

# Memphis 3.0 Transit Vision

## Conceptual Alternatives Report

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For Innovate Memphis and the City of Memphis

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# What is the purpose of this report?

This Conceptual Alternatives Report is the second step in the Memphis 3.0 Transit Vision (see Figure 1). This plan is an outgrowth of the Memphis 3.0 comprehensive planning process and is being led by the City of Memphis and Innovate Memphis, in partnership with the Memphis Area Transit Authority (MATA). This plan will do the following:

- Assess the existing transit network and the geometry of today’s city;
- Engage the public, stakeholders and elected officials in a conversation about the goals of transit in Memphis;
- Develop recommendations for changing the transit network; and
- Consider the cost and financing options for improving transit in Memphis.

This Conceptual Alternatives Report follows closely on the *Choices Report* prepared in September 2017. That report summarized existing conditions of transit in Memphis, and drew readers’ attention to key choices that arise when planning for transit now and in the future. Two of those choices were:

- How to balance ridership and coverage goals.
- How much transit service Memphis needs. Is there enough transit service or should the City invest in additional transit service?

Figure 1: Process and Timeline for Memphis 3.0 Transit Vision



# What is the purpose of transit?

Transit can serve many different goals. But different people and communities value these goals differently. It is not usually possible to serve all of them well all the time.

Understanding which goals matter most in Memphis is a key step in developing the Memphis 3.0 Transit Vision.

Possible goals for transit include:

- **Economic:** transit can give businesses access to more workers, and workers access to more jobs. Transit can also help attract certain industries, new residents, tourists, or other economic contributors.
- **Environmental:** increased transit use can reduce air pollution and greenhouse gas emissions. Transit can also support more compact development and help conserve land.
- **Social:** transit can help meet the needs of people who are in various situations of disadvantage, providing lifeline access to services and jobs.

- **Health:** transit can be a tool to support physical activity by walking. This is partly because most riders walk to their bus stop, but also because riders will tend to walk more in between their transit trips.
- **Personal Liberty:** By providing people the ability to reach more places than they otherwise would, a transit system can be a tool for personal liberty, empowering people to make choices and fulfill their individual goals.

**Some of these goals are served by high transit ridership.** For example, the environmental benefits of transit only arise from many people riding the bus rather than driving. Subsidy per rider is lower when ridership is maximized. We call such goals “ridership goals” because they are achieved in part through high ridership.

**Other goals are served by the mere presence of transit.** A bus route through a neighborhood provides residents insurance against isolation, even if the route is infrequent, not very useful, and few people ride it. A route may fulfill political or social obligations, for example by getting service close to every taxpayer or into every political district. We call these types of goals “coverage goals” because they are achieved in part by covering geographic areas with service, regardless of ridership.



Figure 2: Is an empty bus failing? That depends entirely on why you are running it in the first place.

# Ridership and Coverage Goals Conflict

Ridership and coverage goals are both laudable, but they lead us in opposite directions. Within a fixed budget, if a transit agency wants to do more of one, it must do less of the other.

Here is an illustration of how ridership and coverage goals conflict with one another, due to geometry and geography.

In the fictional town at right, the little dots indicate dwellings and commercial buildings and other land uses. The lines indicate roads. Most of the activity in the town is concentrated around a few roads, as in most towns.

A transit agency pursuing only a ridership goal would focus service on the streets where there are large numbers of people, where walking to transit stops is easy, and where the straight routes feel direct and fast to customers. Because service is concentrated into fewer routes, frequency is high and a bus is always coming soon. This would result in a network like the one at bottom-left.

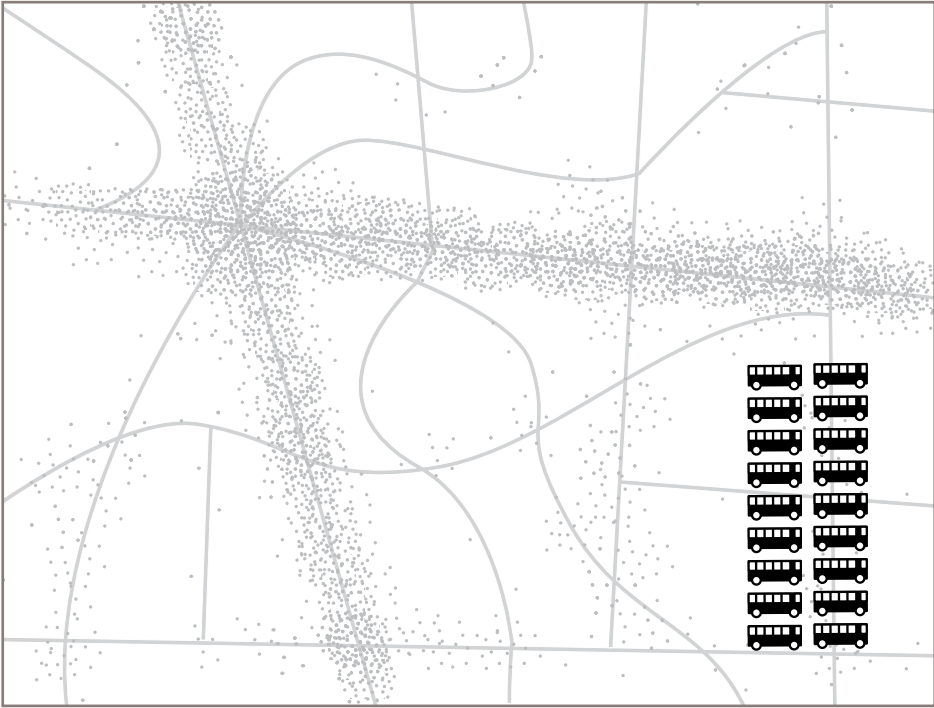
If the town were pursuing only a coverage goal, on the other hand, the transit agency would spread out services so that every street had a bus route, as in the network at bottom-right. As a result, all routes would be infrequent, even those on the main roads.

In these two scenarios, the town is using the same number of buses. These two networks cost the same amount to operate, but they deliver very different outcomes.

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

These illustrations also show a relationship between coverage and complexity. Networks offering high levels of coverage (like the MATA network in Memphis) are naturally more complex.

In this imaginary town, any person could keep the very simple “high frequency” network in their head, since it consists of just two routes, running in straight lines. They would not even need to consult a schedule to catch a bus. The coverage network would be harder to memorize, requiring people to consult a map (to understand the routing) and a schedule (to catch these infrequent services).



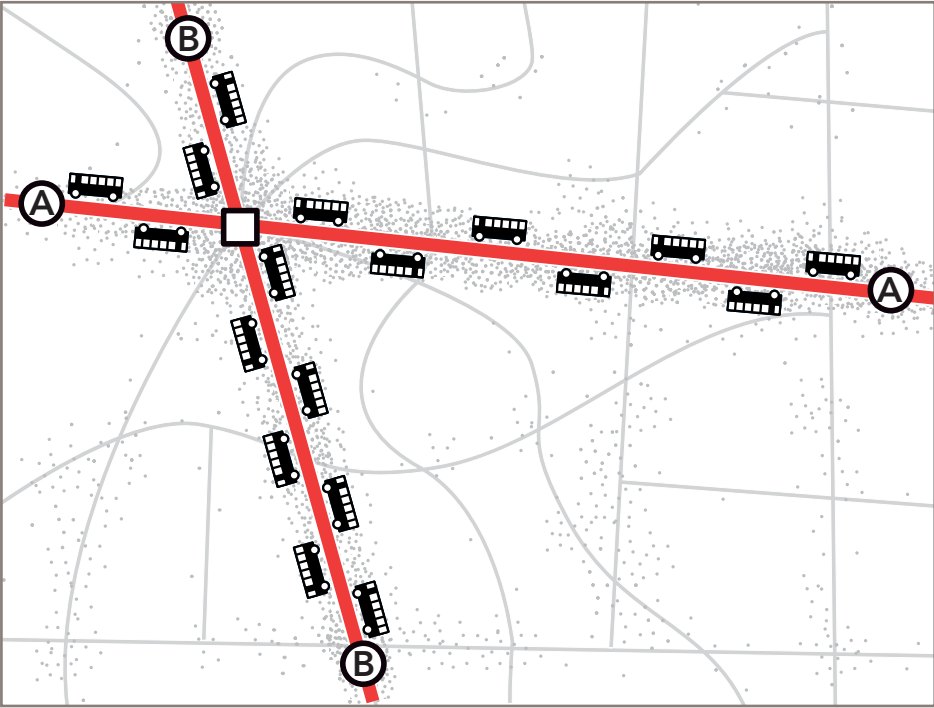
Imagine you are the transit planner for this fictional town.

The dots scattered around the map are people and jobs.

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

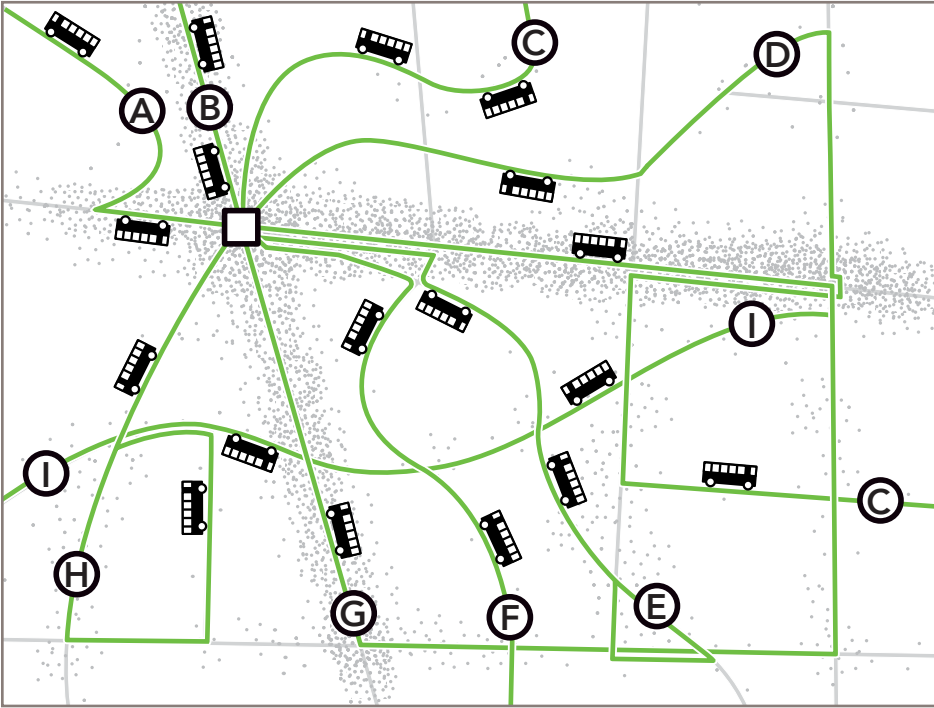
Before you can plan transit routes, you must first decide: What is the purpose of your transit system?

## Maximum Ridership



All 18 buses are focused on the busiest areas. Waits for service are short but walks to service are longer for people in less populated areas. Frequency and ridership are high, but some places have no service.

## Maximum Coverage



The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop, but every route is infrequent, so waits for service are long. Only a few people can bear to wait so long, so ridership is low.

Figure 3: Ridership and coverage goals, both laudable, are in direct conflict within a fixed budget.



# What did people say they prefer?

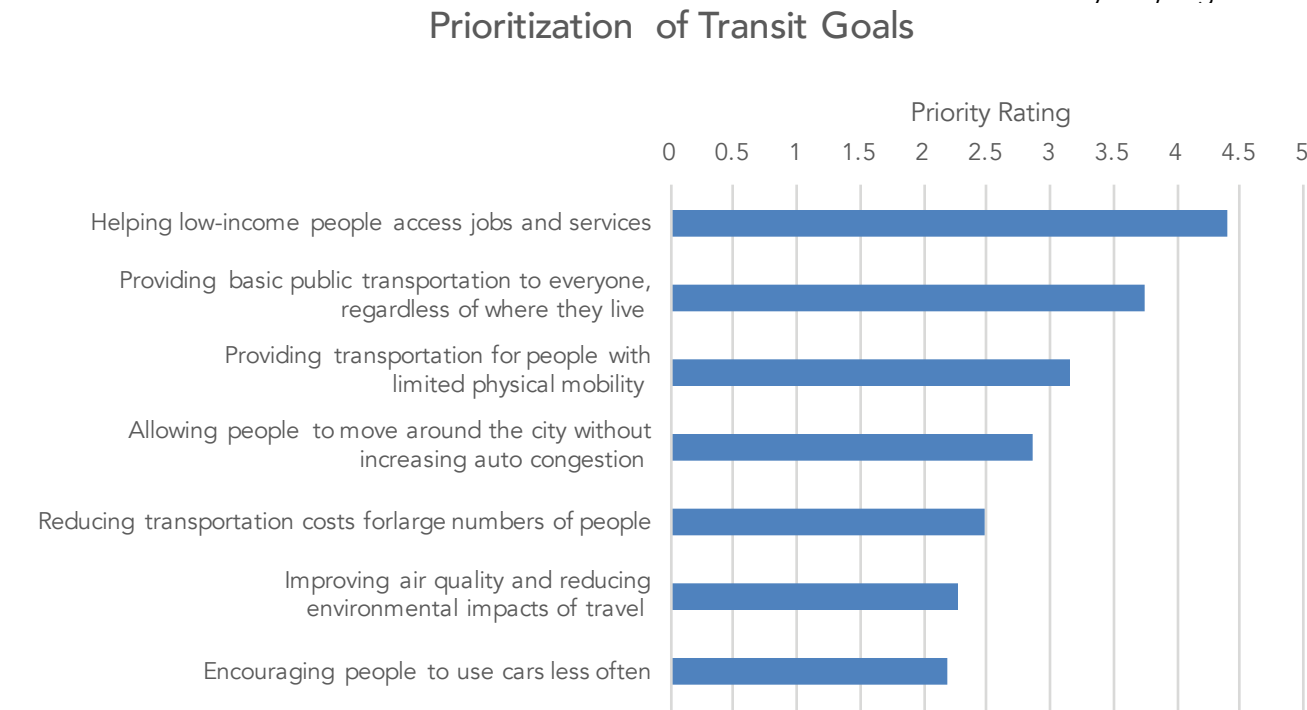
In the first phase of the Memphis 3.0 Transit Vision, we asked the public about their goals for transit, how they might balance the ridership-coverage and other trade-offs in transit, and their priorities for improvements to transit in Memphis.

Nearly 1,000 people responded to the survey online, on a tablet, or via a paper survey at transit centers and community events. Of the respondents, 40% identified as Non-Hispanic White, 39% identified as African-American/Black, 5% identified as Hispanic, 2% identified as some other race or ethnicity, and 14% did not provide a racial or ethnic identity.

As of 2015, the Census Bureau reports that 63% of Memphians identify as African-American/Black, while 27% identify as Non-Hispanic White and 7% identify as Hispanic. Therefore, Non-Hispanic Whites are over-represented in our survey results. So, in assessing the survey results, we will report responses by race/ethnicity where responses showed significant variance by the race/ethnicity of respondents.

We also asked respondents about their income and in analyzing results found that low-income responses tracked closely with the responses of African-American/Black respondents. Therefore, we are not reporting results by income separately.

Figure 4: Prioritization of Transit Goals from Phase 1 Survey



One observation about the results is that for some questions, African American/Black respondents tend to have higher “Not Sure” responses than others. The outreach team noticed that a higher portion of people who took the survey on paper (which included a high portion of African American/Black respondents) tended to respond “Not Sure” to some questions. The outreach team speculates that because paper survey respondents did not have easy access to the *Choices Report*, they would have benefited from a personal overview of the trade-off questions before responding to the survey. The outreach team is developing new tactics to increase the clarity of responses from everyone in the next survey.

## What transit benefits are most valuable to Memphians?

The first question for Memphians was how they would prioritize seven benefits of transit. Figure 4 shows the results for this question with higher numbers indicating a higher priority for that benefit. There was relatively little variation in the priorities by race or ethnicity, so the results are shown for all respondents. The highest rated benefit of transit was “Helping low-income people access jobs and services.”

The top three rated benefits tend to align with coverage goals, particularly the second ranked benefit: “Providing basic public transportation to everyone, regardless of where

they live.” The bottom four rated benefits tend to align with ridership goals. The results from this first question would suggest that Memphians want transit that focuses more on coverage goals.

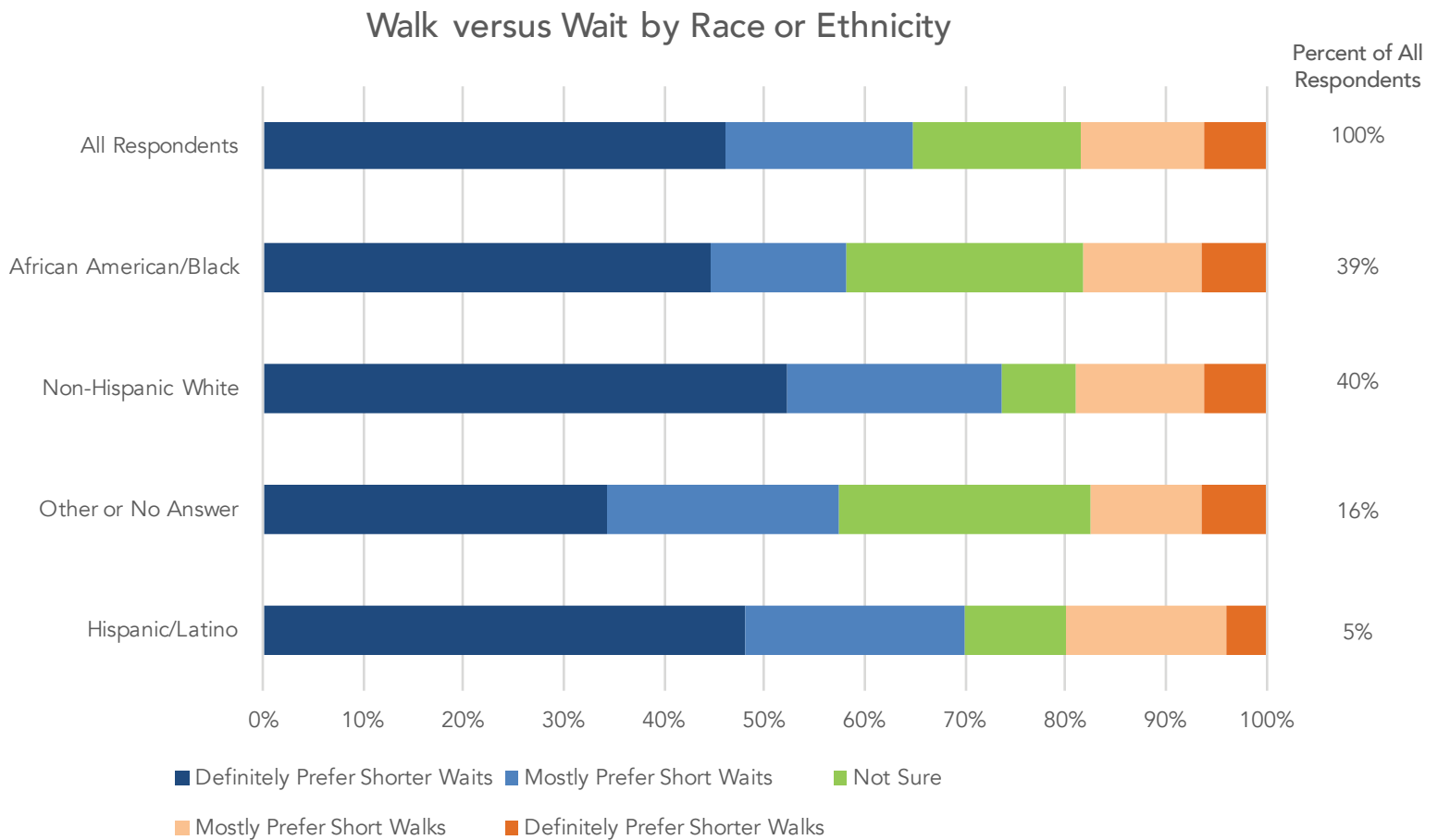
## Do Memphians prefer walking or waiting?

The second questions asked Memphians whether they would prefer a shorter wait for transit even if it required a longer walk or whether they preferred a shorter walk to transit even if it required a longer wait. Figure 5 shows the responses from all survey takers and breaks down responses by race or ethnicity.

Among all respondents, nearly half said they would definitely prefer shorter waits even if it meant longer walks while another 19% said they would mostly prefer a shorter wait, 17% were not sure and 20% said they mostly or definitely prefer a shorter walk.

But there was some variation in responses by race or ethnicity. African-American respondents did not rate short waits as strongly as other respondents and had a higher “Not Sure” response (23% compared to

Figure 5: Walk versus Wait Responses from Phase 1 Survey



17% overall). Among all racial or ethnic groups, though, shorter waits were preferred by a majority of respondents. These responses would suggest that Memphians would prefer higher frequency service even if it meant a longer walk to service.

Do Memphians prefer ridership or coverage?

The third question of the Phase 1 survey asked Memphians if they preferred a transit system that prioritized ridership and frequency or one that prioritized coverage. This question used the fictionalized examples of high ridership and high coverage networks shown in Figure 3. Figure 6 summarizes the responses for all respondents and for respondents by race or ethnicity.

Among all respondents, 42% preferred high ridership, while 32% preferred high coverage and 24% were not sure. For this question, responses varied more significantly by race or ethnicity. A plurality of African-Americans (37%) said they were not sure which they preferred, while 33% said they preferred high ridership and 30% preferred high

coverage. A majority (55%) of Non-Hispanic Whites preferred high ridership, while 35% preferred high coverage and 10% were not sure. A majority (54%) of Hispanic/Latino respondents preferred high coverage, versus 28% who preferred high ridership and 18% were not sure.

Given the limited time to answer, and the limited information, it is not surprising that more people answered “not sure” to the ridership-coverage question. The question is naturally hard to answer in the abstract. Therefore, the concepts presented in this report, which will be the basis of another round of surveys, will provide clearer information to Memphians about how the ridership-coverage trade-off would affect them so they can make a more informed decision for themselves and the city.

What do Memphians want new transit resources spent on?

We also asked Memphians to prioritize their top three improvements for transit service if more money for transit was found. Figure 7 summarizes the results of this question. Higher numbers indicating that people rated that priority higher than others.

The top priority was higher frequency service on weekdays. The second was covering places that don’t have service today. These results suggest that survey respondents would prioritize higher frequency service when adding more dollars to the transit budget. But adding coverage is still a high priority as it outweighed adding frequency in the evenings or on weekends.

Summary of Phase 1 Responses

Overall, when asked about walking versus waiting, the majority of respondents said they would prefer less waiting, even if it meant a longer walk. When asked about the ridership-coverage trade-off, though, many respondents were not sure about which they would prefer and there was a marked difference in response by race or ethnicity. This suggests that Memphians have a variety of views about what they want transit to do and likely want more information before deciding how do balance these difficult trade-offs. This is understandable as these value choices are quite difficult to balance.

Thus, this report will provide more information on what the balance between coverage and ridership would mean for Memphis and will provide the public, stakeholders, and elected officials more information to help them decide what balance they want in these two key goals for transit.

Figure 6: Ridership versus Coverage from Phase 1 Survey

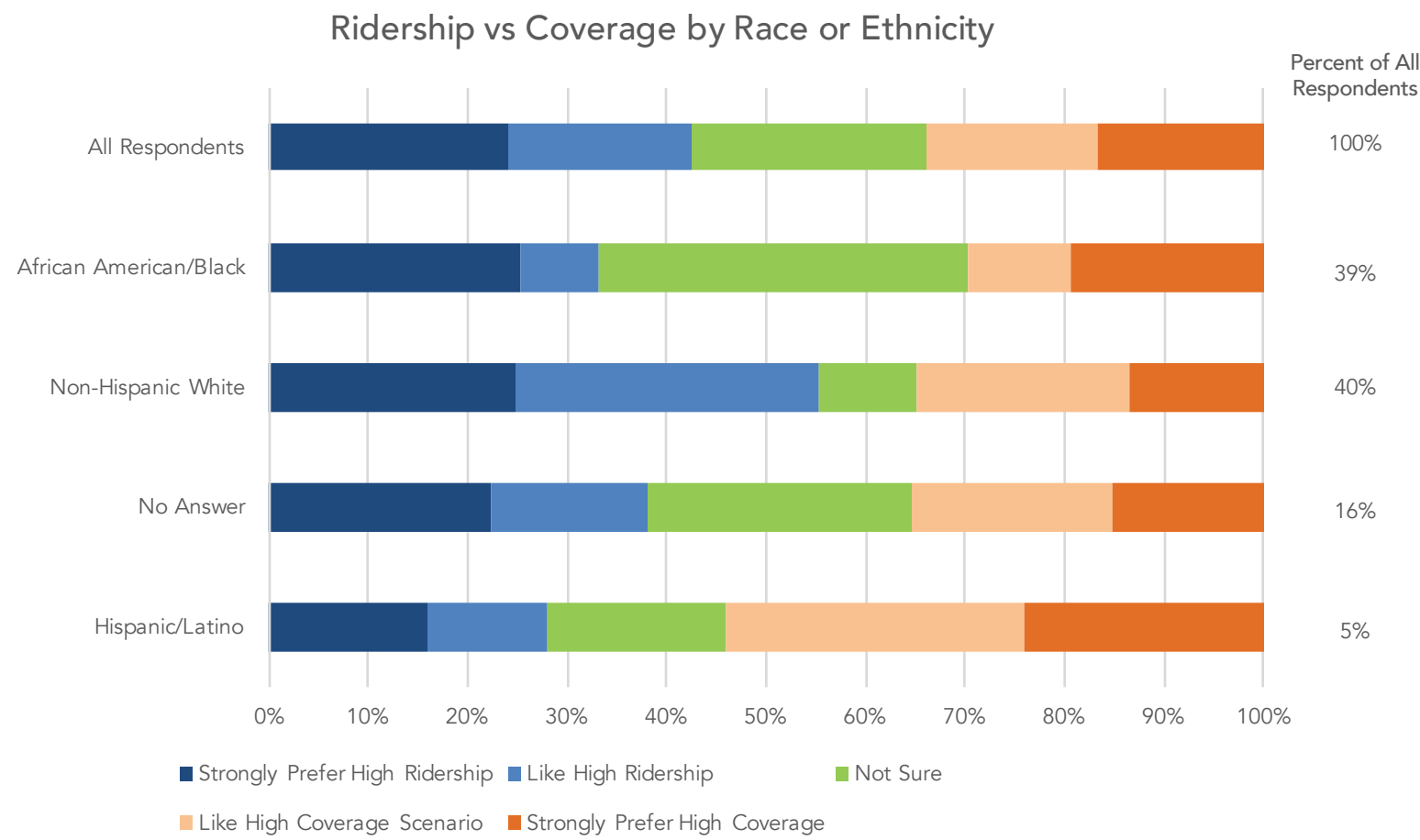
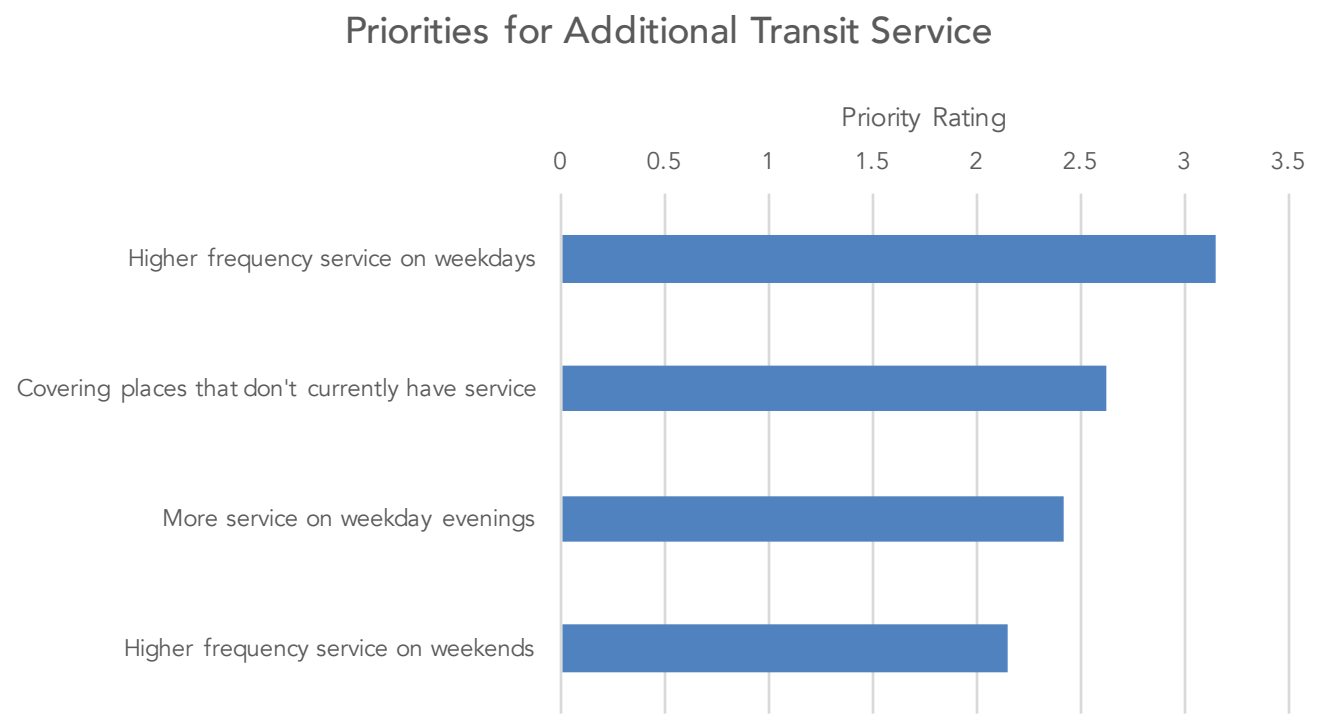


Figure 7: Priorities for Additional Service from Phase 1 Survey



## What are the Concepts?

The trade-off between high ridership (and high frequency) on the one hand, and wide geographic coverage on the other hand, is particularly difficult to resolve. Also, as we noted in the *Choices Report*, Memphis has relatively little transit service compared to its peers. For this reason, we have created four conceptual alternatives (or concepts) to illustrate the frequency-coverage trade-off and the benefits of additional transit funding in Memphis.

Understanding that everyone’s preference would be for higher frequency and wider geographic coverage, both are simply not possible within the existing budget. And even with additional funding, having more frequency means that the ability to expand coverage is limited.

The existing budget is already being used effectively by the agency to deliver existing levels of frequency and coverage. There are no significant “inefficiencies” or “low-hanging fruit” that would allow MATA to meet such demands with existing resources. So any higher frequencies or coverage of new neighborhoods would have to come at the expense of service elsewhere, unless additional funding was provided for transit.

The four concepts represent four points at the corners of a square (see Figure 8). These points frame the edges of many possible ways to balance ridership and coverage goals and the range between no new funding for transit and a significant increase in transit funding.

There are two concepts that assume the existing level of transit funding:

- **Coverage Concept** - 40% Ridership, 60% Coverage: This concept is very similar to the existing system and matches the current way that resources are split between ridership and coverage.
- **Ridership Concept** - 80% Ridership, 20% Coverage: This is the most extreme change from the current network, with the highest ridership potential (without additional funding) but also the greatest reduction in low-ridership coverage services.

There are two concepts that assume additional funding for transit:

- **Coverage PLUS Concept** - 50% Ridership, 50% Coverage: This concept is similar to the existing system in its balance between ridership and coverage. With more resources, both coverage and frequency can be improved, with more focus on coverage.
- **Ridership PLUS Concept** - 80% Ridership, 20% Coverage: With more funding and a ridership focus, this concept shows how more frequency can provide better and faster connections within the core of Memphis, while maintaining coverage in less dense areas.

The decision space diagram (Figure 8) illustrates how these four concepts relate to the ridership-coverage trade-off and range of options for funding. As people think about their own reactions to the concepts, and what kind of direction they would like to see Memphis pursue in the future, they can locate their opinion within this decision space.

### How much more transit funding are we recommending?

We are not recommending any additional funding at this time. We are giving people concepts that show what additional funding for transit could do. The additional funding concepts assume that an additional \$35 million per year would be provided for transit operations and \$10 million for transit capital needs. This funding level was chosen based on consultation with City, MATA and Innovate Memphis staff.

These concepts can help residents, riders, stakeholders and elected officials see what benefits additional transit funding would bring and, therefore, whether Memphis wants to invest more in transit.

A key question for the public, stakeholders, and elected officials is whether additional funding is desired. If the City wants a Transit Vision with more funding, then the exact funding source for the Recommended Transit Vision will be determined during the next phase.

## Important Cautions

We are presenting four concepts for public discussion in order to gain insight from the public as to how Memphis should balance the competing goals of ridership and coverage, and to understand how much Memphis should be investing in transit. Because of this, the following cautions must be kept in mind:

### The Concepts Are Not Proposals

A proposal is something that the proposer recommends. At this stage, the City, Innovate Memphis, and the consultant are not proposing anything. The result of the public conversation about these concepts will help guide us in developing the actual proposed network, which will be developed in 2018.

### No Concept is Preferred at this Stage

The City, Innovate Memphis, consultants and other staff have no preference among these concepts, and have no desire to steer the conversation to a particular result.

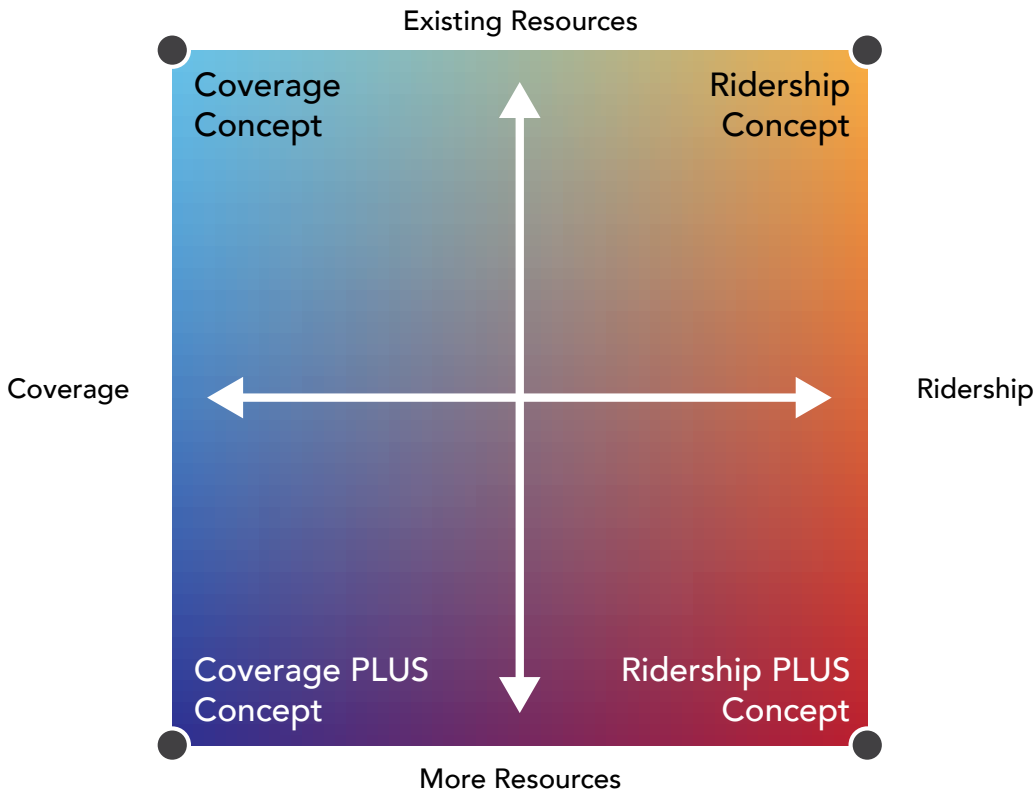
The most important word in this report is “if”. The Coverage Concept shows what might happen *if* Memphis chooses to retain its current balance of ridership and coverage goals. At the other extreme, the Ridership Concept shows what might happen *if* Memphis chooses to shift toward a great focus on ridership as the primary goal without any additional funding. The two PLUS concepts show the same ridership-coverage trade-off but with additional funding.

Because the Ridership and Ridership PLUS concepts are the most different from the existing system, this report puts greater focus on explaining them, including both the upsides and downsides. This can create the illusion that these concepts are being promoted.

### The Big Picture Matters More than Details

When we sketch concepts for public discussion, we do so with less attention to detail than we would when developing a final proposal for implementation. It is important not to judge an entire concept solely based on some small routing detail that you like or dislike. The point of these concepts is the “big picture” contrast: Which of these concepts, with its outcomes positive and negative, best reflects how you would balance the competing priorities?

Figure 8: Decision space and the four concepts.





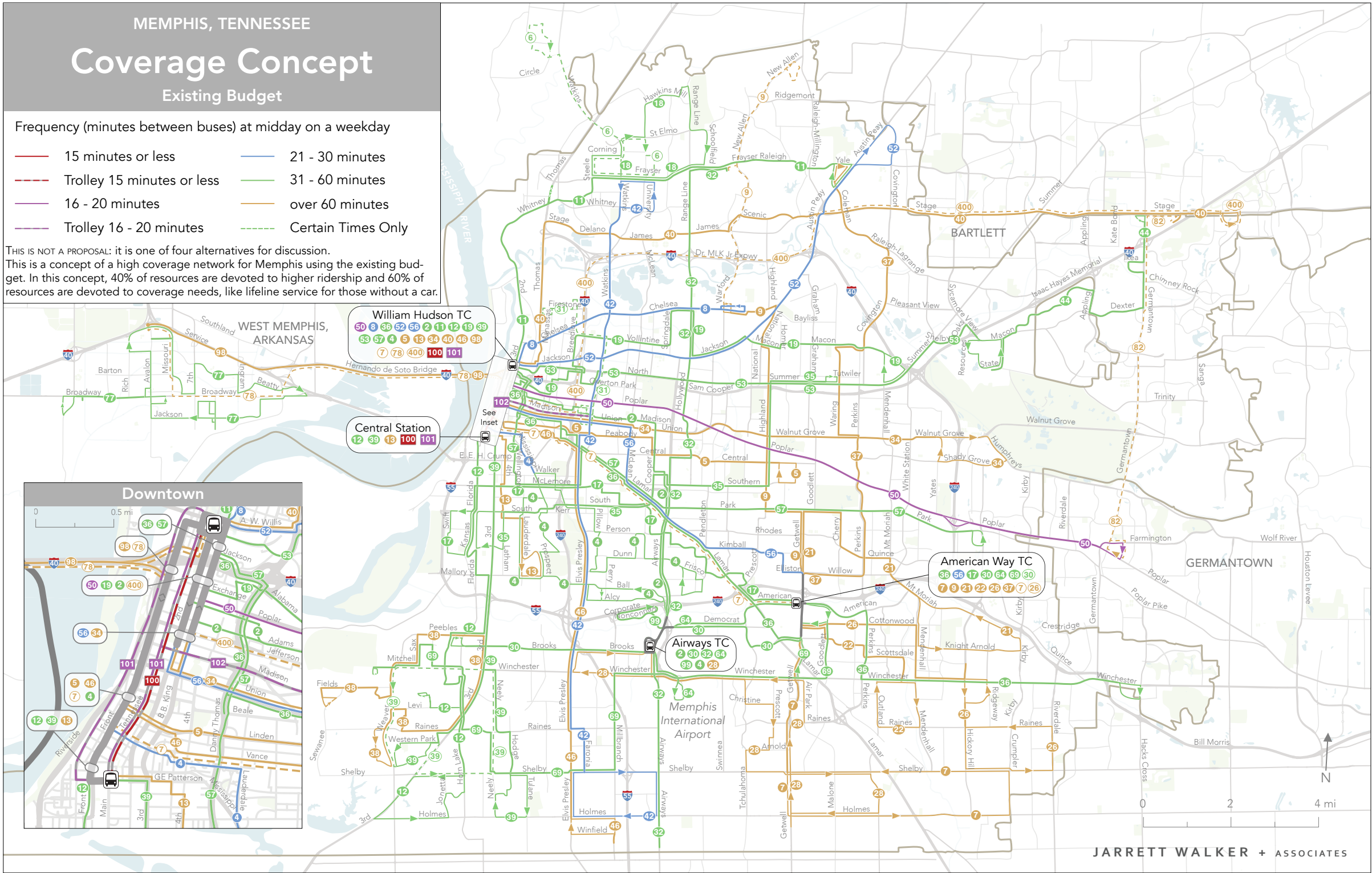
# Coverage Concept

The Coverage Concept map shows a network that is very similar to today’s system.

The Coverage Concept devotes 40% of the budget to ridership goals and the other 60% to coverage goals. There are many blue, green, and tan routes covering most parts of the city and peak-only lines providing additional service.

In this concept, the frequency of service is low for most routes, which means that waits for the bus are long and therefore the time it takes to get from place to place is long for many trips by transit.

Figure 9: Coverage Concept





# Ridership Concept

The Ridership Concept map shows a network with some key changes compared to the Coverage Concept that would increase ridership.

In this concept, 80% of resources are spent on service expected to get high ridership relative to cost, while 20% of resources are spent on service that is meant to provide coverage to areas where ridership is not likely to be high.

This concept would provide a high frequency grid network with high frequency service on four routes radiating from downtown: Jackson, Poplar, Union and Lamar.

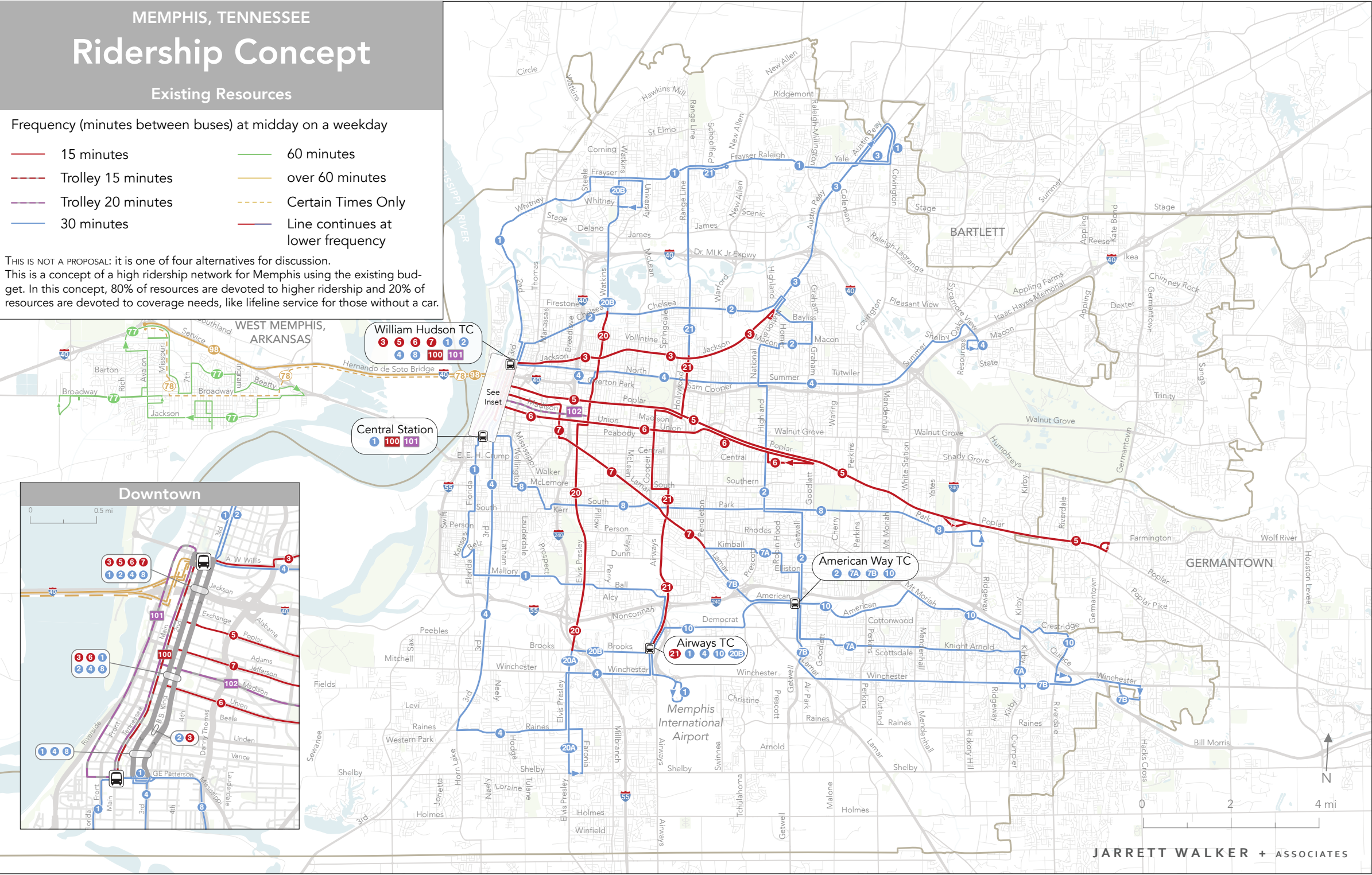
It would provide high frequency service on two north-south crosstown routes: the Watkins/Cleveland/Presley corridor (similar to the current route 42) and the Hollywood/Cooper/Airways corridor (similar to the current route 32).

A benefit of this high frequency grid is how it makes moving around Memphis much easier. Where high frequency routes cross, transfers are fast and easy, so going from Prospect Park (Presley and Ball) to the Regalia Shopping Center (Poplar and Ridgeway) is much faster because the initial wait and the wait when transferring is much shorter.

Providing this high frequency service in the most dense and walkable areas of the city has a cost- a significant reduction in coverage. Many places that have some service today would lose service to afford the frequency of service in the most dense and active areas of the city.

The benefit of this concept would be that people near the service provided would have much more useful service, and thus more people in those areas would use transit.

Figure 10: Ridership Concept





# Coverage PLUS Concept

The Coverage PLUS Concept map shows a network with significantly more service than today's system, but with resources still deployed more toward coverage.

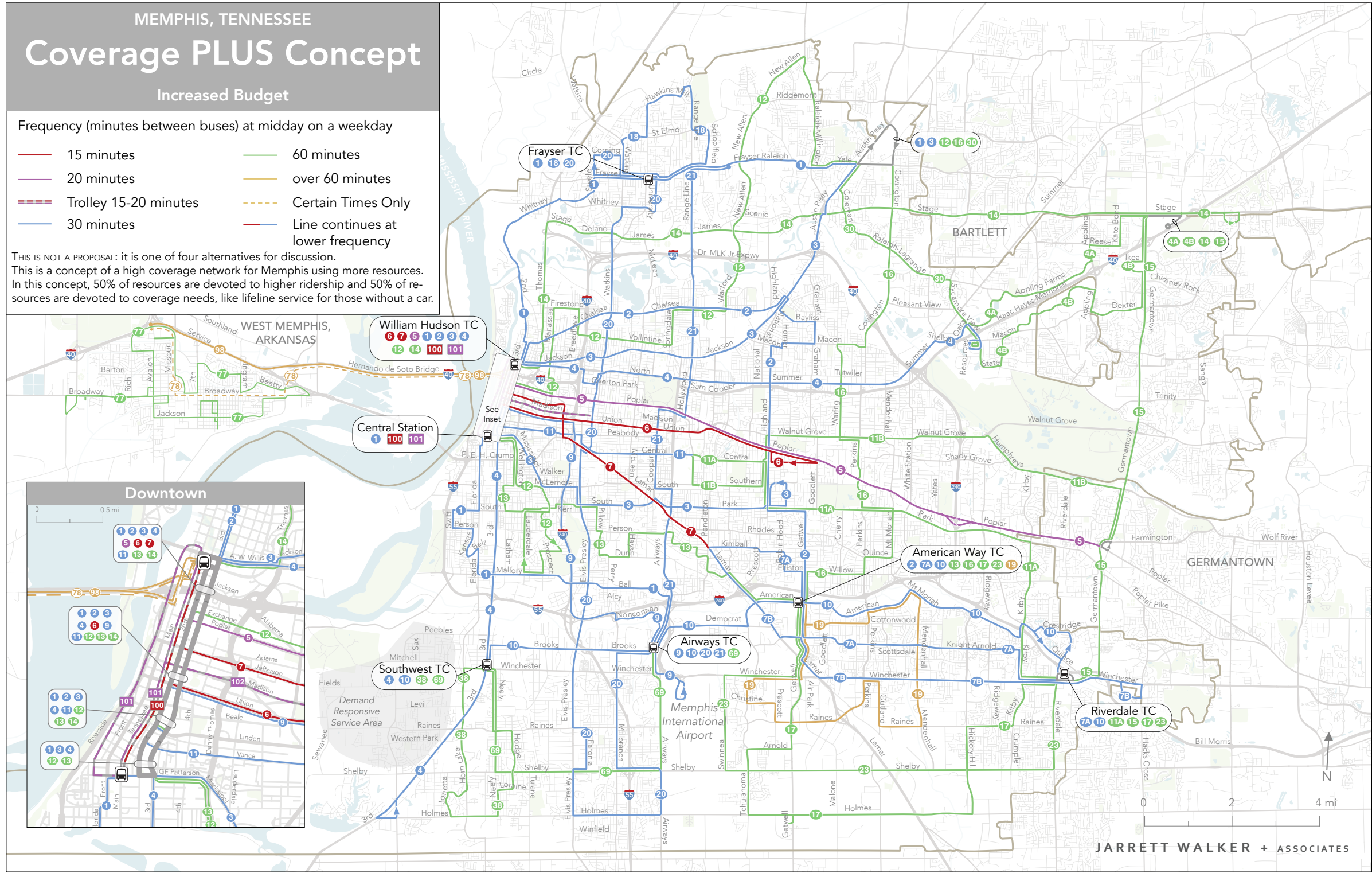
In this concept, 50% of resources are spent on service that should garner high ridership relative to cost, while 50% of resources are spent on service that is meant to provide coverage to areas where ridership is not likely to be high.

This concept assumes there is an additional \$35 million per year in resources for operating transit in Memphis; therefore this concept can provide significantly more service to the city.

Compared to the Coverage Concept (which is most like today's system) there is not a lot of unique additional coverage, but most service in lower density areas is much better than today. For example, the frequency of service is improved to every 60 minutes on routes along Stage Road, Shelby Drive, Perkins Road and many other roads in the far southern or eastern parts of the city. Today and in the Coverage Concept, the frequency of service in these areas is every 75, 90 or 120 minutes.

Another significant difference is that in far Southwest Memphis, fixed route service is replaced with demand responsive service that would connect to a new transit center near 3rd and Mitchell. Sometimes called dial-a-ride, demand responsive transit operates on flexible routes and rides must be scheduled in advance with the transit agency. Service would be provided to the new Southwest Transit Center to connect to fixed route service to the rest of Memphis.

Figure 11: Coverage PLUS Concept





# Ridership PLUS Concept

The Ridership PLUS Concept map shows a network with significantly more service than today’s system, but with resources focused more on ridership than on coverage.

In this concept, 80% of resources are spent on service that should garner high ridership relative to cost, while 20% of resources are spent on service that is meant to provide coverage to areas where ridership is not likely to be high.

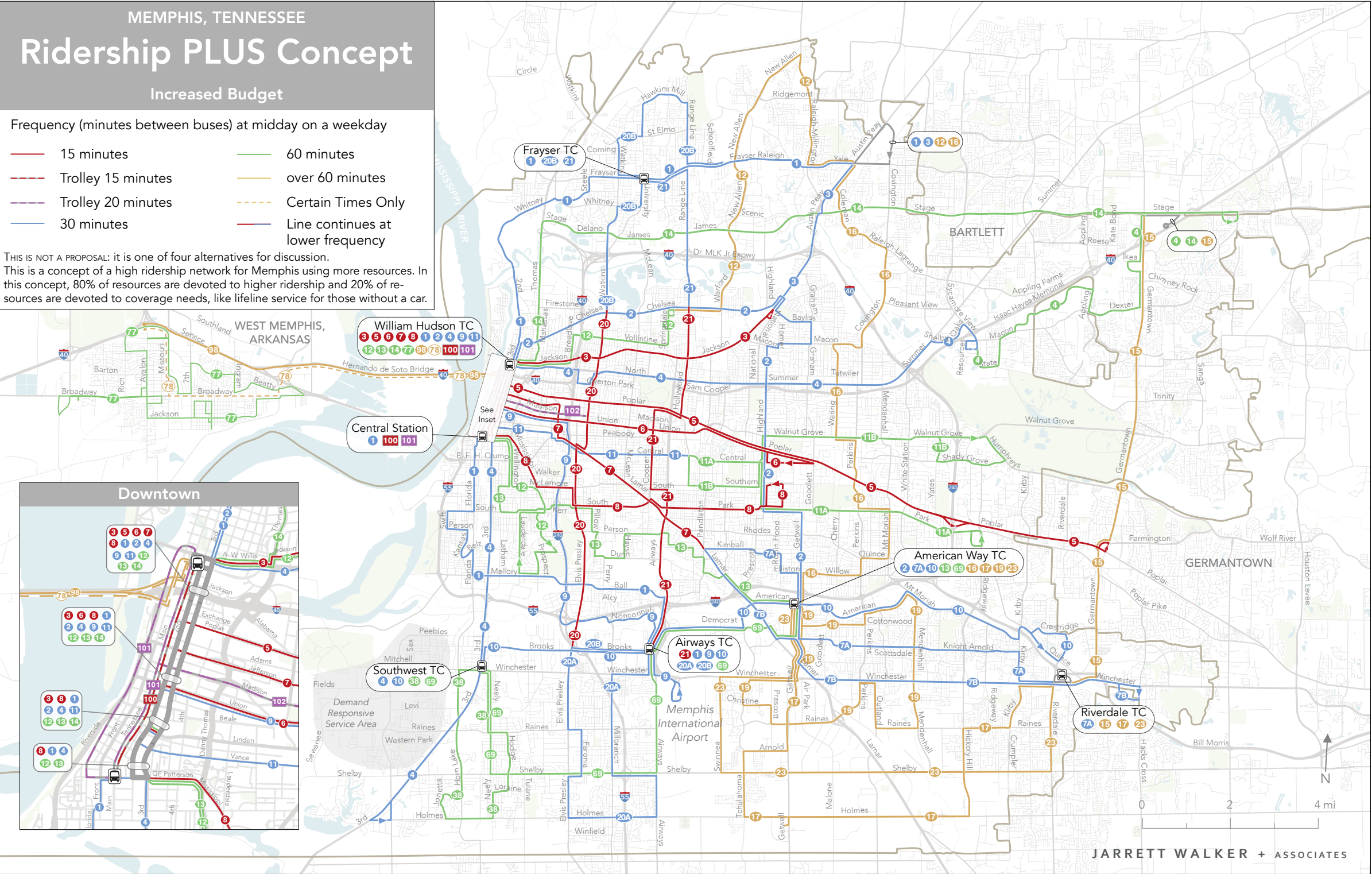
This concept assumes there is an additional \$35 million per year in resources for operating transit in Memphis; therefore, this concept can provide significantly more service to the city.

Compared to the other concepts, this concept has the most high frequency service, with five high frequency routes extending east-west out of downtown and two north-south high frequency crosstown routes.

Compared to the Coverage PLUS Concept, the frequency of service in low density areas is lower. For example, the routes along Shelby Drive and Holmes Road only run every 120 minutes in this concept.

Similar to the Coverage PLUS Concept, in far Southwest Memphis, fixed route service is replaced with demand responsive service that would connect to a new transit center near 3rd and Mitchell.

Figure 12: Ridership PLUS Concept



Span of Service

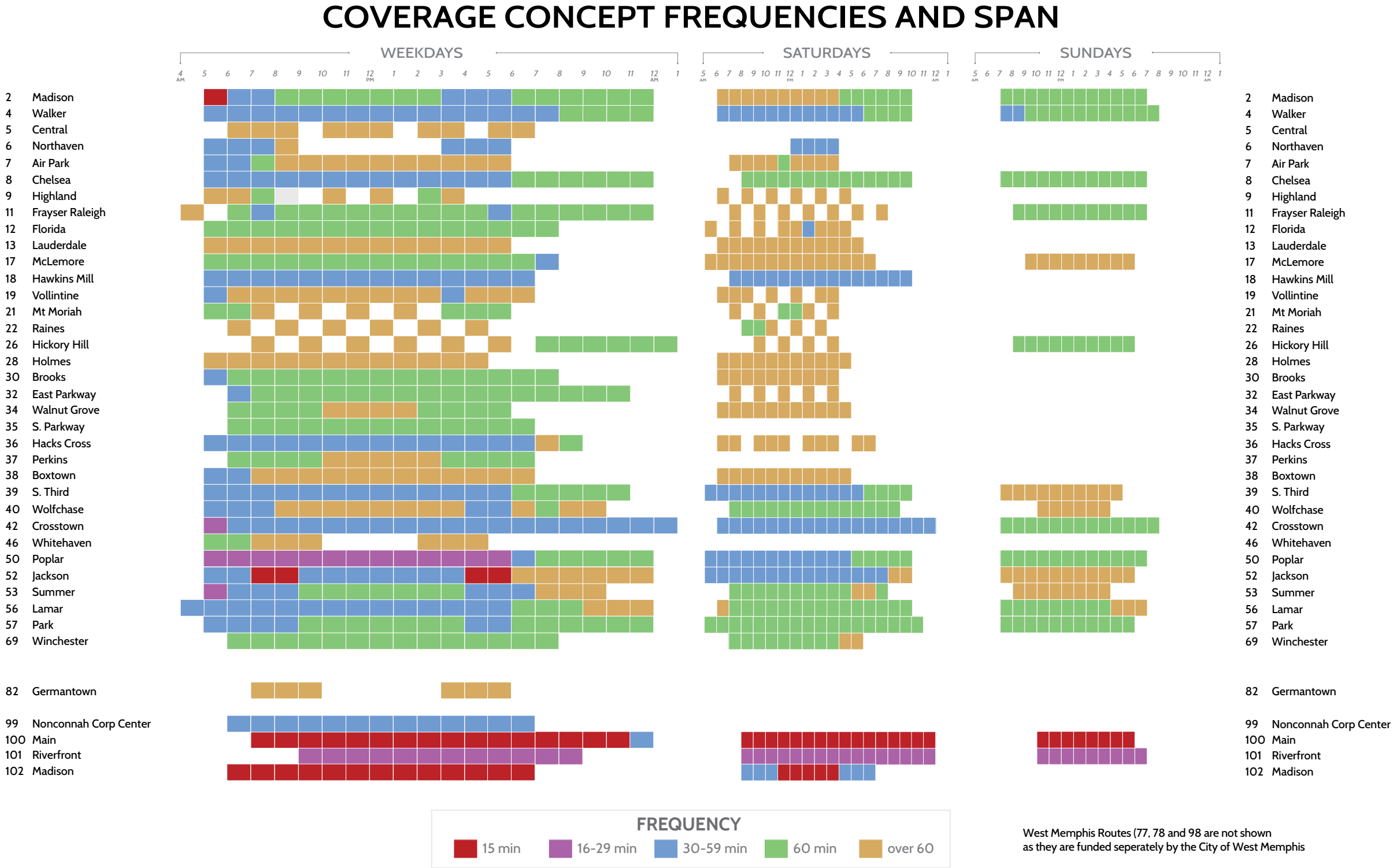
A key difference between the concepts, and in particular the concepts with more funding, is the span of service, or how long service runs.

Coverage Concept

The Coverage Concept is almost identical to today’s system, and because a small amount of resources is being spread across many routes, the span of service is very low. Figure 13 shows the frequency and span of service for weekdays and weekends.

Most service runs at very low frequency after 8 pm on weekdays, meaning that trips take much more time in the evening than they would during the day. Also, on Saturdays and especially Sundays, the number of routes operating declines significantly and frequency of service is much lower. Thus, the level of coverage shown on the Coverage Concept map is really only available during the day on weekdays. Access is much lower on evenings and weekends.

Figure 13: Coverage Concept Frequency and Span of Service



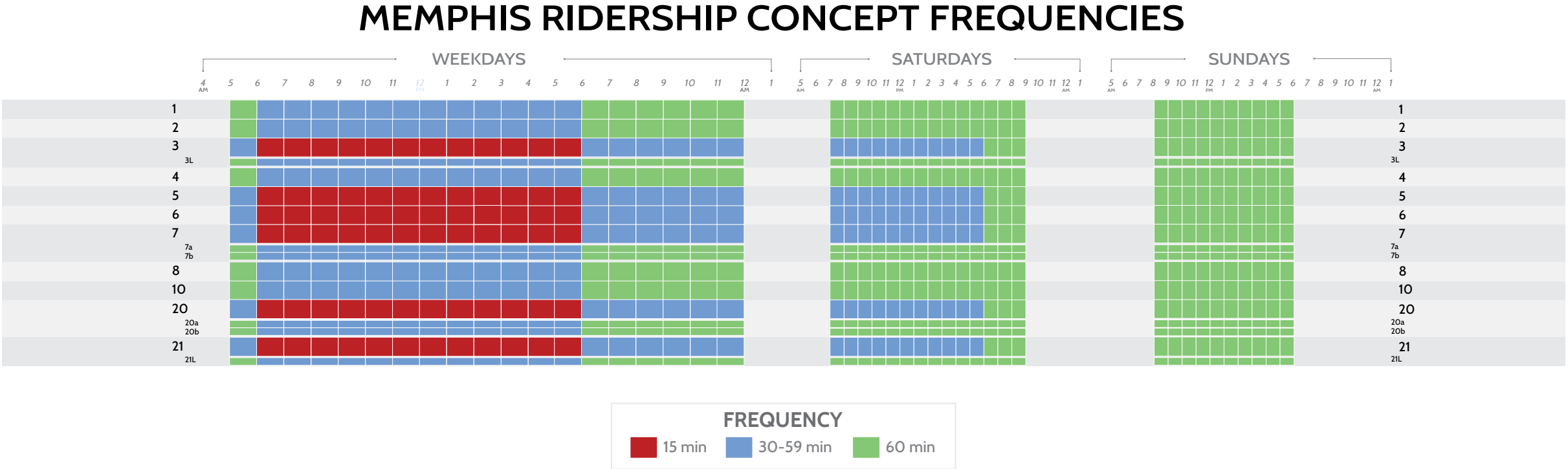


Ridership Concept

The Ridership Concept has fewer routes than the Coverage Concept, but those routes have higher frequency service throughout most of the day. Figure 14 shows the frequency and span of service for weekdays and weekends under the Ridership Concept.

One of the major differences with this concept is that all routes run continuously until at least 11 pm on weekdays, though at lower frequencies. All routes run on Saturday and Sunday at lower frequencies than during the weekday as well. This is a marked contrast to the Coverage Concept, where many routes do not run on Saturdays or Sundays. So, while the geographic coverage is much lower in the Ridership Concept, the service that is provided is available, consistently, seven days a week.

Figure 14: Ridership Concept Frequency and Span of Service

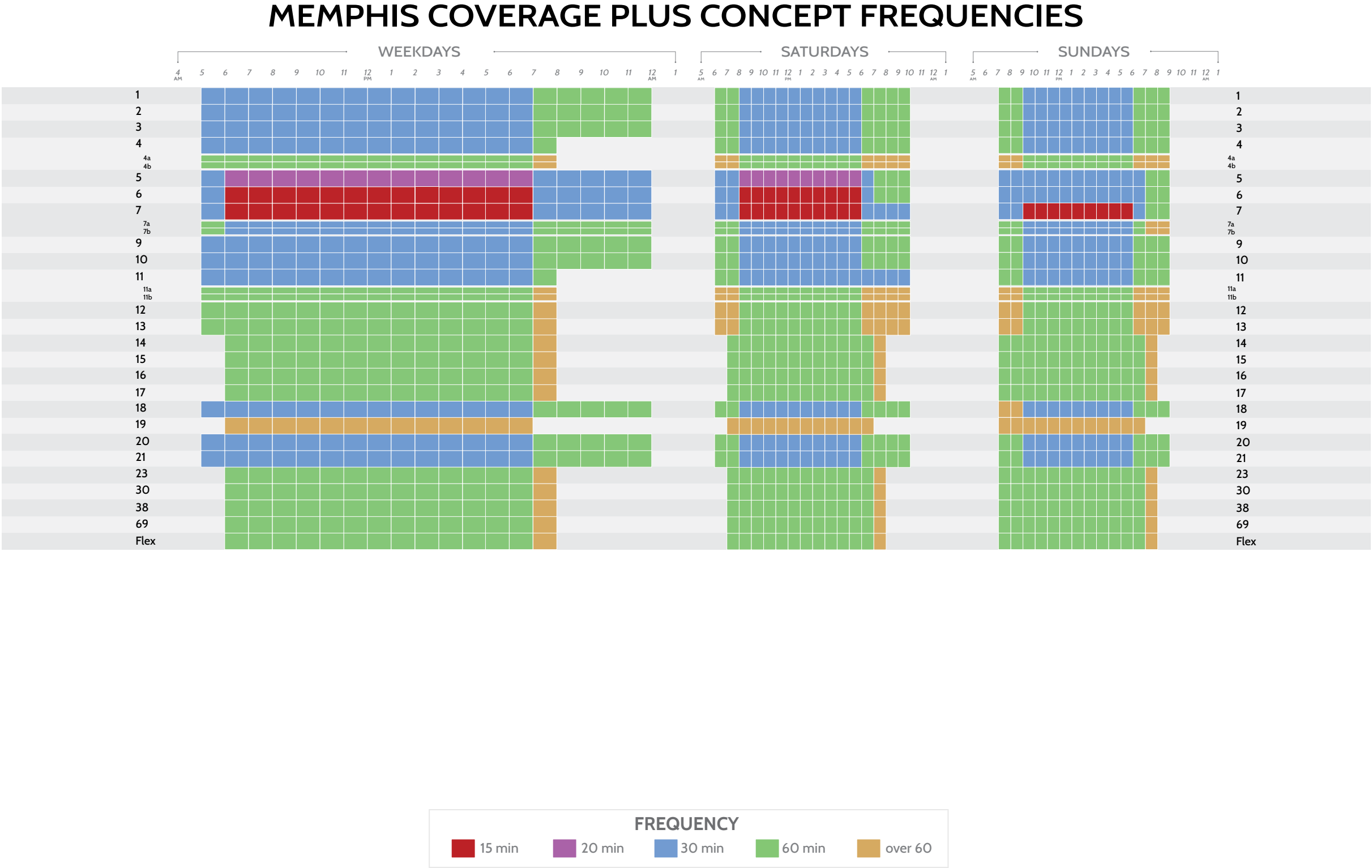


Coverage PLUS Concept

The Coverage PLUS Concept is simpler than the Coverage Concept as many routes have been optimized or routed through downtown. Figure 15 shows the frequency and span of service for weekdays and weekends under the Coverage PLUS Concept.

To maximize the geographic coverage of the concept, most lower frequency routes end by 7 pm on weekdays, similar to the existing system. But in this concept, all routes run on Saturday and Sunday, which significantly improves the access to outer parts of Memphis on weekends. More routes run at higher frequencies on Saturdays and Sundays, which would significantly reduce travel times on weekends.

Figure 15: Coverage PLUS Concept Frequency and Span of Service

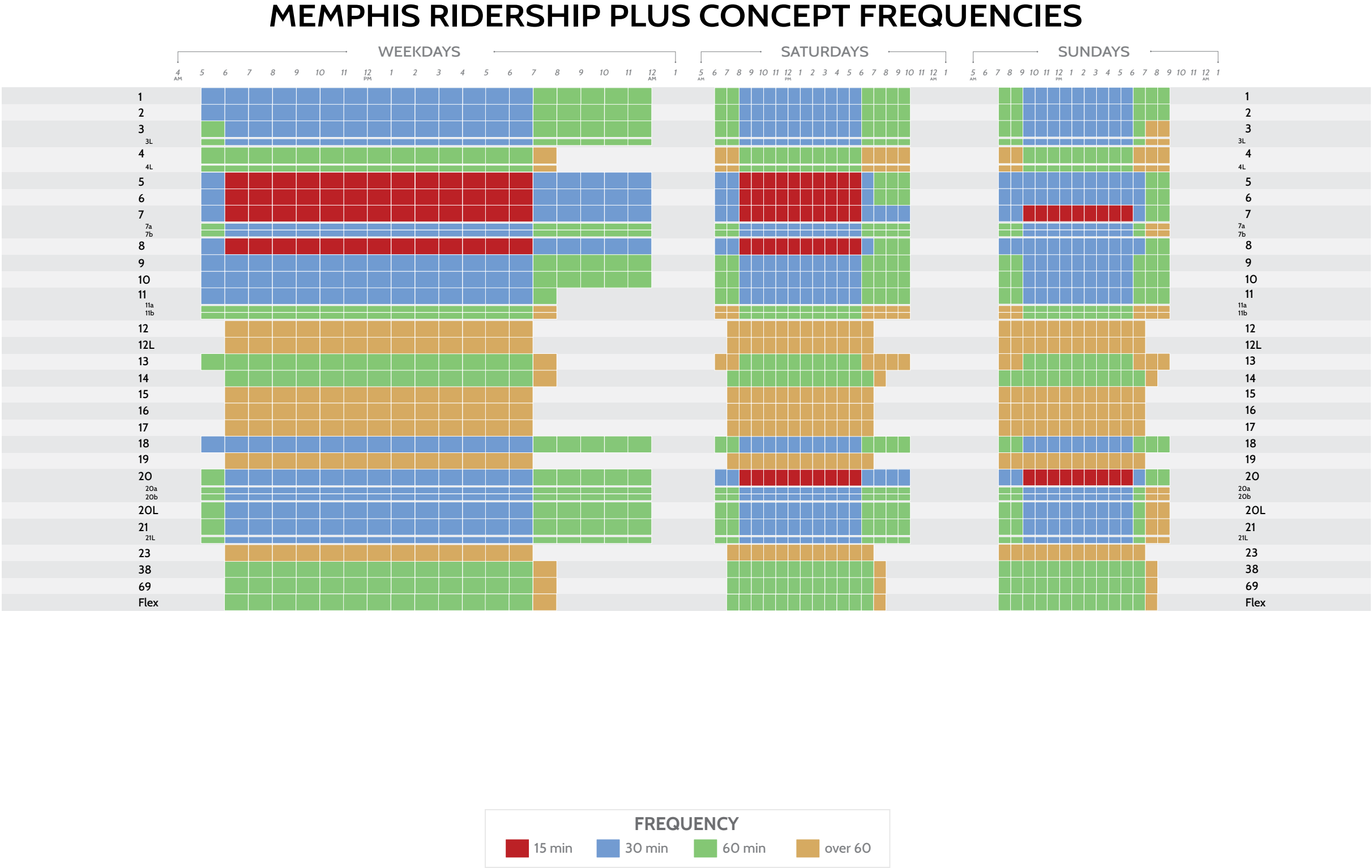


Ridership PLUS Concept

The Ridership PLUS Concept is similar to the Coverage PLUS Concept in the number of routes and areas that it coverst, but its balance between frequency in the core and periphery is different. Figure 16 shows the frequency and span of service for weekdays and weekends under the Ridership PLUS Concept.

Compared to the Coverage PLUS Concept, there are more routes with high frequency service, which provide more service in evenings (after 7 pm). The trade-off is that routes in less dense areas, like those on Holmes Road and Shelby Drive, operate at lower frequencies.

Figure 16: Ridership PLUS Concept Frequency and Span of Service



## Comparing Coverage

By simply comparing the maps on the previous pages, it is clear that the Ridership Concept would cover less of Memphis than the Coverage Concept, and that the Coverage PLUS would cover more than the Ridership PLUS. But how many residents and jobs does that geographic coverage represent?

The charts at right illustrate how the concepts would affect the number of residents and jobs that have access to *any* service (no matter how frequent) and to *frequent* service within a half-mile.<sup>1</sup>

The Coverage Concept (which is most like the existing system) provides any service within 1/2 mile of about 80% of residents. The Ridership Concept reduces this to about 55%. However, far more people have access to frequent service. In the Coverage Concept, only 3% of Memphians are near frequent service, but 17% of residents are near frequent transit in the Ridership Concept.

With additional resources, the Ridership PLUS and Coverage PLUS Concepts make this trade-off between coverage and frequency less severe. The Coverage PLUS Concept provides some service to 86% of residents and frequent service to 9% of residents. The Ridership PLUS Concept provides any service to 84% of residents and it provides frequent service to 20% of residents.

Job accessibility exhibits a similar pattern. With no new resources, the trade-off between coverage and frequency is significant. The Coverage Concept provides any service near 69% of jobs, while the Ridership Concept reaches 53% of jobs. The Ridership Concept provides frequent service near 26% of jobs, while the Coverage Concepts reaches only 10% of jobs with frequent service.

With additional resources, it is possible to maintain or grow access to jobs. The Coverage PLUS Concept provides any service near 72% of jobs and frequent service near 15% of jobs. The Ridership PLUS Concept provides any service near 71% of jobs and it provides frequent service near 27% of jobs.

Access to frequent service is a good estimate of potential ridership. While frequency alone is not enough to cause high ridership, frequency deployed along direct routes, in places that are dense, walkable and proximate to one other, does tend to lead to high ridership and lower operating costs, and thus to high productivity.

<sup>1</sup> Data limitations requires that this analysis is done using the air distance (also called “as the crow flies” distance) to estimate the people and jobs near transit. We know this is imperfect and that it often corresponds to longer walks in areas with more disconnected street networks.

Figure 17: Chart of Residents with Access to Transit by Concept

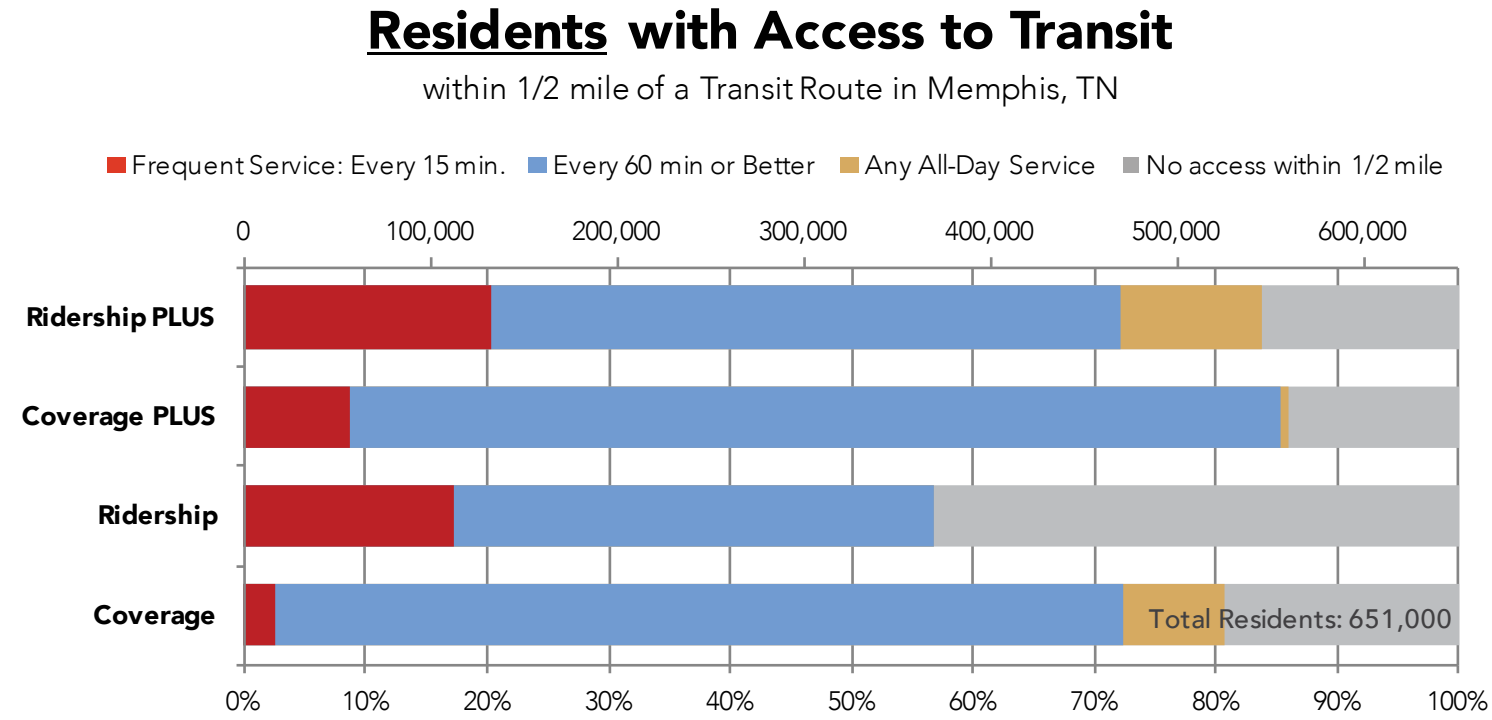
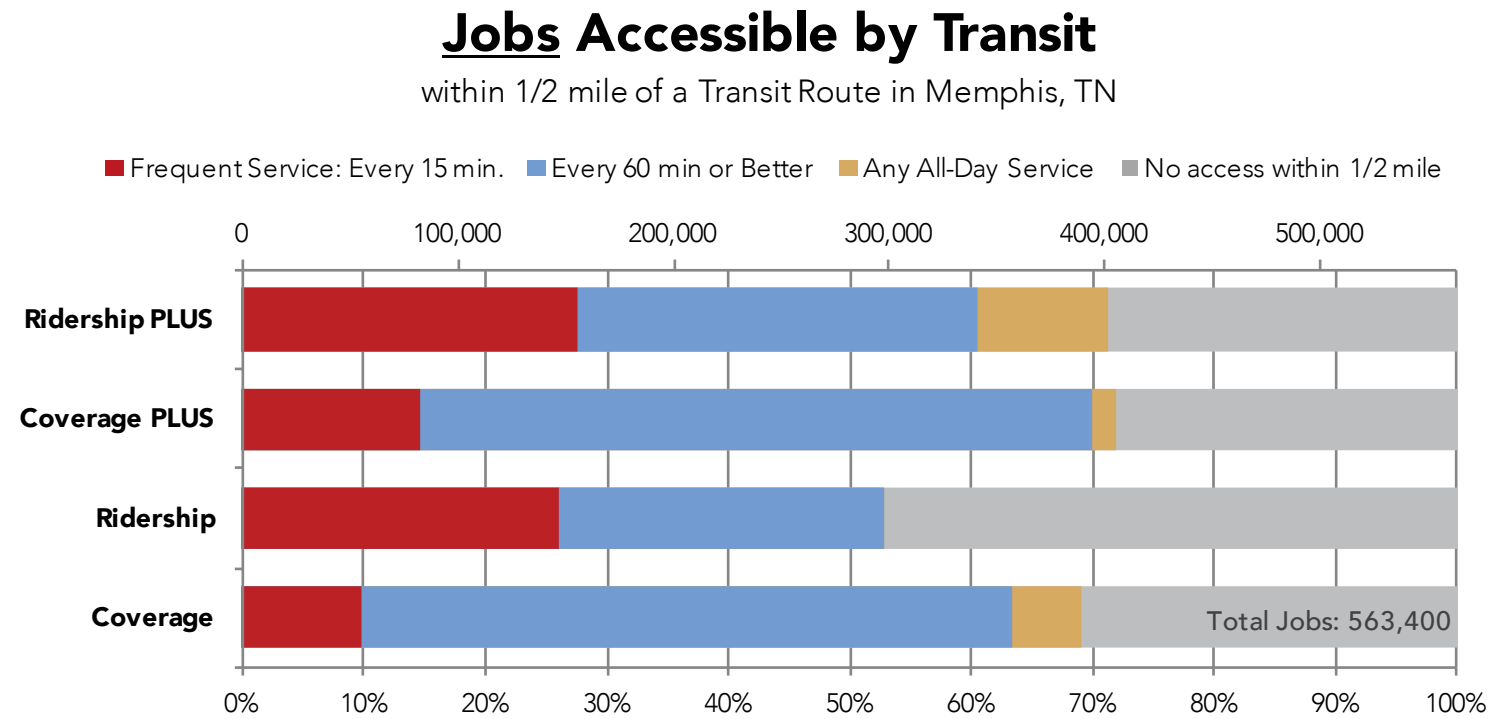


Figure 18: Chart of Jobs with Access to Transit by Concept





# Liberty and Opportunity

To understand why the high frequency networks- the Ridership and Ridership PLUS Concepts, have such high ridership potential, it is helpful to consider what they do in geometric terms.

Quite simply, high frequency services, especially in a grid pattern where many connections are possible, maximize the range of useful destinations that can be reached quickly, for the maximum possible number of people.

While this point can be proven with data, it also becomes obvious if we think about how travel decisions are made. For a person to choose transit over other modes, transit must provide a reasonable travel time to reach their destination. It stands to reason that when transit offers access to more destinations within a shorter travel time, to more people, it will attract higher ridership.

We can visualize this change in travel times and access, and compare concepts to one another using this measure. We have analyzed, for several locations around Memphis, what places can be reached in a fixed amount of time. Maps of this information are called "isochrones."

In all of the following isochrones in this section (and in the example in Figure 19), you will see a figure (we call her Jane) placed at a key location in Memphis, and a series of maps. Those maps will show where you could travel, in a fixed amount of time, by walking and riding transit.

We sometimes refer to these as maps of liberty and opportunity because that's what they are. If someone chooses to rely on transit, they will be constrained by where transit can readily take them, and will experience the blobs in these images as walls around where they can go and what they can do. For someone to choose to rely on transit, and especially for them to decide to not own a car or to share a car among others, these blobs have to contain enough of the places that make people's lives complete: jobs, education, shopping, services, social opportunities, and so on.

You use this tool to think about access in the reverse, as well. For a work site or store at the selected point, the blobs show who could readily get there, the employees it can attract, and the customers who might visit.

Of course, the real measure of usefulness is not just how much geographic area we can reach, but how many useful destinations we can access within that space. All geographically accurate maps tend to emphasize land area, when what really matters is population and activity. That's why each page in this section shows not just isochrones, but

also reports the number of jobs and residents within each isochrone, in accompanying tables.

Computer models that predict ridership have always been doing this analysis, behind the scenes. It has long been known that a good indicator of the ridership from a place is how many other useful places can be reached quickly from there, weighted by the number of people likely to be attracted to each of those destinations. More ridership arises from service being useful, for more people, to get to more places.

This helps to explain why the Ridership and Ridership PLUS Concepts have the highest ridership potential, and the Coverage Concept has the lowest. The Ridership PLUS Concept offers the greatest expansion in where people can go in a reasonable trip time. This is in part because it adds resources, but also because it provides the most frequency, especially for those who live in the most dense and walkable places.

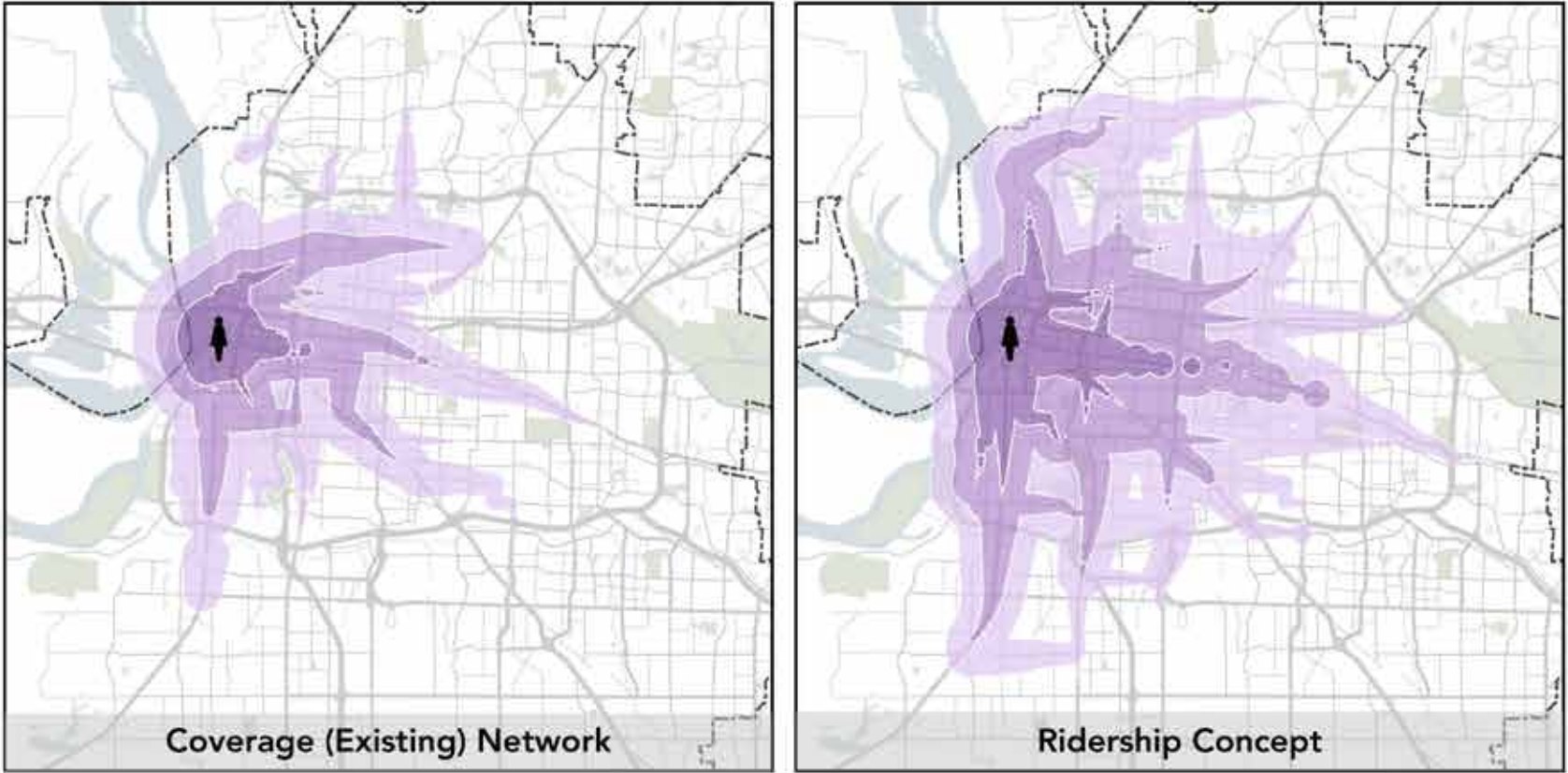
Of course, the Ridership and Ridership PLUS Concepts do this by not trying to serve places where transit is less cost-effective. Thus these concepts require people who live in those places to find other options for transportation.

Ridership is not the only payoff of large isochrones. Liberty and opportunity have their own value to Memphians, aside from how they affect transit ridership. For lower income people, transportation is the biggest barrier to employment, and can also limit access to education. When low-income people are able to get to more places in less time, it means they have more choices in their lives, and in that sense, more freedom.

Figure 19: Example of Isochrone Maps and Diagram

## How far can Jane travel by public transit from Downtown?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.



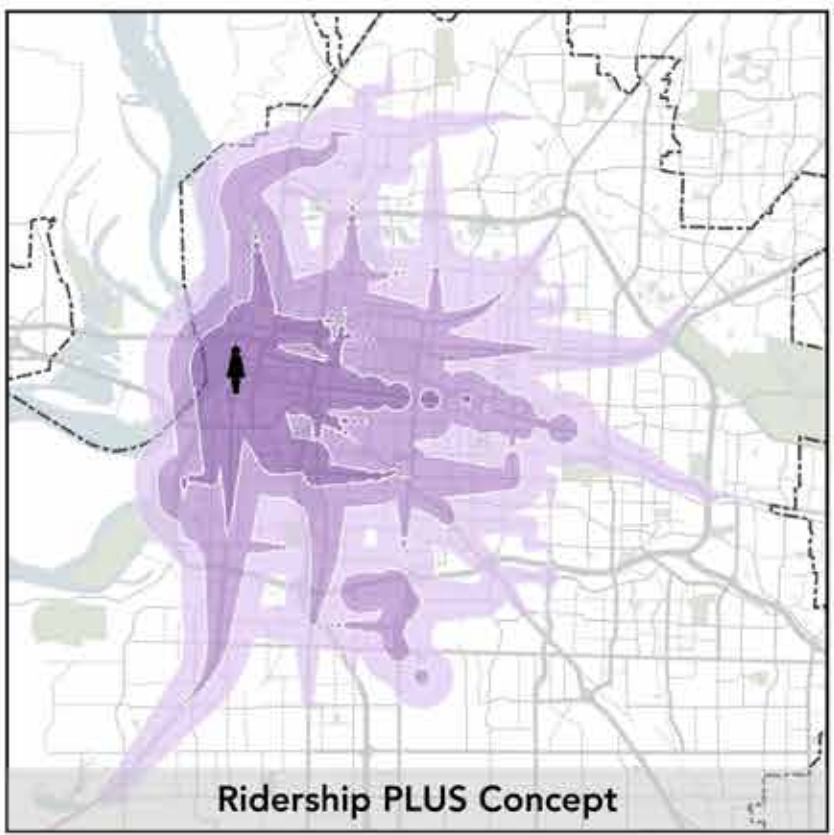
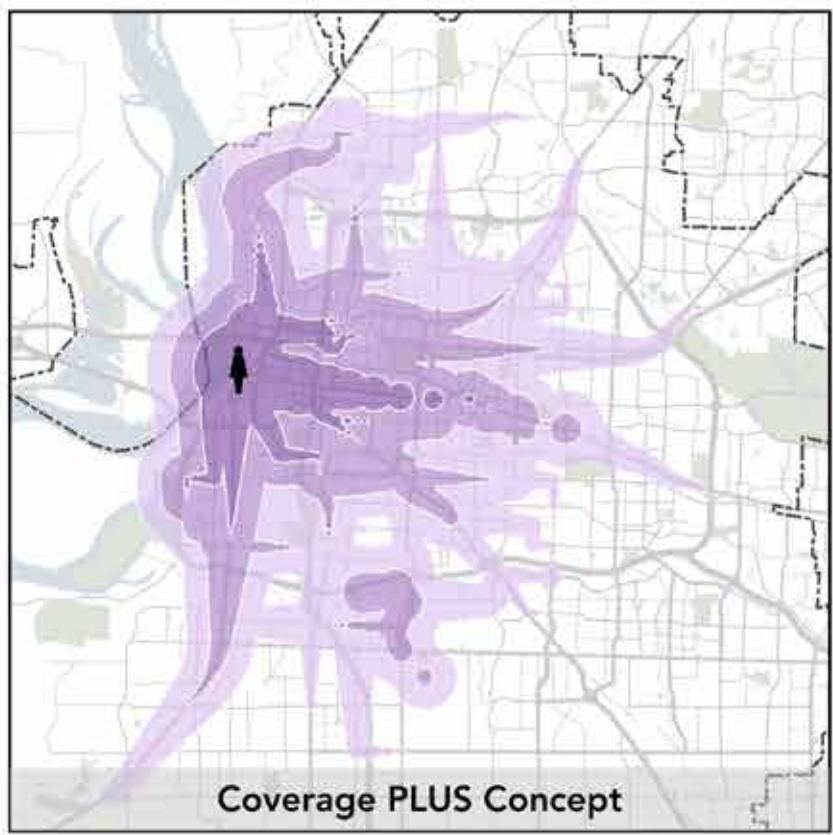
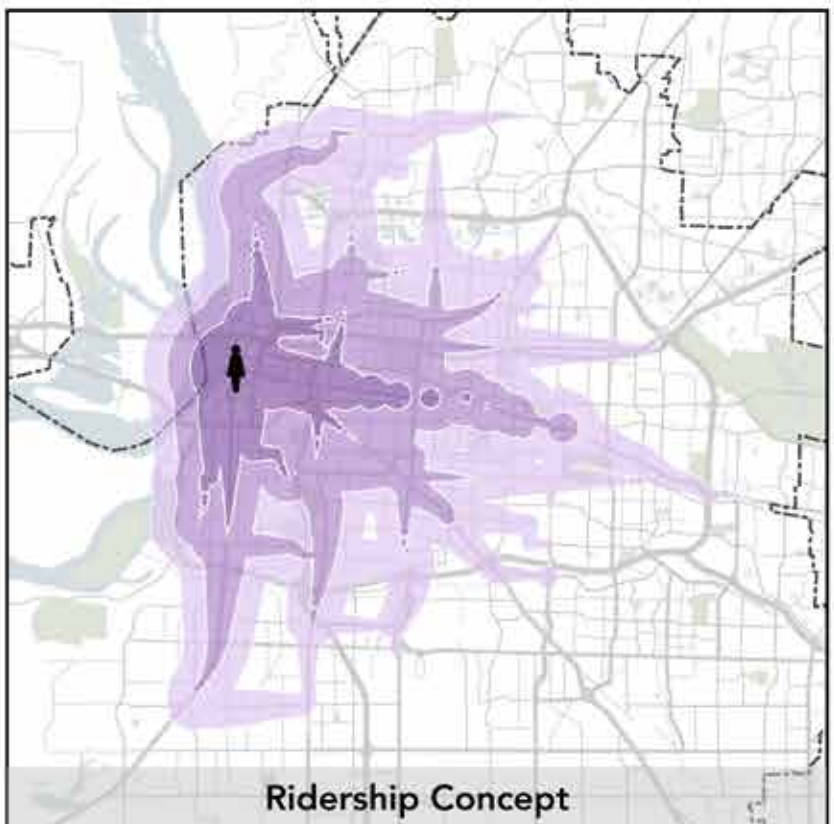
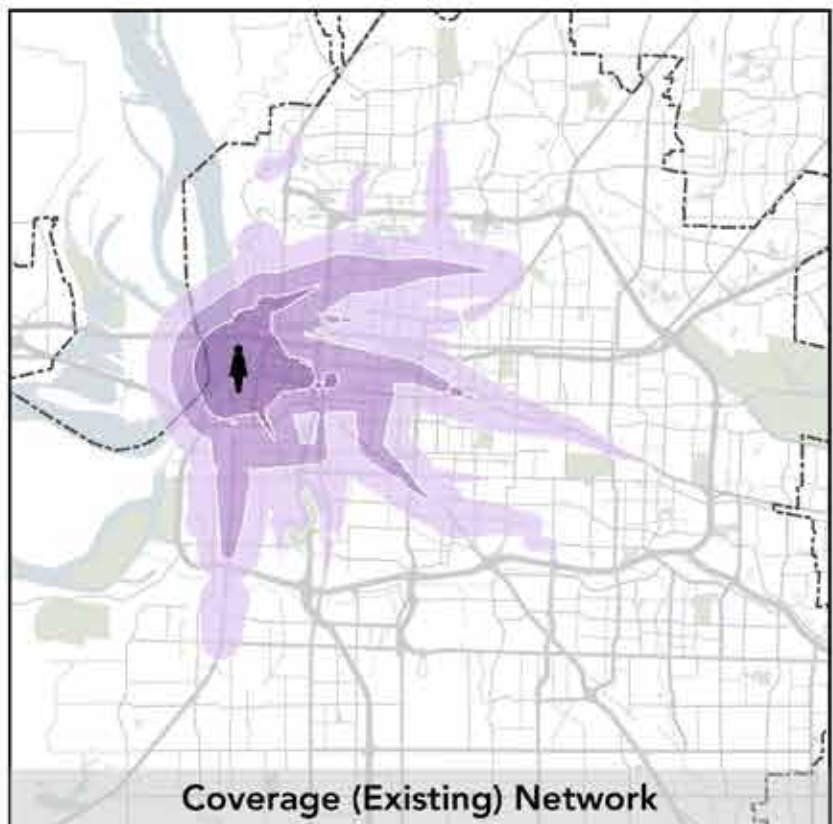


# How far can Jane travel by public transit from Downtown?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	17,000	+138%	+145%	+191%
45 min	68,000	+101%	+97%	+119%
60 min	158,000	+61%	+71%	+69%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	50,000	+49%	+50%	+58%
45 min	85,000	+52%	+61%	+69%
60 min	139,000	+45%	+56%	+60%



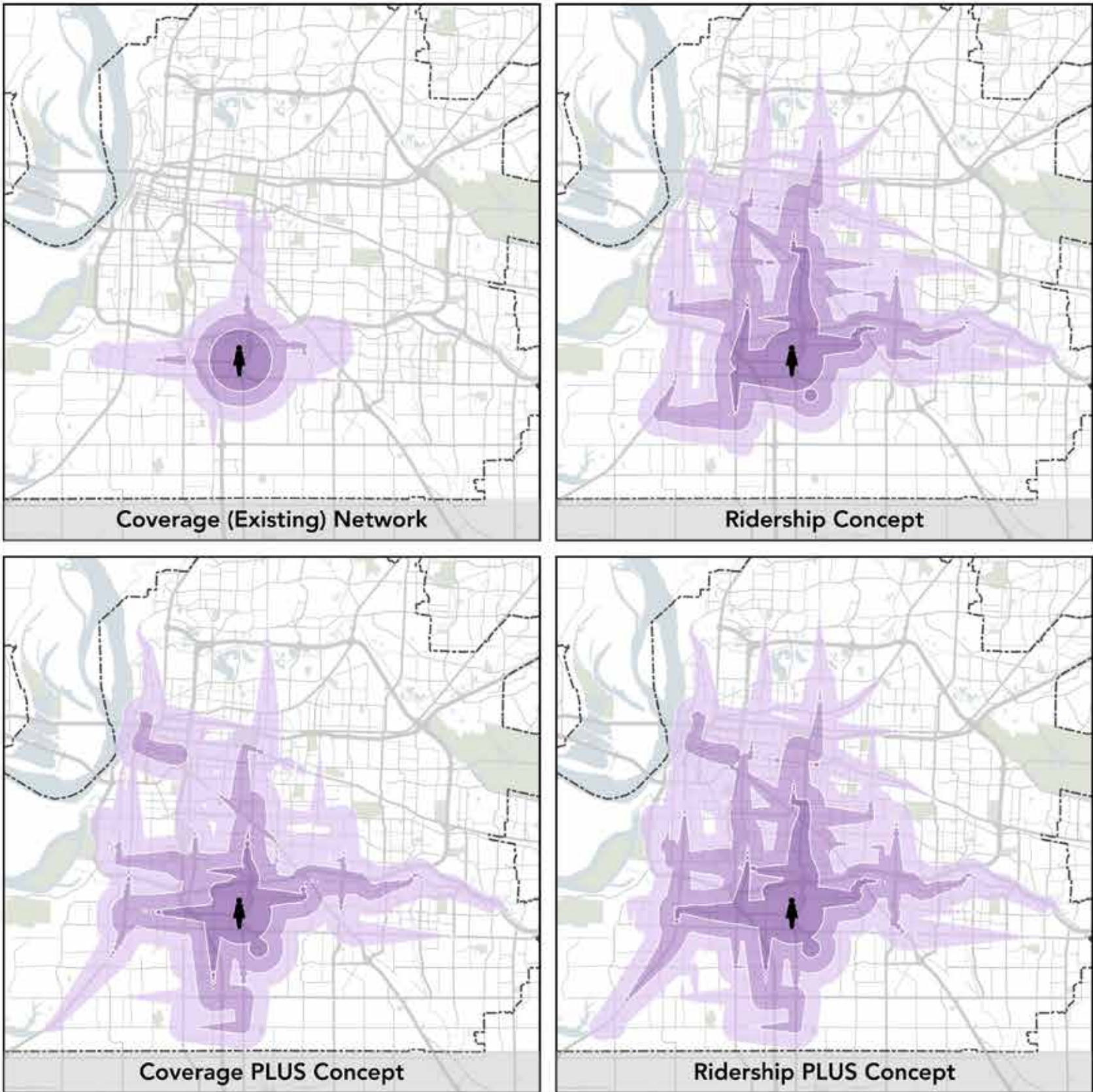


# How far can Jane travel by public transit from Airways Transit Center?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	2,000	+812%	+379%	+871%
45 min	10,000	+800%	+610%	+1028%
60 min	45,000	+459%	+418%	+537%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	14,000	+121%	+70%	+133%
45 min	28,000	+183%	+236%	+319%
60 min	65,000	+214%	+207%	+246%



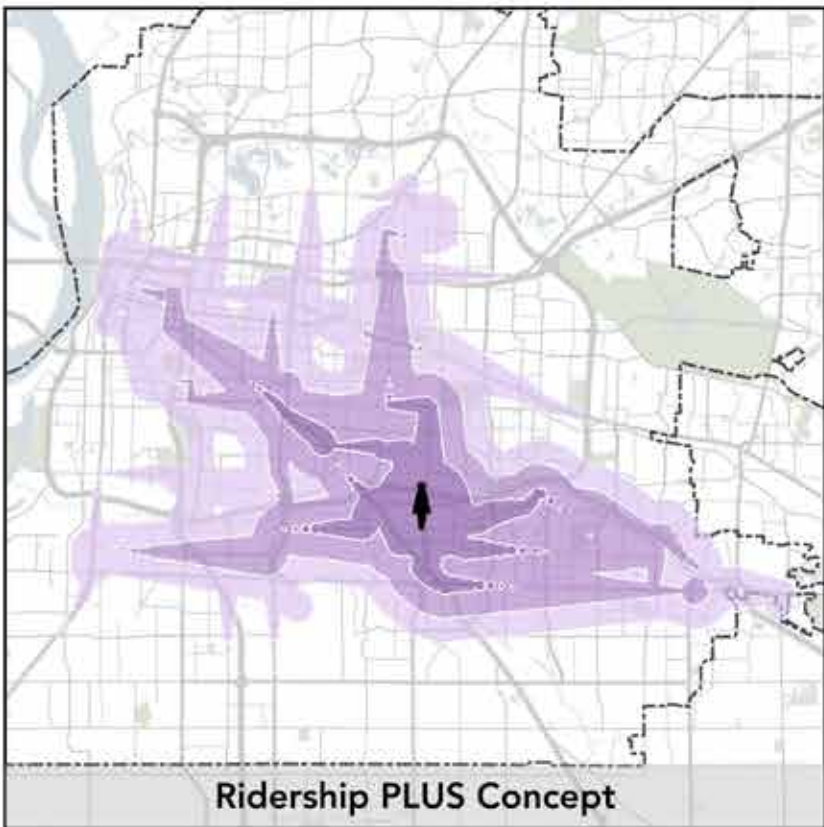
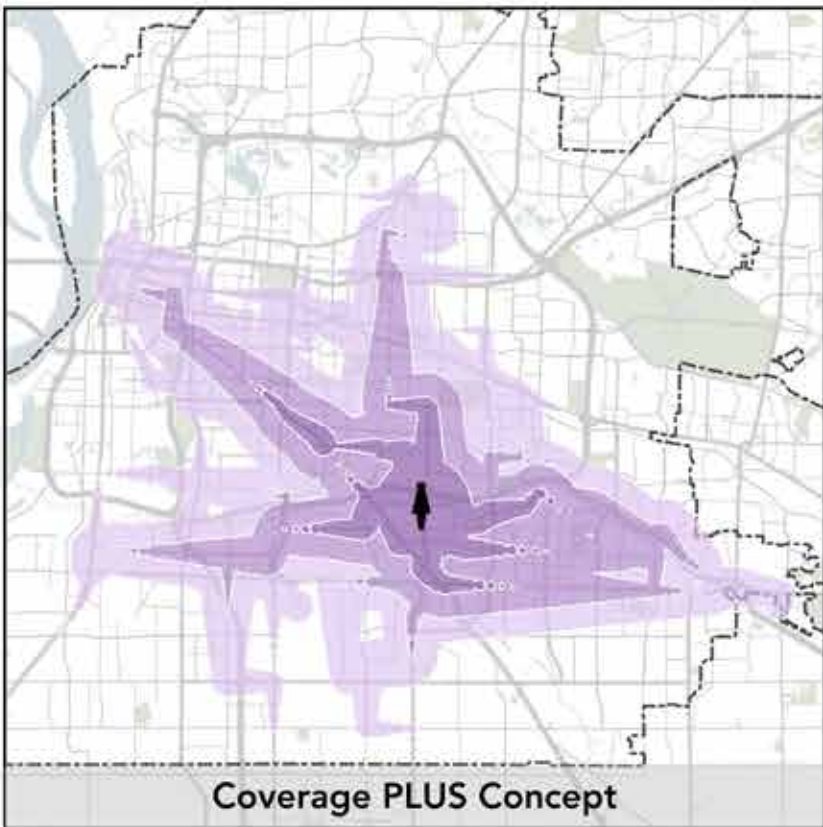
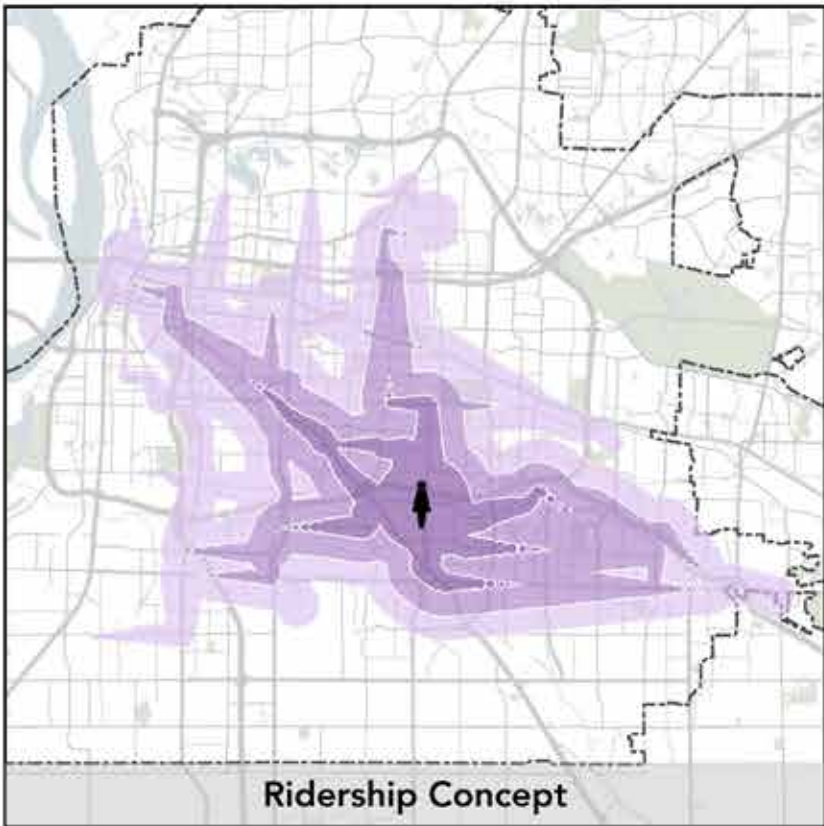
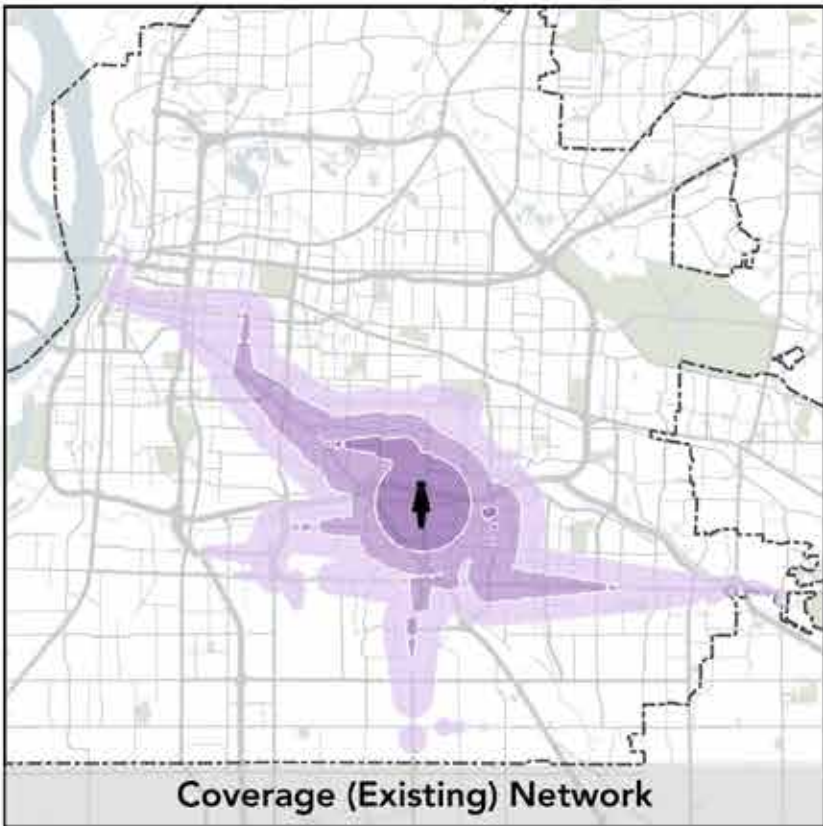


# How far can Jane travel by public transit from American Way Transit Center?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	17,000	+114%	+102%	+102%
45 min	65,000	+110%	+109%	+116%
60 min	139,000	+94%	+99%	+96%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	6,000	+234%	+227%	+227%
45 min	33,000	+189%	+193%	+199%
60 min	130,000	+79%	+76%	+80%



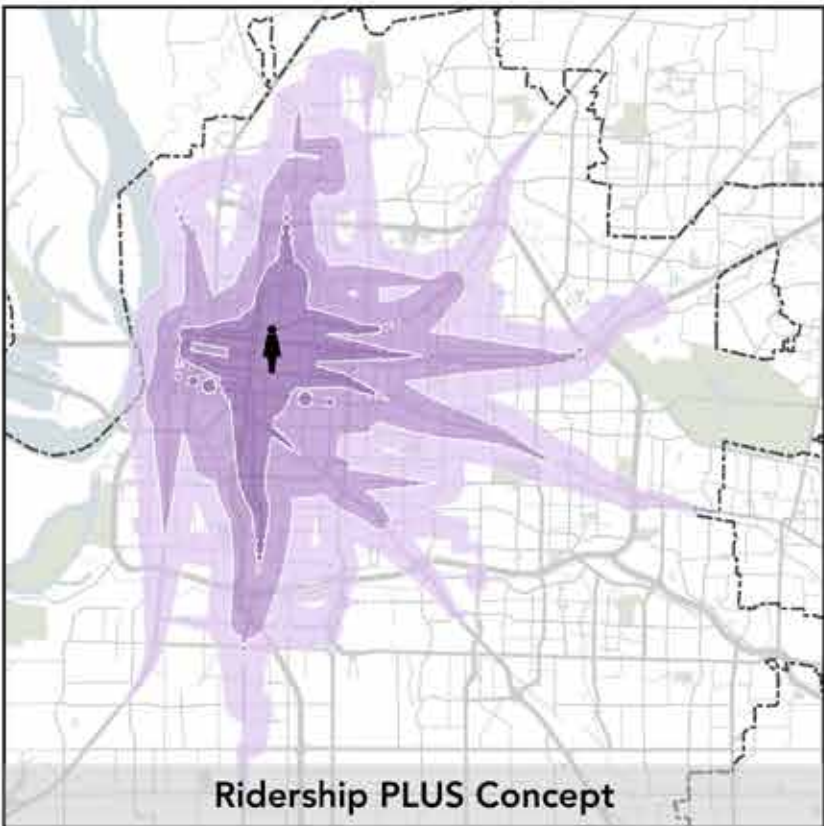
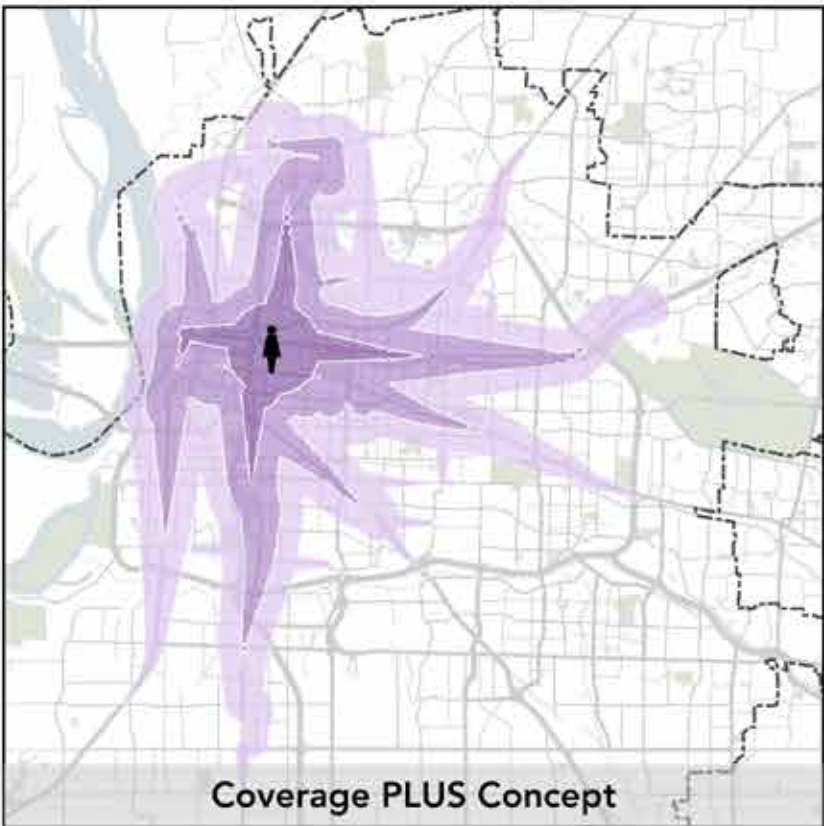
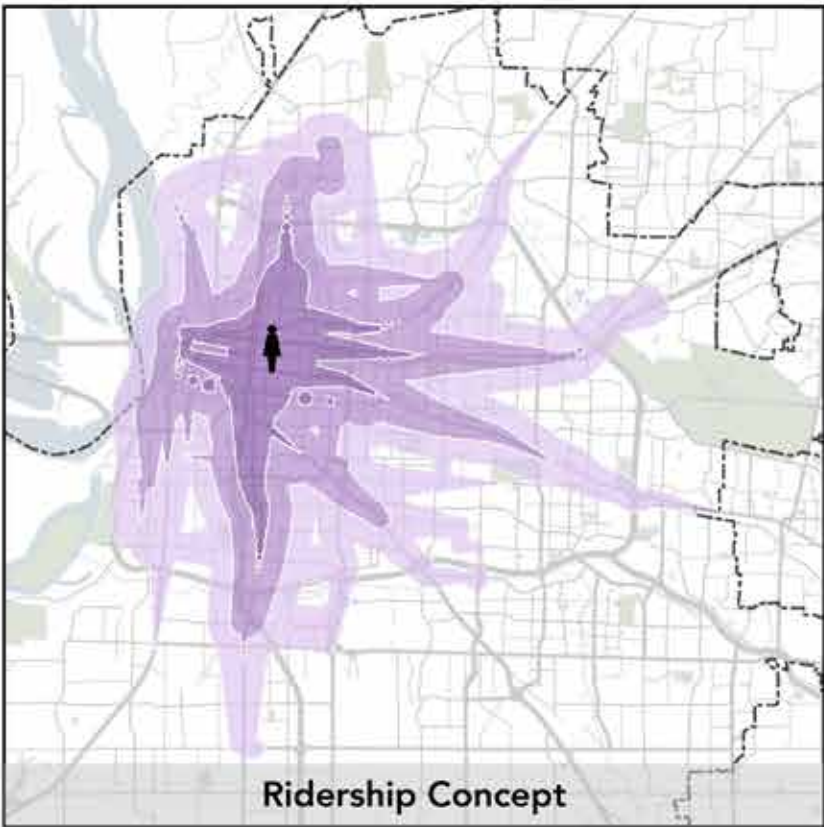
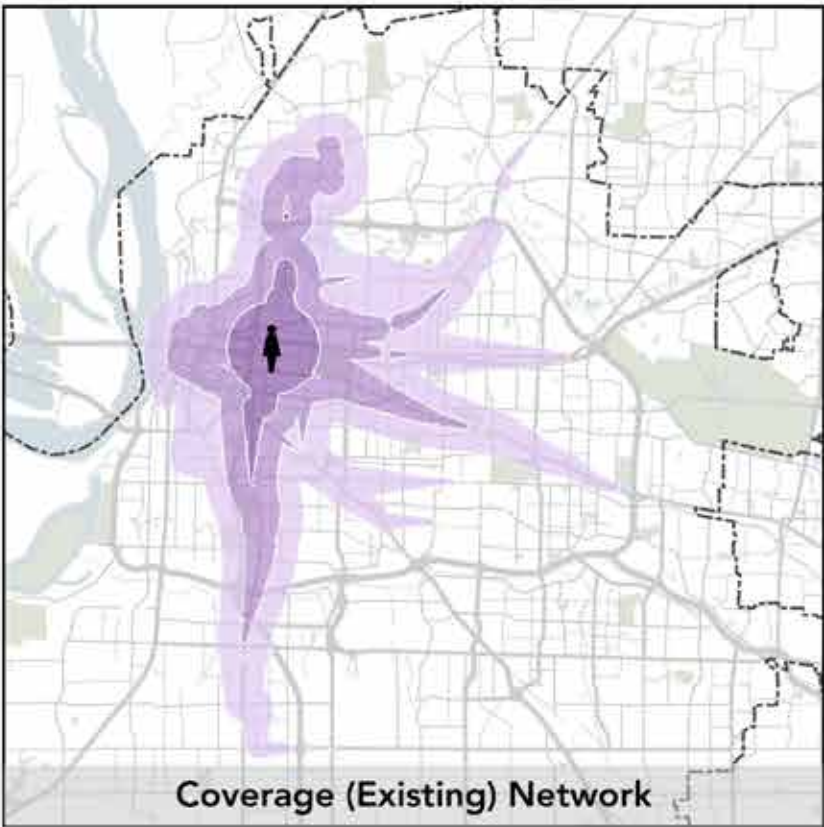


# How far can Jane travel by public transit from Crosstown Concourse?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	22,000	+96%	+17%	+96%
45 min	80,000	+76%	+35%	+84%
60 min	188,000	+41%	+26%	+47%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	17,000	+165%	+48%	+164%
45 min	79,000	+65%	+37%	+66%
60 min	154,000	+41%	+18%	+44%



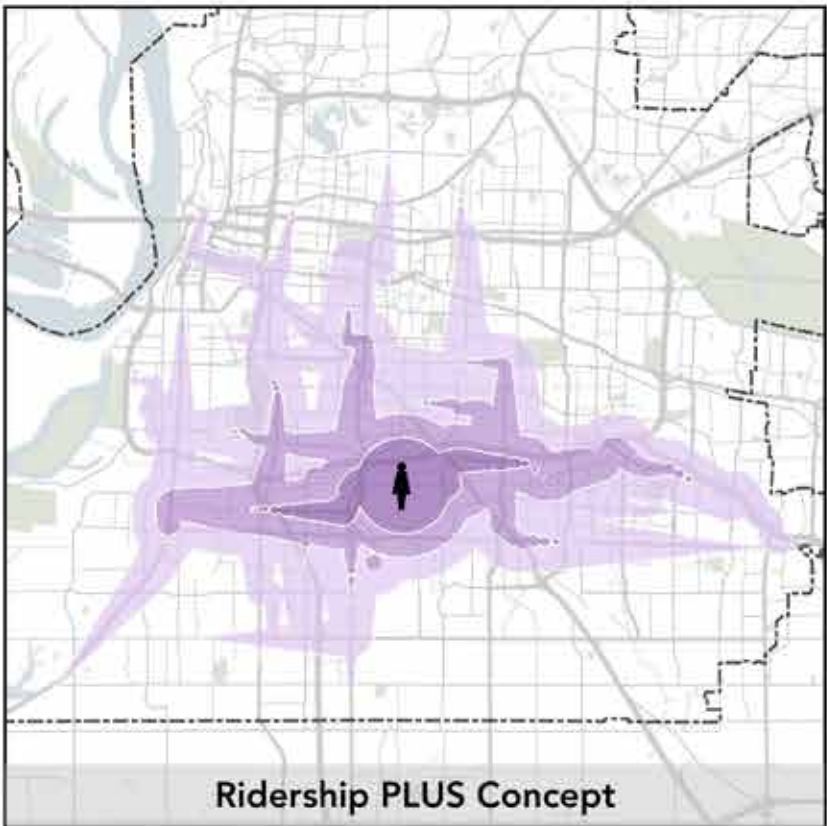
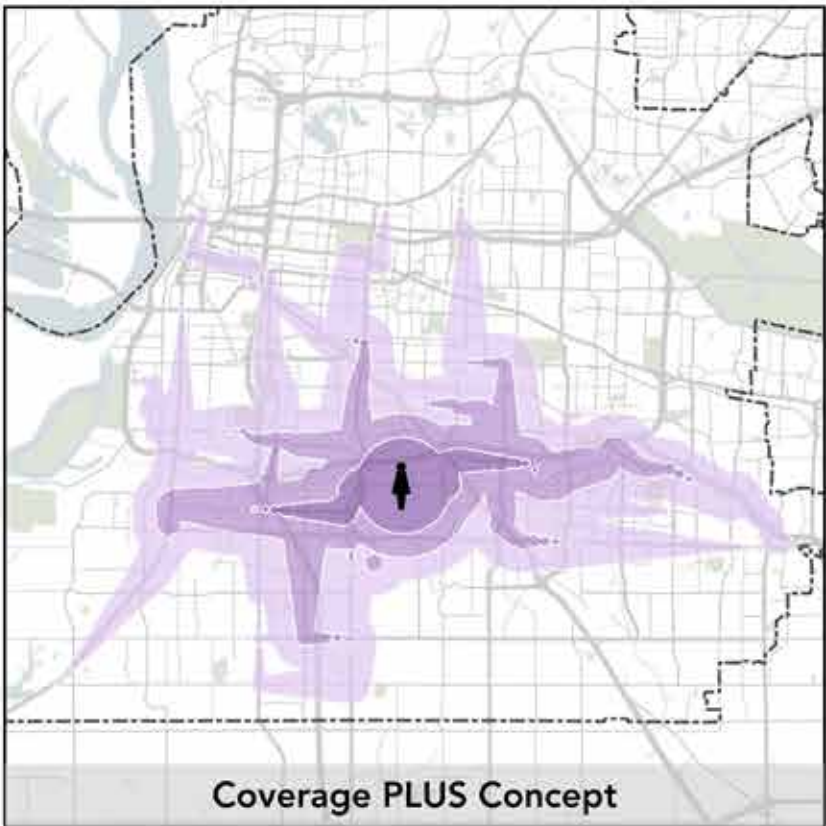
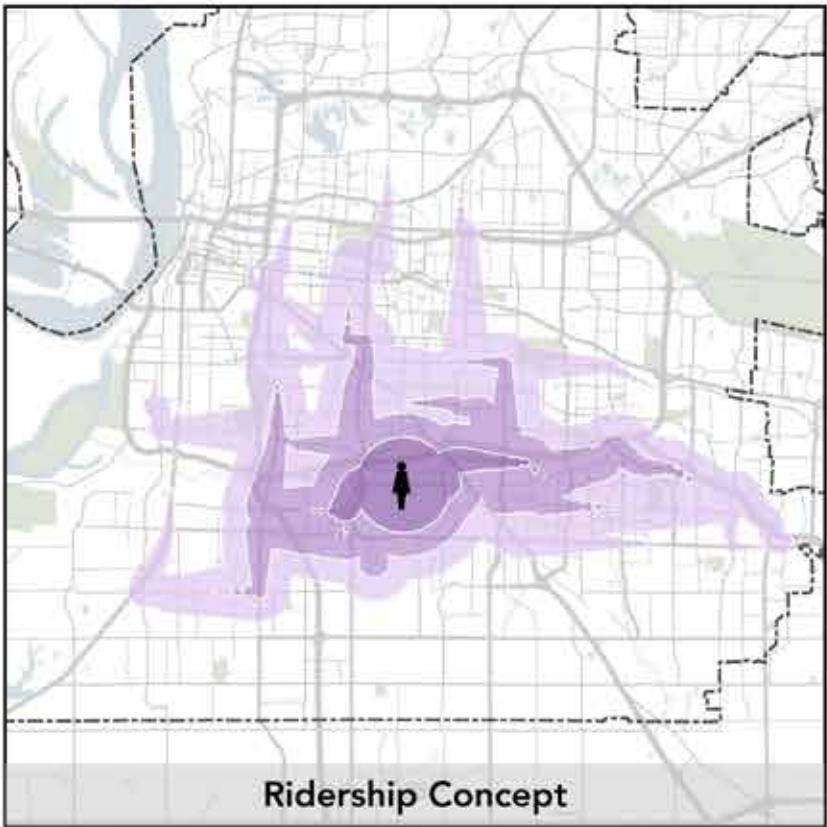


# How far can Jane travel by public transit from FedEx Hub?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	2,000	+53%	+78%	+78%
45 min	10,000	+418%	+424%	+403%
60 min	36,000	+425%	+467%	+486%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	18,000	+26%	+40%	+40%
45 min	33,000	+77%	+86%	+90%
60 min	55,000	+132%	+171%	+187%



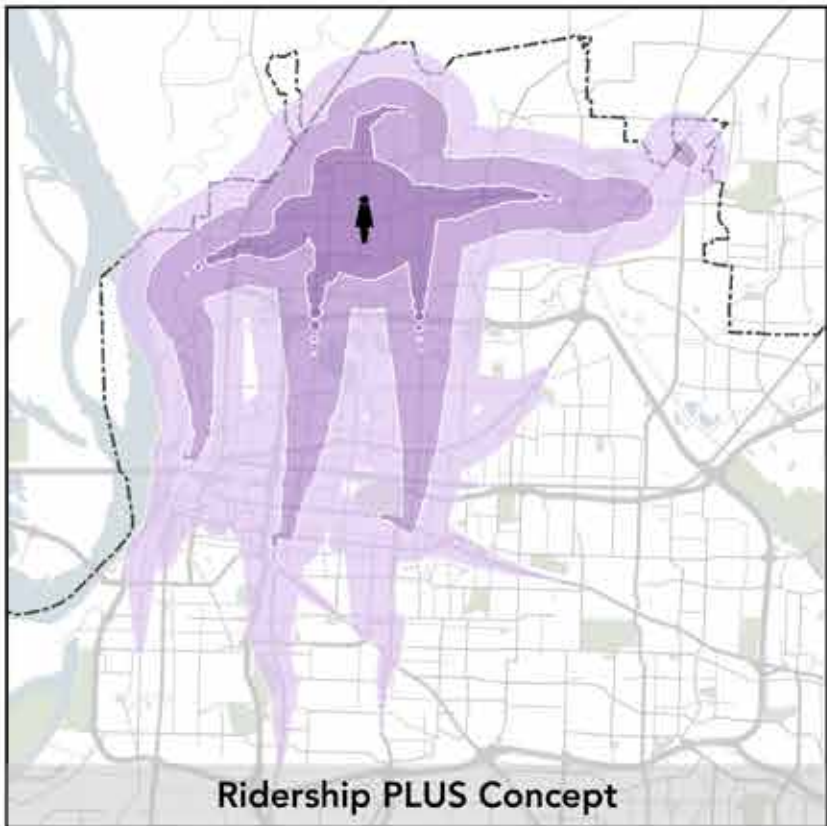
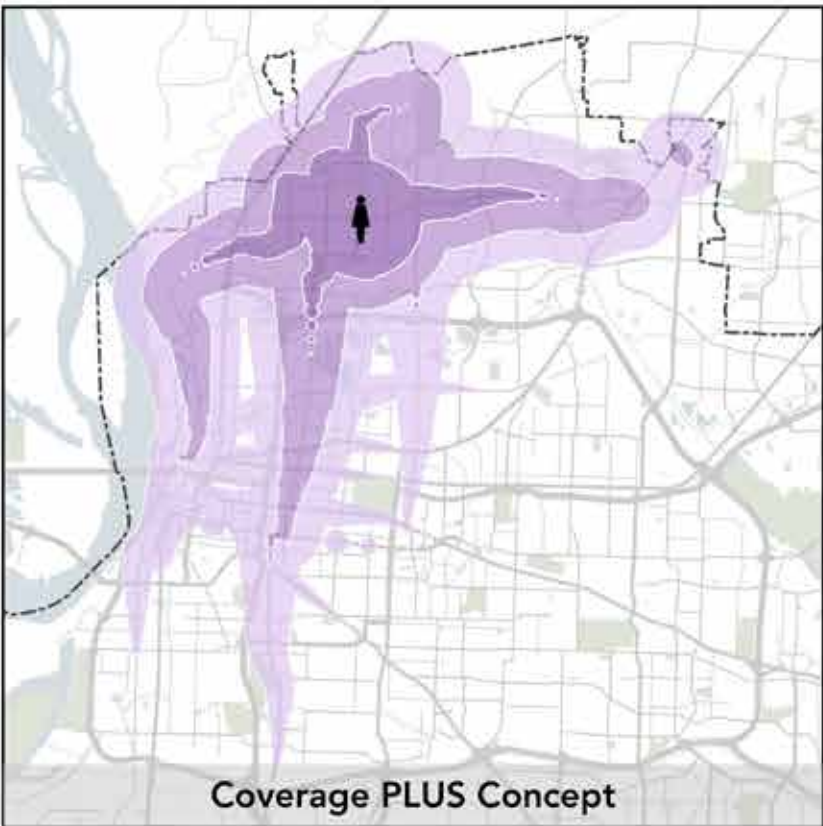
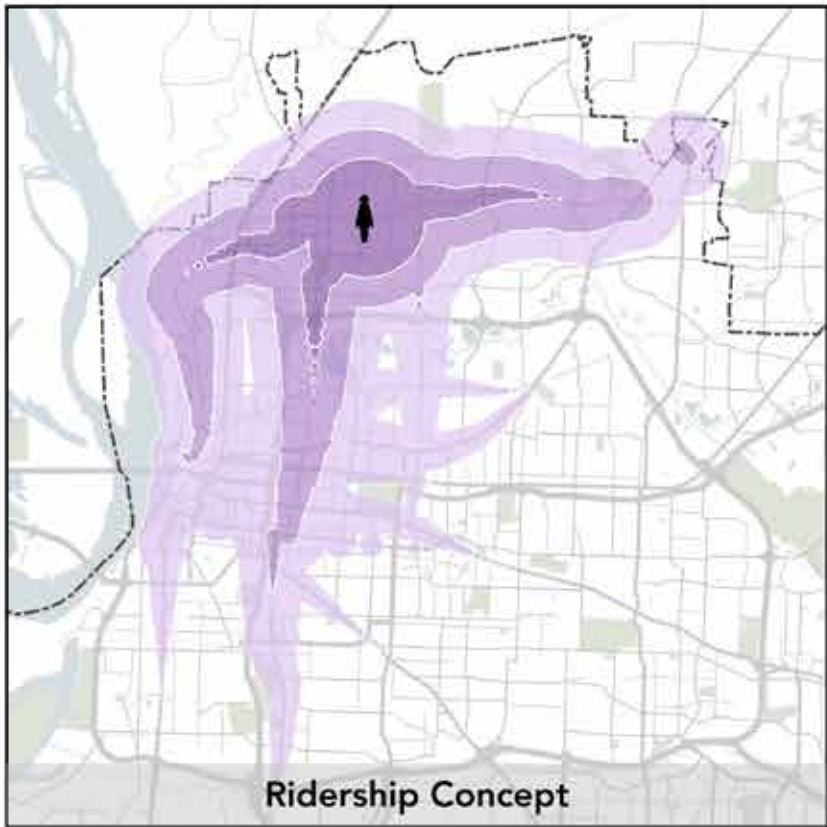


# How far can Jane travel by public transit from Frayser and Overton Crossing?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	14,000	+40%	+57%	+58%
45 min	41,000	+39%	+43%	+63%
60 min	106,000	+39%	+27%	+53%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	2,000	+51%	+54%	+55%
45 min	12,000	+51%	+35%	+63%
60 min	56,000	+91%	+73%	+114%



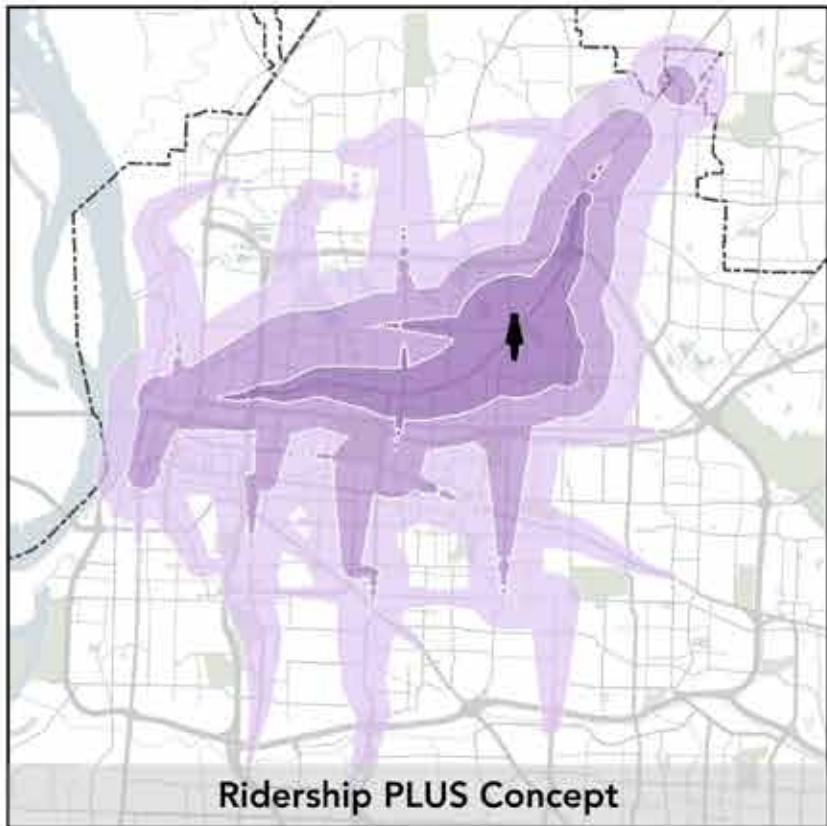
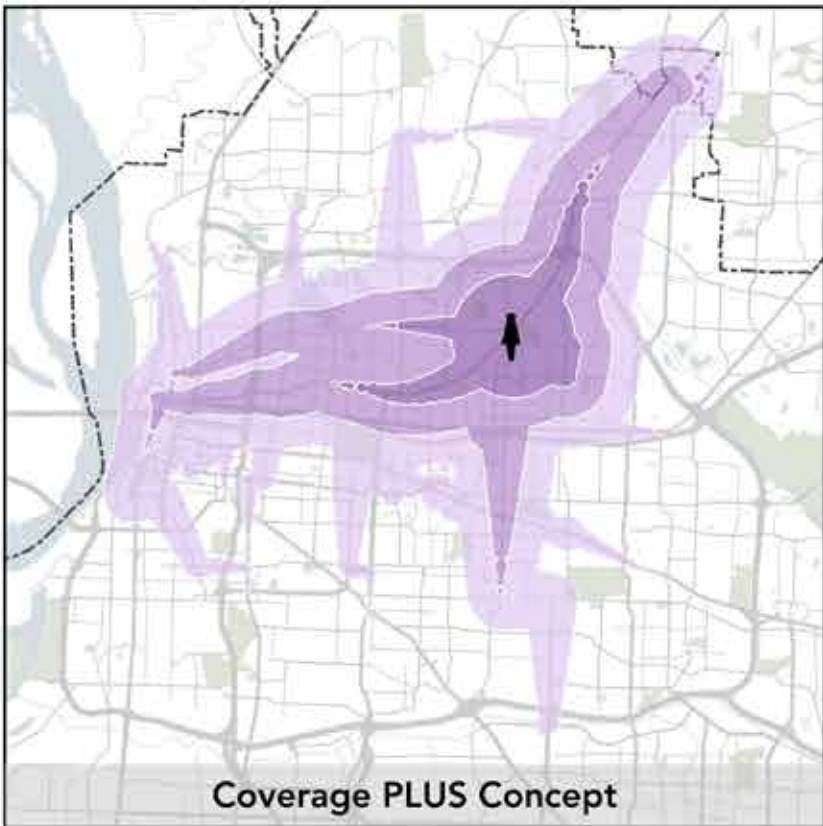
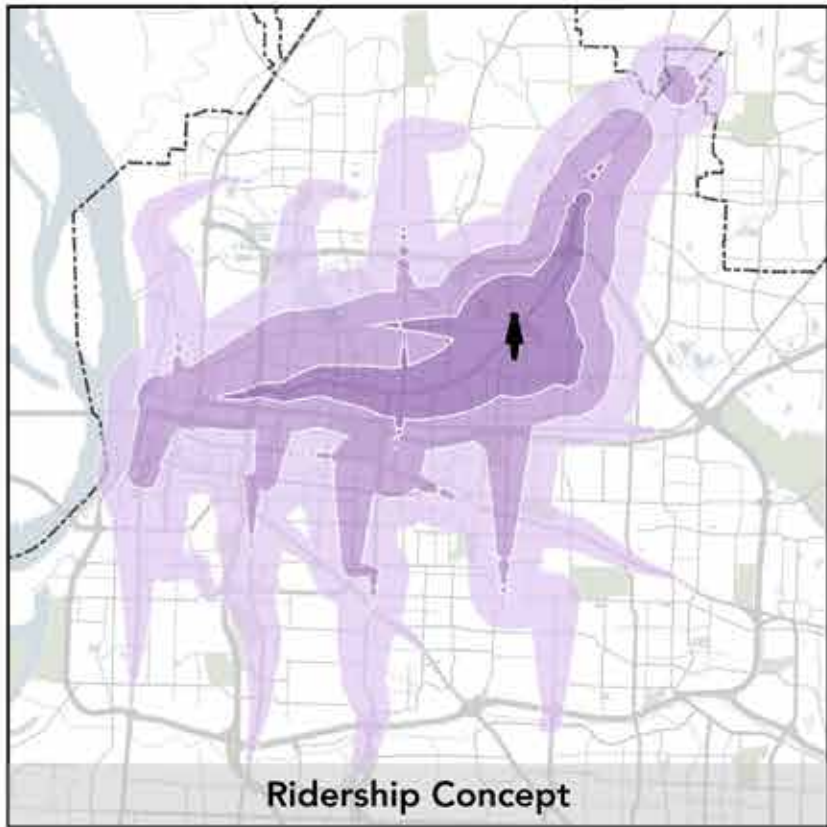
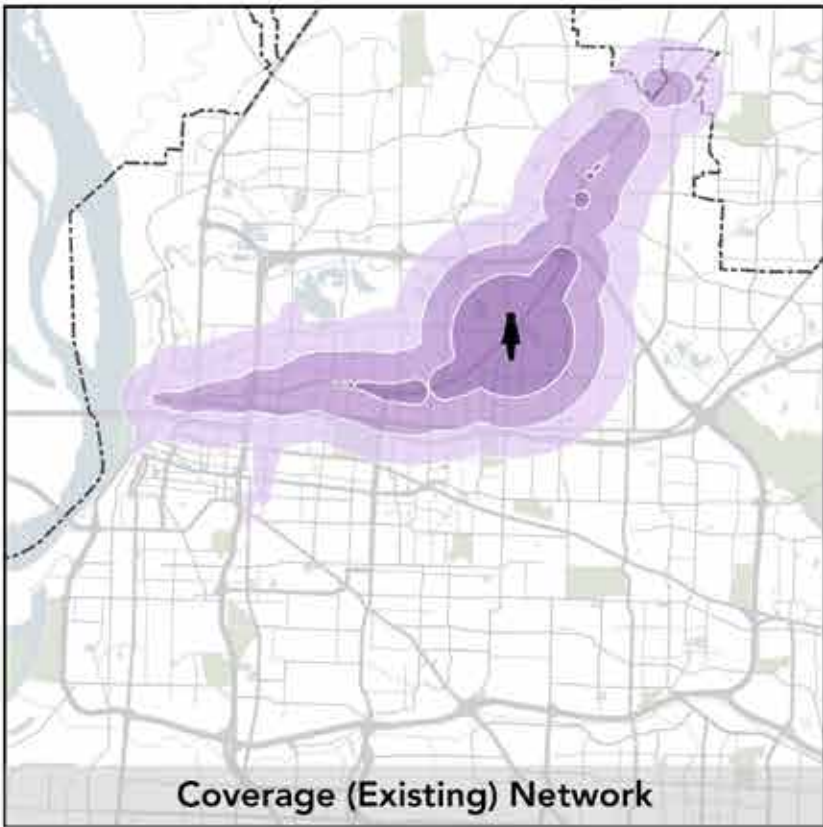


# How far can Jane travel by public transit from Jackson and Bayliss?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	16,000	+74%	+13%	+74%
45 min	56,000	+76%	+34%	+76%
60 min	106,000	+98%	+54%	+98%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	6,000	+65%	+14%	+65%
45 min	22,000	+236%	+60%	+236%
60 min	61,000	+152%	+89%	+148%



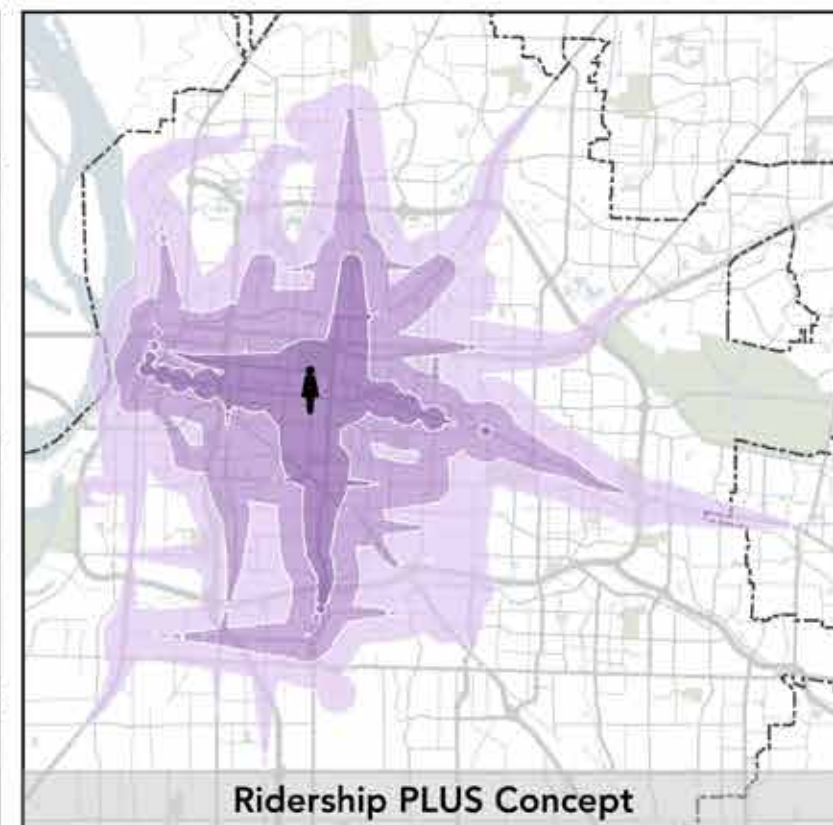
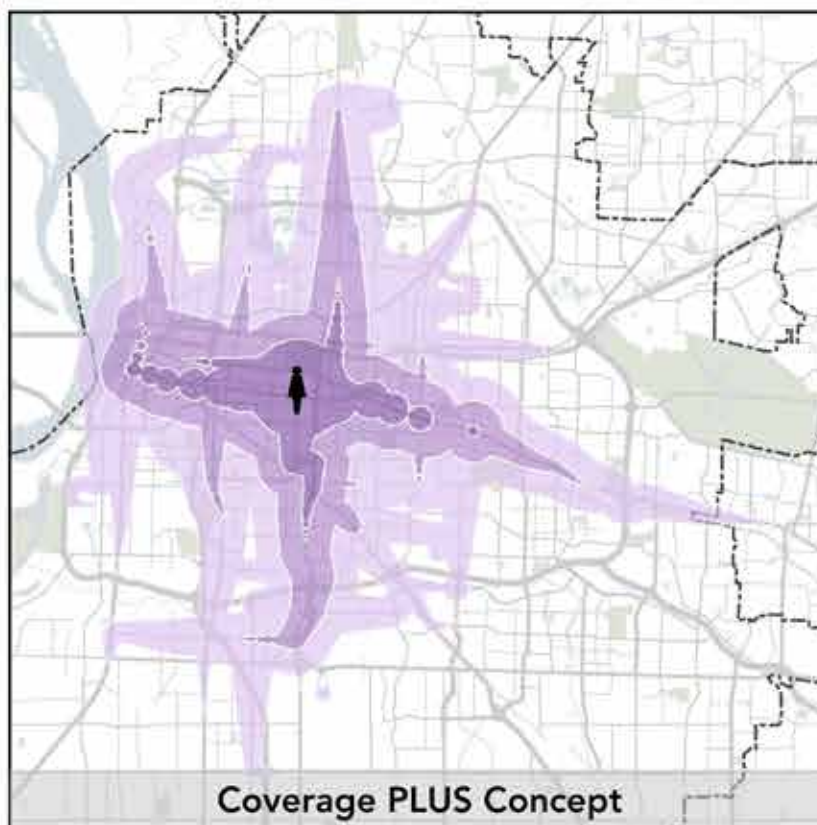
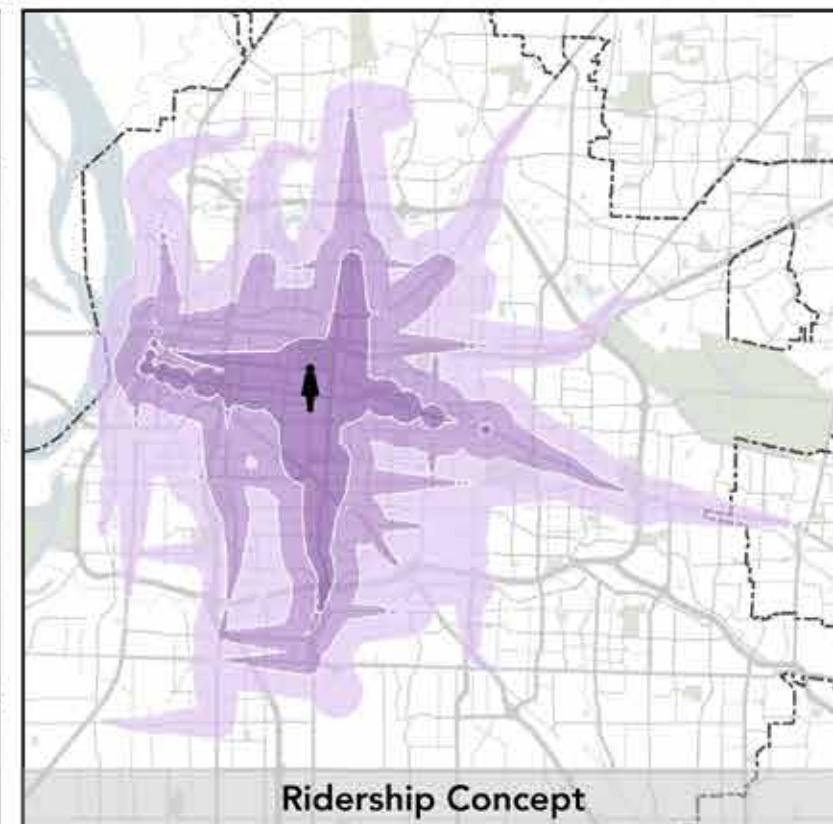
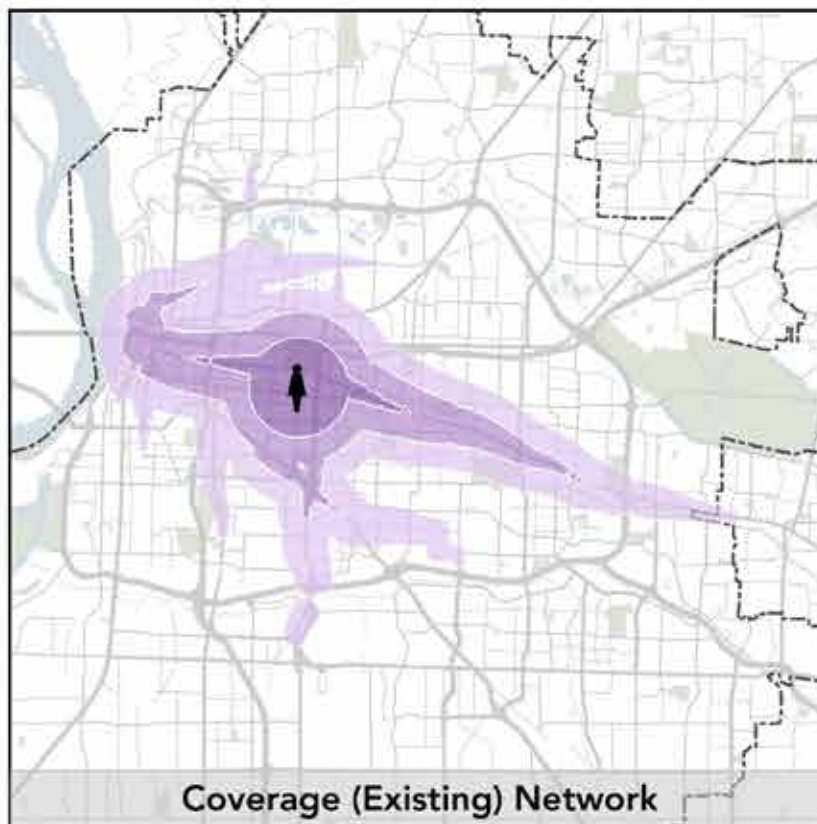


# How far can Jane travel by public transit from Madison and Cooper?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	17,000	+160%	+93%	+163%
45 min	63,000	+124%	+66%	+136%
60 min	146,000	+88%	+65%	+86%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	19,000	+213%	+153%	+214%
45 min	79,000	+84%	+50%	+88%
60 min	156,000	+58%	+43%	+58%



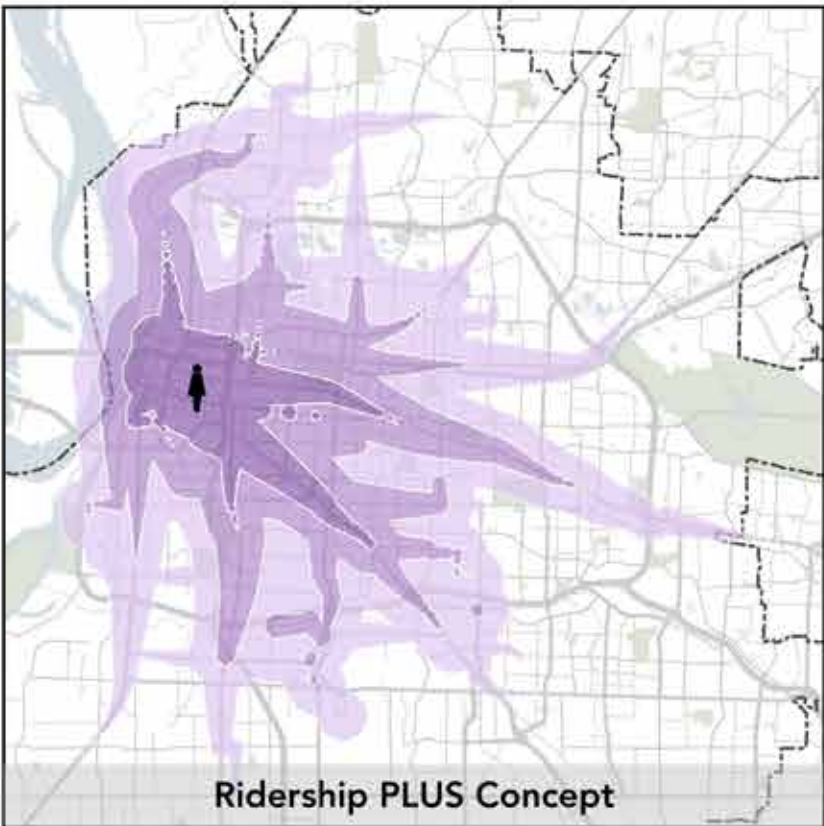
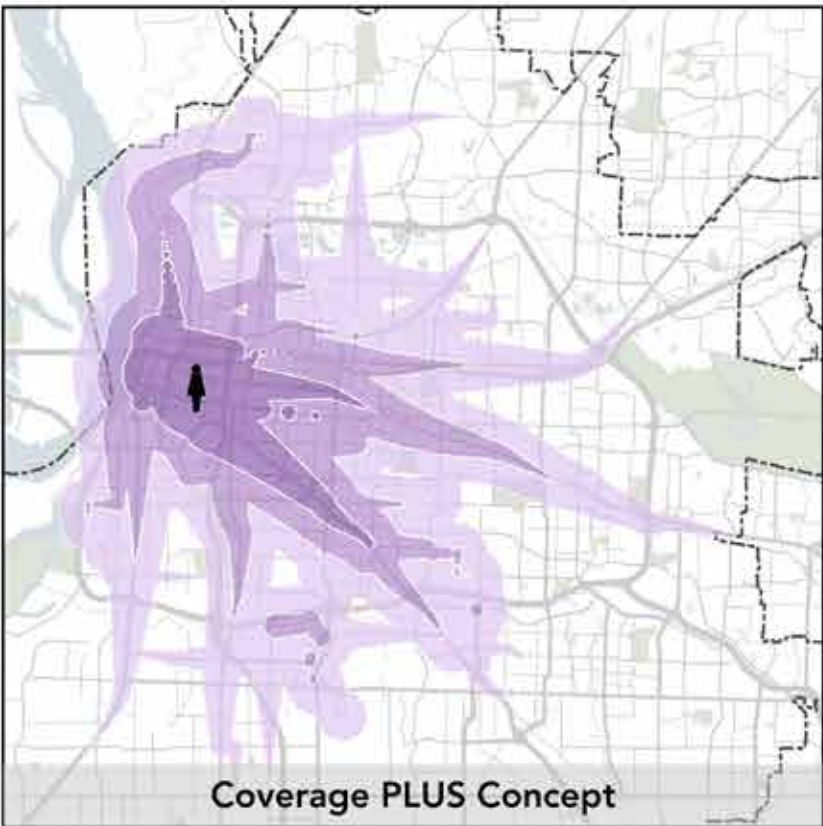
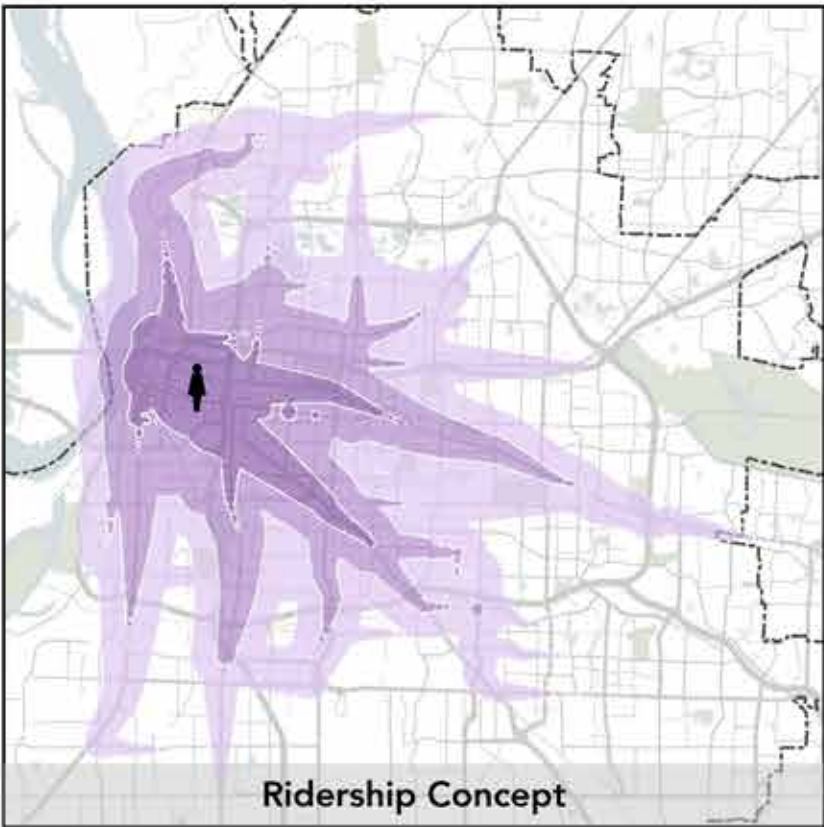
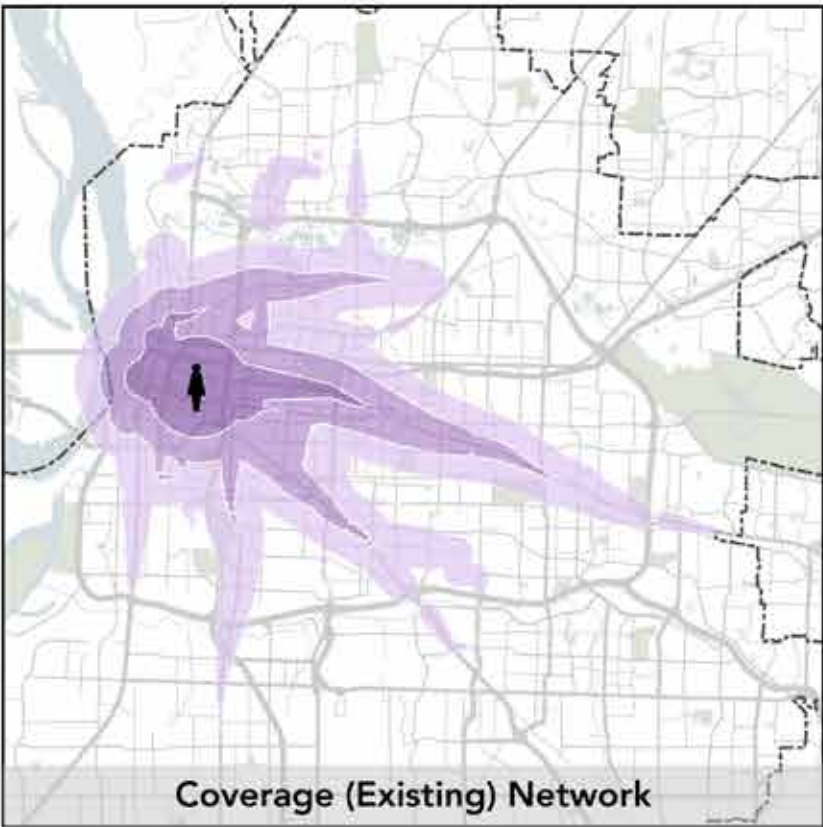


# How far can Jane travel by public transit from Medical District?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	25,000	+77%	+64%	+82%
45 min	77,000	+78%	+54%	+83%
60 min	170,000	+60%	+57%	+60%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	54,000	+29%	+18%	+30%
45 min	95,000	+37%	+31%	+44%
60 min	161,000	+45%	+43%	+48%





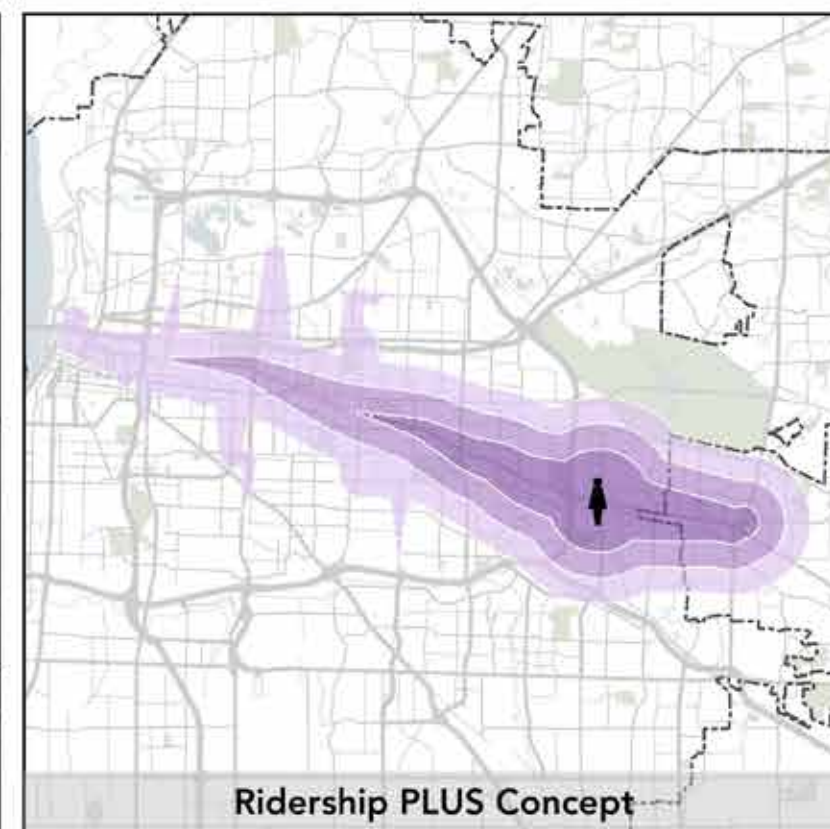
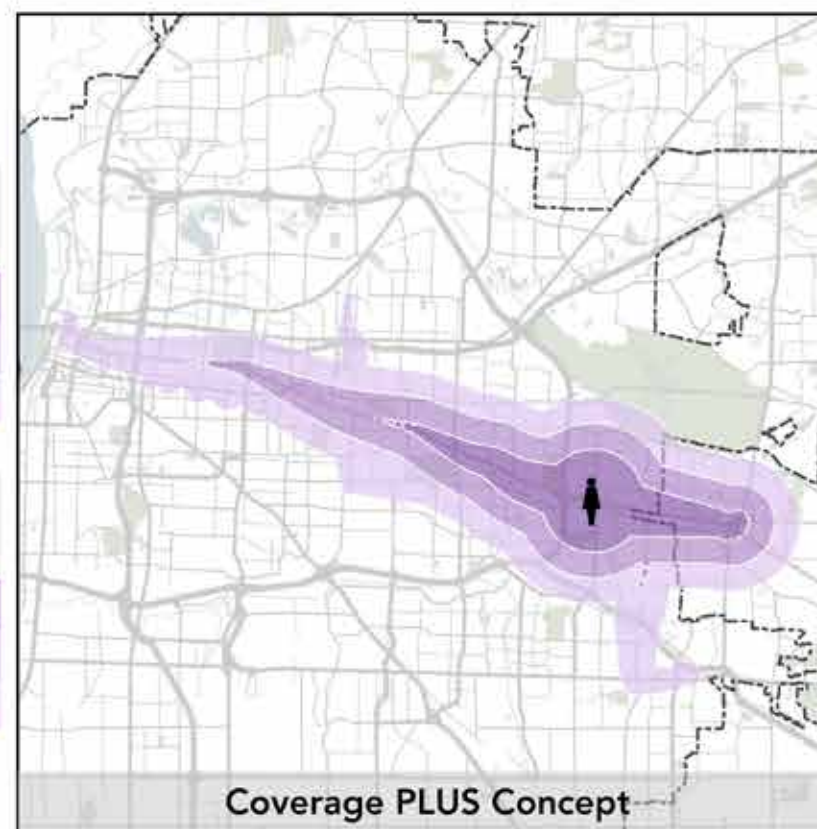
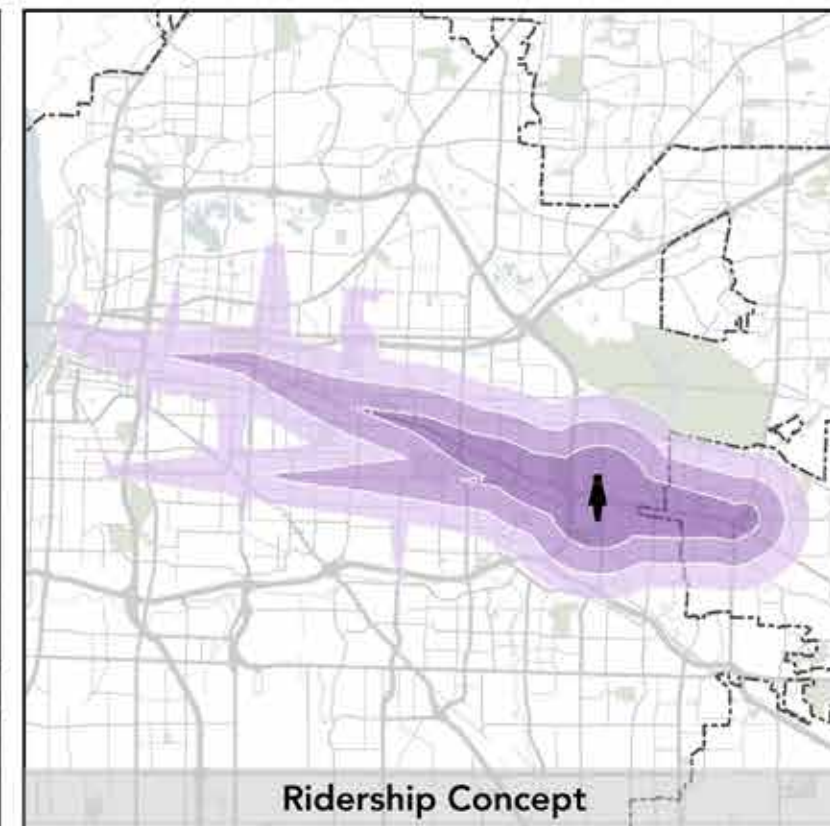
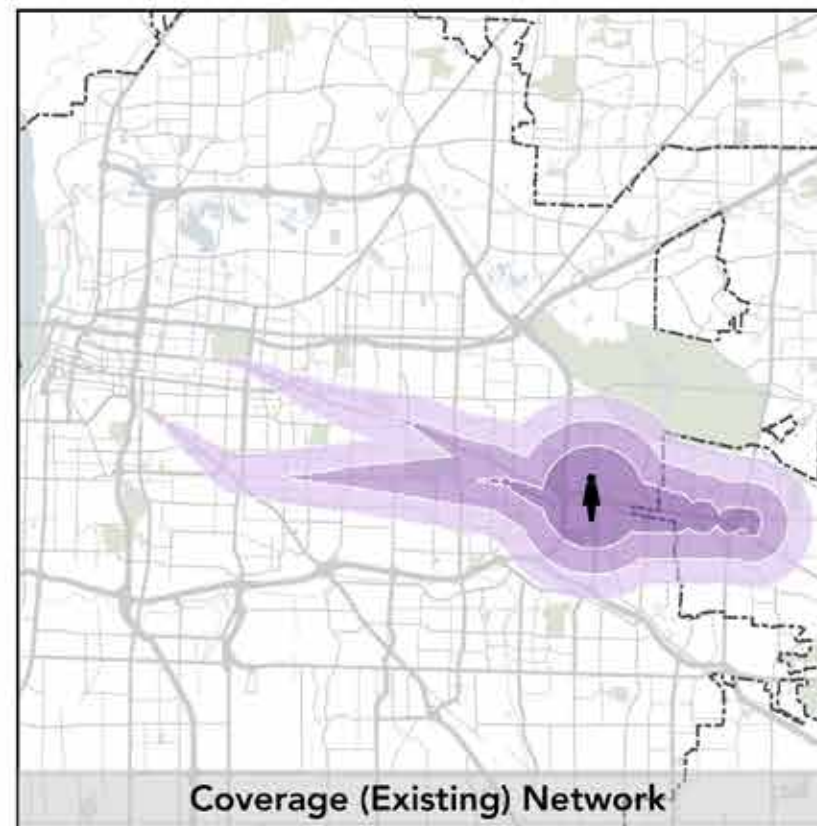
# How far can Jane travel by public transit from Poplar and Ridgeway?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	13,000	+56%	+30%	+55%
45 min	40,000	+53%	+17%	+33%
60 min	94,000	+67%	+27%	+40%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	35,000	+38%	+26%	+38%
45 min	60,000	+37%	+26%	+32%
60 min	95,000	+61%	+42%	+54%

0 2 4 miles



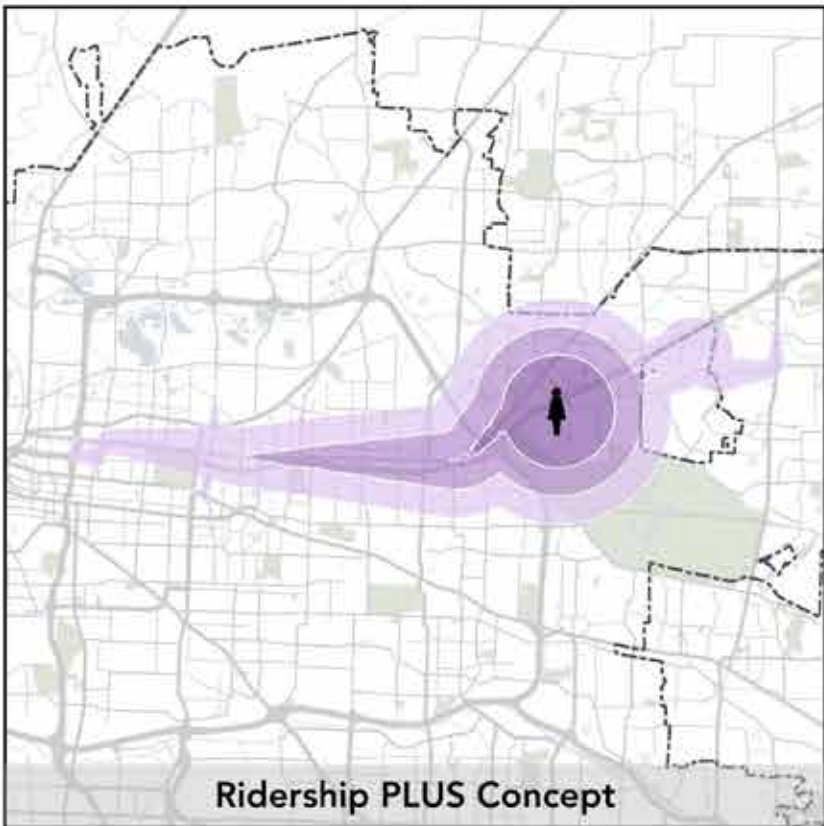
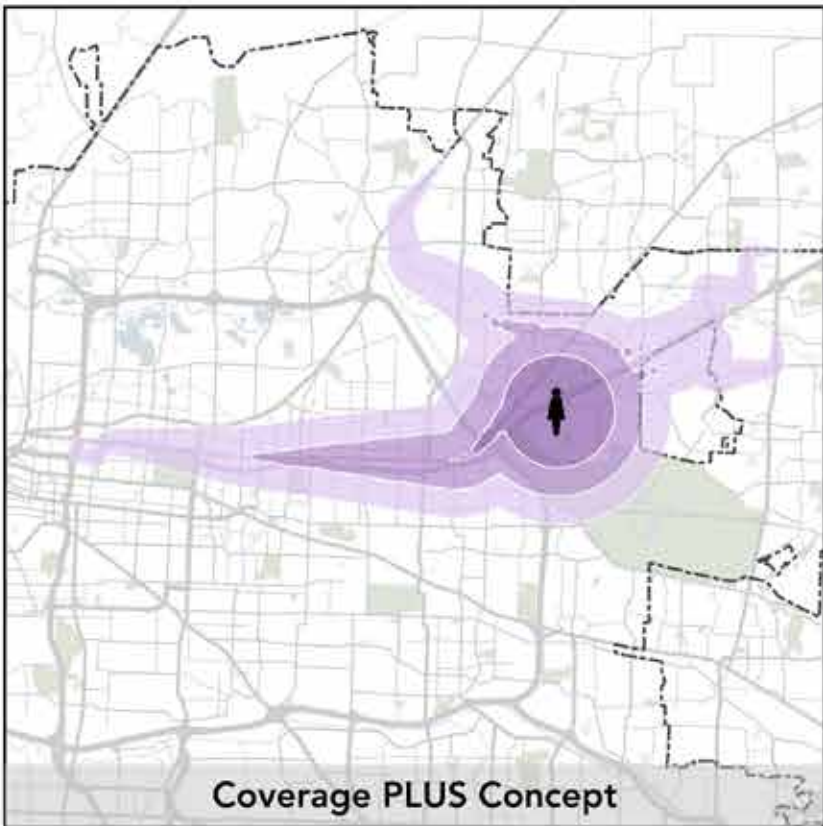
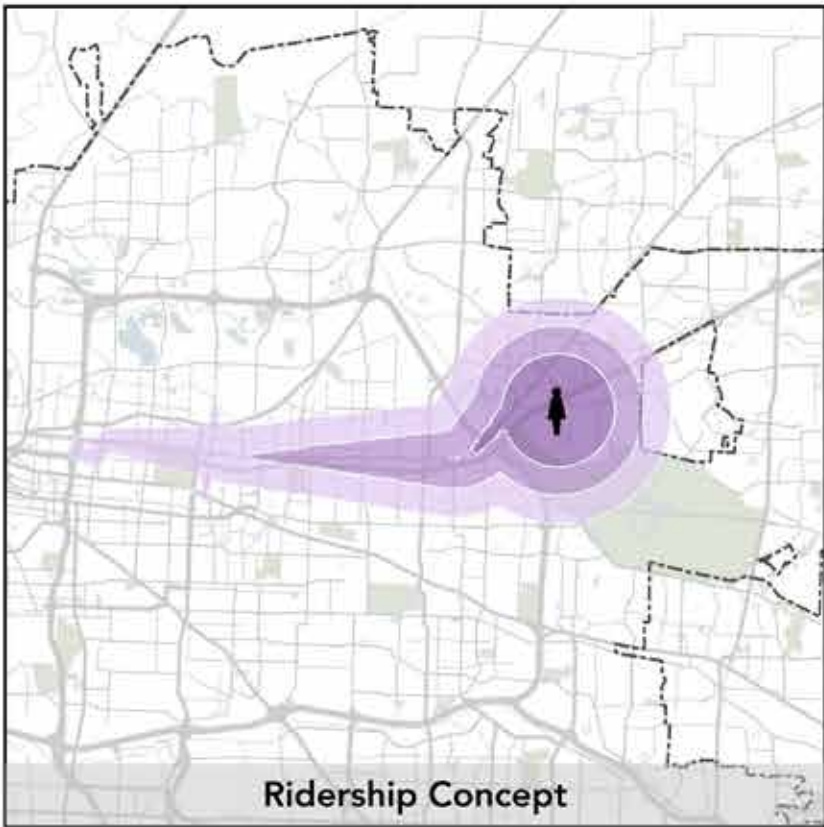


# How far can Jane travel by public transit from Southwest Tennessee Community College?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	9,000	+3%	+3%	+3%
45 min	17,000	+64%	+71%	+66%
60 min	35,000	+94%	+143%	+111%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	9,000	+4%	+4%	+4%
45 min	15,000	+37%	+42%	+39%
60 min	26,000	+43%	+88%	+63%



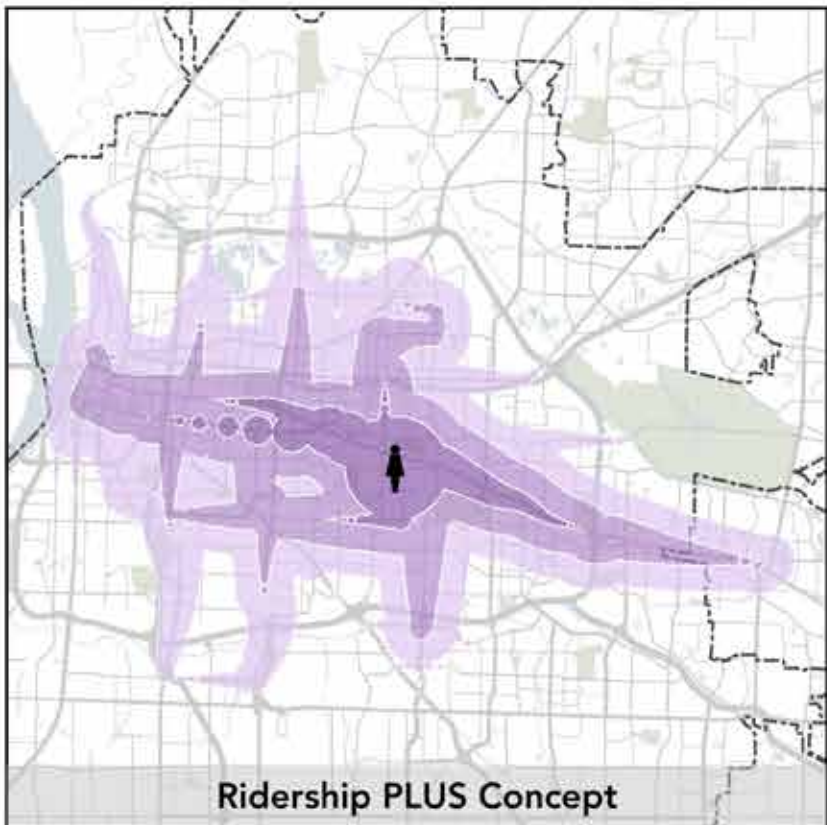
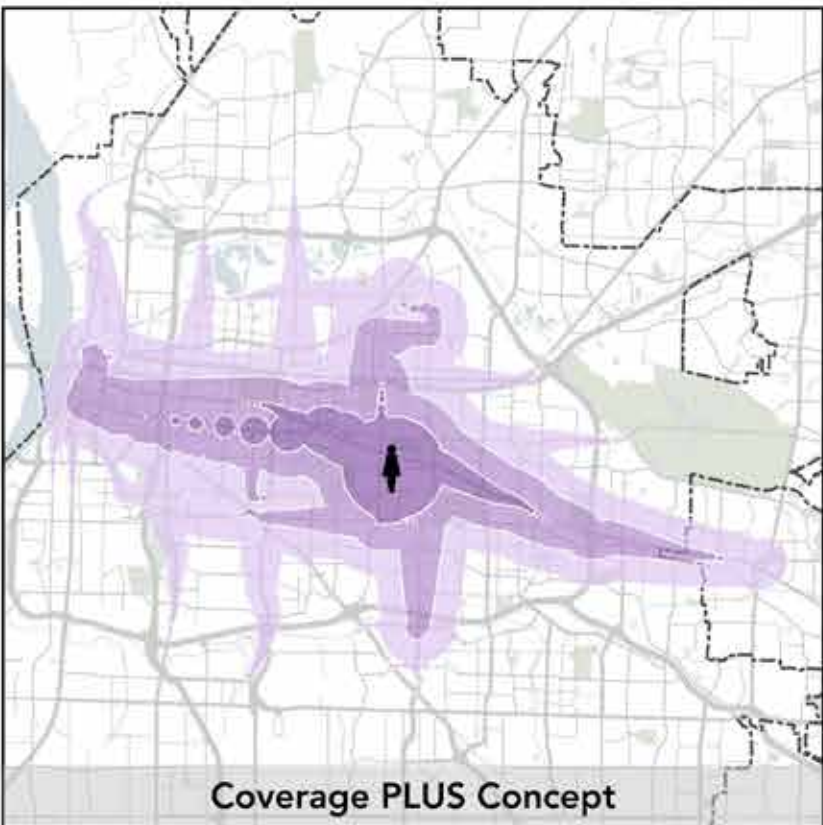
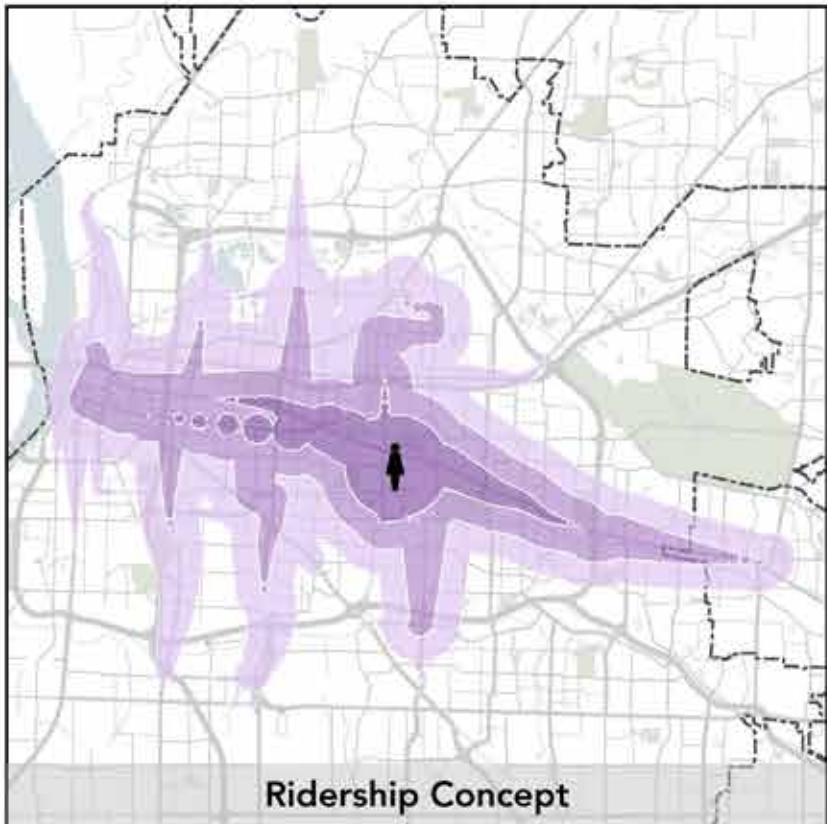
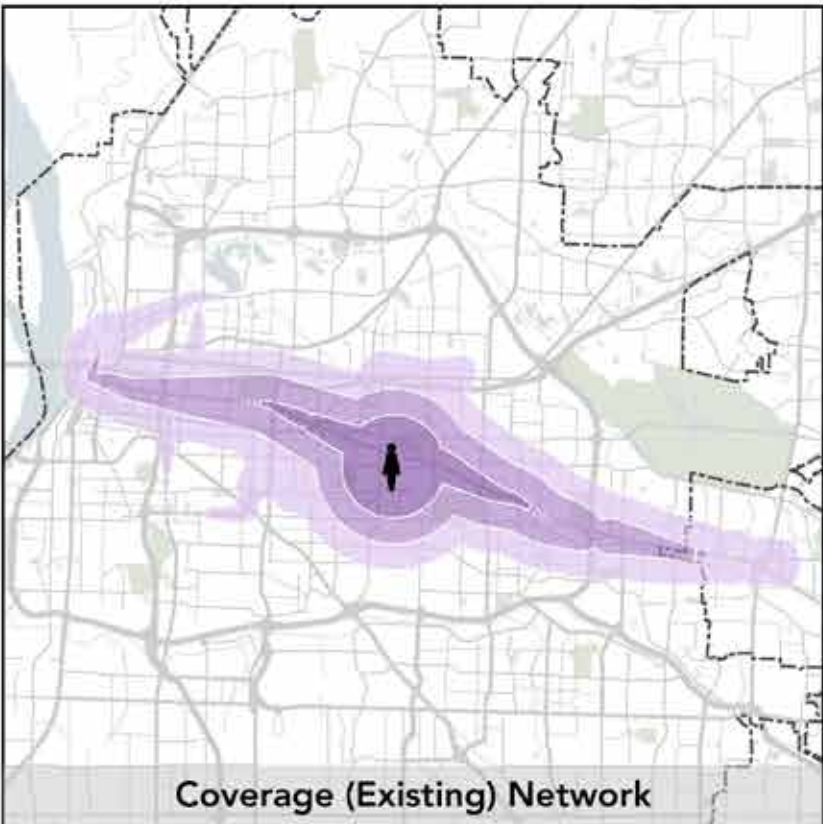


# How far can Jane travel by public transit from University of Memphis?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	18,000	+51%	+39%	+57%
45 min	61,000	+87%	+67%	+103%
60 min	136,000	+70%	+59%	+75%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	16,000	+82%	+59%	+84%
45 min	75,000	+75%	+62%	+79%
60 min	155,000	+37%	+28%	+38%



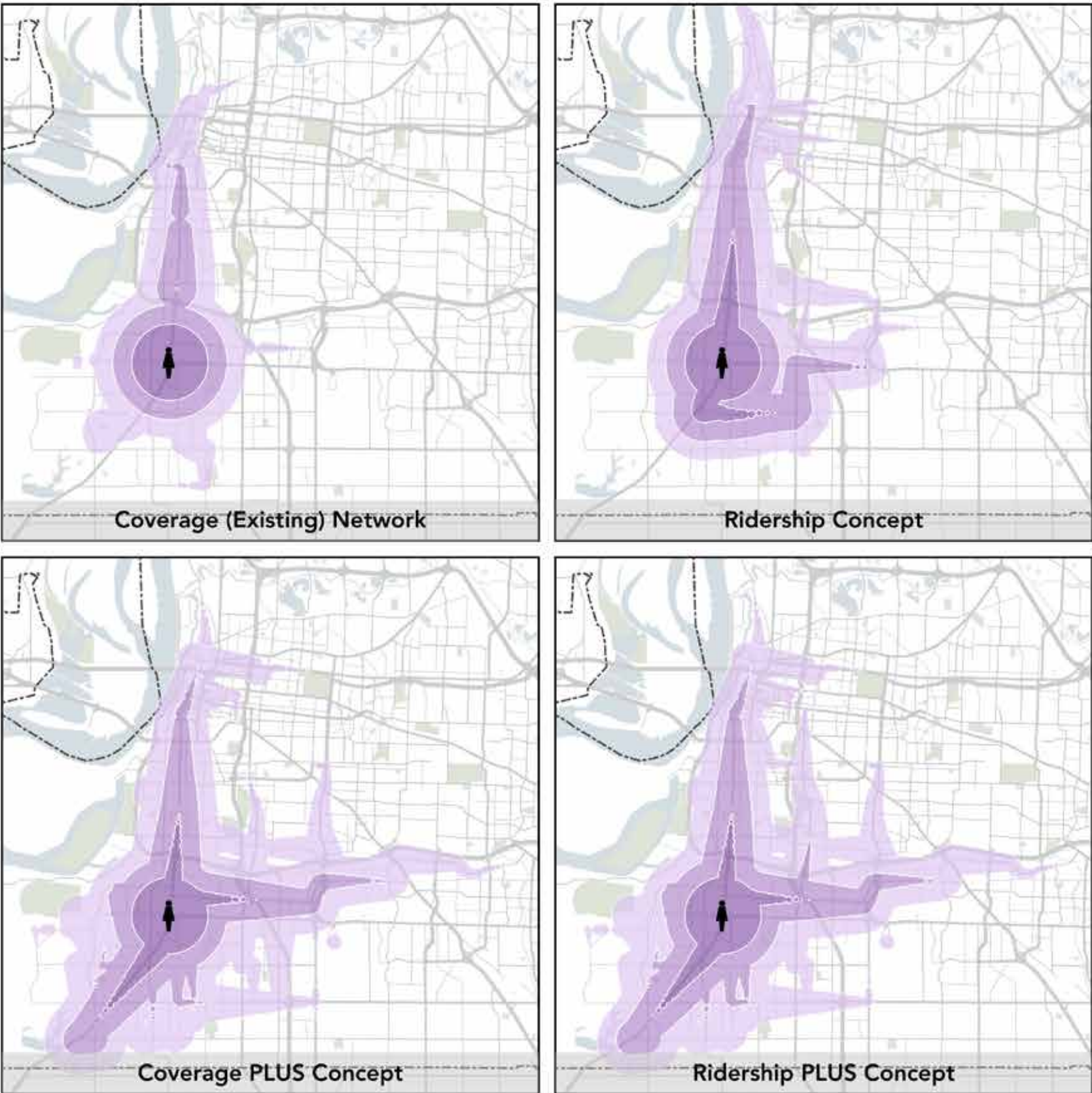


# How far can Jane travel by public transit from Winchester and 3rd in SW Memphis?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	7,000	+53%	+45%	+45%
45 min	20,000	+105%	+83%	+87%
60 min	59,000	+60%	+102%	+107%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	3,000	+50%	+34%	+34%
45 min	12,000	+234%	+196%	+199%
60 min	57,000	+73%	+115%	+124%



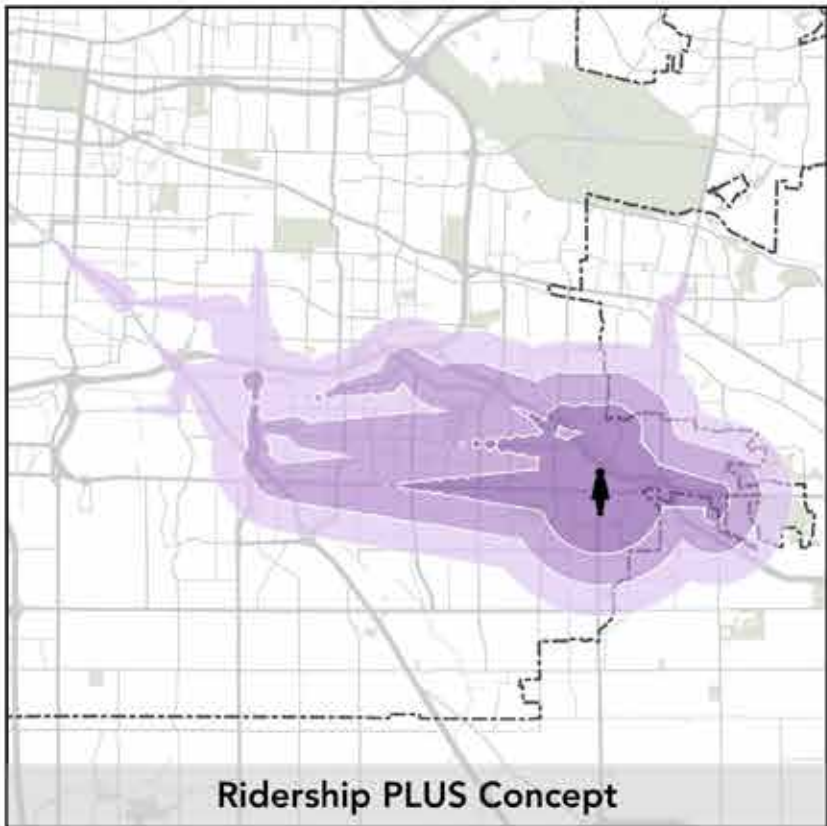
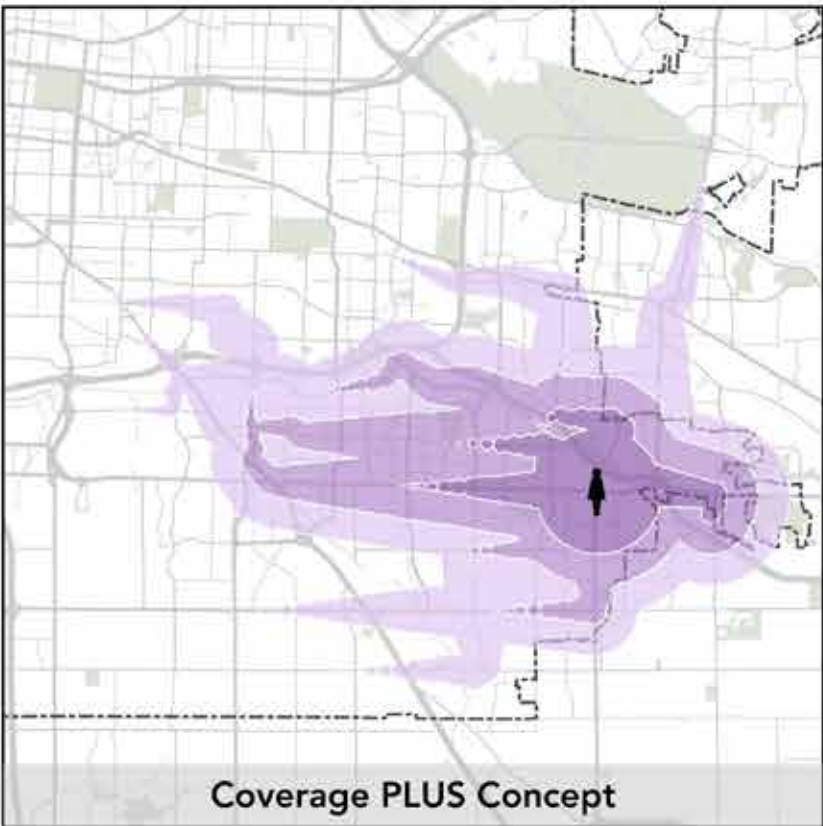
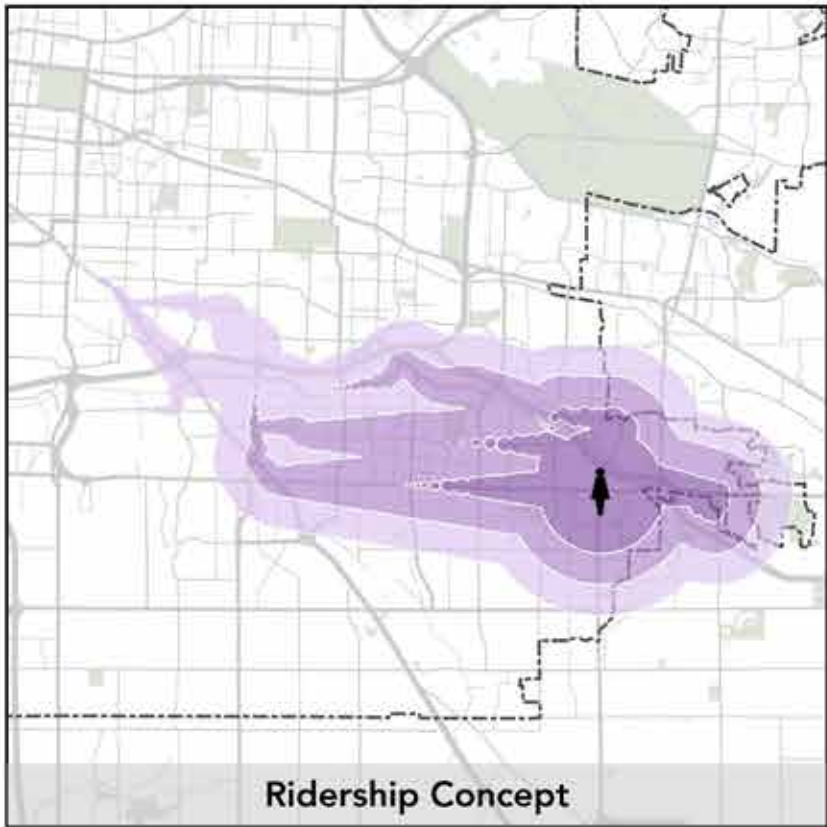
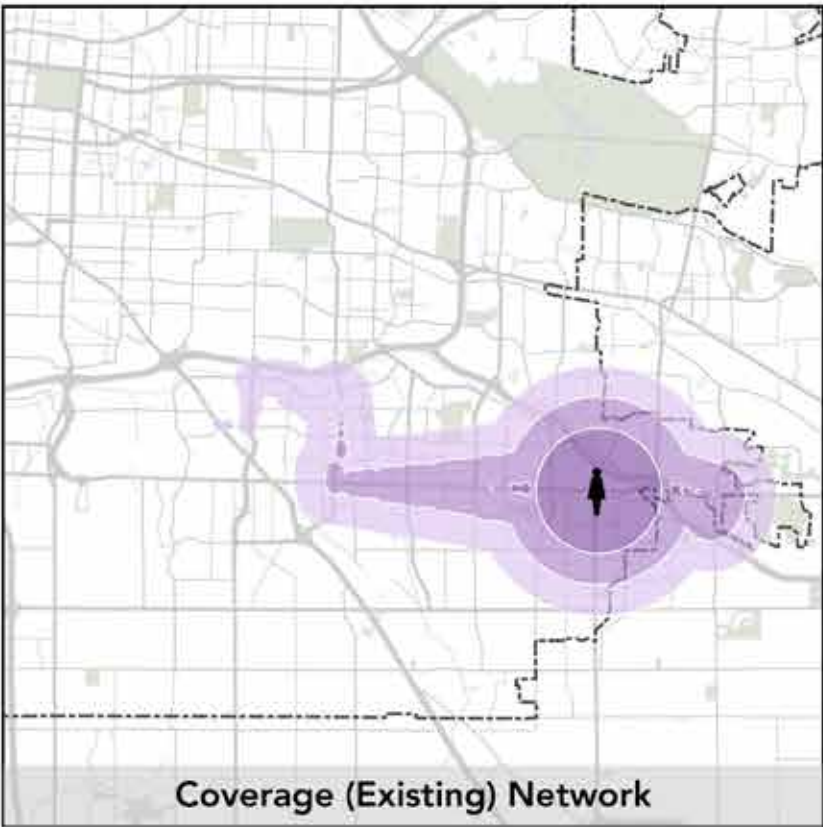


# How far can Jane travel by public transit from Winchester and Riverdale?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	13,000	+73%	+72%	+91%
45 min	45,000	+73%	+82%	+80%
60 min	90,000	+40%	+59%	+46%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	6,000	+77%	+73%	+83%
45 min	17,000	+94%	+97%	+109%
60 min	38,000	+72%	+147%	+86%



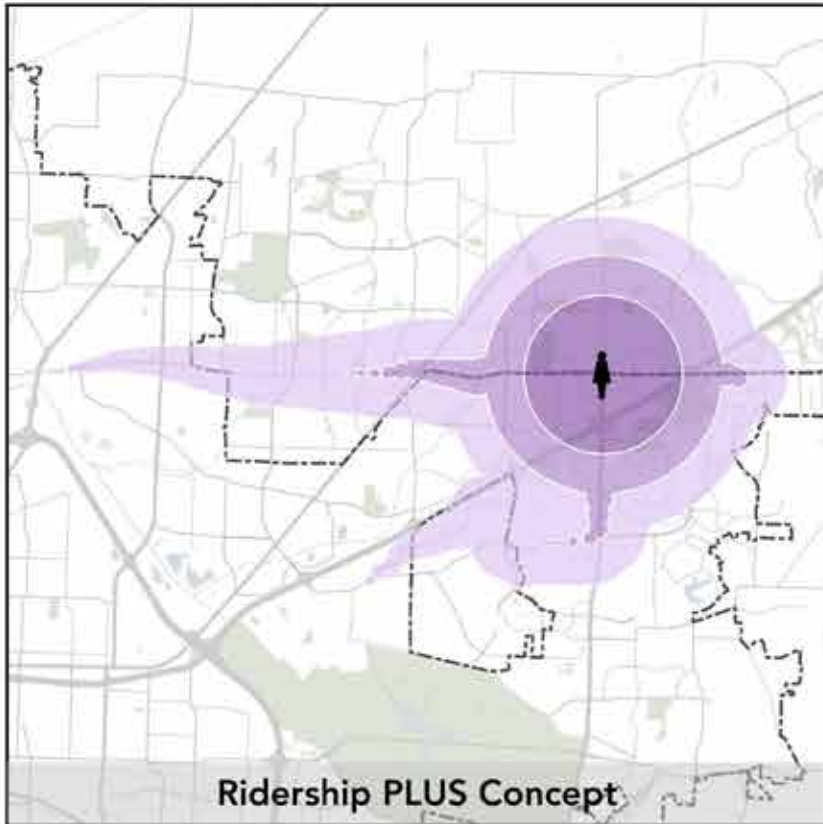
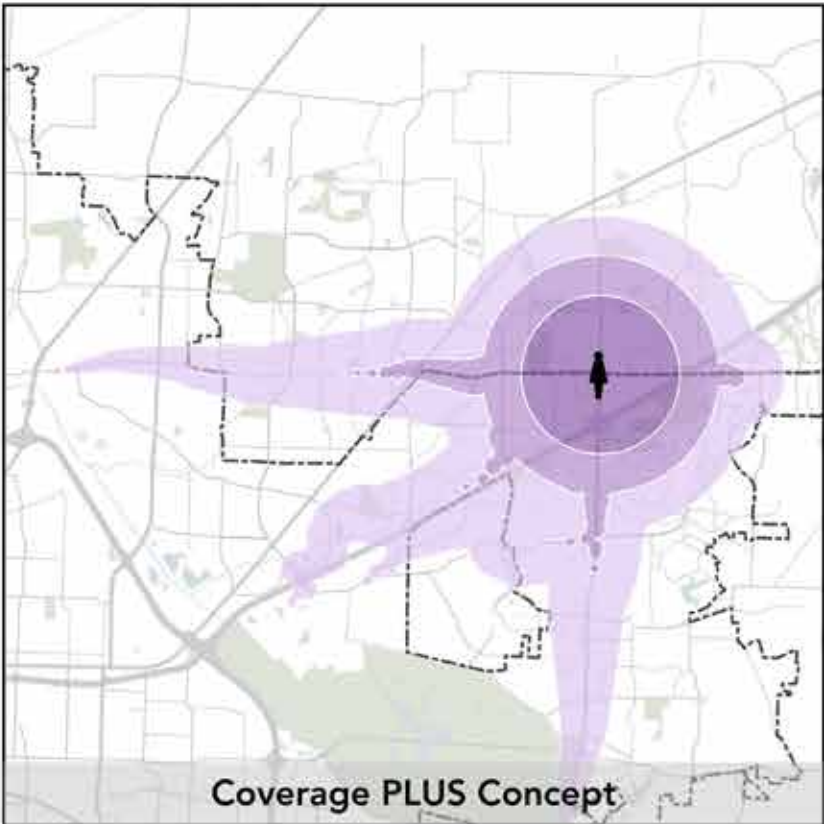
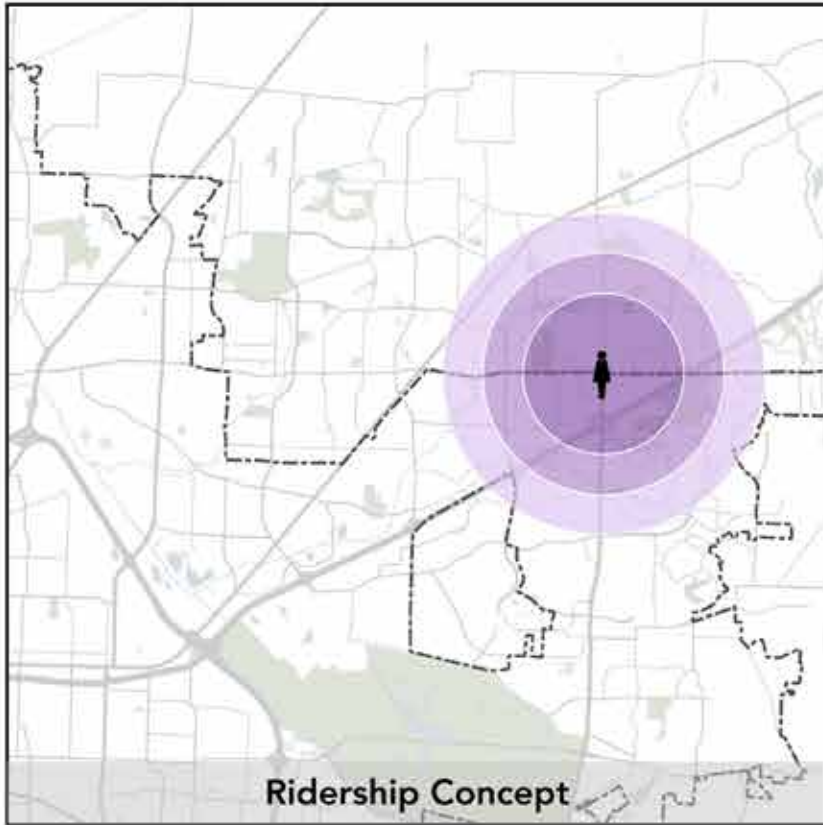
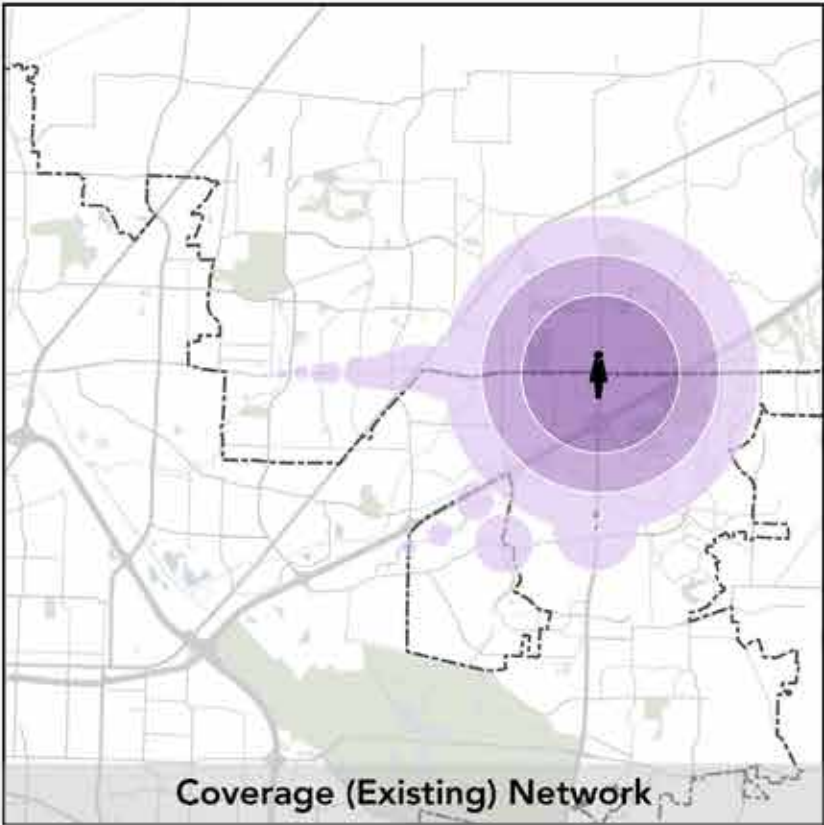


# How far can Jane travel by public transit from Wolfchase Galleria?

On a weekday at 12 pm, Jane can reach the shaded areas in 30 45 and 60 minutes using the public transit network in each Concept.

% Increase in Accessible Residents from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	4,000	0%	0%	0%
45 min	11,000	0%	+32%	+26%
60 min	34,000	-15%	+73%	+42%

% Increase in Accessible Jobs from Coverage Concept				
Travel	Coverage	Ridership	Coverage Plus	Ridership Plus
30 min	13,000	0%	0%	0%
45 min	20,000	0%	+5%	+3%
60 min	28,000	-15%	+73%	+28%



Next Steps

Innovate Memphis, the City of Memphis, and MATA will use these concepts as tools to engage residents, bus riders, stakeholders and elected officials in a conversation about the transit choices and trade-offs for the City of Memphis. The goal of this conversation is to find the right balance in the decision space for these two choices:

- How to balance ridership and coverage goals.
- How much transit service Memphis needs. Is there enough transit service, or should the City invest in additional transit service?

Figure 20 shows the decisions space bounded by the four concepts that we have shown in this report. The focus of the conversation during this phase of the Transit Vision process is to answer the above questions, to find the right balance for Memphis. Comments and suggestions about other ways to improve transit in Memphis are welcome, as are specific ideas and suggestions for bus routing and frequency of service.

Everyone has a voice in helping to determine the direction for this Transit Vision. Therefore, the study team encourages the public to read this report carefully and discuss the trade-offs with neighbors, friends, colleagues, fellow transit riders and other Memphians to help determine what direction the city should take. And finally, take the survey about these concepts, available at [www.memphis3point0.com/transit](http://www.memphis3point0.com/transit).

The Transit Vision team will engage the public to discuss these concepts and get feedback from November 2017 through January 2018. Once the community, stakeholders, and elected officials have provided direction on the right balance between ridership and coverage and between current resources and more resources, the Transit Vision team will design a draft recommended transit network that fits within the recommended balance. A draft Transit Vision will then be developed in early 2018 and the community will have an opportunity review and comment on that draft plan.

Figure 20: Decision space and the four concepts.

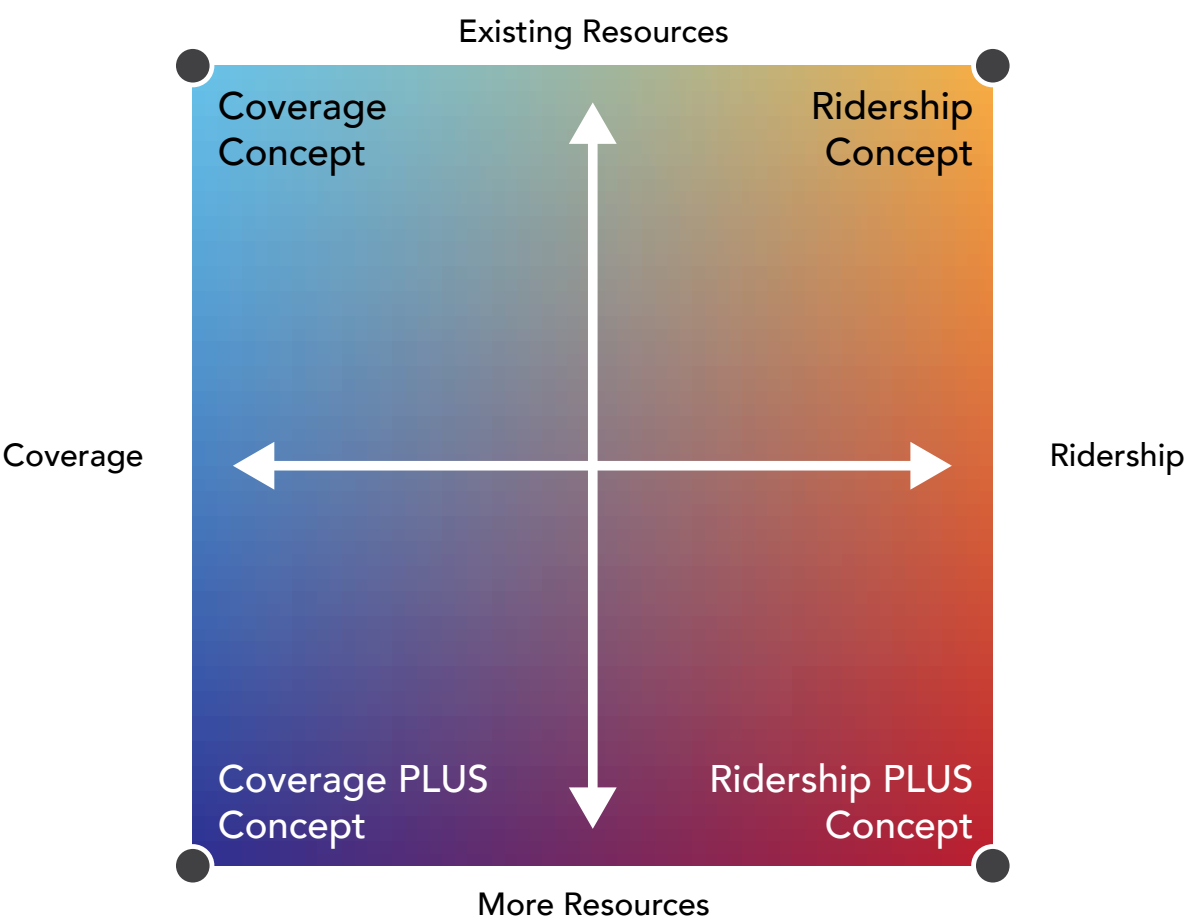


Figure 21: Process and Timeline for Memphis 3.0 Transit Vision

Memphis 3.0 Transit Vision Process Timeline

