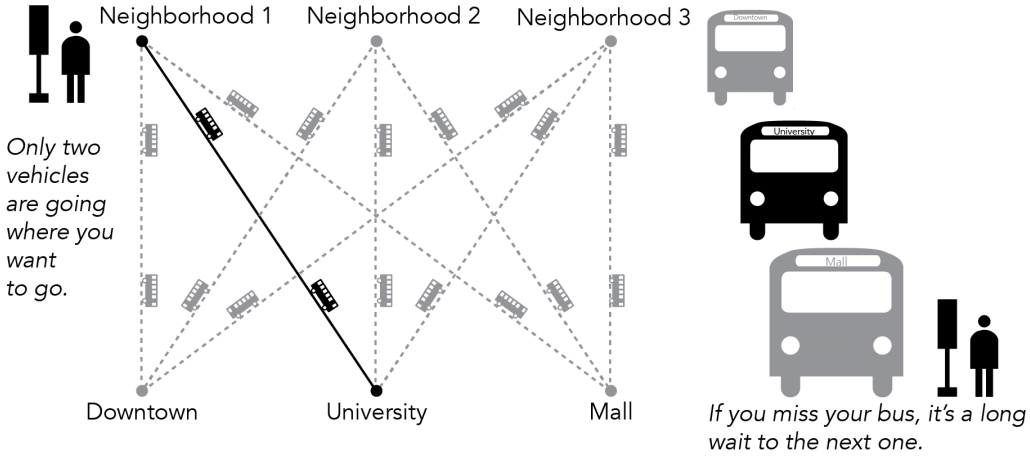
- Longer walks to a stop
- Faster bus speeds
- Shorter travel time
- More reliable service

Key Choice: Connections vs Complexity

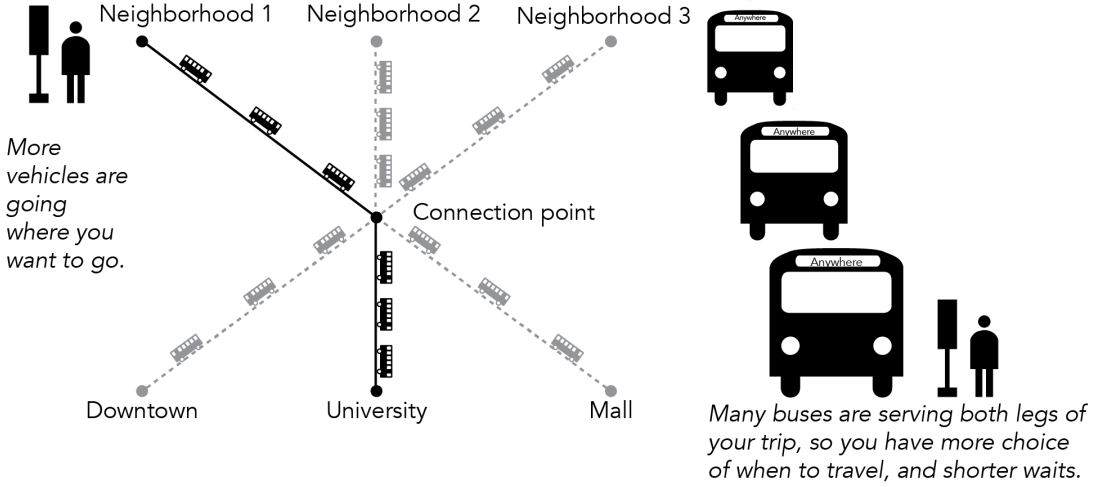
Using the same resources, a bus network can be structured with many routes that provide direct service between many destinations. A network like this minimizes transfers, but increases complexity and can be difficult to remember. Alternatively, a bus network can be designed with fewer routes that provide connective service. This network would require people to transfer, but connections can be timed so that travel times are faster for many trips.

Whenever you try to provide direct service from every origin to every destination, the result is a more complicated and inefficient network. So many more route miles must be offered that the agency can't afford enough frequency, and the result tends to be less useful service. This is why most agencies at DART's scale plan around connections rather than trying to give people a single-seat ride from origin to destination, unless the destination is a very high-demand place such as Downtown.

Direct Routes, Higher Complexity



Connections, Lower Complexity



Key Choice: Peak vs All-Day

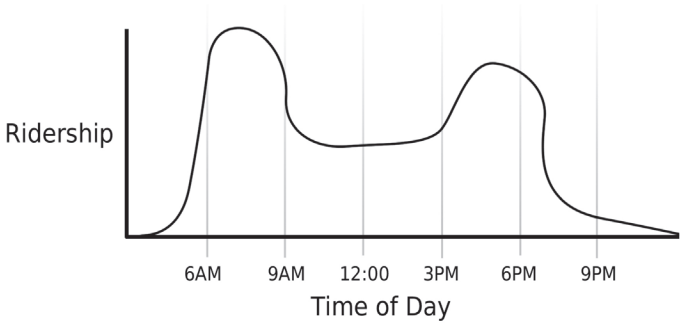
Within a fixed budget, there is a trade-off between providing more service during peak periods or providing a useful level of service all day, everyday. Some advantages to focusing on peak-hour services include:

- Peak-hour services have the most potential for full buses.
- Peak-hour services have the highest potential for traffic relief.
- Peak-hour services have the highest potential to relieve individual riders of the stress of driving.

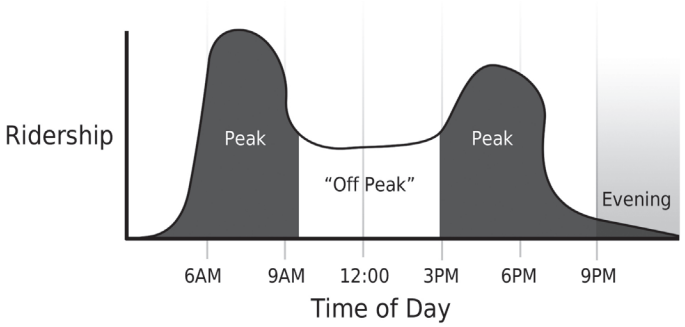
However, focusing on peak-hour services also has real disadvantages and costs, such as:

- Additional peak service requires DART to maintain a larger fleet of buses that sit unused at most times. These buses must be purchased, maintained, stored and replaced on a regular basis.
- Peak-hour services tend to have a higher average labor cost because drivers must go to and from the garage without serving passengers.
- Peak-hour service tends to focus on the commuting needs of full-time office workers. But there are many other reasons to ride transit and many other types of potential riders.

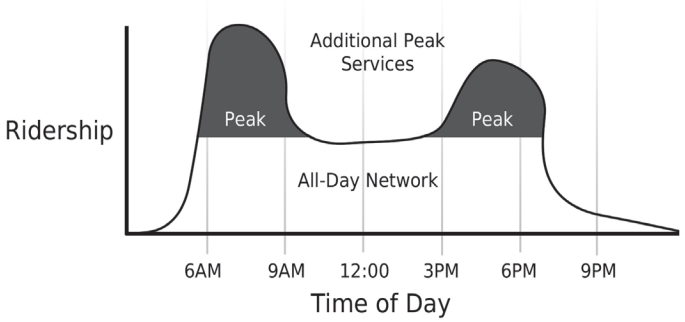
Given a peaking pattern....



... do we think of the peak as our main product?



... or do we think of the all-day network as our main product?



Key Choice: Transit Supportive Land Use?

As discussed throughout this report, the built environment has a strong affect on transit's ability to succeed:

Density: How many people, jobs and activities are near each bus stop?

Walkability: How many of the people near the bus stop can actually walk to the bus stop?

Linearity: Can transit reach large numbers of people by traveling straight, direct paths?

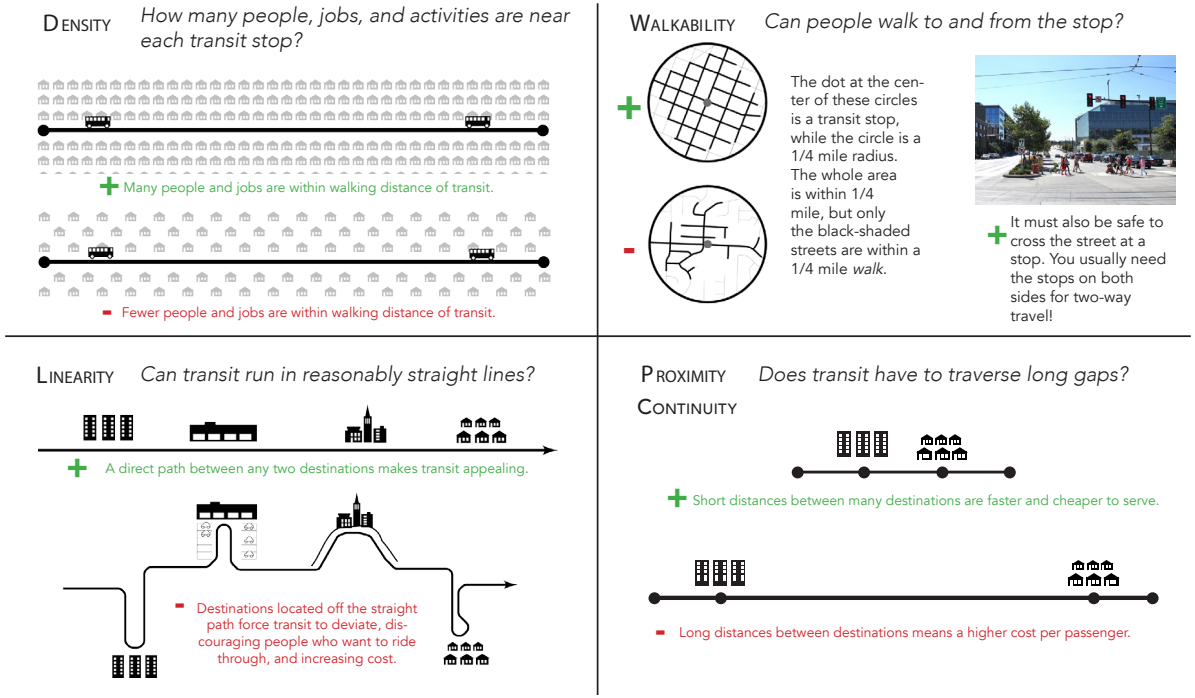
Continuity: Can transit reach large numbers of people without crossing long, low-demand gaps?

Transit agencies are commonly placed in a very challenging position. They are expected to provide transit service but they have very little influence in how a city or region chooses to develop. Establishing a clear goal and direction for transit service, including a desired percentage balance of ridership and coverage services, and an agreement with the community on the level of service to provide, can allow a transit agency to more clearly communicate and work with partners in directing future development to be transit supportive.

Once clear direction on transit's goals are set, it becomes easier for the city agencies and regional partners to see how their land-use decisions will encourage or discourage transit's ability to succeed, business developers will have a clear message on where and how best to build if they want the best access to transit, and the community will have a clearer understanding about where and when their transit network is working its best.

Critically, setting a permanent frequent transit network and a planned future frequent network can be a very powerful tool for the transit agency and city to communicate to the public, developers, businesses and others about where transit is a priority and where people and business should locate if they wish to have the best transit access possible.

Four Geographic Indicators of High Ridership Potential



For more detais on land use, see the explanations starting on page 19.

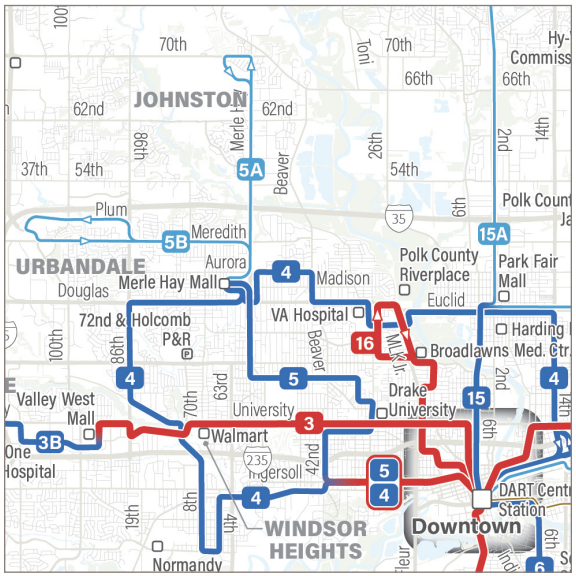
7 Concepts

Introduction to the Network Concepts

To help the community understand how different goals would result in different network designs and outcomes, this chapter introduces two concepts. The two concepts, the Ridership and Coverage Concepts, have the same amount of service, but they show different ways to allocate these same resources.

The concepts differ in the degree to which they emphasize Ridership and Coverage goals. The Ridership Concept puts more resources toward Ridership goals and less towards Coverage goals. The Coverage Concept in this report puts more resources toward Coverage goals and less toward Ridership goals.

The concepts shown in this chapter represent a spectrum of possibilities, and are not intended to be an either/or proposition. By showing the public, stakeholders, and decision-makers the range of possibilities, DART is asking: "Now that you see the outcomes of emphasizing one goal over another, how should we balance the Ridership and Coverage goals? In other words, if you want better service, what is your definition of better?"



When comparing these concepts and their outcomes, the choice is not, "Pick one of these two"; rather, it is, "Where on the spectrum of possibilities should the DART bus network be?"

Concepts Parameters

Concepts, Not Proposals

At this stage, the study team is not proposing any specific changes. The public conversation about the concepts will help guide the development of an actual network proposal.

Some features are common to both concepts, but even these are not proposals yet. We are highlighting the Ridership-Coverage trade-off, and to do this, we made a single choice about matters unrelated to that. Different choices could have been made, and we welcome public comment about these features of the plan.

None of the staff from DART nor the consultant staff have a preference among the concepts shown in this chapter.

The most important word to remember is **"if"**. The Ridership Concept shows what might happen if DART chose to shift toward Ridership goals as the primary goal. The Coverage Concept shows what might happen if DART chose to provide more network coverage. No decision has been made.

The Big Picture Matters More than Details

These concepts have been designed so that they could be implemented with minimal adjustments, yet they are not a binary choice. Their purpose is to illustrate choices at a high altitude. Based on public feedback on the concepts, a Draft Network will be developed, and details will be filled in, like exact stop locations and turnarounds for the ends of routes.

Cost-Neutral

These concepts have been designed within DART's current budget to have a clear conversation about the trade-off. This means that both the Ridership and Coverage concepts reflect the same amount of bus service as today. Specifically, this is quantified in the total revenue hours. One revenue hour is one bus operating for one hour on the street.

If the Draft Network and/or budget require changes in DART's paratransit service, this will be discussed in more detail during the Draft Network phase.

Trade-off in Each City

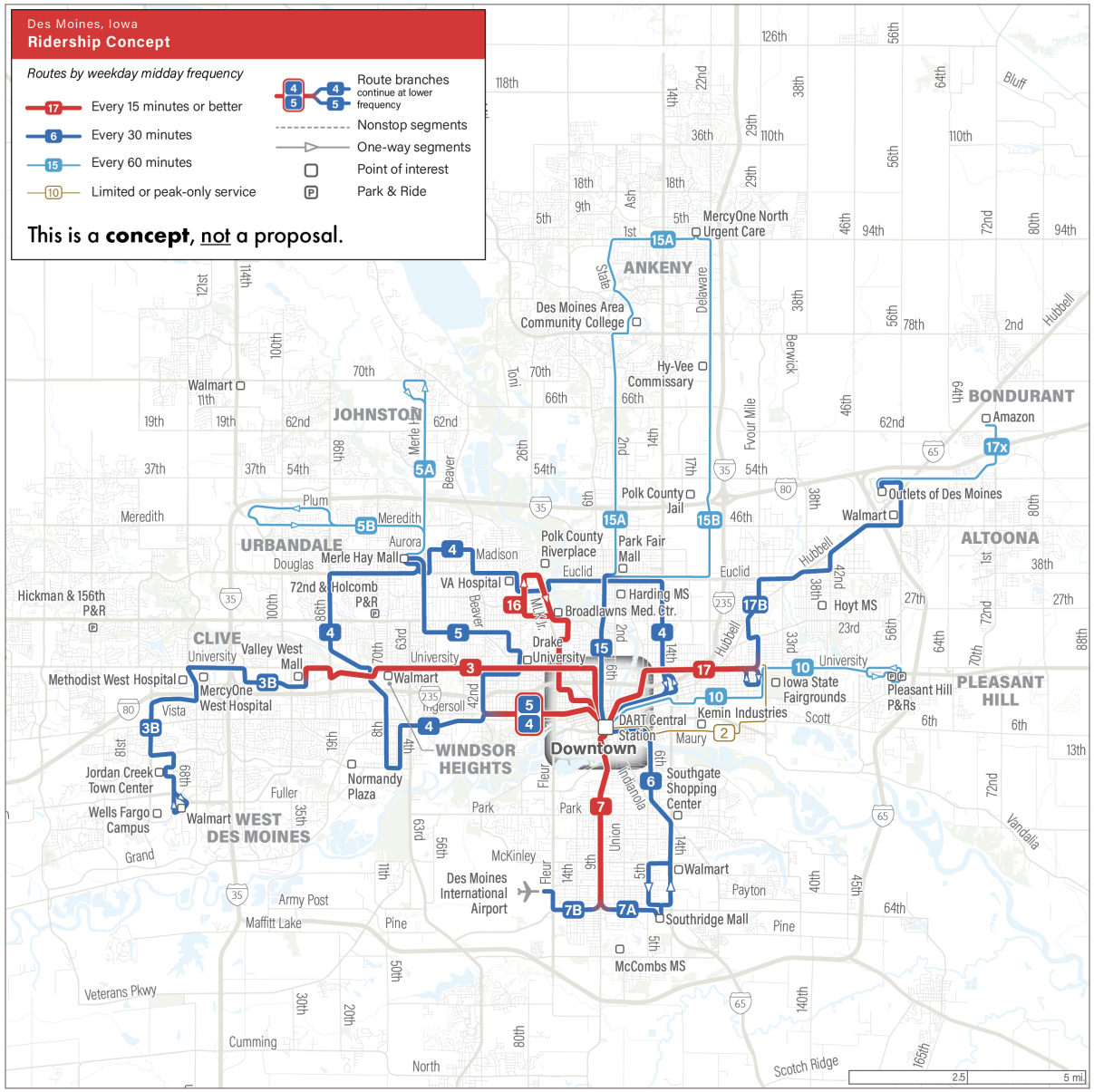
Every city has about the same amount of service in both concepts as DART provides today. This means that the trade-off between Ridership and Coverage can be discussed within each city. While some routing designs are tied to the overall structure of the network, different cities could, potentially, decide on a different balance between Ridership and Coverage goals.

Ridership Concept

The Ridership Concept, shown on the right, concentrates more frequent service where there are more people, jobs, and opportunities. This dramatically increases how many useful destinations an average resident can reach in a given amount of time, which is the key to increasing ridership. Concentrating service into fewer but more frequent routes means that some lower-demand areas would require residents to walk longer to transit service, or not have service at all, in this concept.

This concept concentrates frequent service on the most dense and active corridors, with frequent service on West University Avenue to Valley West Mall, East University Avenue to the State Fairgrounds, SW 9th Street, and MLK Jr Parkway to Polk County Riverplace.

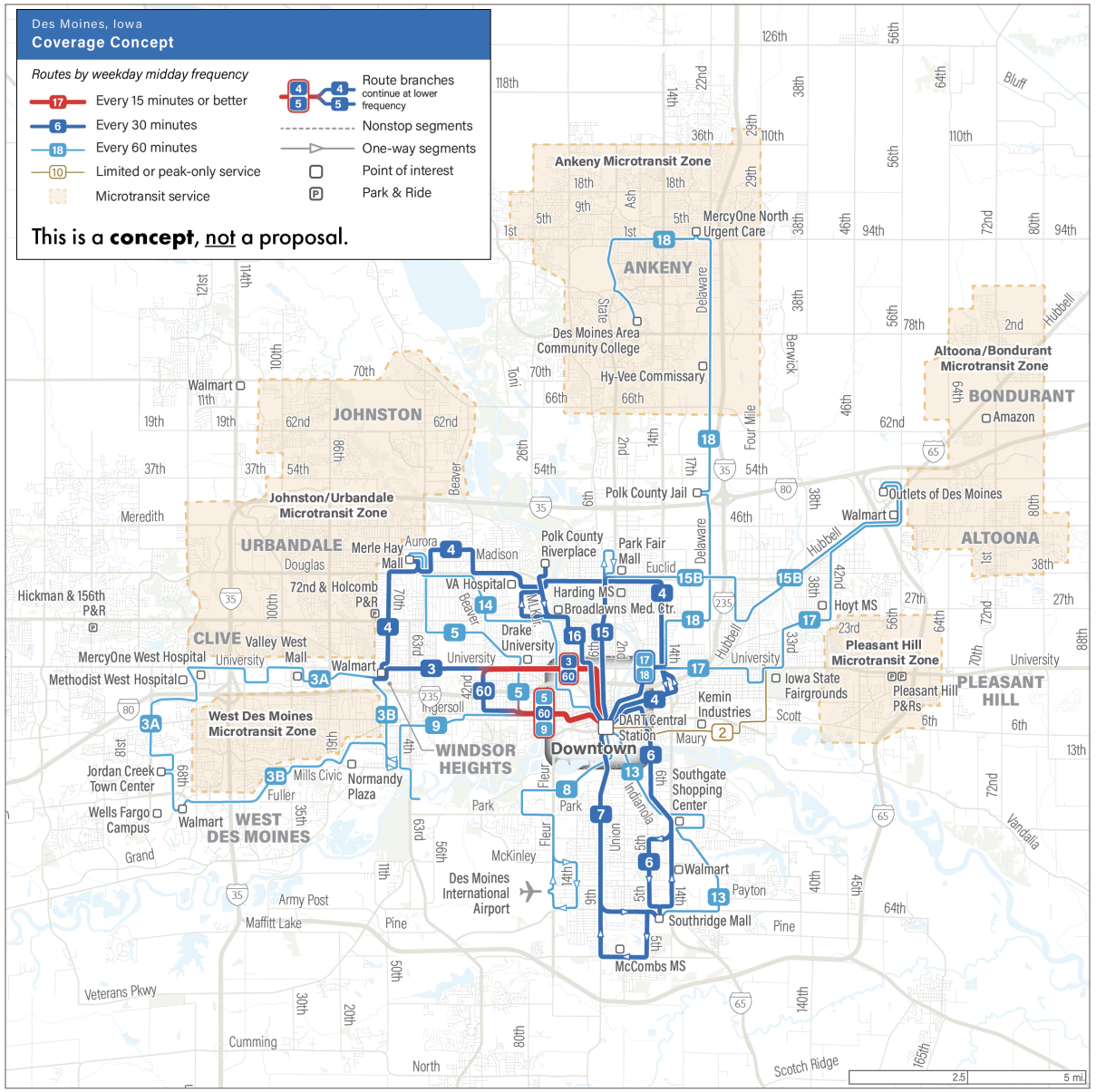
The cost of these investments in service is that some outer areas would lose service. For example, the Ridership Concept removes service in areas that are today served by Routes 1, 16, and 72. The map is not meant to be specific about the details. Instead, it is meant to provide a high-level view of the overall picture of frequent and infrequent service available across the region.



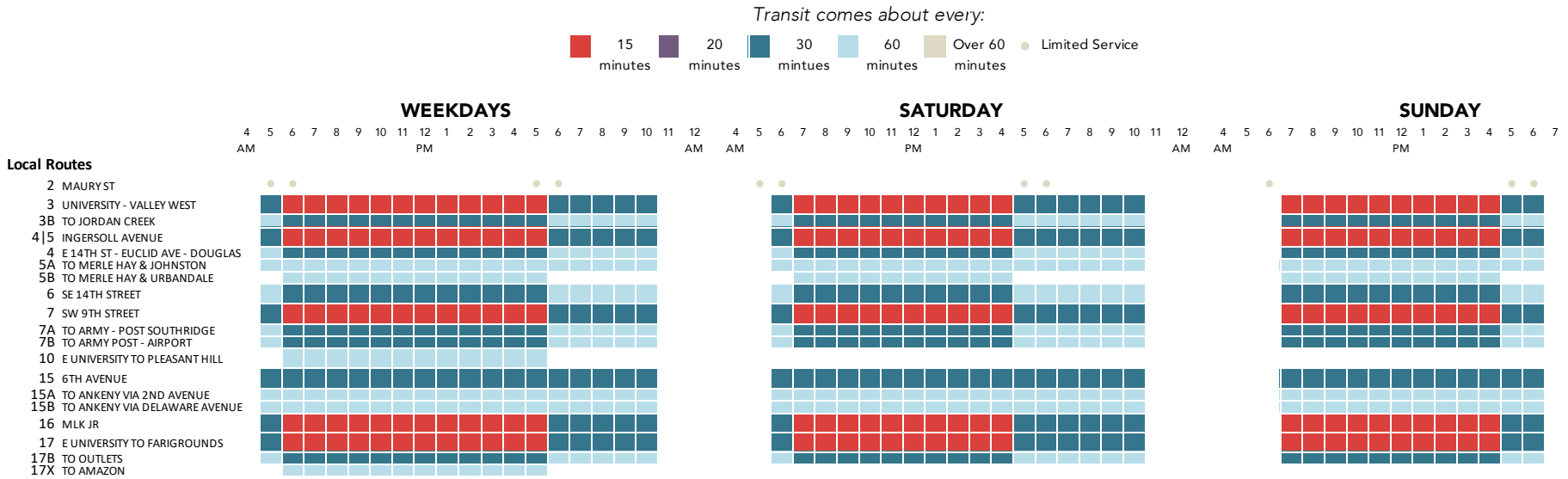
Coverage Concept

The map to the right, shows the Coverage Concept. All areas served by transit service today would still be served along with a few new places. However, this means that service is spread thinly. This concept only provides frequent service where routes converge along University Avenue and Ingersoll Avenue. Routes everywhere else would only run every 30 or 60 minutes.

To cover new low-density areas, the Coverage Concept includes five microtransit zones. While today's On Demand Ankeny provides door-to-door service, these microtransit zones will be different. They will ask riders to walk out to a virtual stop on a major street nearby to be picked up. By staying on the main streets, these microtransit zones are able to provide coverage withing a quarter mile of more residents. The response time for these services could be up to an hour, but on average about 30 minutes.



Ridership: Spans and Frequencies



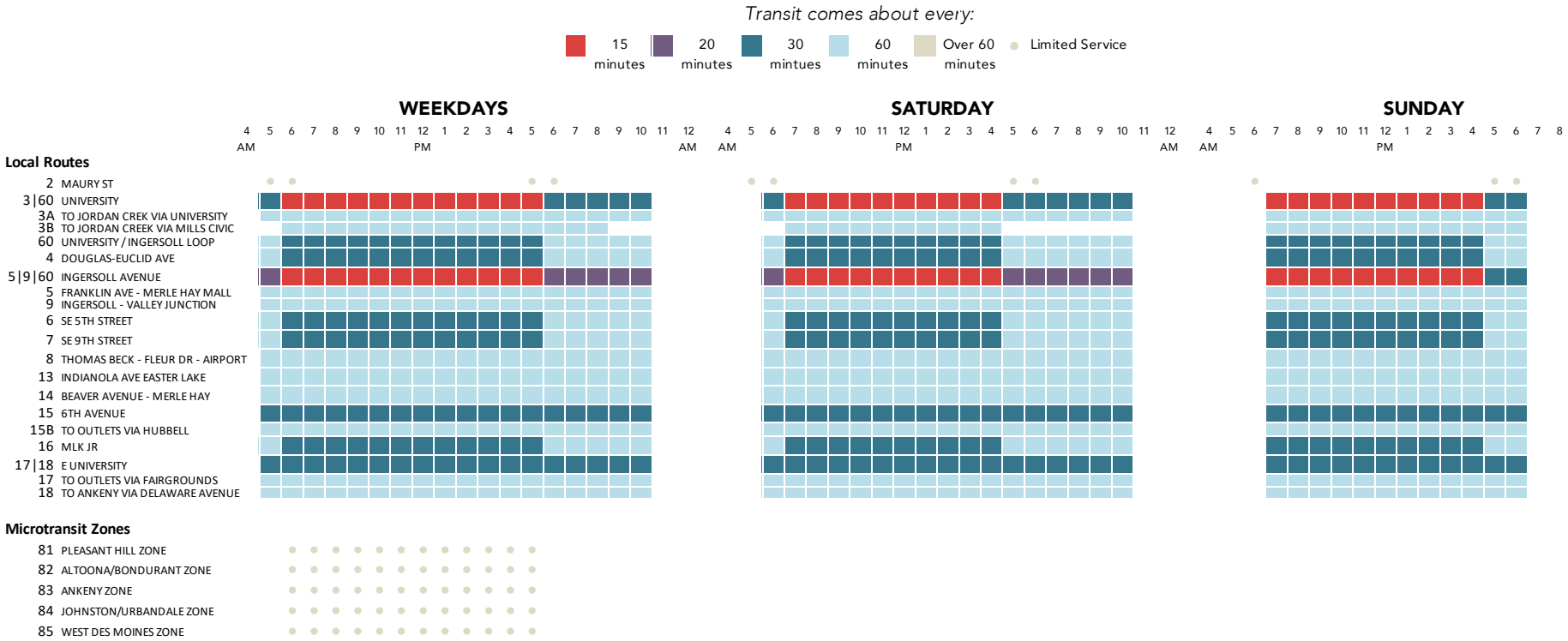
The chart above shows the frequency by time of day for the routes in the Ridership Concept. You can compare this to the Existing Network spans and frequencies on page 48.

The spans of service are similar to today, but this concept consolidates service into fewer routes to provides higher frequencies most of the time. Routes that are shown as red on the map run every 15 minutes for 12 hours a day on weekdays and for 10 hours on weekends. They also run every 30 minutes in the evenings and early in the morning.

This is more service in the evenings and weekends compared to today. This increase in all-day and weekend frequencies reflects the fact that more jobs are on nontraditional schedules requiring shifts on weekends and during non-peak times. This trend is especially pronounced for lower-wage jobs in retail, healthcare, restaurants, and personal services, so improving weekend and evening service helps improve the lives of people with lower incomes.

Many people may be reluctant to use transit because of its inconsistent availability. If someone buys a car to get home after evening or weekend work shifts when transit is unavailable, they may feel that they might as well drive on weekdays too. They are also are much less likely to take transit at all, even if their bus comes every 15 minutes at other times.

Coverage: Spans and Frequencies



The chart above shows the frequency by time of day for the routes in the Coverage Concept.

This concepts has more routes and lower frequencies overall, but there is still more service throughout the week compared to the Existing Network. Instead of having routes that only run during peak times, every fixed route runs throughout the day, every day. During the weekday, most routes run from 5am to 11pm.

On weekends, every route operated with the same frequency as it does during weekdays. This makes the overall network vastly more useful for people who work on weekends, like those with retail and service jobs.

Note that this concept has five microtransit zones that operate for 12 hours during weekdays only. While this is not ideal, it is what we can afford within DART's current budget.

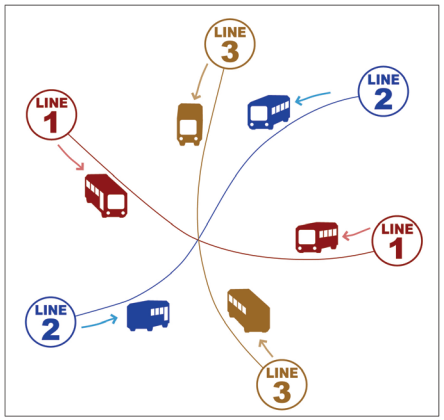
Timed Connections

Both concepts make better use of DART Central Station by providing a timed connection.

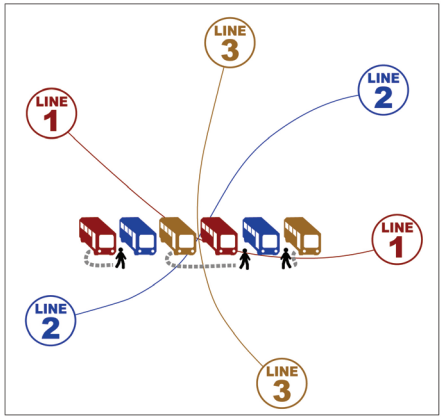
Connecting between two 60-minute routes can be cumbersome. You may have to wait a long time for the first bus, and if you just miss the second bus, you'll have to wait 59 additional minutes. To facilitate transfers, the concepts have a timed connection at DART Central Station. This means that all light blue lines on the map are scheduled to get to DART Central Station at the same time. They wait five minutes to allow people to change buses and then depart. Instead of waiting up to 59 minutes for a bus, you now only wait 5 minutes every time you transfer.

Likewise, all dark blue lines on the map are schedules to get to DART Central Station twice an hour. One of those times, they will arrive together with all the light blue routes.

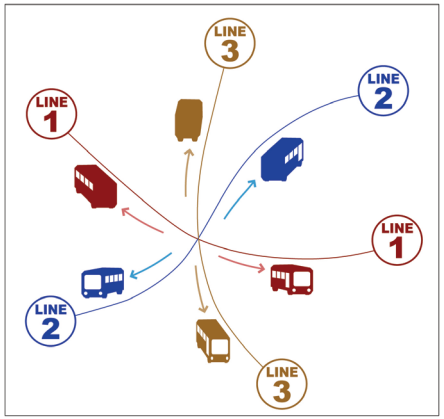
Transferring is necessary for passengers to be able to reach more of the network (and more of the region). With timed connections, transfer time is reduced, allowing people travel farther within the same amount of time.



Routes are designed to come together at one central location. Buses can terminate here or simply stop along their route.



Buses come together and wait for 5 minutes allowing people to transfer from one bus to another.



After 5 minutes, buses depart at the same time and continue their trip.

Comparing Outcomes: Access

People ride transit if they find it useful. High transit ridership results when transit is useful to large numbers of people. A helpful way to illustrate the usefulness of a network is to visualize where a person could go using public transit and walking, from a certain location, in a certain amount of time.

The maps on the right show someone's access to and from Polk County River Place in 45 minutes, at noon on a weekday in the Ridership Concept compared to the Existing Network. The technical term for this illustration is "Isochrone". A more useful transit network is one in which these isochrones are larger, so that each person is likely to find the network useful for more trips.

Why weekdays at noon?

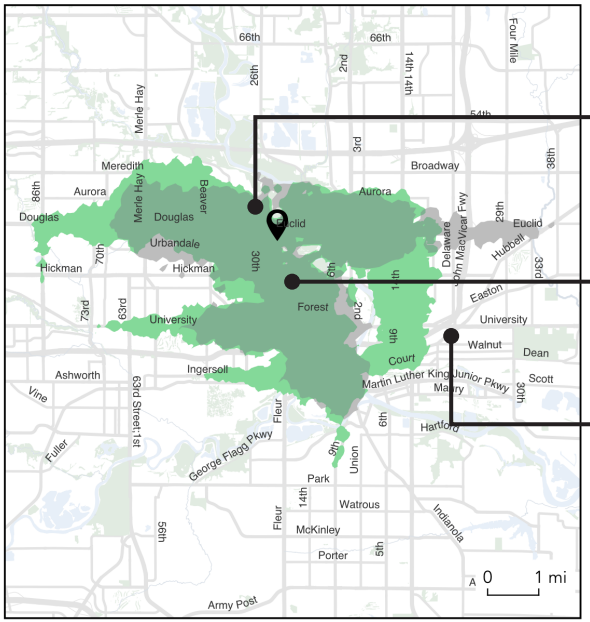
This analysis uses the network that runs during the midday because it represents the frequencies of service that someone can rely on for most of the day. DART's Existing Network has a lot of service that only runs during the peak times, but people often need to travel at other times. Midday service reflect service that is useful for many more trips.

Compared to the Existing Network, how far can I travel in **45 minutes** from

Polk County River Place
(2309 Euclid Ave, Des Moines)

on weekdays at noon using the

Ridership Network?



Light green areas are newly reachable in 45 minutes in this concept.

Gray areas are reachable in 45 minutes in the Existing Network, but not in this concept.

Dark green areas are reachable in 45 minutes in both the Existing Network and this concept.

Isochrone Example (1)

Not Just the Area – Also What is Inside the Area

The real measure of usefulness is not just how much geographic area we can reach, but how many useful destinations are in that area. The maps show that for trips beginning from Polk County River Place, the Ridership Concept would increase access to residents over the existing network by 32% and increase access to jobs by 18%. The Coverage Concept would increase access to residents by 7% and increase access to jobs by 4%.

Ridership arises from service being useful, for more people, to get to more busy places. That's why predictive models of ridership do this very same analysis behind-the-scenes.

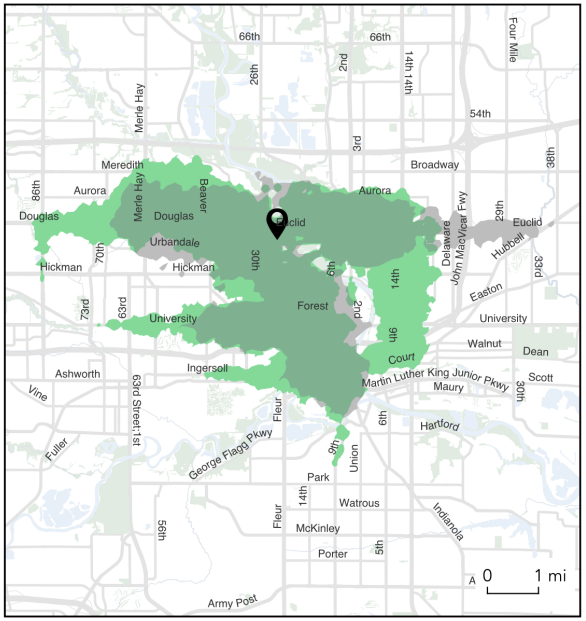
When reviewing these maps, remember that waiting time counts, and in most cases, a longer walk to a high-frequency route can get people farther and faster, than a shorter walk to an infrequent route. The next pages show three more isochrone examples, and there are many more in the "Appendix" starting on page 97.

Compared to the Existing Network, how far can I travel in **45 minutes** from

Polk County River Place
(2309 Euclid Ave, Des Moines)

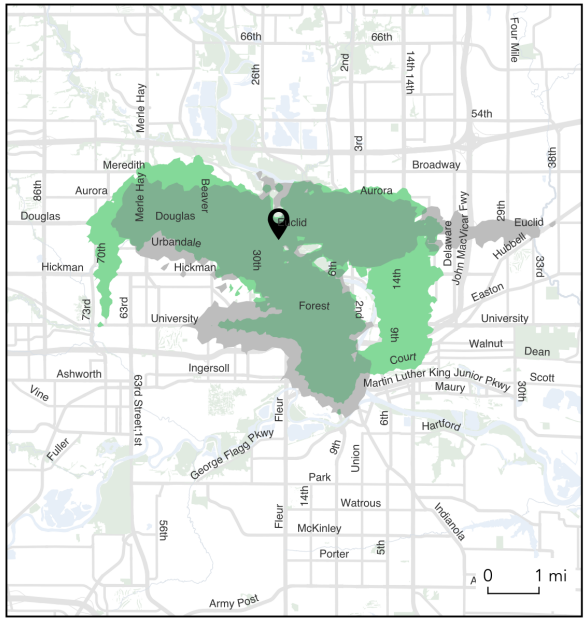
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+21,500	(+32%)
Jobs Accessible	+12,400	(+18%)

Coverage Network?



	Change	% Change
Residents Accessible	+4,900	(+7%)
Jobs Accessible	+2,550	(+4%)

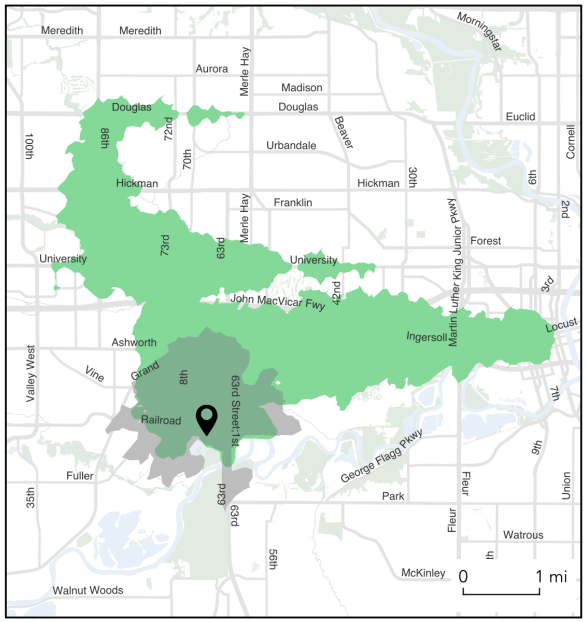
Isochrone Example (2)

Compared to the Existing Network, how far can I travel in **45 minutes** from

Valley Junction
(Maple St and 5th Street, Des Moines)

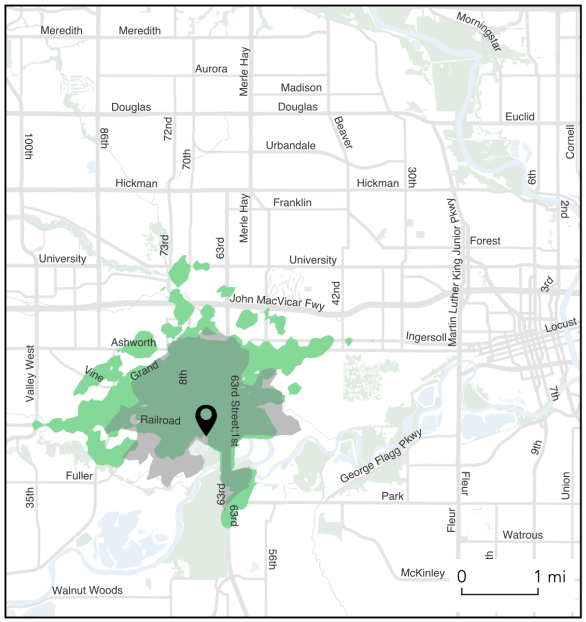
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+32,300	(+453%)
Jobs Accessible	+41,300	(+946%)

Coverage Network?



	Change	% Change
Residents Accessible	+5,350	(+75%)
Jobs Accessible	+2,350	(+54%)

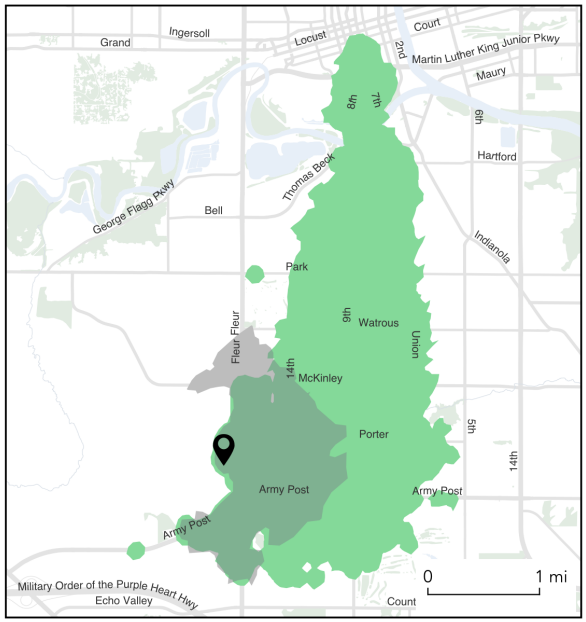
Isochrone Example (3)

Compared to the Existing Network, how far can I travel in **45 minutes** from

Des Moines International Airport
(5800 Fleur Dr, Des Moines)

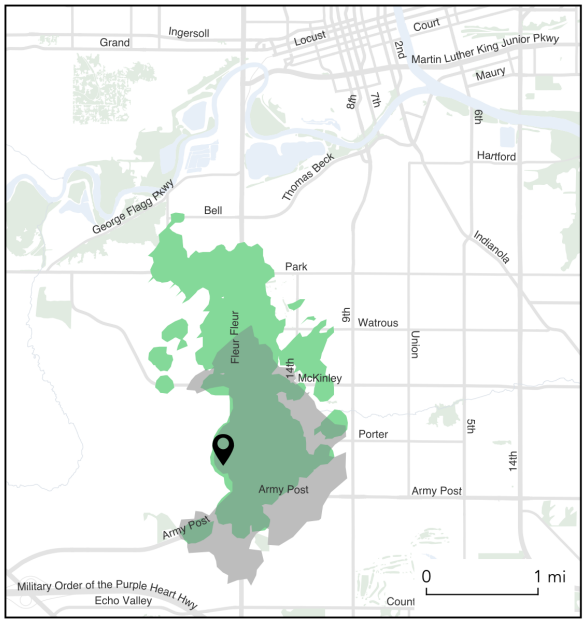
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+17,100	(+335%)
Jobs Accessible	+10,700	(+432%)

Coverage Network?



	Change	% Change
Residents Accessible	+700	(+14%)
Jobs Accessible	+850	(+35%)

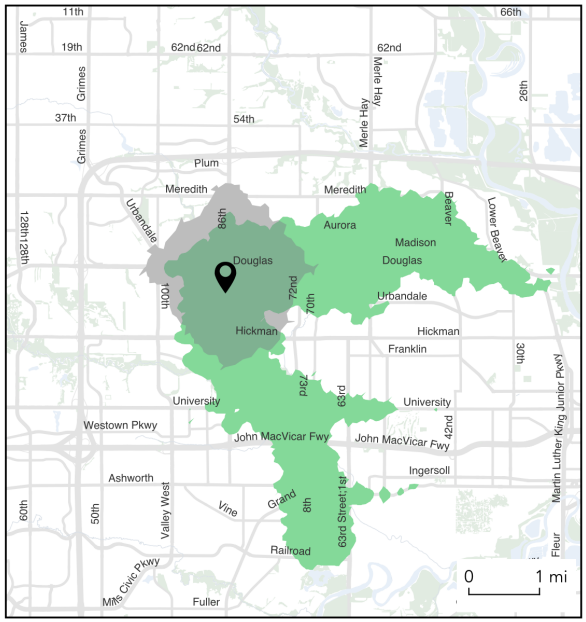
Isochrone Example (4)

Compared to the Existing Network, how far can I travel in **45 minutes** from

Urbandale City Hall
(3600 86th St, Urbandale)

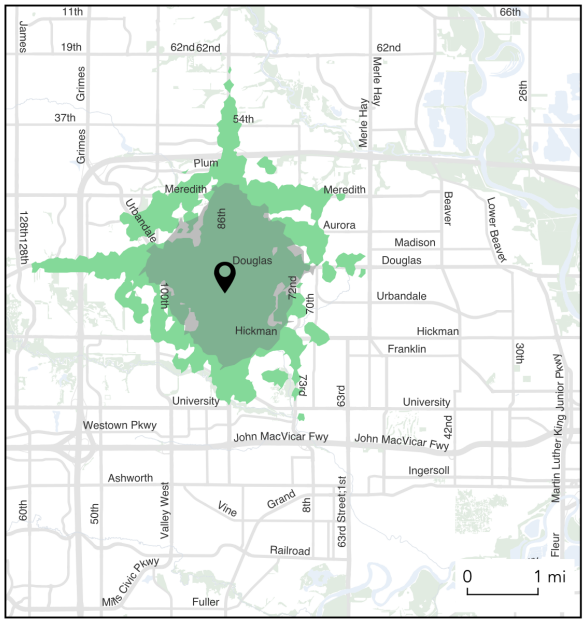
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+26,600	(+200%)
Jobs Accessible	+14,350	(+214%)

Coverage Network?



	Change	% Change
Residents Accessible	+8,350	(+63%)
Jobs Accessible	+6,600	(+99%)

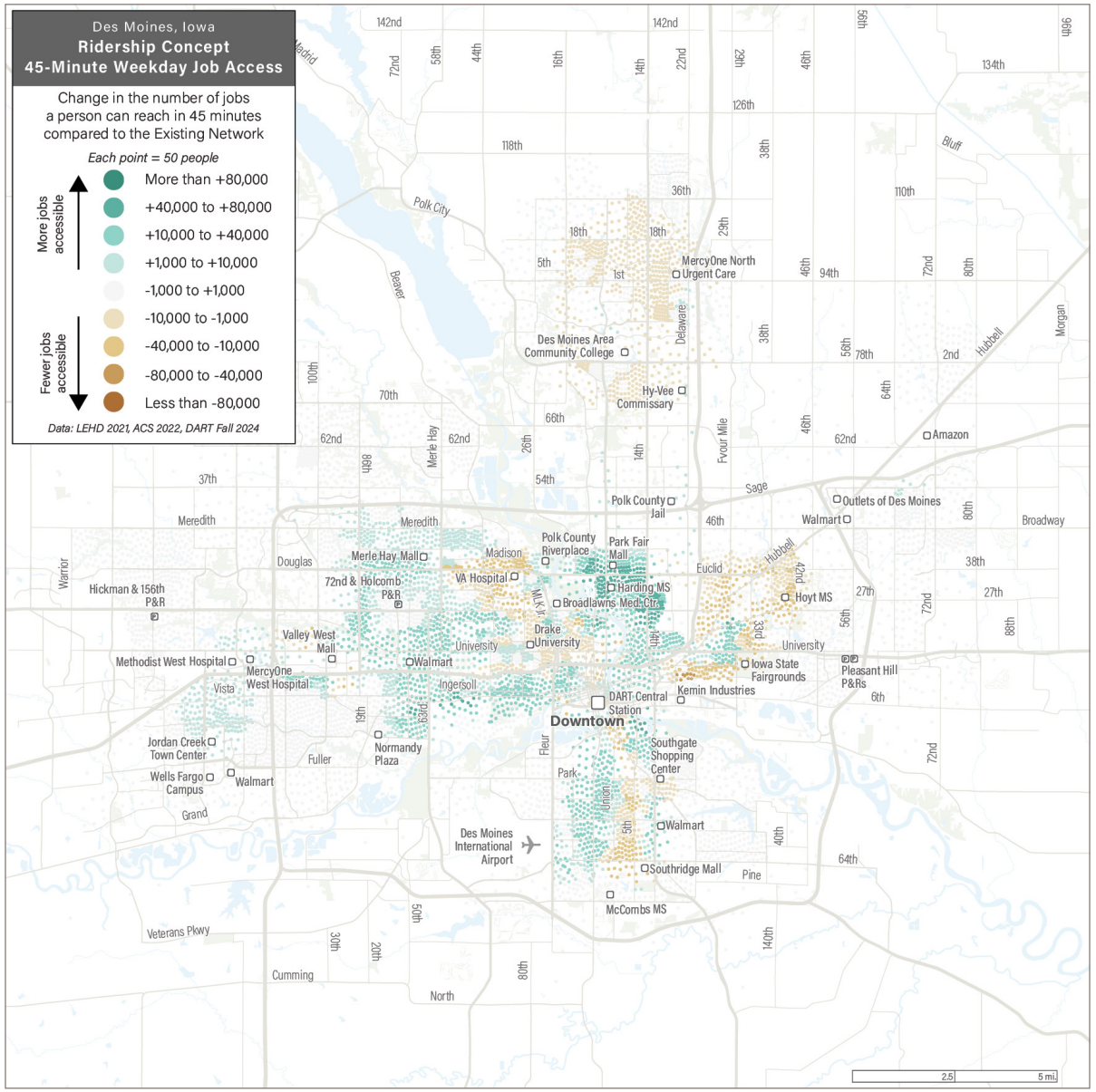
Change in Access: Ridership

The previous maps show how the concepts expand where people could go in a given time, from certain places. We can run the same analysis throughout the region to estimate how access changes everywhere. In this map, every dot represents 50 residents and the color represents the change in jobs reachable in 45 minutes compared to the existing network.

- **Green dots** represent more jobs accessible
- **Brown dots** represent fewer jobs accessible
- The **intensity** of the color represents the intensity of the change.

With more frequent routes across the busiest and most dense places, the Ridership Concept increases access to jobs and opportunity across much of the region. Traveling across large parts of the region would be much faster because waiting times would be much shorter, both for the initial wait for a bus and for a connection. Areas along Route 3, 4, 5, 7, 16, and 17 see significant gains in job access due to more frequent service.

Some areas see declines in access. In particular, the removal of Routes 1 and 14 shows a decrease in access because there is no longer service nearby.

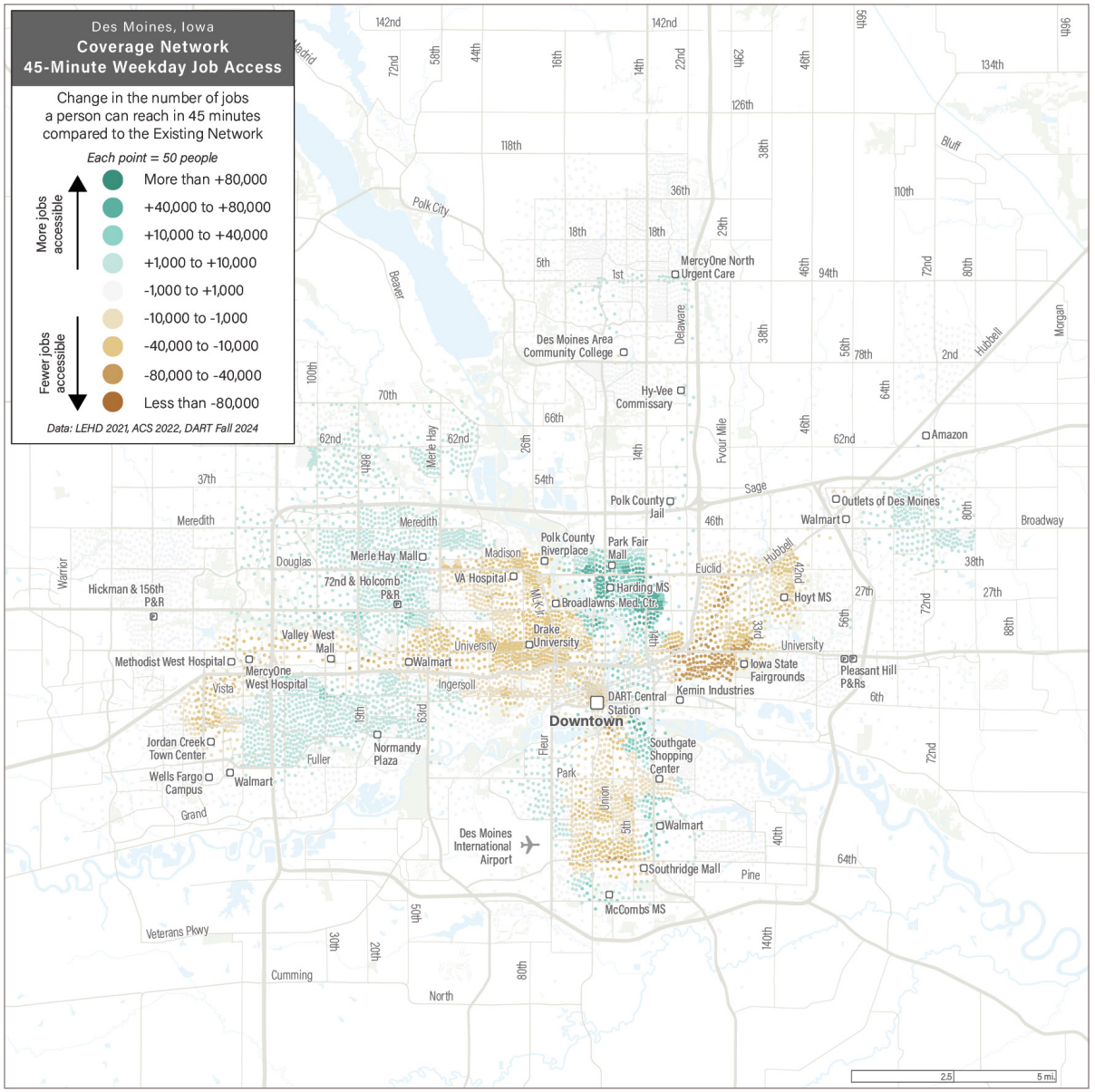


Change in Access: Coverage

The Coverage Concept shows an increase in job access for some of the region. There is a large increase in access to jobs near Park Fair Mall because of the new Route 4 every 30 minutes (which is similar in both concepts). There is also an increase in outer parts where new microtransit service is provided.

However notice that these areas have a light green signifying a small increase in access to jobs. The areas that are brown on this map are darker indicating a greater decrease in access to jobs.

There are places with a decrease in access to jobs along the main corridors in the region because we decreased frequency from 20 minutes to 30 minutes. This still provides service to everyone that has service today, but it decreases frequency and spreads the service thinly. That means that people will have to wait longer to get on a bus and won't get as far within 45 minutes.



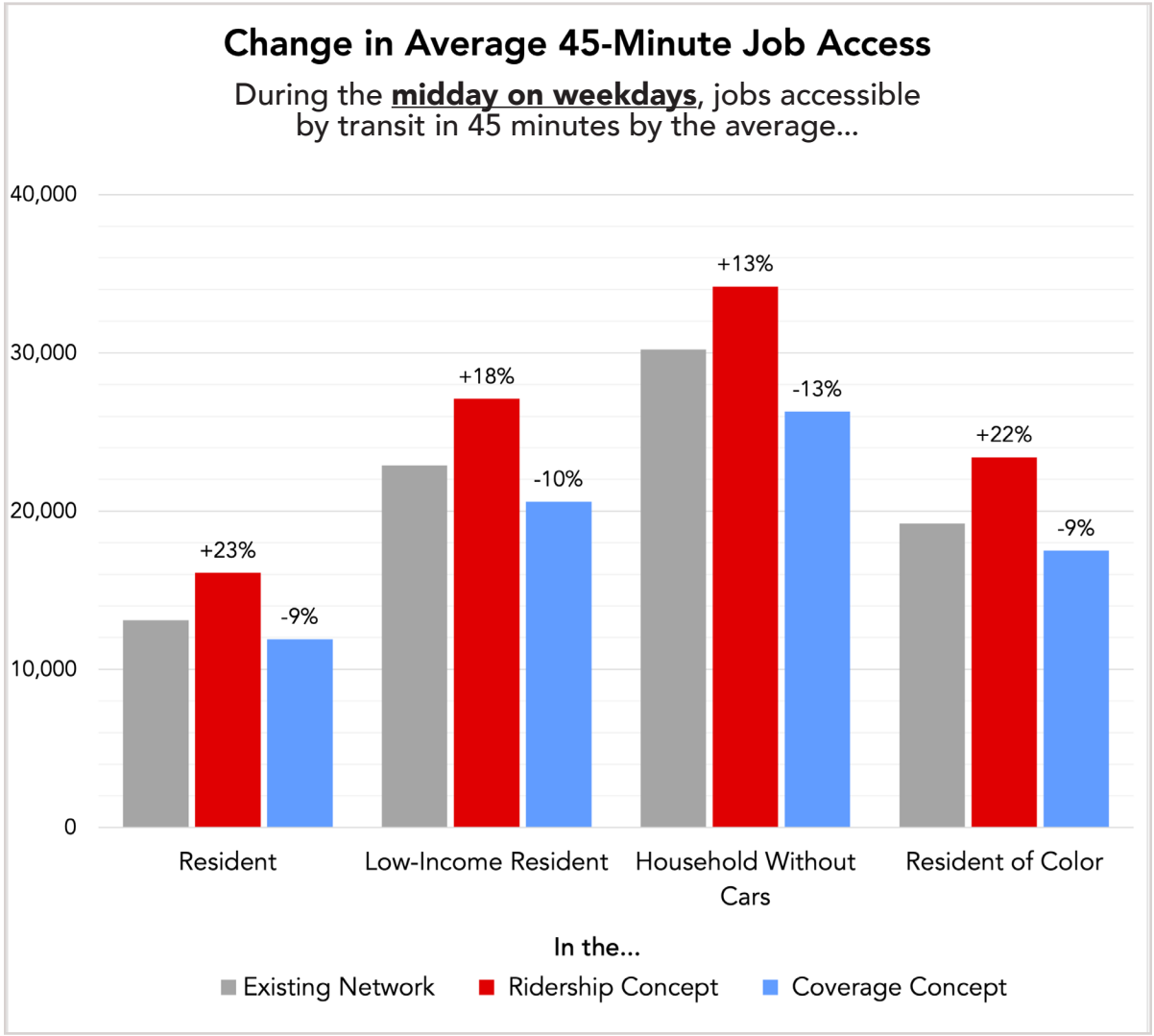
Change in Access: Average Resident

The maps on the previous pages show the two concepts change access to jobs for different parts of the region. By adding up all the increases and decreases across the city, we can estimate how each concept changes the access to jobs for the average person.

The chart to the right shows the change in how many jobs the average person could reach by walking and taking transit to their destination in 45 minutes. In the Ridership Concept, the improved frequency of service substantially increases the number of jobs the average person could reach by 23%. So while fewer people have access to some kind of service, those who have access can reach many more opportunities.

In the Coverage Concept, access decreases by 9% for the average resident. When service is spread more thinly, more people have access to some service, but the average access goes down.

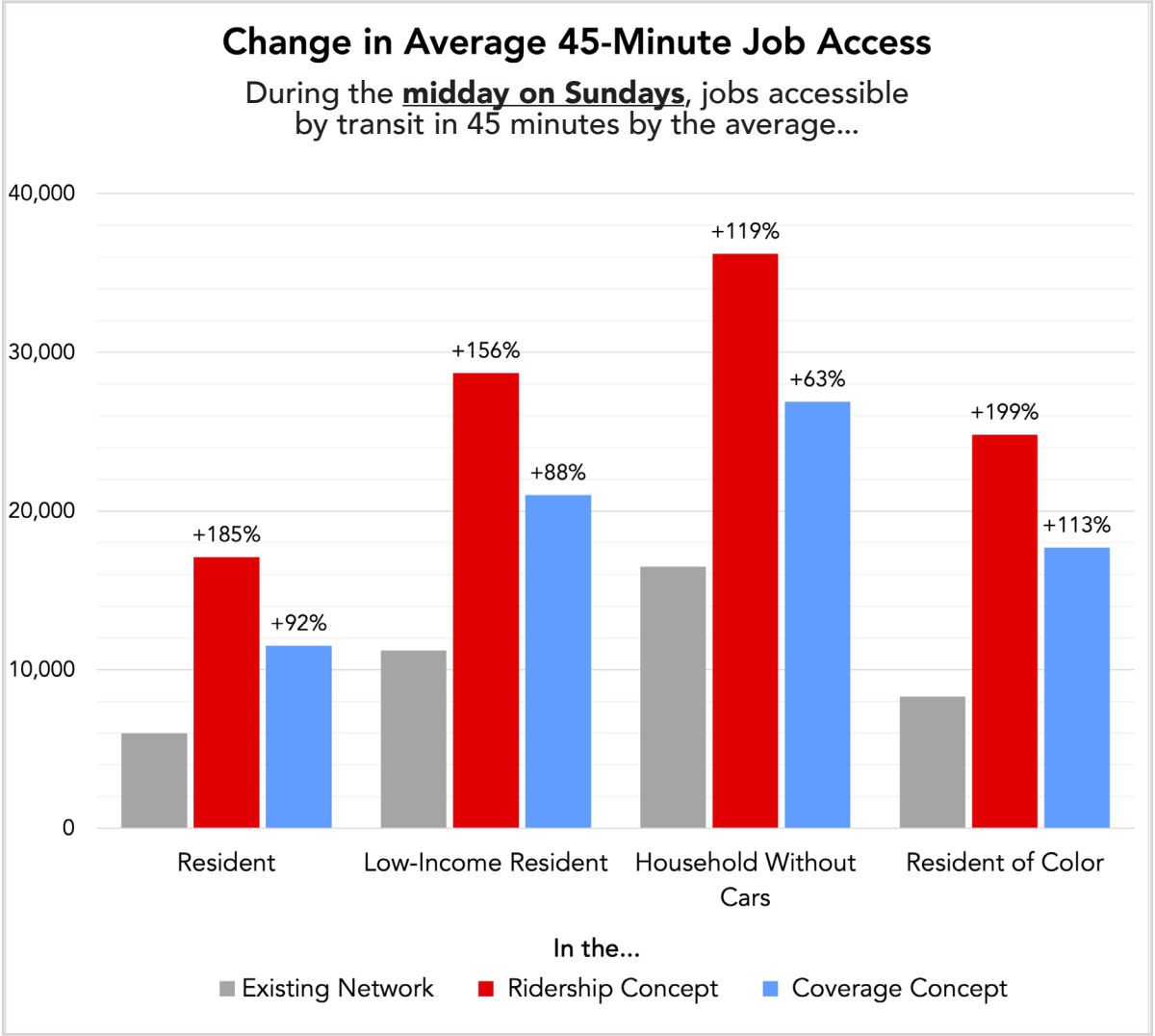
This trend is also similar for different subgroups. The Ridership Concept would increase access to jobs for low-income residents, residents of color, and households without cars by 13-22%. The Coverage Concept would decrease access to jobs for these groups by 9-13%.



Change in Access: Sundays

A big difference in the Concepts, compared to DART's Existing Network, is the increase in weekend service. Routes that run every 15 or 30 minutes during the weekday also run at that frequency on weekends for at least 10 hours. Most of the other routes also run during the weekends for both concepts.

The chart to the right shows the change in access during the midday on Sundays. With the Ridership Concept, the average resident would be able to reach 185% more jobs than today. The Coverage Concept also has a substantial increase of 92%. Similarly, all other subgroups see a large increase in access to jobs. This shows that an increase in all-day and weekend frequencies would make transit much more useful to many people.



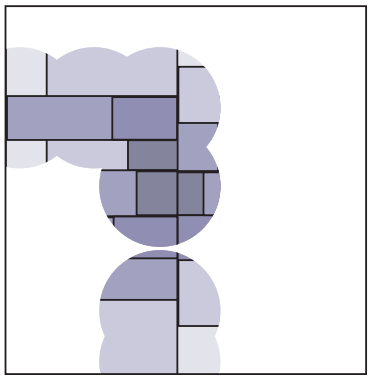
Comparing Outcomes: Proximity

The design of the networks and when and where service run are important to thinking about how service changes might affect individuals and their trips, but they tell us only so much about the overall affects of these networks. In this section, we look at three different ways of measuring the potential outcomes of the concepts. These measurements are not forecasts. They do not make assumptions about how culture, technology, prices or other factors will change in the next few years. These are simple arithmetic measures that combine existing distance, time and population information to show the potential of each Concept and how they each differ from the existing network.

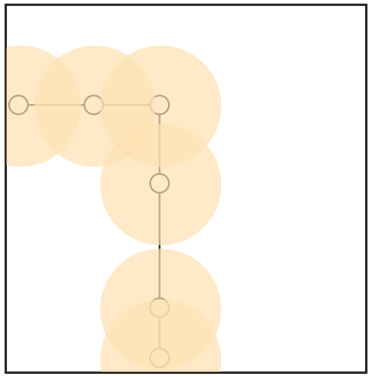
Proximity

The first measure reported, on the next page, is very simple: *How many residents and jobs are near transit?*

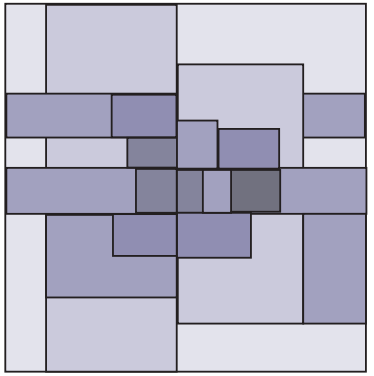
Proximity tells us about how well transit is achieving coverage goals. It does not tell us how useful people will find transit service, only that it is nearby to them. We also report on proximity to frequent transit service to provide a little more information about how many people are near service that they are more likely to use. The design of the networks and when and where service run are important to thinking about how service changes might affect individuals and their trips, but they tell us only so much about the overall affects of these networks.



Residents within 1/2 Mile



Transit Stops and 1/2 Mile Buffers



Residential Density

Proximity to Transit

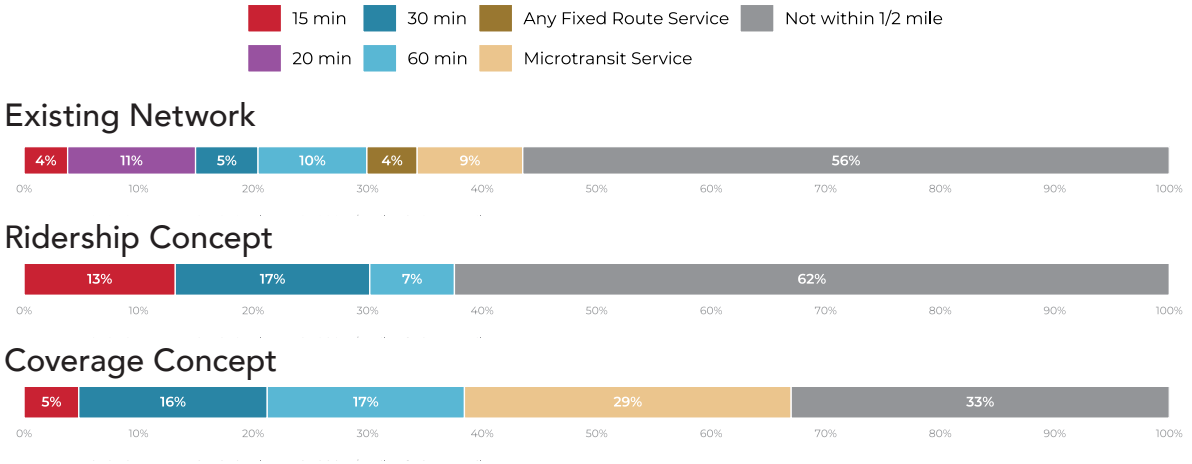
The charts on the right shows the change in residents and jobs near transit in the Existing Network compared to the Ridership and Coverage Concepts.

Today, 44% of residents are near transit service and in the Coverage Concept that would increase to 67%. In the Ridership Concept, the percent of residents near service declines to 38%, but of those, 13% would be near frequent transit. So the trade-off for the Ridership Concept is that while fewer people are near service, those that are near service have relatively high frequency service.

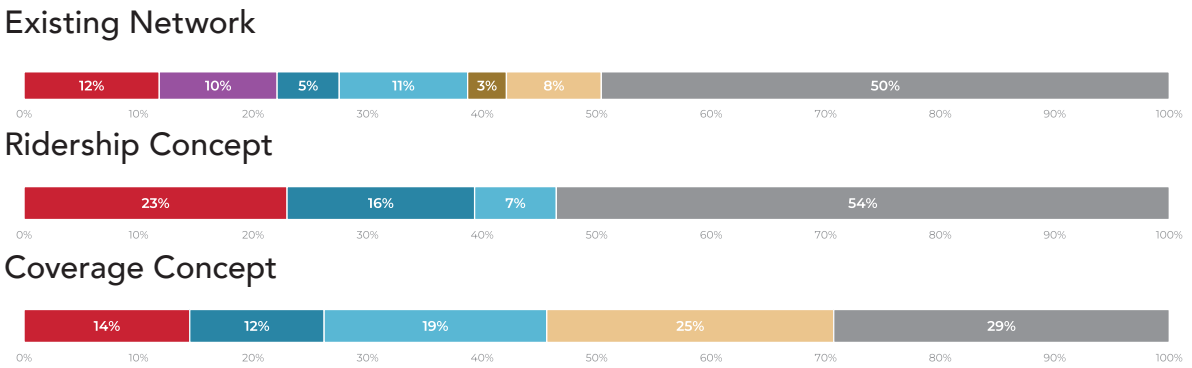
For jobs, in today's network, 50% of jobs are near some service, with 12% near 15-minute service or better. In the Coverage Concept, total jobs served increases to 71% of jobs, and 14% would be near frequent (15-minute or better) service.

In the Ridership Concept, fewer jobs are near any service, with only 46% near some service, but many more jobs are served by high frequency service, with 23% of jobs near a bus route coming every 15 minutes.

Residents Near Transit at Midday



Jobs Near Transit at Midday



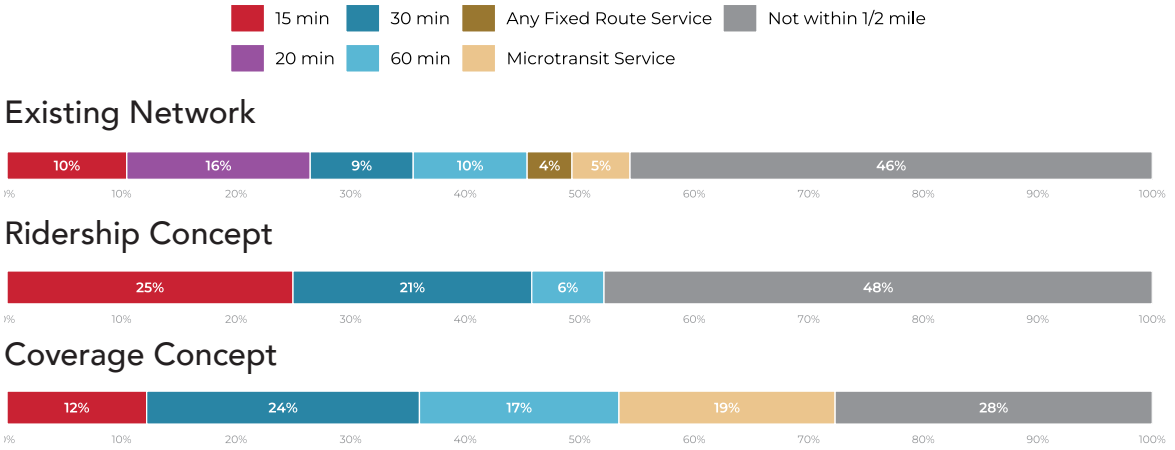
Proximity to Transit: Subgroups

Transit is often tasked with providing affordable transportation for low-income residents, which is why agencies provide service to some people and areas, regardless of ridership potential. Under Title VI, federal laws also protect those with low incomes from disparate transportation impacts, which is why agencies sometimes provide transit service in places where poverty is high, even if this does not maximize ridership. Similarly, federal Civil Rights laws require that transit agencies assess the impacts of changes to service on people of color to ensure there are no disproportionate negative impacts.

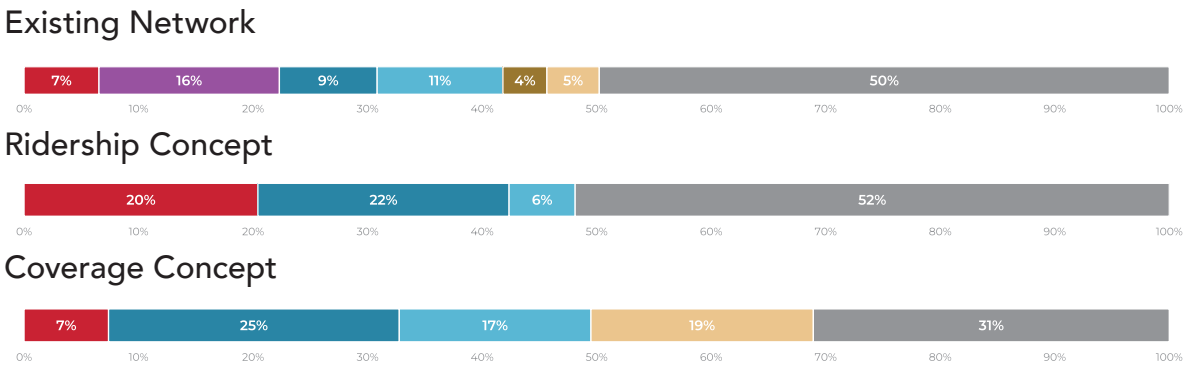
Today, 54% of low-income residents are near any transit service. Under the Ridership Concept, the percent of low-income residents near any service would decrease to 52%, but 25% of these residents would be near a bus coming every 15 minutes. In the Coverage Concept, 72% of low-income residents would be near transit.

The trend is similar for residents of color. The Ridership Concept decreases the percentage near any service from 50% to 48%, but there are more residents of color near frequent service (from 7% to 20%). The Coverage Concept provides service near 69% of residents of color, but keeps a similar number near frequent service.

Low-Income Residents Near Transit at Midday



Residents of Color Near Transit at Midday



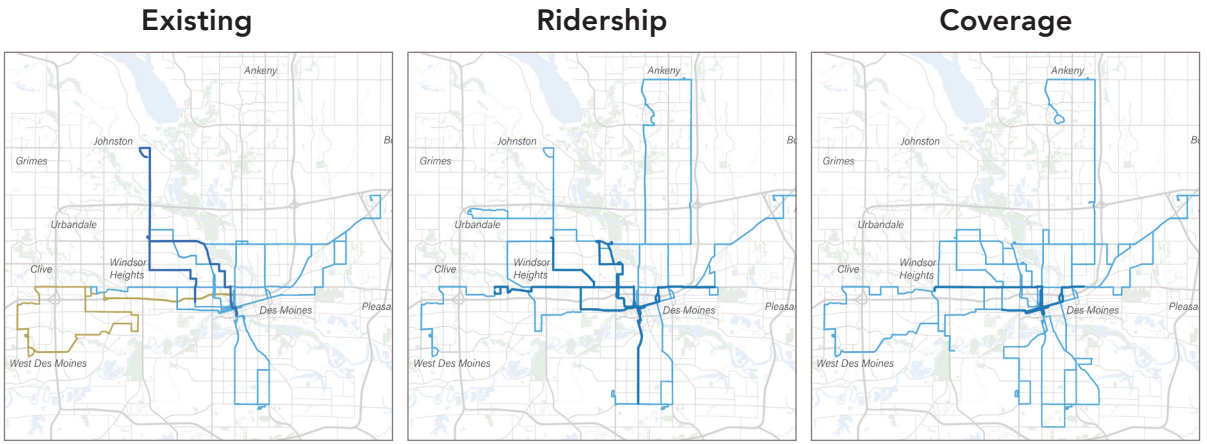
Proximity to Transit: Evenings

We can also visualize how service is provided throughout the day. The maps to the right show what each network looks like at 8pm on a weekday. All routes that run during the midday, also run in the evenings except for the microtransit zones, which do no operate in the evenings.

We can also calculate the number of residents near transit at 8pm. In the Existing Network, 47% of residents are close to any transit service. In the Ridership Concept, that increases slightly to 51%. In the Coverage Concept, 53% of residents are near service.

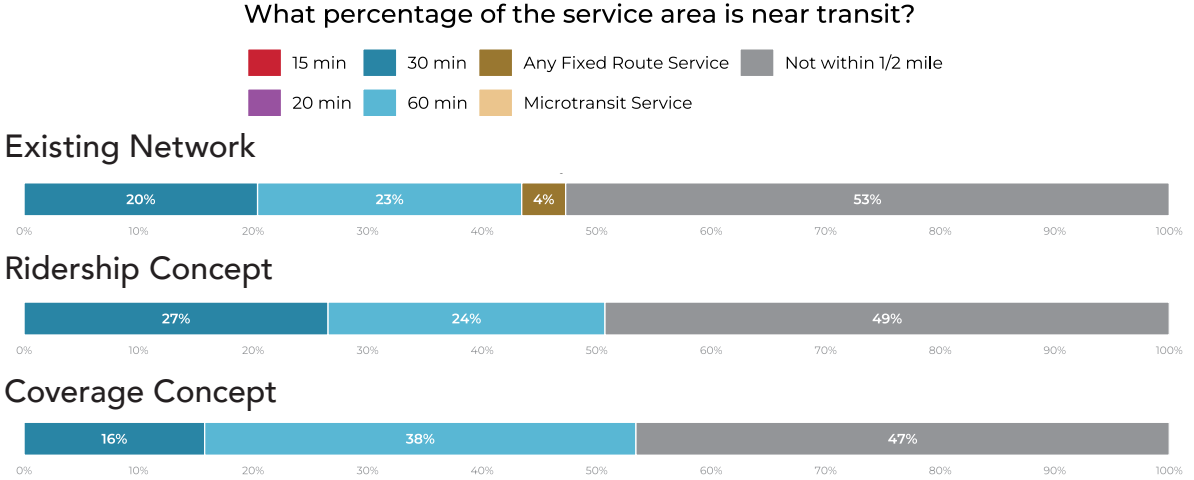
Notice that no service runs frequently in the evenings. Within the current budget, DART can't afford to run 15 minute service after 7pm in either concept. However, there is a difference in residents close to 30-minute service so the Ridership-Coverage trade-off is still visible here. The Ridership Concept has less people close to any service, but more people close to 30-minute service while the Coverage Concept has more people close to any service, but less close to 30-minute service.

Networks at 8pm on Weekdays



Residents Near Transit at 8pm on Weekdays

What percentage of the service area is near transit?



Proximity to Transit: Sundays

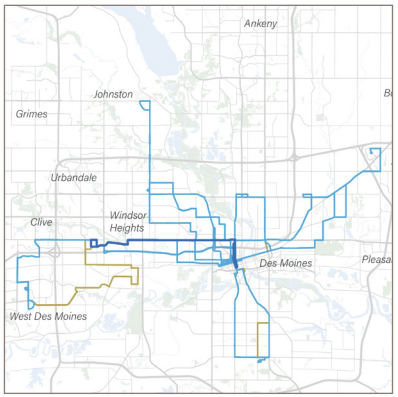
A big difference between the Existing Network and the concepts is the amount of weekend service provided. The maps to the right show each network on Sundays.

The Existing Network keeps most routes that run during the midday on weekends, but they only run every 60 minutes. Route 3 is the only service that runs more frequently on Sundays. In contrast, the concepts run every route on the weekend with the same frequency as the weekday, except for the microtransit zones, which don't run.

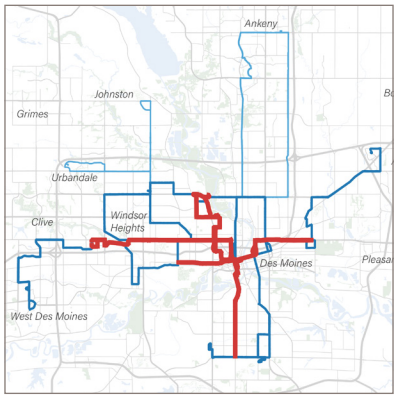
Today, 49% of residents are near transit service on Sundays and now frequent service is provided. In the Ridership Concept, 51% of residents are near any service, and 25% are close to frequent 15-minute service, just like during the midday on weekdays. In the Coverage Concept, 53% of residents are near any service, and 12% are close to frequent service. This is less than midday, because the microtransit service wouldn't run on weekends.

Networks at 12pm on Sundays

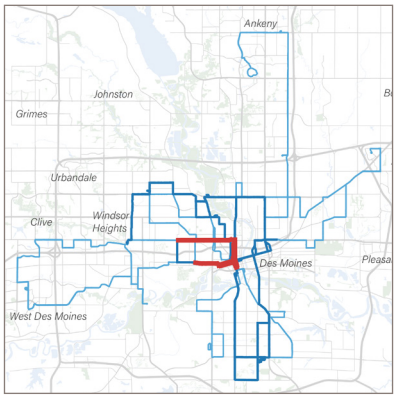
Existing



Ridership

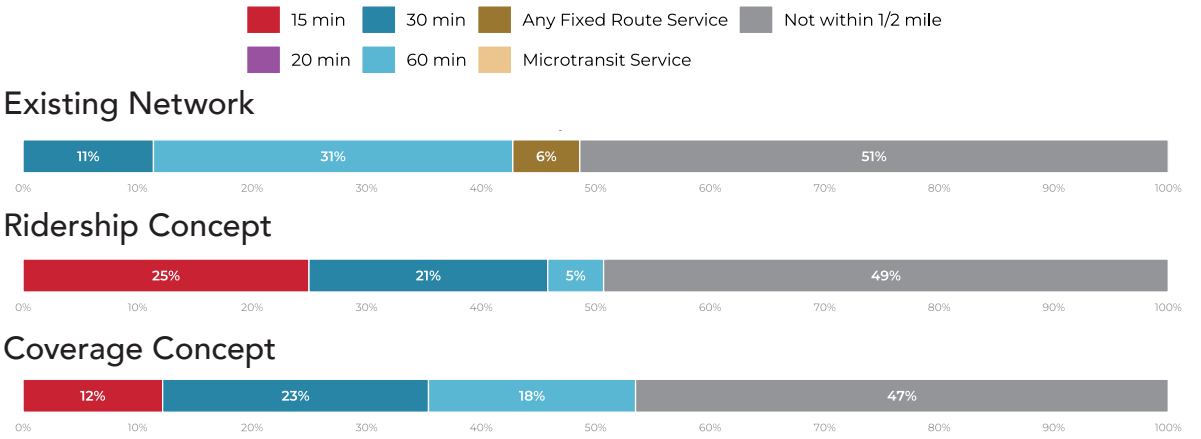


Coverage



Residents Near Transit at 12pm on Sundays

What percentage of the service area is near transit?



How do we decide?

If you're interested enough to read this far, we'd love to have you more involved in this project!

This report is the first step in engaging the public for Reimagine DART. It kicks off a round of public input for DART to help guide the Commission's decision of how it balances the goals of high coverage and high ridership.

In April 2025, members of the project team, DART staff, and others will be engaging the public through print and digital outreach strategies, surveying at key locations, and public meetings. The project team will also engage with the Commission and a select group of community leaders. Through this process, we need you to tell us what you think about these concepts and what priorities DART should emphasize as it thinks about a new network.

Building on the input we get from you, the project team will develop a Draft Network in May. The Draft Network will include maps of the new routes, and measures like job access change and proximity to service will be summarized in a report for the public and stakeholders to review by August.

For more information and to stay involved in the project, go to www.ReimagineDARTdsm.com.

Many people will be involved in guiding this plan:

- **Transit riders**
- **People living on low incomes**
- **People of color and non-English speakers**
- **Civic and neighborhood leaders**
- **Employers and businesses**
- **City staff**
- **Local elected officials**

Learn More

- Read about the project
- Sign up for email updates

Give Input

- Take the survey
- Attend a public meeting

Share with Others

- Tell your friends, family, neighbors, and coworkers about Reimagine DART
- Share information about how to participate in public input

Appendix

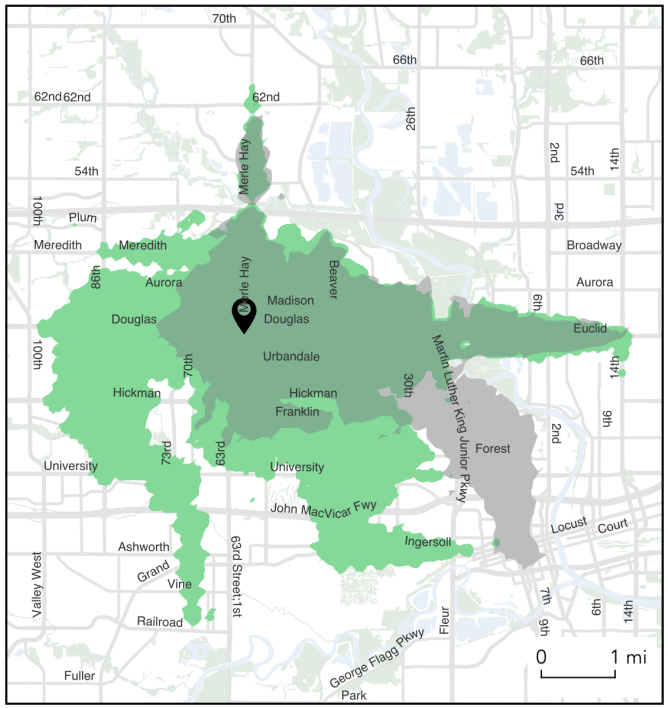
Compared to the Existing Network, how far can I travel in **45 minutes** from

Merle Hay Mall

(3800 Merle Hay Rd, Des Moines)

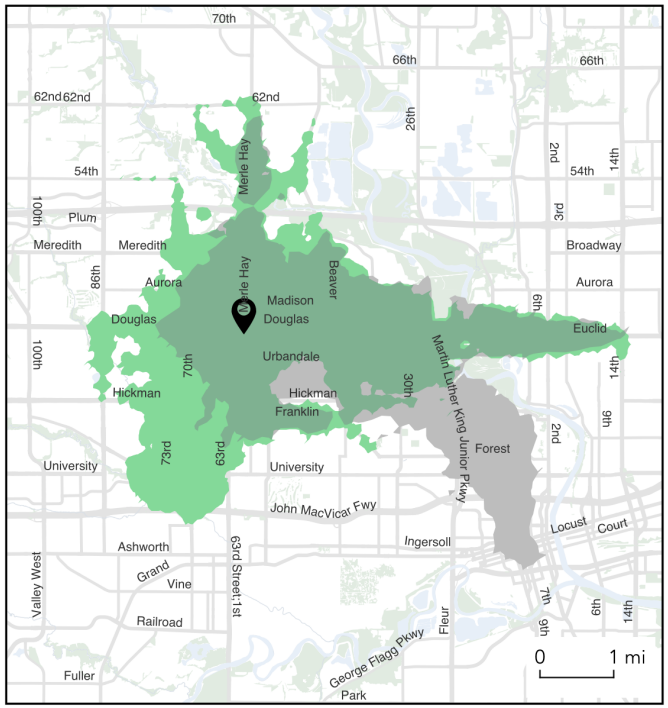
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+27,950	(+52%)
Jobs Accessible	-3,150	(-9%)

Coverage Network?



	Change	% Change
Residents Accessible	+2,100	(+4%)
Jobs Accessible	-13,150	(-39%)

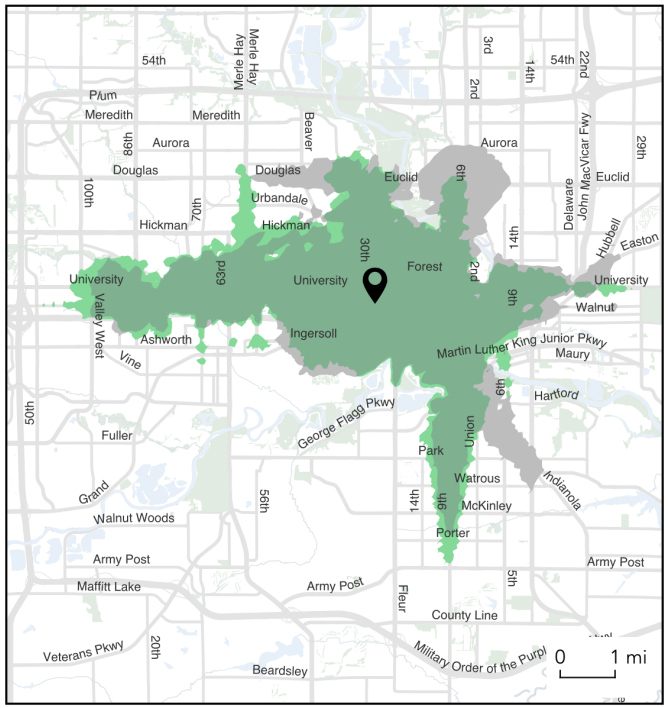
Compared to the Existing Network, how far can I travel in **45 minutes** from

Drake University (Old Main Building)

(2507 University Ave, Des Moines)

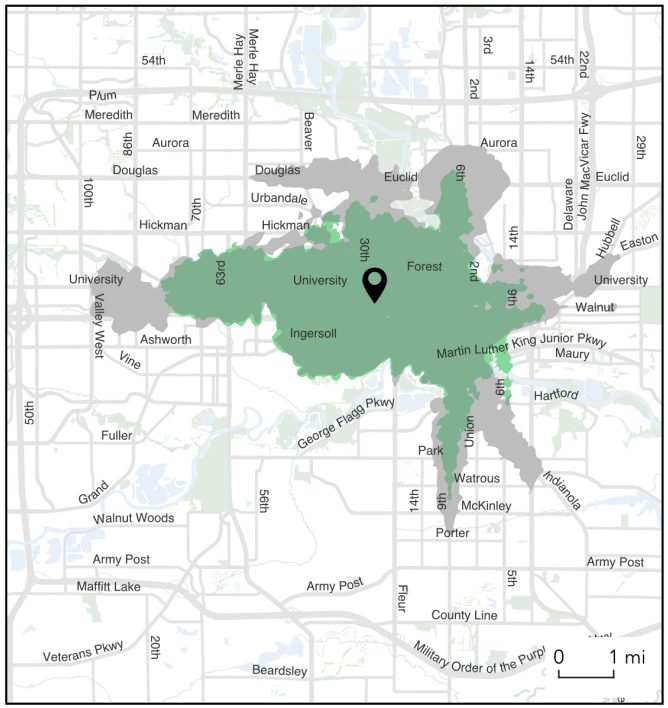
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	-8,000	(-9%)
Jobs Accessible	+700	(+1%)

Coverage Network?



	Change	% Change
Residents Accessible	-29,300	(-32%)
Jobs Accessible	-14,850	(-17%)

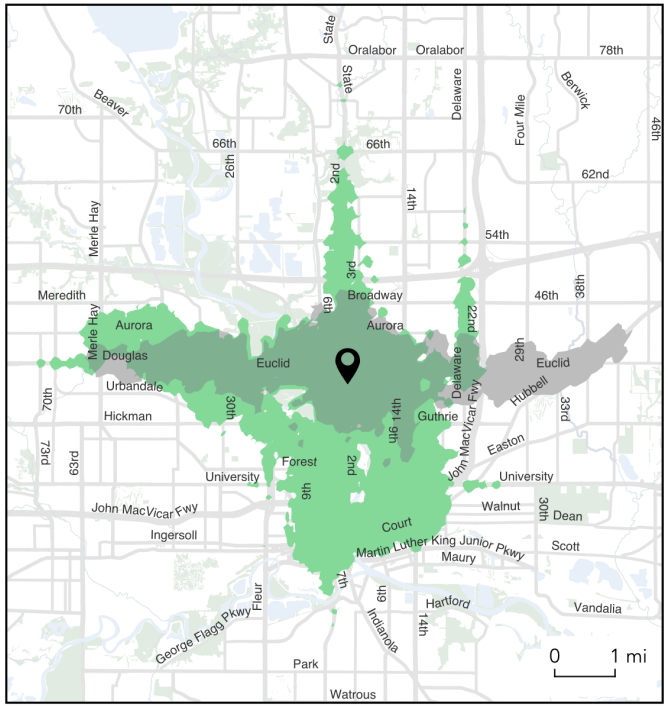
Compared to the Existing Network, how far can I travel in **45 minutes** from

Park Fair Mall

(100 E Euclid Ave, Des Moines)

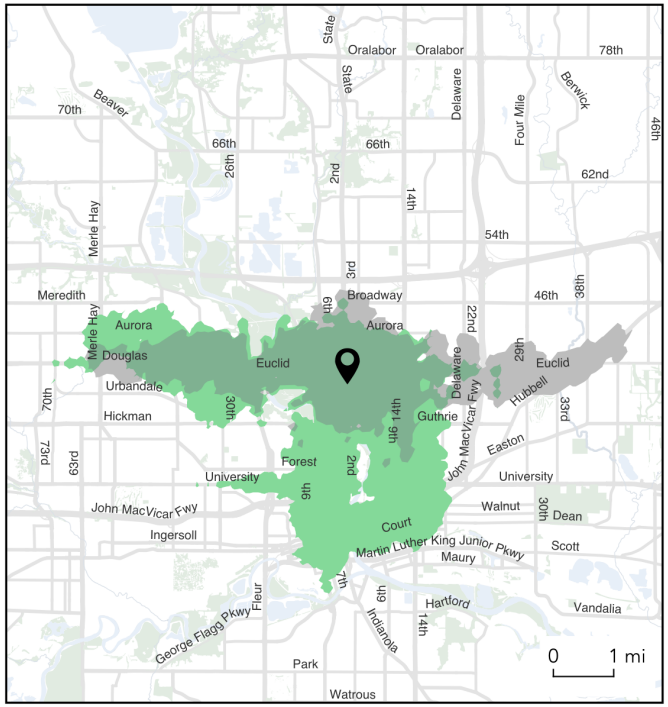
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+26,000	(+74%)
Jobs Accessible	+62,300	(+480%)

Coverage Network?



	Change	% Change
Residents Accessible	+21,750	(+62%)
Jobs Accessible	+55,250	(+426%)

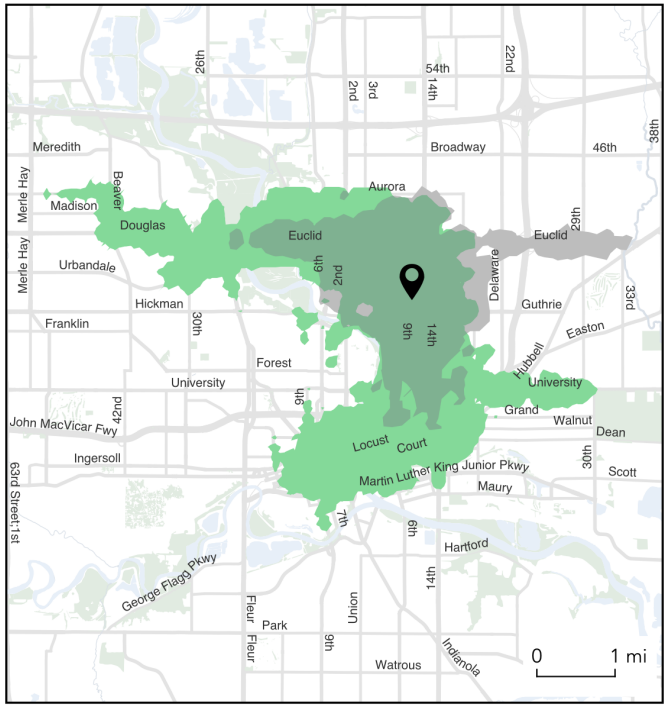
Compared to the Existing Network, how far can I travel in **45 minutes** from

Grand View University

(1200 Grandview Ave, Des Moines)

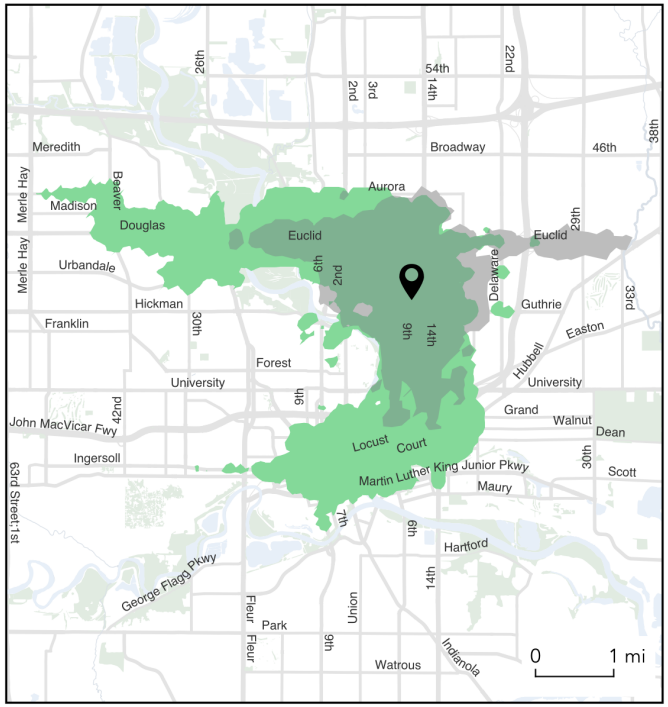
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+21,250	(+100%)
Jobs Accessible	+50,300	(+523%)

Coverage Network?



	Change	% Change
Residents Accessible	+19,700	(+93%)
Jobs Accessible	+51,150	(+532%)

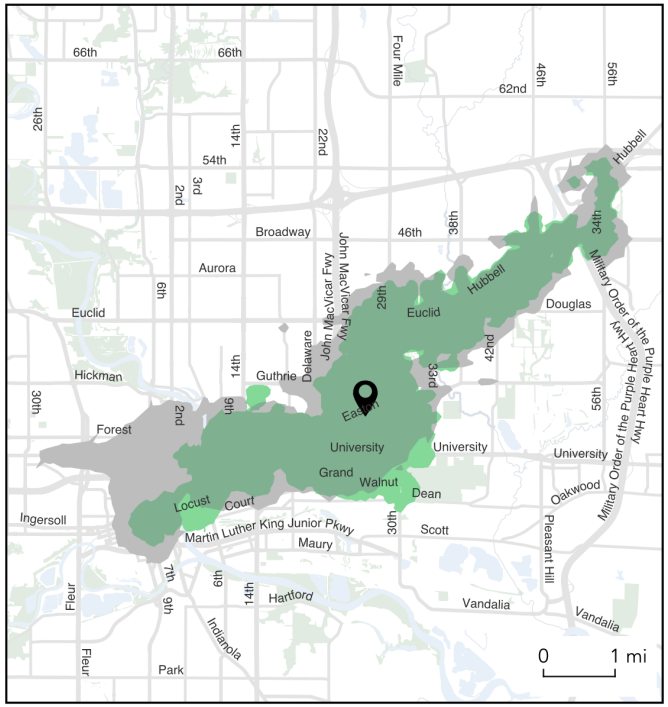
Compared to the Existing Network, how far can I travel in **45 minutes** from

East Side Library

(2559 Hubbell Ave, Des Moines)

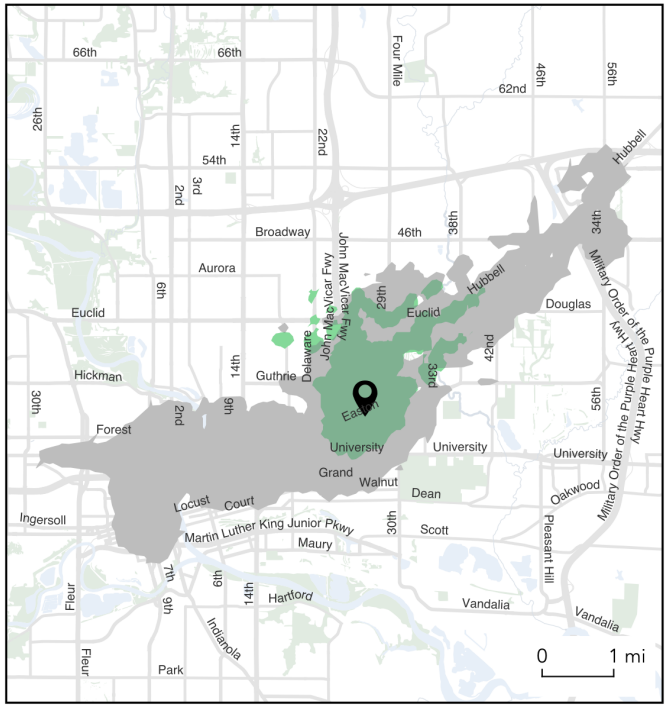
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	-10,500	(-26%)
Jobs Accessible	-23,850	(-41%)

Coverage Network?



	Change	% Change
Residents Accessible	-32,500	(-79%)
Jobs Accessible	-55,450	(-95%)

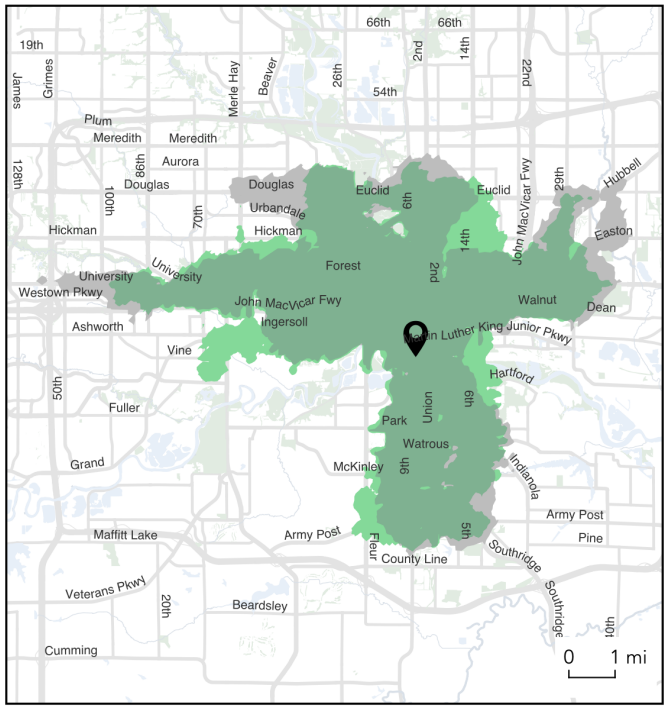
Compared to the Existing Network, how far can I travel in **45 minutes** from

DART Central Station

(620 Cherry St, Des Moines)

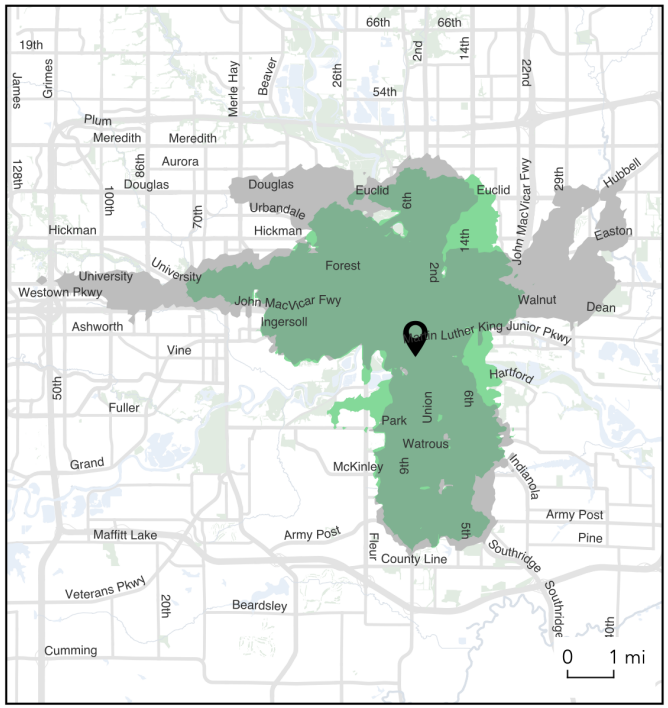
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+600	(+0%)
Jobs Accessible	-2,400	(-2%)

Coverage Network?



	Change	% Change
Residents Accessible	-30,350	(-21%)
Jobs Accessible	-17,050	(-16%)

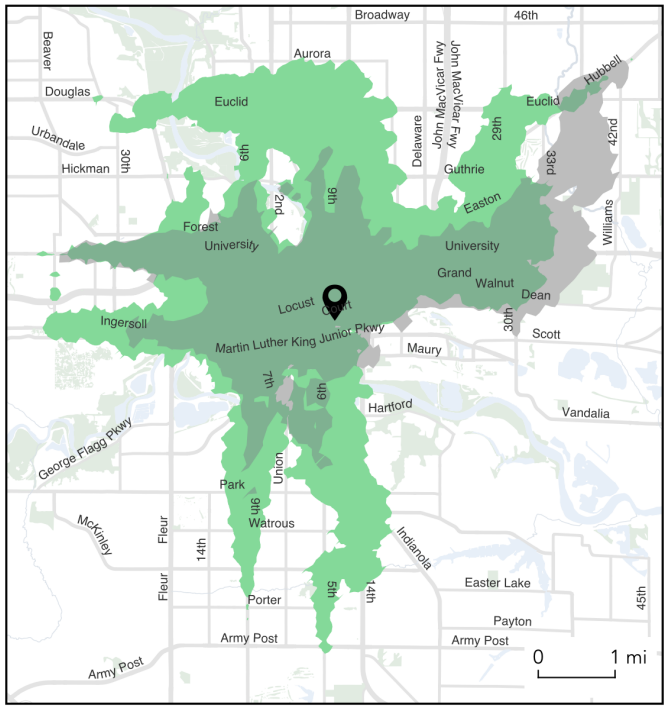
Compared to the Existing Network, how far can I travel in **45 minutes** from

Iowa State Capitol

(1007 E Grand Ave, Des Moines)

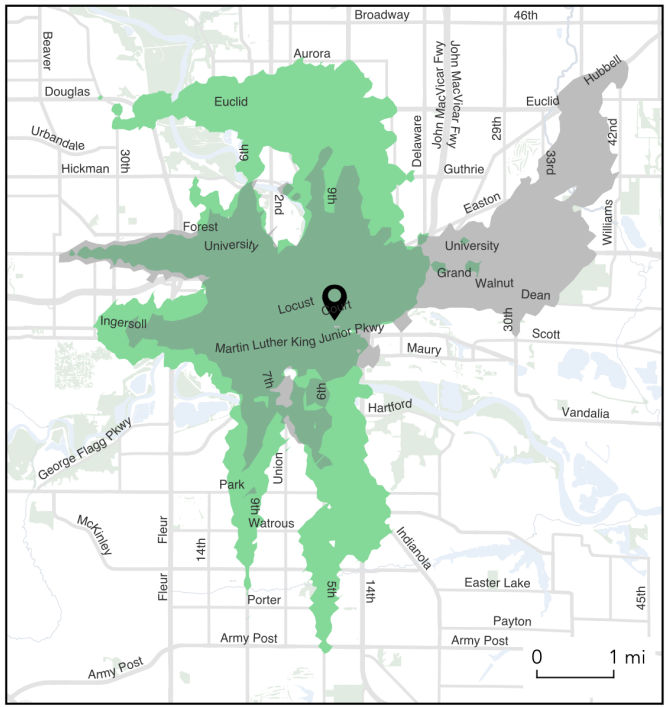
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+34,400	(+78%)
Jobs Accessible	+13,750	(+21%)

Coverage Network?



	Change	% Change
Residents Accessible	+15,850	(+36%)
Jobs Accessible	+7,950	(+12%)

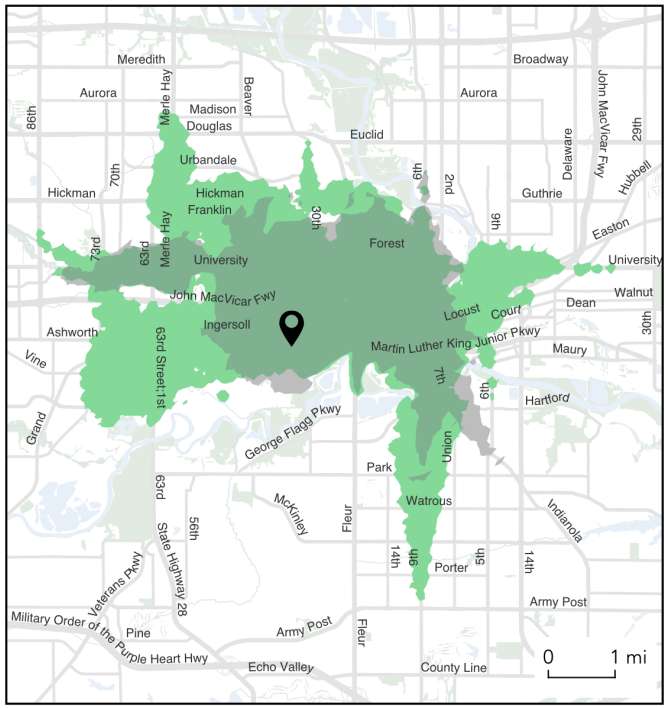
Compared to the Existing Network, how far can I travel in **45 minutes** from

Price Chopper on Ingersoll

(3425 Ingersoll Ave, Des Moines)

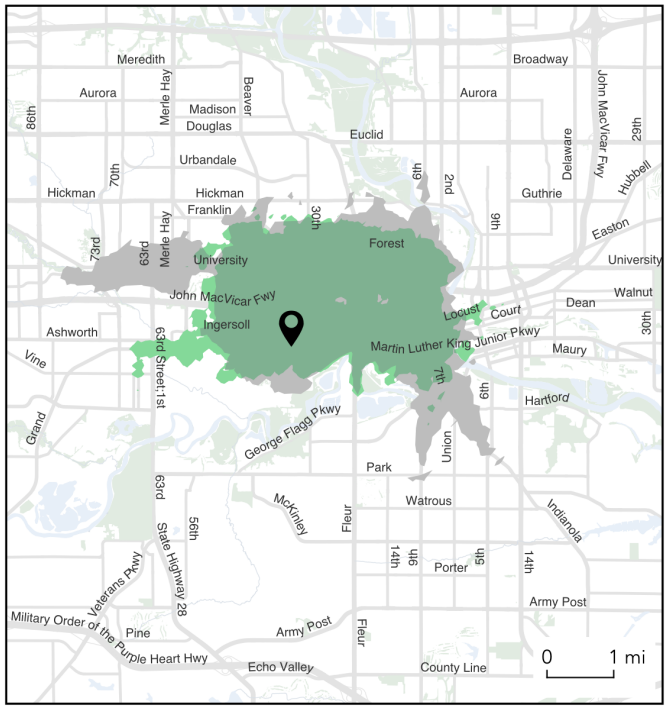
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+30,600	(+64%)
Jobs Accessible	+17,900	(+29%)

Coverage Network?



	Change	% Change
Residents Accessible	-8,200	(-17%)
Jobs Accessible	-4,500	(-7%)

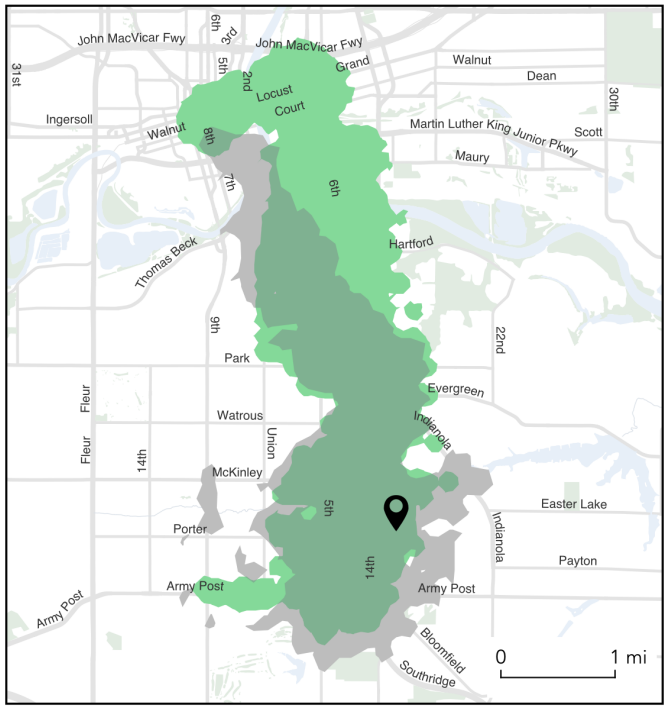
Compared to the Existing Network, how far can I travel in **45 minutes** from

Walmart on 14th Street

(5101 SE 14th St, Des Moines)

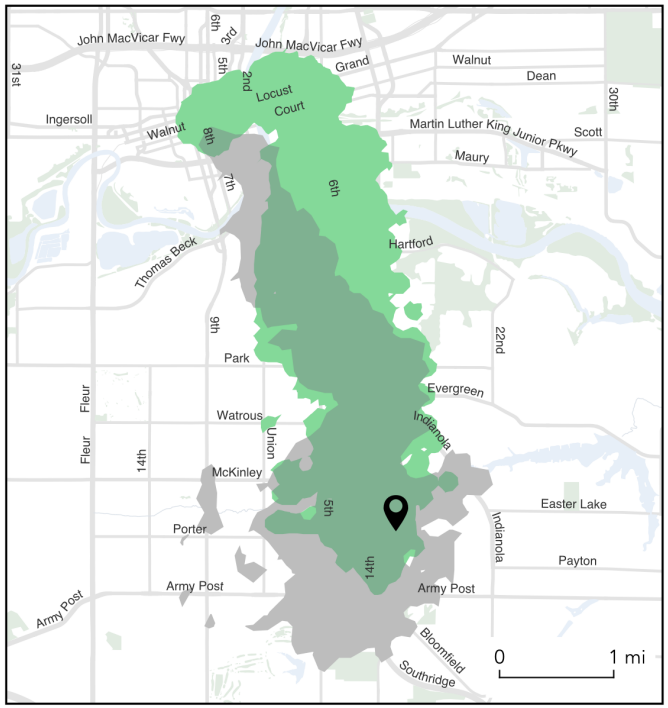
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+3,550	(+21%)
Jobs Accessible	+18,450	(+150%)

Coverage Network?



	Change	% Change
Residents Accessible	+850	(+5%)
Jobs Accessible	+16,950	(+137%)

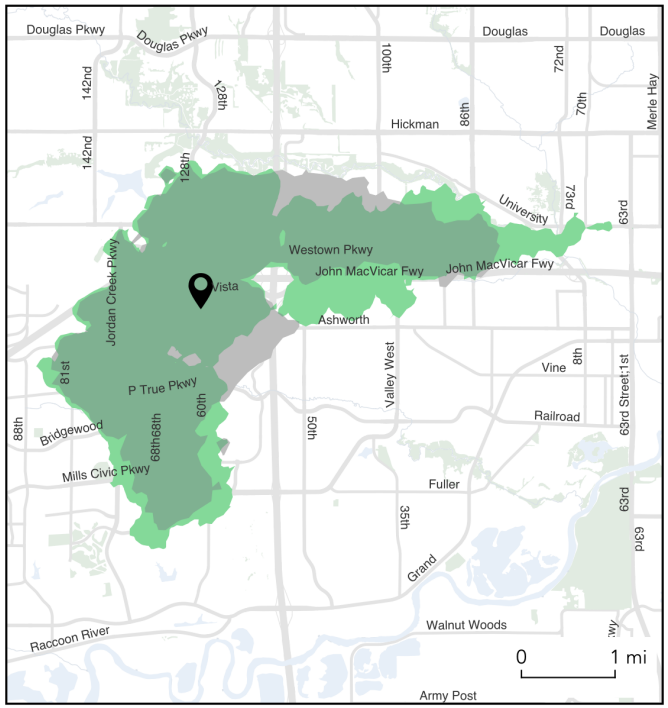
Compared to the Existing Network, how far can I travel in **45 minutes** from

Apartments on Vista Drive

(Vista Drive & 60th Street, West Des Moines)

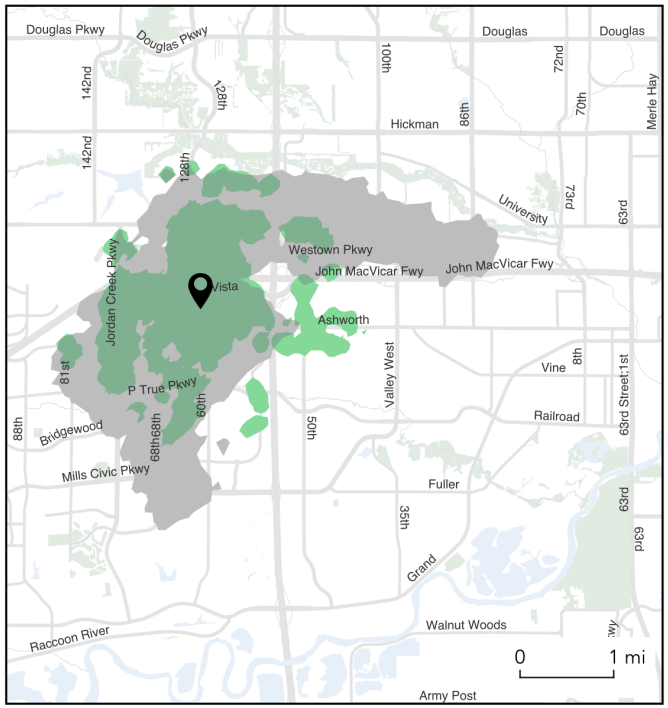
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+3,500	(+22%)
Jobs Accessible	+5,800	(+17%)

Coverage Network?



	Change	% Change
Residents Accessible	-6,050	(-37%)
Jobs Accessible	-20,550	(-59%)

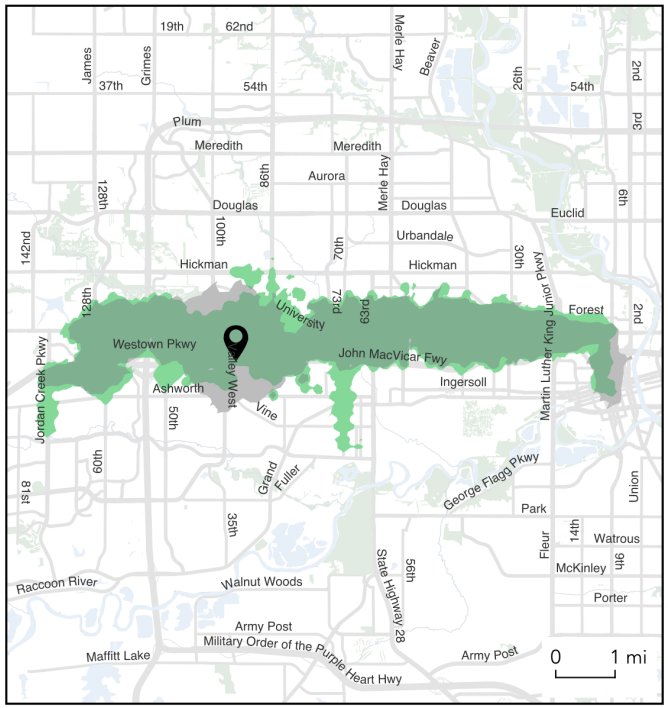
Compared to the Existing Network, how far can I travel in **45 minutes** from

Valley West Mall

(1551 Valley W Dr, West Des Moines)

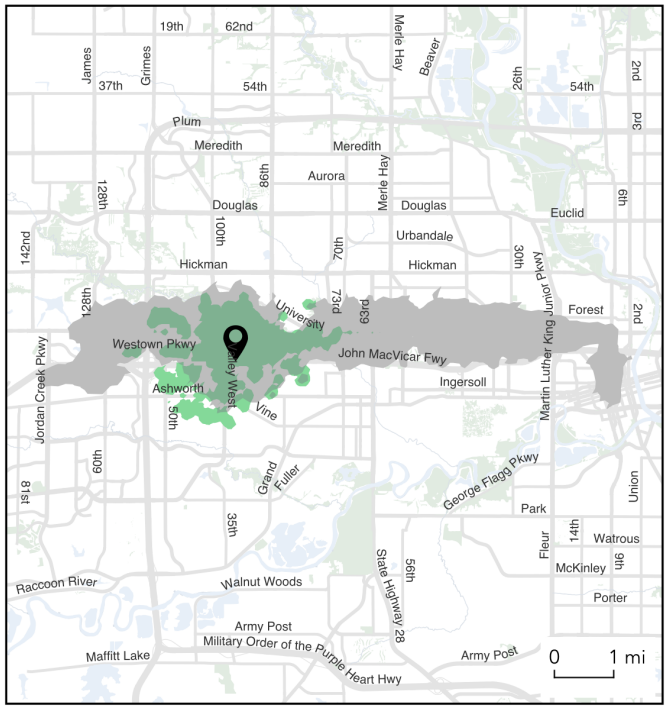
on weekdays at noon using the

Ridership Network?



	Change	% Change
Residents Accessible	+5,950	(+17%)
Jobs Accessible	-1,150	(-2%)

Coverage Network?



	Change	% Change
Residents Accessible	-26,900	(-76%)
Jobs Accessible	-32,350	(-68%)