Metro Transit Network Redesign

Alternatives Report

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JARRETT WALKER + ASSOCIATES

UrbanAssets

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1   Introduction to the Alternatives

Metro Transit Network Redesign - An Introduction to the Alternatives

Why redesign the bus network?

Metro Transit serves many vital needs and its bus routes reach the vast majority of Madison neighborhoods. But it's also clear the current network doesn't conveniently serve most trips.

The basic shape of Madison's transit network was established in 1998. There have been many changes since then, but they have mostly been relatively small and incremental.

The upcoming implementation of Bus Rapid Transit (BRT) will require changes to bus routes throughout the city. This is an opportunity to rethink the entire bus network from a blank state.

Contrasting Alternatives

This report presents the most important trade-off Metro Transit must face in redesigning the network, by showing two very different alternative futures for the Metro Transit network.

- The Coverage Alternative would focus on delivering transit service to as many areas as possible. All areas served today would continue to be served, although there would be some changes to exact routes and streets.

- The Ridership Alternative would focus service on fewer routes so buses could run more frequently. This would reduce wait times and make service useful for many more trips, but many trips might require longer walks.

No Preferred Alternative

The most important word in this report is "if". Both alternatives are possible, but neither is a proposal.

The Coverage Alternative shows what could happen only if Metro Transit chose to retain its current focus on coverage goals.

The Ridership Alternative shows what could happen only if Metro chose instead to focus service into higher-frequency routes.

Metro Transit does not have a preference between these alternatives. Metro wants to hear which way the public is leaning, and gather input on what's missing or needs improvement.

Next Steps

Although these alternatives have been designed to be possible, they may contain elements that generate significant feedback and require more detailed work in some areas. Metro Transit accepts and welcomes feedback on any details that might be missing in either alternative.

A later stage of planning will produce a Draft Network Plan, based on public feedback and direction from the Madison Transportation Policy and Planning Board. At that point many more details will be filled in.

Neither of these Alternatives is a *proposal.* Each is an illustration of one end of the spectrum between designing for maximum Ridership and designing for maximum Coverage.

Key Assumptions

Bus Rapid Transit

Both alternatives include the BRT lines as key elements of their design. The alternatives assume that the East-West BRT route will match the most recent plans, but that the North-South BRT is still flexible outside central Madison.

Timeline and Operating Budget

Both alternatives are designed for the year 2023, with the assumption that Metro Transit will only have its existing operating budget.

This means any decision to provide more service in one area is a decision to provide less service somewhere else. This is why neither alternative significantly expands Metro Transit's service area or hours.

Ridership Alternative

Coverage Alternative

Where should Metro Transit be, on this spectrum?

Designing for Ridership vs. Designing for Coverage

The Metro Transit Network Redesign is a unique opportunity to rethink the purpose of Madison's transit system, and how it relates to other ways of getting around such as cycling and driving.

The most basic choice is the degree to which the transit system should be pursuing ridership or coverage.

Designing a transit system for **high ridership** serves several popular goals, including:

- Competing more effectively with cars, so that the city can grow without increasing vehicle miles driven and traffic congestion.

- Reducing the public subsidy needed for each ride by carrying more passengers and by collecting more fare revenue.

- Minimizing climate impact by replacing single-occupancy vehicle trips with transit trips, which reduces greenhouse gas emissions.

- Supporting dense and walkable development.

On the other hand, other popular goals for transit don't require high ridership. Designing a transit system for **high coverage** serves these goals:

- Ensuring that everyone in the service area has access to some transit service, no matter where they live.

- Providing access for people without access to personal vehicles.

Within a given budget, 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 high frequency along a dense corridor is a dollar that cannot be spent bringing transit closer to each person's home or reaching areas at the edge of the city, and vice versa.**
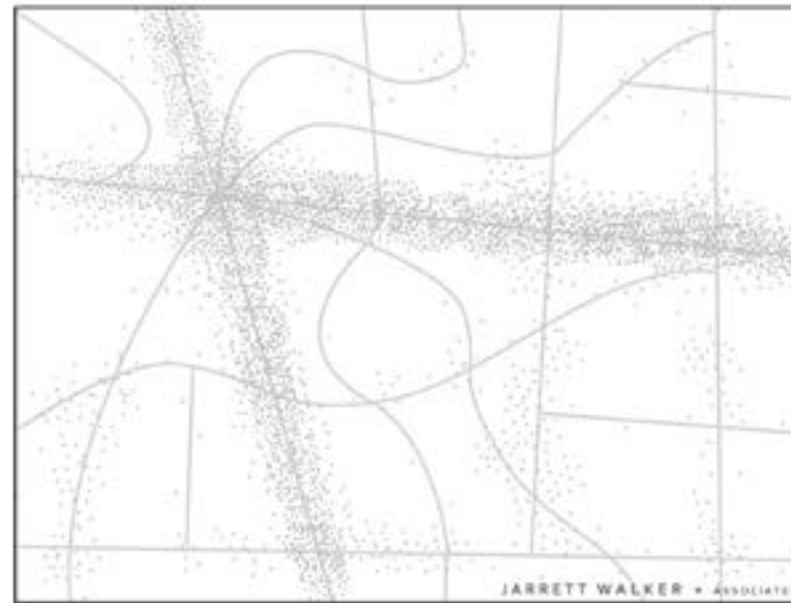
Imagine you are the transit planner working in this fictional neighborhood.

The dots scattered around the map are people and jobs.

The 18 buses are the resources the town has to run transit.

Before you can plan transit routes, you must first decide: What is the purpose of your transit system?
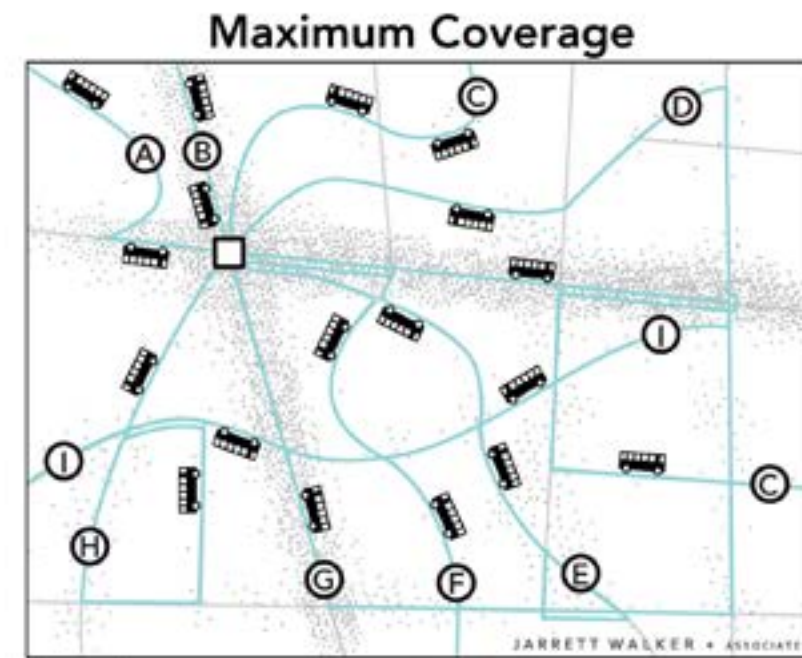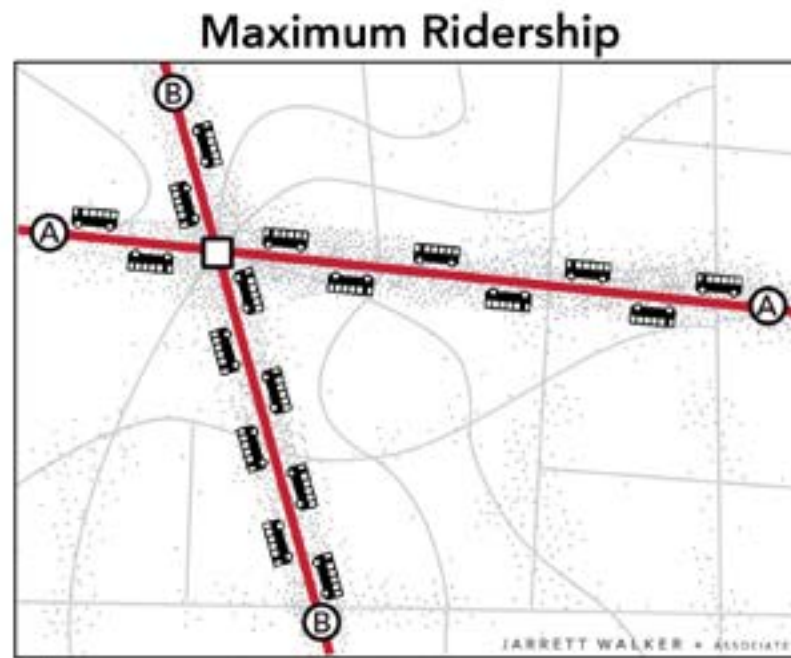
Figure 1: Comparing an imaginary town where transit is run with the goal of maximizing frequency and ridership (left) vs. the same town where transit is run with the goal of providing a little service near everyone (right). The maximum ridership (left) network has very frequent service, but only on the roads where the most people live and work. The maximum coverage network has service on every road, but it doesn't come very often. Madison's existing network looks more like the one on the right. Should a redesigned network focus more on frequency, even if some people will have to walk farther to reach service?

How the Pandemic Changes This

Many people who used transit before stopped riding at the start of the Covid-19 pandemic. It's unclear when people's travel needs will return to pre-pandemic levels and how many people will consider transit as an option.

So a more frequent network might not result in higher ridership immediately. Those effects take time. For example, some people will choose where to live based on bus service, and only then begin to ride.

But regardless of ridership, a more frequent network would increase the amount of access provided between different parts of Madison, and make transit useful for more trips.

The key question remains whether it is acceptable for some people to walk further to reach their bus stop, or for some areas not to receive service.

What we've heard from the public so far

From January to June 2021, the Metro Transit Network Redesign project engaged the community around values, priorities and trade-offs for transit service. This effort built on the Choices Report, which detailed the existing conditions of the transit network and the key choices involved in designing future service[1].

Here, we summarize the most important findings to date. A full report from Phase 1 of public engagement is attached in Appendix C.

Sources of Public Input

In this phase of outreach, the public engagement gathered public input from multiple sources to inform transit network design development:

- A public survey distributed through a variety of online and in-person efforts from March 2 to June 25, 2021. The public survey was offered in English and Spanish; it received a total of 2,872 responses.

- Small group meetings conducted virtually and in-person in May and June 2021. Six (6) small group meetings were held with a diversity of community stakeholder organizations.

- Tabling at community events and intercept interviews conducted from April through June 2021[2]. Four (4) events were attended, in addition to three (3) intercept interviewing sessions at various locations throughout the city.

- A transit choices public information meeting held virtually on March 3, 2021. A total of 173 community members were in attendance.

The community is ready for change.

At the most basic level, public feedback overwhelmingly indicates an appetite for change to the Metro Transit network.

This is illustrated in public survey responses. Regardless of age, income, race or how often they ride transit, 80% to 90% of respondents either agreed or strongly agreed that "we should look for ways to change the system [...] even if some people prefer [it] the way it is." Only 3% disagreed.

This willingness to accept change is an important signal that the Metro Transit Redesign Project should proceed, and that the public may be willing to consider fairly radical changes.

> **A survey with over 2,800 responses found that people overwhelmingly agree that we should look for ways to change the transit system. This finding is consistent across lines of age, income and race.**

We should look for ways to change the system to make it more useful to most people, even if some people prefer the system the way it is.	Respondents					
	All	Frequent Transit Riders*	Lower-Income**	BIPOC***	Seniors (65+)	18 - 35 Years
Strongly agree	47%	45%	48%	48%	42%	52%
Agree	42%	43%	41%	34%	42%	40%
Neutral	8%	8%	8%	9%	11%	6%
Disagree	2%	2%	2%	2%	3%	1%
Strongly disagree	1%	1%	1%	3%	1%	0%

* Often" and "everyday" riders (pre-pandemic)
** Less than $35,000 per year
*** Black, Indigenous, and other People of Color

Figure 2: Table showing the percentage of public survey respondents who agree or disagree with the idea that the transit system in Madison should change, even if some people like it the way it is.

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1 As of July 2020, the Choices Report remains available online along with other project materials at the following address: https://www.cityof-madison.com/metro/routes-schedules/bus-rapid-transit/transit-network-redesign

2 The outreach team interviewed event attendees to solicit in person responses to the public survey questions.

Most people we heard from favor focusing on ridership.

When we asked people to directly compare the merits of designing service for ridership vs. coverage, a majority (50 to 65%) of survey respondents fell on the side of designing most or all service to maximize ridership.

This is far higher than the percentage of respondents who favored designing most or all service for coverage (10 to 20%), or the percentage of people who thought we should focus equally on ridership and coverage (about 20%).

But many people think coverage for all should be transit's first priority.

When we asked people to rank the most important objectives for transit, nearly 30% of survey respondents chose "basic access to everyone who needs it, wherever they are" as their first priority. A further 18% chose "expanded mobility for low-income people in isolated neighborhoods".

These priorities suggest many Madisonians might prefer a system designed for maximum coverage, spreading service out to reach as many peripheral neighborhoods as possible.

Taken together, we can see that both ridership- and coverage-related goals are important to many people in Madison. And it is understandable to want to pursue both ends of the spectrum in the absence of any budget constraints.

The alternatives described in this report aim to bring more clarity to the consequences of shifting the Ridership-Coverage balance given Metro Transit's actual budget constraints.

Coverage VS. Ridership	Respondents					
	All	Frequent Transit* Riders	Lower-Income**	BIPOC***	Seniors (65+)	18 - 35 Years
Design all service for ridership	8%	6%	9%	9%	10%	6%
Design most service for ridership, but offer some coverage	57%	58%	48%	38%	57%	59%
Design half our service for each goal	21%	21%	23%	18%	18%	22%
Design most service for coverage, but offer some ridership	11%	11%	14%	10%	10%	11%
Design all service for coverage	3%	3%	5%	4%	4%	2%

Figure 3: Table showing the percentage of public survey respondents that favored focusing on ridership vs. those who favored focusing more on coverage, in the absence of alternatives to evaluate.

* Often" and "everyday" riders (pre-pandemic)
** Less than $35,000 per year
*** Black, Indigenous, and other People of Color

What objectives should transit adhere to?	Respondents						
	All	Frequent Transit* Riders	Lower-Income**	People of Color***	Seniors (65+)	18 - 34 Years	Persons with Disabilities
Reduce pollution and greenhouse gas emmissions	17%	45%	48%	38%	40%	50%	35%
Support denser and more walkable development	11%	35%	36%	32%	30%	43%	29%
A better economy without more traffic congestion	5%	24%	16%	22%	27%	22%	20%
Maximize access to jobs and opportunities	17%	57%	49%	58%	56%	51%	55%
Expanded mobility for low-income people in isolated neighborhoods	18%	63%	67%	58%	64%	63%	65%
Basic access to everyone who needs it, wherever they are	29%	61%	64%	61%	61%	60%	64%

Figure 4: Objectives of the redesigned transit network. (n)= % of people that ranked the particular objective among the top-3

* Often" and "everyday" riders (pre-pandemic)
** Less than $35,000 per year
*** Black, Indigenous, and other People of Color

Public input received so far suggests the community does not fall entirely on one side of the Ridership vs. Coverage trade-off.

This suggests policy-makers and the public at large need to see alternatives that illustrate the real-world consequences of leaning one way or the other.

Existing Network

Figure 5, at right, is a map of Metro Transit's existing network as of early 2021. Line colors indicate how often the bus comes, on weekdays at midday. There is very little frequent service outside the UW Campus. Nearly all bus routes in Madison run every 30 to 60 minutes on weekdays, while a few run only at peak times or on weekends. In peripheral areas of Madison, the network is organized around four timed Transfer Points.

Access to jobs

The median Madison resident can reach **24,000 jobs within 45 minutes** by transit and walking.

The median person of color can reach **21,000 jobs within 45 minutes** by transit and walking.

The median low-income person can reach **80,500 jobs within 45 minutes** by transit and walking.

People near transit

78% of Madison's residents **are within 1/4 mile of all-day service.**

11% of Madison's residents **are within 1/4 mile of service every 15 minutes or better.**
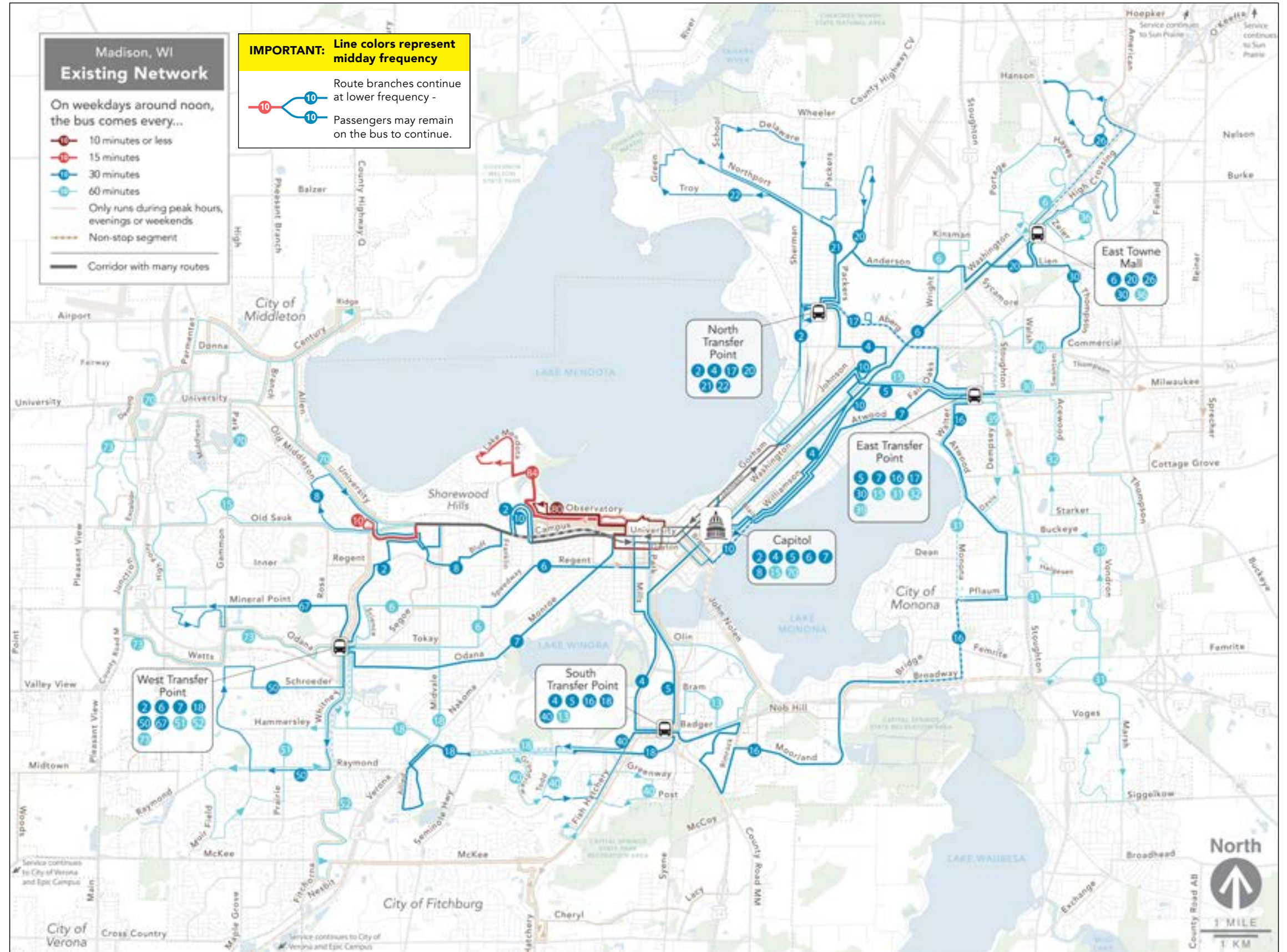
Figure 5: Metro Transit network of bus routes, as of early 2021. The network is centered around Downtown Madison, where many routes converge. Most outlying areas are served by routes that connect to a local transfer point, where passengers can transfer to routes going Downtown or across town.

Ridership Alternative

Figure 6, at right, is a map of the Ridership Alternative. This network would consolidate most of bus service in Madison onto just seven routes, and eliminate the need for Transfer Points. Four routes would run every 15 minutes or better on weekdays. These changes would reduce wait times and allow for more direct travel. However, some people would have to walk farther to service, and some neighborhoods would not receive all-day service.

Access to jobs

The median Madison resident could reach **51,000 jobs within 45 minutes** by transit and walking, a **112% increase** over the Existing Network.

The median person of color could reach **47,000 jobs within 45 minutes** by transit and walking, a **120% increase**.

The median low-income person could reach **103,000 jobs within 45 minutes** by transit and walking, a **28% increase**.

People near transit

67% of Madison's residents **would be within 1/4 mile of all-day service**, compared to 78% today.

43% of Madison's residents **would be within 1/4 mile of service every 15 minutes or better**, compared to 11% today.
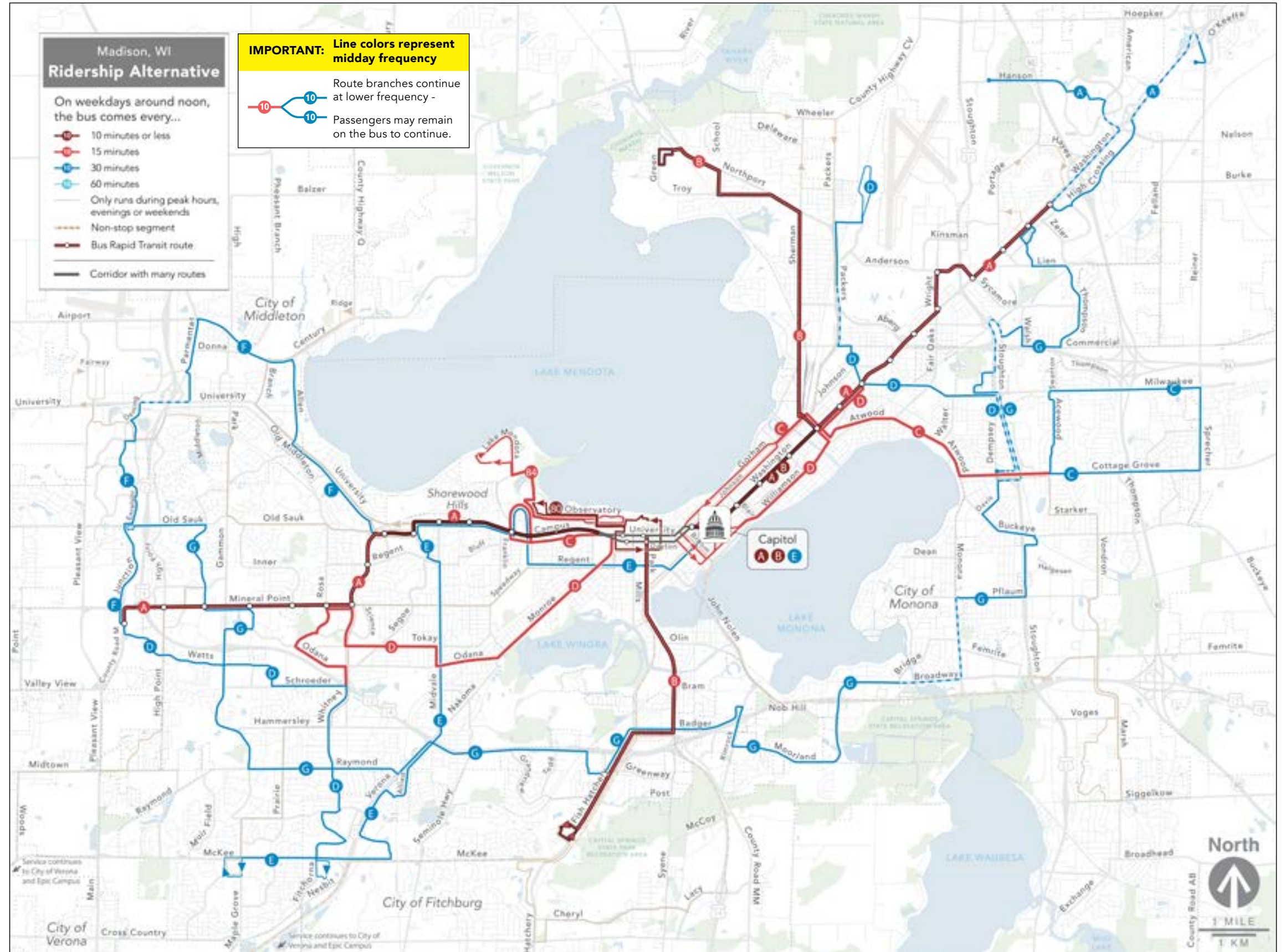
Figure 6: In the Ridership Alternative, service would be concentrated at higher frequencies and on direct paths along major corridors where many people live and work. This would allow for shorter waits and faster travel for many people. Areas with lower densities would have service reduced to rush-hour only.

Coverage Alternative

Figure 7, at right, is a map of the Coverage Alternative. The Coverage Alternative retains the Existing Network's focus on providing all-day service within 1/4 mile of as many people and jobs as possible, throughout Madison. However, most bus routes would still change in response to the BRT lines (A and B). There would also be some emphasis on providing two-way service wherever possible and reducing unnecessary transfers.

Access to jobs

The median Madison resident could reach **33,000** **jobs within 45 minutes** by transit and walking, a **38% increase** over the Existing Network.

The median person of color could reach **30,000** **jobs within 45 minutes** by transit and walking, a **40% increase**.

The median low-income person could reach **87,000** **jobs within 45 minutes** by transit and walking, an **8% increase**.

People near transit

81% of Madison's residents **would be within 1/4 mile of all-day service**, compared to 78% today.

28% of Madison's residents **would be within 1/4 mile of service every 15 minutes or better**, compared to 11% today.
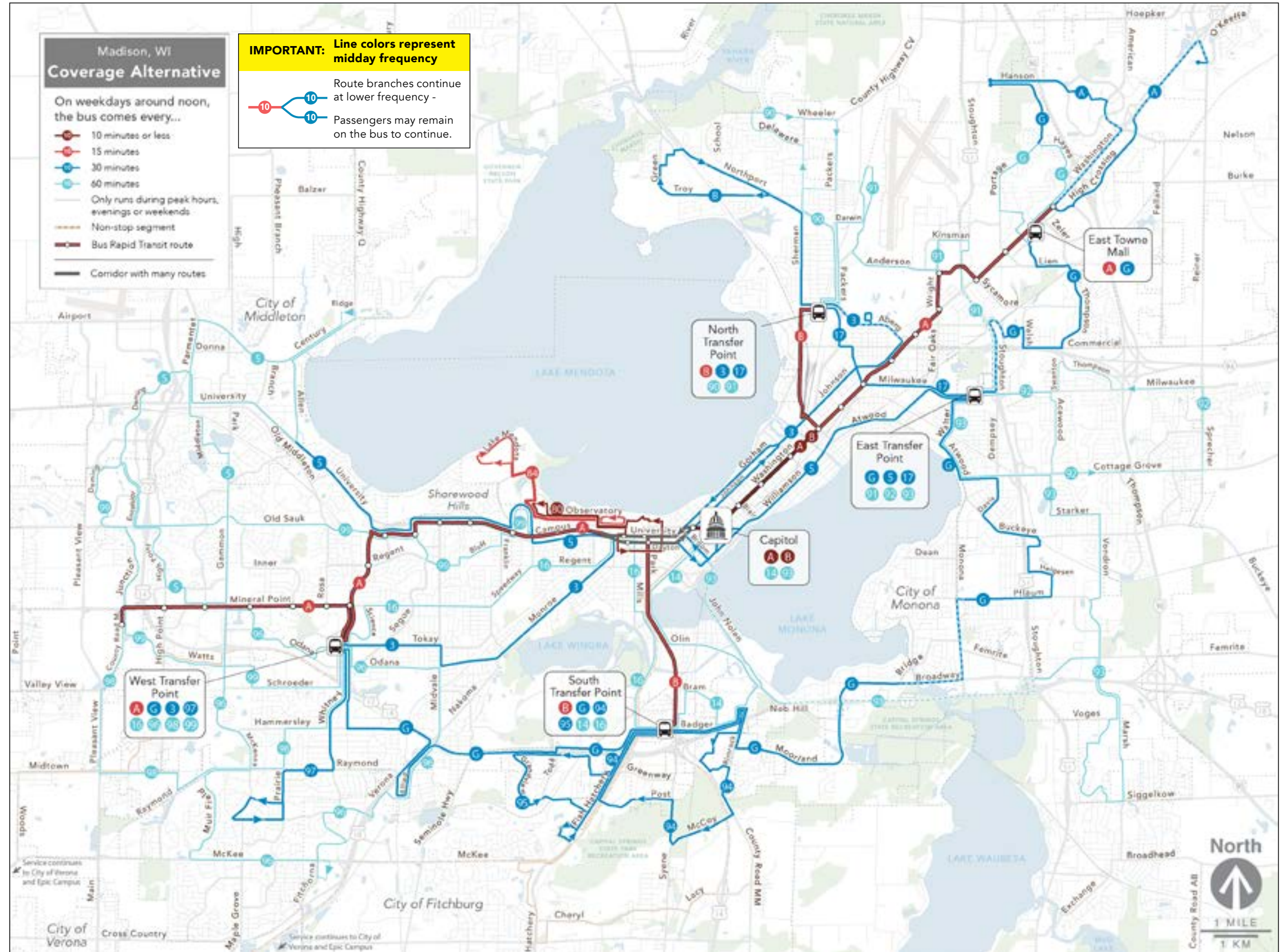
Figure 7: In the Coverage Alternative, service would be reorganized to connect with BRT, while slightly expanding the coverage area. Spreading service out means spreading it thin, so frequencies are low and wait times are long.

2   Design Challenges and Assumptions

Madison's built form requires the transit network to converge on Downtown.

Downtown is the largest destination by far

As a state capital with a major university, and being geographically constrained by bodies of water on two sides, Madison has a higher concentration of housing and jobs near Downtown than many cities of similar size.

Figure 8 below shows the number of jobs within 1.5 miles of locations throughout the city. It illustrates the dramatic concentration of destinations in central Madison.

**The high density of central Madison allows buses to serve more trips, at a lower cost per passenger.** Radial routes that extend outward also brings an abundance of destinations within reach of people throughout the city.

Nevertheless, most people aren't going Downtown

Metro Transit has limited resources and has logically deployed much of those resources towards central Madison because many people's daily trips start or end there.

That means there isn't much direct service between peripheral areas, even though demand for trips to and from these areas has been growing.

Approximately two-thirds of Madison's jobs are located beyond the isthmus and the university, but there is no single area with an especially strong concentration of destinations outside central Madison.

Most outlying areas aren't built for transit

Transit service between peripheral areas is further complicated by a range of transit hostile land-use patterns.

Transit is most effective when it can operate along linear, continuous corridors of high density, where many people are within a short walk of bus stops.

The meandering streets and dead-ends of some outlying areas mean that fewer people can walk to bus stops on main roads, or that buses have to make time-consuming deviations to get close to destinations. Barriers like freeways and railroads prevent people from reaching bus stops on the other side, even if they are close enough to see.

Figure 10 (at right) illustrates this by comparing the development pattern of Central Madison with that of an area around the Beltline freeway and High Point Road.

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Imagery ©2021 Google, Imagery ©2021 , Maxar Technologies, USDA Farm Service Agency

Figure 10: In central parts of Madison like the upper example from Capitol Square, the connective street grid maximizes the area within a short walk of each bus stop. In some peripheral areas, like the lower example from Watts Road and High Point Road, a combination of landscaping, fences and dead-end roads makes it impractical or impossible to walk in a straight path, except to the main road.

Figure 8: There are many jobs and opportunities within walking distance from locations along the UW campus, and across the isthmus. Radial transit routes allow people throughout the city to access the dense cluster of opportunities in central Madison with relative ease.

Figure 9: Madison's geography and development pattern drives a radial (orange arrows) network design. A ring of orbital routes (purple arrows) connect with the radial services.

For transit, freeways are barriers, not corridors

Transit is most efficient when the potential riders live and work along a corridor where buses can serve stops, and people can access those bus stops.

Neither is true of most freeways, which are walled off from potential riders, and where buses must exit the freeway and loop around to serve stops. For transit, freeways are barriers, not corridors.

There are two major consequences of this freeway-oriented development pattern. The most obvious consequence is that development concentrated around freeway interchanges requires people to walk in unsafe and unpleasant conditions to access transit service. This will naturally suppress transit ridership at those bus stops below what it could otherwise be.

Another consequence is that Metro must respond by making sure that neighborhoods on both sides of the barrier have access to transit. This tends to mean running two routes, instead of one.

Dividing a limited quantity of service into more routes means that routes have worse frequencies (or shorter spans of service) than they otherwise could. In turn, this means wait times are longer and service is much less useful.

Freeways result in less-frequent service

This area is built around a road

A single bus route would serve both sides of a road

This area is built around a freeway

There aren't many places for pedestrians to cross the freeway, so you would need two routes to serve the areas on both sides

... with buses coming half as often on each route

Splitting service into two routes results in worse frequencies and longer waits.

Figure 11: This graphic explains why the same amount of development clustered around a freeway can't be served as frequently as around a surface road.

Many people who need transit the most are in the areas hardest to serve.

Many low income people of color live in peripheral areas

Figure 12 below shows the density of people living below the federal poverty line in different areas of Madison, based on US Census data.

The largest concentration of people with low income surrounds the university. Many people in these areas are university students, who may be temporarily poor simply because they have not yet attained professional employment.

But there are also many areas of concentrated poverty in peripheral parts of Madison. People in these areas tend to be of all ages, and they are more likely to be experiencing long-term or generational poverty.

The map in Figure 13 (bottom right) shows where people of color live in Madison. When we compare the two maps on this page, we see that the low-income residents in the peripheral areas are disproportionately people of color. Generally speaking, Black and Hispanic people are much more likely to live in peripheral areas of Madison than members of other racial and ethnic groups.

These peripheral areas are farther from jobs and other opportunities. This makes transit all the more important for people living there.

But serving these areas is relatively expensive, because transit vehicles must travel longer distances to reach the same number of people as in more central areas.

In addition, many of these peripheral areas are built around grade separated freeways (like Verona Road or the Beltline) or extremely wide and fast highways that are very difficult for pedestrians to cross (like Fish Hatchery Road or Northport Drive).

More detailed maps of Income, Race, Car Ownership, and Age are available in the Choices Report. We encourage readers to refer to them for a more in-depth discussion of demographic patterns in Madison and what they mean for transit.
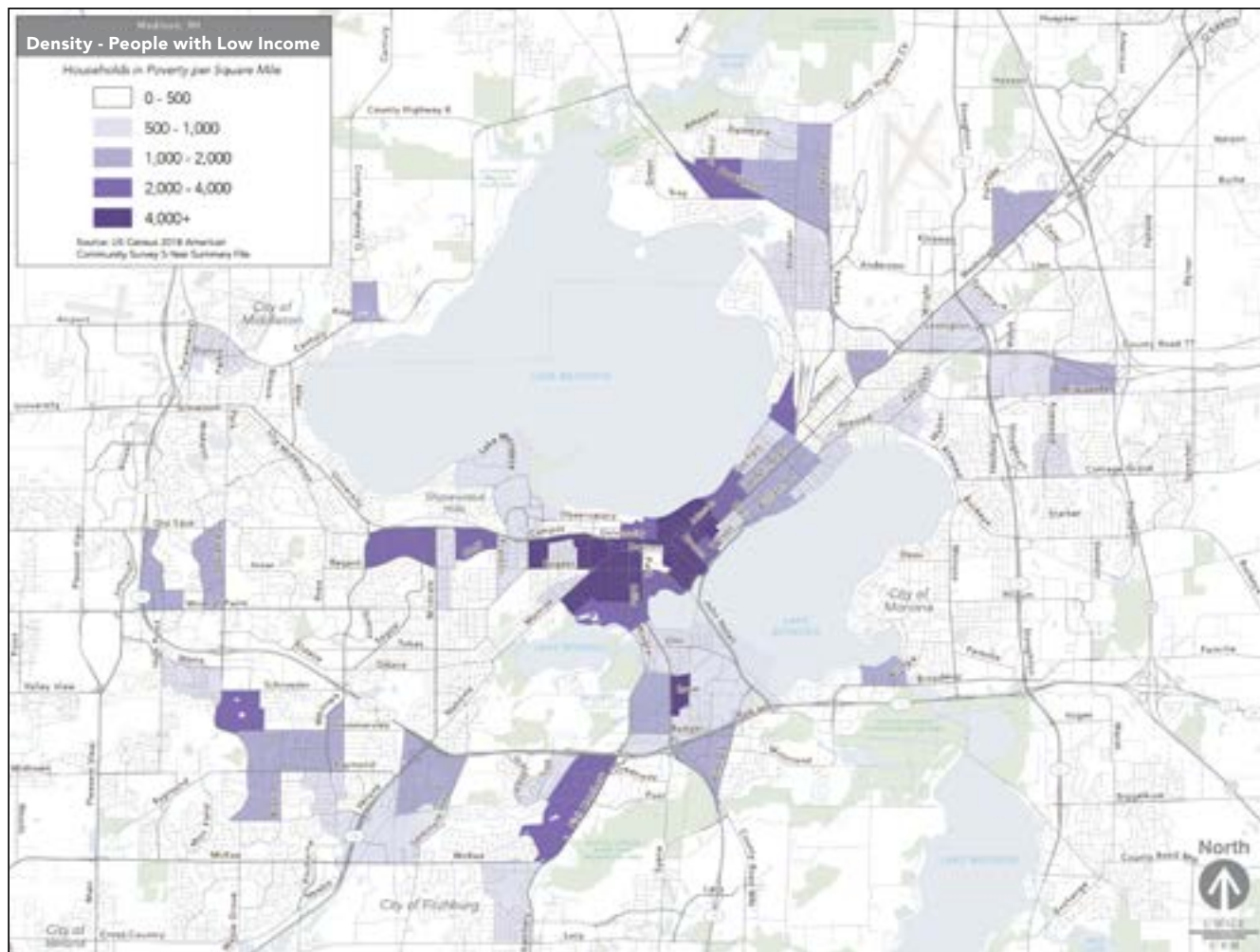
Figure 12: Map showing density of people in poverty in Madison. Comparing the two maps on this page, we can see that outside central Madison, concentrated poverty is correlated with concentrations of people of color.
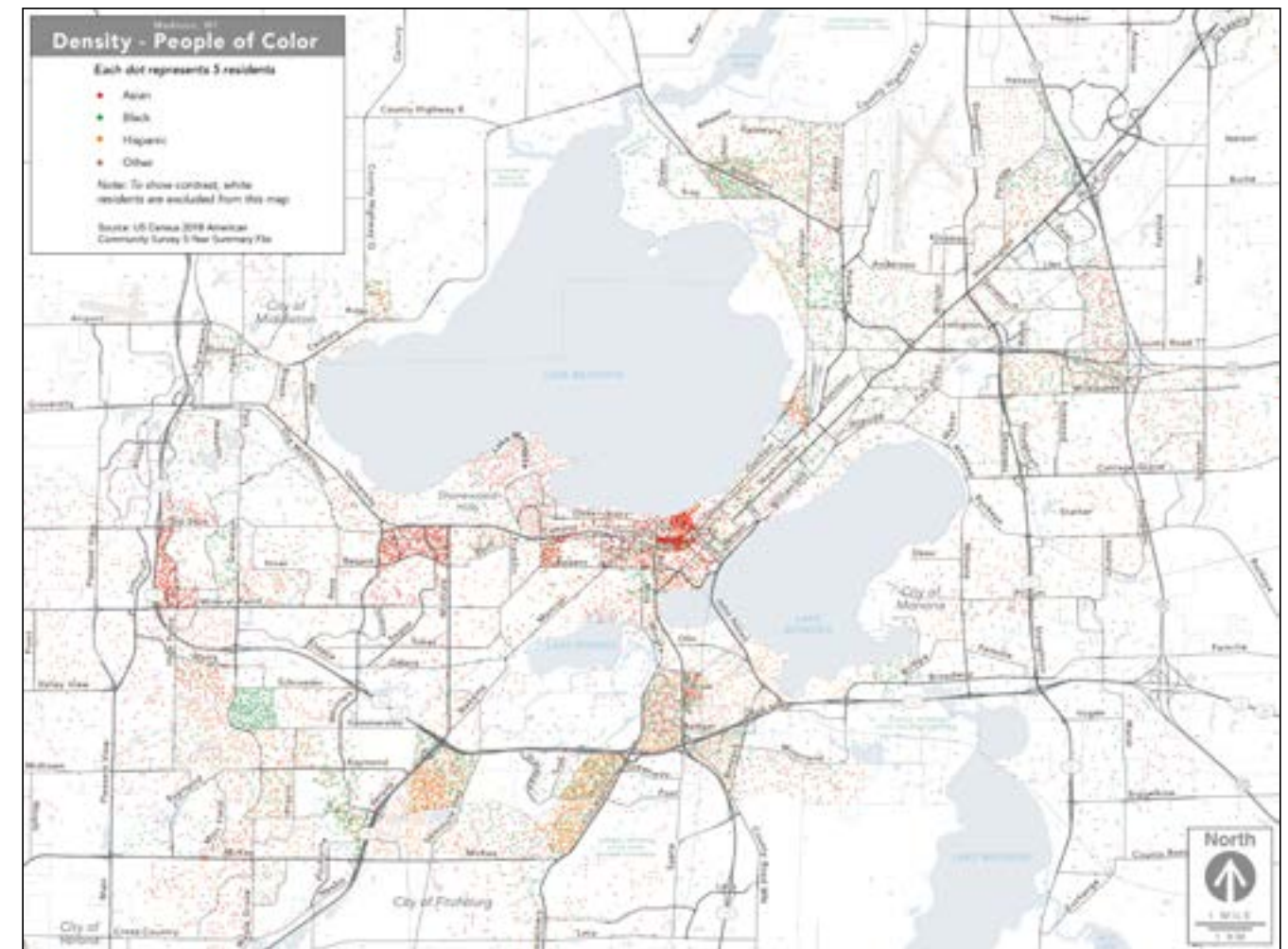
Figure 13: Map showing density of people of color in Madison. On this map, one dot = 5 people.

The location of future development determines how well they can be served

The Madison Comprehensive Plan includes designated areas for future growth. Some of these areas can be better served by transit than others. Figure 14, at right, is a map of these Growth Priority Areas. The same map, with the Alternative Networks overlaid on top, is available in Appendix B.

Transitioning Centers and Corridors

Many Transitioning Centers and Corridors are in relatively central locations where transit already exists, and where frequent, efficient service may be possible as a part of the Transit Network Redesign. The Comprehensive plan prioritizes these areas for mixed-use infill development and redevelopment. Any future increases in transit budget due to population growth in these central areas can be used towards better frequencies, which would benefit not only the new residents, but also existing transit riders who travel through the area.

Peripheral Growth Areas

The Comprehensive Plan includes greenfield development in peripheral areas with "Future Centers" of commercial and residential density within them. While the Comprehensive Plan aims establish higher densities and good walkability in these areas, extending transit to reach these areas would either require a coverage mandate that reduces service in central areas, or an increased operating budget. Unlike the Transitioning Centers and Corridors, future budget increases allocated towards extending coverage to Peripheral Growth Areas would benefit new residents, but do little to improve the travel experience of existing residents in more central parts of the city.

Growth Priority Areas

- ○ Neighborhood Activity Centers
- ○ Community Activity Centers
- ○ Regional Activity Centers
- ● Established Centers
- ● Transitioning Centers
- ● Future Centers
- ↔ Community Corridor
- ↔ Regional Corridor
- ▭ Peripheral Growth Area

Please see pages 78 and 79 for maps of the city's historic districts.
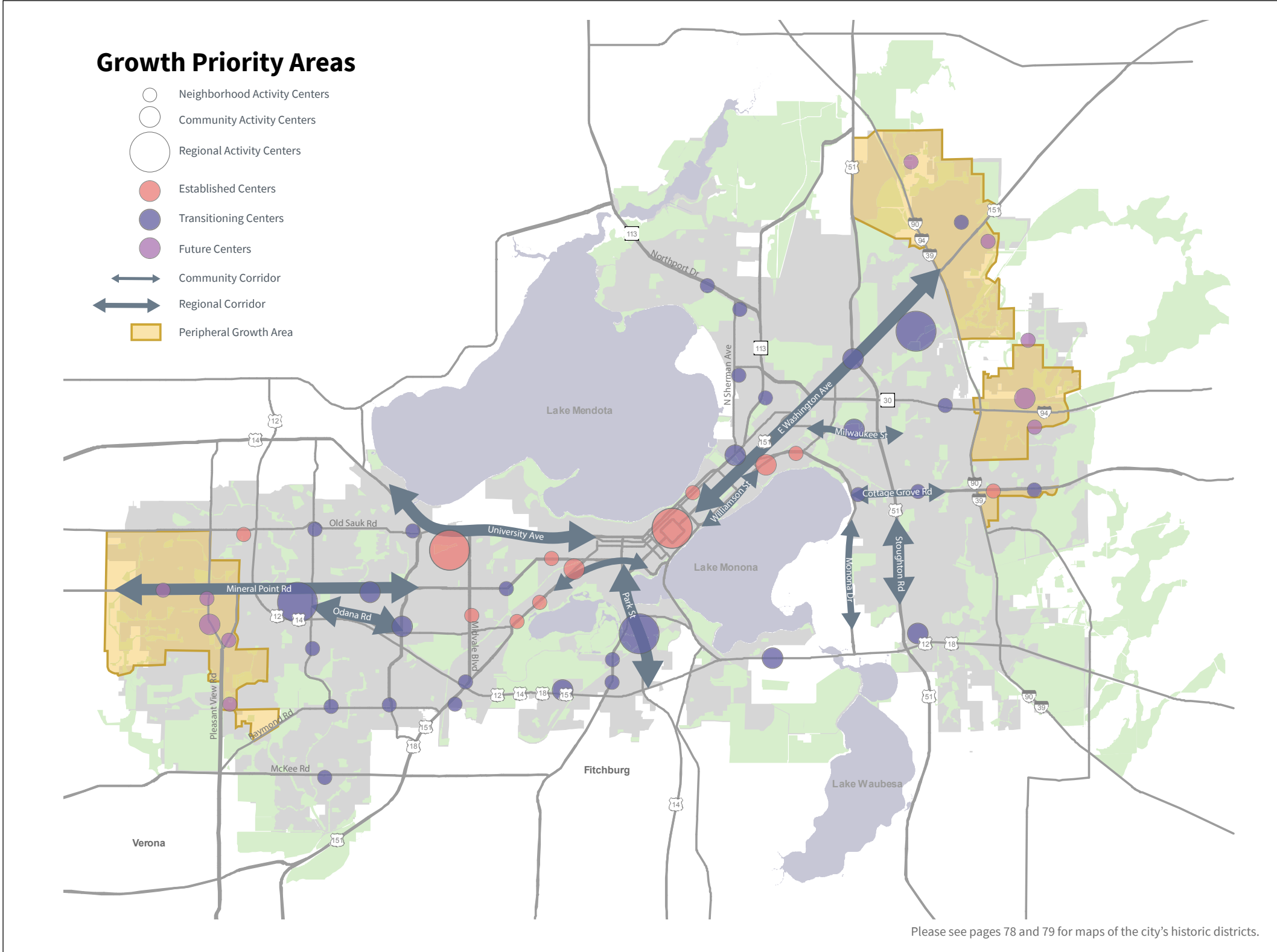
Figure 14: Map of Growth Priority Areas, from the Madison Comprehensive Plan.

Bus Rapid Transit will be at the center of the future transit network.

Making the Most of BRT

As part of the Metro Forward plan, the City of Madison has been planning the construction and operation of a Bus Rapid Transit (BRT) system.

The Transit Network Redesign offers an opportunity to think about how BRT will work in the context of the whole network, and to extend its benefits beyond the East-West route to the whole city.

BRT in Madison may include up to three lines, as shown on the map in Figure 15:

- The East-West (Red) line will serve Mineral Point Road, University Avenue, Downtown Madison, and East Washington Avenue.

- The North-South (Green) line will serve the South side, Downtown Madison, the Isthmus and the North side. However, the exact alignment remains to be determined. The Ridership and Coverage Alternatives presented in this report come to slightly different conclusions about where North-South BRT should operate.

- The Blue Line to Middleton remains conceptual past Eau Claire station at this time.

Maximizing the value of these frequent cross-town services requires re-thinking all of Metro Transit's other routes, considering issues like:

- Should outlying routes still use the Transfer Points, or should they connect to BRT at other locations?

- Once BRT is implemented, what other routes should continue to run all the way Downtown?

The City intends for the East-West BRT to begin operating by 2025. The redesigned network would likely be operational in 2023, but would include "pre-BRT" routes following the same alignments.
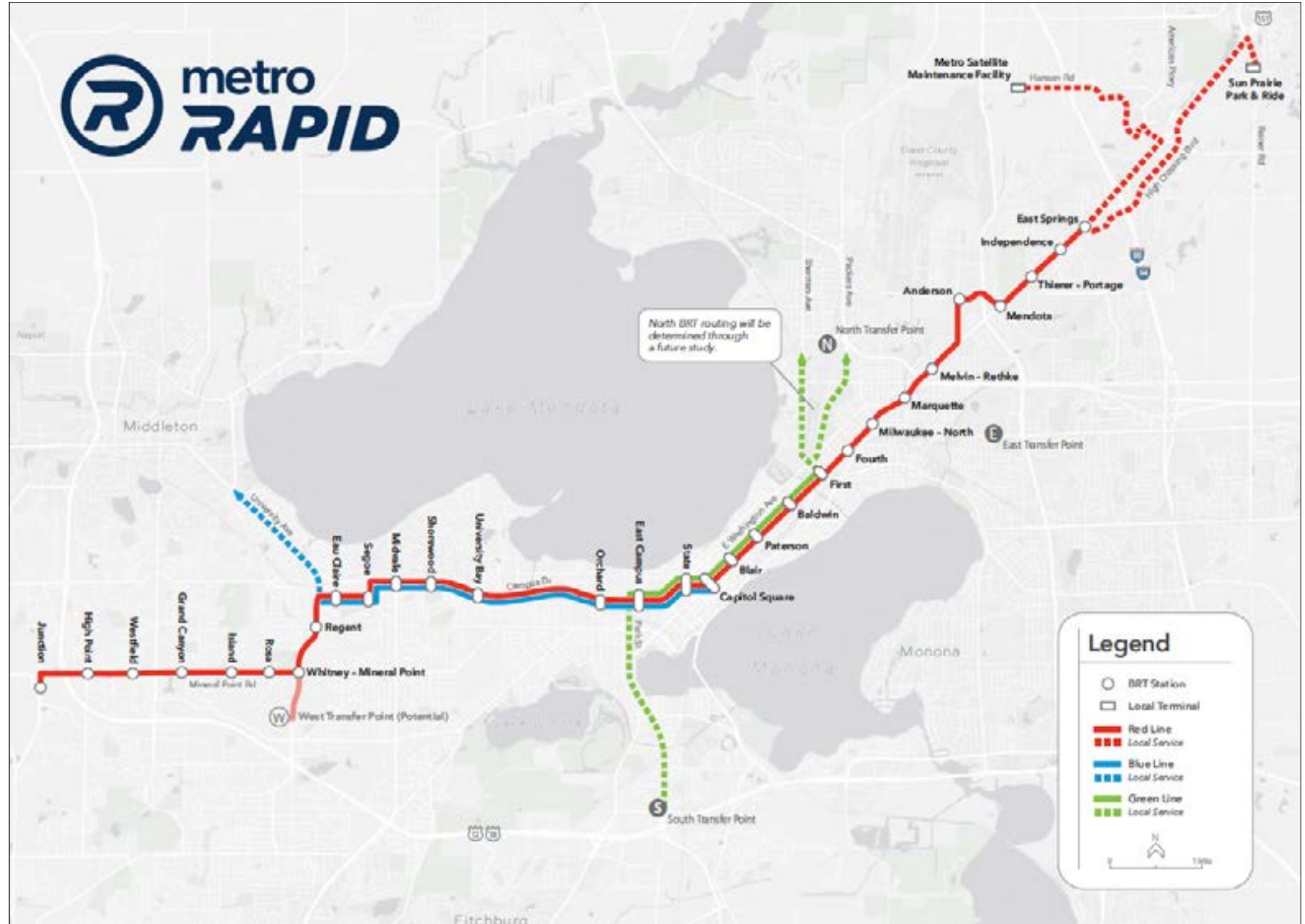
Figure 15: Bus Rapid Transit lines envisioned by the City of Madison, as of mid-2021. The Red Line is the main East-West Corridor; the City has undertaken significant detailed planning work on this route. The Blue and Green Lines remain conceptual routes to serve other areas. The Blue Line would serve Middleton, while the Green Line would be a North-South route. (Source: City of Madison)

There is no dedicated funding for evening and weekend service.

The argument for evening and weekend service

There is a growing number of reasons to provide transit service at all times of day and week.

- **Service worker shifts tend to start early in the morning, or to end late at night.** Many service workers are changing shifts at times when service is infrequent, such as in the very early morning or the late evening.

- **People working in retail or restaurants often need to commit to working on weekend days.** A route that runs very infrequently or doesn't exist on weekends (and at night) is useless to most low-income service workers.

- **Young people tend to travel at higher rates on weekends, and at night.** Large numbers of young adults in Madison live in and near the city center, where transit has the most potential to be useful. Young people may be less interested in owning their own cars than did previous generations, but few of them can afford to hire a car for every trip, so they have a big incentive to rely on transit.

- **People appreciate more flexibility in their lives.** Even among rush hour commuters, anyone taking an evening class, pursuing a hobby, going to worship, or occasionally working late wants the flexibility to get home outside of the traditional 8-to-5 workday.

Ultimately, offering long hours of service seven days a week is key to increasing and maintaining ridership over time. These are the conditions necessary for large numbers of people to build their lives around transit and forgo car ownership.

Existing Budget Constraints

Metro Transit's Existing Network has a mixture of routes that maintain their midday frequency until the end of service near midnight, and some routes that see a frequency reduction around 7 PM on weekdays. The Existing Network also offers reduced service on weekends compared to weekdays. Overall, evening and weekend service levels tend to be 40% to 50% lower than weekday midday levels[1].

Increasing evening and weekend service would make transit useful for many more trips. But within the existing budget, increasing weekend and evening service means reducing weekday daytime service.

In designing the alternatives, we have chosen to roughly maintain today's ratio of weekday vs. weekend service, so that the amounts of service portrayed in different areas can be compared to what existing routes provide.

However, this assumption does not reflect a preference or value judgement on the part of Metro Transit. The balance of weekday vs. weekend service levels is a key question for the public in the next phase of the Metro Transit Network Redesign.

Spans Remain the Same

Both Alternatives feature similar spans of service as today. Transit would start running at about 5am on weekdays and end most routes would operate until about midnight. On weekends, service would begin at about 6am and end at about 11pm. These times are approximate.

For the alternatives, we have assumed that Metro Transit will continue to operate 40% to 50% less service on evenings and weekends than on weekdays in the daytime.

This assumption will be reviewed in designing the Draft Network Plan, based on the feedback from the public and policymakers.

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1 Excluding campus oriented service paid by the University of Wisconsin (Routes 80, 81, 82, 84).

Rush hour demand will come back, but probably not to pre-pandemic levels.

Prior to March 2020 and before the disruptions associated with the COVID-19 pandemic:

- Metro Transit carried twice as many passengers during the morning and afternoon rush hours than in the middle of the day.

- Correspondingly, Metro Transit operated twice as many buses at rush hours than in the middle of the day.

- About 16.5% of total annual operating hours were dedicated to boosting service beyond midday levels during the weekday AM and PM peaks. We call this extra peak hour service the "peak increment".

The peak increment mostly consists of buses that run for just a few hours a day. Running a bus only during the peak hour is expensive, because of three inefficiencies:

- Short and split shifts are less convenient for drivers, and more expensive for Metro Transit[1].

- The agency must own many vehicles that it doesn't use very much.

- Peak demand tends to be in one direction, but the buses must all return empty in the other direction, because driver shifts must end where they began.

In addition, transit service that is focused on peak times does not match the needs of many lower income people, whose jobs are more likely to have nontraditional work schedules, or to include work on weekends.

As the pandemic has proceeded, the combined impact of remote learning and white-collar work-from-home jobs greatly reduced ridership. The impact has been strongest at rush hours. In Fall 2020, peak-hour ridership was 85% lower than in Fall 2019. Much of the peak-increment service was temporarily cut during the pandemic due to reduced demand.

But the pandemic won't last forever. **It is reasonable to expect that some degree of peak-hour ridership will gradually return as schools and offices reopen, though nobody knows how much.**

National trends suggest that remote work and remote learning are here to stay to some extent. For the Alternatives, we have made the assumption that it would take about 50% of the 2019 peak increment to meet Madison's post-pandemic rush hour needs. The remainder would be re-invested towards improving all-day service through both BRT and regular routes.
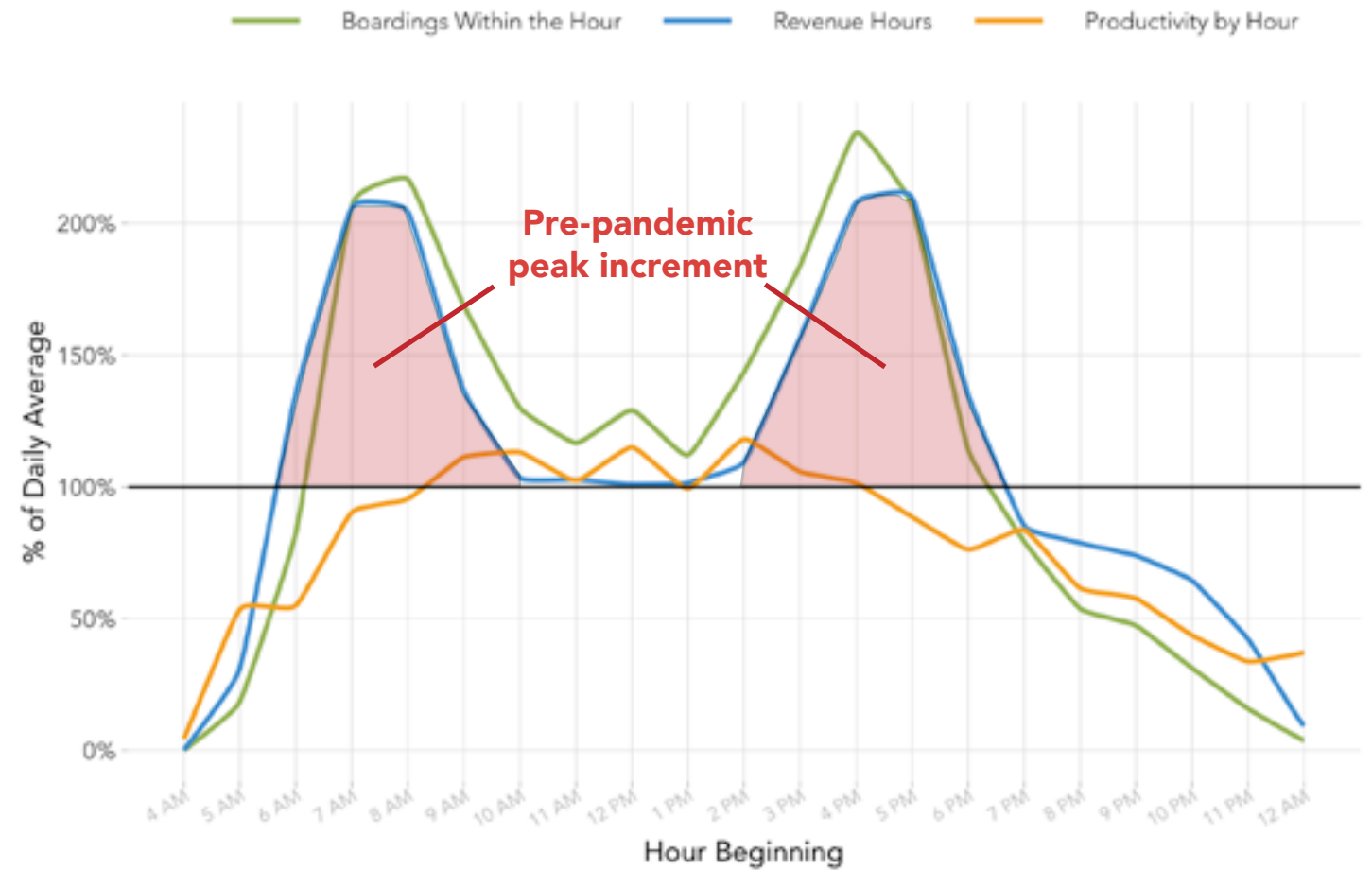
Figure 16: Chart showing pre-pandemic ridership and service amounts by hour of the day on weekdays. Service added to meet extra rush hour demand is highlighted in pink as the "peak increment".

For the Alternatives, we have assumed it would take about 50% of the 2019 peak service increment to meet Madison's post-pandemic rush hour needs.

This assumption will be reviewed in designing the Draft Network Plan, based on the most up to date information on ridership trends.

---

1 This is true even if Metro Transit does not have to pay drivers a higher wage to work short or split shifts. Whatever Metro Transit does not pay in extra salary is paid for in the long-run with more contentious scheduling, lower driver retention and higher costs to find and train new drivers.

3   The Existing Network

Introduction to the Metro Transit Network

Metro Transit Today

As of early 2021, Madison's transit network includes 45 bus routes[1].

- 23 routes that operate all day, seven days a week. Service typically starts between 5 and 7 AM, and ends around 11 PM.

- 18 weekday-only routes, including ten routes which run only in the morning and afternoon peaks (more or less 6 to 9 AM and 3 to 6 PM).

- 4 weekend-only routes. These routes combine one or more weekday routes to expand the area coverable by a single bus on weekends.

This reflects a network that has been significantly pared down due to the pandemic from a prior 58 routes. Overall, Metro Transit operated 20% less service in Fall 2020 than in Fall 2019.

Reading the Maps

Throughout the maps in this report, **routes are color-coded by midday frequency during the week.**

- **Reds** represent higher frequencies (with darker meaning more frequent).

- **Blues** represent lower frequencies (lighter meaning less frequent).

- **Gold** represents routes with service limited to certain hours of the day.

- **Dark grey** segments are where many routes overlap.

1 Metro Transit also operates paratransit services for qualifying members of the public. As discussed in the earlier Choices Report, the Transit Network Redesign is about general public transit, and does not foresee any changes to paratransit.

Figure 17: Metro Transit network of bus routes, as of early 2021.

Existing Network: frequencies throughout the week

Legend

The bus comes about every

- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Capitol Square

Weekdays at Noon

Weekdays at 9pm

Weekends at Noon

Figure 18: Mini Maps, Existing. These maps show how frequencies vary between weekdays, weekday evenings, and weekends in Metro Transit's Existing Network.

The maps on this page show how much service is provided at different times of the day and week in Metro Transit's Existing Network.

- **About half of the network provides 30 minute frequencies at midday during the week**. Outlying areas, particularly in the northwest and southeast only have 60 minute service at midday. The only frequent services (every 15 minutes or better on weekdays) are the west side portion of Route 10 and Routes 80 and 84 on the University of Wisconsin campus.

- **Weekday nights see a considerable drop in service.** Many routes fall back from service every 30 minutes to every 60 minutes between 6 and 7 PM.

- **More than half of the network drops to 60 minute frequency on the weekend,** although there is still 15 minute service on the UW campus. Many routes either do not run on weekends, or are replaced with weekend-only service with a different number and a lower frequency.

Madison's current transit network system revolves around six hubs.

The Capitol
Many routes converge in Downtown Madison on their way to and from different sides of town.

Transfer Points
Most outlying parts of Madison are served by bus routes that connect to one of the four Transfer Points (North, South, East, West). From there, passengers connect to a second route to go Downtown or across town. Several routes also serve or end at East Towne Mall.

Most routes are defined by their relationship to transit hubs.

University-oriented routes serve the core of the University of Wisconsin campus. This service is paid for by UW.
(Ex: Routes 80 and 84)

A ring of **orbital routes** connects outlying areas to each other, travelling between Transfer Points.
(Ex: Routes 16 and 30)

Feeder routes operate in outlying areas of the city, connecting these areas to one of the Transfer Points.
(Ex: 40 and 51)

Radial routes travel from all directions into Downtown Madison. Most radial routes connect two of the Transfer Points via Capitol Square.
(Ex: Routes 5 and 7)

Madison, WI
Existing Network

On weekdays around noon, the bus comes every...
- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Only runs during peak hours, evenings or weekends
- Non-stop segment
- Corridor with many routes

North

There is 40% less service on weekends and evenings than during weekdays.

Figure 19: This chart shows approximately how often the bus runs throughout the day, on weekdays and weekends, on each Metro Transit route. Many routes with service every 30 minutes go to every 60 minutes after 6 PM and on weekends. Several routes that operate on weekdays don't feature any service on weekends.

EXISTING NETWORK
Route Frequencies and Spans of Service

The bus comes every...
■ 10 minute ■ 15 minute ■ 30 minute ■ 60 minute

Notes:

1. Route 11, 12, 44, 48 and 49 run only in the peak direction.
2. On Fridays and Saturdays during UW session, route 80 runs until 3am.
3. Route 81 and 82 run only when UW is in session and run until 3am on Fridays and Saturdays.
4. Frequencies on the 80 and the 84, are lower when UW is out of session.

ROUTES

2 - West Transfer Point // North Transfer Point
  via Fordem
  via Sherman
4 - South Transfer Point // North Transfer Point
5 - South Transfer Point // East Transfer Point
6 - West Transfer Point // East Towne Mall
  via Madison Coll./Tokay
  via Hayes/Midvale
7 - West Transfer Point // East Transfer Point
8 - Capitol Square // Spring Harbor
10 - Union Corners // University Row
  via Highland/UW Hosp.
  via Johnson
11 - West Transfer Point // UW Campus // Dutch Mill
12 - Dutch Mill // Capitol Square // West Transfer Point
13 - South Transfer Point // UW Campus
15 - High Point // Capitol Square // East Transfer Point
16 - South Transfer Point // East Transfer Point
17 - North Transfer Point // East Transfer Point
18 - West Transfer Point // South Transfer Point
  via Midvale
  via Hammersley
20 - North Transfer Point // East Towne Mall
21 - Lakeview Loop
22 - Mendota Loop
23 - Sun Prairie // Capitol Square
26 - American Center Loop
27 - N. Transfer Point // Capitol Square // UW Campus

WEEKDAYS

WEEKEND

ROUTES

2
4
5
6
7
8
10
11
12
13
15
16
17
18
20
21
22
23
26
27

ROUTES

ROUTES	WEEKDAYS	WEEKEND
30 - East Transfer Point // East Towne Mall		
via Nakoosa		
via Swanton		
31 - Marsh Road Loop		
32 - Thompson // Acewood Loop		
33 - Sprecher // Thompson Loop		
36 - East Springs Loop		
39 - World Dairy Loop		
40 - Arbor Hills Loop		
44 - South Transfer Point // UW Campus		
48 - UW Campus // South Transfer Point		
49 - Hatchery Hill // Lacy Loop		
50 - Raymond Loop		
51 - Muir Field Loop		
52 - Orchard Pointe // West Transfer Point		
55 - West Transfer Point // Verona // Epic Campus		
59 - West Transfer Point // Orchard Pointe // Fitchburg		
63 - West Transfer Point // Prairie Town Center		
67 - West Towne Mall Loop		
68 - Prairie Town Center // West Transfer Point		
70 - Middleton // Capitol Square		
72 - Middleton // Capitol Square		
73 - West Transfer Point // Middleton		
75 - Capitol Square // Verona // Epic Campus		
78 - Middleton // West Transfer Point		
80 - Memorial Union // Eagle Heights		
81 - Park // Broom // Johnson/Gorham		
82 - Observatory // Breese Loop		
84 - Eagle Heights Loop		

4   Ridership Alternative

Ridership Alternative: Weekday Network Map

The Ridership Alternative is designed to be very different from the Existing Network. In designing this alternative, the focus was on:

- **HIGHER FREQUENCY:** Four routes (A, B, C and D) would run **every 15 minutes or better**. All seven main routes (A through G) would operate every **30 minutes or better, seven days a week**[1].

- **DIRECT TRAVEL:** Service would be concentrated onto **fewer, straighter routes that provide direct service between many people, jobs and opportunities.**

- **NO FORCED TRANSFERS:** The network is no longer oriented around the Transfer Points. Instead, **routes would be designed to connect on-street as they travel from one end of Madison to the other.**

The consequence of these choices is also that there would be:

- **LESS COVERAGE: Some areas would be a longer walk from service**. For some people, transit may be too far to walk to at all.

Exploring the Network

To determine the network's relevance to your life, or the lives of people you care about, you can:

1. Find a place you care about using the labeled streets.

2. Note which routes are nearby, by number and color.

3. Look at the legend at the top left and see what frequency those routes would have on weekdays.

4. Look at where else those routes go; they may go farther than your routes do today.

1 Service on the UW campus would also remain frequent. Details of on-campus service may change as reopening proceeds.
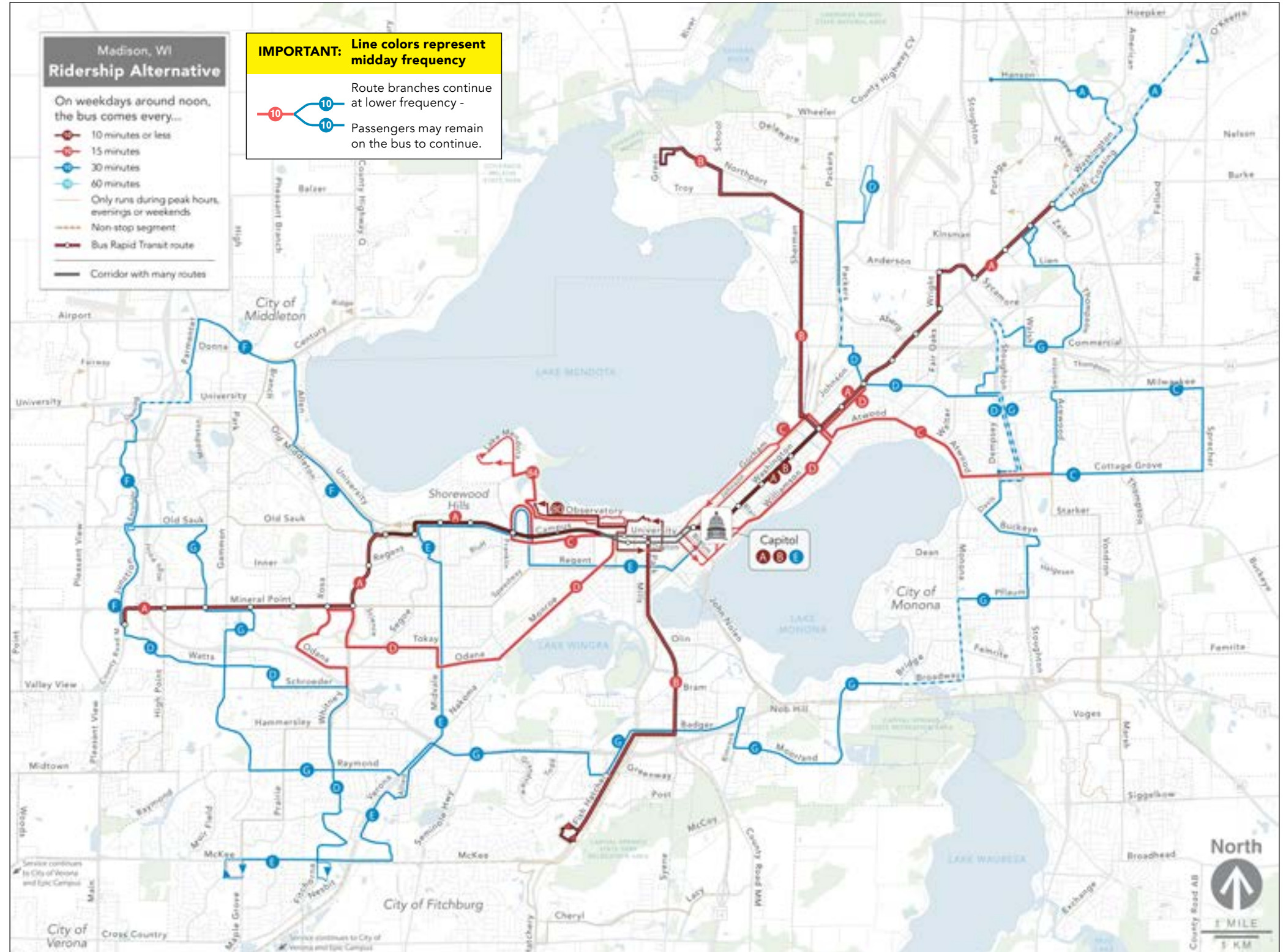
Figure 20: Ridership Alternative.. This map shows an example network of routes that would operate if Metro Transit's future bus network focused mostly on generating the highest possible ridership.

Ridership Alternative: frequencies throughout the week
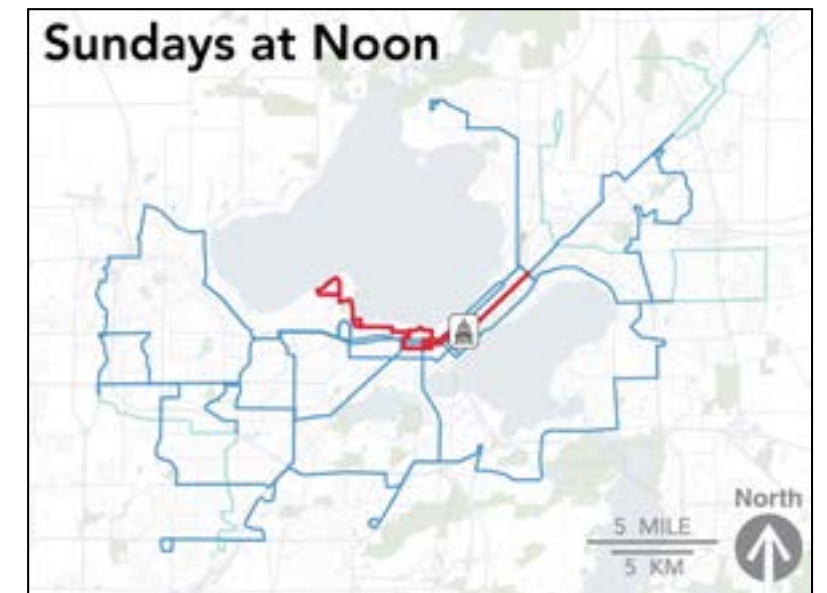
Legend

The bus comes about every

- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes

Capitol Square

Weekdays at Noon

5 MILE / 5 KM — North

Weekdays at 9pm

5 MILE / 5 KM — North

Saturdays at Noon

5 MILE / 5 KM — North

Sundays at Noon

5 MILE / 5 KM — North

The maps on this page show how much service would be provided at different times of the day and week in the Ridership Alternative.

- **About half of the network would operate every 15 minutes or better on weekdays in the daytime.** The other half would offer service at least every 30 minutes.

  – Several peak-only routes would operate during morning and evening rush hours only, for extra peak-hour passenger capacity and to provide service in lower-ridership areas.

- **Weekday evening service would mostly run every 30 minutes,** although some of the routes serving peripheral areas of Madison would drop to every 60 minutes around 8 PM.

- **Saturday service would remain frequent (every 15 minutes) on the BRT lines (A and B)**. Frequencies would drop to every 30 minutes in most of the rest of the network. Some route branches in the northeast and southwest would drop down to 60 minute frequencies.

- **Most of the network would run every 30 minutes on Sundays.** Some route branches in the northeast and southwest would drop down to 60 minute frequencies.

Figure 21: Mini Maps, Ridership. These maps show how frequencies would vary between weekdays, weekday evenings, and weekends.

High frequency in many more locations.

In the Existing Network, the vast majority of Madison is served by routes that run every 30 to 60 minutes on weekdays. In the Ridership Alternative, every all-day route would run at least every 30 minutes, and four routes would run every 15 minutes, resulting in higher frequencies across the whole system.

The two new bus rapid transit routes act as the central frame of this frequent network. Route A crosses from the far west to the northeast corner of the service area, while Route B runs down the center from the north to the south.

The BRT routes will create faster trips for riders in two ways.

1. **Much shorter wait times:** With frequencies of 15 minutes or less, riders will not have to wait long when catching or transferring to a BRT bus.

2. **Fewer stops:** Stops on BRT routes are generally spaced farther apart than regular bus routes (as seen on Route A in the map). This means that the bus will spend less time having to slow down and stop to let passengers on and off every block.

This alternative would maximize the usefulness of the North-South BRT (Route B) by ensuring direct service every 15 minutes or better is available all the way from Fish Hatchery Road in Fitchburg to Northport Drive on the North Side.

To match the locations of the largest possible number of people and businesses, we propose that Route B should operate on Sherman Ave in the inner North Side and Park Ave in the inner South Side.

Madison, WI
Ridership Alternative

On weekdays around noon, the bus comes every....
- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Only runs during peak hours, evenings or weekends
- Non-stop segment
- Bus Rapid Transit route
- Corridor with many routes

New BRT routes (A and B) and other frequent routes (C and D) provide **service of 15 min or better across the service area** (not just the University).

BRT to Middleton: On weekdays during the day, F would continue to Capitol Square on the BRT corridor. During evenings and on weekends, F passengers would have to make a connection to BRT at Eau Claire Station.

Very frequent spine: The overlap of the two BRT routes in Downtown Madison means **a bus would arrive every 7.5 minutes along Washington**. This also creates a reliable, quick transfer, providing faster and more direct travel to all the places the two BRT routes serve. This element is also part of the Coverage Alternative.

North

Faster and more direct travel across Madison.

Consolidating routes:
Where multiple existing routes overlap on the same street or nearby streets, there would be a single, more frequent route. Here, the D and E routes consolidate service provided by existing routes 6, 7, 11, and 18. They would also run at higher frequencies.

University-oriented routes still serve the core of the University of Wisconsin campus.
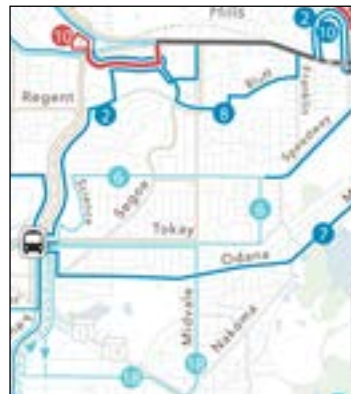
More direct routes:
Routes have been simplified to create more continuous and direct travel going north-south and east-west, rather than deviating for transit hubs and other outlying destinations. For example, someone would be able to ride the G bus straight across Raymond without having to go up to the West Transfer Point or make the other deviations in the Existing Network, shown below.

An **orbital route (G)** connects outlying areas to the new frequent grid, without requiring transfers to cross the service area. Route F serves this function in the northwest.

Frequent connections:
Where frequent routes touch, the wait for a transfer would be just 7.5 minutes on average, or 15 minutes at worst.

Madison, WI
Ridership Alternative
On weekdays around noon, the bus comes every....
- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Only runs during peak hours, evenings or weekends
- Non-stop segment
- Bus Rapid Transit route
- Corridor with many routes

North
1 MILE
1 KM

Longer walks, and some areas left with peak-only or no service.

The downside of concentrating service into fewer, higher frequency routes is that transit covers a smaller area. Some places very close to a low-frequency route in the Existing Network might be a farther walk to a more frequent route in the Ridership Alternative. In most cases, the shorter wait for the bus would mean the overall trip would still be faster. However, some people would not be able to make the longer walk and would lose access to all-day service.

Some areas in the region would be too far from transit for most people to walk, and they would completely lose access to all-day service. These areas are generally lower-density, but still may have people who rely on access to transit.

Longer walks to transit:
Some places close to a low-frequency route today would be **a longer walk to a more frequent route** in a Ridership Alternative. For example, these pockets served by the existing 60 minute and peak-only routes shown below would have to walk a little farther for 30 minute frequency on the F bus.

In some areas, all-day service would be replaced with peak-only service.

Madison, WI
Ridership Alternative

On weekdays around noon, the bus comes every....
- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Only runs during peak hours, evenings or weekends
- Non-stop segment
- Bus Rapid Transit route
- Corridor with many routes

North
1 MILE
5 KM
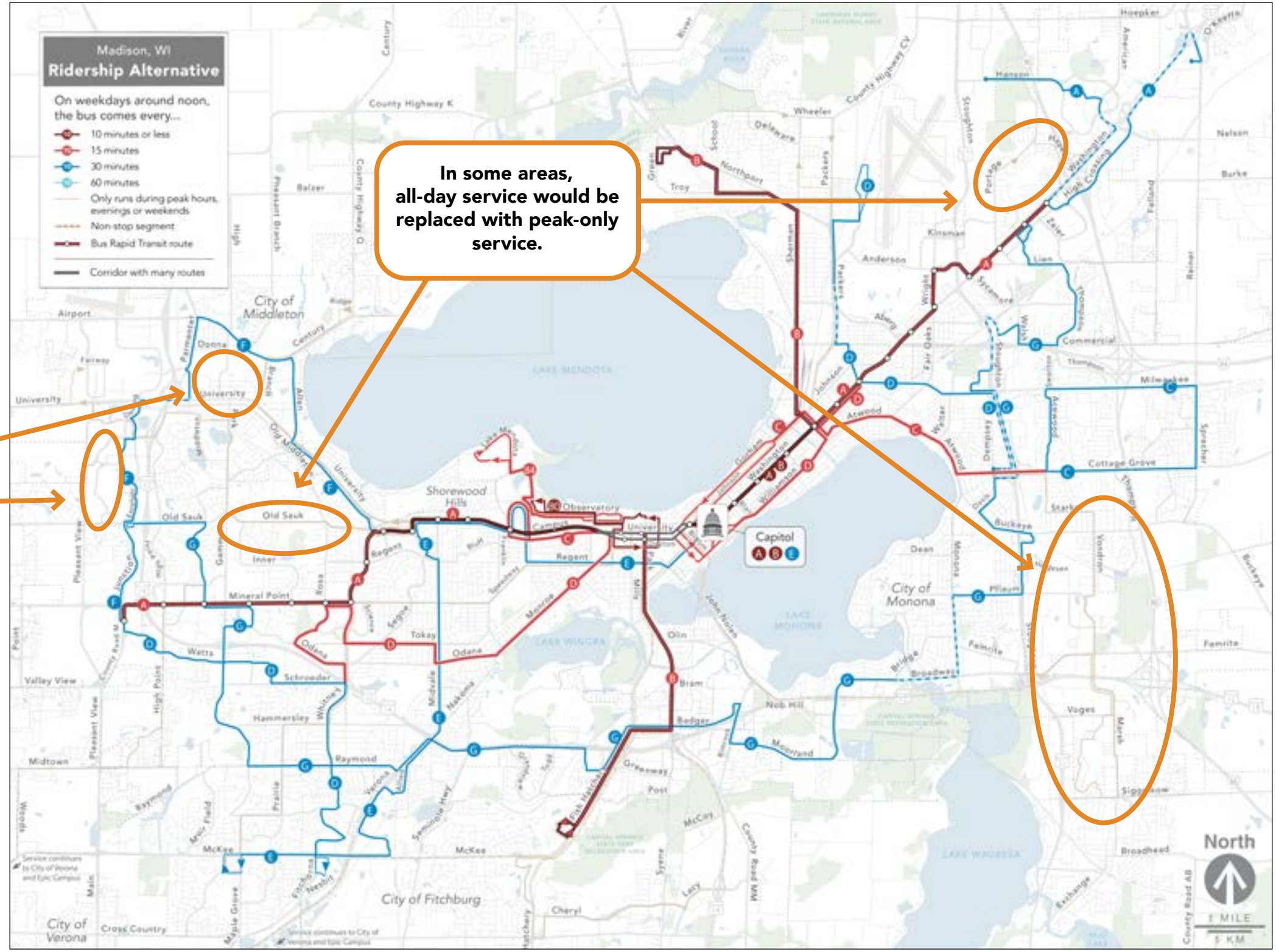
Ridership Alternative: detailed frequencies

Figure 22: This chart shows how often the buses would run on weekdays and weekends in the Ridership Alternative. All BRT and local routes would run seven days a week, from 5 AM until 12 AM on weekdays and from 6 AM to 11 PM on weekends. Higher frequencies would also be maintained throughout most of the day during the week, and BRT routes would still provide 15 minute frequencies on Saturdays.

RIDERSHIP ALTERNATIVE
Route Frequencies and Spans of Service

The bus comes every...

| ■ =<10minutes | ■ 15 minutes | ◣ 8 minutes on Saturdays; 15 minutes on Sundays | ◣ 15 minutes on Saturdays; 30 minutes on Sundays | ■ 30 minutes | ■ 60 minutes |

Notes:

1. Route F buses continue to Capitol Square as BRT Route A on weekdays from 6 AM to 7 PM.

2. On Fridays and Saturdays during UW session, route 80 runs until 3am.

3. Route 81 and 82 run only when UW is in session and run until 3am on Fridays and Saturdays.

4. Frequencies on the 80 and the 84, are lower when UW is out of session.

5 Coverage Alternative

Coverage Alternative: Weekday Network Map

Unlike the Ridership Alternative, the Coverage Alternative is designed to maximize the area covered with all-day transit service. In designing this alternative, the focus was on:

- **MAINTAINING SERVICE TO AREAS, NOT SPECIFIC STREETS OR ROUTES:** Those who currently have a short walk to transit today would still have a short walk in the Coverage Alternative, but it may not be to the exact same bus stop or bus route.

- **EXPANDED ALL-DAY SERVICE:** Some areas that currently only have service during limited hours of the day, or one-way service on a loop would have all-day service in both directions.

- **PEAK FREQUENCY ON HIGH-DEMAND ROUTES:** Most peak capacity needs would be met by increasing frequencies on all-day routes, improving the legibility of the network.

The consequence of these choices is also that the Coverage alternative would largely maintain:

- **LOWER FREQUENCIES AND TRANSFER POINTS:** To keep service spread out, many areas would be served only every 60 minutes. That means timed connections between routes at the Transfer Points would remain essential, as they are today.

Exploring the Network

To determine the network's relevance to your life, or the lives of people you care about, you can:

1. Find a place you care about using the labeled streets.

2. Note which routes are nearby, by number and color.

3. Look at the legend at the top left and see what frequency those routes would have on weekdays.

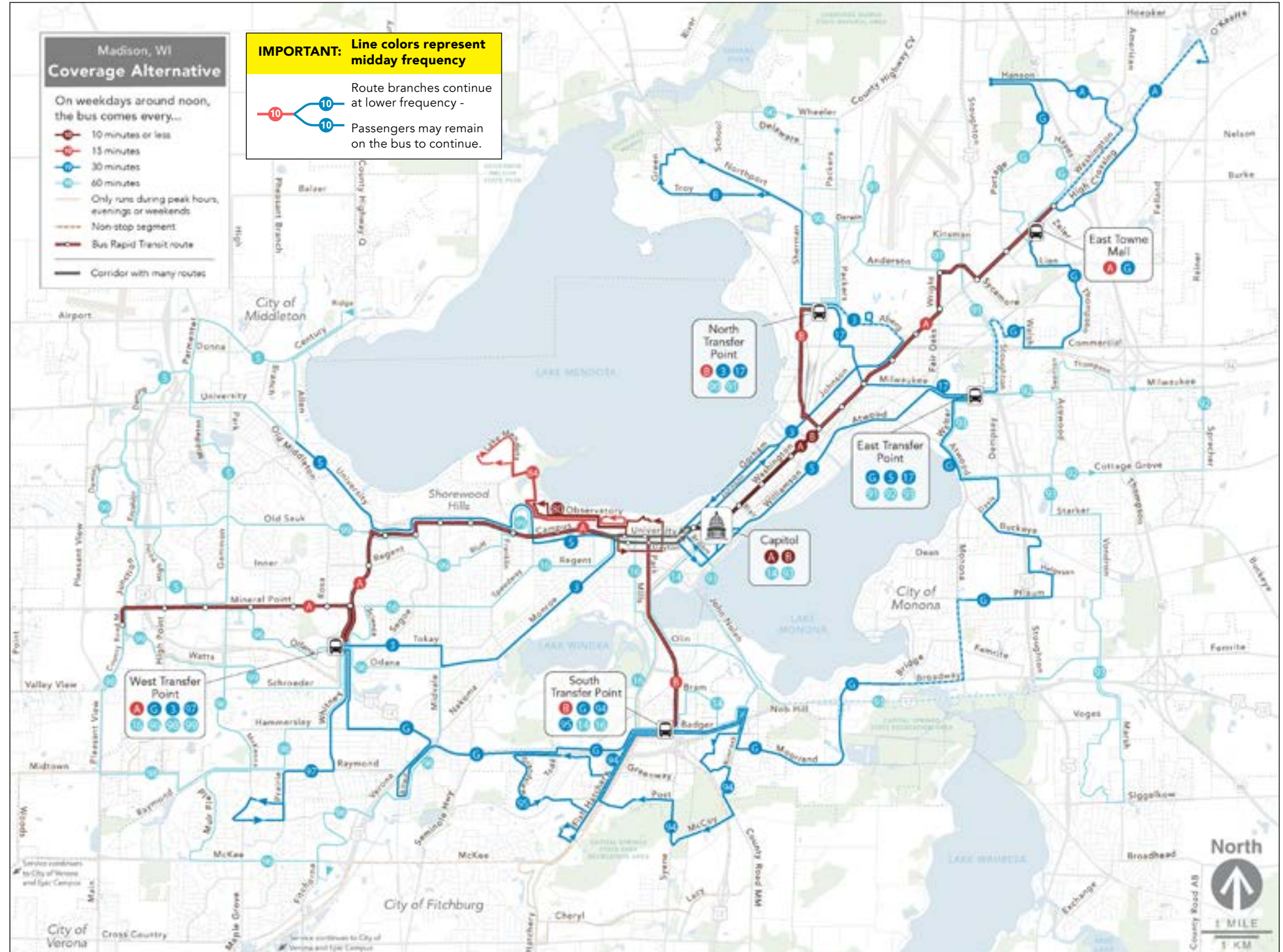4. Look at where else those routes go; they may go farther than your routes do today.

Figure 23: Coverage Alternative. This map shows an example network of routes that would operate if Metro Transit implemented a network focused on maximizing coverage and making sure as many people as possible have a minimum level of all-day service.

Coverage Alternative: frequencies throughout the week

Legend

The bus comes about every

- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Capitol Square

Weekdays at Noon

Weekdays at 9pm

Weekends at Noon

Figure 24: Mini Maps, Coverage. These maps show how frequencies would vary between weekdays, weekday evenings, and weekends in the Coverage Alternative.

The maps on this page show how much service would be provided at different times of the day and week in the Coverage Alternative.

- **On weekdays in the daytime, there would be a mix of routes running every 15, 30 and 60 minutes**. This includes 15 minute frequencies on the BRT routes and 30 minute frequencies on some of the main routes beyond BRT. However, many areas would be served only every 60 minutes.

- **On weekday evenings, much of the network would drop to 60 minute frequency at 7 PM.** However, there would still be service every 30 minutes on some routes. The portion of the BRT corridor in the Isthmus would retain service every 15 minutes.

- **On weekends, main routes would run every 30 minutes while routes in peripheral areas would mostly run every 60 minutes.** There would still be some 15 minute service on E. Washington and to the University, and many of the core routes would run every 30 minutes.

Expanded all-day service and some frequency increases.

Madison, WI
Coverage Alternative

On weekdays around noon, the bus comes every....

- 10 minutes or less
- 15 minutes
- 30 minutes
- 60 minutes
- Only runs during peak hours, evenings or weekends
- Non-stop segment
- Bus Rapid Transit route
- Corridor with many routes

New BRT routes (A and B) would bring frequent service to parts of Madison. However, the frequent segment of the B route would not extend as far as in the Ridership Alternative, terminating at the North and South Transfer Points.

More areas would have new all-day service compared to the Ridership Alternative or Existing Network, like these segments along Gammon, Pleasant View, and McKee.

To pay for expanding the coverage of the all-day network, **frequencies would decrease in some places**. Here, Routes 90 and 91 would be every 60 minutes compared to the existing 30 minute service of Routes 20 and 21.

As in the Ridership Alternative, **some street segments would no longer have service if another route is within walking distance.** For example, the southern end of the existing Route 39 loop and the segment on Buckeye would no longer have service, but would still be within walking distance of Routes G and 93 in the Coverage Alternative.

Timed transfers and connections to BRT still required for travel across the city.
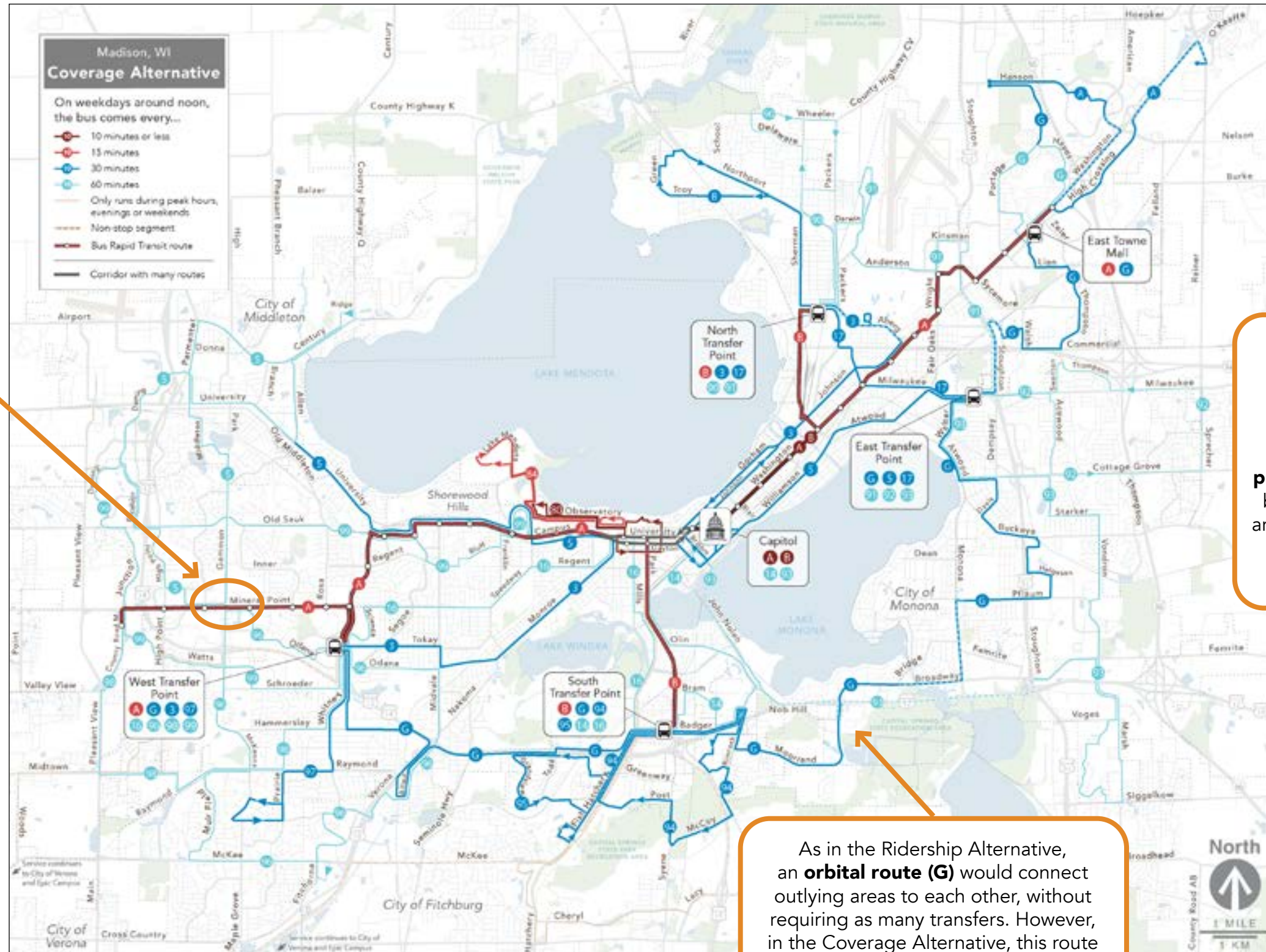
Connections to BRT stations would allow riders in more outlying areas to reduce their total trip times by taking advantage of BRT's faster travel across the service area. For example, these BRT connections with Routes 5 and 96 enable riders in the northwest and southwest to make faster trips to Downtown Madison and further northeast.

The 6 existing transit hubs would continue to provide timed connections between buses in outlying areas. All but one would also provide transfers with the new BRT routes.

As in the Ridership Alternative, an **orbital route (G)** would connect outlying areas to each other, without requiring as many transfers. However, in the Coverage Alternative, this route would end at the West Transfer Point.

Coverage Alternative: detailed frequencies

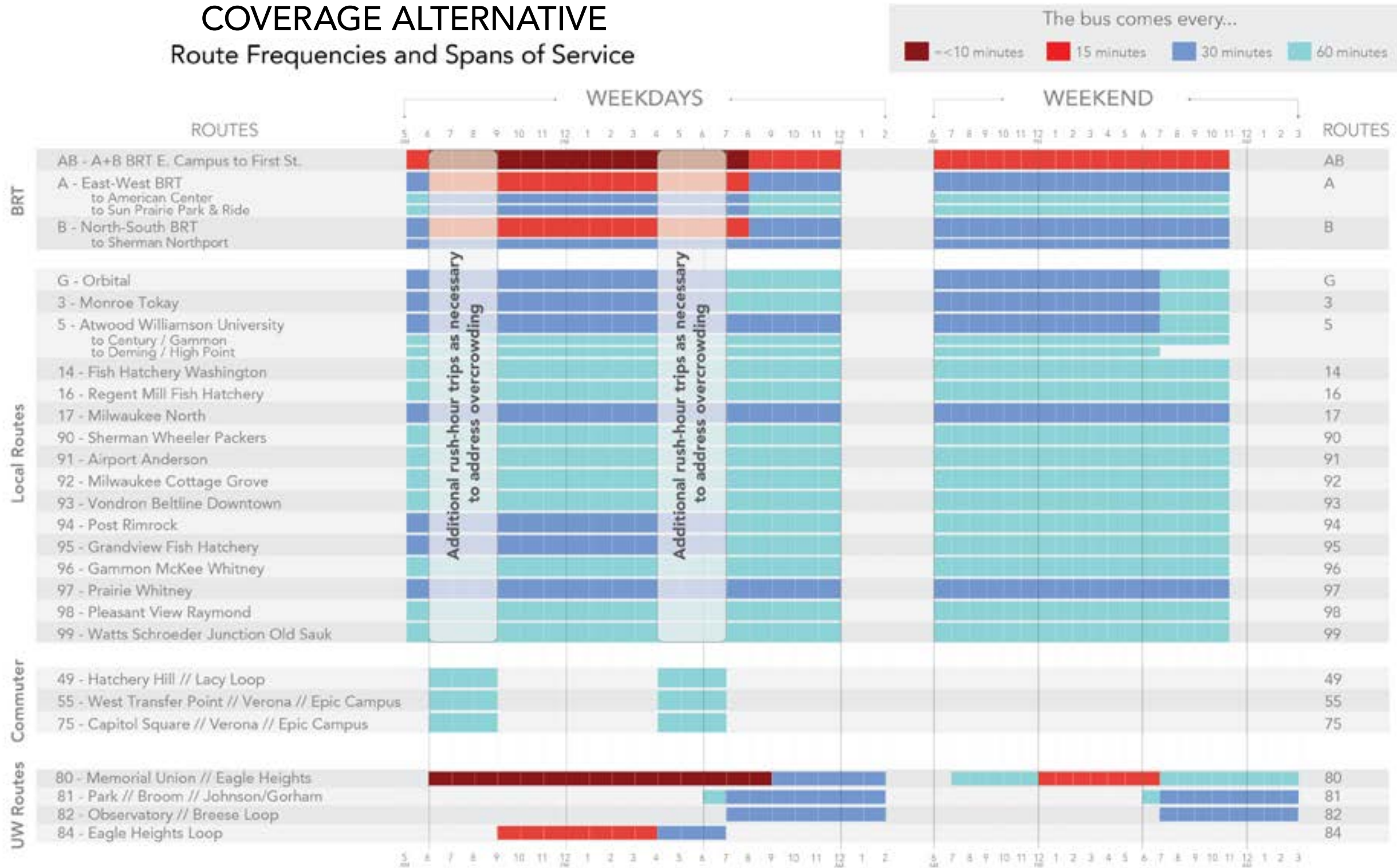COVERAGE ALTERNATIVE
Route Frequencies and Spans of Service

Figure 25: This chart shows how often the buses would run on weekdays and weekends in a Coverage Alternative. Other than a few university and commuter routes, all Metro Transit routes would run seven days a week, from 5 AM until 12 AM on weekdays and from 6 AM to 11 PM on weekends. Although the frequencies are not as high as in the Ridership Alternative, this would provide consistent, reliable service throughout the day, everyday.

Notes:

1. On Fridays and Saturdays during UW session, route 80 runs until 3am.

2. Route 81 and 82 run only when UW is in session and run until 3am on Fridays and Saturdays.

3. Frequencies on the 80 and the 84, are lower when UW is out of session.

6   Comparing Outcomes

Comparing Outcomes

This chapter reports on three different ways of measuring the potential outcomes of the Alternatives.

These measurements are not forecasts. These are simple measures that combine existing distance, time and population information to show the potential of each alternative and how they each differ from the existing network. These measures do not make assumptions about how culture, technology, prices or other factors will change in the next few years.

Proximity

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

Proximity does not tell us how useful people will find transit, only that it is available nearby. We also report on proximity to frequent transit service, to provide a little more information about how many people are near service that is more likely to be useful.

Isochrones

To understand the benefits of a network change, consider this simple question: *Where could I get to, in a given amount of time, from where I am?*

To the extent that you want to do things outside of your neighborhood, your life will be more free, and you will have more opportunities, if you can get to more places in a given amount of time.

Isochrones provide a visual explanation of how a transit network changes peoples' freedom to travel, on foot and by transit, to or from a place of interest. A few examples are included in this chapter, and more examples are included in Appendix C.

Access to Jobs

Isochrones display the change in access that a person would experience to or from a particular place.

By summing up the isochrones throughout Madison, we can describe how access to jobs would change for all local residents.

This describes the part of ridership forecasting that is basic math and highly predictable: *Could more people access more jobs (and other opportunities) by transit, in less time?*

If the answer is "Yes," that implies higher ridership potential.

Proximity to Transit Service

The number or percentage of people near available transit service is called *proximity*.

Proximity to service of any type is a good measure of an agency's success towards a Coverage goal. Proximity does not tell us if service is useful, only that it is nearby. In pursuit of a Coverage goal an agency will spread service thinly, to cover as many people as possible. This means routes have low frequencies and circuitous routing. A route that is near many people is helping an agency meet a Coverage goal, even if it is not useful to most people, most of the time.

Proximity to frequent service speaks more to a Ridership Goal. Frequent service can be useful for more trips and tends to attract higher ridership.

Residents near Transit

The bar chart at top right shows the percentage of City of Madison residents who would be within a 1/4 mile walk of any service, or frequent service.

- In the Ridership Alternative, only 67% of Madison residents would be near all-day service (compared to 79% today). But the number of residents near frequent service would nearly quadruple, from 11% to 43%).

- In the Coverage Alternative, 81% of Madison residents would be near all-day service. The number of residents near frequent service would also increase, but less than in the Ridership Alternative: from 11% to 27%.

Jobs near Transit

The lower bar chart at top right show how many jobs in the City of Madison would be within a 1/4 mile walk of any service, or frequent service.
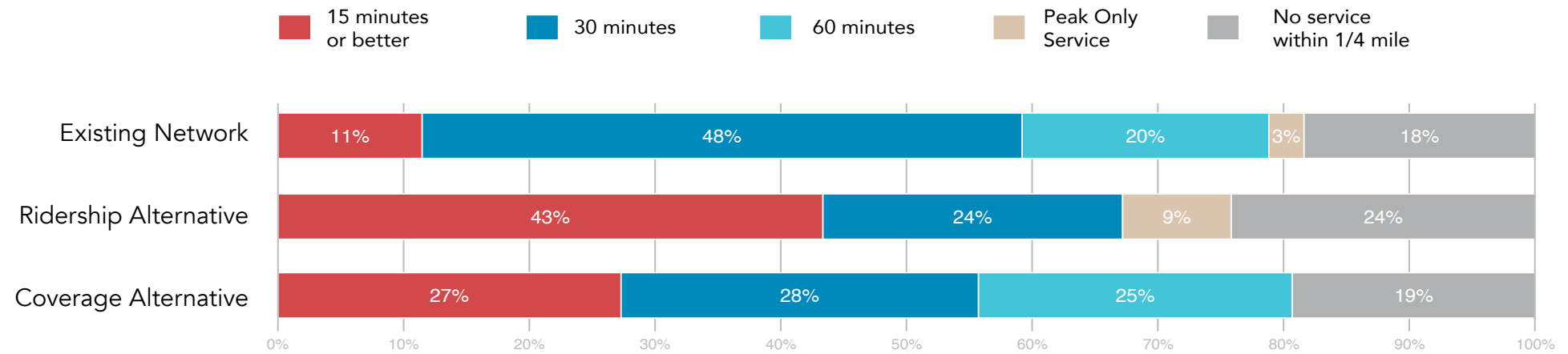
- In the Ridership Alternative, only 76% of jobs in Madison would be near all-day service (compared to 88% today). But the number of jobs

near frequent service would more than triple, from 17% to 56%.

- In the Coverage Alternative, 86% of jobs in Madison would be near all-day service. The number of jobs near frequent service would increase almost as much as in the Ridership Alternative, from 17% to 47%.

The number of people near frequent service would increase in both alternatives because of BRT. **The resources required to operate BRT frequently explain why the Coverage Alternative would not increase the number of residents and jobs near transit, compared to existing service.**
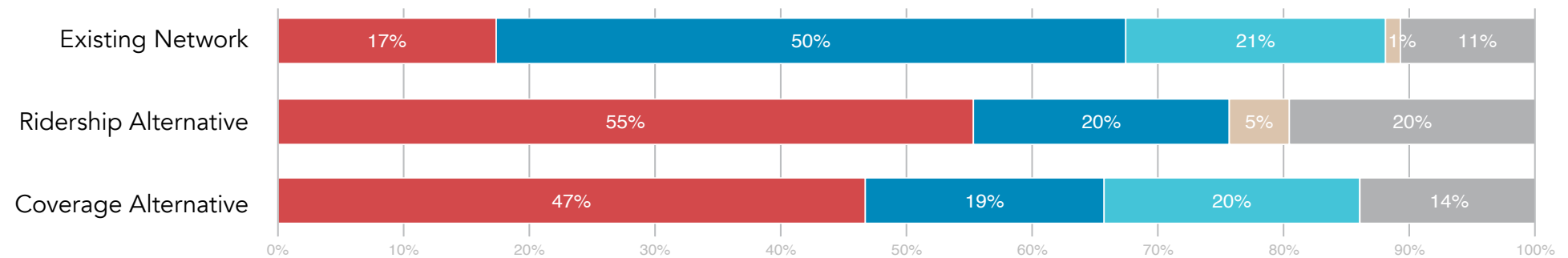
Residents near Transit
Percentage of the Residents of Madison within 1/4 mi of a bus stop with service every...

Legend: 15 minutes or better | 30 minutes | 60 minutes | Peak Only Service | No service within 1/4 mile

	15 min or better	30 minutes	60 minutes	Peak Only	No service
Existing Network	11%	48%	20%	3%	18%
Ridership Alternative	43%	24%		9%	24%
Coverage Alternative	27%	28%	25%		19%

Jobs near Transit
Percentage of jobs in Madison within 1/4 mi of a bus stop with service every...

	15 min or better	30 minutes	60 minutes	Peak Only	No service
Existing Network	17%	50%	21%	1%	11%
Ridership Alternative	55%	20%		5%	20%
Coverage Alternative	47%	19%	20%		14%

The Coverage Alternative would mostly maintain the existing number of people and jobs near all-day service. The number of people who live near frequent service would more than double.

The Ridership Alternative would reduce the number of people and jobs near all-day service by about 15%, but it would nearly quadruple the number of people who live near frequent service.

Proximity to Transit - People of Color and People with Low Incomes

Transit is often tasked with providing affordable transportation for low-income residents. This is one of the reasons agencies provide service to some people and areas, regardless of ridership potential.
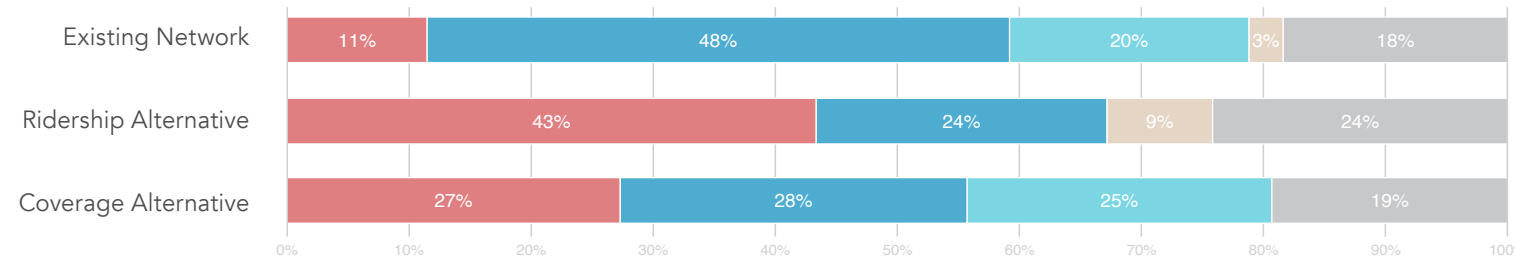
Federal laws also protect non-White people from disparate transportation impacts. This is one of the reasons agencies sometimes provide transit service in places where there are equity needs, even if this does not maximize ridership.

People of Color

In the Existing Network, proximity to transit is relatively equitable by race. 79% of all residents and the same percentage of people of color in Madison are within 1/4-mile of all-day transit service. Furthermore, 15% of people-of-color live near frequent service, compared to 11% of all residents.

- In the Ridership Alternative, the number of people of color near all-day service would decrease from 79% to 66%. The number of people of color near frequent service would increase from 15% to 41%.

- In the Coverage Alternative, the number of people of color near all-day service would increase from 79% to 81%. The number of people of color near frequent service would increase from 15% to 29%.

  – Note that people of color might benefit slightly less from the expansion of frequent service in the Ridership Alternative, compared to all residents. But the number of people near frequent service would still be much higher in the Ridership Alternative than in the Coverage Alternative.

Residents near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	11%	48%	20%	3%	18%
Ridership Alternative	43%	24%		9%	24%
Coverage Alternative	27%	28%	25%		19%

People of Color near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	15%	44%	19%	2%	19%
Ridership Alternative	41%	25%		9%	25%
Coverage Alternative	29%	26%	27%		19%

Legend: ■ 15 minutes or better ■ 30 minutes ■ 60 minutes ■ Peak Only Service ■ No service within 1/4 mile
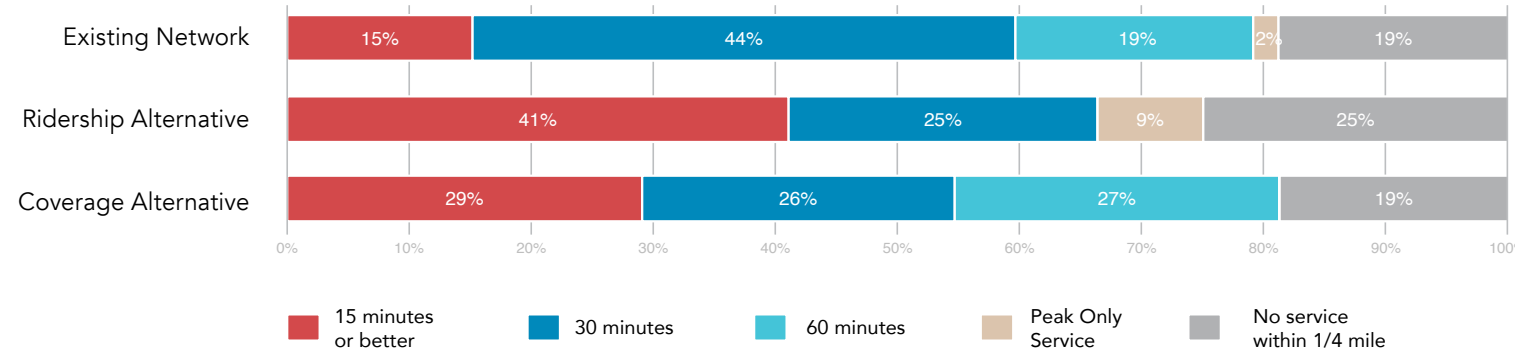
Figure 26: Proximity of All Residents, and People of Color, to transit. This chart shows percentage of people near service of different frequencies.

In proximity terms, people of color would experience the same type and a similar level of change as all Madison residents, in both the Ridership and Coverage Alternatives.
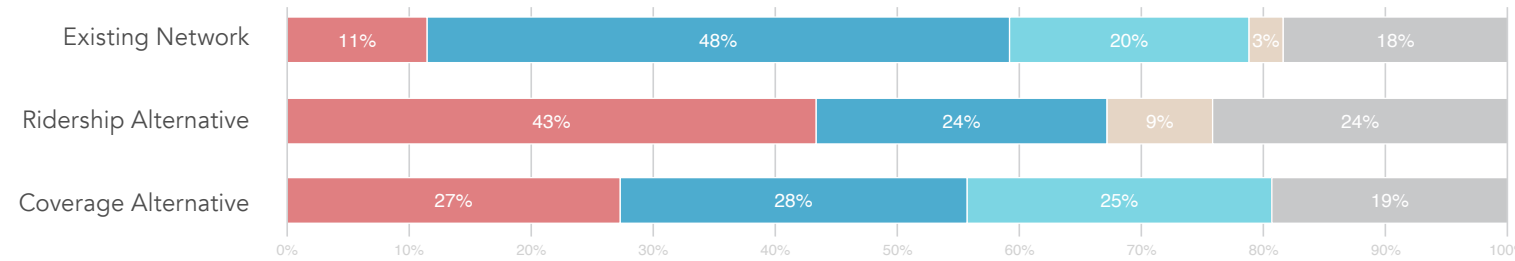
Proximity to Transit - People with Low Incomes

People with Low Incomes

In the Existing Network, 79% of all Madison residents and 91% of people with low incomes in Madison are within 1/4-mile of all-day transit service. Furthermore, 32% of Madison residents with low incomes[1] live near frequent service, compared to just 11% of all residents.

The higher proportion of low-income people near transit service reflects the high density of low-income residents in Central Madison. In other words, this measure may tell us more about the experience of temporarily low-income students, and less about the experience of people experiencing generational poverty.

- In the Ridership Alternative, the number of people with low incomes near any all-day service would decrease from 91% to 82%. The number of people with low incomes near frequent service would increase from 32% to 66%.

- In the Coverage Alternative, the number of people with low incomes near any all-day service would remain at 91%. The number of people with low incomes near frequent service would increase from 32% to 49%.

Residents near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	11%	48%	20%	3%	18%
Ridership Alternative	43%	24%		9%	24%
Coverage Alternative	27%	28%	25%		19%

People with Low Incomes near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	32%	48%	11%	1%	8%
Ridership Alternative	66%	16%		5%	13%
Coverage Alternative	49%	26%	16%		9%

Legend: ■ 15 minutes or better · ■ 30 minutes · ■ 60 minutes · ■ Peak Only Service · ■ No service within 1/4 mile
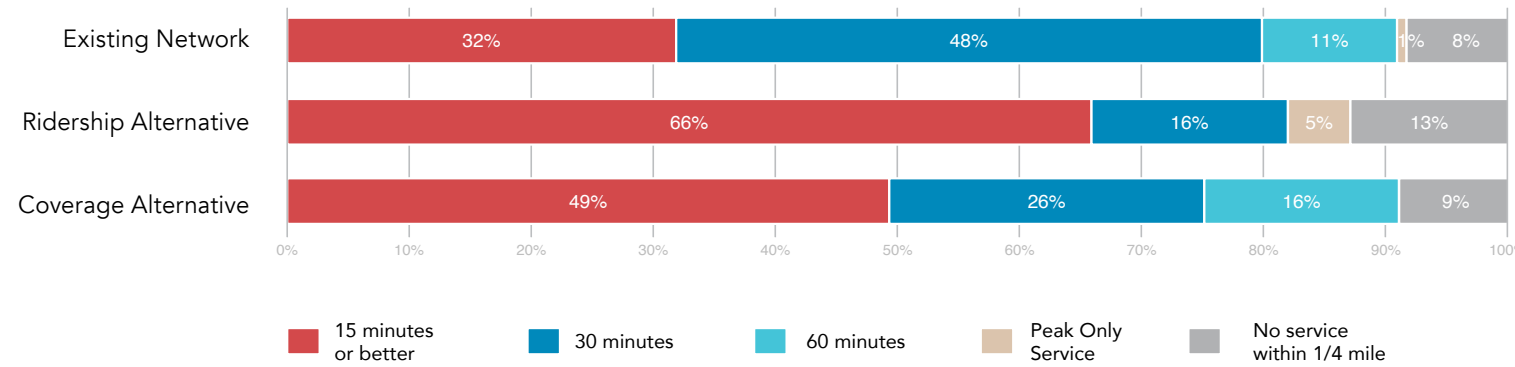
Figure 27: Proximity of All Residents, and People with Low Incomes, to transit. This chart shows percentage of people near service of different frequencies.

> **In both the Ridership and Coverage Alternatives, a higher percentage of people with low incomes would be near transit service than the general population.**

---

1 For the purposes of this analysis, we define "low income" as people from households below 100% of the federal poverty level.

Proximity to Transit - Seniors and Youth

Some people over age 65 and most people under age 18 cannot drive. As a result, people in these age groups may be more likely to depend on transit, either regularly or occasionally. This page looks at how the Ridership and Coverage Alternatives would change Proximity to Transit for City of Madison residents over the age of 65 (seniors), and those under age 18.

Senior Residents

Seniors in Madison are spread out throughout the city at relatively low densities; on average, they tend to live farther from the city center than other age groups.

As a result, senior residents are less likely to live near transit service than the average Madisonian. Only 73% of seniors live within 1/4 mile of all-day service, compared to 79% of all Madison residents. Furthermore, only 3% of seniors live near frequent service, compared to 11% of all residents.

- In the Ridership Alternative, the number of seniors near all-day service would decrease from 73% to 57%. The number of seniors near frequent service would increase from 3% to 29%.

- In the Coverage Alternative, the number of seniors near all-day service would remain at 73%. The number of seniors near frequent service would increase from 3% to 16%.

Residents under 18

Youths tend to have a similar population distribution between different areas of Madison, compared to the population as a whole, with one important exception: residents under 18 are the least likely to live in the Downtown or UW areas, compared to other age groups.

As a result, residents under 18 are also less likely to live near transit service than the average Madisonian. Only 72% of residents under 18 live within 1/4 mile of all-day service, compared to 79% of all Madison residents. Furthermore, only 4% of residents under 18 live near frequent service, compared to 11% of all residents.

- In the Ridership Alternative, the number of residents under 18 near all-day service would decrease from 72% to 57%. The number of residents under 18 near frequent service would increase from 4% to 28%.

- In the Coverage Alternative, the number of residents under 18 near all-day service would increase from 72% to 74%. The number of residents under 18 near frequent service would increase from 4% to 15%.

Residents near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	11%	48%	20%	3%	18%
Ridership Alternative	43%	24%		9%	24%
Coverage Alternative	27%	28%	25%		19%

Senior Residents near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	3%	44%	26%	3%	24%
Ridership Alternative	29%	28%		11%	32%
Coverage Alternative	16%	27%	31%		27%

Residents under 18 near Transit

	15 minutes or better	30 minutes	60 minutes	Peak Only Service	No service within 1/4 mile
Existing Network	4%	45%	23%	3%	25%
Ridership Alternative	28%	28%		11%	32%
Coverage Alternative	15%	29%	30%		26%

Legend: 15 minutes or better | 30 minutes | 60 minutes | Peak Only Service | No service within 1/4 mile
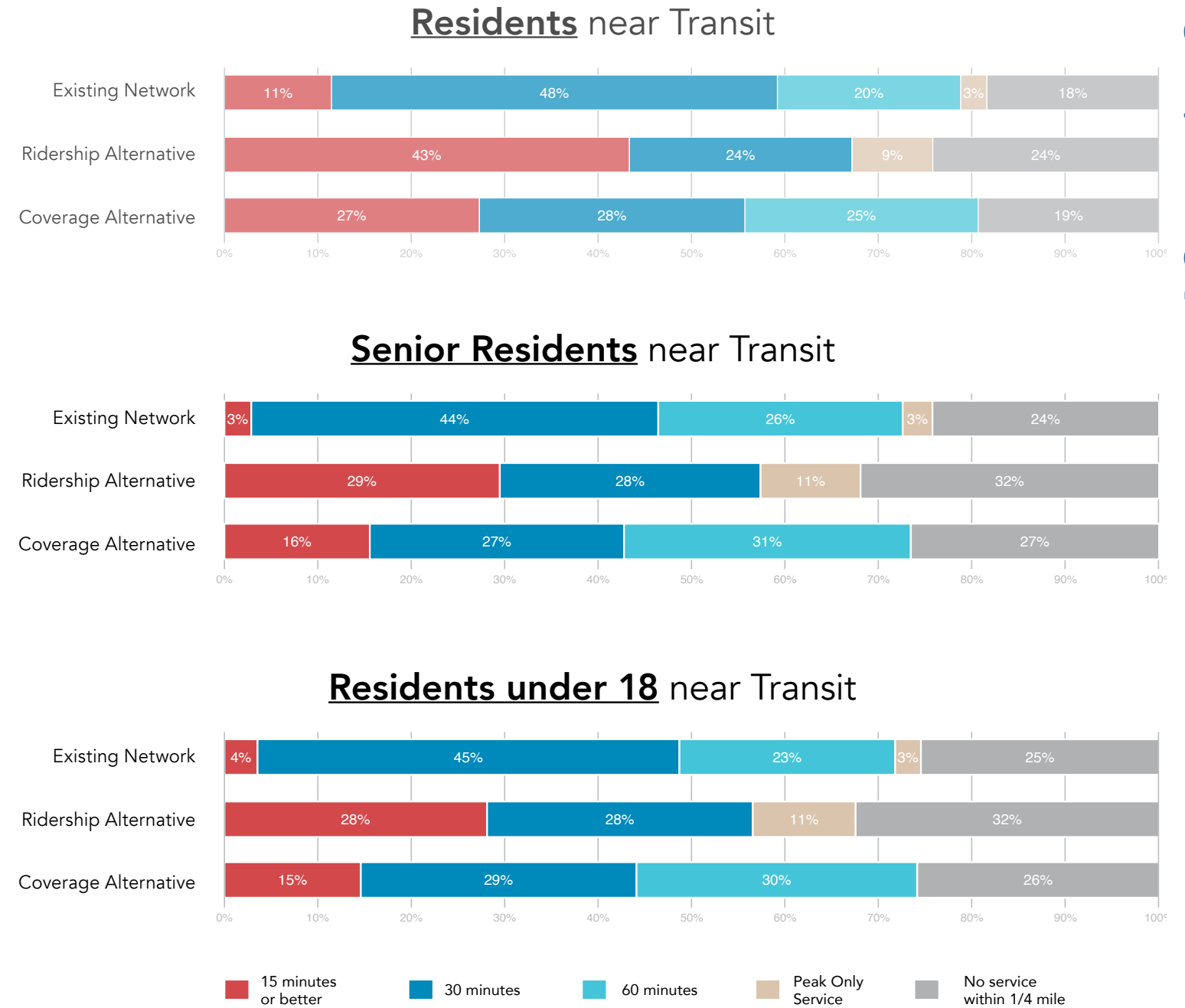
Figure 28: Proximity of Residents of all ages, Senior Residents, and Youth, to transit. This chart shows percentage of people near service of different frequencies.

> In proximity terms, seniors and youth would experience the same type and a similar level of change as Madison residents of all ages, in both the Ridership and Coverage Alternatives.

Proximity to Transit Summarized by Alternative

Proximity to Transit Service compared by Alternative

The table below compares the number of people and jobs near all-day transit between the Existing Network and the two Alternatives.

The Ridership Alternative would reduce the number of people near transit. The Coverage Alternative would maintain and slightly increase the number of people near transit service.

	Existing Network	Ridership Alternative	Coverage Alternative
All Residents	79%	67%	81%
People of Color	79%	66%	81%
People with Low Incomes	91%	82%	91%
Senior Residents	73%	57%	73%
Youth	72%	57%	74%
Jobs	88%	76%	86%

Proximity to Frequent Transit Service compared by Alternative

The Ridership Alternative would nearly quadruple the number of people near frequent transit (service every 15 minutes or better). The Coverage Alternative, would increase the number of people near frequent transit as well, but my a more modest amount.

	Existing Network	Ridership Alternative	Coverage Alternative
All Residents	11%	43%	27%
People of Color	15%	41%	29%
People with Low Incomes	32%	66%	49%
Senior Residents	3%	29%	16%
Youth	4%	28%	15%
Jobs	17%	55%	47%

Access - What makes a transit network useful?

Access and 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 blob around your location.

Think of this blob as a "wall around your life." Beyond this area are things you can't do because it simply takes too long to get there. The extent of this area affects your options in life: for employment, school, shopping, or whatever places you want to reach.

The technical term for this is access, but it's also fair to call it freedom, in the physical sense. If you can go to more places, you have more choices, so in an important sense you are more free.

How Transit Expands Access

The basic point of transit is to increase the number of useful places people can access in a reasonable amount of time without driving, beyond the area they could reach on their own.

On transit, the extent of your access is determined by:

- The **network,** including transit lines with their frequency, speed, and duration. These features determine how long it takes to get from any point on the network to any other point.

- The **layout of the city.** This determines how many useful destinations can be located near transit stops. For example, where there are more people or useful destinations near a given stop, good access from that point is of value to more people.

- Your **location.** This determines which routes are close and frequent enough to be useful to you.

Here is a person.

... in **a city full of possible destinations.**

In **45 minutes** this person can get to...

45 min

...anywhere in the **highlighted area.**

Their **access to destinations** is the **number of destinations in that area.**

You can count **the jobs or schools or shopping** in that area to **estimate their access.**
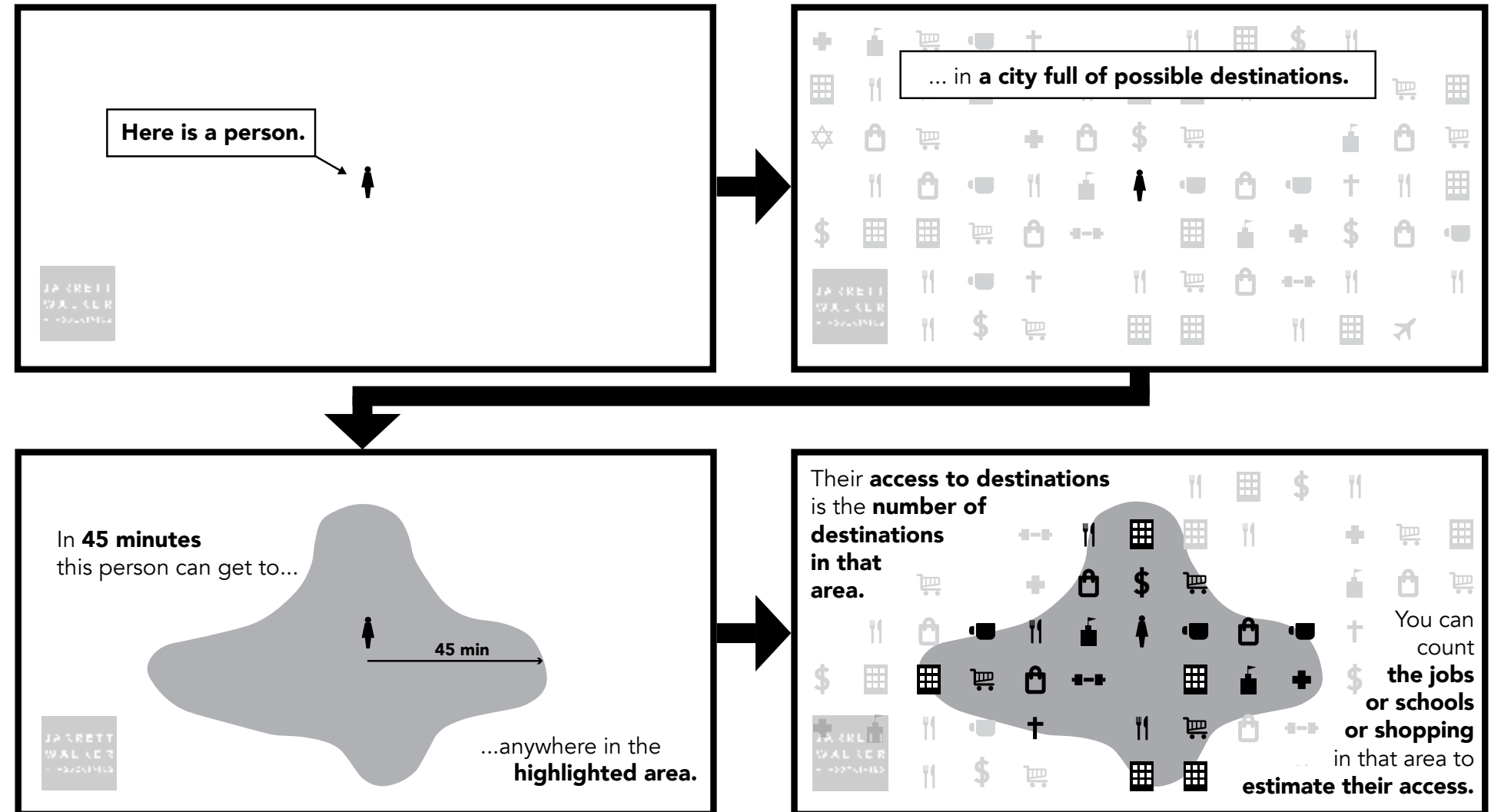
Figure 29: Access is the ability to get from your current location to places you need to go. The more places you can access in a reasonable amount of time, the more freedom you have to live your life in the way you need. Transit helps increase this freedom by providing access to more places, without needing to drive.

Transit helps expand the area reachable in a given amount of time, without needing to drive. The more the transit network makes this possible, the more useful it is.

Access - Travel Time Maps

Measuring Access and Freedom

To illustrate access from any particular point in Madison, we can create a travel time map (also known as an isochrone).

The travel time maps on this and the following pages show where you could get to, on average[1], in 45 minutes **door-to-door (including walking, waiting and riding)**, from a given starting point at noon on a weekday. These maps compare existing service to either the Ridership of Coverage Alternative.

Our choice of noon, rather than morning or evening rush hour, is intentional. While travel peaks at rush hours, many different kinds of people need to travel at midday. The retail and restaurant industries tend to start or change shifts at midday. Office workers need to travel for personal appointments or meetings. College students often finish or start classes at midday. And any parent values being able to get home to pick up a sick kid from school.

Where to find the maps

The maps on this and the following pages show three examples. See Appendix A for a full set of isochrone maps from many starting locations across Madison.

How to use these maps

Dark blue shows no change. These areas can usually be reached in 45 minutes on the Existing Network, and would still be reachable within 45 minutes if the Alternative under comparison were implemented.

Light blue shows improvement. These areas cannot usually be reached within 45 minutes on the Existing Network but would be reachable within 45 minutes if the Alternative under comparison were implemented.

Gray shows losses. These areas can usually be reached in 45 minutes in the Existing Network today, but it would take longer if the Alternative under comparison were implemented.

When reviewing these maps, remember that:

- Waiting time counts![2]

- 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.

- Some of the access shown in these maps isn't reached on a single route, but requires a transfer.

- It's not just about the size of the area, but also what's inside. For this reason, we've shown the change in the number of people and jobs that can be reached, in addition to the areas on the maps.

Note that the people and jobs reachable in 45 minutes is calculated from the Greater Madison MPO 2016 TAZ Model data.

_____

1 By "on average," we mean approximately 50% of the time, assuming random departure times within a one-hour window, and based on a combination of existing scheduled bus speed and observations of actual speeds at different times of day.

_____

2 Even if you time your departure just right and don't wait at the bus stop, a lower-frequency route often makes you wait at your destination because it can force you to arrive very early (rather than be slightly late). On average, you will wait one-half of the frequency of the route.

How far can I travel in **45 minutes** from **Fish Hatchery at Post** on weekdays at noon using: **Ridership Network?**
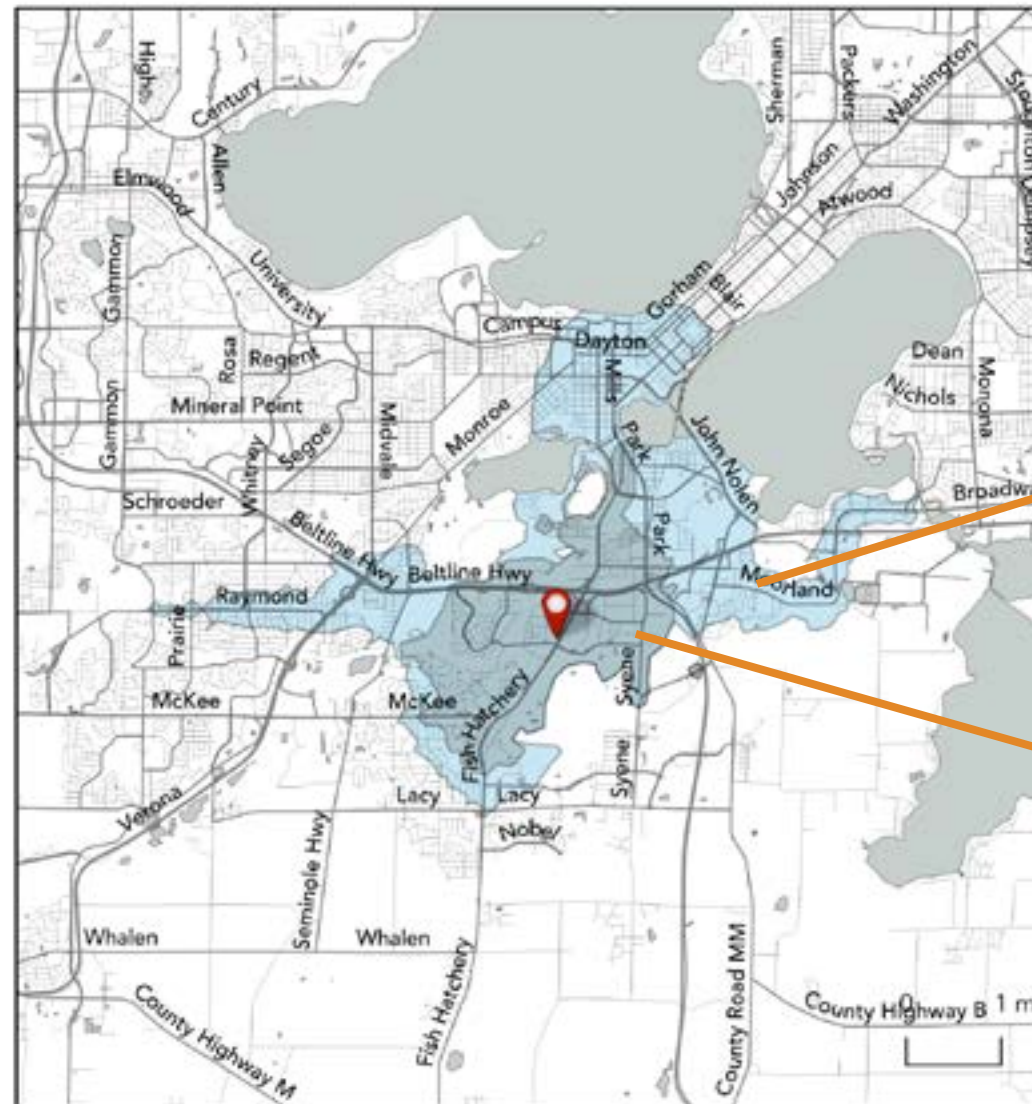
Area newly reachable with the Alternative Network

Area still reachable with the Alternative Network

Change in jobs and people reachable

	Change	% Change
Residents Accessible	+58,600	+337.5%
Jobs Accessible	+60,800	+393.5%

Figure 30: Example of Travel Time Map (Isochrone) from Fish Hatchery Road at Post Road.

Travel Time Map: Downtown Example

Many transit routes in the Existing Network converge Downtown, where residential and job densities are high. This results in both a large area being reachable from here, as well as many jobs being reachable from here. For employers located in this location, it also results in a large number of potential employees living within a reasonable transit travel time, as shown by the "Residents Accessible" number in the bottom left of the maps.

- In both Alternatives, the East-West BRT (Route A in the Alternatives), running every 15 minutes would expand access from Downtown to both the east and west.

- In the Ridership Alternative, the North-South BRT (Route B) would expand access to North Madison with continuous, frequent service from Fish Hatchery Road, through Downtown, and onto Northport Drive. We can also see frequency-related improvements in access to and from West Madison via Monroe Street and East Madison via Atwood Avenue and Cottage Grove Road.

- In the Coverage Alternative, there would be little access improvement from this location aside from the East-West BRT. There would be some loss in access going towards Monroe Street.
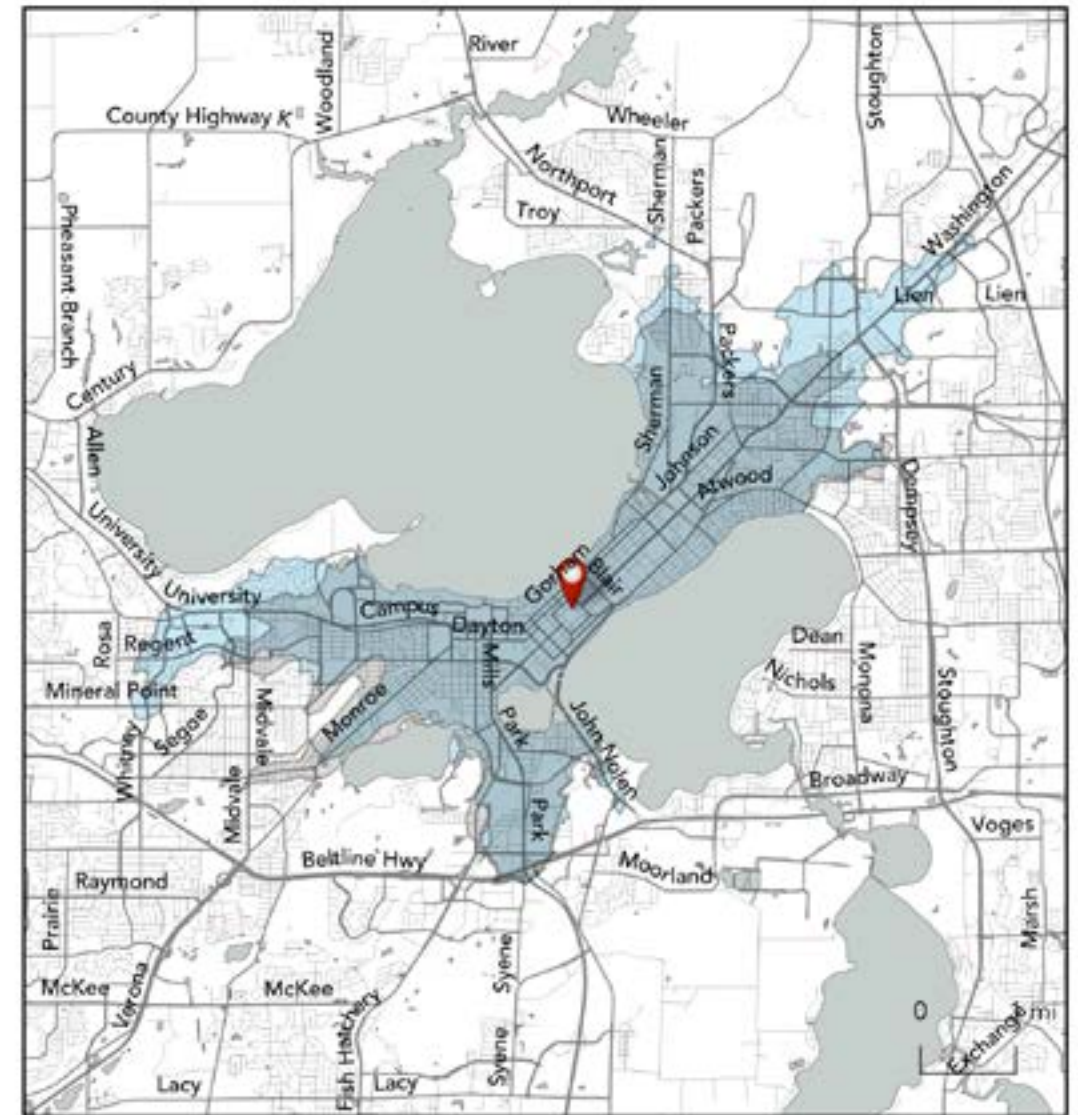
How far can I travel in **45 minutes** from

* Compared with the Metro Network as of February 2020

Downtown - Capitol Square

on weekdays at noon using:

Ridership Network?

	Change	% Change
Residents Accessible	+31,500	+32.0%
Jobs Accessible	+19,500	+21.0%

Coverage Network?

	Change	% Change
Residents Accessible	+8,300	+8.5%
Jobs Accessible	+11,000	+11.5%

Travel Time Map: North Madison Example

From the intersection of Northport Drive and School Road, the Existing Network provides access to relatively few opportunities. Part of the issue is the requirement for connections at the North Transfer Point, which impose a 5 to 10 minute wait for passengers travelling into Downtown.

- In the Ridership Alternative, the direct and frequent North-South BRT would make it possible to reach Downtown within 45 minutes, with continuous, frequent service along Northport and Sherman, through Downtown. Access towards east and northeast Madison via Atwood Avenue and East Washington Avenue would also improve, although many places would still take more than 45 minutes to reach.

- In the Coverage Alternative, there would be some access improvement from this location with the North-South BRT, but because it would run every 30 minutes instead of every 15 minutes, the improvement would be fairly limited.

How far can I travel in **45 minutes** from

Northport at School

on weekdays at noon using:

* Compared with the Metro Network as of February 2020

New Access · Retained Access · Lost Access

Ridership Network?

	Change	% Change
Residents Accessible	+24,800	+77.5%
Jobs Accessible	+26,700	+211.0%

Coverage Network?

	Change	% Change
Residents Accessible	+3,800	+12.0%
Jobs Accessible	+3,700	+29.0%

Citywide Change in Access to Jobs

Job Access

The maps on the previous pages show you access to jobs and people from a single location in Madison.

But what about all parts of the city? The diagram at right depicts how we expand on the previous analysis to show the change in access to jobs for all parts of the city.

The maps on the following pages show how many more (or fewer) jobs could be reached in 45 minutes on transit on weekdays at noon, from anywhere in Madison, using one of the Alternative networks. As stated previously, the 45 minute travel time is door-to-door and includes walking, waiting, riding, and any time required for transfers.

The maps we have developed to show job access throughout Madison don't just focus on areas, they focus on where people live. The Ridership Alternative, and to a lesser degree, the Coverage Alternative, are both designed to shift some transit operating resources around in order to focus more service in areas where many people would benefit. To see the impacts of that, we display Access Change as a dot-density map where every five residents is represented with one dot.

Step 1: Job access from specific locations

Change		% Change
Residents Accessible	+28,900	+37.5%
Jobs Accessible	+20,300	+24.0%

Change		% Change
Residents Accessible	+58,600	+337.5%
Jobs Accessible	+60,800	+393.5%

Step 2: Repeat throughout city

Step 3: Adjust for population density

Job Access Change

How many jobs can be accessed in 45 minutes with this network compared with the existing network?

Access Gain
- Better than + 15,000
- + 10,000 to 15,000
- + 5,000 to 10,000
- + 1,000 to 5,000

- Similar to Existing

Access Loss
- - 1,000 to 5,000
- - 5,000 to 10,000
- - 10,000 to 15,000
- Worse than -15,000

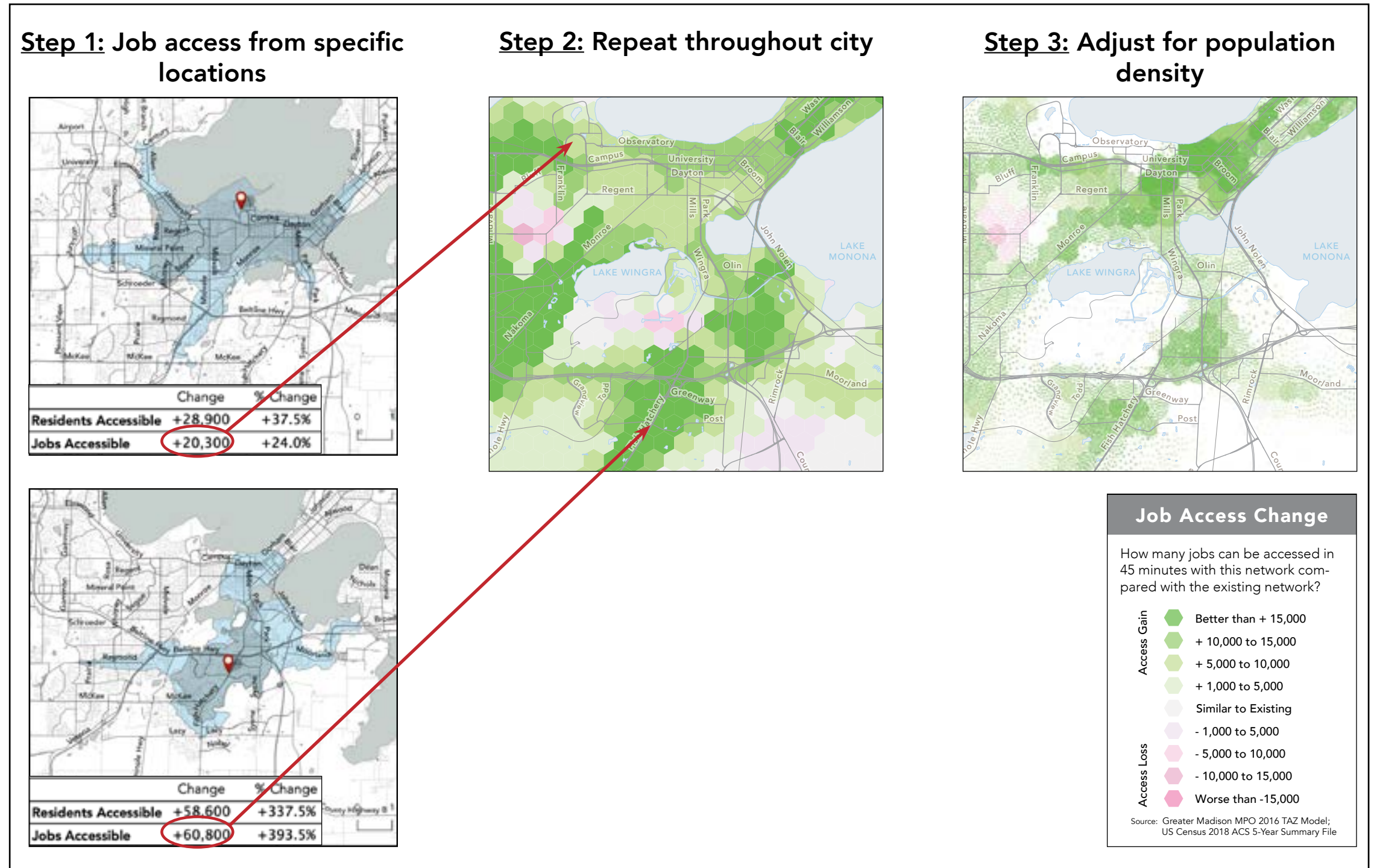Source: Greater Madison MPO 2016 TAZ Model; US Census 2018 ACS 5-Year Summary File

Figure 31: Diagram of the components of citywide change in access to jobs. Job Access is calculated from a grid of points across the city and mapped to show the magnitude of access change throughout the city. This data is then adjusted for population and displayed as a dot-density map with each dot representing five people.

Change in Access - Ridership Alternative

The vast majority of people in Madison would live in areas where job access would increase substantially in the Ridership Alternative. This is because many more people would be near frequent service, fewer transfers would be required from outlying areas to reach Downtown, and bus routes would generally follow more direct routes.

In the map at right, each dot represents five residents. The color of the dot indicates whether residents in a particular area would experience an increase or a decrease in job access.

- **Green** show places where people's access to jobs by transit would increase compared to the Existing Network.

- **Gray** areas show places where people's access to jobs by transit would not change much.

- **Pink** areas show where people's access to jobs by transit would decrease.

Access to jobs

The median Madison resident could reach **51,000 jobs within 45 minutes** by transit and walking, a **112% increase** over the Existing Network.

Network	Jobs
Existing Network	24,100
Ridership Alternative	51,000
Coverage Alternative	33,100
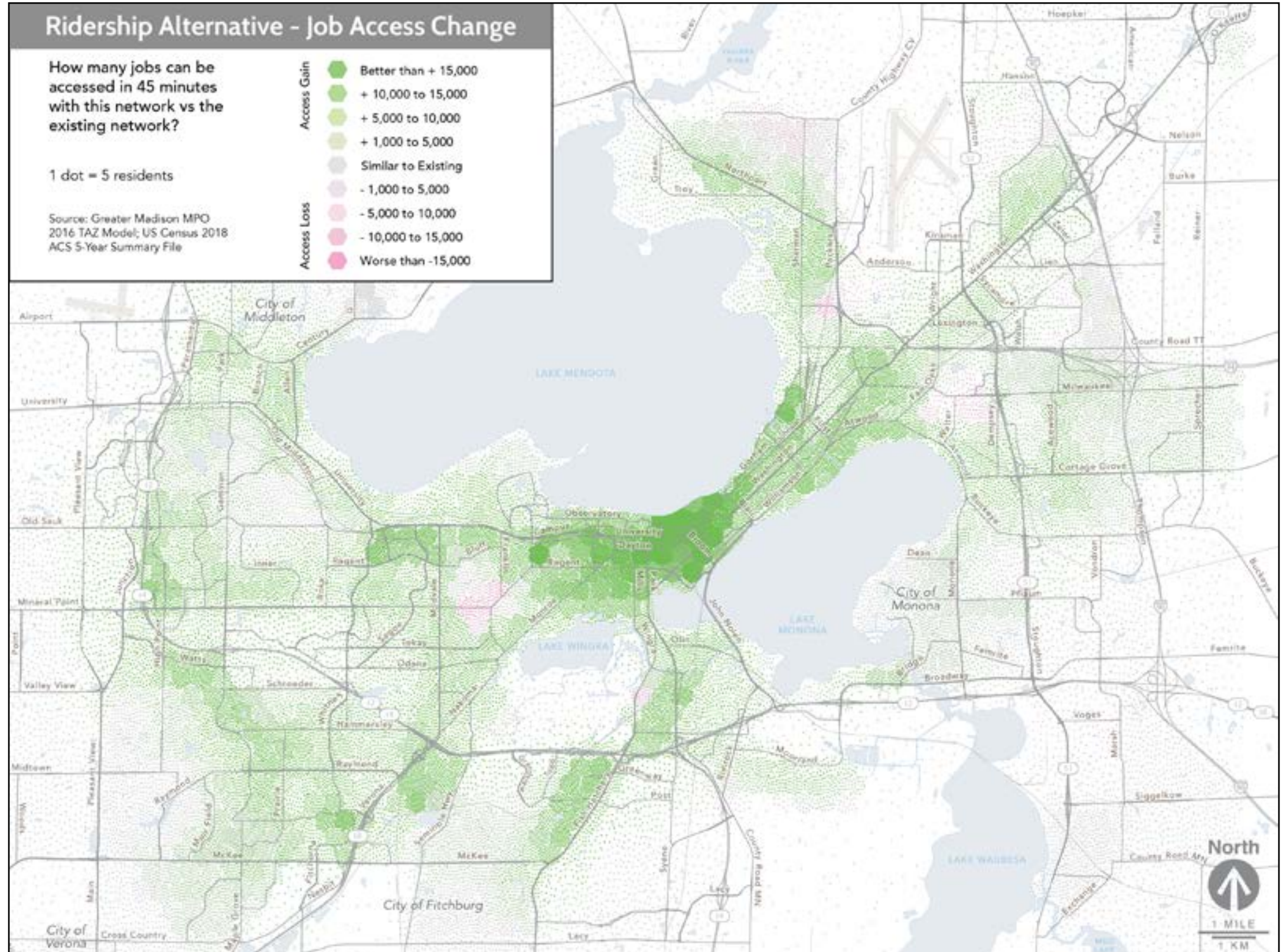
Figure 32: Ridership Alternative 45-minute Job Access Change Dot Density Map

Ridership Alternative - Job Access Change

How many jobs can be accessed in 45 minutes with this network vs the existing network?

1 dot = 5 residents

Access Gain
- Better than + 15,000
- + 10,000 to 15,000
- + 5,000 to 10,000
- + 1,000 to 5,000
- Similar to Existing

Access Loss
- - 1,000 to 5,000
- - 5,000 to 10,000
- - 10,000 to 15,000
- Worse than -15,000

Source: Greater Madison MPO 2016 TAZ Model; US Census 2018 ACS 5-Year Summary File
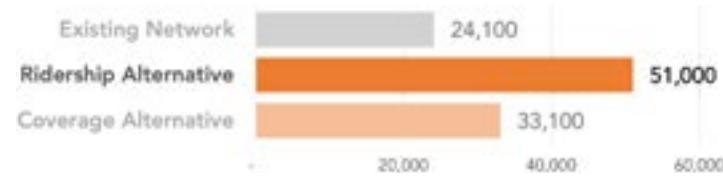
Change in Access - Coverage Alternative

The Coverage Alternative would spread service out more thinly across the city in to cover more area, but because frequencies would be low, you wouldn't be able to reach as many places within 45 minutes as in the Ridership Alternative.

Generally, access gains in the Coverage Alternative would be less dramatic than in the Ridership Alternative, although areas served by the BRT, and the redesigned Orbital route near the Beltline Freeway, would still have significant access gains.

In the map at right, each dot represents five residents. The color of the dot indicates whether residents in a particular area would experience an increase or a decrease in job access.

- **Green** show places where people's access to jobs by transit would increase compared to the Existing Network.

- **Gray** areas show places where people's access to jobs by transit would not change much.

- **Pink** areas show where people's access to jobs by transit would decrease.

Access to jobs

The median Madison resident could reach **33,000 jobs within 45 minutes** by transit and walking, a **38% increase** over the Existing Network.

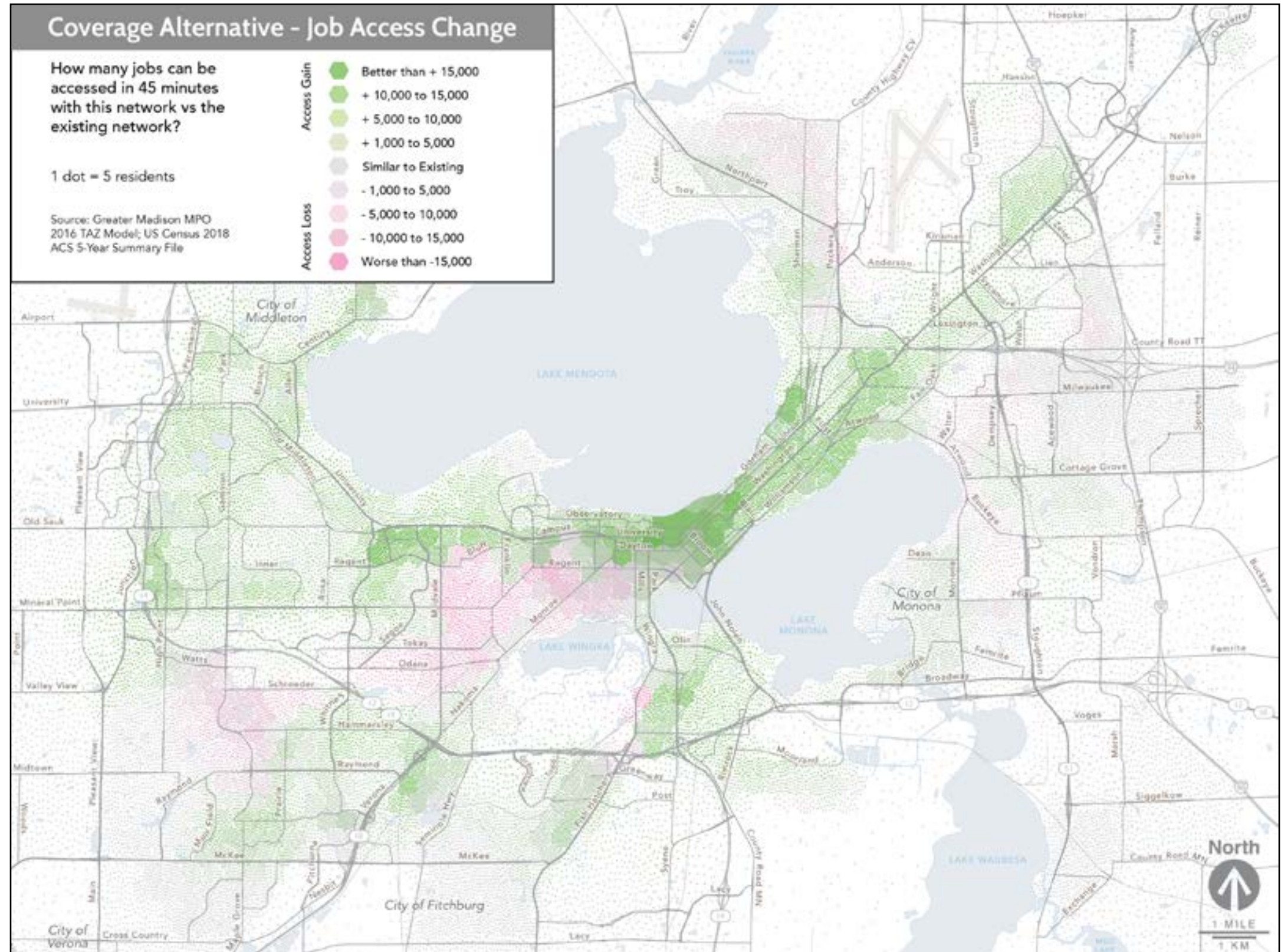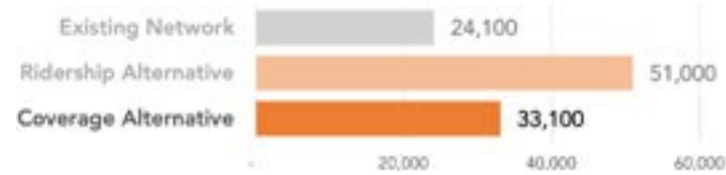|		
Existing Network	24,100	
Ridership Alternative	51,000	
Coverage Alternative	33,100	

Figure 33: Coverage Alternative 45-minute Job Access Change Dot Density Map

Change in Access - People of Color

Both Alternatives would have positive impacts on job access for the average Madisonian. But how can we know whether those benefits reach marginalized populations?
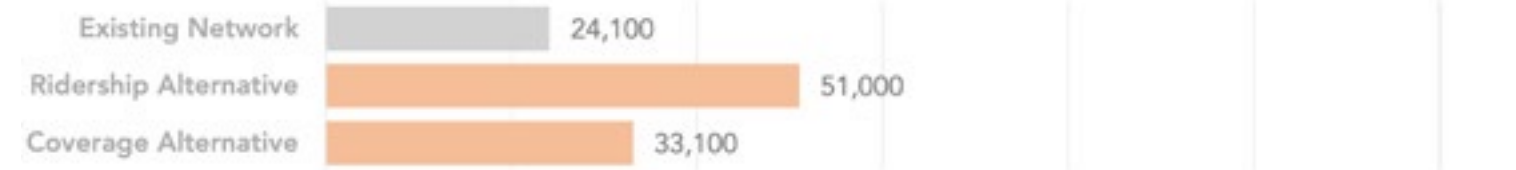
In the maps below, each dot represents one person of color. The colors of each dot represent the change in the number of jobs accessible from each location within 45 minutes by transit. As in prior maps, **green** represents increased access and **pink** represents losses in job access.

In both Alternatives, people of color would benefit from improvements in job access by transit at similar rates to the general population.

In the Ridership Alternative, the median person of color could reach 48,000 jobs within 45 minutes by transit and walking, a 120% increase. As can be seen by the color distribution on the map, this improvement would be experienced by the vast majority of people of color in Madison.

In the Coverage Alternative, the median person of color could reach 31,000 jobs within 45 minutes by transit and walking, a more modest 40% increase. This increase would also be experienced by a majority of people of color, although certain areas where many people of color live would also experience a decrease in access, and many areas would experience almost no change.

Jobs Reachable within 45 minutes by the Median <u>Resident of Madison</u>

Existing Network	24,100
Ridership Alternative	51,000
Coverage Alternative	33,100

Jobs Reachable within 45 minutes by the Median <u>Person of Color</u>

Existing Network	22,000
Ridership Alternative	48,200
Coverage Alternative	30,700

Ridership Alternative - Job Access Change People of Color (1 dot per person)

Coverage Alternative - Job Access Change People of Color (1 dot per person)

Job Access Change

How many jobs can be accessed in 45 minutes with this network compared with the existing network?

Access Gain
- Better than + 15,000
- + 10,000 to 15,000
- + 5,000 to 10,000
- + 1,000 to 5,000
- Similar to Existing
- - 1,000 to 5,000
- - 5,000 to 10,000
- - 10,000 to 15,000
Access Loss
- Worse than -15,000

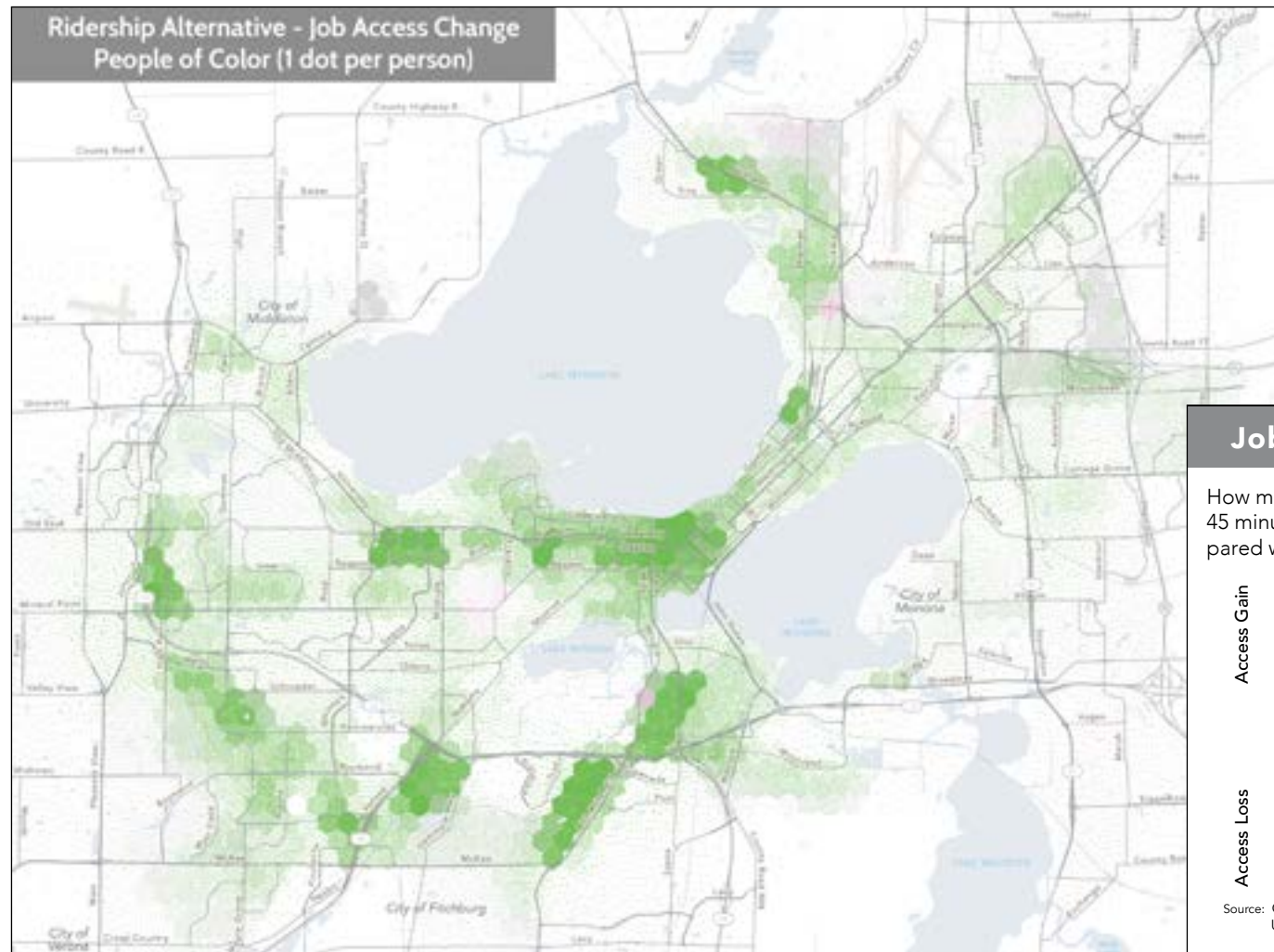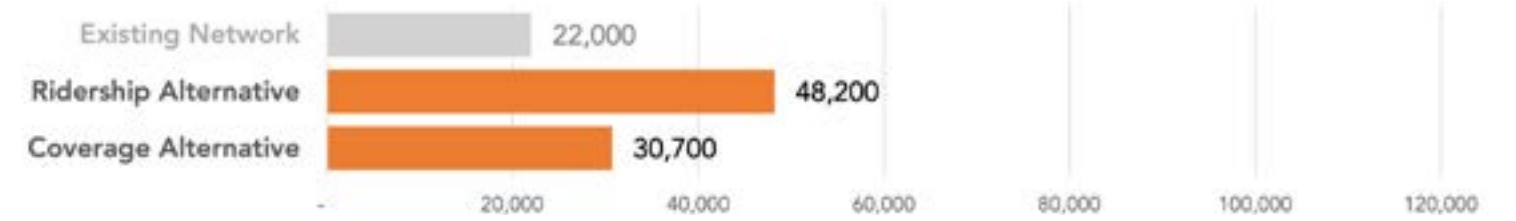Source: Greater Madison MPO 2016 TAZ Model; US Census 2018 ACS 5-Year Summary File

Figure 34: Ridership Alternative 45-minute Job Access Change by Residents with Low Income
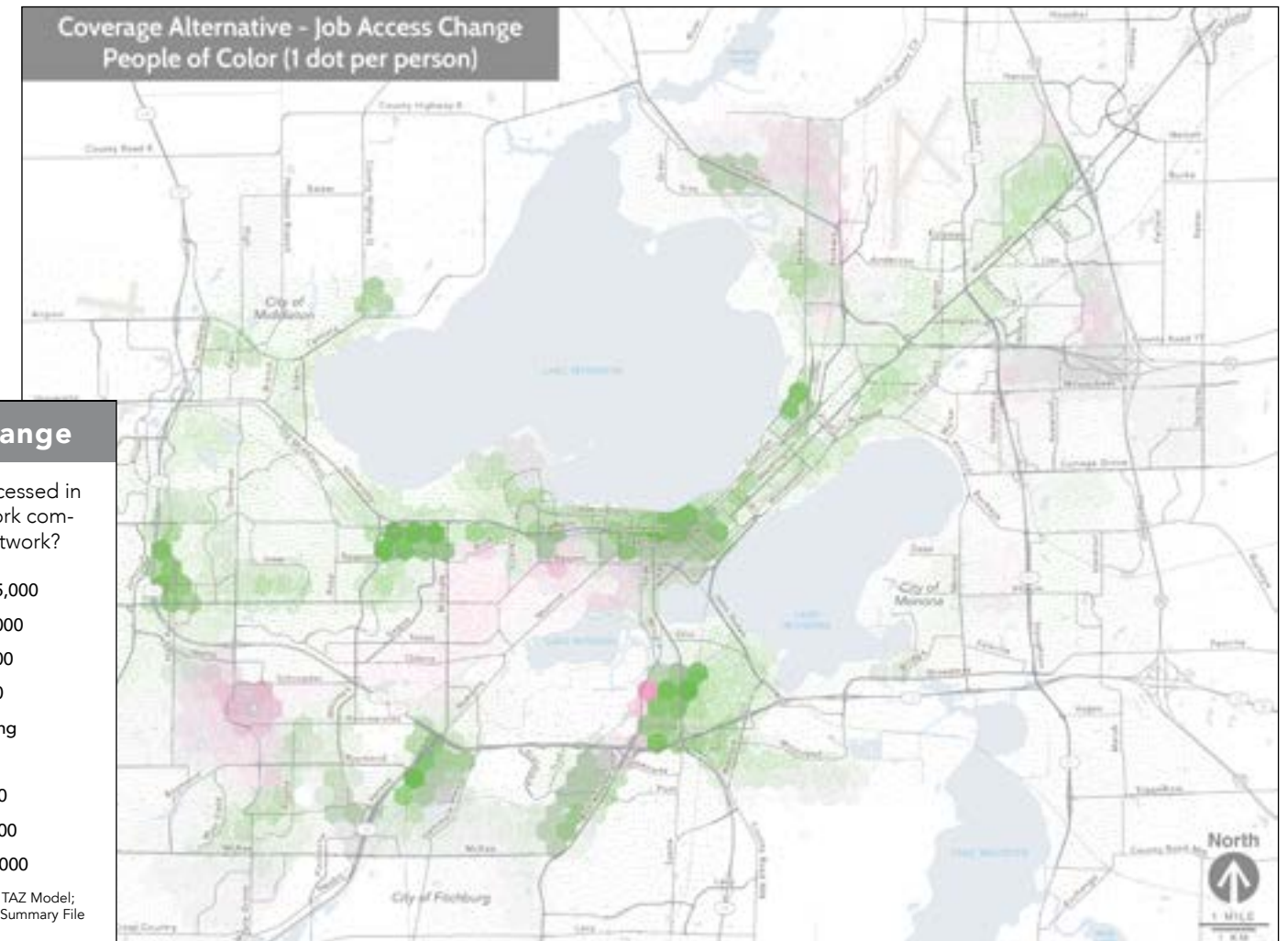
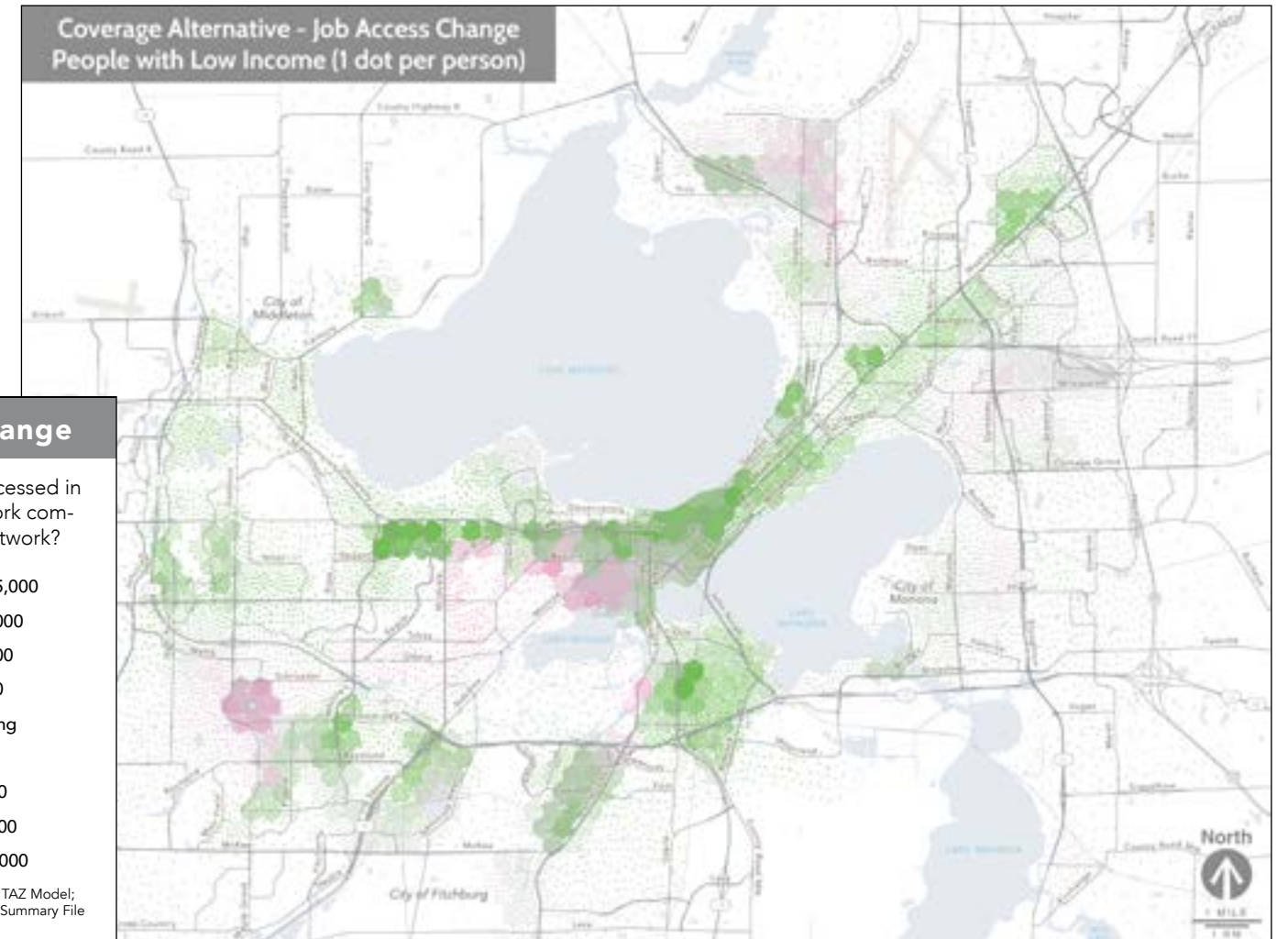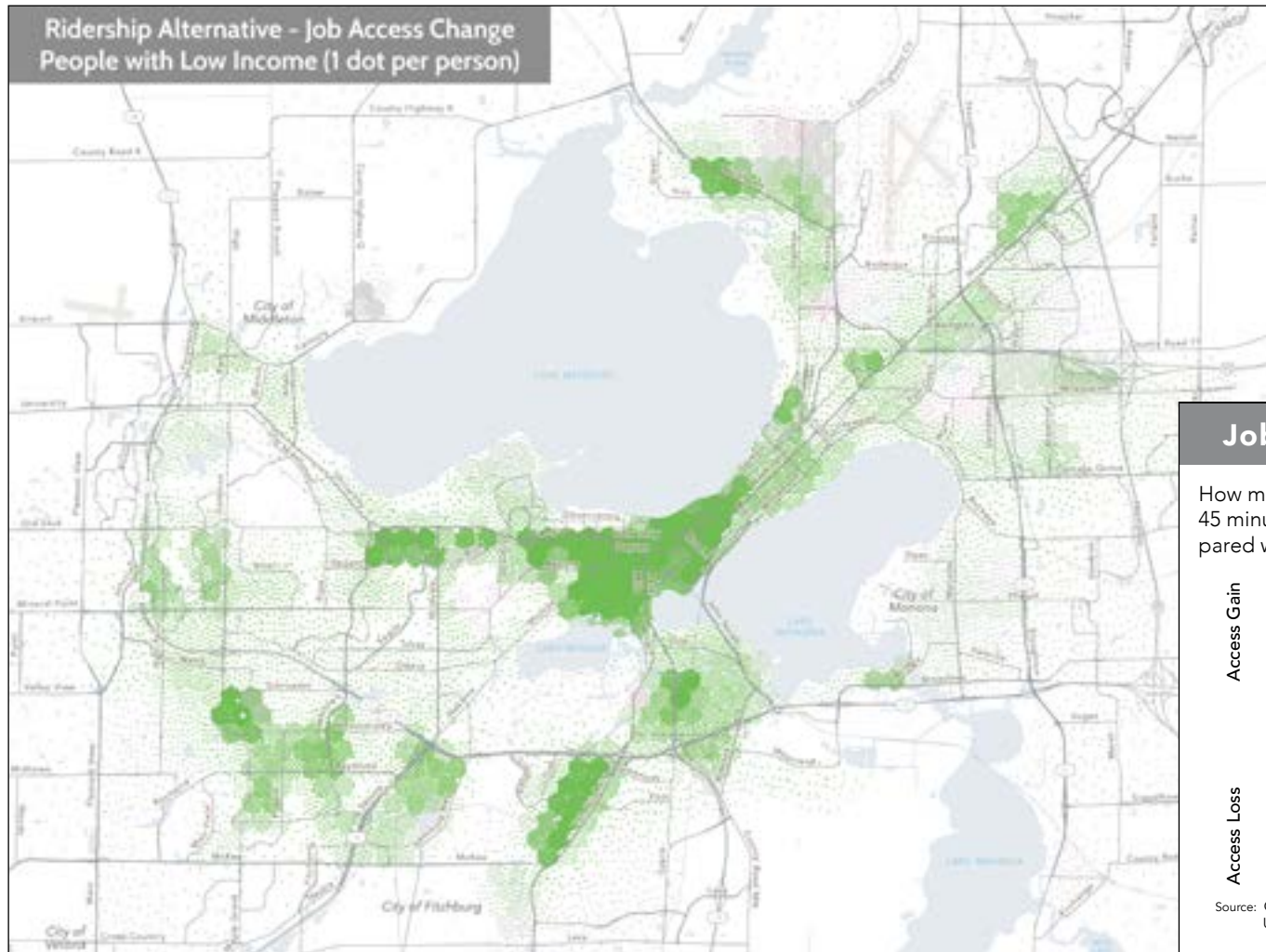Figure 35: Coverage Alternative 45-minute Job Access Change by Residents with Low Income
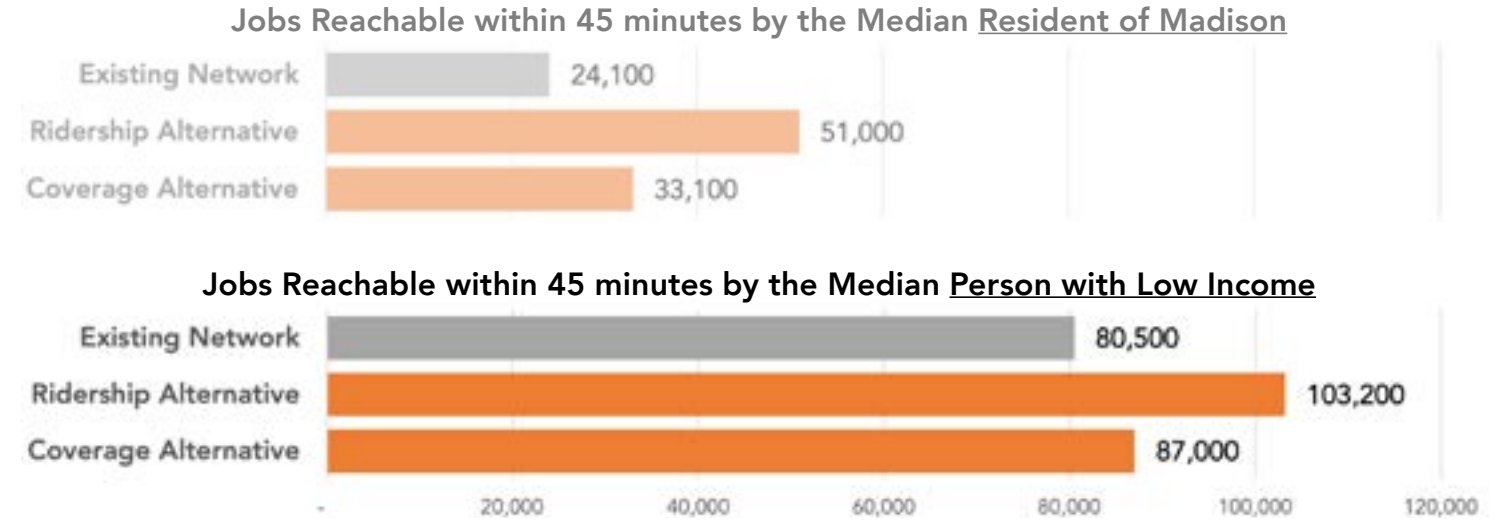
Change in Access - People with Low Incomes

In the maps below, each dot represents one person of color. The colors of each dot represent the change in the number of jobs accessible from each location within 45 minutes by transit. As in prior maps, **green** represents increased access and **pink** represents losses in job access.

Many low-income people live in Central Madison. For this population, job access is already high on average, so in percentage terms they would benefit less from any changes to the transit network. But **in absolute terms, people with low incomes would benefit from improvements in job access by transit at nearly similar rates to the population as a whole in both Alternatives.**

In the Ridership alternative, the median low-income person could reach 103,000 jobs within 45 minutes by transit and walking, a 28% increase, (or +23,000 jobs vs. +27,000 jobs for all Madison residents). As can be seen by the color distribution on the map, this improvement would be near-universal among low-income people.

In the Coverage Alternative, the median low-income person could reach 87,000 jobs within 45 minutes by transit and walking, a more modest 8% increase (or +7,000 jobs vs. +9,000 jobs for all Madison residents).

Jobs Reachable within 45 minutes by the Median Resident of Madison

Existing Network	24,100
Ridership Alternative	51,000
Coverage Alternative	33,100

Jobs Reachable within 45 minutes by the Median Person with Low Income

Existing Network	80,500
Ridership Alternative	103,200
Coverage Alternative	87,000

Figure 36: Ridership Alternative 45-minute Job Access Change by Residents with Low Income

Figure 37: Coverage Alternative 45-minute Job Access Change by Residents with Low Income

Job Access Change

How many jobs can be accessed in 45 minutes with this network compared with the existing network?

Access Gain
- Better than + 15,000
- + 10,000 to 15,000
- + 5,000 to 10,000
- + 1,000 to 5,000
- Similar to Existing

Access Loss
- - 1,000 to 5,000
- - 5,000 to 10,000
- - 10,000 to 15,000
- Worse than -15,000

Source: Greater Madison MPO 2016 TAZ Model; US Census 2018 ACS 5-Year Summary File

7   Conclusion

Summary of Key Outcomes

The Alternatives would likely have these effects on transit outcomes:

1. Transit service would become slightly more useful to the average Madisonian in the Coverage Alternative; it would become much more useful in the Ridership Alternative.

- The number of people living near frequent service would more than double in the Coverage Alternative, and it would nearly quadruple in the Ridership Alternative. Frequency correlates strongly with high ridership, especially when frequent services are combined into a connected network.

- As a result, more people would be able to reach more opportunities in a given amount of time. *In the Ridership Alternative, the average Madisonian could reach more than twice as many jobs (+112%) in 45 minutes by transit than they could today. In the Coverage Alternative, this measure would increase by +38%.*

- Other factors would affect whether or not people choose to ride, such as fares, parking prices, gas prices, employment levels, the lingering effects of the pandemic etc. Holding these factors constant, however, when more people can make more of their trips faster, by transit, more people will choose to ride and fewer will travel by car.

2. Some areas would be farther from all-day transit service in the Ridership Alternative than in the Coverage Alternative. This is very obvious when you compare the network maps.

- However, because the unserved areas in the Ridership alternative are populated at low densities, the number of residents and jobs who lose coverage would be lower than one might expect from the visual impression given by the maps.

- The Coverage Alternative would slightly increase the number of residents near any all-day service. The number of people near any service at all would remain similar (-1%) to what it is today.

3. In both Alternatives, people of color and people with low incomes would benefit from network changes at similar rates to the population in general.
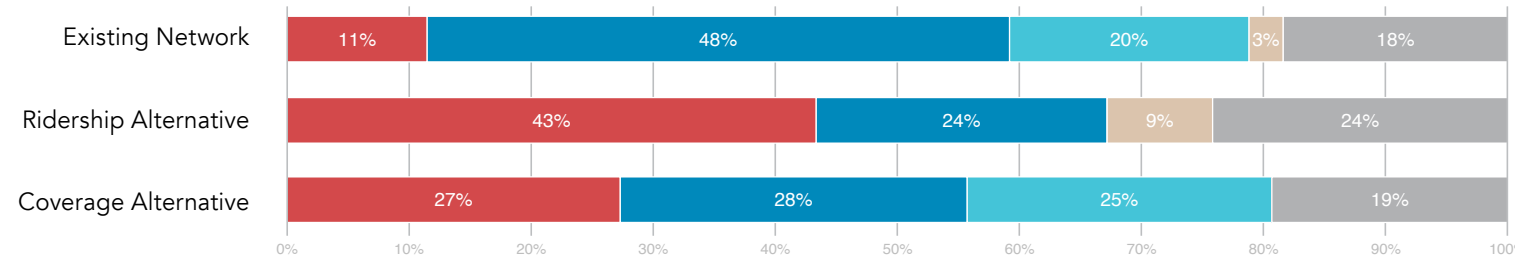
- In the Ridership Alternative, nearly all people of color and people with low income would benefit from improvements to job access by transit within 45 minutes. In the Coverage Alternative, there would be much more variation from one area to another.

- While there would be higher frequencies and shorter waits, Ridership Alternative would result in some people being farther from transit service, so these job access benefits are somewhat contingent on physical ability.

4. The Coverage Alternative is somewhat simpler than the Existing Network. The Ridership Alternative is radically simpler. Simplicity can help attract spontaneous and new riders. The number of lines goes from 47 in the Existing Network, to 25 in the Coverage Alternative, to 14 in the Ridership Alternative. Fewer lines mean a network is easier to remember, and more frequent lines with more consistent spans make trip-planning easier.

5. The number of places where the City of Madison could justify encouraging transit-oriented development, including affordable housing, would be higher in the Ridership Alternative. Dense developments and the neighborhoods around them benefit from frequent transit service, and some cities have policies allowing more density, less parking, and greater affordability around frequent bus lines.

Residents near Transit

Existing Network	11%	48%	20%	3%	18%
Ridership Alternative	43%	24%	9%		24%
Coverage Alternative	27%	28%	25%		19%

Jobs Reachable within 45 minutes
by the Median Resident of Madison

Existing Network	24,100
Ridership Alternative	51,000
Coverage Alternative	33,100

Next Steps

Project Timeline

This report is the second major report in the Metro Transit Network Redesign and kicks off a second round of public involvement. As described in Figure 36, this will include another public survey, as well as a variety of efforts to meet the public virtually and in-person.

The next steps in the redesign process are the following:

- **August-September 2021: Public Review of Alternatives.** The project team will reach out to the public for feedback on the alternatives. Members of the public can use these to make more informed judgements on the type of service they'd prefer.

- **Fall 2021: Draft Plan.** Based on community input and direction from the City's Transportation Policy and Planning Board (TPPB), the project team will develop a full draft of a redesigned network.

- **Winter 2022: Public Review of Draft Plan.** Taking into account public feedback, the TPPB will direct the project team on any changes to make to develop the Final Plan.

- **Spring-Summer 2022: Final Plan.** Depending on the amount of change, it could take more or less time to finalize and implement the network redesign.

- **Fall 2022: Partial implementation.** If the redesign process reveals clear consensus on the benefits of some transit network changes that can be isolated for early implementation, these changes may be put into place in Fall 2022.

- The City is targeting **full implementation for Fall 2023.**

We are here

Figure 38: Timeline for the first three phases of the Transit Network Redesign. The Final Plan will be developed in the first half of 2022. Depending on the degree and complexity of change involved, the redesigned network may be implemented in either 2022 or 2023.

Let us know what you think!

Take the online survey at:

mymetrobus.com/redesign