

Regional Transit Vision Draft Vision Framework

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For Thomas Jefferson Planning District Commission

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REGIONAL

TRANSIT

VISION

FOR THE
CHARLOTTESVILLE
AREA

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1 Introduction

What is the Regional Transit Vision?

The Charlottesville Area Regional Transit Vision Plan is a collaborative effort to evaluate transit service in the City of Charlottesville and the Counties of Albemarle, Green, Louisa, Fluvanna, Buckingham, and Nelson and to establish a clear, long-term vision for efficient, equitable and effective transit service in the region.

This project is being led by the **Thomas Jefferson Planning District Commission** and is funded by the Virginia Department of Rail and Public Transit. It supports the work of the **Regional Transit Partnership (RTP)**, which strives to improve communication and collaboration between the three transit providers that operate in the region.

The goal of the Transit Vision Plan is to establish a single unified vision for transit service in the Charlottesville area that can be shared and supported by all the members of the RTP and its constituents. The planning effort will include a study of the region's existing conditions, including transit services, transportation patterns, and land development practices. It will also include asking the community about its values and priorities for the future of the region's public transit. The project will result in the development of strategies and integrated transit network concepts to reach the community's goals.

Why focus on transit?

The the Charlottesville region there are a range of transportation needs and challenges. In particular, housing costs have recently become a major challenge for people who work in Charlottesville, forcing people to endure longer commutes from more affordable locations outside the city and the urbanized area. Even within the urbanized area, topography, historic red lining practices, and a range of other challenges mean that there can be long distances between homes, schools, shops and jobs. Most people cannot meet their transportation needs on foot, scooter or bicycle alone. This suggests a significant opportunity for public transit.

Of course, transit isn't the only alternative to owning and driving a car. Ridehailing (like Uber and Lyft) and taxis are available in some parts of the region. But these options are more expensive per mile than driving a private car, so very few people can afford to use them on a daily basis. Other alternatives like carpooling

and vanpooling only work when several people who know each other come from and go to the same place at the same time. These options may work for some commuters going to the University or to downtown Charlottesville, but they rarely work for workplaces and destinations in more suburban areas, or for non-traditional commute times.

Another alternative could be on-demand dial-a-ride service, similar to the paratransit service that is required for eligible disabled users by the Americans with Disabilities Act (ADA), or subsidized ridehailing. Both options are extremely expensive to extend to the general public, because each trip would cost nearly the equivalent of a taxi ride. JAUNT currently operates a general public dial-a-ride like service, but its hours of service are extremely limited and it requires a reservation one-day in advance. These limitations exist, in part, to reduce the total cost of the service by limiting its use.

Public transit on fixed routes can help bridge the gap, particularly in the urbanized area, where it can do two critical things:

- Extend how far people can go on foot, or on a bicycle, providing some of the benefits of access to a private vehicle but at a much lower cost and without relying on friends or family.
- Replace driving trips in times and places where driving a car is inconvenient or too expensive.

In rural areas, where people, jobs, and destinations are much farther apart, it is harder for transit to cost-effectively deliver significant improvements in access to opportunity purely because it takes so much more time between destinations. The primary cost of transit is paying the operator to drive the vehicle. Therefore, when destinations are far apart, it costs far more per trip to serve with transit. Nevertheless, transit can play an important role in rural areas by providing an insurance against social isolation, a critical link to essential services like shopping and medical services, and access to jobs for those with no other transportation options.

About This Report

This report is the culmination of our work thus far on developing the Vision and is broken down into several sections:

- 1. Introduction**, the section you're currently reading, that provides background and context for this study.
- 2. How Did We Get Here?**, which shows the work we did to evaluate where transit would perform well, where transit is needed, and what the people of Charlottesville think about transit and what its goals should be.
- 3. The Constrained Vision Concept**, a network concept based on an increased investment in transit.
- 4. The Unconstrained Vision Concept**, a network concept that imagines what transit could look like if we built a network to maximize important transit goals.
- 5. What's Next**, which shares the next steps for the Regional Transit Vision and the engagement process to allow the community and stakeholders to respond to this Draft Vision Framework.

This report complements past work done by the Regional Transit Vision project team, including:

- Development of the Vision Statement, Goals, and Objectives ([summary available here](#))
- Phase One of Public Engagement on the Vision ([summary available here](#))
- A Land Use Assessment of the region ([report available here](#))
- A Transit Propensity Assessment for the region ([report available here](#))

This Draft Vision Framework report provides some content from these prior reports to clarify how the study team developed the two Vision Concepts.

Transit in the Region Today

Transit in the Urbanized Area

The map at right shows the existing transit network in Charlottesville and the urbanized areas of Albemarle County. Every route is color-coded based on its frequency during midday on a weekday.

Frequency is often the dominant element of travel time, particularly for shorter trips in urbanized areas. More frequent service dramatically improves how far you can go, by providing several linked benefits:

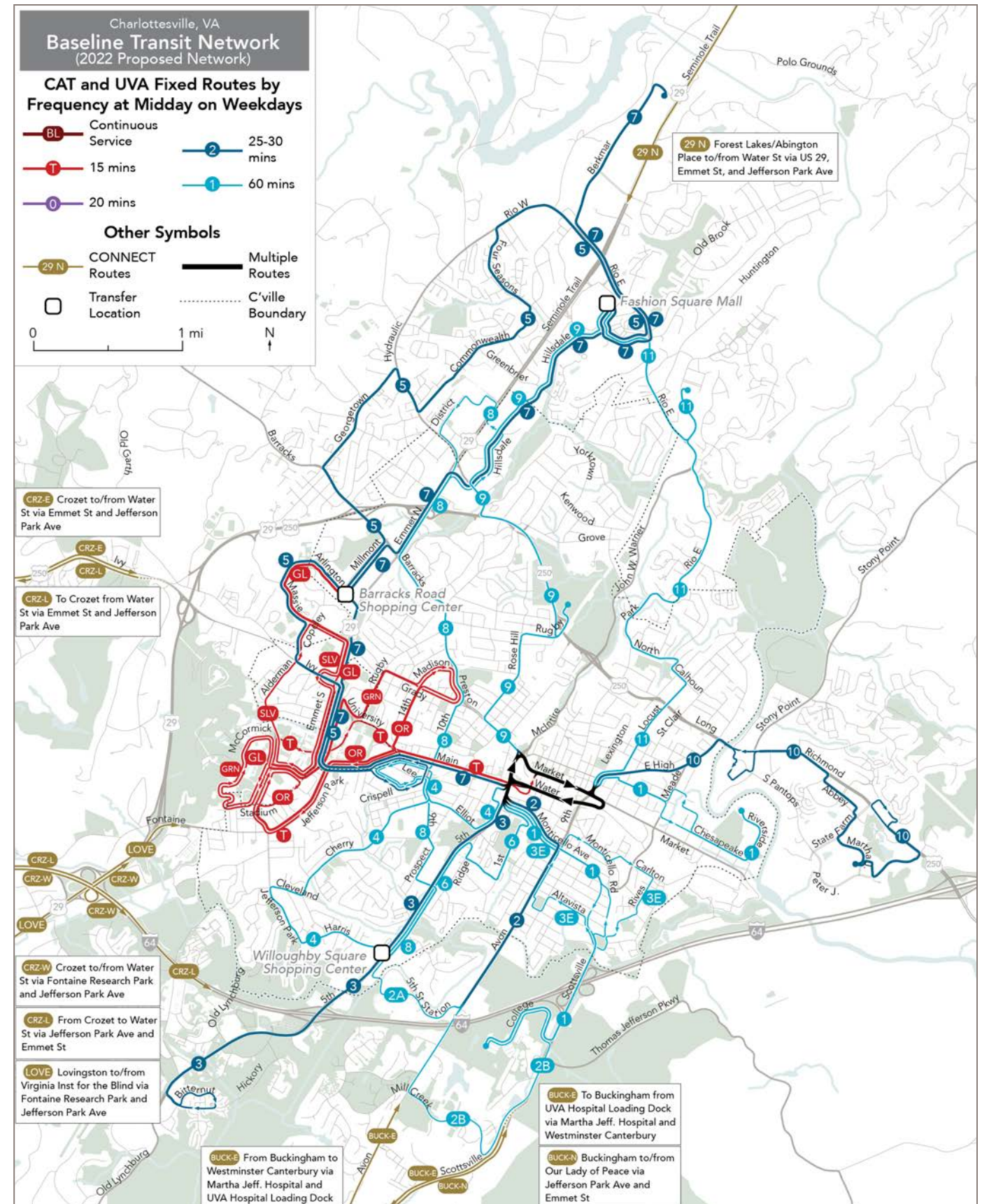
- **Shorter Waits.** Waiting for the bus may be the most onerous part of using transit, since you're not moving at all. The more often the bus comes, the less time you wait.
- **Faster Connections.** Connections are the glue that combines a pile of individual routes into a network. The ability to change from one route to another is critical to reach all the places that are inevitably not on the line you happen to be on. Frequency makes connections easy, because the next bus is always coming soon.
- **Easier Recovery from Disruption.** Frequent service is more reliable. If a bus breaks down, the next bus is coming soon.
- **Spontaneity.** Rather than building your life around a bus schedule, you can turn up at the stop and go.

Because these benefits are independent of each other, transit becomes exponentially more useful as frequency improves. Low frequencies and limited hours of service are one of the main ways that transit fails to be useful, because it means service is simply not there when the customer needs to travel. In the case of transit in Charlottesville and Albemarle, most routes operated by CAT only come every hour, with some routes coming slightly more frequently at every 20-30 minutes. CAT makes extensive use of timed transfers to improve connections between these less-frequent routes.

Our analysis of the two Vision concepts is based on a Baseline Network that CAT has created as part of its System Optimization Plan and is set to launch later in 2022. In this network, frequencies on some lines are improved, including 15 minute frequency on the Trolley. In the transit world, routes that come every 15 minutes or more often are the most useful, for the reasons

explained above.

The map also shows the circulator routes that the University of Virginia operates around the university grounds. These circulators operate every 15 minutes or better most of the day, providing very useful service between the various university facilities. Many universities operate their own circulator services since universities have high internal demand and specialized needs. There are opportunities in the long-term where IF the region invested more heavily in transit and provided all-day frequent service through the University grounds, some internal circulation within the University could be handled by those regional transit services. Today, however, only the CAT Trolley service is frequent enough to be useful for internal circulation on the grounds.



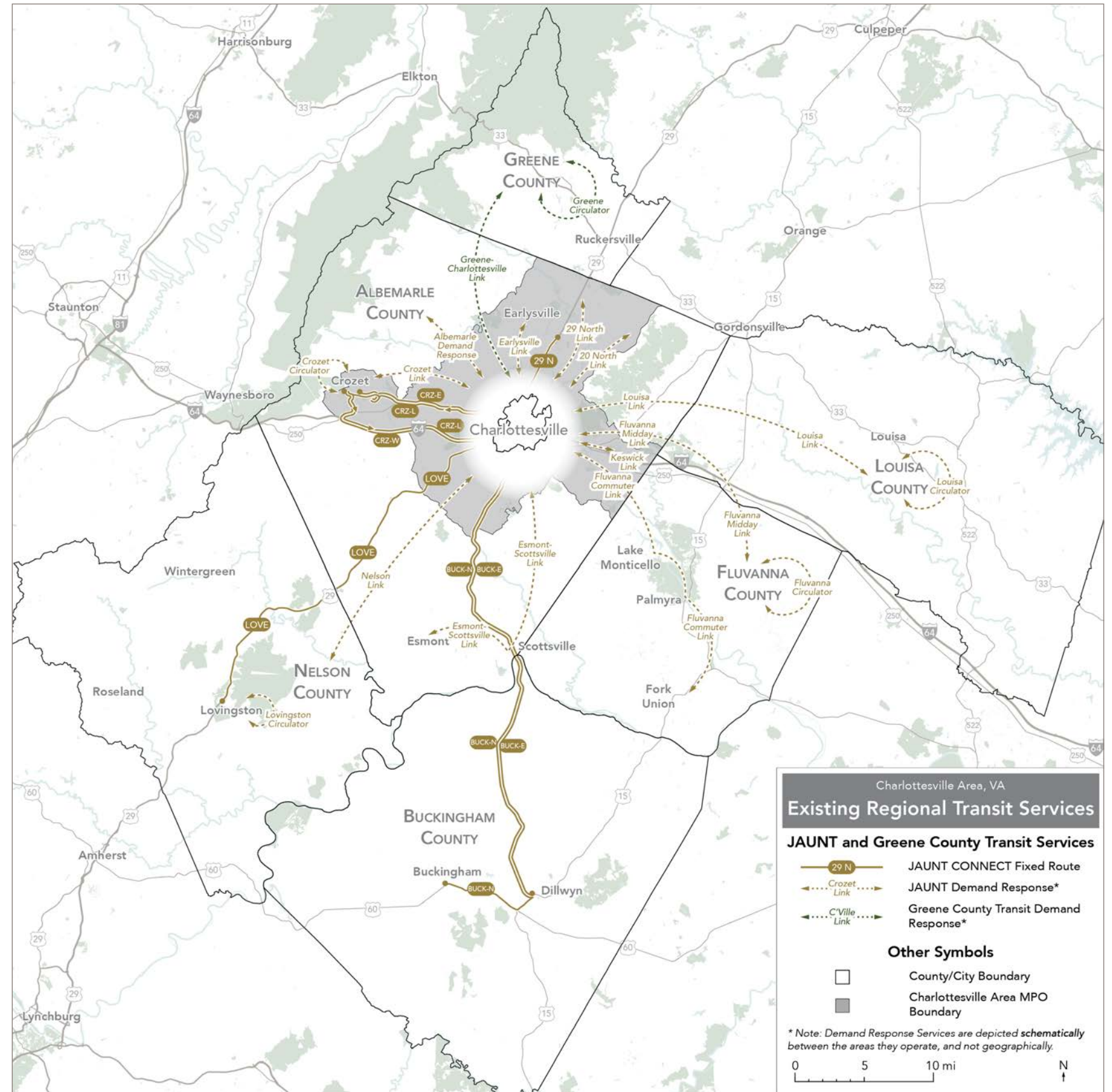
Existing Transit in Rural Areas

Since the Regional Transit Vision is meant to encompass all of the region, we have also looked at services operated by Jaunt within Albemarle County and in the surrounding counties: Green, Louisa, Fluvanna, Buckingham, and Nelson.

Most Jaunt services are *demand-response* or *dial-a-ride* services. For most Jaunt services, a rider must call ahead, **at least one day in advance**, and book a time to be picked up, dropped off, and then picked up again once they're done. While these kinds of services make sense in a service area with the size and relatively low population density of much of the rural area in the region, these services put severe limitations on a person's ability to travel around the region, or even within one's own county. Scheduling trips a day ahead takes out spontaneity, which means that you have to build your life around when you've booked a trip.

Jaunt also operates several CONNECT services. These services connect Crozet, Buckingham, the US 29 North corridor, and Lovingston with Charlottesville. However, these services do not operate all day. They have only one or a few trips in the morning toward Charlottesville and return trips in the afternoon. If you have to make a trip between those times, some areas are served by a Jaunt demand-response when CONNECT is not operating.

Changes in technology may enable Jaunt to switch to a more on-demand model, where trips can be booked on very short notice. Such a change would significantly improve access for rural customers and free people in rural areas from having to so carefully schedule their daily travel if they rely on transit. Providing that greater level of flexibility, however, would require additional resources so that Jaunt could have vehicles ready and waiting to respond to spontaneous requests.



What Is Transit's Goal?

Transit can serve many different goals. Different people and communities value these goals differently. It is not usually possible to excel towards all of these goals at the same time, and certainly not within a limited budget.

Understanding which goals matter most in Charlottesville is a key step in imagining a better transit system.

Possible goals for transit include:

- **Economic:** transit can give businesses access to more workers, and workers access to more jobs, and give students more access to education and training. Transit can also allow for continued economic growth beyond what congestion would prevent.
- **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 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, transit can only support continued economic growth without congestion if many people ride the bus rather than drive. The environmental benefits of transit also only arise from ridership.

Other goals are served by the simple presence of transit. A bus route through a neighborhood provides residents insurance against isolation, even if the route is infrequent 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 municipality.

Transit agencies often have to maximize both of these goals with limited funds. In the Charlottesville area, most of the funding that is dedicated to transportation goes to roads. While roads do have a role to play in the broader transportation system, when they are over-prioritized for funding, that can leave other modes behind

The Role of Land Use

Land use patterns and transportation systems are always inter-related subjects. However, the connection between the two is especially significant for transit services. Traditional transit systems are almost always most efficient and successful in places with land use patterns featuring characteristics such as mixed-uses, relatively high densities, and widely available bicycle and pedestrian infrastructure. Transit service can still be offered in places without those characteristics but may require innovative or alternative service approaches.

Much of the Charlottesville region is largely rural, with the exception of the City of Charlottesville proper and parts of Albemarle County near Charlottesville proper.

What's Possible with Better Transit?

How Transit Creates Freedom

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

- The network of transit lines with their frequency and speed, which determines how long it takes to get from A to B.
- The layout of the city and region. How many destinations are near each transit stop? Access to places where there are more useful destinations to jobs, services, etc. is valuable to more people.

We define access as “the places and people you can reach within a given amount of time”. It can also be thought of as the “wall around your life”.

The way the network and a city's layout determine access from any point is simple math, but it's very important:

- Access is key for keeping people employed. If you are deciding where to live based on how you'll reach your job, school, or relatives, you are asking a question about access.
- Access from any location gives that location value. Real estate firms routinely study where you can get to by car from a property, and this is the same analysis for transit.

From Better Access to Higher Ridership

As an individual, transit becomes more useful when it provides you with more freedom. So planning for useful transit means planning for more freedom. More broadly, transit ridership arises from providing useful access to many people. So while increasing many peoples' freedom does not in itself predict ridership, it is a necessary foundation.

In planning for better transit, increasing the number of places many people can reach in a reasonable amount of time is the source of ridership that can be influenced the most.

Expanding where people can go quickly on public transit helps meet many other useful goals, thanks to:

- **Higher Ridership.** People will only use transit if transit is useful. The essence of usefulness is that it's possible to make many trips that need to be made in a person's life. When we make more trips possible in a reasonable amount of time, we

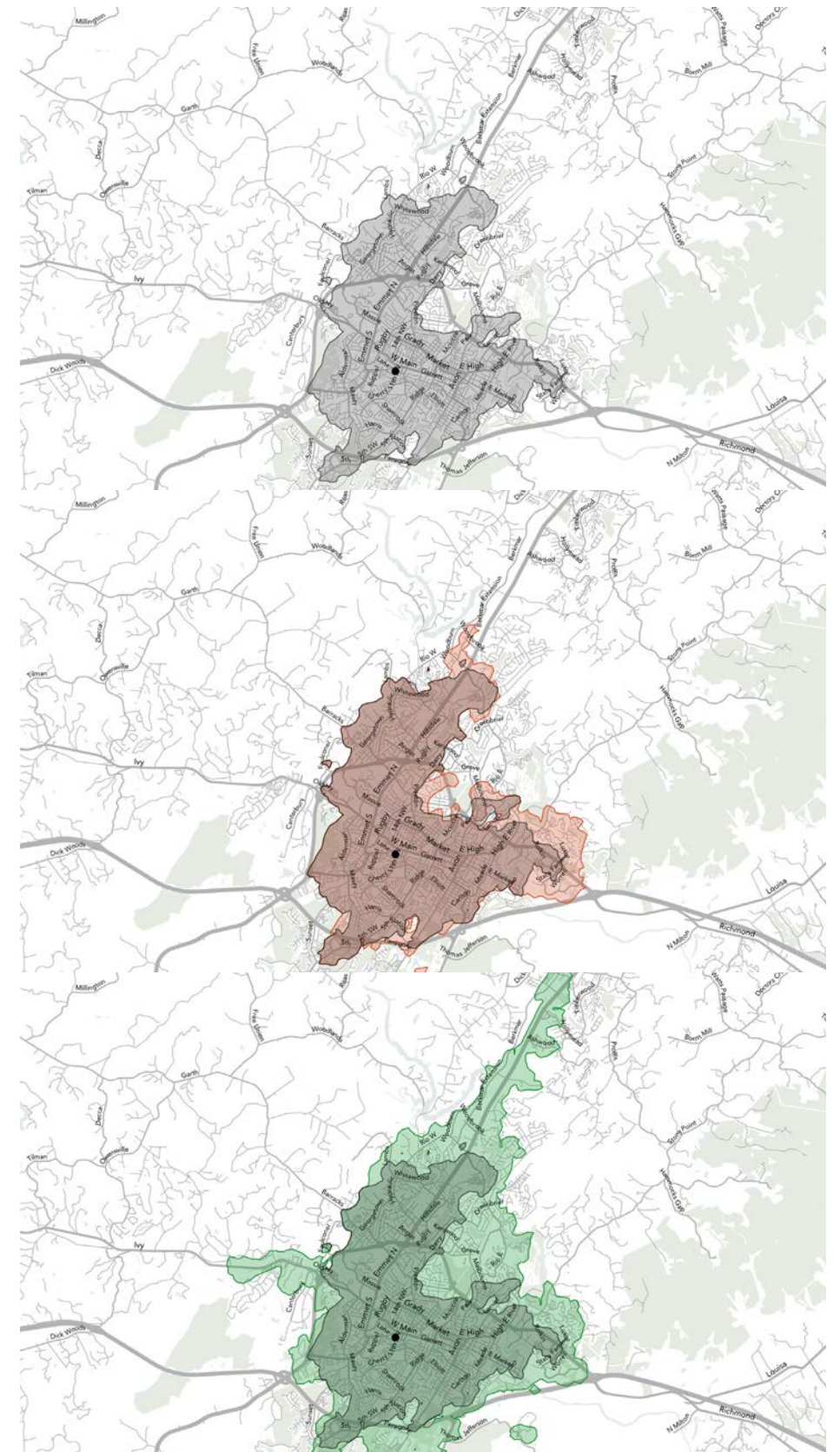
increase the likelihood that transit will be useful. Greater ridership also means:

- » **Protecting the Economy from Congestion.** Higher ridership means fewer cars on the road.
- » **Environmental Benefits** including reducing emissions that cause air pollution and climate change. These benefits depend on people using transit instead of driving, so they become greater as more people ride transit.

• **Increased Access to Opportunity.** This is an important policy outcome independent of transit ridership, for several reasons:

- » **Access to Basic Needs.** People who do not or cannot drive need to have means to access essential tasks like food shopping and medical appointments. Expanding where people can go expands how many of these trips are possible on transit.
- » **Economic Opportunities for Low-Income People.** For many people, lack of transportation is a primary barrier to accessing jobs. To empower people to improve their lives, useful transportation must be available to those who either can't afford a car or aren't able to drive.
- » **Reduced Isolation.** Lack of transportation is also a barrier for people at risk of social isolation, including many senior citizens.
- » **Civil Rights.** The ability to move around the city is a measure of physical freedom. People who lack transportation are effectively less free. For a variety of reasons, people with low incomes and people of color are less likely to own a car. Improving the ability of transit to get people to useful places means increasing the rights and freedoms of those who are most disadvantaged.

The maps on the right show how many places someone can reach from UVA Hospital in 60 minutes in the baseline network (in grey), the Constrained concept (in orange), and the Unconstrained concept (in green). These maps are one of the ways we measure the success of a transit network and are key to our analysis of a future for transit in Charlottesville.



2

How Did We Get Here?

The Market for Transit

A “strong transit market” is mostly defined by where people are, and how many of them are there, rather than by who people are. We learn about transit needs mostly by examining who people are and what life situation they are in.

One of the first questions we asked was: where would transit make the most sense, either in terms of providing access to the most people overall or in terms of where it’s needed the most?

The Demand for Transit

To determine where transit is most likely to be in demand (and is therefore the most likely to generate higher ridership), we look at several factors

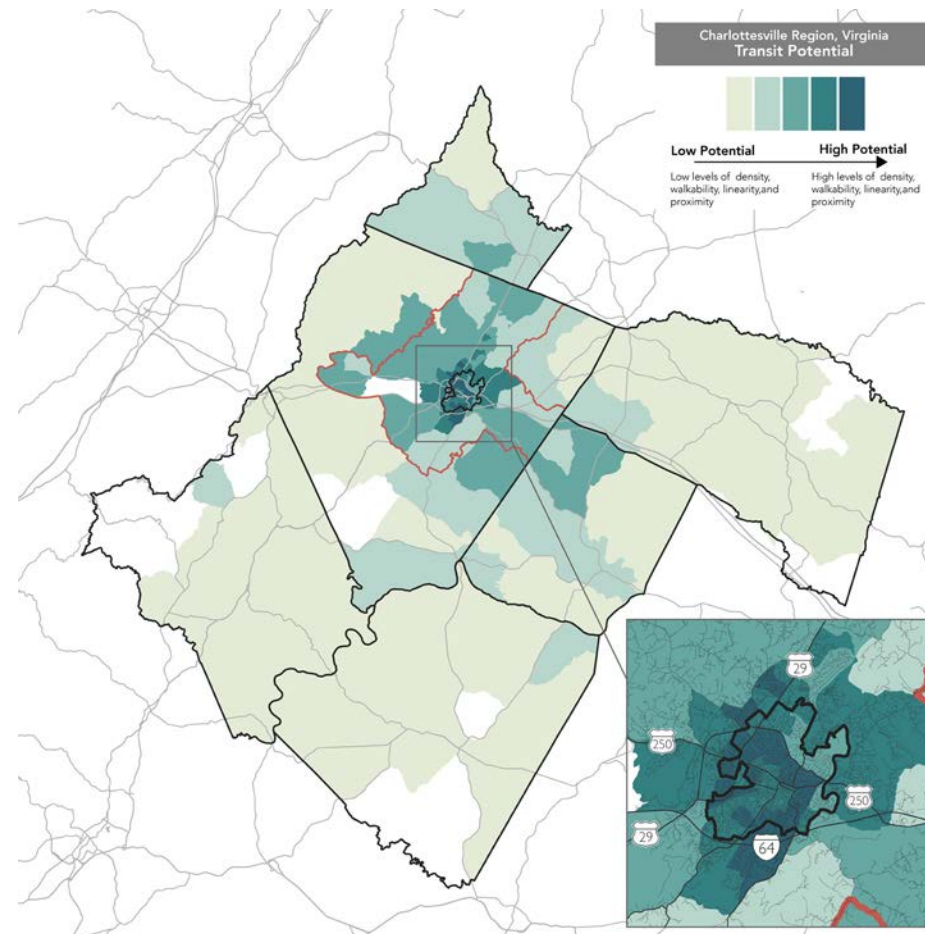
- **Residential density**, which is the number of people per square mile,
- **Job density and type**, which is the number of jobs per square mile and what types of jobs there are per square mile
- **Walkability**, which is how well-connected and complete is the street network for pedestrians (and by association, transit riders),
- **The number of zero-vehicle households, and**
- **The number of low-income households**

In the Charlottesville area, residential density is at its most highest in the City of Charlottesville and urban Albemarle County. Job density is even more concentrated in this “urban core”, with the exception of low-wage and retail jobs, which are in the outer parts of the urban core or in more suburban parts of the region, owing to the land use of the region.

Walkability is concentrated in the urban core as most of the Charlottesville area is either highly rural with limited street connectivity, or highly suburban with high street connectivity, but only for automobiles.

Zero-vehicle households tend to be clustered within the City of Charlottesville, and mostly in fairly walkable areas of the city.

These factors relate to each other to create areas of transit “potential”, or areas where a combination of density, walkability, and proximity to destinations can enable higher ridership.



The Need for Transit

While demand tells us where transit is most likely to “wanted”, it doesn’t tell us the whole story. There are also indicators of need where good quality transit service is needed the most by the people who live or work there. Some of these indicators include:

- **The number of low-income households,**
- **The number of seniors,** and
- **The number of residents under the age of 18.**

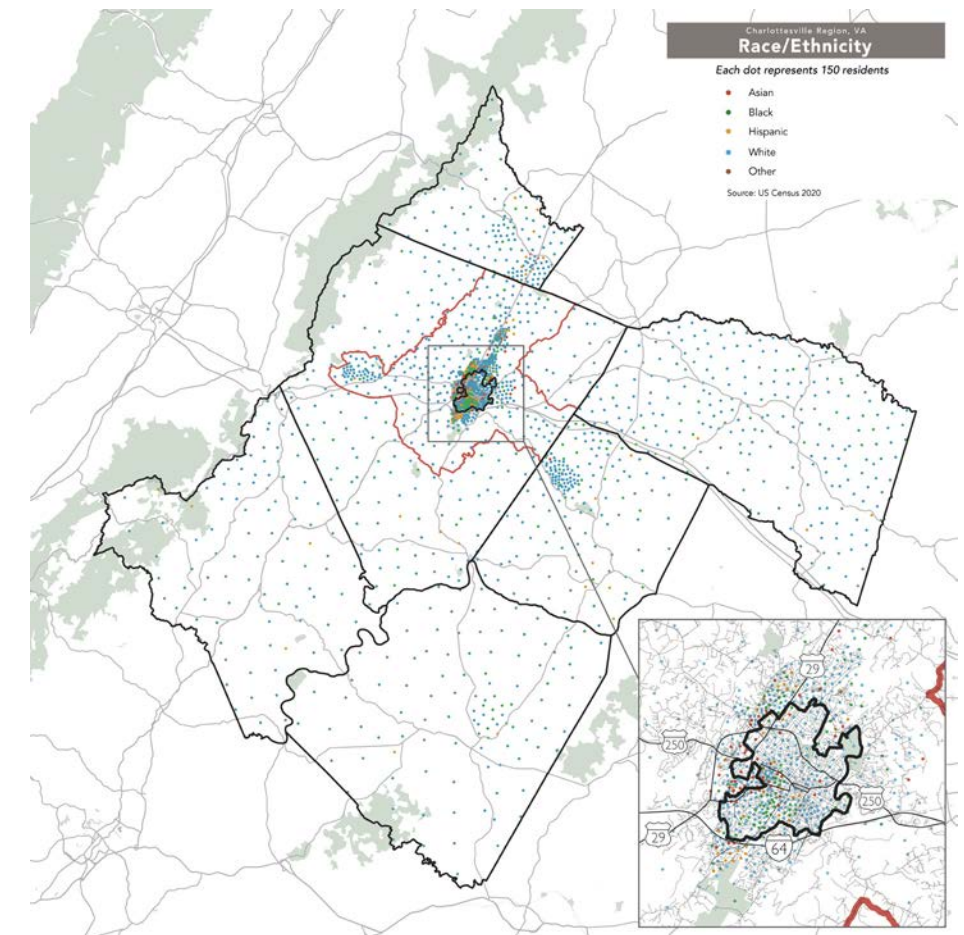
Members of these groups of people tend to have either limited access to a private automobile or are not able to drive.

In the Charlottesville area, these groups are clustered within the city of Charlottesville, with some pockets in the outer counties.

Notably, both Crozet and Lake Monticello in Fluvanna County have higher than average densities of both seniors and residents under 18.

Civil Rights

Another factor we consider is race and ethnicity. While it is not indicative of need, transit agencies like CAT and Jaunt are required to ensure that their service does not disproportionately disadvantage any one group, as enshrined by Title VI of the Civil Rights Act. The map below shows roughly the density of residents per racial/ethnic group in the study area.



While data can tell us where transit would be the most beneficial and who transit would benefit the most, it doesn’t tell the full story. We also need to ask the community what they value about transit and where they see its benefits.

Land Use Plans in the Region

For a Regional Transit Vision, the existing density and land use pattern is important but not the only defining factor in thinking about the long-term markets and needs for transit. Much will change throughout the region as it grows over the next 20 years. Therefore, the study team looked at the region's land use plans to consider what might change.

Of particular interest are designated growth areas in the region. The map at right shows designated growth areas across the region as described in the land use plans from each jurisdiction in the region. These growth areas define places that are more likely to be key destinations for transit in the future or region hubs where different transit services might connect.

Urban Core

The City of Charlottesville's comprehensive plan aspires to create a more vibrant community, bringing together places where its residents live, work, and play. It seeks to accomplish these using strategies such as increasing the number and styles of housing units, encouraging in fill development on under utilized properties, and increasing commercial vitality and density in appropriate areas. The City is currently updating its comprehensive plan. While these policies will continue into the next update, Charlottesville also envisions greater densities throughout its municipal boundaries.

The urbanized areas of Charlottesville extend beyond the city limits into neighboring Albemarle County. To preserve its natural resources and rural character, Albemarle County has established development areas as the primary locations for future growth. Three of the development areas—the Southern and Western Neighborhoods, Pantops, and Places 29—are immediately adjacent to Charlottesville. The remaining development areas include Crozet and the Village of Rivanna, located short distances west and east, respectively, of Charlottesville on US 250.

Growth Corridors

Moving beyond the Charlottesville urban core, localities designate their future growth areas around major interregional transportation corridors. These corridors include US 29, which follows a north-south alignment, and I-64/US 250, which follows an east-west orientation.

The primary growth areas along US 29 are north of Charlottesville. One of the previously mentioned development areas of Albemarle County (Places 29) extends north along US 29 to the Hollymead area. Beyond Hollymead, the corridor continues north into Greene County, which expects continued growth in the Ruckersville area near the intersection of US 29 and US 33.

The I-64/US 250 corridor features growth areas both west and east of Charlottesville. The community of Crozet is on US 250 several miles west of Charlottesville. To the east of the region's urban core, localities established multiple growth areas along this corridor. These include the Village of Rivanna in Albemarle County, and Zion Crossroads in Louisa and Fluvanna Counties. Proceeding east is the Ferncliff, Shannon Hill, and Gum Springs growth areas in Louisa County. Local comprehensive plans envision nodes along the I-64 corridor that consist of mixed-use cores surrounded by low-density residential neighborhoods.

Designated Rural Growth Areas

Localities expect that most of the remaining future development will concentrate around existing towns, unincorporated villages, and other designated growth areas identified by each County. Most localities express a strong desire to preserve their rural lands and utilize these growth areas to contain future development and avoid sprawl.

Buckingham County located its primary growth areas along the Route 15 corridor surrounding the Town of Dillwyn. It also has designated growth areas around Buckingham Courthouse.

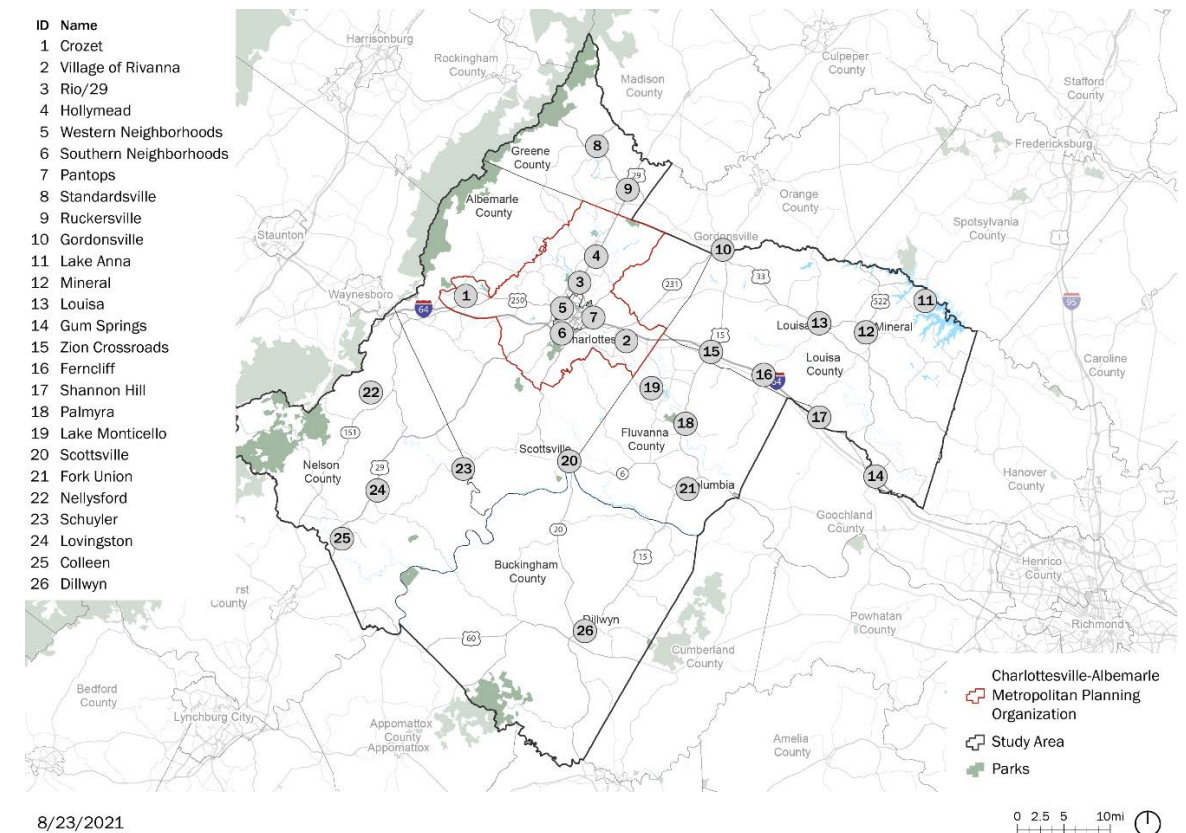
Fluvanna County has established community planning areas surrounding Fork Union, Palmyra, and Scottsville. However, its largest community planning areas are those in the areas of Lake Monticello and Zion Crossroads. The comprehensive plan also designated much of the remaining northern portions of the County as rural residential development areas.

Louisa County located most of its higher density growth areas along the I-64/US 250 corridor. It also designated areas for mixed-use and residential development in the central portion of the County

surrounding the towns of Mineral and Louisa. Additionally, there is a small area designated for mixed-use development in the northwestern corner of the County adjacent to the Town of Gordonville, located on US 33. Finally, Louisa County also designated a large growth area around Lake Anna. In addition to County residents, this area will likely attract significant numbers of tourists and second-home buyers.

Greene County has only established one growth area outside of the previously described corridor of US 29 at Ruckersville. This additional area is in and around the Town of Stanardsville on US 33.

Nelson County intends to concentrate its future growth around Lovingston and in the areas around Colleen and Schuyler. It also anticipates an area of mixed-use development along Route 151 in Nellysford and Wintergreen. Due to the popularity of its adult beverage attractions and the Wintergreen Resort, the Route 151 corridor attracts significant numbers of outside visitors and county residents.



The Community

What Does The Community Value?

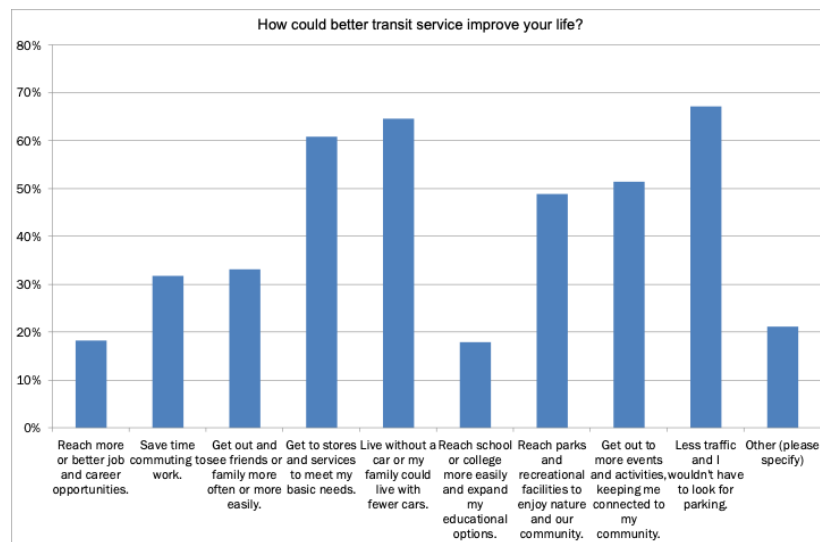
To find out what residents of the Charlottesville area thought about the role transit plays in their lives and what better transit could bring them, we put out a survey to find out. 673 people responded to this survey to tell us what they think about transit's role in the region.

We asked them about:

- How better transit service would improve their lives,
- How they rank the benefits of transit,
- Which goals transit should aim to prioritize,
- Where they would want additional funding for transit spent,

How could better transit service improve your life?

We asked people how better transit service could improve their lives and the benefits it would bring them. Most people responded by saying that better transit would help them live without a car or help their family live with fewer cars, or that better transit would reduce their time spent in traffic and looking for parking. Others responded by saying that better transit would make it easier to get to stores and services for their basic needs.

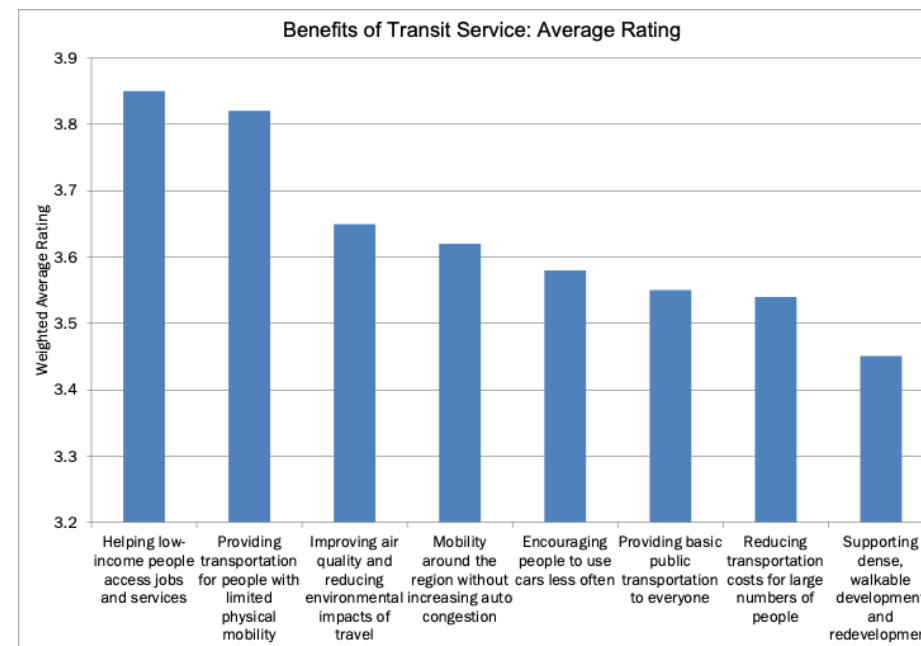


How would you rate the benefits of transit?

We asked respondents about the benefits that transit brings and asked them to rank how important they are. Some of these benefits included:

- Helping people access jobs and services,
- Improving air quality and reducing environmental impacts,
- Reducing transportation costs,
- Reducing traffic and congestion, among others

Most respondents ranked "Helping low-income people access jobs and services" highly, with "Providing transportation for people with limited physical mobility" as the second-highest benefit.

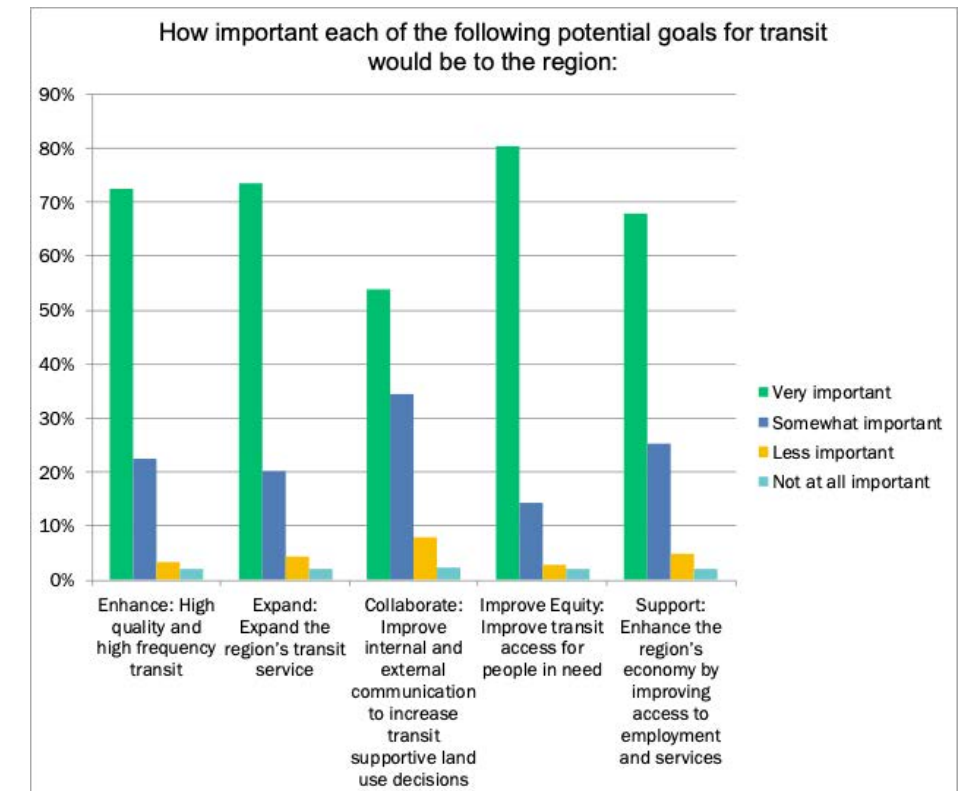


What goals should transit aim to prioritize?

We gave respondents a set of five (5) potential goals for transit and asked them to prioritize how important they would be. They are:

- **Enhance:** High quality and high frequency transit
- **Expand:** Expand the region's transit service
- **Collaborate:** Improve internal and external communication to increase transit-supportive land use decisions
- **Improve Equity:** Improve transit access for people in need
- **Support:** Enhance the region's economy by improving access to employment and services

Most people put Improve Equity as a top priority for transit, with 70% of respondents marking it as "Very Important". The next two were Expand and Enhance, showing an appetite for better transit service in the region.

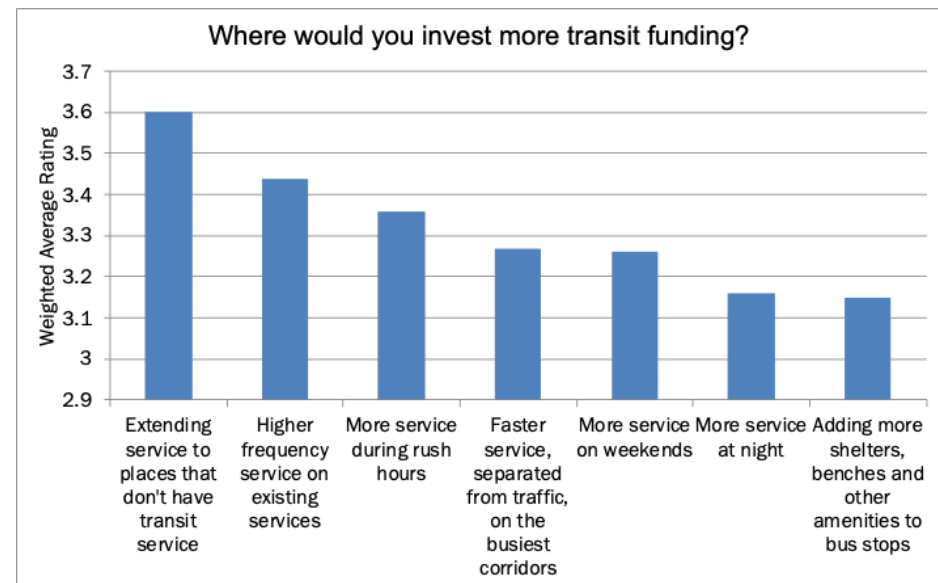


If the region had more money for transit, how would you invest it?

We asked respondents what they would prioritize if there were more funding for transit. Some of the choices included:

- Extending service to places that don't have transit service
- Higher frequency service on existing services
- More service during rush hours
- Faster service, separated from traffic, on the busiest corridors
- More service on weekends
- More service at night
- Adding more shelters, benches, and other amenities to bus stops.

Most people ranked "Extending service to new places" highly on what they'd prioritize for additional funding. Others wanted to prioritize improving frequencies. Interestingly, people tended to rank improving the amenities at bus stops lowest.



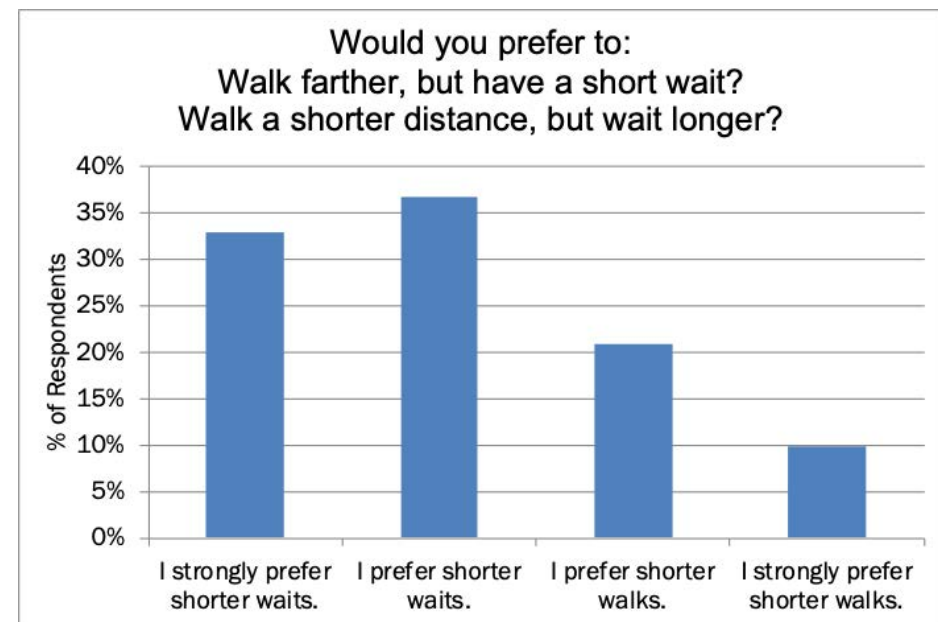
Wait or Walk?

Finally, we asked respondents to consider whether they'd rather:

- Walk further, but spend less time waiting for transit, or
- Wait longer for transit, but spend less time walking

We ask about this tradeoff because transit can reach people in two different ways: by concentrating a higher amount of service (more buses coming more often) onto fewer streets, or by getting closer to people by distributing lower amounts of service across several streets. When we consider how we design transit networks, we have to consider how willing people are either to walk to service or wait to service.

Respondents overwhelmingly preferred to spend less time waiting and would be willing to walk further to do so.



By putting together what the data tells us about where transit would be in the most demand, where transit is the most needed, where it has the best potential to improve the lives of people, and how people value transit, we can then start envisioning a network that meets those needs going into the future.

3 Constrained Vision Concept

What is the Constrained Vision Concept?

The Constrained Vision Concept would create a network that improves upon the existing system—but is limited by cost. It assumes the creation of a new regional funding mechanism for transportation in the Charlottesville area. This new regional funding mechanism would provide a new transit funding resource for the region. This type of regional funding mechanism is new to Charlottesville, but is already in use elsewhere in Virginia. For example, the Central Virginia Transportation Authority (CVTA) provides new funding opportunities for transportation projects in the Richmond area. For the purposes of constructing a Constrained Vision Plan for the region, the study team discussed various potential assumptions with the Regional Transit Partnership and key stakeholders. Based on those conversations, the Constrained Vision Plan is built on the following financial assumptions:

- A regional funding framework similar to the CVTA in the Richmond region and most funding dedicated to the regional transit system. Using tax revenue sources (sales and fuels taxes) similar to the CVTA, the region could produce about \$26 million annually to support transit services.
- The new regional funding would supplant most existing local funding sources for transit, so that most local contributions to transit funding would no longer be needed. The primary downside to this assumption is that currently local governments contribute about \$8 million per year, collectively, to CAT and JAUNT. If regional funding mostly supplants this local funding, then the net new dollars available to increase transit service is only about \$18 million.

What Changes for the Entire Network?

In the Constrained Vision, we expanded the hours that every service operates on (or span of service). Most fixed-route services and several regional services in this concept will now run seven days a week. We've also maximized the amount of "all day" service—that is, service that runs consistently both during the morning and evening peak periods and during the middle of the day.

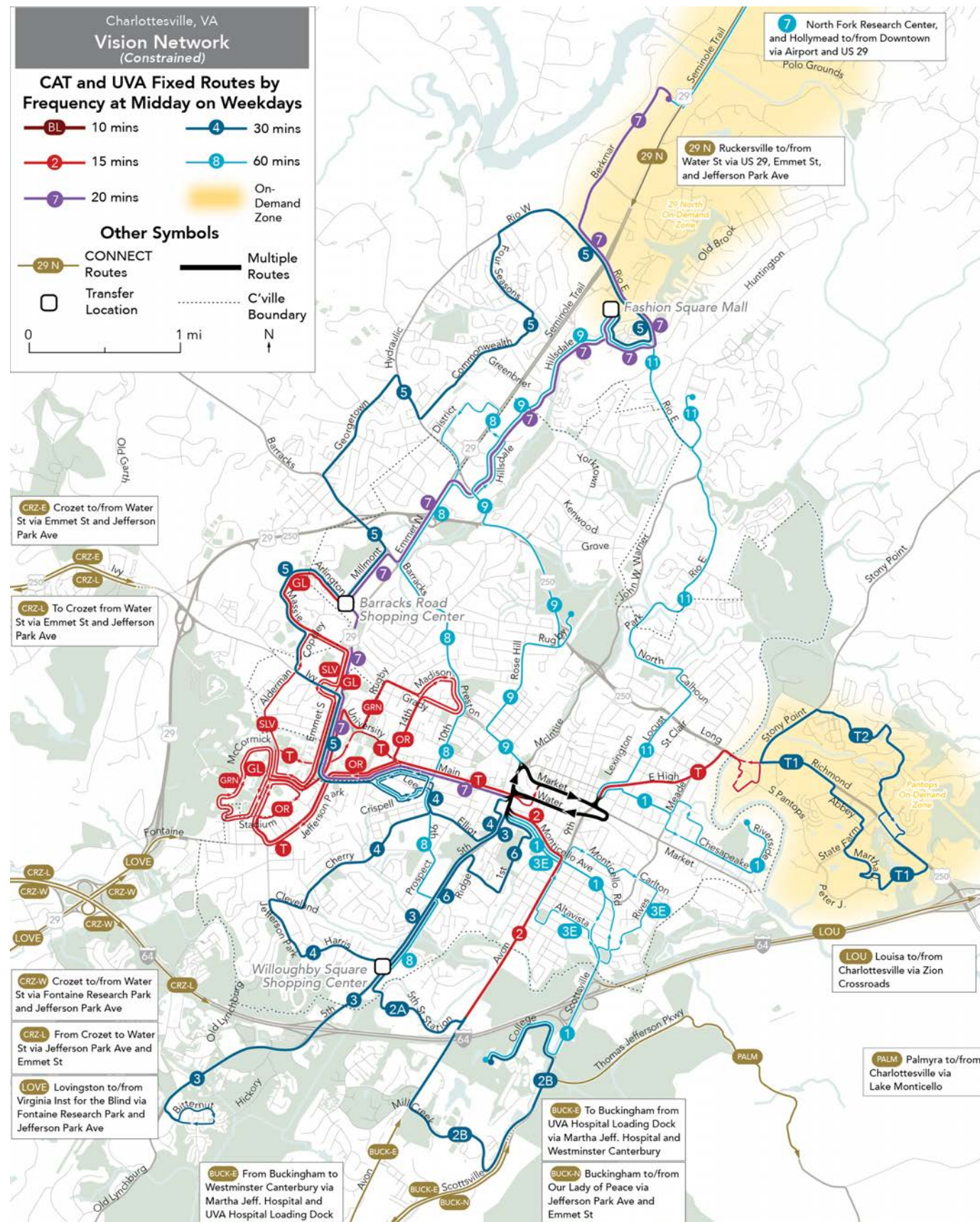
What Would It Cost?

Because a transit agency's costs can vary widely, we look at revenue hours as one way to determine how much transit service costs. Revenue hours are defined as each hour a vehicle spends running on the street, picking up and dropping off passengers. Revenue hours generally track with an agency's operating costs.

For services operated by CAT, the Constrained Vision would represent a 113% increase in the total amount of revenue hours compared to the existing service. For services operated by Jaunt (excluding ADA paratransit service), the Constrained Vision would represent a 154% increase in the total amount of revenue hours compared to the existing service. These figures only represent the cost of running the service and do not take into consideration any capital costs.

The next pages will show maps of the constrained network with commentary on changes made to the network as compared to the Baseline Network. Subsequent pages will discuss the changes in access, proximity, and span of service in the concept.

What is the Constrained Vision Concept?



What Changes in the Urban Network?

The urban network is largely based on the baseline network with some key changes to the network where they would be the most beneficial.

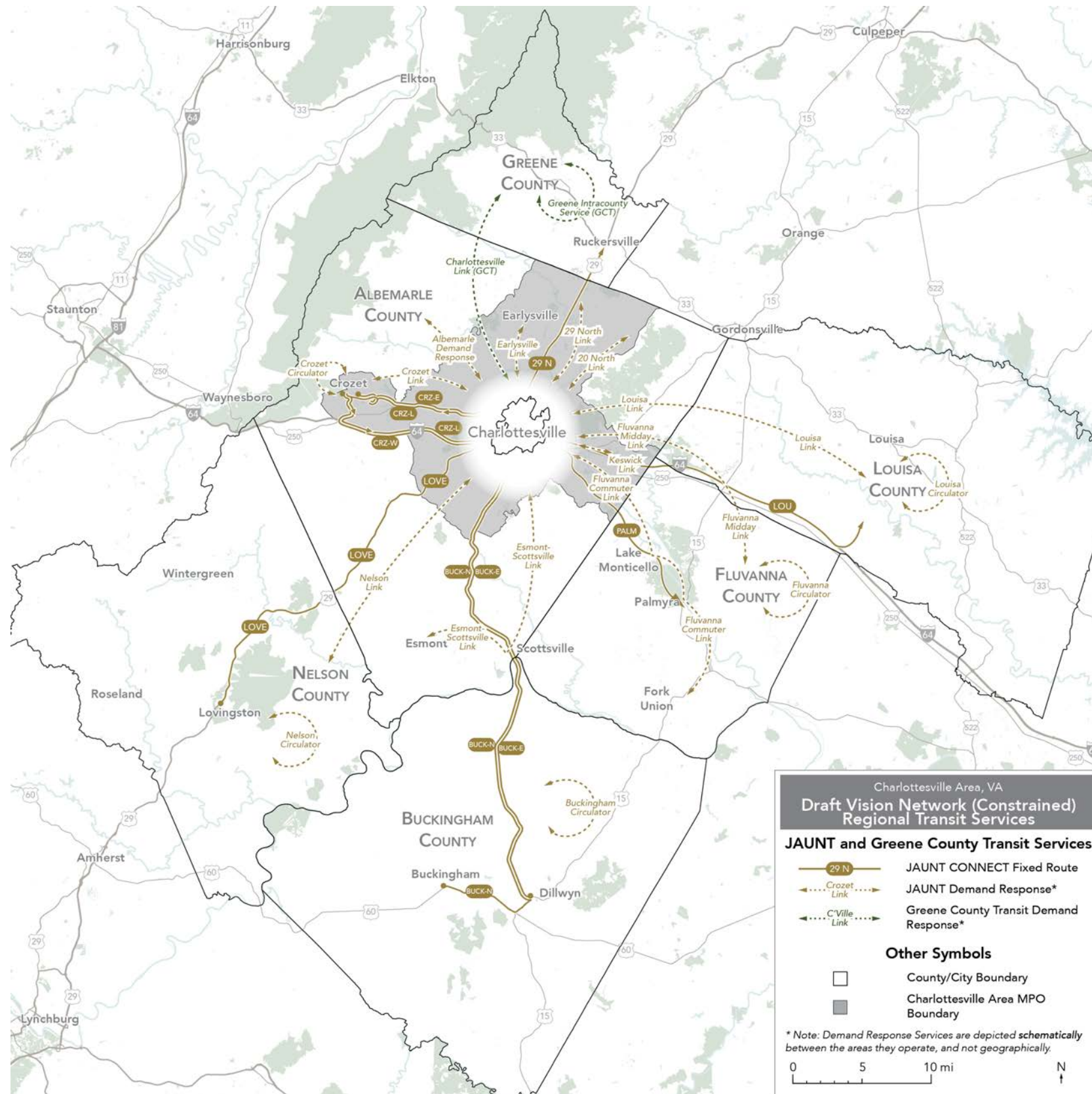
This includes improvements to the frequency on Route 7 to provide service every 20 minutes and enhancing service on the 2A and 2B to provide 15-minute frequencies along Avon Street. This concept would also extend the Trolley to Pantops and create two new branches of the trolley, greatly expanding transit service in Pantops.

The concept would provide hourly all-day service to the airport, UVA's North Fork Research Park, and Hollymead with an extended Route 7. This means that once an hour, one bus on the 7 will run between downtown Charlottesville and the North Fork Research Park.

We've assumed that the on-demand zones as proposed in the Albemarle Transit Expansion Study would be in place in this network.

No changes have been made in this scenario to routes currently operated by UVA.

Constrained Vision Concept - Regional



What Changes in the Regional Network?

The regional network in the Constrained Vision Concept looks similar to the Baseline Network in terms of the name and types of services, but the span (how many days and hours each service runs) and the number of trips changes.

CONNECT routes

All CONNECT routes would now run seven days a week and provide two additional trips a day compared to the Existing network. This concept would also create new CONNECT lines to Louisa and Palmyra. Changes made to the urban network would also enable the extension of the 29 North CONNECT from Hollymead all the way to Ruckersville.

Circulator services (intra-county)

Existing county-wide circulator services provided by Jaunt would be expanded in Nelson, Greene, Louisa, and Fluvanna counties, as well as an expansion of the Albemarle County rural demand response service. There would also be a new circulator service in Buckingham County. These services would now run all day, seven days a week, but would still require a reservation the night before.

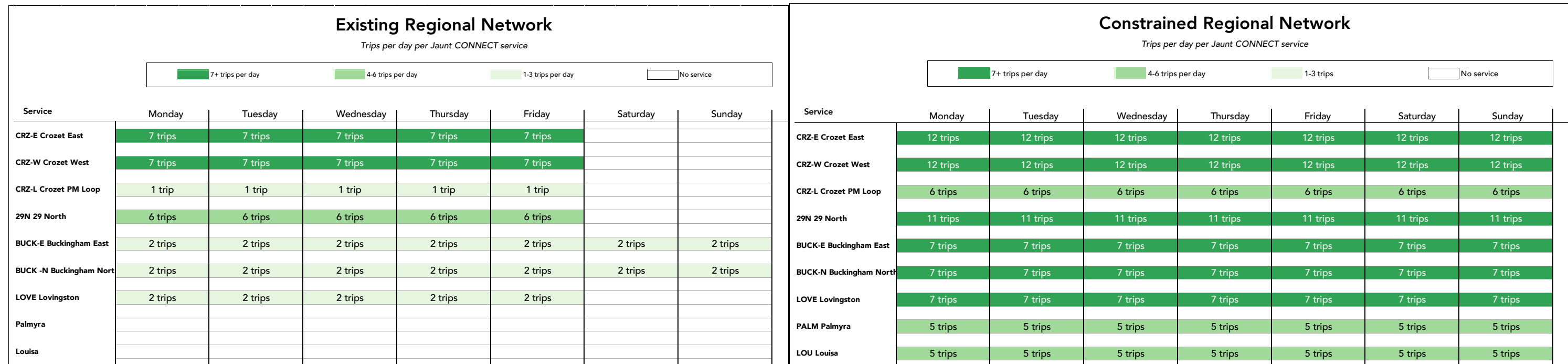
Link services (intra-county to and from Charlottesville)

Link services connecting to Charlottesville and urban Albemarle County would be the same as in the existing network.

Changes to Regional Services

Because the Constrained Concept does not dramatically change the types of services operated outside the urban area (only how long a service is operational for during the day), proximity isn't a useful way to demonstrate the change in service. Instead, we visualize how the service has changed either by how many hours each service runs during the day (for Circulator services) or how many trips per day each service makes (for CONNECT services). The charts below demonstrate how the Constrained Concept affects regional services.

In the Constrained Concept, we have scaled up all Circulator services to operate seven days a week, from 6 am to 7 pm. We've also expanded CONNECT services by providing an additional 5 one-way trips (or 2.5 round-trips) for each service and have introduced services to Louisa and Palmyra. Link services (services from regional destinations to and from Charlottesville) remain similar to today.

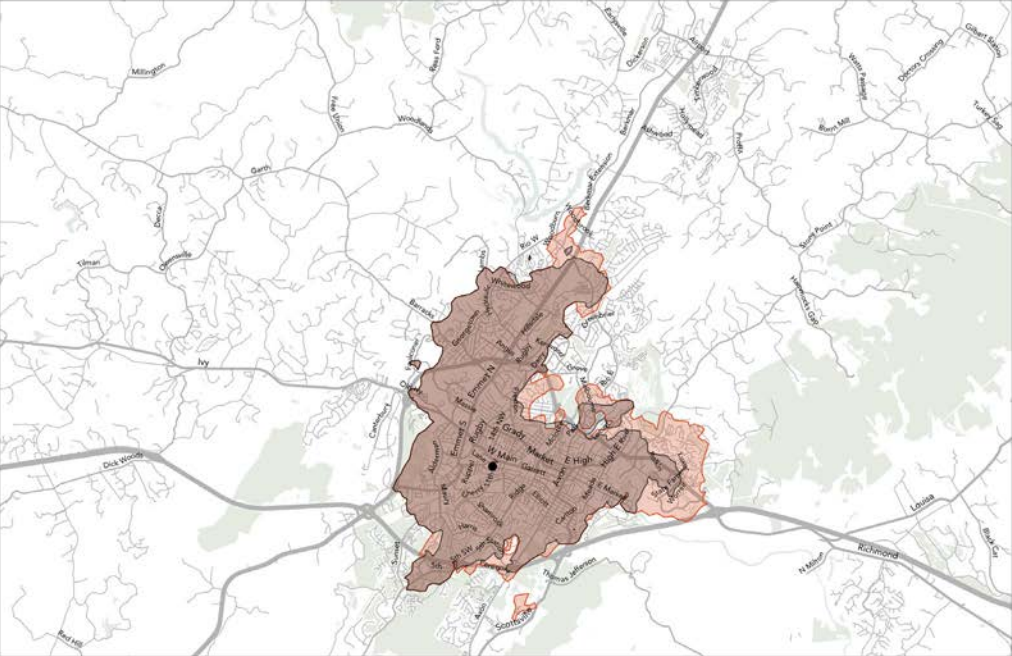


Access in the Constrained Vision Concept

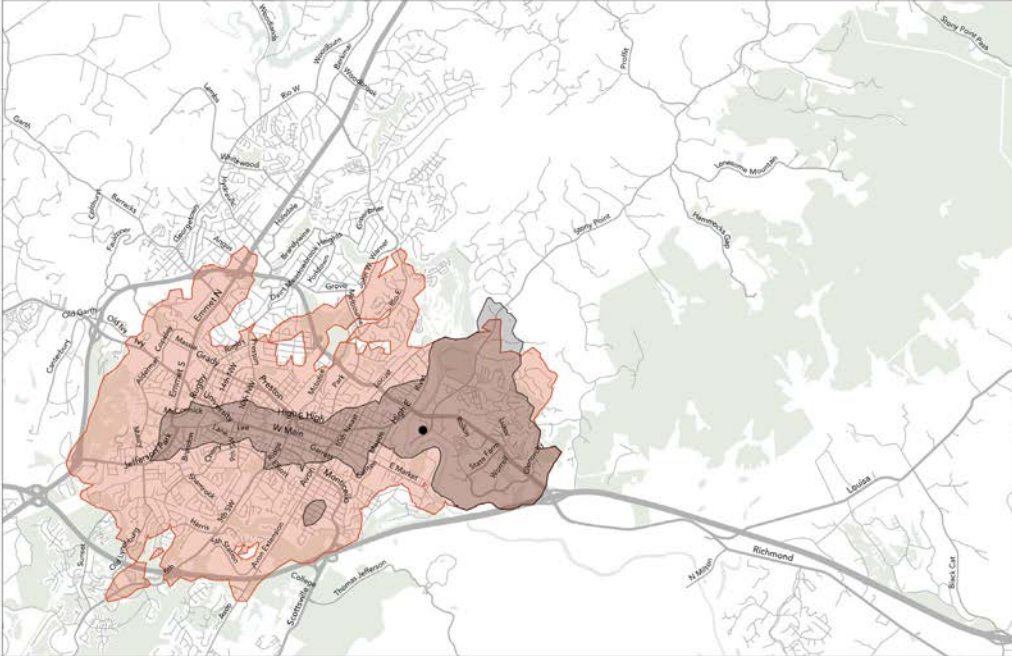
Isochrones

One way we visualize the usefulness of transit and how it connects people to places is with isochrones. Each isochrone shows how far you can go from a given location in a reasonable amount of time, as an area on a map. We can then calculate the number of people and jobs in this area

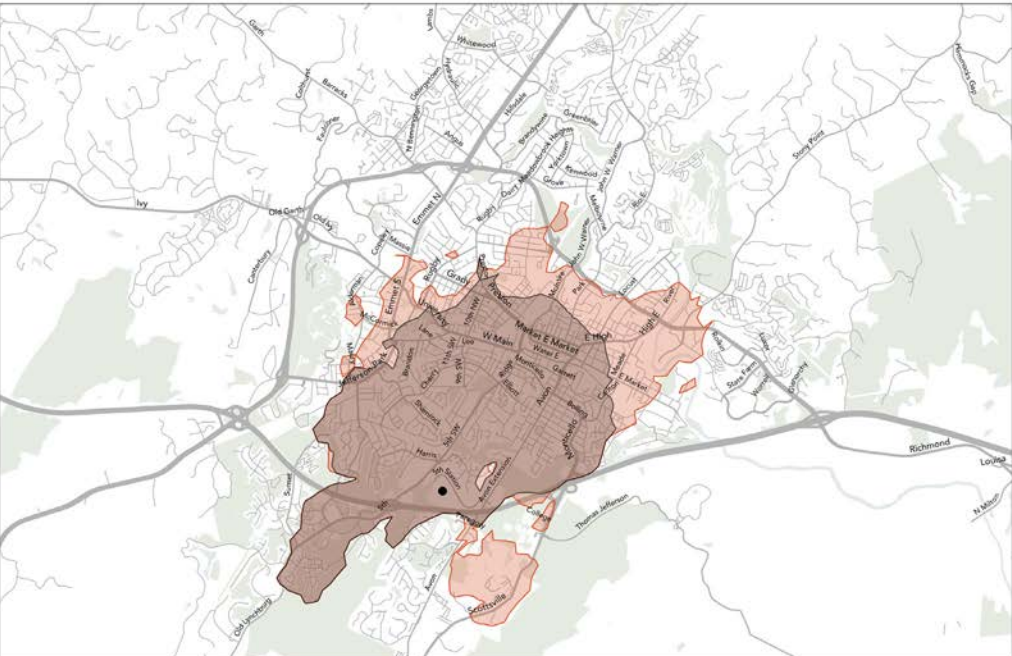
In the Constrained Vision, the places you can reach does increase from the Baseline Network, but not significantly in certain areas. Because the Constrained Vision is based on what is proposed to operate in 2022, **no one would be worse off** compared to baseline.



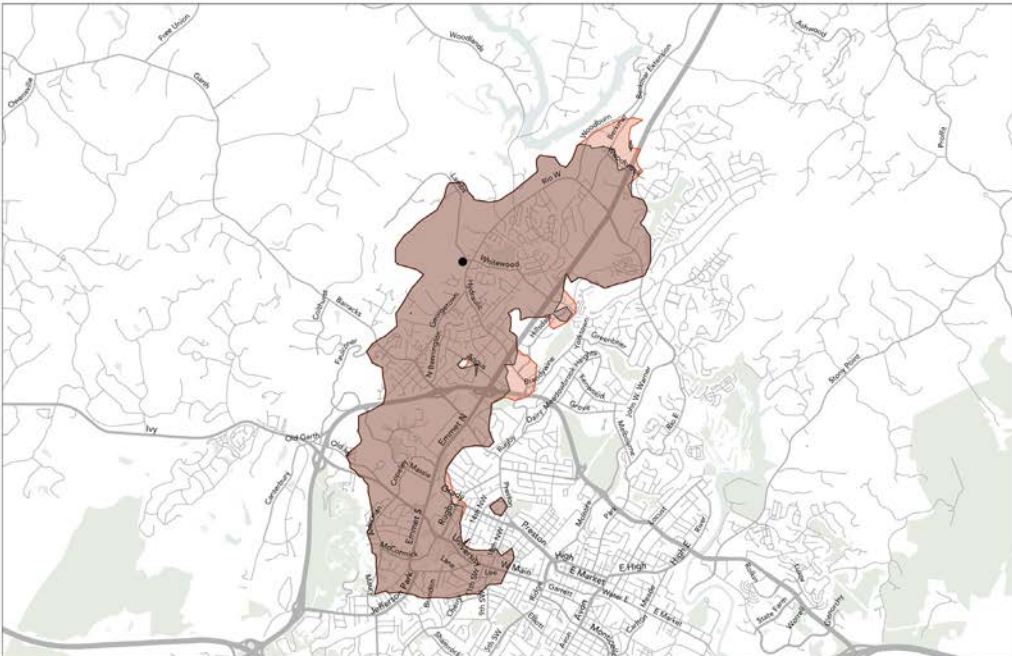
From
UVA Hospital
in the
**Constrained Vision
Network**
on weekdays at noon,
using transit, you can reach
62,400 **67,200**
Jobs **Residents**
in 60 minutes



From
Pantops Shopping Center
in the
**Constrained Vision
Network**
on weekdays at noon,
using transit, you can reach
44,600 **53,200**
Jobs **Residents**
in 60 minutes



From
5th Street Station
in the
**Constrained Vision
Network**
on weekdays at noon,
using transit, you can reach
37,500 **41,200**
Jobs **Residents**
in 60 minutes



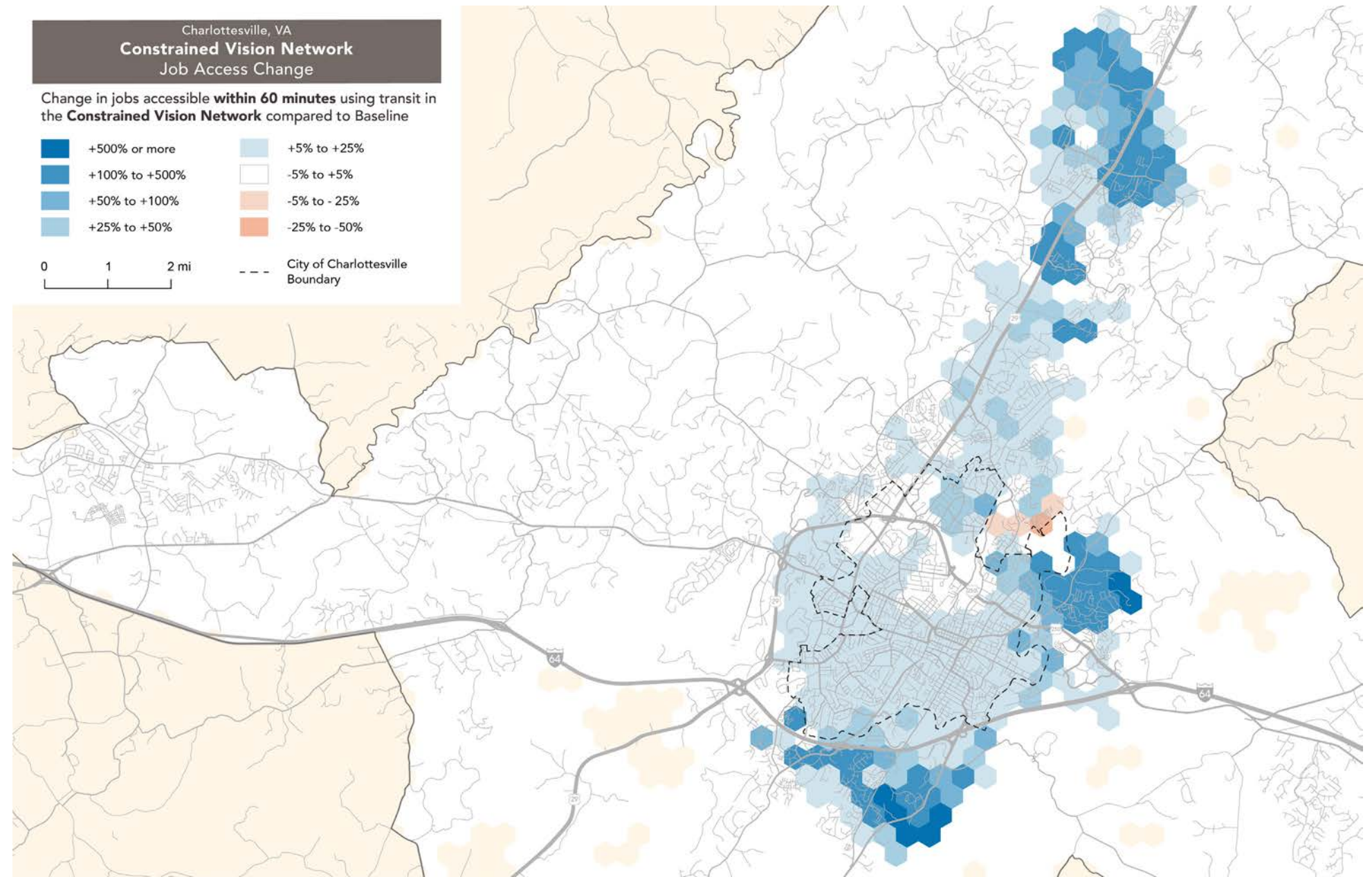
From
Albemarle High School
in the
**Constrained Vision
Network**
on weekdays at noon,
using transit, you can reach
36,300 **24,300**
Jobs **Residents**
in 60 minutes

Access to Jobs

A key measure of the usefulness of transit is how it connects people to employment. Job access is an indicator of both the work opportunities that can be reached by transit, and the businesses and services customers or clients could choose to travel to.

The map to the right shows the change in the number of jobs someone can reach by walking and transit in 60 minutes when comparing the Baseline and Constrained Vision Concept networks. Each hexagon on the map is shaded by the percentage increase or decrease in jobs reached.

In the Constrained Vision, most places see minor increases in access, with some areas to the south and in the north of the study area seeing more significant changes, largely due to increased frequencies. Note that as this concept was based on the Baseline Network, **no one would be worse off compared to Baseline** and any decreases are related to a lack of detail on timed transfers between routes.



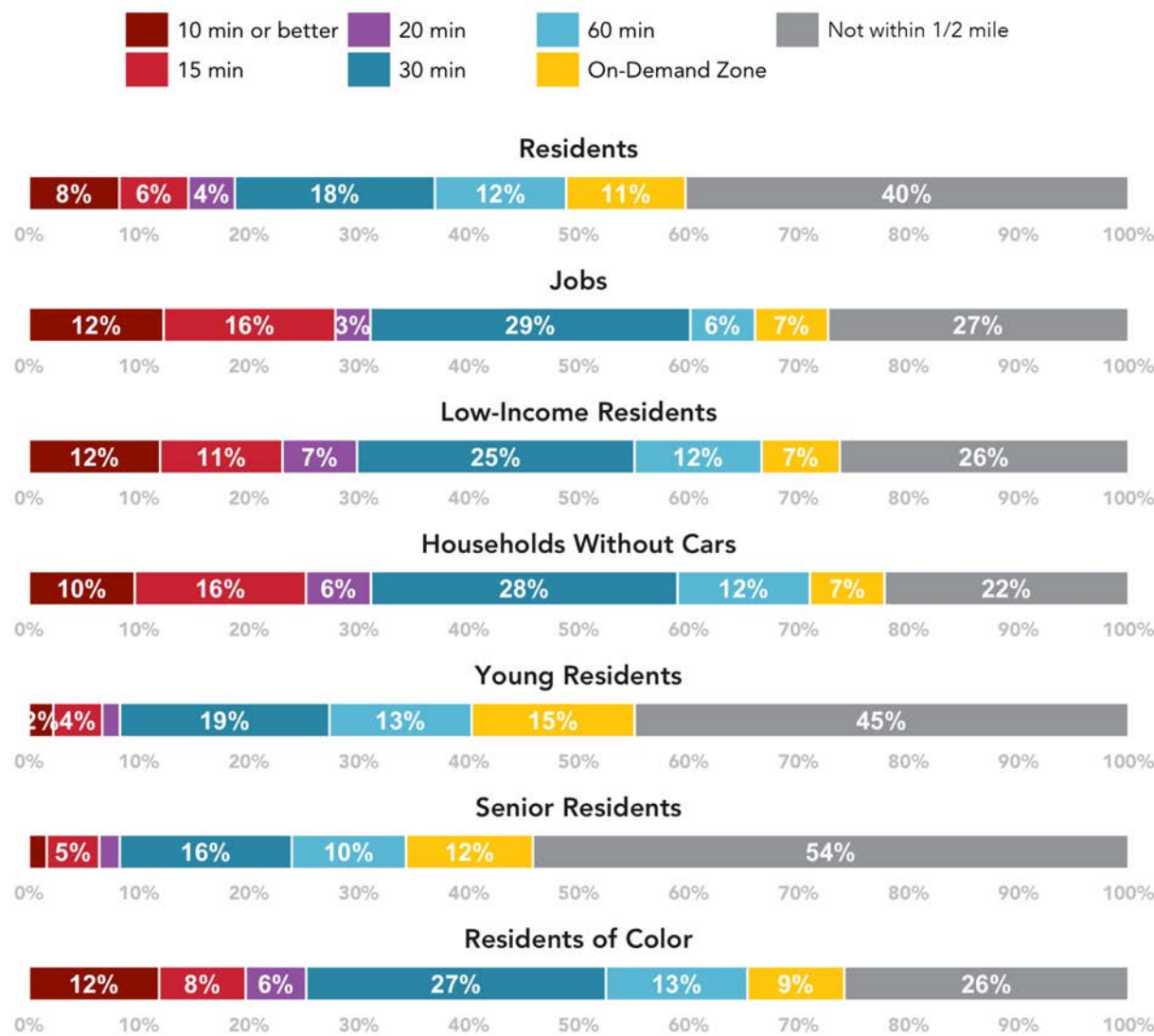
Proximity To Transit - Urban

If access measures the different places people can get to on transit, proximity measures how close people are to transit. We measure proximity as the number of people that are within a 1/2 mile to a stop on a route. Proximity is also a valuable measure for more rural/regional areas as the places one can walk to and from a transit stop are more spread out.

In the Constrained Vision, proximity to *higher-frequency transit (service that comes every 15 minutes or better)* is improved within Charlottesville and urban Albemarle County (noted here as the Charlottesville/Albemarle MPO), but *proximity to any transit* does not change, as the network has not significantly changed compared to baseline.

Proximity to Transit at Midday - Weekday

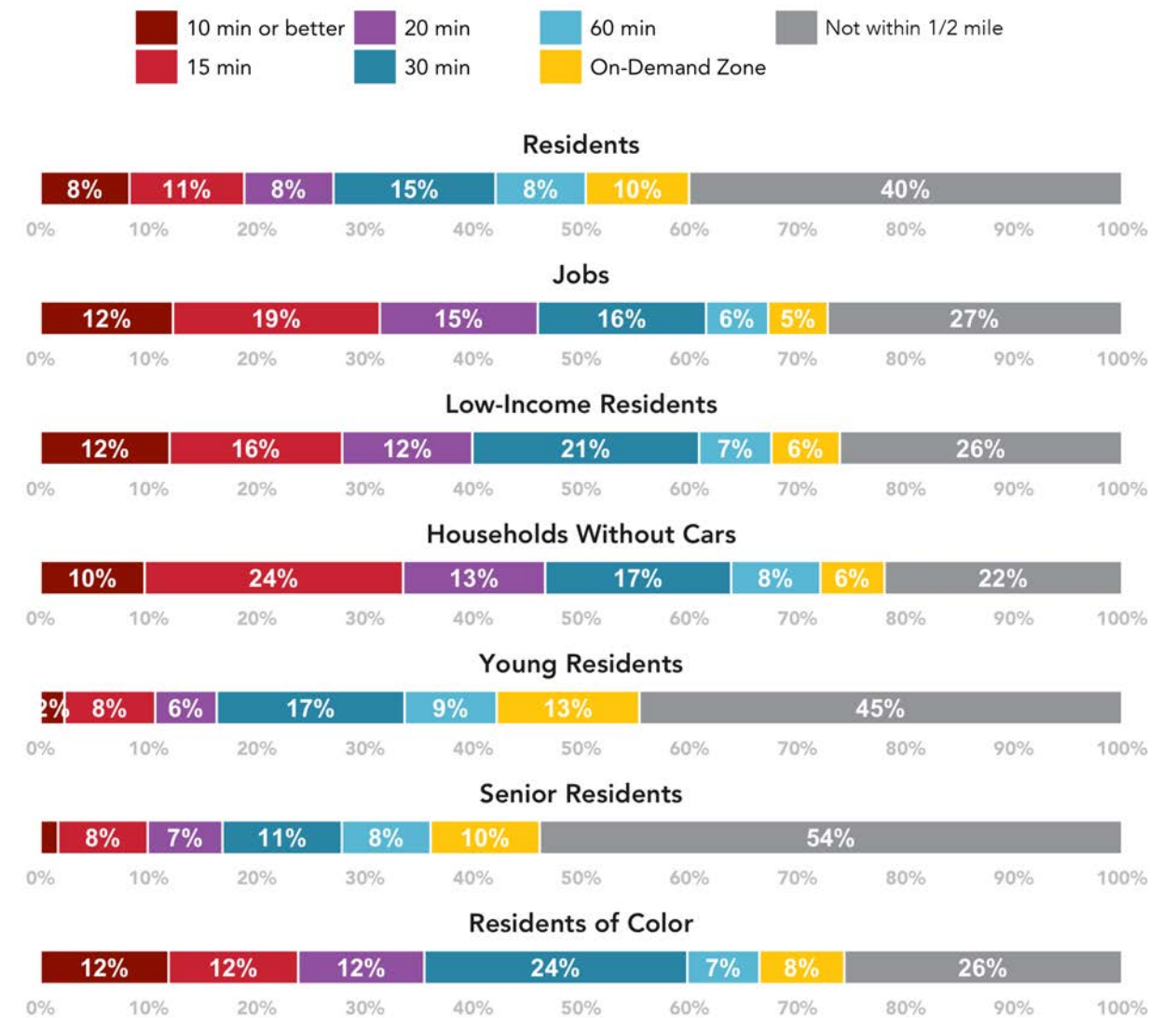
What percentage of each group in Charlottesville/Albemarle MPO is near transit in the Baseline Network?



Note: Proximity is measured as being located within 1/2 mile of a bus stop.

Proximity to Transit at Midday - Weekday

What percentage of each group in Charlottesville/Albemarle MPO is near transit in the Constrained Vision Network?



Note: Proximity is measured as being located within 1/2 mile of a bus stop.

4 Unconstrained Vision Concept

What is the Unconstrained Vision Concept?

The Unconstrained Vision Concept is a fundamental rethink of transit service in the Charlottesville area. It imagines a future where the transit network is substantial enough to meet the key community goals around economic development, land use, housing affordability, climate, and other policy goals. In this sense, one could also call this the Policy Network, as it supports many community policies.

What Changes for the Entire Network?

In the Unconstrained Vision, we expanded the hours that every service operates on (or span of service) and the days that every service operates on. Every service in this concept will now run seven days a week. On weekdays, most services on both the urban and regional networks would run at minimum from 7 am to 8 pm, with some services running to midnight. We've also maximized the amount of "all day" service—that is, service that runs consistently both during the morning and evening peak periods and during the middle of the day.

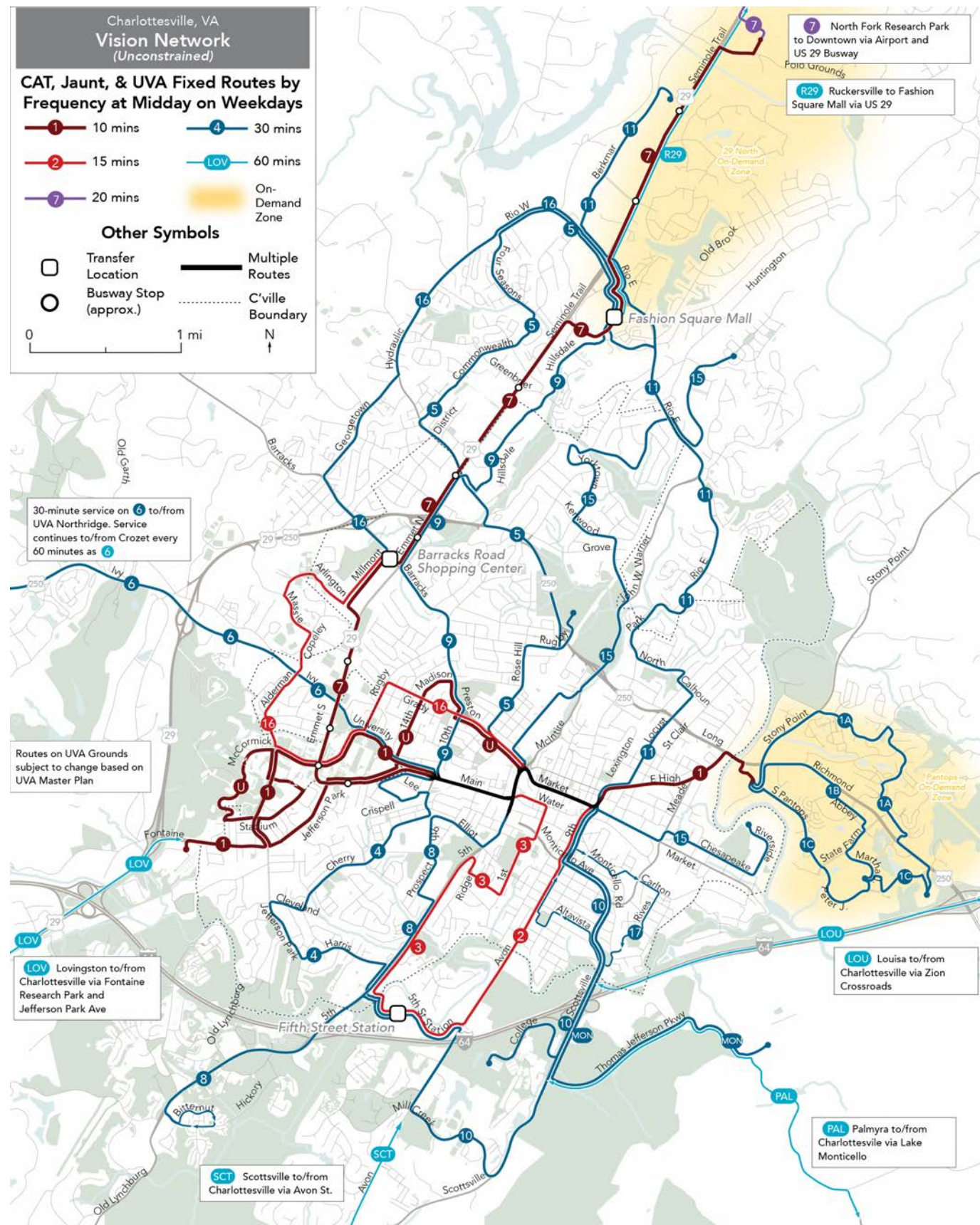
What Would It Cost?

Because a transit agency's costs can vary widely, we look at revenue hours as one way to determine how much transit service costs. Revenue hours are defined as each hour a vehicle spends running on the street, picking up and dropping off passengers. Revenue hours generally track with an agency's operating costs.

For services operated by CAT, the Unconstrained Vision would represent a 310% increase in the total amount of revenue hours as compared to the existing service. For services operated by Jaunt (excluding ADA paratransit service), the Unconstrained Vision would represent a 704% increase in the total amount of revenue hours as compared to the existing service. These figures are for operations only and would exclude any capital cost.

The next pages will show maps of the constrained network with commentary on changes made to the network as compared to the Baseline Network. Subsequent pages will discuss the changes in access, proximity, and span of service in the concept.

Unconstrained Vision Concept - Urban



What Changes for Urban Services?

High-Frequency Routes and Corridors

We've introduced a network of high-frequency corridors with several routes that run every 15 minutes or more during the day, seven days a week. These high-frequency routes include:

- A new Route 1 (formerly the Trolley), connecting Fontaine Research Park, UVA, UVA Hospital, Downtown Charlottesville, and Pantops;
- Routes 2 and 3, converging at Fifth Street Station, connecting Avon Street (on Route 2) Fifth Street and Crescent Hall (on Route 3)
- Route 16 between Barracks Road and Downtown Charlottesville, connecting with the North Grounds of UVA, and
- Route 7, connecting the US-29 Corridor via Fashion Square Mall, Barracks Road, UVA, UVA Hospital, and Downtown,

Route 7 is unique as it will be part of a Bus Rapid Transit (BRT) corridor along US-29. This BRT corridor would provide a higher level of transit service and priority for buses travelling along the corridor. The investment in higher speeds on this corridor reflects its importance in the overall network, and that this corridor is much longer than others in the region, and therefore speed of service is important to improving access.

The rest of the fixed-route network in Charlottesville and urban Albemarle County would operate at 30-minute frequencies during the day.

More Routes to New Places

This network would also provide all-day service to the airport, UVA's North Fork Research Park, and Hollymead every 20 minutes. In addition, new hourly services to and from regional destinations would improve connectivity between Charlottesville proper and the rest of the area.

Key Transfer Locations

Four points would enable transfers between services: a redeveloped Fashion Square Mall, Barracks Road Shopping Center, Fifth Street Station, and a new facility near Market Street in downtown.

UTS and Services Through UVA

In the Unconstrained Vision, service in and around UVA's main campus and satellite facilities is bolstered by fixed-route transit. Thus, UVA has the opportunity to reallocate its service hours into the U route as shown in this concept that complements the rest of the transit network and provides connectivity that is similar to some of the existing UTS routes. As UVA is concurrently preparing its Master Plan, which will inform future directions on land use and mobility corridors, routes travelling through UVA are subject to change.

What is Bus Rapid Transit?

A Higher Standard of Transit

Bus rapid transit, or BRT, is a type of transit service where buses have priority over general traffic through a set of measures like dedicated lanes, queue jump lanes, and signal priority. Often these measures are paired with wider stop spacing to increase the average speed of service. When done properly, and with frequent service, bus rapid transit can provide many of the benefits of rail transit, namely higher capacity, higher speed, and improved customer experience, with more flexibility.

What Does Good BRT Look Like?

High-Quality Operations

Bus rapid transit services are often on routes with high ridership or passenger demand. Therefore, the quality of service along the route should be high as well. This often means running a service that is available at least every 15 minutes, seven days a week, from morning to evening. At this level of service, there's no need to consult a schedule or timetable - a bus will be there soon.

BRT services often have widely-spaced stops compared to traditional bus services. Stops are often spaced every 1/2 mile, while vehicles on conventional bus services may stop as often as every 1/4 mile or less.

Transit Priority

Transit priority is what helps bring many of the benefits of bus rapid transit. There are many interventions that can be implemented along a BRT corridor, especially at intersections, to improve transit speed and reliability. **Without transit priority measures, a bus rapid transit line risks being delayed by traffic and cannot be considered "rapid"**. Transit priority can consist of:

- **Dedicated lanes**, either in the center of the road (median) or on the sides of the road next to the curb;
- **Signal priority** at intersections, including but not limited to: dedicated lights for transit vehicles, early or extended green signals triggered by transit vehicles; and/or
- Physical measures like **queue jumps**, which allow transit vehicles to get a "head start" at intersections.

Any number of these priority measures can and should be implemented along a BRT corridor or route, often with specific interventions at certain areas (like dedicated lanes in an area more likely to be congested).



An example of dedicated transit lanes in suburban Toronto, Canada.

Amenities For Improved Efficiency and Passenger Experience

BRT systems often include a higher set of passenger amenities compared to the conventional bus network. These amenities both improve the customer experience, and may improve the speed and reliability of service. These amenities often include:

- **Distinct stops or stations** with shelters, real-time passenger information displays, ample seating, and other high quality amenities;
- **All-door boarding**, with off-board fare payment and proof of payment, enabling passengers to buy a ticket in advance and board at any door, reducing the time spent at a stop;
- **Level boarding** at stops and stations, which enables passengers to board faster and improves the accessibility for passengers travelling with strollers, wheelchairs, or other mobility devices;
- **Distinctly-branded vehicles**, often with special seating layouts, dedicated spaces for bicycles, or other amenities.

Connectivity With Other Modes

High-quality transit like BRT should connect easily with other modes of travel. At BRT stations, there are often ample sidewalks

and crosswalks connecting to those sidewalks. As part of a broader transit network, BRT should also enable connections to other routes and can serve as a "backbone" for the rest of the transit network.

Where is BRT?

Bus rapid transit is being used by cities around the US and the world to provide higher-quality transit service. In Virginia, the most notable examples are GRTC's Pulse line in Richmond and the Metroway corridor in Arlington and Alexandria.



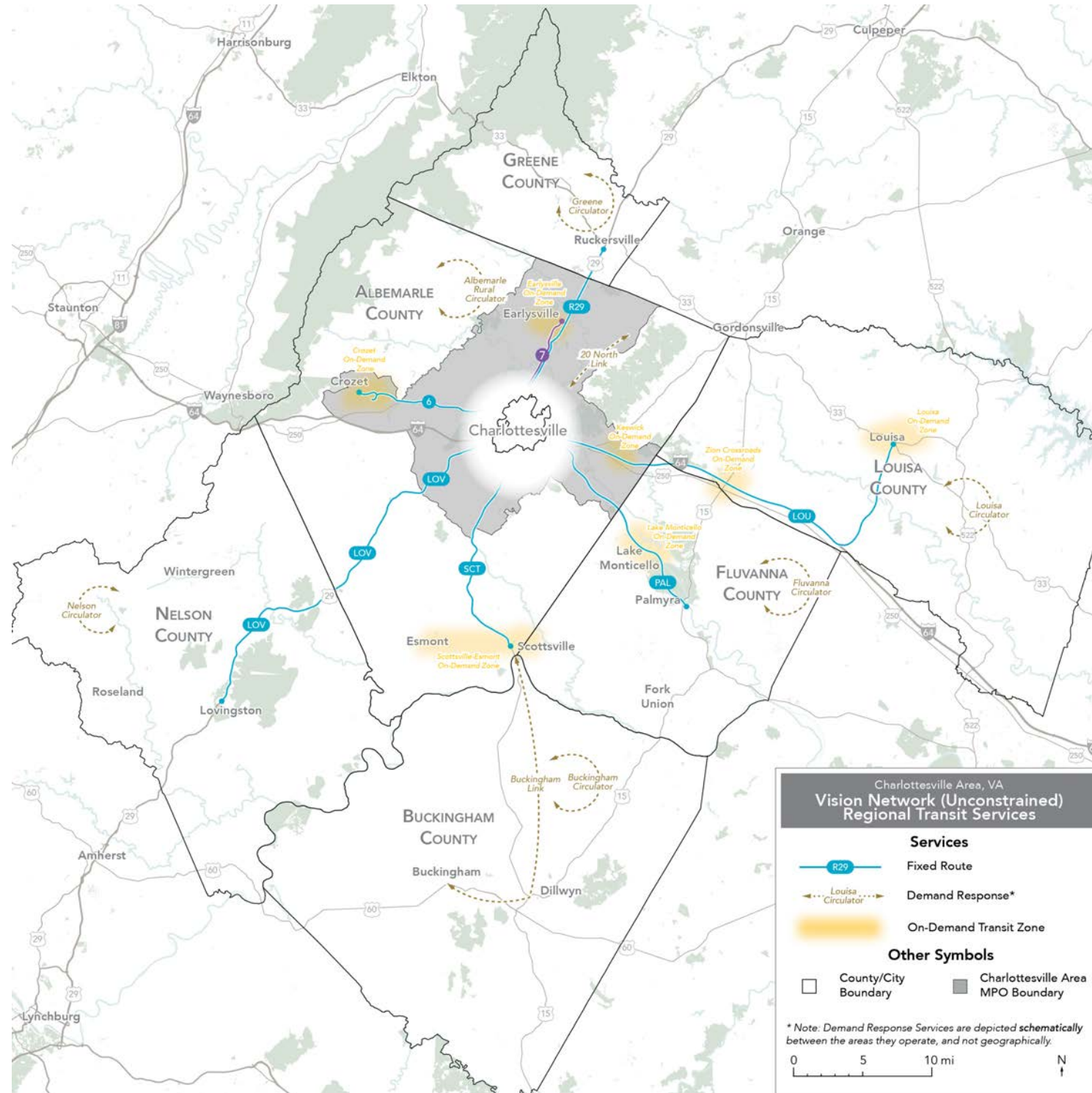
GRTC's Pulse line, showing some of the features of BRT like dedicated stops, dedicated lanes, distinct buses, and improved pedestrian access.

What could BRT look like in Charlottesville?

Given the importance of US-29 to the region and its long and continuously developed path, the Unconstrained Vision includes BRT from downtown through UVA to Fashion Square Mall and onward to the airport. Service would be operated by Route 7 every 10 minutes at midday along the core of the route from downtown to Brookhill with 20 minute service north to the airport.

The region has choices into the level of investment it wants to put to transit along US-29. A BRT service along US-29 with a high level of transit priority and a high quality of delivered service would improve access in the region, both directly along its route and throughout the rest of the network.

Unconstrained Vision Concept - Regional



What Changes for Regional Services?

New All-Day Fixed Routes

There would be six new fixed-route services operating seven days a week between Charlottesville and these destinations:

- Crozet
- Scottsville
- Lovingston
- Palmyra
- Louisa
- Ruckersville

These services would largely replace the CONNECT services provided by Jaunt in the baseline network and the Constrained Concept.

New On-Demand Zones

Fixed-route services would be complemented by seven new on-demand transit zones, enabling people within these zones to book a ride on the same day and travel within the zone or connect to a fixed-route service. These zones would be in:

- Crozet
- Esmont and Scottsville
- Lake Monticello
- Zion Crossroads
- the town of Louisa
- Earlysville (with connections to Hollymead)
- Keswick (with connections to Pantops)

Enhanced Circulator Services

Finally, existing county-wide circulator services provided by Jaunt would be expanded in Nelson, Greene, Louisa, and Fluvanna counties, as well as rural Albemarle County. There would also be a new circulator service in Buckingham County. These services would now run all day, seven days a week, but would still require a reservation the night before.

Proximity in the Unconstrained Vision Concept

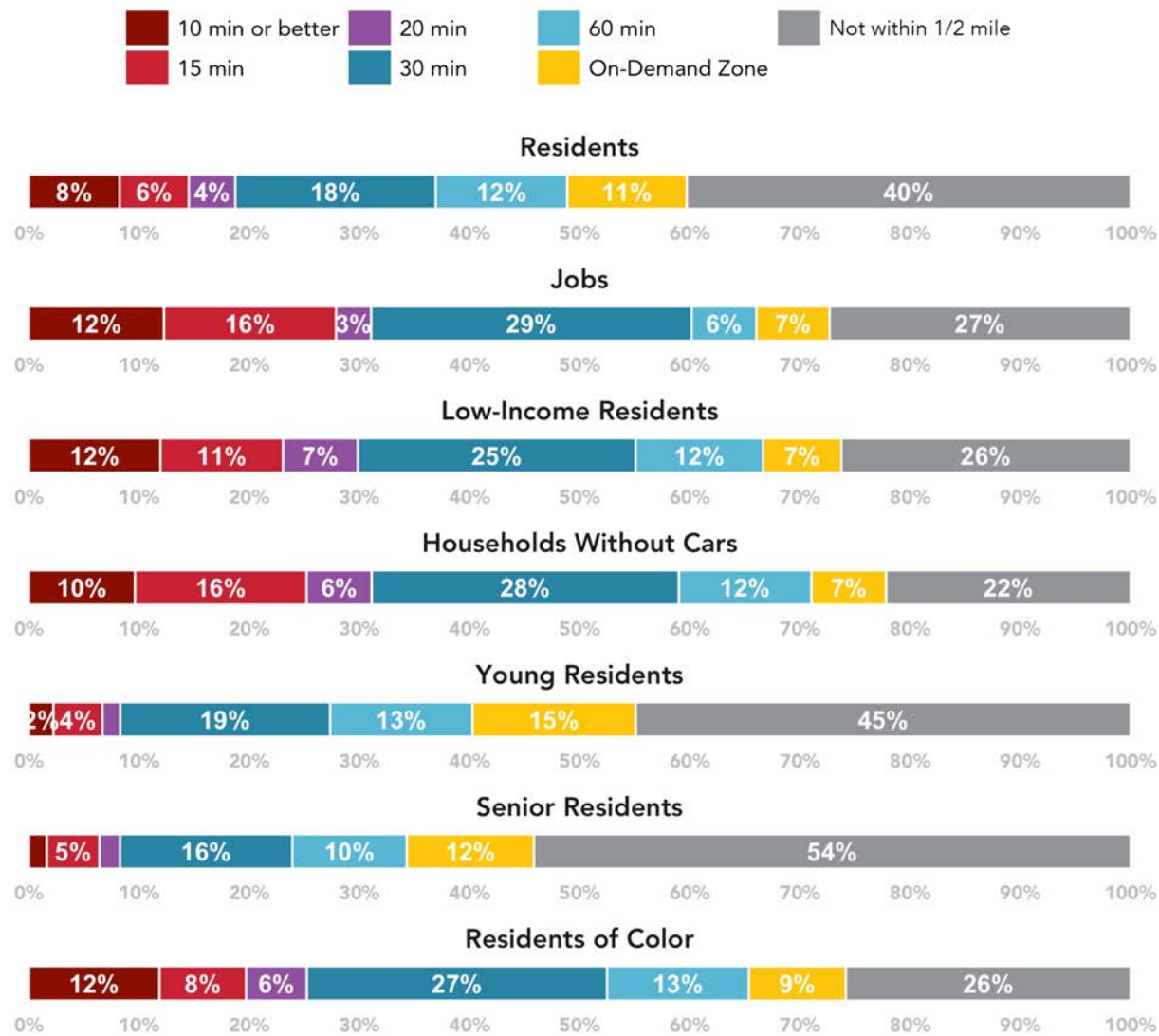
Proximity To Transit - Urban

If access measures the different places people can get to on transit, proximity measures how close people are to transit. We measure proximity as the number of people that are within a 1/2 mile to a stop on a route. Proximity is also a valuable measure for more rural/regional areas as the places one can walk to and from a transit stop are more spread out.

In the Unconstrained Vision, both proximity to higher-frequency transit (service that comes every 15 minutes or better) and proximity to any transit is improved within Charlottesville and urban Albemarle County (noted here as the Charlottesville/Albemarle MPO). More groups of people are now served by transit and especially by high-frequency transit.

Proximity to Transit at Midday - Weekday

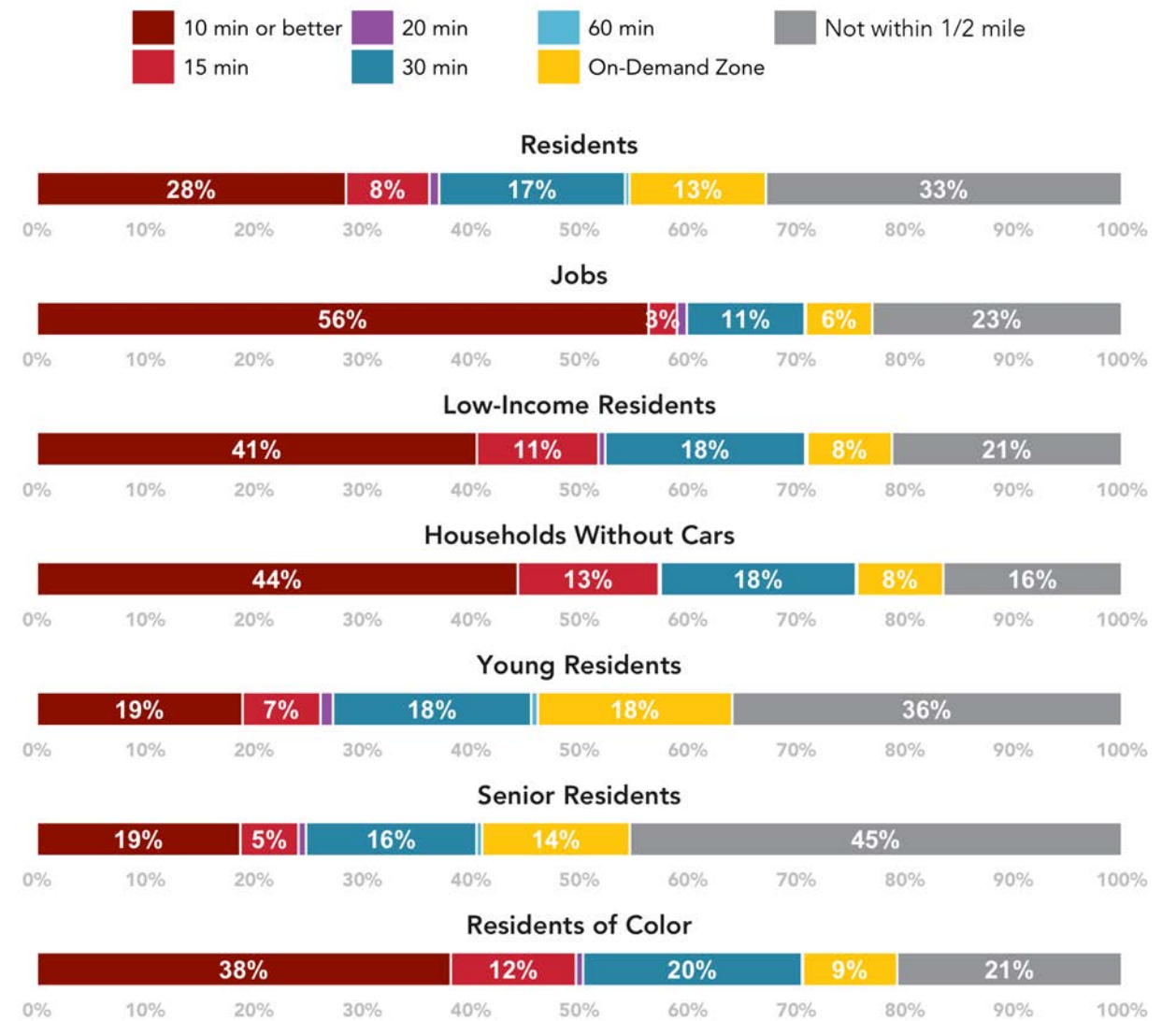
What percentage of each group in Charlottesville/Albemarle MPO is near transit in the Baseline Network?



Note: Proximity is measured as being located within 1/2 mile of a bus stop.

Proximity to Transit at Midday - Weekday

What percentage of each group in Charlottesville/Albemarle MPO is near transit in the Unconstrained Vision Network?



Note: Proximity is measured as being located within 1/2 mile of a bus stop.

Proximity To Transit - Regional

In the Unconstrained Vision, proximity to transit is also improved in the rest of the Charlottesville region.

In these charts, we only show residents and jobs as our analysis is based on block groups and block groups are not fine-grained enough in rural areas to allow for any significantly useful demographic measures.

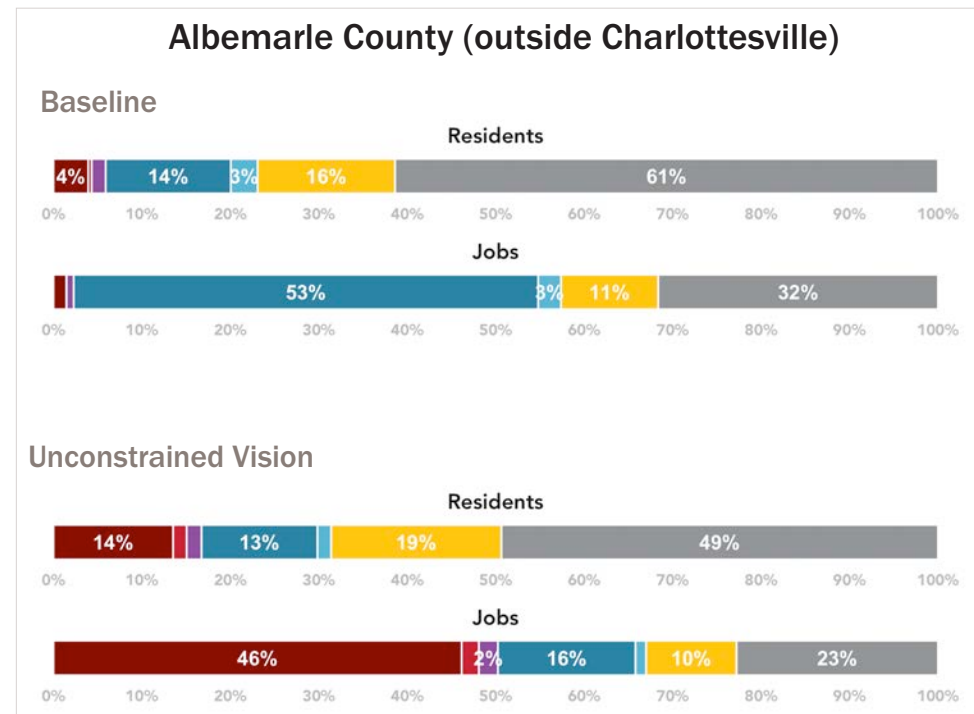
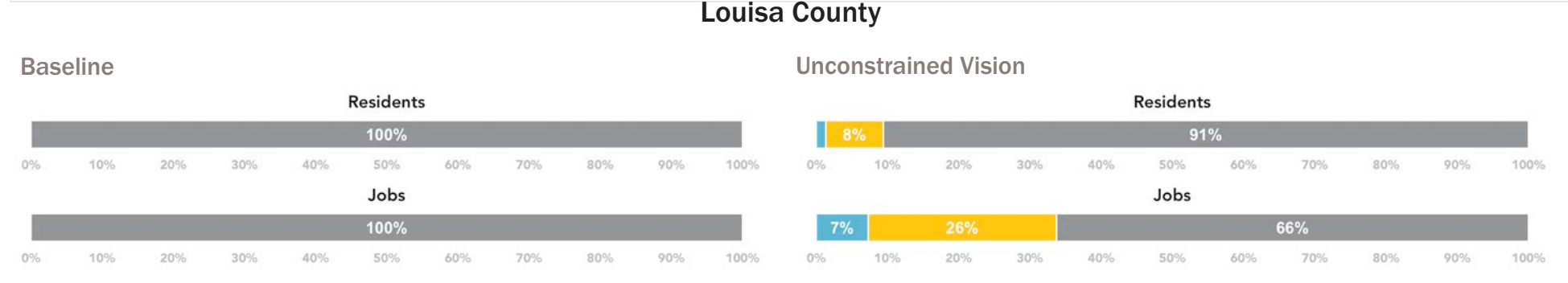
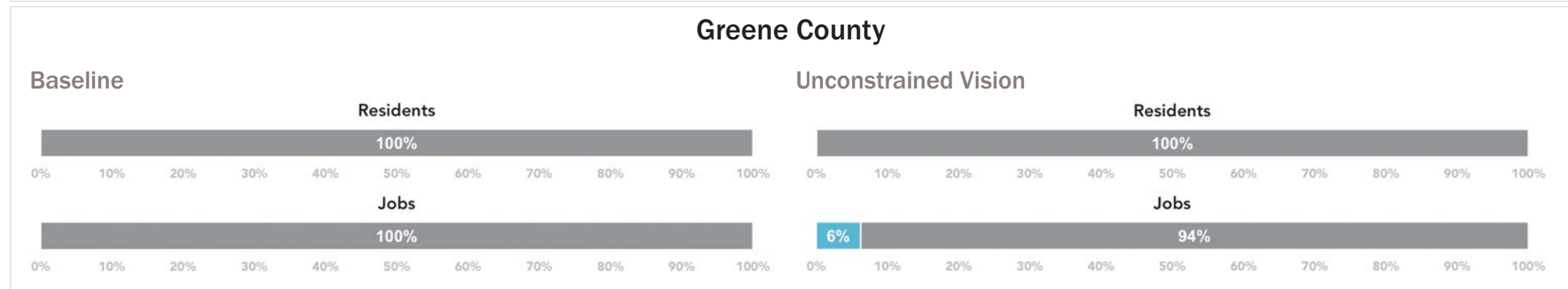
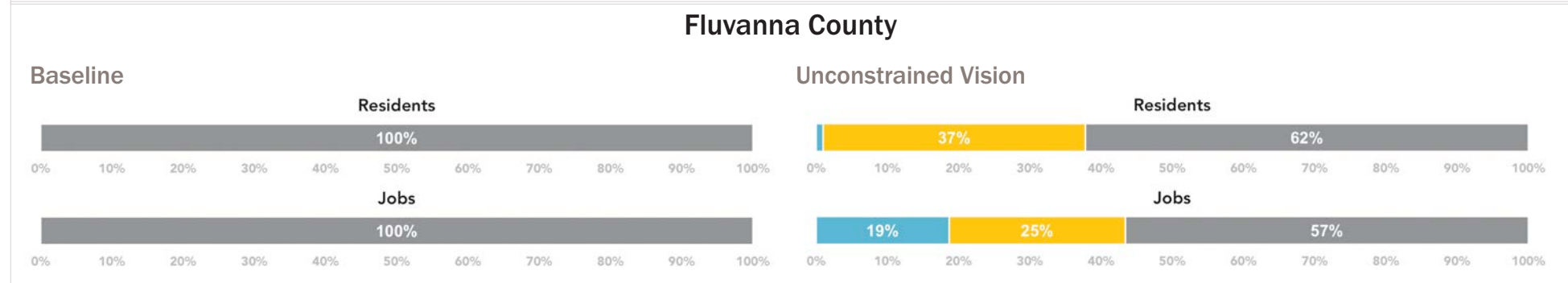
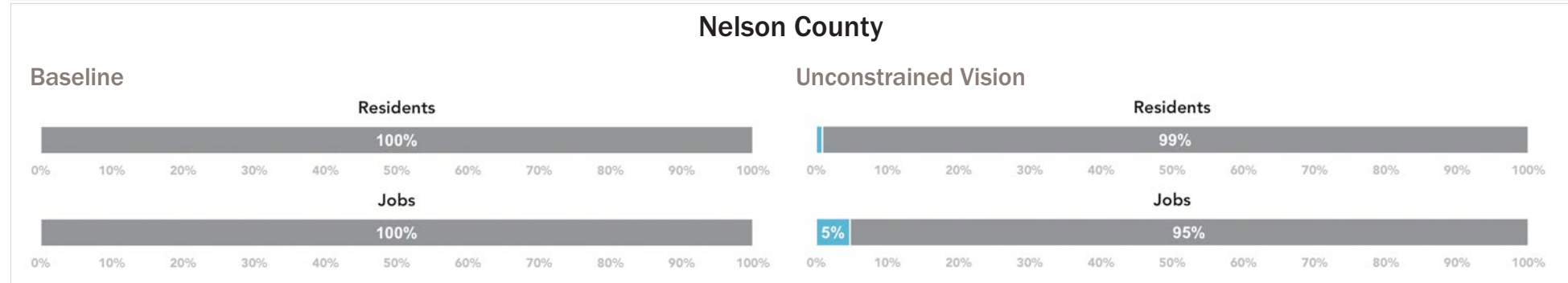
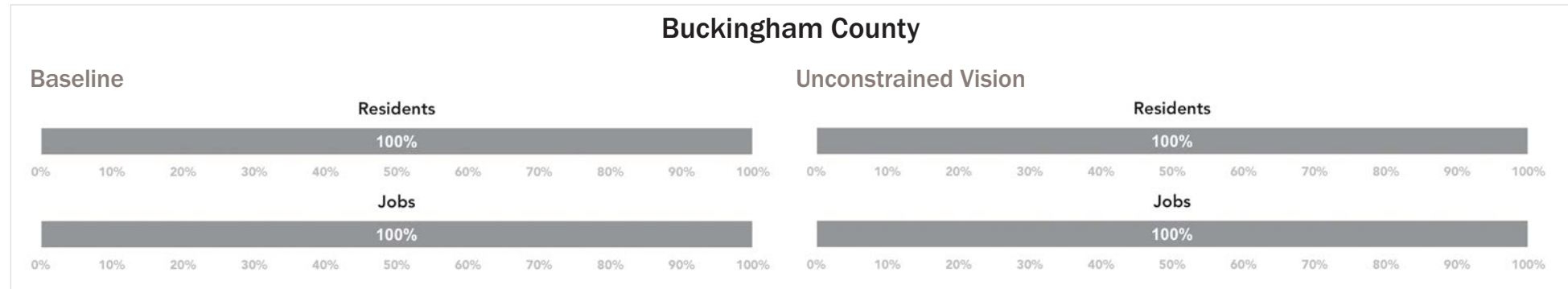
Legend



Notes

Proximity is measured as being located within 1/2 mile of a bus stop or within 1/2 mile of potential on-demand service. Proximity is measured on the midday of the week.

*24-Hour Reservation service indicates a service similar to the Jant Link or Circulator services today. Riders must call the day before to schedule service.



Proximity To Transit - Regional

In the Unconstrained Vision, proximity to transit improves in the rest of the Charlottesville region.

In these charts, we only show residents and jobs as our analysis is based on block groups and block groups are not fine-grained enough in rural areas to allow for any significantly useful demographic measures.

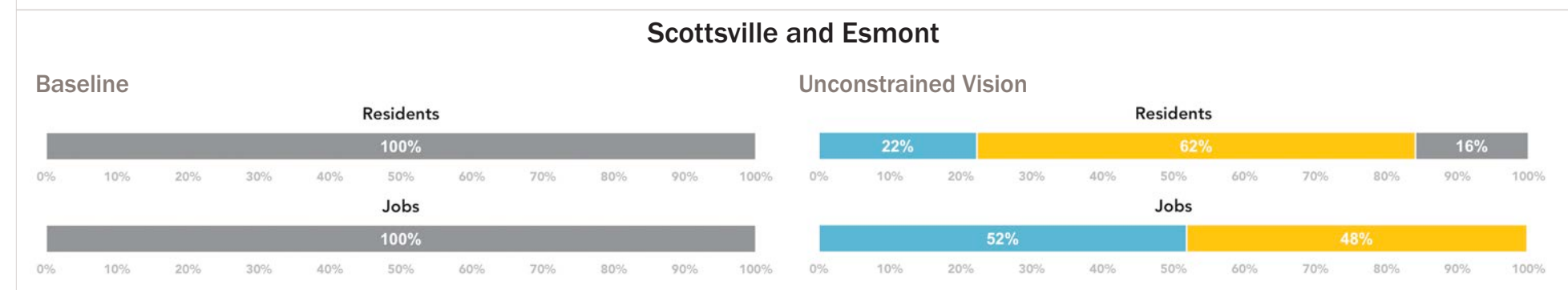
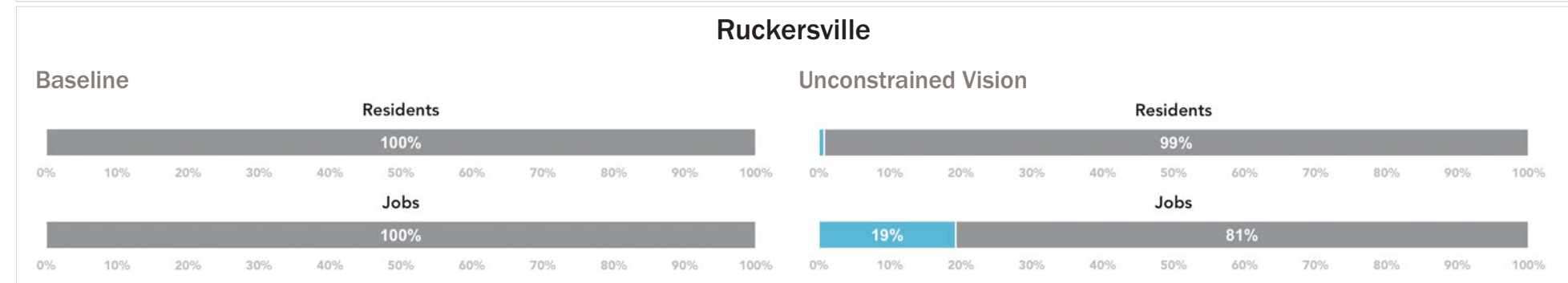
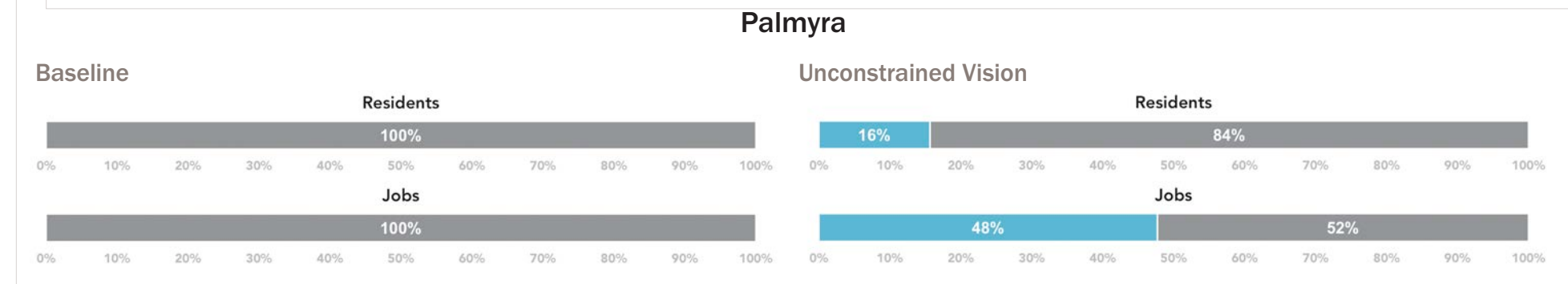
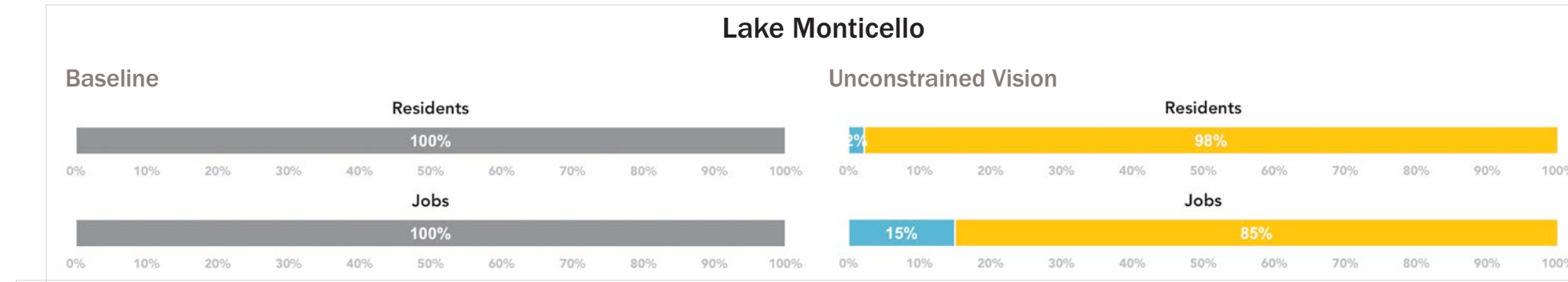
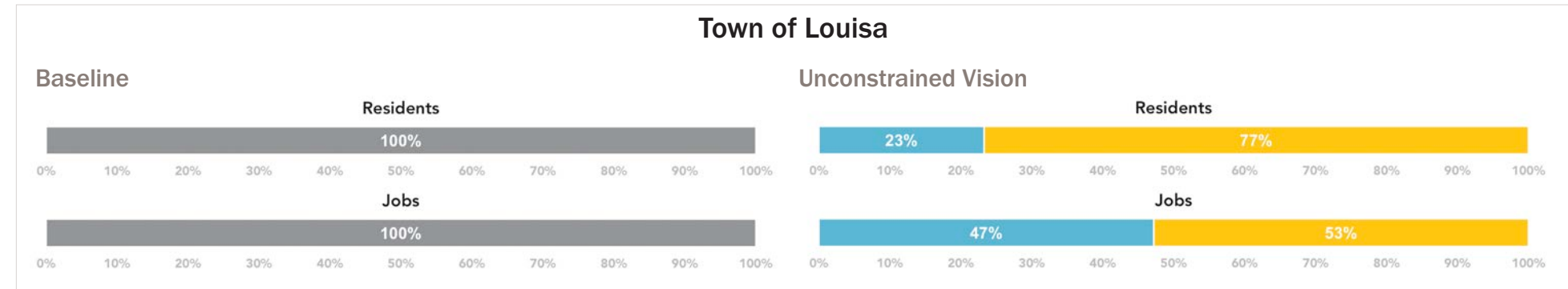
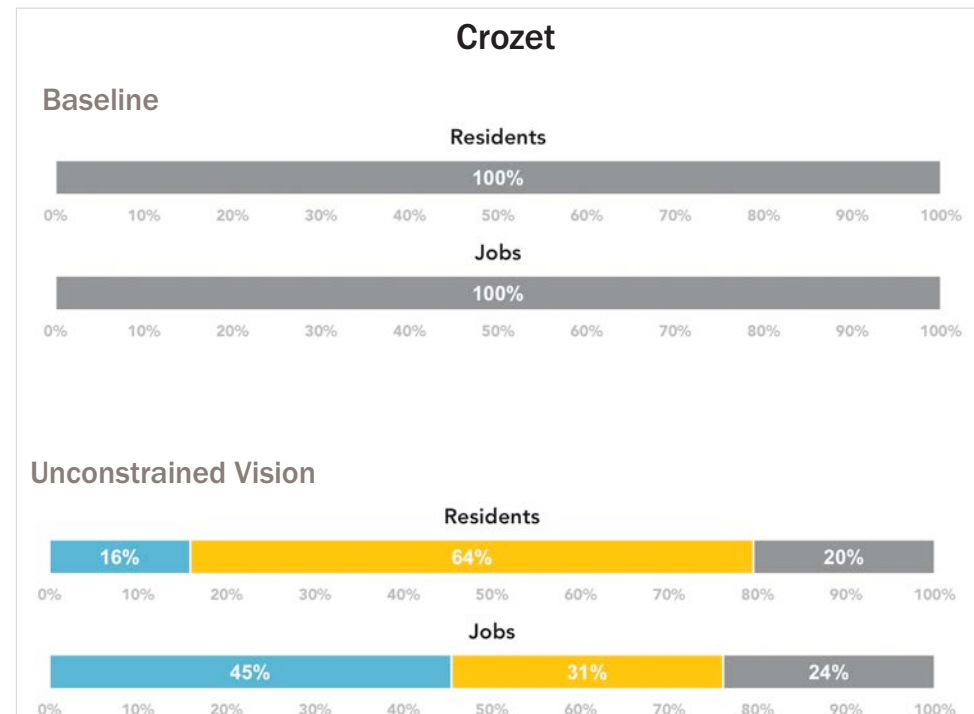
Legend



Notes

Proximity is measured as being located within 1/2 mile of a bus stop or within 1/2 mile of potential on-demand service. Proximity is measured on the midday of the week.

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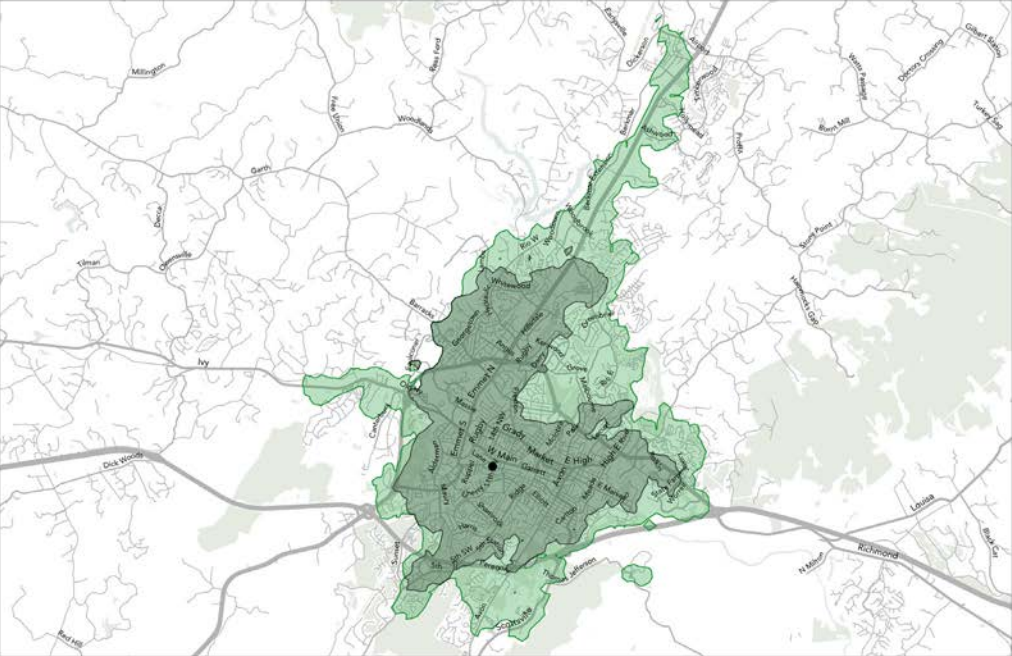


Access in the Unconstrained Vision Concept

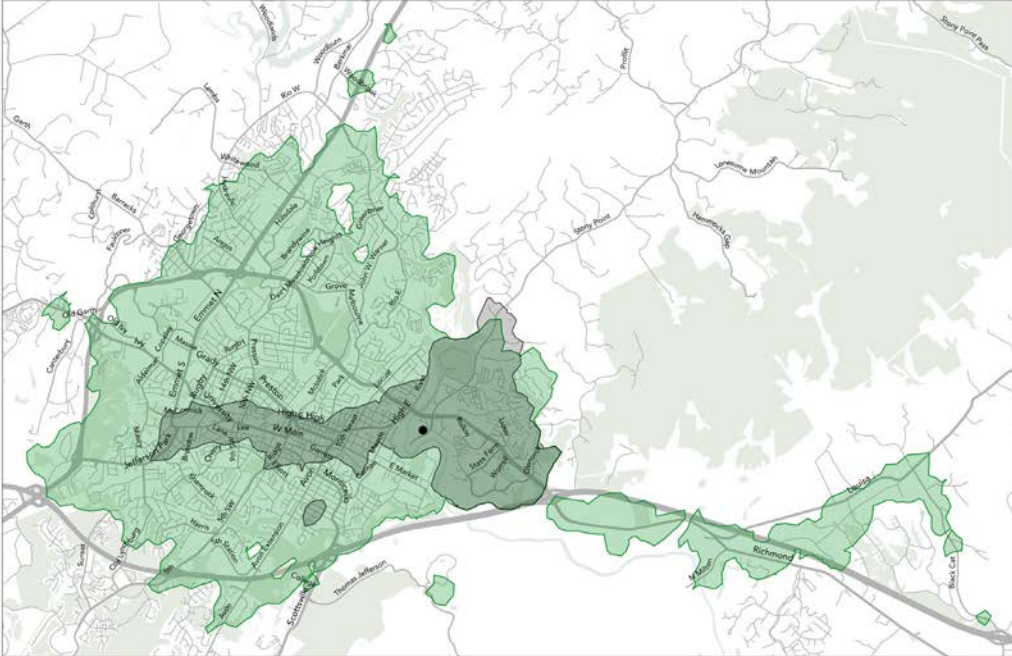
Isochrones

One way we visualize the usefulness of transit and how it connects people to places is with isochrones. Each isochrone shows how far you can go from a given location in a reasonable amount of time, as an area on a map. We can then calculate the number of people and jobs in this area

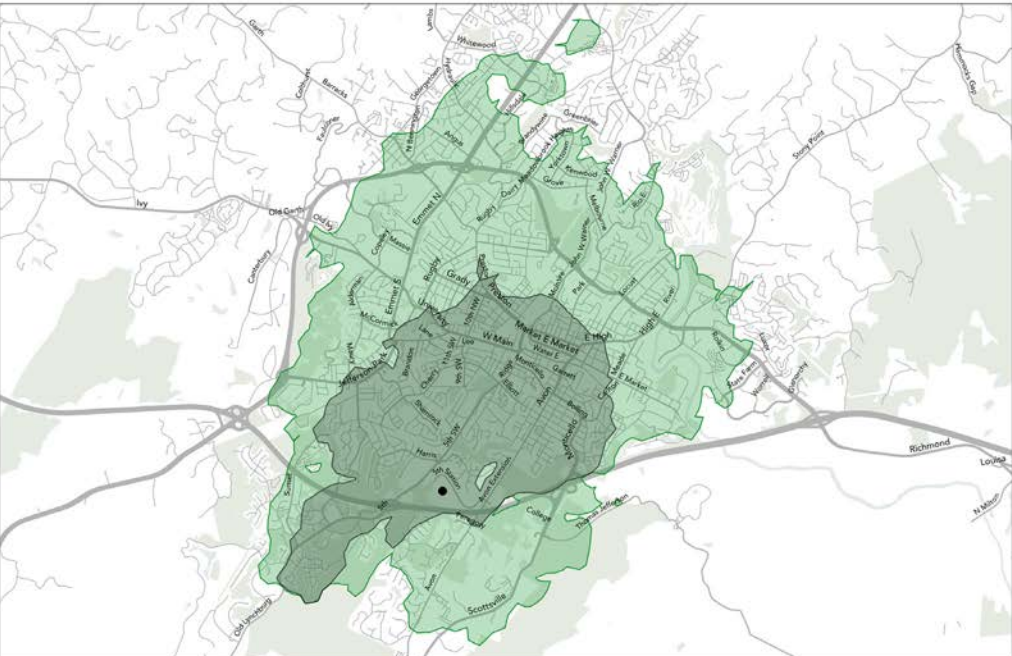
In the Unconstrained Vision, the places you can reach change dramatically from the Baseline Network, in large part due to high-frequency routes that make connecting to other places faster and more reliable.



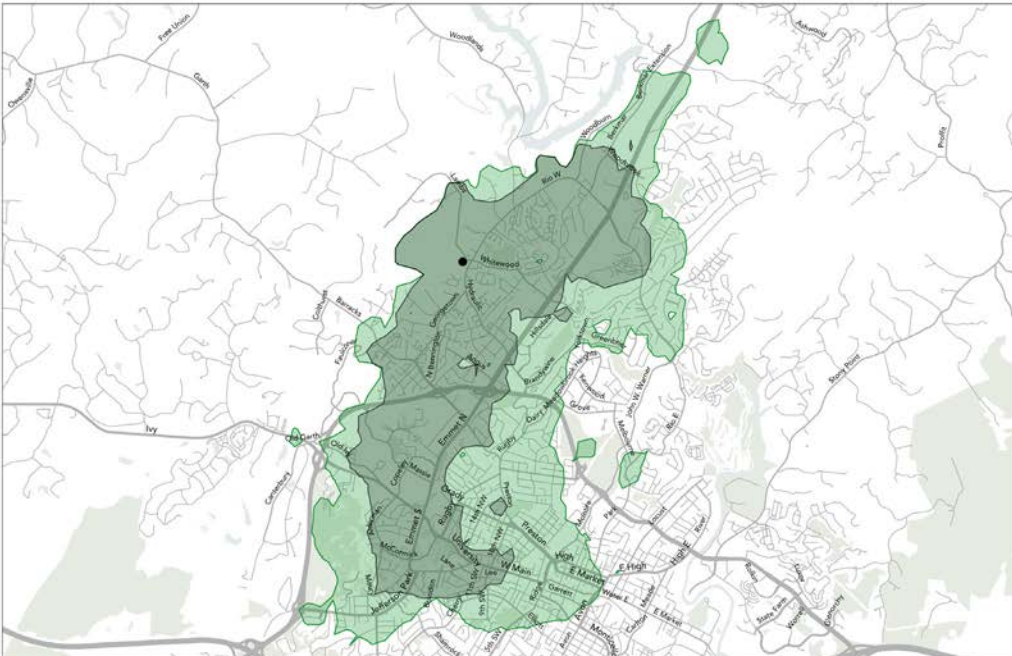
From
UVA Hospital
in the
Unconstrained Vision Network
on weekdays at noon,
using transit, you can reach
76,500 **82,900**
Jobs **Residents**
in 60 minutes



From
Pantops Shopping Center
in the
Unconstrained Vision Network
on weekdays at noon,
using transit, you can reach
56,900 **70,500**
Jobs **Residents**
in 60 minutes



From
5th Street Station
in the
Unconstrained Vision Network
on weekdays at noon,
using transit, you can reach
51,300 **66,600**
Jobs **Residents**
in 60 minutes



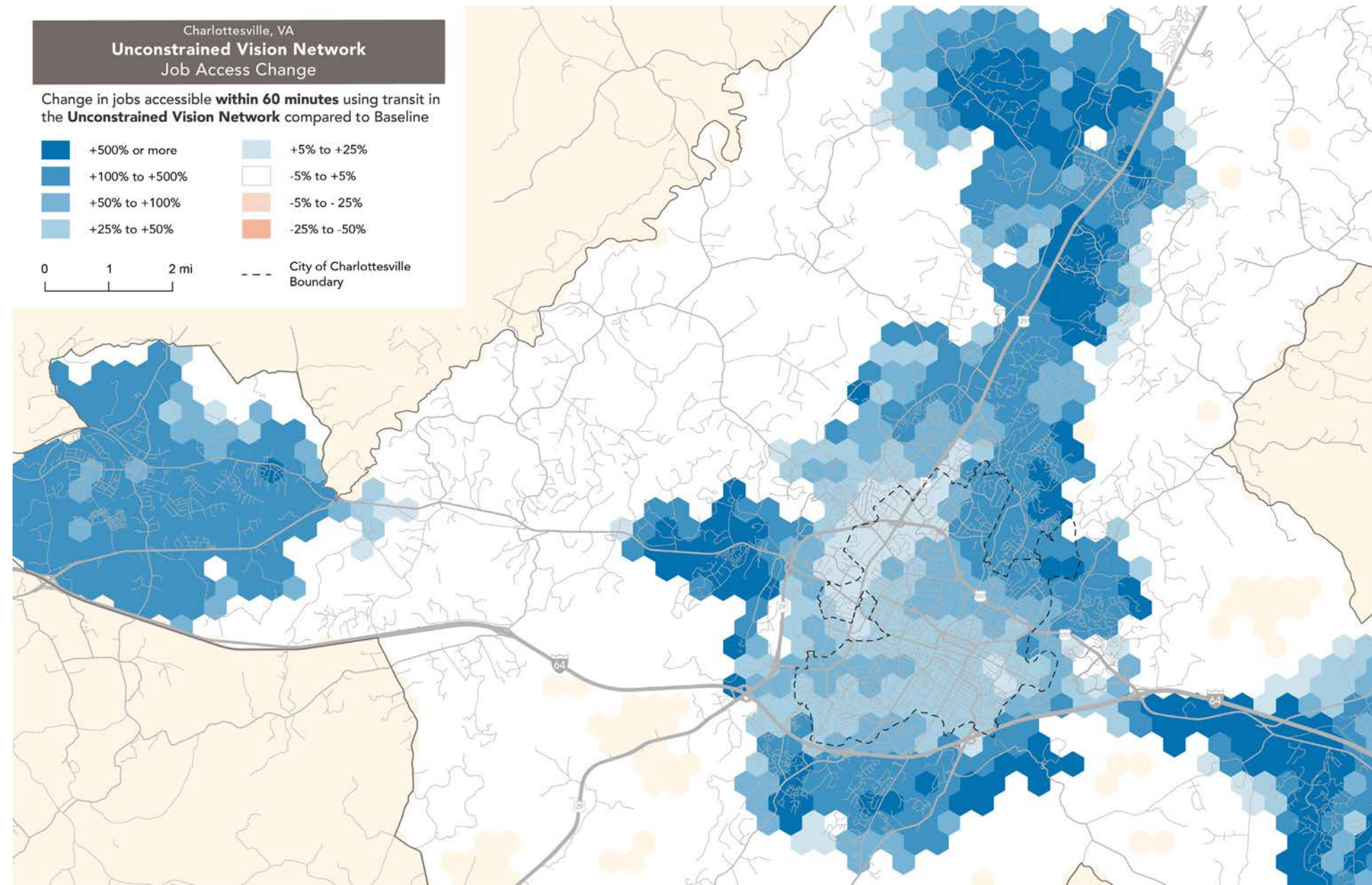
From
Albemarle High School
in the
Unconstrained Vision Network
on weekdays at noon,
using transit, you can reach
57,500 **46,000**
Jobs **Residents**
in 60 minutes

Access to Jobs

A key measure of the usefulness of transit is how it connects people to employment. Job access is an indicator of both the work opportunities that can be reached by transit, and the businesses and services customers or clients could choose to travel to. The Unconstrained Vision Concept vastly expands the number of jobs accessible to most people in Charlottesville and across most of the city compared to the Baseline Transit Network. The map to the right shows the change in job access across the city.

Large areas of the city see job access increases of over 100%, with some parts of the city seeing increases of 500% or more.

Portions of the map that did not show change in the Constrained Vision would experience significant changes in access. This is due to the greatly expanded reach of the network and the improved frequencies as a whole. In the case of Crozet and Keswick, most of these changes are driven by new on-demand transit zones that provide internal circulation and connect to the broader fixed-route network.



5 What's Next?

What's next for the Regional Transit Vision?

These are Draft Concepts

It's important to note that the two network concepts presented in this report are draft concepts. That means that there are more conversations to be had with both stakeholders in the Charlottesville area and with the public on what we should prioritize going forward. We hope that these concepts will facilitate discussion on transit's role in Charlottesville and what the future could bring.

Funding Transit

Transit costs money to maintain and operate. In the Regional Transit Vision, the Constrained Concept considers its budget for service in the context of a Regional Transportation Authority or RTA. This RTA would manage funds that would provide continued reliable investment for transportation projects throughout the region. RTAs are present in Virginia, most notably in Northern Virginia as the NVTA and in the Richmond area as the CVTA. The exact mechanism by which a Charlottesville area RTA would get these funds is subject to continued discussion, but is vital to delivering on the recommendations of the Regional Transit Vision.

It is clear that the Charlottesville region has an appetite for better transit service and ensuring transit is well-funded will support this desire.

Land Use and Transit

In many places, the ability of transit to run quickly and reliably is most often the result of things outside the transit agency's control. High transit ridership results from a four legged stool:

- **Transit Service:** a well-connected network with high frequency, long spans, reasonable speeds, high reliability and sufficient capacity.
- **Land Use:** the density, walkability, linearity and proximity of residents, jobs, and other land uses.
- **Street design:** the ability of transit to use certain streets, to make turns, and whether transit has priority that protects it from congestion.

- **Pricing:** the cost of transit fares relative to competing modes.

The transit agency only has complete control of the first element (service). It has partial control over the fourth (price) but only in terms of the transit fare. In general, local or state governments have complete or partial control over the other three elements.

Cities and state governments control the density of land by determining the zoning and approving or not approving development. They set parking policies, which dramatically affect both the density of land use and the cost of competing modes. They control walkability through land use decisions and the management of streetscapes, signal timing, and crossing locations. They manage curbs and determine parking locations, parking enforcement, loading zone locations, and traffic enforcement. They manage street priority by allocating lanes among competing uses. Overall, cities have as much control, if not more, over the success of transit than transit agencies.

Some key policies that the City of Charlottesville and the counties in the region can focus on in improving the ability of transit to carry many riders include:

- Prioritizing pedestrians and safe crossings along frequent transit corridors;
- Prioritize transit movement on frequent corridors so that buses full of people are not delayed by lower occupancy vehicles;
- Prioritize connected streets and connected pedestrian paths near frequent transit corridors to maximize the walkable area around bus stops with frequent service;
- Reducing or eliminating parking requirements near frequent transit corridors;

Close coordination between the City of Charlottesville, the TJPDC, the counties, and the transit agencies will be required to ensure that development and land use is supportive of high-quality transit.

In the Charlottesville region, CAT is in a unique position being a division of the City of Charlottesville, which means there is a potential opportunity for the planning department to work more closely with the transit department to prioritize both access

to transit service and focusing development closer to transit service.

The Regional Transit Vision Process

Development of the Regional Transit Vision is a three-step process, with each step designed to build off the progress made in each previous phase

- 1. Listen:** This stage focuses on educating the public and stakeholders on the existing conditions and influences that will likely have an impact on transit in the region and listening to and striving to understand local aspirations and ideas for future transit service
- 2. Envision:** Building off the Listen phase, this stage focuses on confirming the draft vision and goals and exploring long-term transit alternatives for the region. These alternatives will provide an opportunity to explore and test different approaches to serving the region's long-term needs and learning about the tradeoffs and choices.
- 3. Affirm:** Building off the Envision phase, the Affirm phase will confirm reactions to the alternatives and related policy direction. It will focus on developing the draft Regional Transit Vision Plan based on the prior stages and public and stakeholder input.

This report is part of the Envision phase and content from this report, including the Draft Concepts, will go out to the public for feedback in the summer of 2022.