Reimagine METRO - Alternatives Report

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1 Introduction

Why redesign Santa Cruz METRO's bus network?

What is Santa Cruz METRO?

Santa Cruz METRO is the public transit agency for Santa Cruz County. Its services include:

- Local and regional bus routes located throughout the county, available to the general public.
- ParaCruz, a door-to-door paratransit service for passengers who qualify under the Americans with Disabilities Act (ADA).

What is Reimagine METRO?

Reimagine METRO is a comprehensive review of where and how often buses run in Santa Cruz County, and whether that should change.

Key goals include:

- Increase the amount of service provided.
- Make transit service more relevant to the community's needs and desires.
- Adapt to post-COVID travel patterns.
- Create a network that is useful and attractive for many people's trips.

Based on our initial assessment of existing service, there are good reasons to redesign many parts of Santa Cruz METRO's existing network.

Issue no. 1: Existing service is infrequent and often inconvenient

Most of METRO's bus routes run every 30 to 60 minutes in the daytime. Some buses come just a few times a day. Evening and weekend services are significantly less than in the daytime. As a result, METRO riders experience:

Long waits for the next bus

Infrequent buses are rarely available when people need them. If a bus comes every 60 minutes, then the average rider will wait 30 minutes for it. By then, they might already have reached their destination in a car. Low frequencies affect riders countywide.

Service that is difficult to understand and use

On several major streets and corridors, service is split into multiple routes. This makes one-seat trips possible in theory, but in practice it's hard to understand where any particular bus is supposed to go.

For example, Routes 69A, 69W and 71 all connect Santa Cruz, Cabrillo College and Watsonville. But in the process, they use:

- Two different paths in Santa Cruz, Live Oak and Capitola.
- Three different paths in Soquel and Aptos
- Four different paths in Watsonville.

In Watsonville, Main Street, Freedom Boulevard and Green Valley Road are each served by at least four different routes, each running once an hour or less, and all heading to different places.

Overcrowding in high-demand areas

Road and parking limitations at the University of California - Santa Cruz (UCSC), combined with a shortage of on-campus housing and shopping, generate extremely high transit demand on the west side of Santa Cruz.

Low frequencies on routes that serve UCSC are a key factor in buses becoming overcrowded and very slow. At peak times, buses often pass by waiting passengers without stopping because they are already full.

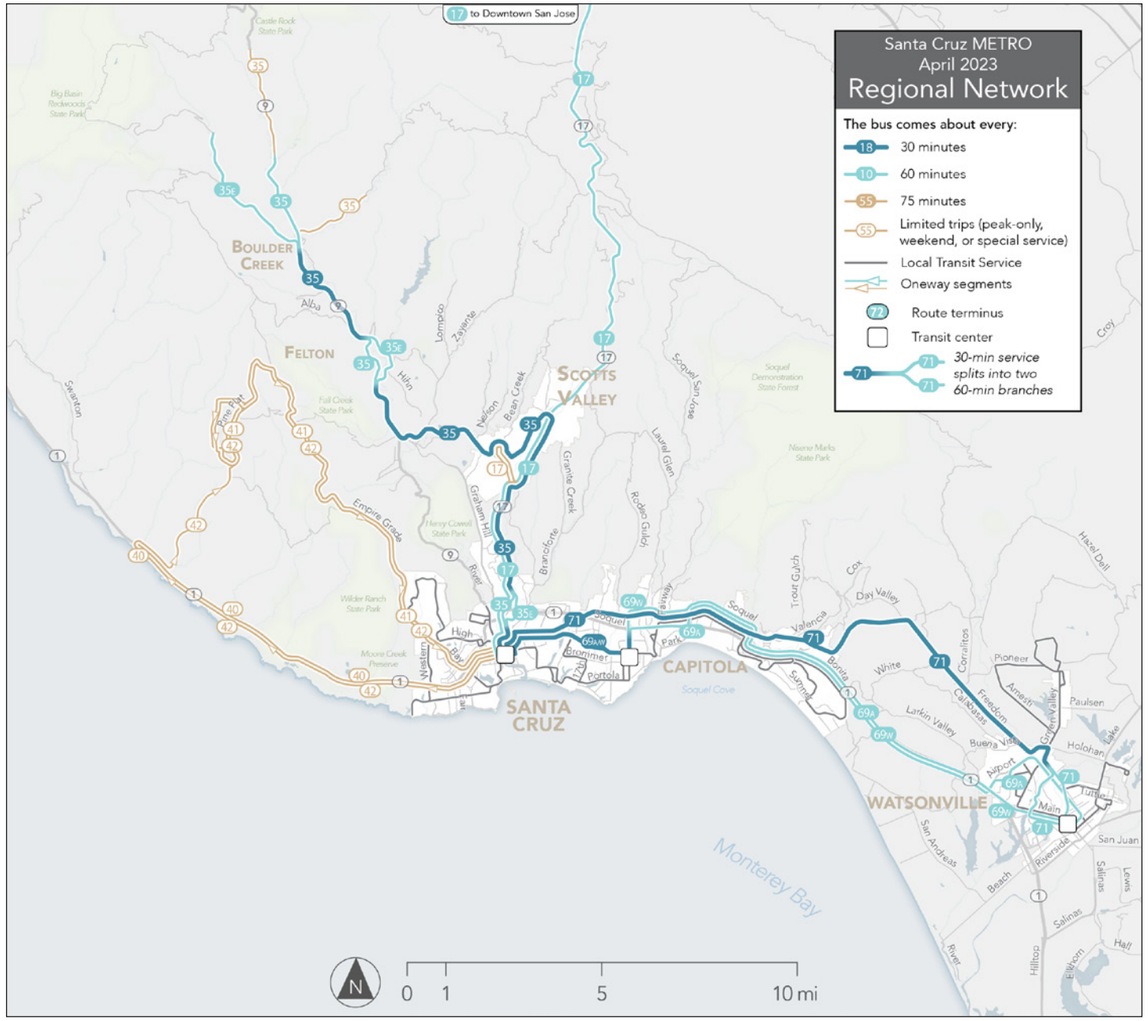


Figure 1: Santa Cruz METRO regional network map. This map shows routes that connect across the county and to San Jose. A detailed map of local routes in Santa Cruz and Watsonville is on the next page.

Issue no. 2: Service has been reduced several times in recent years.

Data from the National Transit Database (NTD) shows that METRO used to provide more service than it does now. METRO service peaked in 2002, when buses operated a combined 257,000 revenue hours of service.

In 2015, METRO buses operated only 225,000 revenue hours. Nevertheless, an 8% service cut was decided in 2016, to eliminate a structural deficit and ensure METRO's long-term financial stability.

From 2019 to 2021, service was reduced by an additional 29%. These reductions came first as a response to COVID-era operating conditions, and later to persistent staffing shortages.

In fiscal year 2022, METRO was able to restore some service, up to 180,000 revenue hours, but this remains **13% less service today than in 2019.**

Issue no. 3: Service is often slow and unreliable.

A study of METRO's core Watsonville-to-Santa Cruz service (Routes 69A, 69W and 71) found that traffic congestion adds up to 20 minutes of delay per trip, while dwell time (spent at bus stops) contributes 20 to 45 minutes per trip.

Traffic congestion contributes to high variability of travel times entering and leaving Downtown Santa Cruz, and on Freedom Boulevard near Green Valley Road in Watsonville.

METRO was recently awarded state funding to implement rapid bus enhancements on this corridor and is working county-wide with regional partners to plan for capital improvements to enhance speed and reliability.

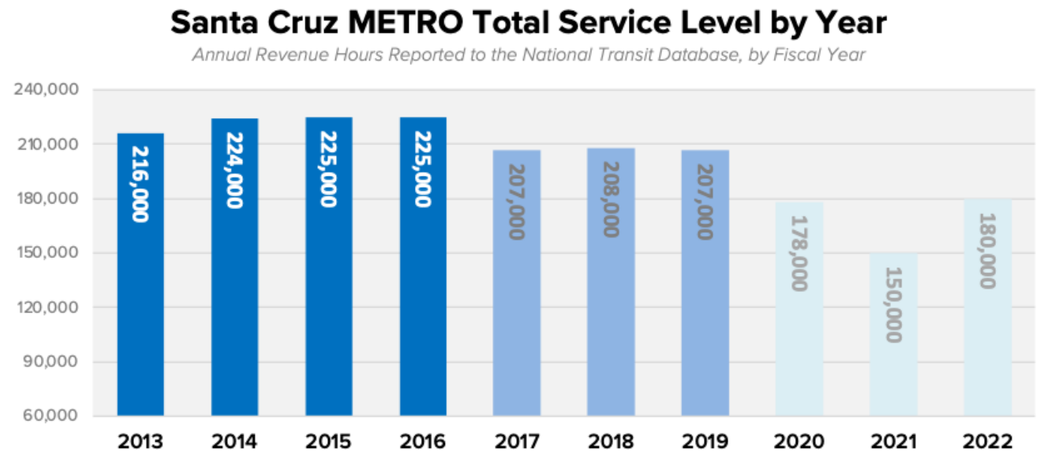


Figure 2: How the amount of service provided by METRO has changed from year to year in the last decade. This is measured in "revenue hours", which means the number of hours that buses are on the road and in service, plus turnaround and break time between trips.

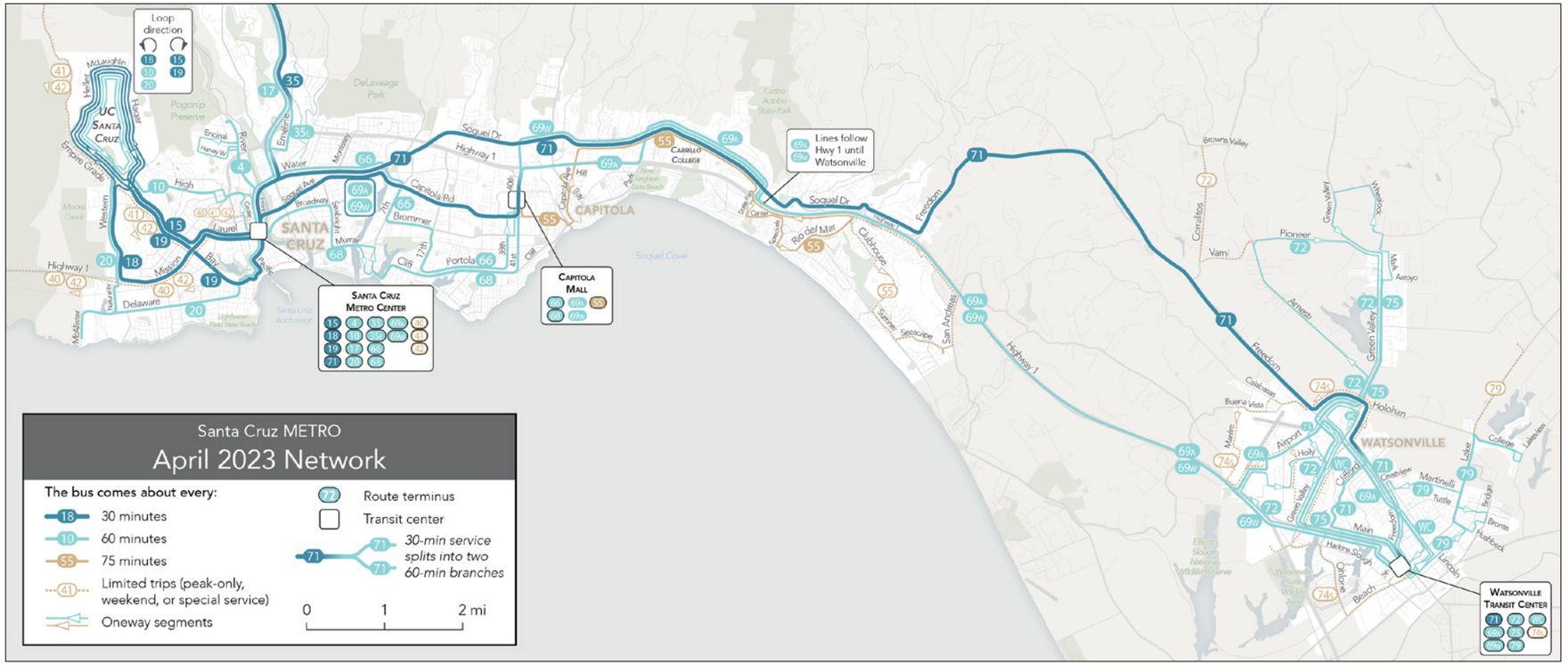


Figure 3: Santa Cruz METRO local network map. This map shows all routes that operate in the core urbanized areas of the County, from the west side of Santa Cruz to Watsonville. Service in Scotts Valley, the San Lorenzo Valley and to San Jose is shown on the previous page.

Issue no. 4: Service remains fragile.

The main constraint preventing METRO from restoring 2019 service levels right now is not financial. Instead, **METRO is hamstrung by staff shortages.**

Staffing issues are a national problem for transit. Many former bus drivers retired during the pandemic, and many potential bus drivers are discouraged by perceived difficult working conditions in public transit. In addition, demand for commercial trucking and delivery drivers has increased significantly in the last decade, so bus drivers have more alternatives.

The driver shortage is part of a broader shortage of skilled labor. METRO has also experienced a shortage of mechanics. Combined with its aging fleet, METRO often needs to send out buses that are not optimally matched to the route they are serving.

As a result, buses on the road are sometimes too small for a high-demand area, sometimes too long to make tight turns on narrow roads, and sometimes don't have enough doors for passengers to get on and off quickly.

METRO has recently taken delivery of five new battery electric buses to add to its zero emission fleet and will order 39 new hydrogen buses this summer. These efforts will help reduce the number of buses that have exceeded their useful life.

In addition, METRO is taking delivery of ten 60-foot articulated buses this summer, to help reduce overcrowding.

Issue no. 5: The public and riders are asking for change.

In a poll conducted in September and October 2022, Santa Cruz METRO found that county residents think METRO should:

- **Provide more service.** 71% of respondents thought it was "very" or "extremely" important for METRO to increase the overall amount of service provided, regardless of purpose.
- **Focus on higher frequency in core areas.** 69% of respondents thought METRO should focus more on providing service every 15 minutes in areas where the most people live and work, compared to 26% who thought METRO should spread service out to more communities, even if it only comes every hour or two. METRO currently does not have any routes that operate every 15 minutes.
- **Prioritize the needs of disadvantaged communities.** 72% of respondents thought METRO should prioritize the needs of communities where many people have low incomes or don't own a car, compared to 25% who thought METRO should provide equal levels of service to all communities.

In the course of developing this report, the project team also had in-depth conversation with dozens of regular METRO riders and stakeholder organizations. Riders reported struggling with low frequency, trip cancellations, long travel times, complicated fare policy, and difficulty with bikes on buses and communication on service changes.

As a result, **many riders report using METRO less often than they would like, and less often than they have in the past.**

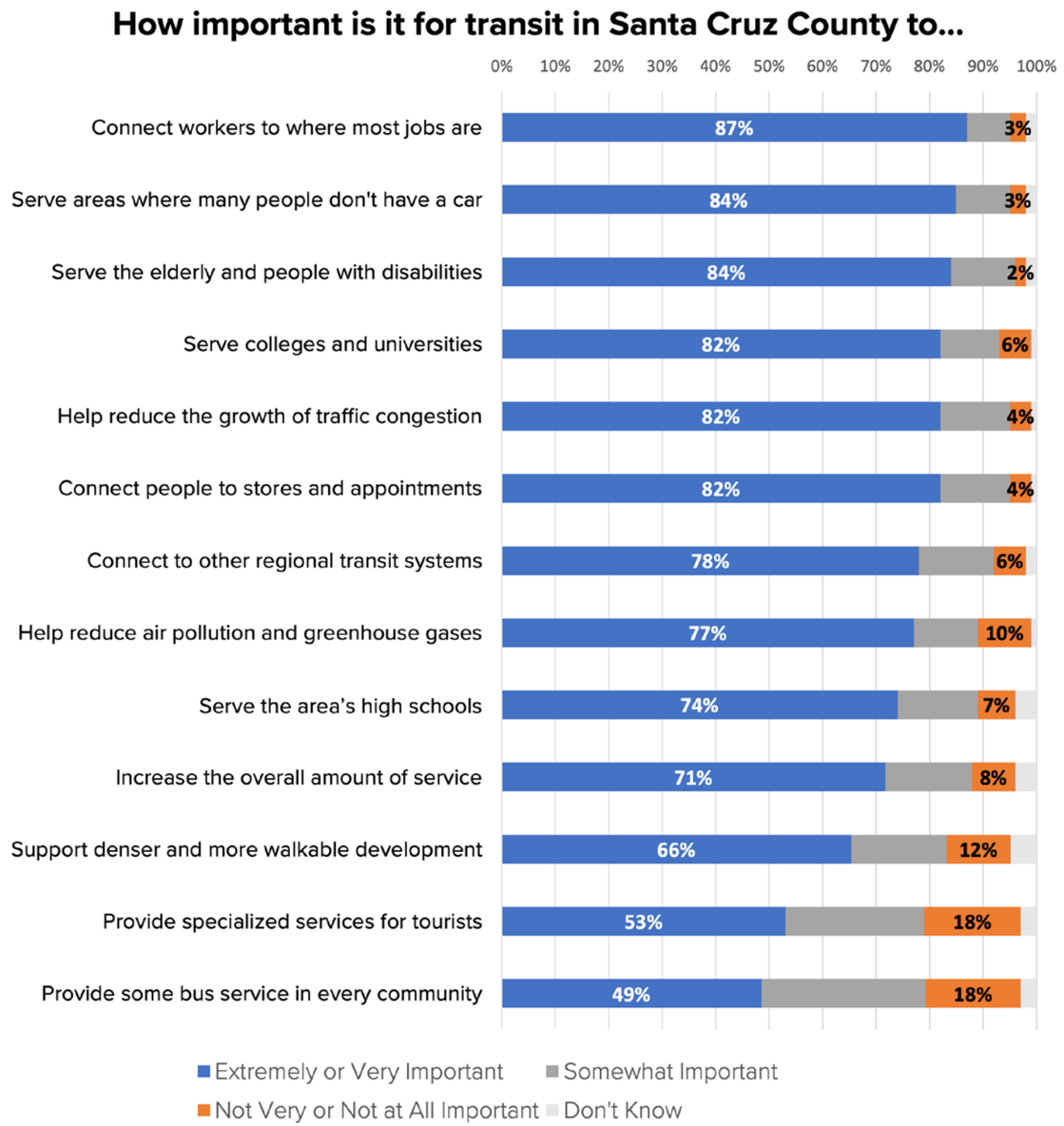


Figure 4: Chart showing Santa Cruz County resident's priorities for transit, based on a poll conducted online and by phone in Fall 2022. The poll included a statistically significant sample of 1,054 respondents, and its results have a margin of error of +/- 4% at a 95% confidence level.

How is Santa Cruz METRO responding to these challenges?

Urgent actions by the end of this year

Recognizing the urgent problems and challenges laid out by the public, METRO is taking action to improve service quality and make the network more useful as quickly as possible. This includes the following key steps.

- **Accelerated driver recruitment, to increase service levels and reliability.** METRO is increasing promotion of its hiring efforts, and bringing on multiple classes of new drivers. This is intended to result in a 15% increase in drivers by December.
- **A major service change in December,** reflecting the principles shown in the alternatives presented in this report in Chapter 6. Alternatives A and B differ on a range of details, but both include:
  - **10% more service.**
  - **More frequency.** Service every 15 minutes in the highest demand areas, and every 30 minutes or better in as many places as possible.
  - **Timed transfers** between routes at Watsonville Transit Center.
  - **Free transfers** between routes, regardless of fare or pass type used. This will apply to all routes except the Highway 17 Express.
- **60-foot articulated buses to serve high-demand routes.** METRO recently acquired ten articulated buses. These will enter into service on routes that experience frequent overcrowding over this summer and fall, primarily at UCSC. This will also make it possible to consistently assign more appropriate vehicles to other routes.

Alternatives for change in December 2023

Figure 5: Network maps showing two alternatives for changes to the Santa Cruz METRO bus network, that could be implemented as soon as December 2023. Both alternatives are guided by the same general principles of higher service and more frequency. Alternative A focuses the most on increasing frequency by simplifying service onto the fewest possible routes. Alternative B would make fewer frequency improvements, but require less additional walking and transfers.

Continued improvements in 2024 and beyond

Santa Cruz METRO recognizes that the actions planned for this year are a necessary first step, but are not enough to achieve the longer-term goal of a world-class transit system in Santa Cruz County. To that end, METRO is:

- **Exploring funding options to enable more service increases**. The exact level of increase will depend on funding sources, but the goal is to provide service frequencies, provide better weekend and evening service, and more rapid and direct service across the county.
- **Reviewing its public, stakeholder and rider communications strategies.** Outreach performed in the course of this study has revealed significant opportunities to increase and improve the effectiveness of METRO's touch points in the community.
- **Redeveloping the Santa Cruz METRO Center at Pacific Station.** Pacific Station is being redeveloped into a brand-new transit facility that will also include a mix of new retail uses and 85 units of affordable housing. Construction is currently intended to being in December 2023. During construction, METRO will use temporary bus stops on Front Street.
- **Renewing its fleet with a focus on new zero-emission buses**, to help decarbonize transit operations and meet statewide greenhouse gas reductions goals.

2 What Makes Transit Service Useful?

Transit is useful because it provides access to destinations and opportunities.

This chapter explains how the key elements of a transit network work together to create a service that many people find useful. It also explains why this report uses certain methods of evaluation rather than others.

Why Access Matters

Many factors affect people's decision to use transit, but the most fundamental is time. Most potential riders are working, studying, or raising children (or all three!) and have a limited amount of time in their day that they can devote to traveling. Even people who don't have the option to drive won't use public transit if it takes more time than they can spare. Long travel times required are one of the most universally cited reasons not to use transit, even among people who would otherwise be open to it.

To assess the existing network, and evaluate possible improvements to it, we need to describe the travel times it provides.

Some approaches to planning do this by studying the patterns of trips that people are making now. For example, it is common to collect data about people's travel based on how their mobile phones move around the region.

However, the trips that people are making aren't necessarily the trips people would make if they had better options. People without cars often don't make all the trips they would like, because transportation is a barrier. This means **there is value in serving not just current trips, but connections to any places that are likely to be useful or attractive to many people.**

For this reason, this report focuses on where people can go in a fixed amount of time. To do this, we talk about the **access to destinations** from each location in the city.

The Wall Around Your Life

Wherever you are, there is a limited number of places you could reach in a given amount of time. These places can be viewed on a map as a blob around your location, as shown in Figure 6.

You can think of the edges of this blob as a "wall around your life." Beyond this area are things you can't do on most days because it simply takes too long to get there. The jobs, education, shopping, and any other resources outside this area are less likely to be available to you.

Measuring Access

Measuring access to and from useful destinations is a good way to capture how the design of the network leads to ridership. When access is high, it means that when someone looks up a trip they want to make, they are more likely to find that the travel time is reasonable.

But access to opportunity is a good thing separate from the ridership that it generates.

- In real estate, access contributes to the value of a location.
- Access to jobs and education is a critical need for people with low incomes, who are more likely to rely on transit, because transportation is a common barrier to these things.
- Access is a measure of how many options we have in our lives. In this sense, you can think of it as a measure of **freedom**, which needs no other justification.

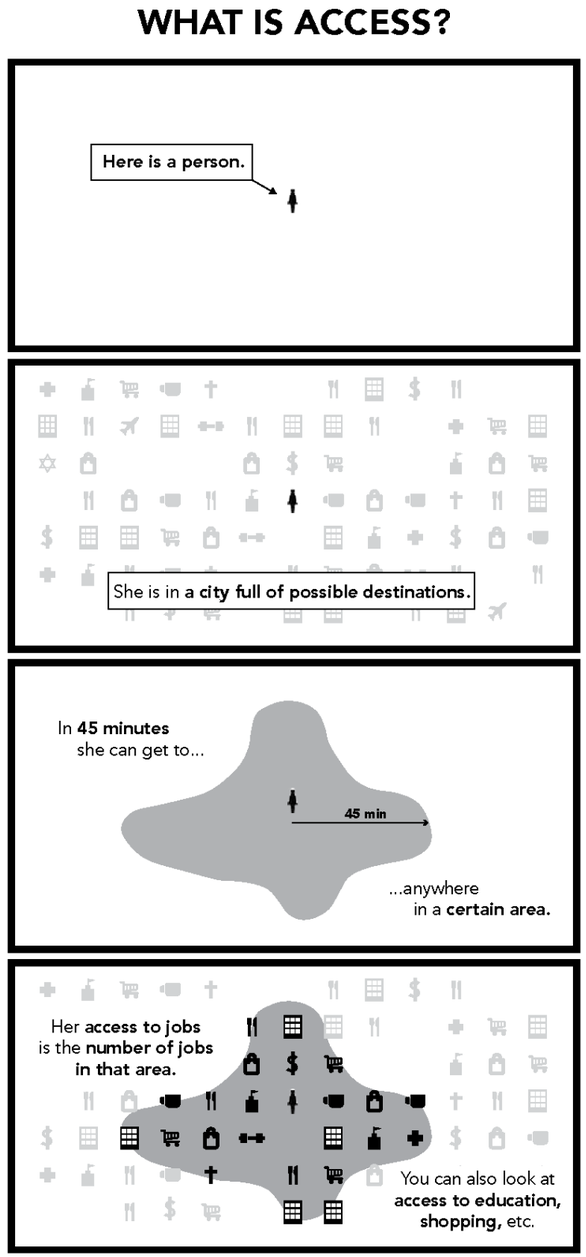


Figure 6: The Concept of Access

Elements of a Transit Trip: Walk, Wait, and Ride

When we think about travel time, we have to think about the entire trip. A typical transit trip contains three types of time:

- **Walking**, or traveling to and from the stop by some other means. Although people do cycle, and sometimes drive and park to use transit, the vast majority of transit trips begin and end with a walk, either on foot or with the assistance of a wheelchair or personal mobility device.
- **Waiting**. Waiting is time spent outside the transit vehicle, and not in motion, as part of your trip. It can also be described as the difference between when you ideally want to travel and the time you can travel.
- **Riding**. Riding is all the time spent inside the transit vehicle.

When we refer to travel time in this report, we mean the sum of all three of these kinds of time.

Measuring Walking Time

This report measures walking times based on an average speed of 3 miles per hour (i.e it takes about 20 minutes to walk one mile).

This is, unavoidably, just an average among diverse human walking speeds, including wheelchair speeds. Some people walk more slowly, and some walk faster. Walking can also be affected by delays such as street crossings that are difficult to account for precisely.

People who walk especially slowly may experience less access than we show here. People who walk faster may experience more. There is no way to incorporate everyone's diverse walking speeds when creating a high-level image of overall transit access across the county.

What is Waiting?

Waiting is not just the time you spent at the bus stop; it includes any time between the moment you want to travel and the next opportunity to get on the bus.

If you have real time information about when the bus is expected, you can show up at the stop just a few minutes earlier. But if the bus comes only once an hour, you've still experienced a substantial loss of access, because you couldn't travel at the time that would have served you best.

Many lower wage jobs also have rigid hours. You may be penalized if you start late but you are not paid more for arriving early. In these jobs, if you have to be at work at 8:00, but your hourly bus arrives at 7:05 or 8:05, you will have to take the earlier bus and effectively wait 55 minutes at your destination.

You may be fortunate enough to have a job that lets you make use of your waiting time, but waiting time is still time spent not where you want to be, doing what you really want to do there.

To represent the average rider's experience, **"waiting time" in this report is calculated as half of the scheduled time between consecutive buses on a route.**

Calculating Travel Times

Every transit trip is made up of walking, waiting, and riding.

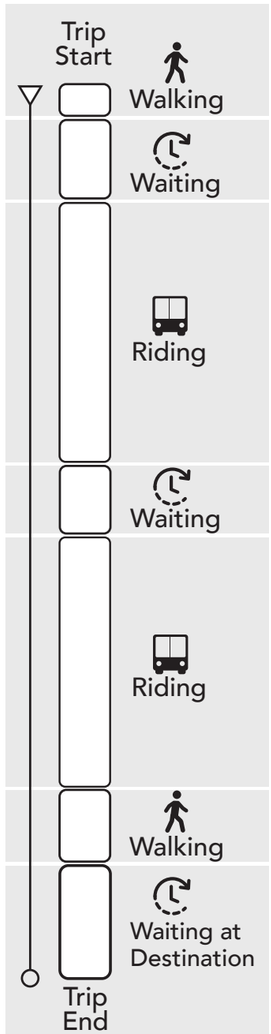


Figure 7: Elements of travel time in a typical transit trip, including a transfer.

Access to Opportunity by Transit in Santa Cruz County

Access to a Single Location

Figure 8 shows the "wall around your life" for someone located at the UCSC student union. The concentric blobs show how far you could get, using public transit and walking, in 30, 45, or 60 minutes. It shows the striking fact that it takes more than 45 minutes to get not much further than downtown Santa Cruz.

This reflects the fact that service to downtown on the most direct path is only half-hourly, and that connections for onward travel are not timed. Overall, about 47,000 people live in the area that can reach the campus in an hour.

We can draw those blobs for any location. Examples for several other locations occur later in this report.

Visualizing Access Countywide

Figure 9 shows many jobs are reachable within 45 minutes in the urbanized areas of Santa Cruz County, by transit and walking. To calculate this, we draw the area accessible from each location and count how many jobs are within it.

Figure 10 shows the average access to jobs for each resident of the county, and for various subgroups of concern. These numbers are calculated by taking the access to jobs for each point in the county, and weighting it according to the access to jobs from that point.

Jobs reachable in under 30 minutes are generally jobs that can be reached by walking only, since the low frequencies of the network mean that transit does not add much access for such short trips.

Chapter 4 explores the network in more detail, showing how the patterns of routes and frequencies create these patterns of access. For now, we show these to illustrate how the concept of access applies to the Santa Cruz METRO area.

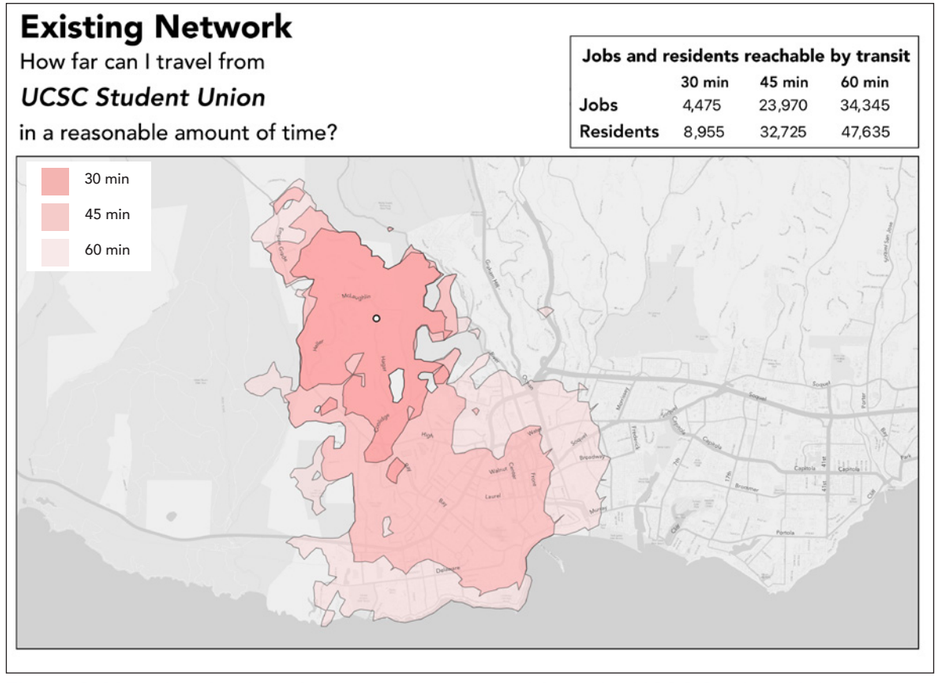


Figure 8: Map showing how far someone can travel from the UCSC Student Union building in 30, 45 and 60 minutes.

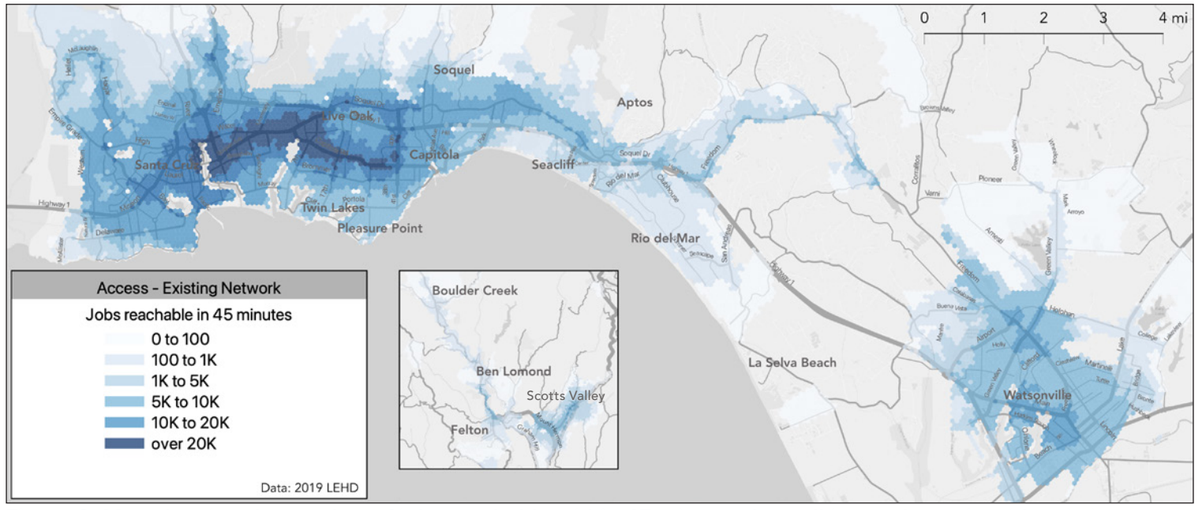


Figure 9: Map showing the number of jobs reachable within 45 minutes, by walking and transit, with existing service.

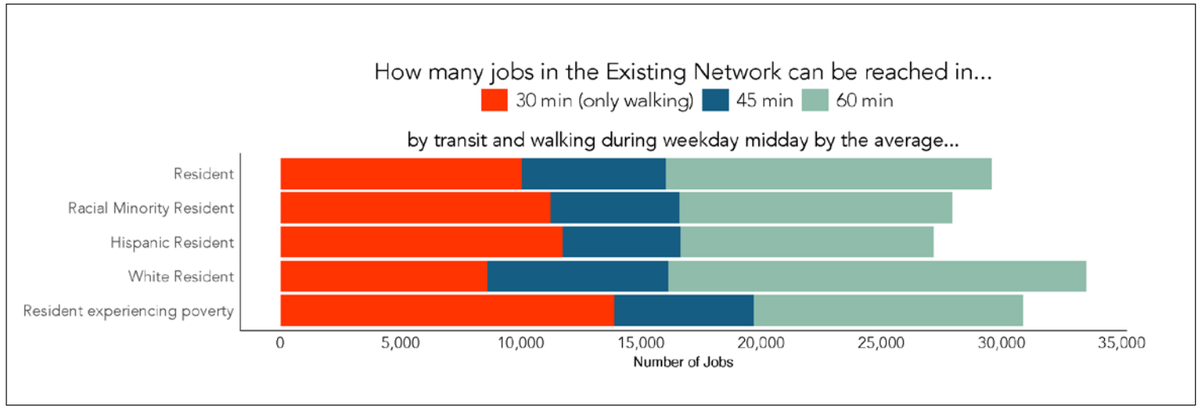


Figure 10: Median number of jobs reached by transit by different types of residents.

Distance Matters

Transit can't provide equal access to everyone, because your access to destinations depends a lot on where you are located and how far away from you useful destinations are.

When cities limit how much housing can be built, lower-income people are sometimes forced to live especially far from the things that they need, which can create an unequal access situation that is too big for transit to solve.

Figure 11 shows how many jobs are within 1.5 miles (in other words, a 30 minute walk at 3 miles/hour) of anywhere in the urbanized areas of Santa Cruz County. This map shows the advantage of being close to major destinations such as inner Santa Cruz and Capitola Mall. If higher education enrollment were included in the jobs database, it would also show the benefit of being close to UCSC or Cabrillo College.

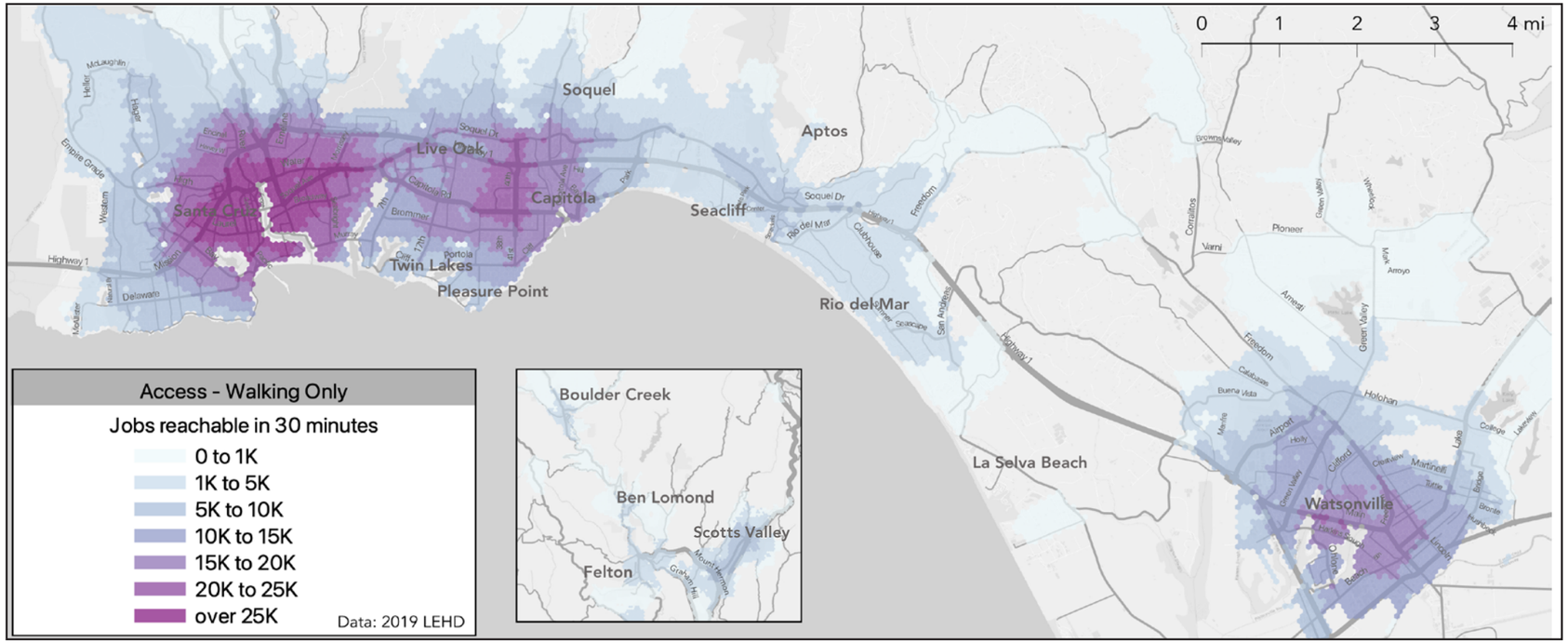


Figure 11: Access by Walking Only, or How Far Away Things Are

Figure 12 shows the access provided by transit within 45 minutes **minus** what can be achieved just by walking 30 minutes or less. This shows where transit is most effectively adding access to what would be possible by walking, given the development pattern as it is. For example:

- People located near Capitola Road and parts of Soquel Drive benefit from transit because many major destinations are just out of walking distance for people living there.
- In Watsonville, transit provides the most added access on and near Freedom Boulevard north of Clifford Street, where service is available every 30 minutes, as opposed to the hourly frequency offered everywhere else in the city.

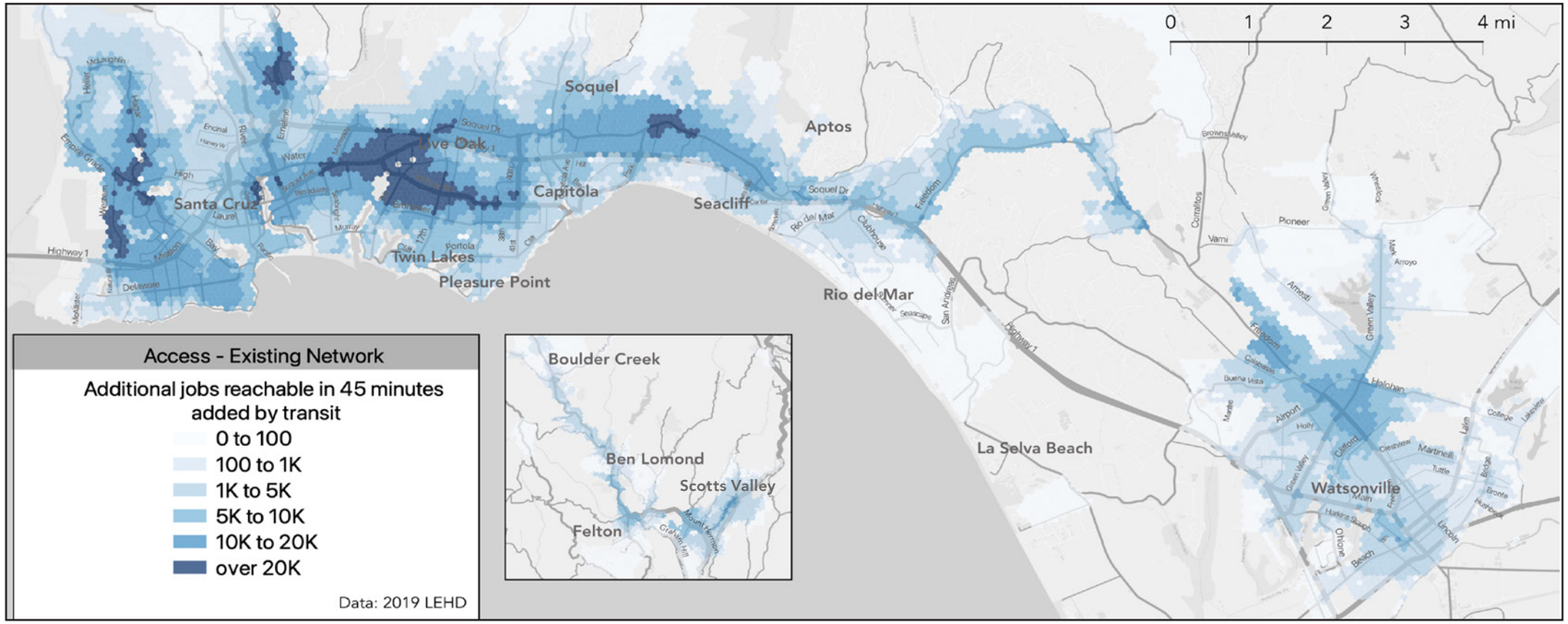


Figure 12: Where Transit Contributes to Access (Total Access by Transit minus Access by Walking Only)

Frequent transit is useful to more people and for more trips.

Elements of a Route

A transit network is a pattern of routes where each line:

- follows a **path**,
- at certain days and times (its **span**),
- at a given average **speed**, and
- buses come at a certain **frequency**, the number of minutes between two buses.

Frequency is especially important. Frequency is invisible and easy to forget, and yet on transit it is often the most important factor determining where you can get to in a given amount of time.

Frequency Is Freedom

More frequent service dramatically improves access. High frequency reduces travel time by providing several linked benefits:

- **Shorter Waits.** Unless you plan your life around a bus schedule, the average wait for transit is half the frequency. If a bus comes every 30 minutes, your average wait will be 15 minutes. But if it comes every 15 minutes, your average wait will be 7.5 minutes.
- **Faster Transfers.** To go further than places on the bus route you happen to be on, you'll need to connect to another route. Frequency makes this kind of connection easy, because the next bus is always coming soon.
- **Easier Recovery from Disruption.** Frequent service is more reliable, because if a bus breaks down you don't have to wait as long until the next one shows up.
- **Spontaneity and Freedom.** When transit comes every few minutes, there's no need to build your day around a bus schedule. You can turn up at the stop and go, whenever you want.

Frequency and Ridership

The plot in Figure 13 shows all the routes operated by 43 different transit agencies, at various points in the 2010s.

Each route is located on the plot based on its frequency and its productivity (boardings per service hour). More frequent service is to the left, and more productive service is higher up. The shade of each hexagon indicates the number of routes in that place on the graph.

The plot shows that higher productivity is correlated with higher frequency, even though higher frequencies require more service hours. In other words, **ridership appears to rise exponentially as frequency increases.**

This is for two reasons. On the one hand, transit agencies rarely run frequent service if they expect low ridership. But conversely, if frequency isn't very high, the amount of ridership transit can attract is fundamentally limited.

What is frequent enough?

Frequency is expensive, so it's important to think about just how frequent service needs to be. **A frequency of 15 minutes or better has a good chance of being useful** to someone whenever they need to travel, especially if that frequency extends over many hours of the day, every day.

Adequate frequency depends on trip length, because it doesn't make sense to wait long to go a short distance. For many people, it wouldn't make sense to wait 15 minutes to go half a mile, because you could probably walk to your destination in that time. But it might make sense to wait that long to go several miles across town.

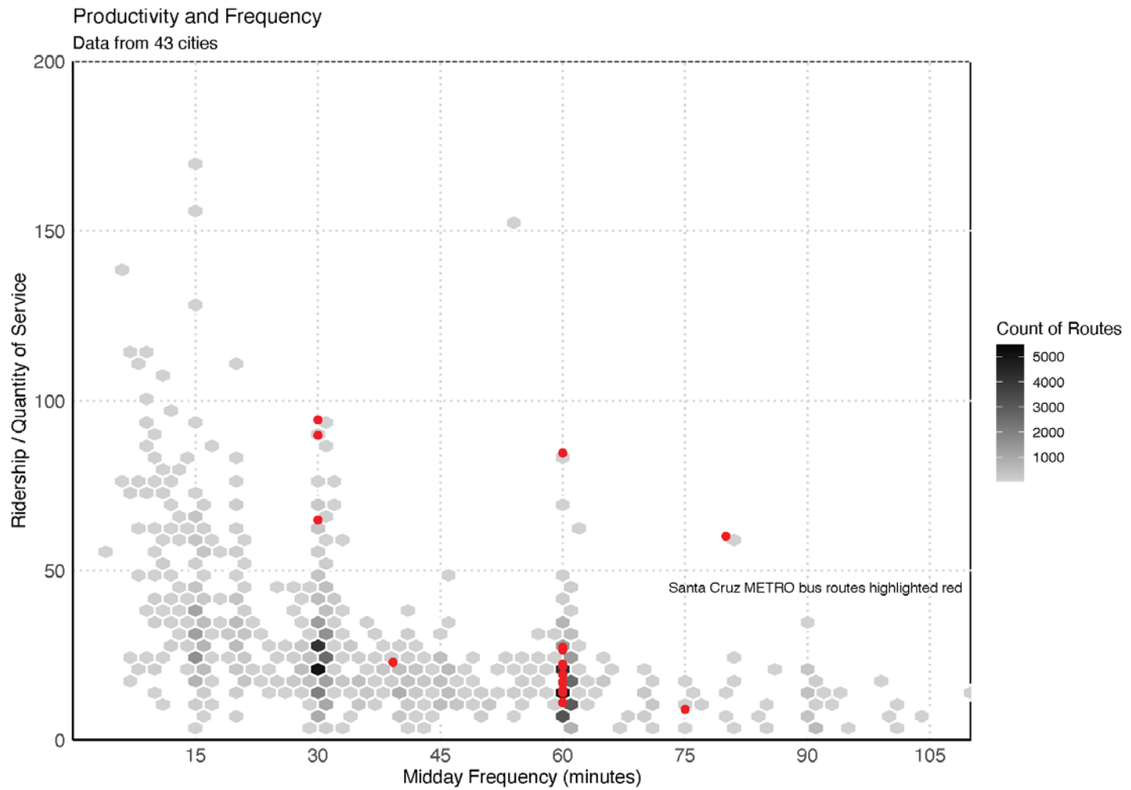


Figure 13: Transit Productivity and Frequency in 43 cities. Routes that operate more frequently tend to attract a higher number of riders per hour of service. This is because frequency makes transit trips shorter and more reliable.

Frequency is invisible and easy to forget, but on transit it is often the most important factor, determining where you can get to in a given amount of time.

Connections are the Foundation of a Useful Network

Why You May Have to Change Buses

Everybody would like a direct bus from where they are to where they're going. Nobody wants to change buses.

In the Santa Cruz METRO network, it's especially understandable that people request direct services, because there are significant barriers to changing buses:

- Most connections are not timed. If you are transferring from one low-frequency route to another, a very long wait may be required.
- Changing buses can cost more, because unless you buy a day pass, at three times the base fare, you will pay more to if your trip requires multiple buses.

The only way to completely avoid transfers is to run a direct bus from everywhere people live to everywhere they might be going. The result would be a confusing tangle of overlapping routes. Once METRO's limited resources were divided over all of those routes, the result would be such low frequency that the service would be useless to most people.

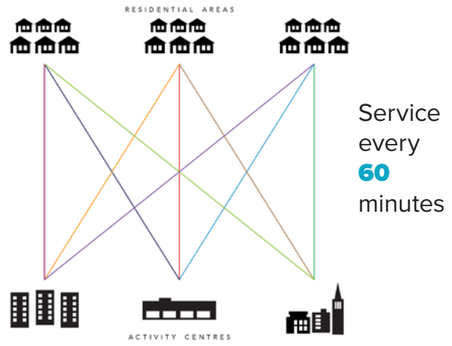


Figure 14: The Direct Service Option, a hypothetical network providing direct service between many locations.

Direct Service vs. Connections

A network that requires connections is in most cases faster, even for passengers who have to take two buses. The following example explains why.

Figure 14 shows a simple imaginary town with three residential areas along the top and three destinations along the bottom. If the transit agency wanted to protect anyone from having to change buses, they'd need nine routes, one from each residential area to each destination.

Suppose that the agency can afford to run each route every 60 minutes. Let's call this the Direct Service Option.

Figure 15 shows another way of serving this simple town for the same cost. Instead of running a direct route between every residential area and every activity center, the agency runs a direct route from each residential area to one activity center, but makes sure that all the lines connect with each other at a transfer point.

Now there are three routes instead of nine, so each route can run three times as often as in the Direct Service option, for the same cost. So instead of service every 60 minutes, we have service every 20 minutes. Let's call this the Connective Option.

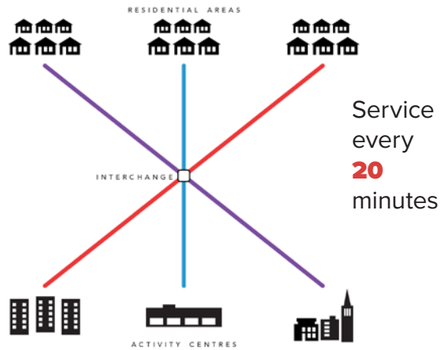


Figure 15: The Connective Option different way to serve the same set of locations.

Let's look at a trip from a Residential Area to an Activity Center, where the two are not on the same route in the Connective Option.

- In the Direct Service Option, a direct route runs every 60 minutes, so on average, the waiting time is 30 minutes.
- In the Connective Option, each bus leaves every 20 minutes, so a passenger waits only 10 minutes on average, and will wait another 10 minutes on average if they need to connect. The total waiting time is 10 minutes less, even if they need to transfer.

In an even larger city, with more destinations in more places, the benefits of a connective network are even bigger. So in a network that minimizes travel time, and thus maximizes access to opportunity, we can't avoid changing buses. We have to make changing buses fast.

Timed Transfers

High frequency is the best way to provide fast connections, but there's one other trick, which is to plan infrequent routes so that they all serve a transit center at the same time each hour. This is called a pulse, or a timed transfer. Figure 16 illustrates this idea.

Pulses are delicate. They can't be offered in places where congestion makes reliable operation impossible, because they rely on all buses arriving on time. In this report we suggest downtown Watsonville as a logical place for timed connections.

Eliminating Fare Penalties

Changing buses is an inconvenience, so it should not cost more to transfer than for a one-seat ride. Fare penalties can be eliminated by providing a two-hour pass in return for the base fare, thus ensuring that any one-way trip can be completed. This report recommends eliminating any extra cost to riders for transfers.

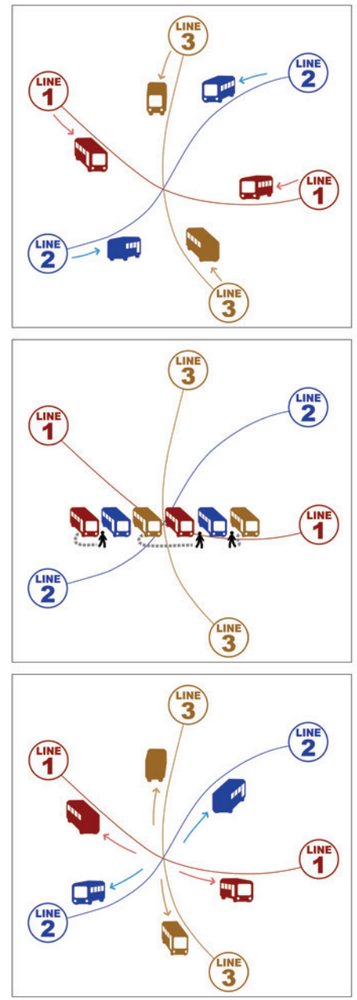


Figure 16: How Timed Transfers Work. All buses arrive at the transfer point at the same time (top), dwell for a few minutes while passengers transfer (middle), and leave at the same time a few minutes later.

The Pattern of Development Matters

Creating a high-access transit network isn't just about faster or more frequent service. Many factors outside the control of Santa Cruz METRO – such as land use, development, urban design, street networks – affect transit's usefulness. This is why **land use and infrastructure decisions made by the cities, the County, UCSC and other agencies are an essential part of transit's success.**

The built environment factors shown in Figure 17 are critical to facilitating a broadly useful transit network:

- **Density.** Where there are many residents, jobs and activities in an area, there are many places people might want to go.
- **Walkability.** An area only becomes accessible by transit if most people can safely and comfortably walk to and from the nearest transit stops.
- **Linearity.** Direct paths between many destinations are faster and cheaper for METRO to operate relative to the number of places served. Linear routes are also easier to understand and more appealing to most potential riders.
- **Proximity.** The longer the distance between two places METRO wants to serve, the more expensive it is to connect them. Areas with continuous development are more cost-effective to serve than areas with big gaps.
- **Mix of Uses.** When there is a mix of land-uses along a direct path, transit can provide direct access to a broad range of destinations. Mixed-use transit corridors also tend to be very productive, because people ride in both directions at many times of the day.

These five elements determine where transit can be useful for many people, at a relatively low cost.

These geometric facts pose a difficult political challenge. A transit system focused on cost-effectively providing the most useful service possible tends to serve its community unevenly, concentrating service where these features are favorable.

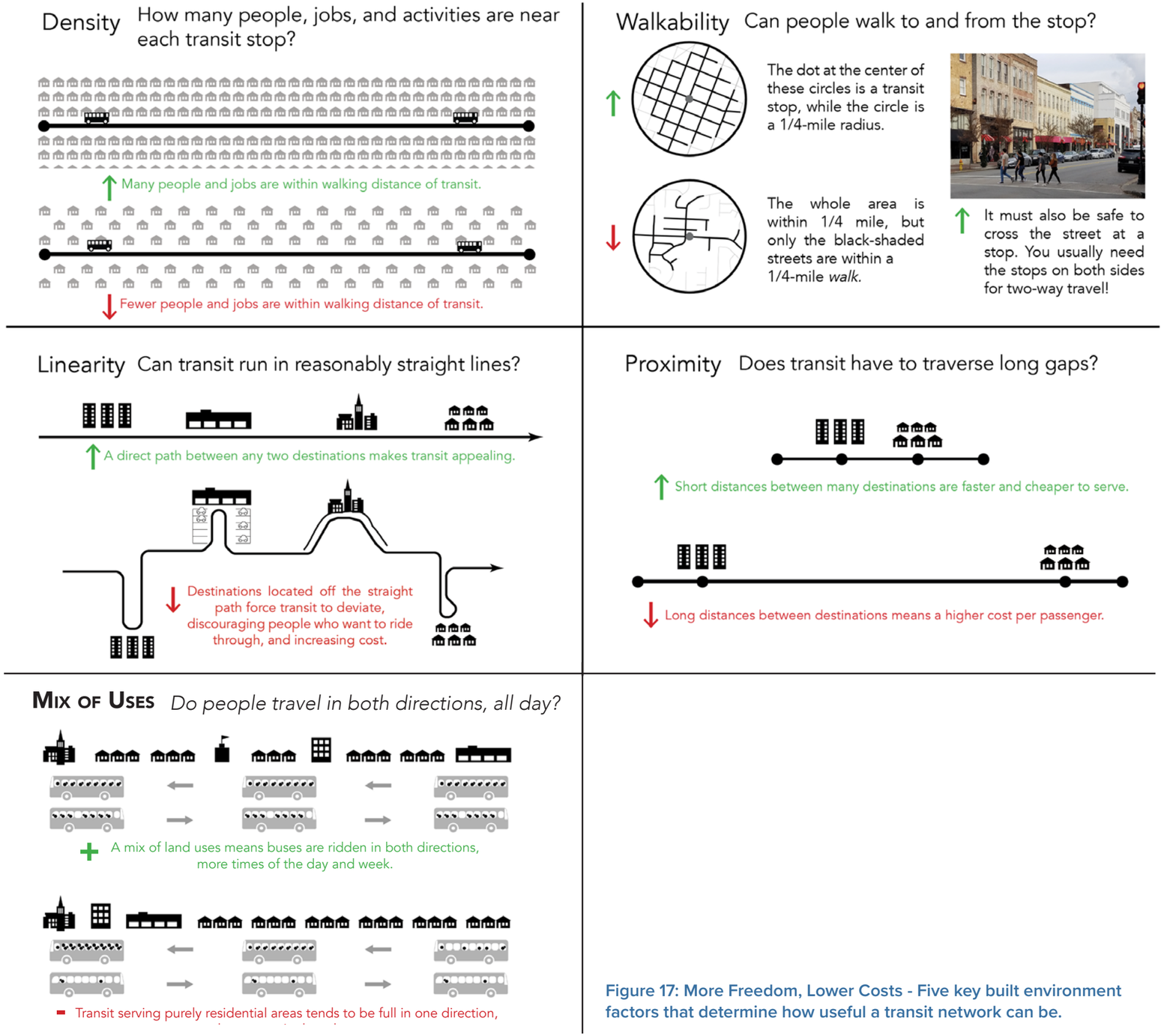


Figure 17: More Freedom, Lower Costs - Five key built environment factors that determine how useful a transit network can be.

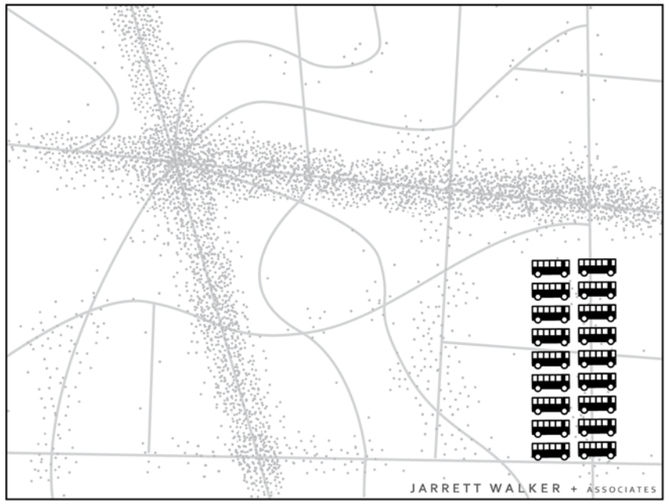
The Tension Between Ridership and Coverage Goals

The previous page shows how certain patterns of development make it possible to serve more people at a lower cost. Where development is dense, walkable, proximate, and mixed, the same transit service dollar will provide more access to more people.

If the goal is ridership, it's generally more efficient to focus on high frequency in areas many people want to go. This concentrates service where conditions are favorable. This makes service much more useful to people and destinations in dense, walkable and well-connected areas, but it also means large areas aren't covered by transit.

If the goal is coverage, then the transit agency must get to as many places as possible, whether or not service is frequent enough to be useful to most people. Coverage goals require transit agencies to spread service out, which means spreading it thin.

The two service alternatives presented later in this report differ slightly in this respect. One is slightly more oriented toward ridership goals, the other toward coverage goals. However, both are more oriented toward ridership goals than existing service.



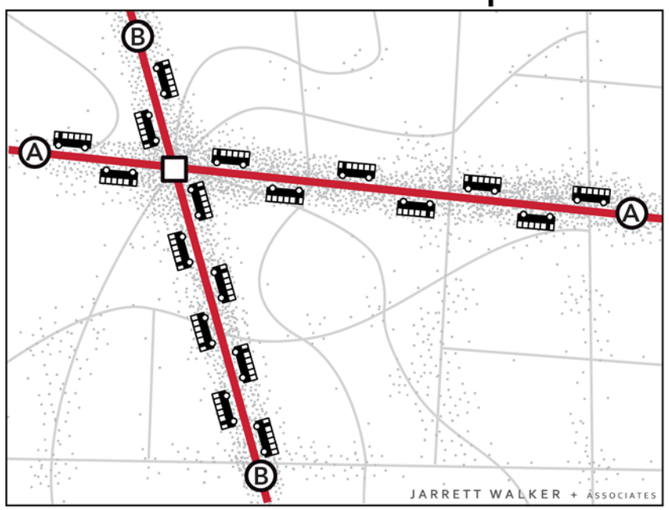
Imagine you are the transit planner working in this fictional neighborhood.

The dots scattered around the map are people and jobs.

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

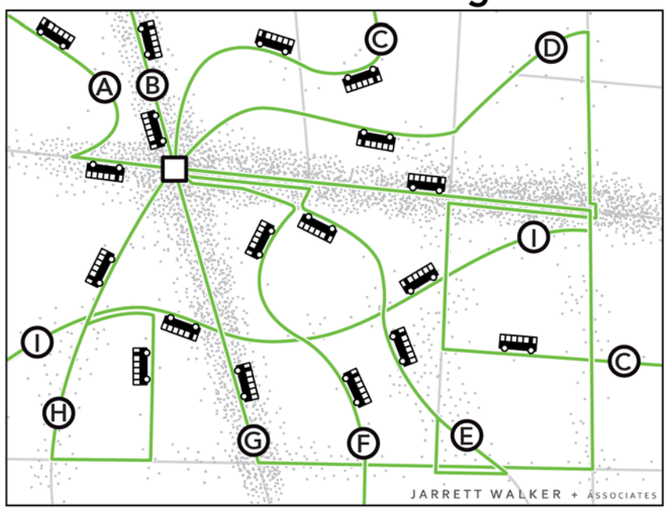
Before you can plan transit routes, you must decide: What is the purpose of your transit system?

Maximum Ridership



All 18 buses are focused on the busiest area. 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 18: The Ridership-Coverage Tension

3 Market and Need for Transit Service

Understanding "Demand" and "Need"

A strong market for transit is mostly defined by the presence of many people in a relatively small area.

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

- **Where are the strongest markets for transit, with potential for high ridership and low operating costs?**
- **Where are there moderate or severe needs for transit, where coverage services may be important even if they do not attract high ridership?**

A strong market for transit is mostly defined by the presence of many people in a relatively small area. However, we learn about individuals' transit needs mostly by examining *who* people are and what life situation they are in.

Measuring Demand and Need

On the following pages, these maps and diagrams help us visualize potential transit markets and needs[1]:

- **Residential density**
- **Job density**
- Activity density (combined residential and jobs)
- Regional **commute patterns**
- **Zero-Vehicle households**
- **Poverty** density map
- Density of **Residents under age 18** (Youth)
- Density of **senior residents**

1 The maps in this chapter are based on data from the U.S. Census Bureau (2021 5-year American Community Survey) and the Santa Cruz County Regional Transportation Commission (2020 Transportation Analysis Zone data).

How to Use These Measures

No one measure tells us that a place has high ridership potential or high needs. Rather, we must consider them in combination.

Designing for Ridership

If you asked a transit planner to draw you a very high-ridership bus route, that planner would look mostly at densities of all residents and jobs; at the walkability of streets and neighborhoods; and at the cost of running a bus route long enough to reach them.

Only secondarily would that planner look into the income or age of those residents or workers. A lower income person is often more likely to choose transit than someone with a higher income. A person without a car is more likely to choose transit than someone with a car. But what generates high ridership is the presence of large numbers of people, including people with low incomes or no cars.

Designing for Coverage

If you asked a transit planner to draw you a route that helped as many people with severe needs as possible, they would look at where low income people, seniors, youth and people with disabilities live and where they need to go.

The densities at which these people live matters, because at higher densities a single bus stop can be useful to more people in need. However, the transit planner might also try to get the route close to places where small numbers of people with severe needs are located. In fact, the more distant and scattered people are, the more isolated they can be and the more they might need access to transit.

Civil Rights and Equity

Another important set of maps in this chapter is not strictly related to *need* but rather to civil rights. These maps show **where people of different races and ethnicities live**.

Unequal treatment on the basis of race or ethnicity by transit agencies is prohibited by Civil Rights Act of 1964. (Unequal treatment on the basis of other characteristics, including income and age, is also prohibited by law and regulation.)

A person's race or ethnicity does not tell us if they need transit, or if they have a propensity to use transit. However, at the population level, race and ethnicity tend to be correlated with income. In Santa Cruz County, areas with Latino majorities tend to have a high proportion of low-income residents.

Providing equitable and supportive levels of service to people of all races and ethnicities, even in areas that are costly to serve or that do not generate much transit ridership, can be an important element of a coverage goal.

Where there are moderate or severe needs for transit, coverage may be important even if it does not serve a large total number of people.

Indicators of Demand: Residential Density

Residential density, which means lots of people living close together, is the essence of what distinguishes an urban area from a rural one. Of course, every urban area has large variations of density within it, and these matter enormously to transit demand.

The density at which people live is one of the strongest indicators of transit demand. High density means that there are more people around any bus stop located there. As a result, better service from that stop, and better amenities at that stop, are likely to benefit more people.

Figure 19 on this page shows the residential density in all populated areas of Santa Cruz County.

Figure 20 on the next page zooms in on the core urbanizes areas located from Santa Cruz to Watsonville.

An important caution about all of the these maps in this chapter is that they show data at the smallest available zone, but these zones still create distortions. In rural areas, especially, a small dense area may be in the same zone as a large undeveloped area, and this will produce a low average density that makes the small dense area disappear. This is an unavoidable limitation of the census data from which this data is drawn.

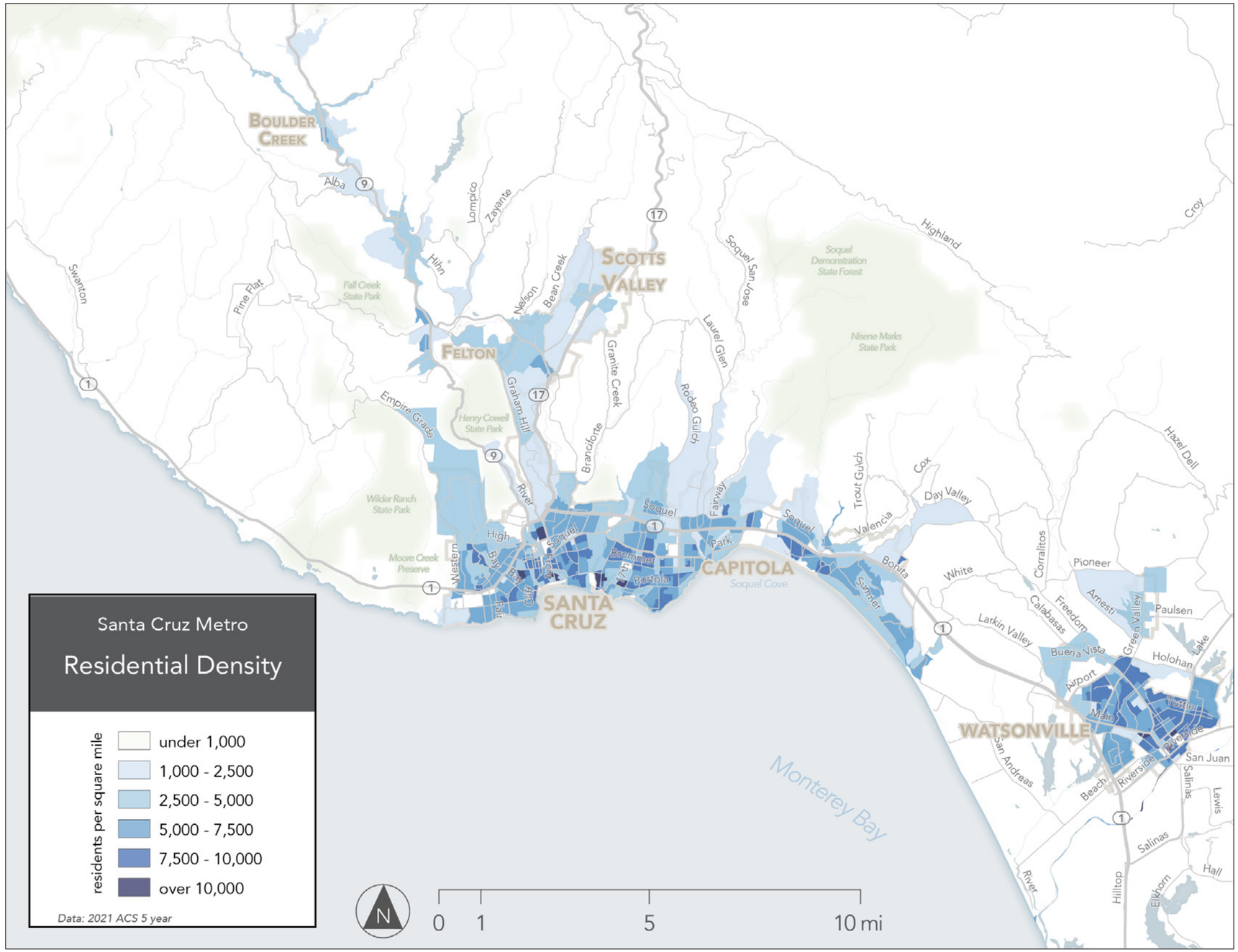


Figure 19: Population Density in Santa Cruz County. 80% of the population in the County live in the areas shown in blue, with the highest densities in Santa Cruz, Watsonville, and parts of Live Oak.

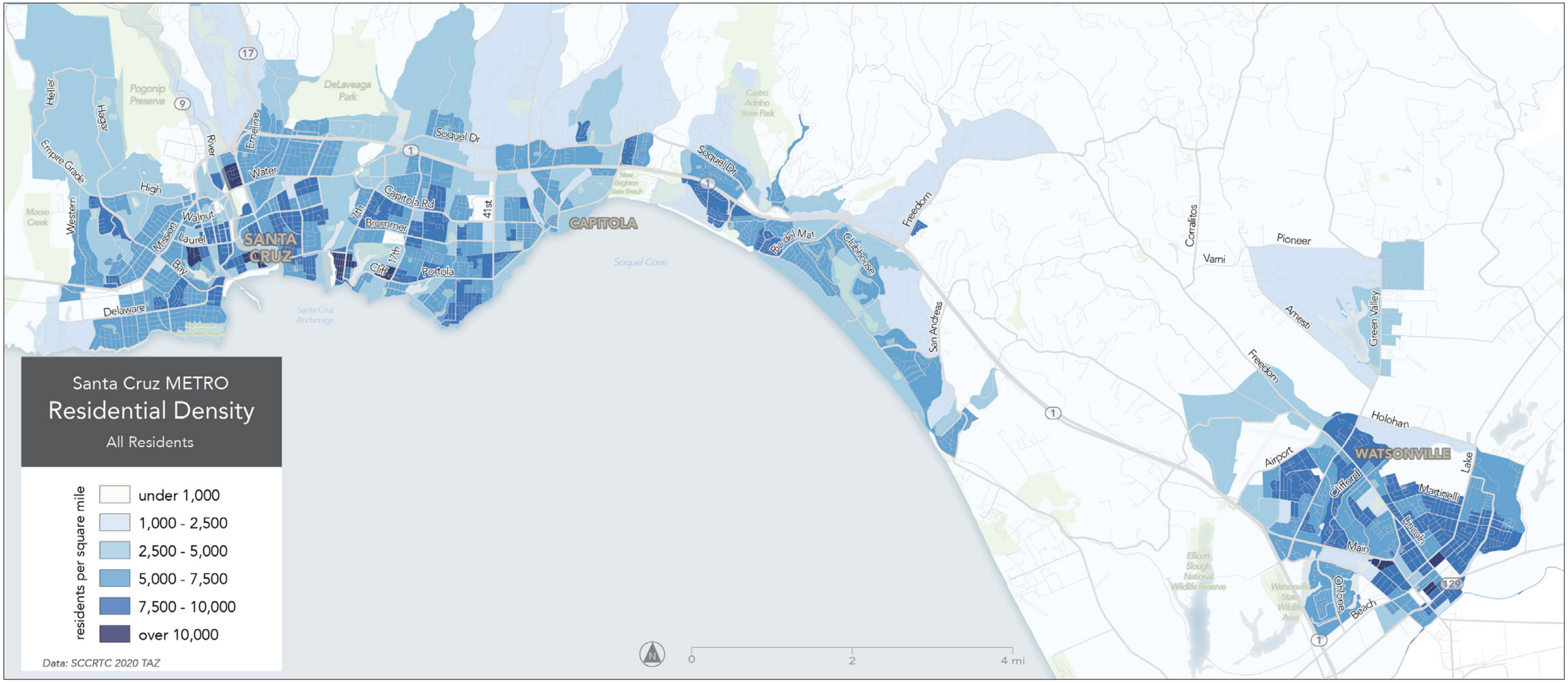


Figure 20: Population Density in the core urbanized areas, from Santa Cruz to Watsonville.

Indicators of Demand: Job Density

Jobs are only one of the many types of destination that generate travel demand, but they are the one for which we have the best data. Locations of jobs usually also correspond to destinations that matter for other reasons, such as shopping centers and medical centers.

In general, job density predicts transit ridership even better than residential density does. This is partly because jobs are naturally concentrated at higher densities than residents are, and partly because some jobs (e.g. retail, services) reflect locations that generate many more trips than the employment numbers alone would suggest.

Job density is highest in the following areas:

- Central Santa Cruz, and in strips extending west along Mission Ave and east along Water St and Soquel Avenue.
- Along 41st Avenue in Capitola.
- Downtown Watsonville, and in several other small patches around the city, such as the Watsonville Community Hospital.

There are also many other small patches of high job density throughout the built-up areas of the county. Note again, however, that whether an area shows up as high density is partly a result of whether the census zone it is in has been drawn small enough to exclude nearby low-density areas. Downtown Felton, for example, would appear denser if the zone were drawn very tightly around the main street and its businesses.

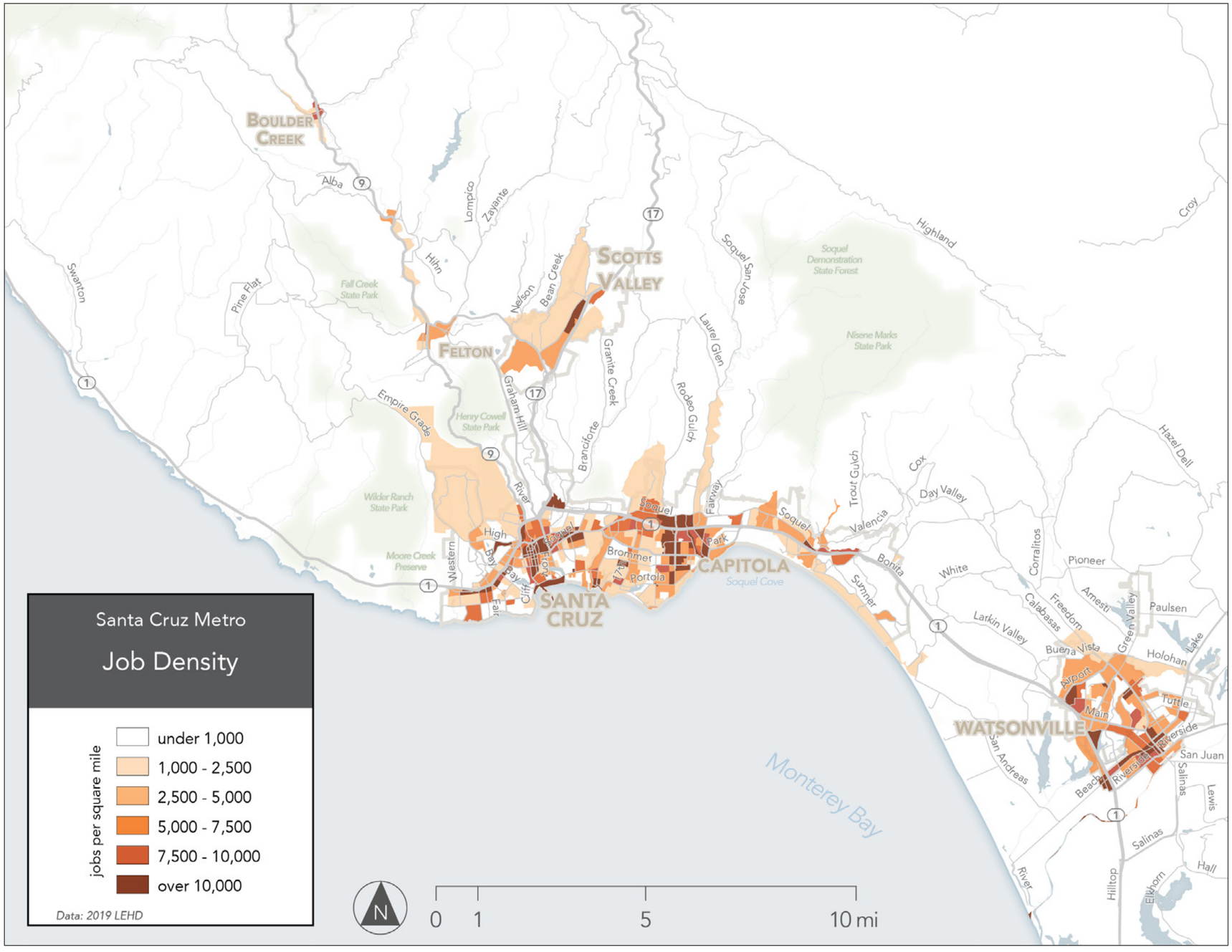


Figure 21: Job Density in Santa Cruz County. Key destinations are scattered throughout urban and suburban areas. The largest job clusters are in UCSC, Downtown Santa Cruz, Downtown Watsonville, and 41st Ave.

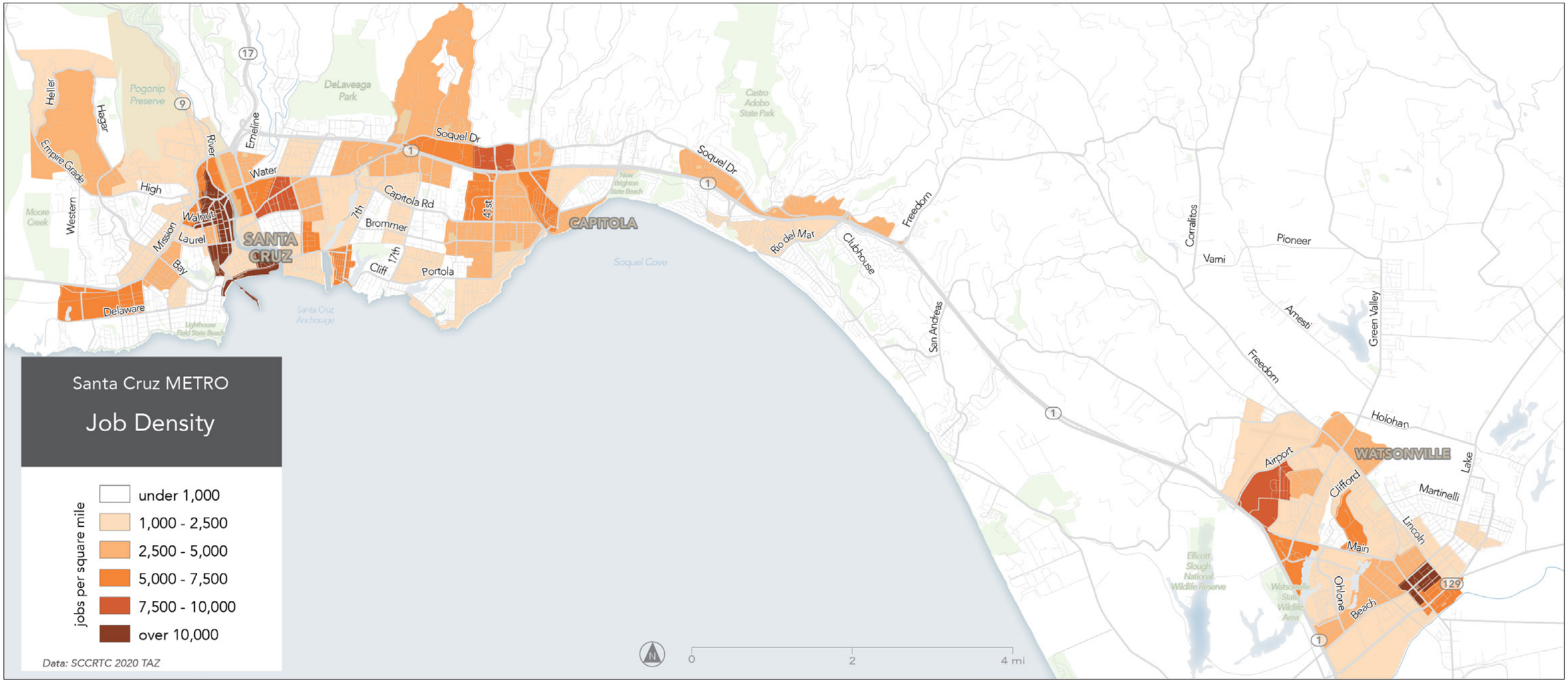


Figure 22: Job Density in the in the core urbanized areas, from Santa Cruz to Watsonville.

Indicators of Demand: Activity Density

The Activity Density maps in Figure 23 and Figure 24 combine residential and employment density into a single image.

On these maps, yellow indicates jobs and blue indicates residents. Reds and purples indicate a high degree of combined job and residential density.

These maps tend to show a relatively high degree of separation between employment areas and residential areas. The main exceptions are in Downtown Santa Cruz, and several parts of Watsonville. As shown on page 16, a transit route that goes by areas with mixed uses is likely to generate relatively high transit ridership in all directions, at many times of day.

Obviously these maps exclude one of the dominant drivers of activity in the region: they do not include college and university students as jobs. A more nuanced measure would show UCSC and Cabrillo College as destinations of overwhelming importance, as indeed they are in the ridership.

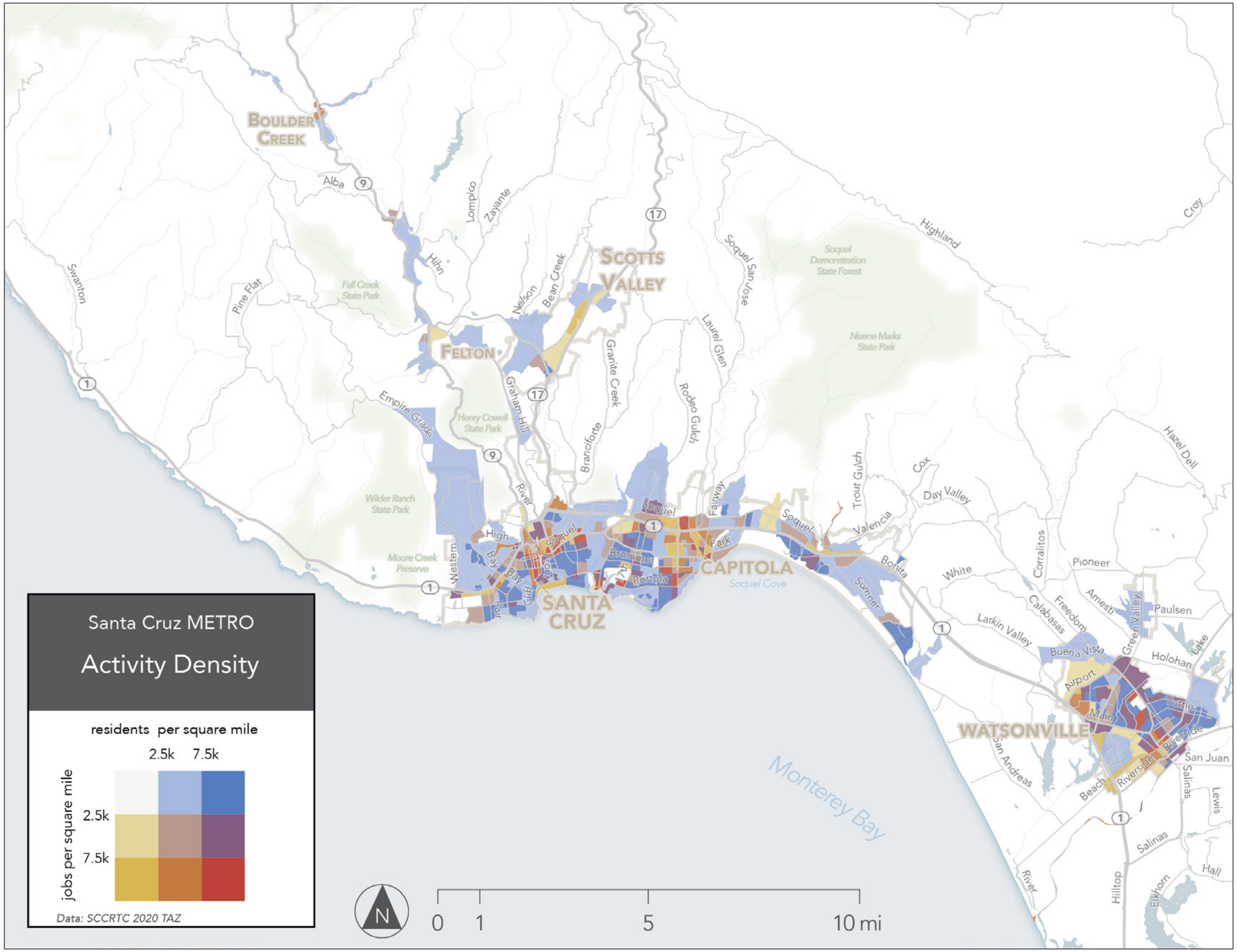


Figure 23: Activity Density in Santa Cruz County. This map shows where people live and work at higher densities.

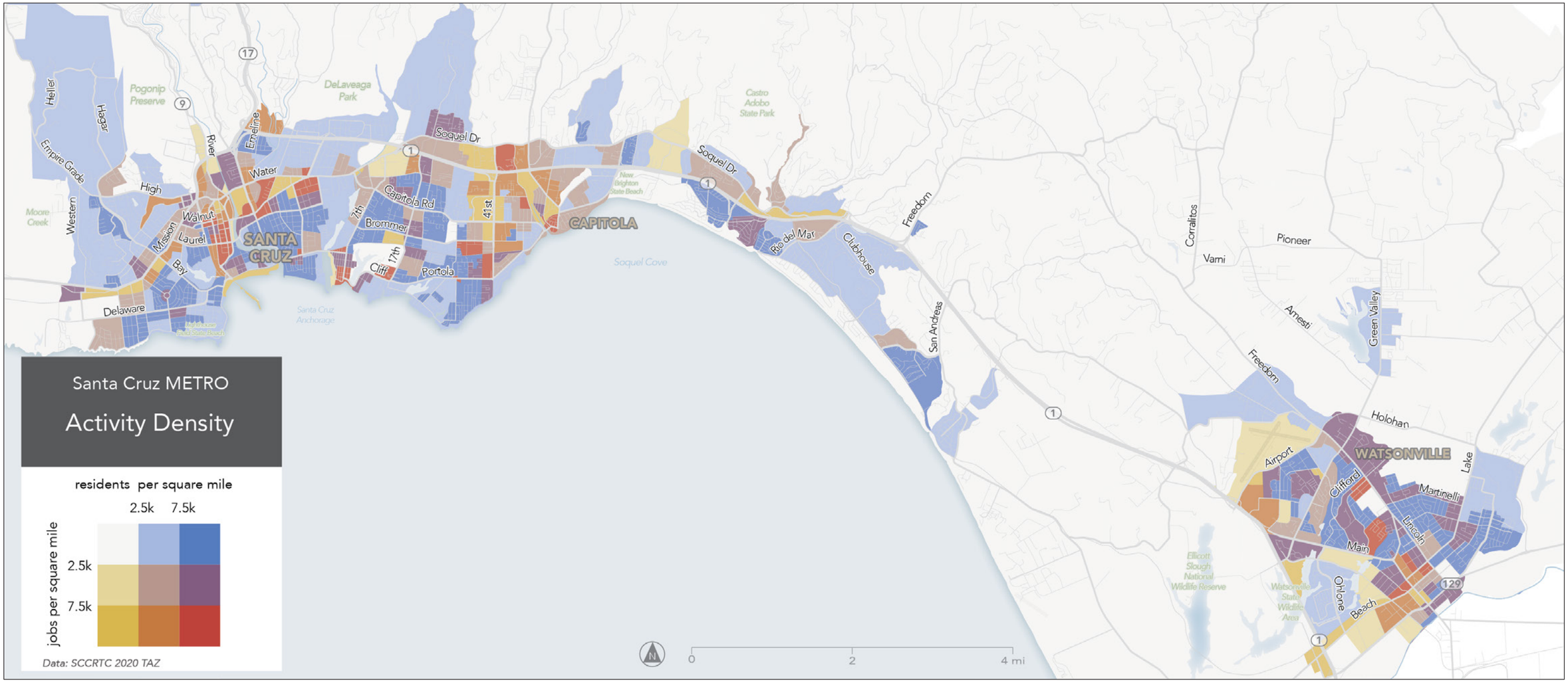


Figure 24: Activity Density in the core urbanized areas, from Santa Cruz to Watsonville.

Indicators of Demand: Commute Patterns

It is important to understand transit's role in the larger demand for commuting, but the most recent data for regional commute patterns is from 2019, before the Covid-19 pandemic.

As a result, this data shows much higher levels of office commuting than exist today. At the moment we write this, in June 2023, there is no evidence nationwide that office commuting is on track to return to what it was before the pandemic. A certain amount of working from home is likely to be permanent among people with office jobs, sometimes with more flexible working patterns such as going into an office only a few days a week.

Of course, many people, and many transit customers, work at jobs that can only be done in person. These non-office jobs -- such as the many jobs in retail, entertainment, and hospitality -- tend to pay lower wages and are less likely to begin and end at the conventional "rush hour" times. With the decline in commuting to offices this kind of employment generates a larger share of the travel market, and needs to be more central to planning.

For that reason, the 2019 commute patterns shown here have had a limited influence in the thinking in this report. The focus instead is on improving access across the area at all times of day, not just rush hour, to benefit a diversity of people traveling to many kinds of jobs and activities.

Nonetheless, these maps do reveal at least one interesting pattern, that is likely even stronger now than in 2019: although many commutes require travelling across the region, a far larger number of commutes stay within Santa Cruz, Watsonville and their immediate neighboring areas.

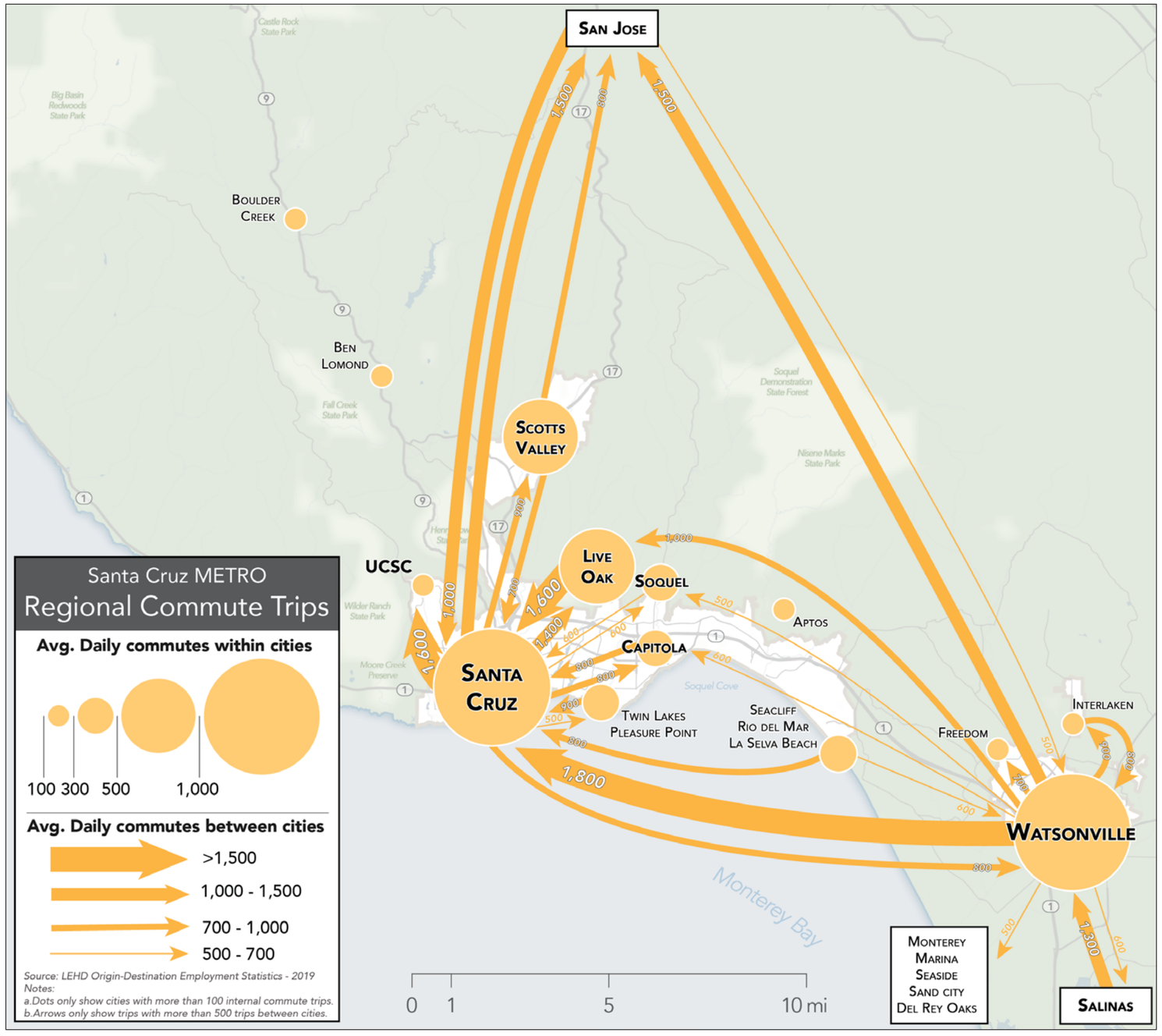


Figure 25: Regional map of major commute patterns in 2019.

Indicators of Need: Residents Experiencing Poverty

People living on low incomes are less likely to afford to own and maintain reliable cars (or to want to pay for expensive gasoline), and thus more likely to use public transit.

Sometimes, low income people are described as dependent on transit, but this term is risky, as it can create the false impression that "dependent" people will ride no matter how bad the service is. In reality, if people's lives become impossibly difficult on transit, then most people will try to find ways buy a car and drive, even if it causes them other hardships.

People with low incomes should thus be viewed as a good market for public transit, but one whose ridership must still be earned with service that is good enough to be reasonably convenient. Like everyone else, low income people only have 24 hours in the day and must use that time efficiently.

The maps in Figure 26 and Figure 27 are of density of residents living in households at or below 150% of the federal poverty level per square mile. As a result, the maps do not highlight poverty in rural areas and small towns, especially where the census zones are too large to focus on a small rural community. However, we are aware of those populations from other sources.

Watsonville has the highest densities of low-income people in the region. There are also relatively high densities of people in poverty in inner and west Santa Cruz. This relates partly to the large number of UCSC students, especially on the west side. In Live Oak and Capitola, there are areas of relatively high poverty driven by large numbers of seniors on fixed incomes.

Although these are the areas with the highest numbers of low-income people, the maps also show that there is significant poverty across much of the urban area.

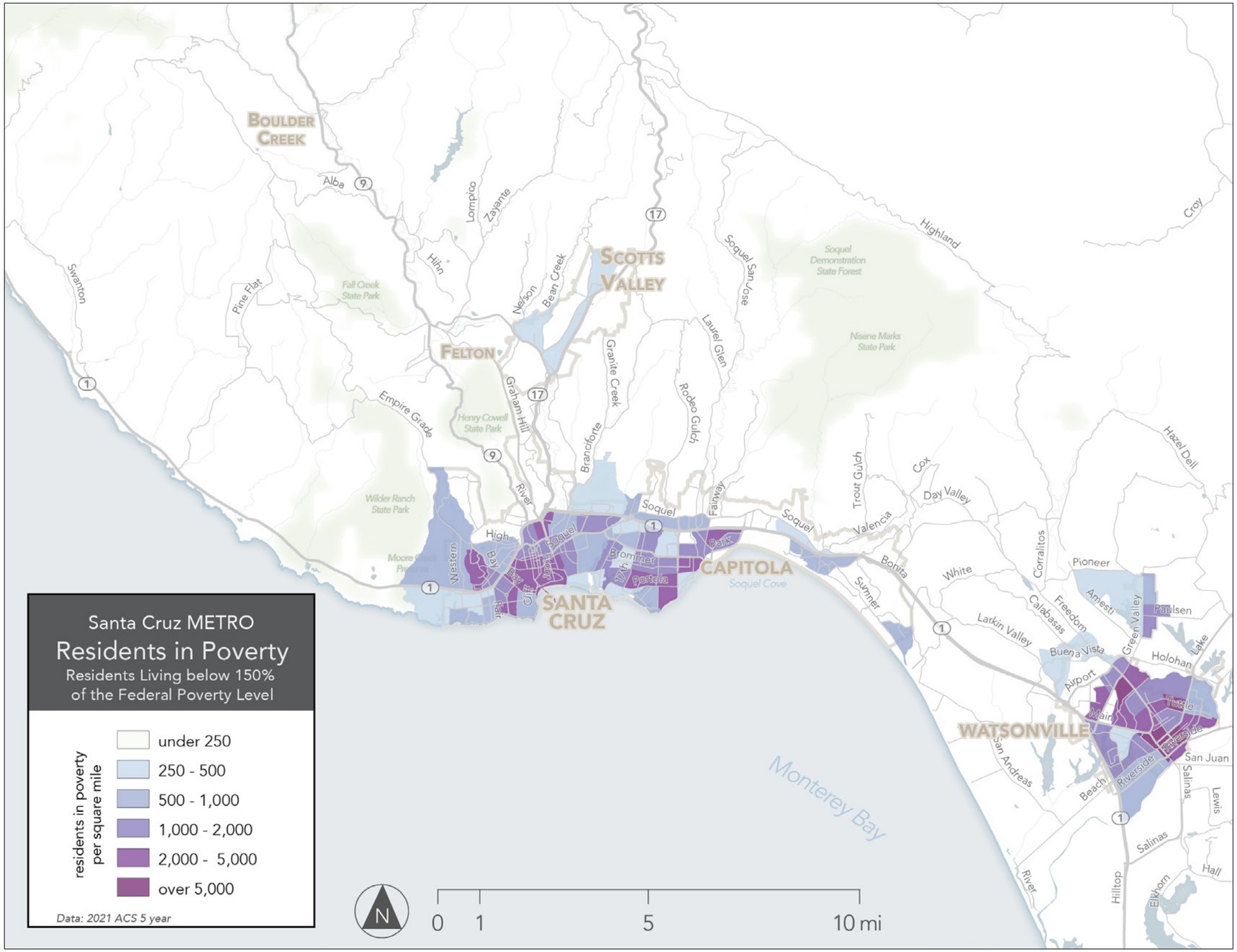


Figure 26: Poverty Density in Santa Cruz County. This map shows where people are living in poverty at moderate and high densities.

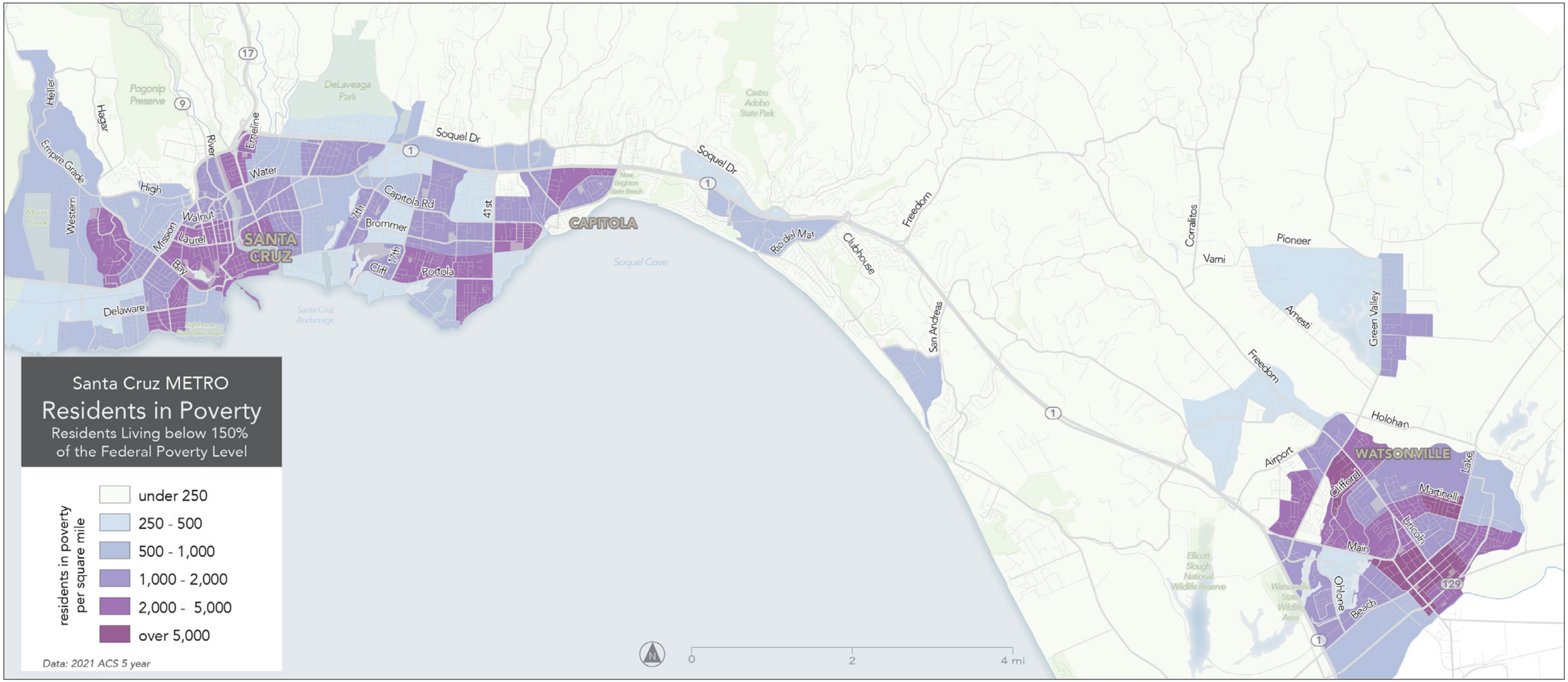


Figure 27: Poverty density in the core urbanized areas, from Santa Cruz to Watsonville.

Indicators of Need: Zero-Vehicle Households

Zero-vehicle households are counted by the U.S. Census, as part of the American Community Survey. Although households without a vehicle are an obvious market for public transit, there are reasons to be careful with this measure.

The census defines a household as “all of the people who occupy a housing unit,” but this can be one person or it can be ten or more. Many students living alone thus constitute a zero-vehicle household, and will appear more prominent on this map than a family of ten living without a car, even though the family generates far more potential transit demand. The family of ten would likely generate more transit demand than a one-person household, even if it owned one or two cars.

One thing the maps based on this measure do show is that people are more likely to live without cars in places where that’s relatively easy to do. There are many zero vehicle households in central parts of Santa Cruz and Watsonville, for example, partly because those are places where many of the basic needs of life can be met within walking and cycling distance, supplemented by public transit.

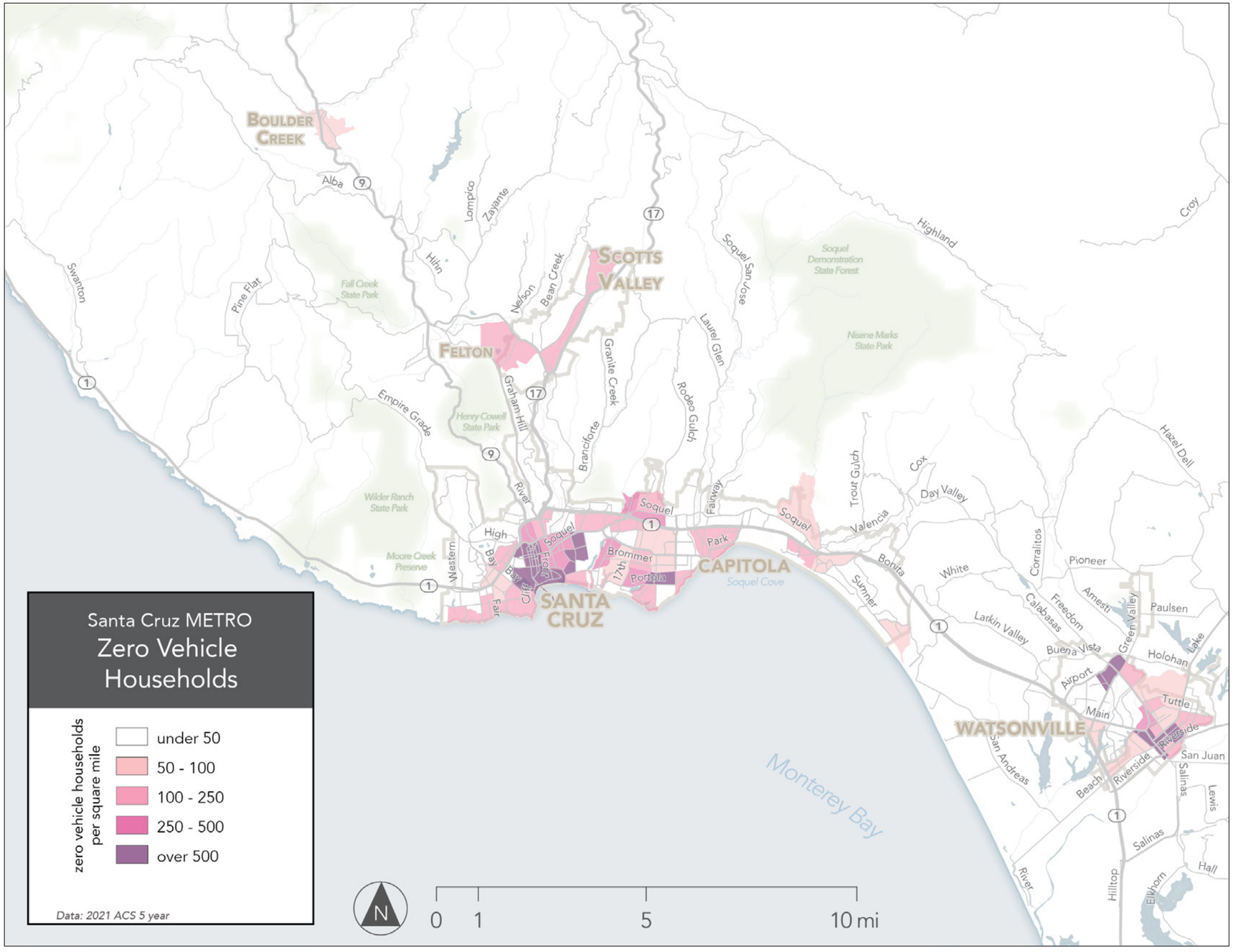


Figure 28: Zero Vehicle Households density in Santa Cruz County.

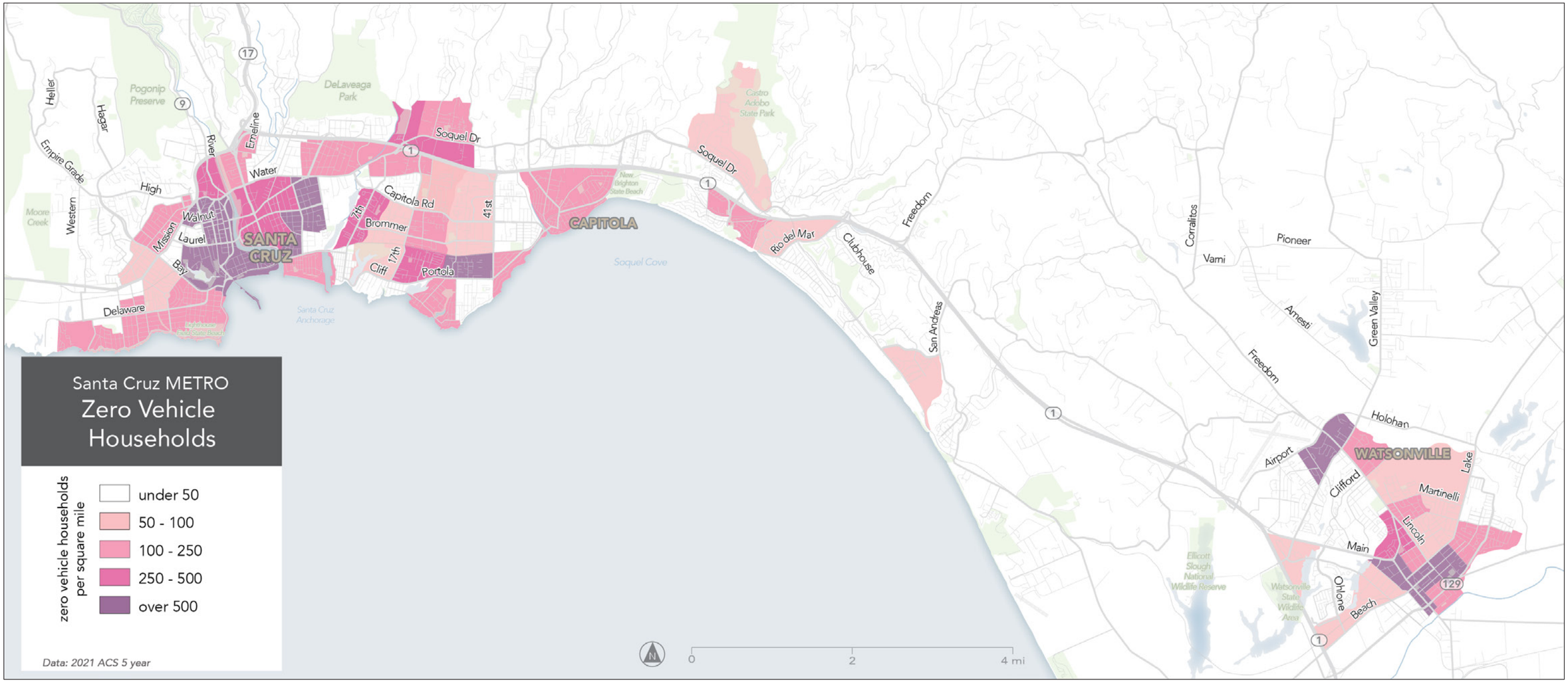


Figure 29: Zero Vehicle Households density in the core urbanized areas, from Santa Cruz to Watsonville. The most significant concentrations are in the inner east and west sides of Santa Cruz, Downtown Watsonville, around Freedom Center in north Watsonville. However, there are also significant concentrations of zero-car households around Portola/Pleasure Point, and in various areas throughout Live Oak.

Indicators of Need: Seniors

People over 65 generate demand for transit, especially when they reach an age when it is no longer safe for them to drive. As a group, senior-headed households are less likely to own cars than the general population, an advantage for transit in places where other characteristics for high ridership (such as overall density and walkability) are present.

However, seniors' needs and preferences are, on average, different from those of younger people. Seniors tend to be more sensitive to walking distance, because of limits on their physical ability. On average, seniors also tend to be less sensitive to long waits, because many are retired and have a relatively flexible schedule. For the same reason, seniors are, on average, less likely to be discouraged by slow or indirect routes that take them out of their way.

Because of these factors, transit service designed primarily to meet the needs of seniors rarely attracts high overall ridership. Most riders who are employed, in school or caring for kids in school will find service with long waits to be intolerable. Thus, the amount of focus that transit agencies place on meeting the needs of seniors should be carefully balanced with the needs and desires of the broader community.

Compared to the population as a whole, seniors are more likely to experience mobility limitations. As a result, they are also more likely to qualify for ParaCruz, METRO's ADA paratransit service This provides an additional mobility option for seniors with physical impairments. Nevertheless, while some people may prefer the door-to-door service provided by paratransit, many others prefer the independence of taking a regularly scheduled bus rather than having to reserve a ride a day in advance.

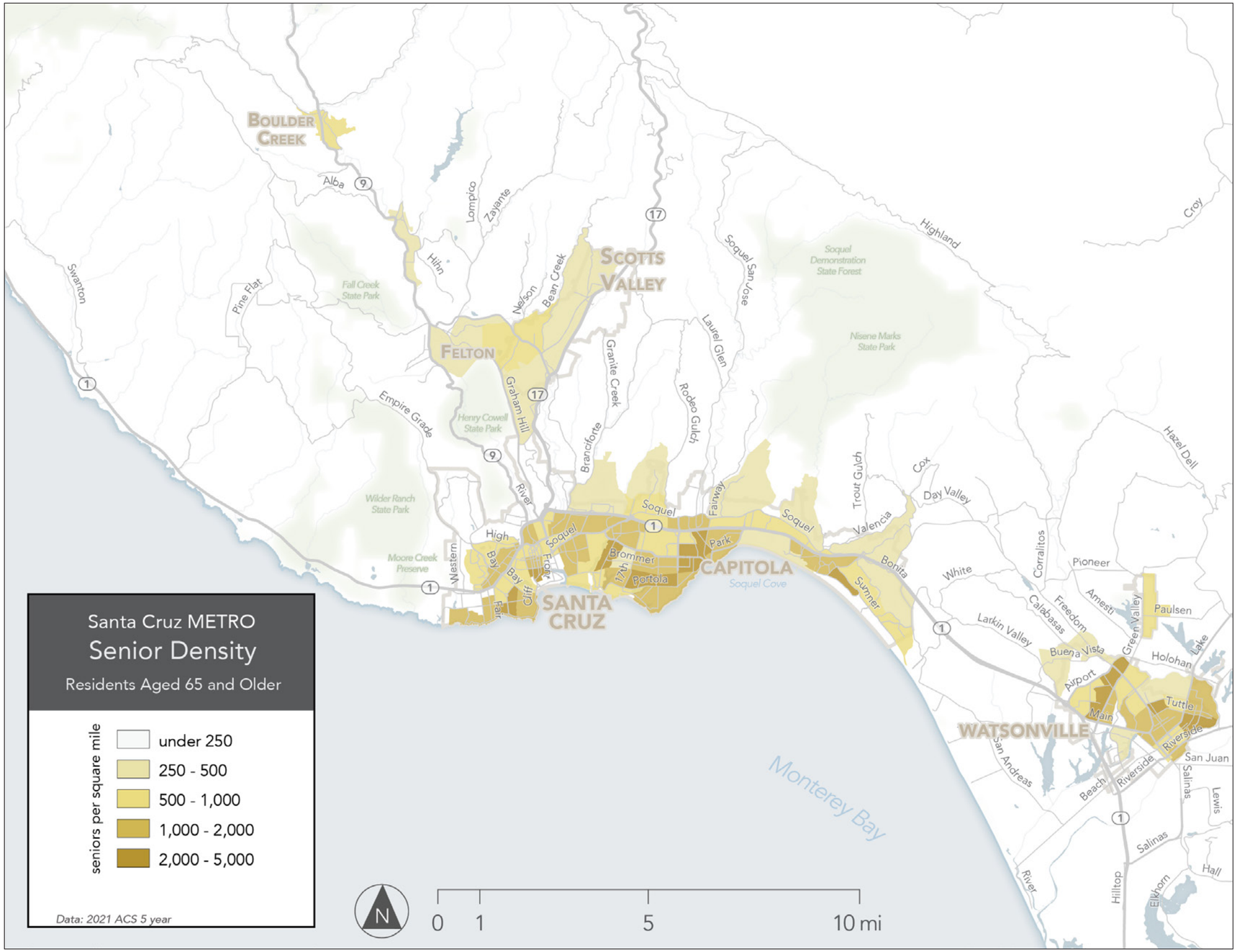


Figure 30: Senior Density (people over 65) in Santa Cruz County.

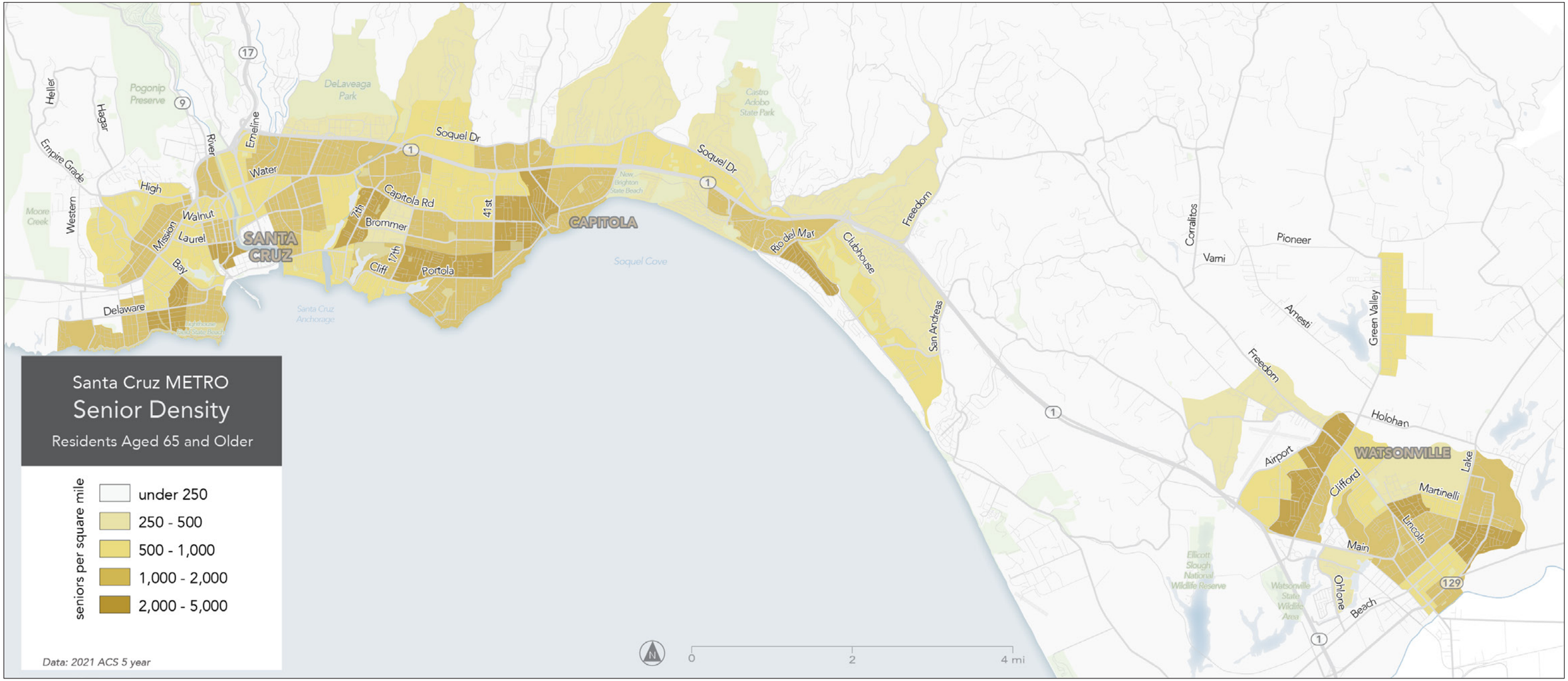


Figure 31: Senior Density (people over 65) in the core urbanized areas, from Santa Cruz to Watsonville. Some concentrations of seniors are correlated with areas with significant low income population, including in Live Oak, Capitola and parts of Watsonville.

Indicators of Need: Youth

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

High densities of people under 18 also tend to reflect high densities of adults with high demands on their time. Parents are sometimes perceived as a relatively weak market for transit, because their needs are so specific in time and pull them in many directions. However, a transit system that can allow children (who are old enough to travel on their own) not to depend on their parents for rides, can also be a significant factor in saving parents time, and making transit a more viable option for them as well.

The maps on this page and the next shows the density of residents under the age of 18 in each census block group.

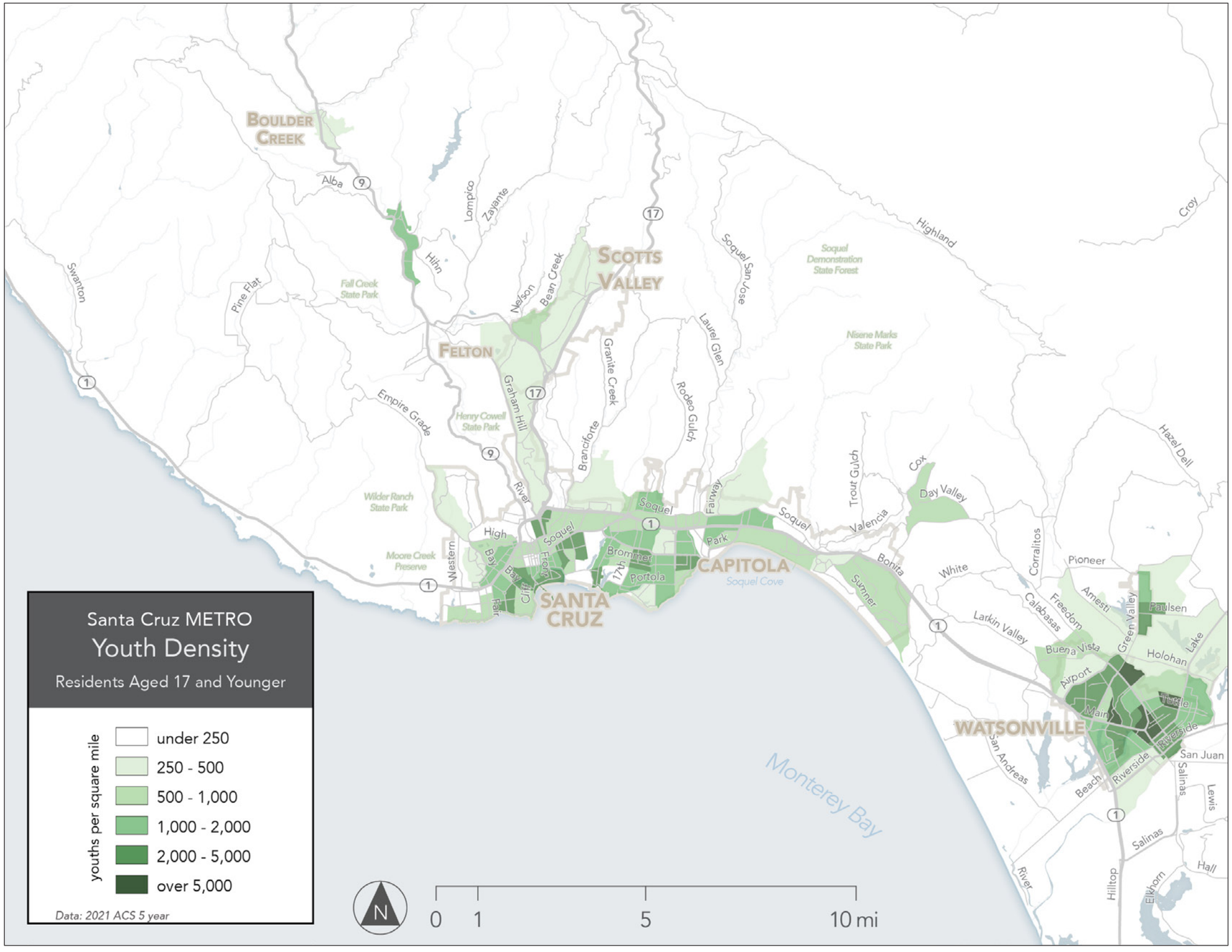


Figure 32: Youth Density (people under 18) in Santa Cruz County. The highest concentrations of families with children are in Watsonville, parts of Santa Cruz and Live Oak.

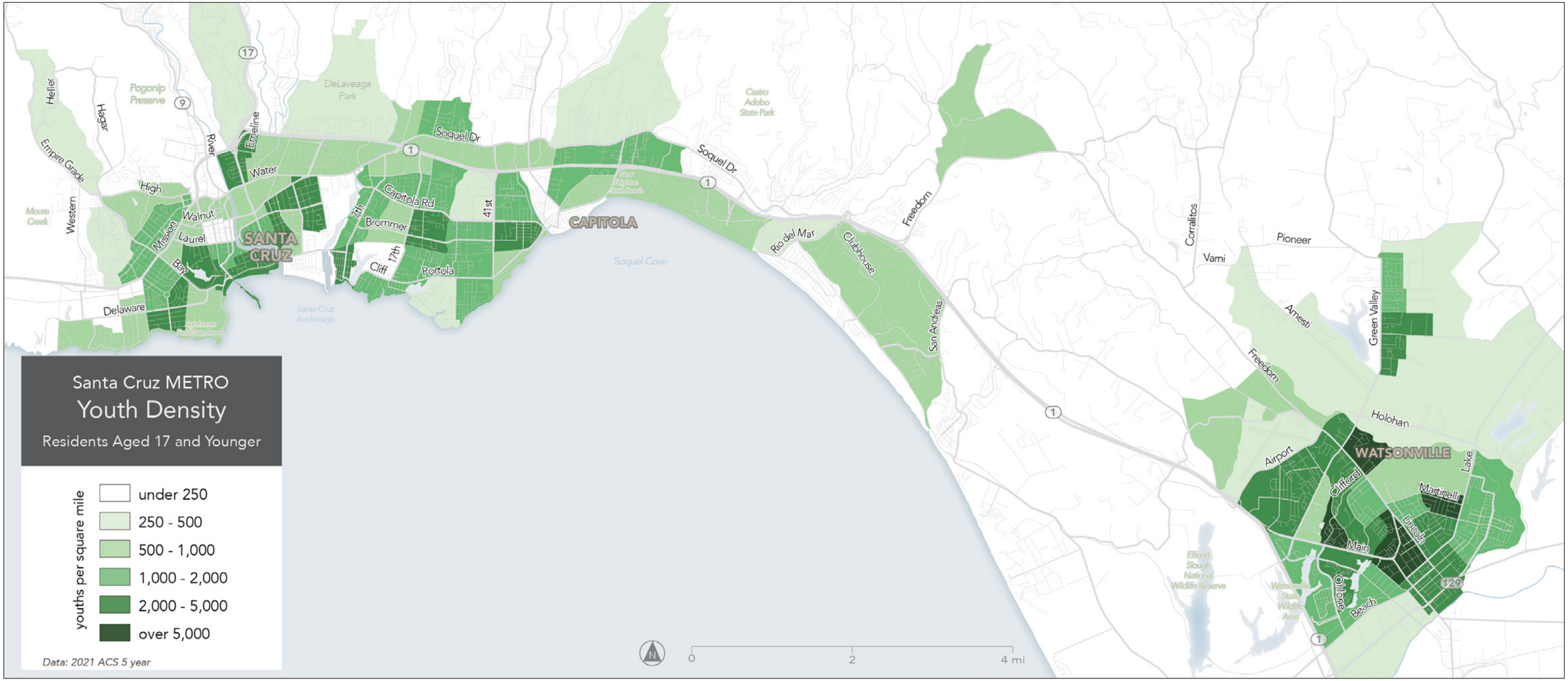


Figure 33: Youth Density (people under 18) in the core urbanized areas, from Santa Cruz to Watsonville. Children, or at least teenagers, are somewhat of a natural market for transit because you can't get a license until you are 16, and even after that a car is expensive.

Civil Rights: Race and Ethnicity

While information about people's income tells us something about their potential interest in or need for transit, information about ethnicity or race do not. However, racial equity is an important issue for many people. In addition, transit planning in the United States is required, under federal civil rights law, to ensure that any negative impacts of a service change do not disproportionately affect racial minority groups.

According to the 2020 Census, Santa Cruz County's population is about 54% White, 35% Hispanic or Latino, 3% multiracial, and 1% Black, with all other races well under 1%.

However, these populations are not evenly distributed across the county. The racial contrast across the region is quite stark. Over 80% of Watsonville residents self-identified as Hispanic or Latino in the 2020 census, compared to about 30% of residents in Live Oak, 20% of residents in Santa Cruz and Capitola, and 10% of residents in Scotts Valley.

The high levels of diversity on the UCSC campus, and in dense housing areas nearby, is typical for a major university that attracts students and faculty from worldwide.

In the dot maps, in Figure 34 and Figure 35, one dot represents 25 residents of a particular racial group. The locations of the dots are not exact, and reflect the shape of census block groups.

Each census block group is evenly covered by a mixture of dots showing the number of each racial group in that zone. No information is available about the locations of each group within a zone, and hard boundaries between one zone and the next likely do not reflect such hard edges in reality.

Figure 34: Race and Ethnicity Dot Density in Santa Cruz County. This map shows where people of different races and ethnicities live in the County.

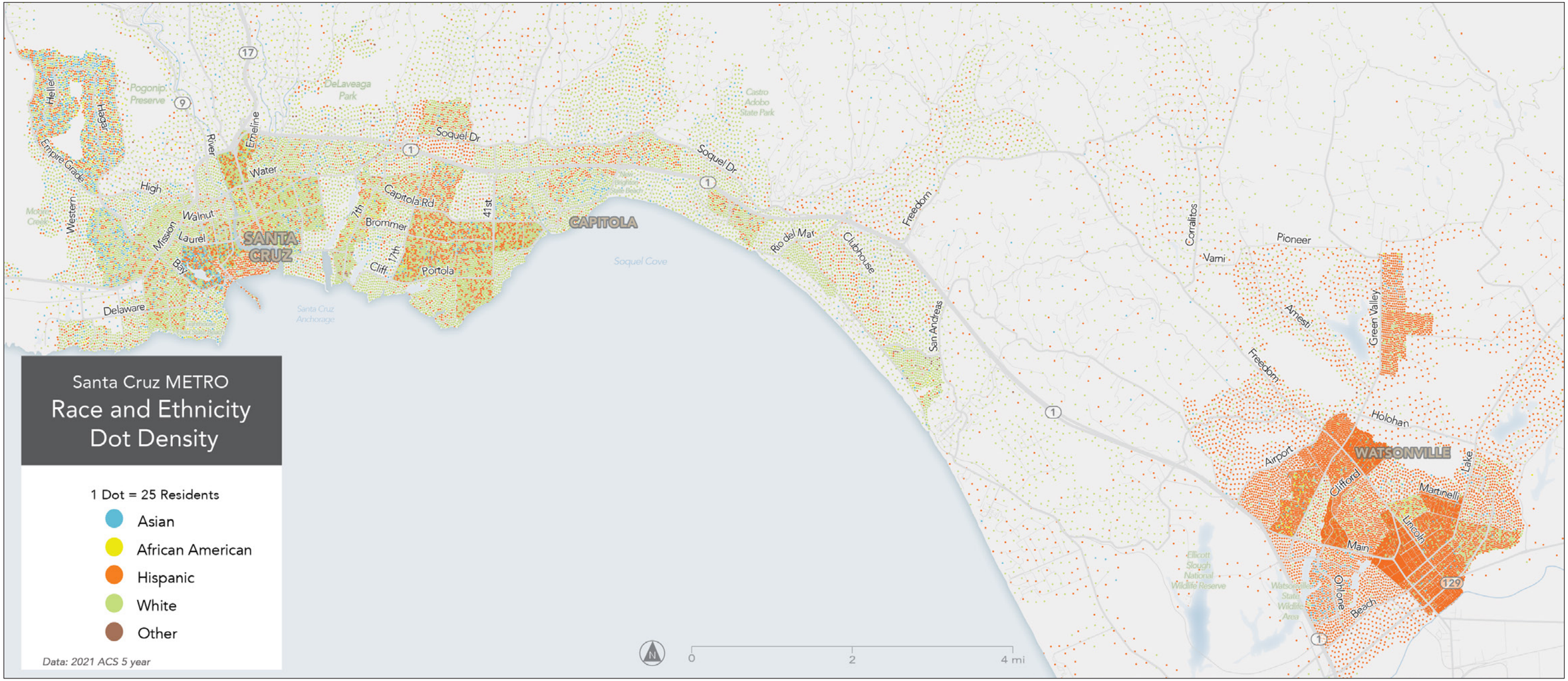


Figure 35: Race and Ethnicity Dot Density in the core urbanized areas, from Santa Cruz to Watsonville. There is a high concentration of Hispanic residents in Watsonville.

4 Santa Cruz METRO's Existing Network

Local and Regional Network

This chapter describes the existing transit network in Santa Cruz County, its strengths and limitations, and the available information about its performance.

The map on this page focuses on the parts of the network that operate at regional scale, while the next page zooms in on Santa Cruz, Watsonville, and the areas between them. Following these pages are tables showing exactly what days and times each route operates.

On all route maps in this report, the color of each line represents the frequency of service, and the networks cannot be fully understood without this information.

As the map legends show, more prominent colors represent higher frequencies—that is, a bus coming more often—that are sustained throughout the day. Pale dashed lines indicate services that run just a few trips per day. In a few places, the color of a line may change because of a branch. For example, a half-hourly service may branch to form two hourly services, like Route 71 at Clifford Street in Watsonville.

The most unusual fact about this network is that there is no service running better than every 30 minutes, a frequency at which it is still necessary to plan your trip around the bus schedule.[1] This low level of service reflects, in part, the staffing shortage that has limited METRO's ability to provide service.

Comparable cities, including Monterey and Salinas, have all-day 15 minute service on their busiest segments. At that frequency, it becomes possible to use public transit spontaneously, knowing that a bus will be coming soon whenever it is needed.

1 A trip from downtown Santa Cruz to UCSC is possible every 5 to 15 minutes. But in the other direction, neither direction of the campus loop has service consistently every 15 minutes or better.

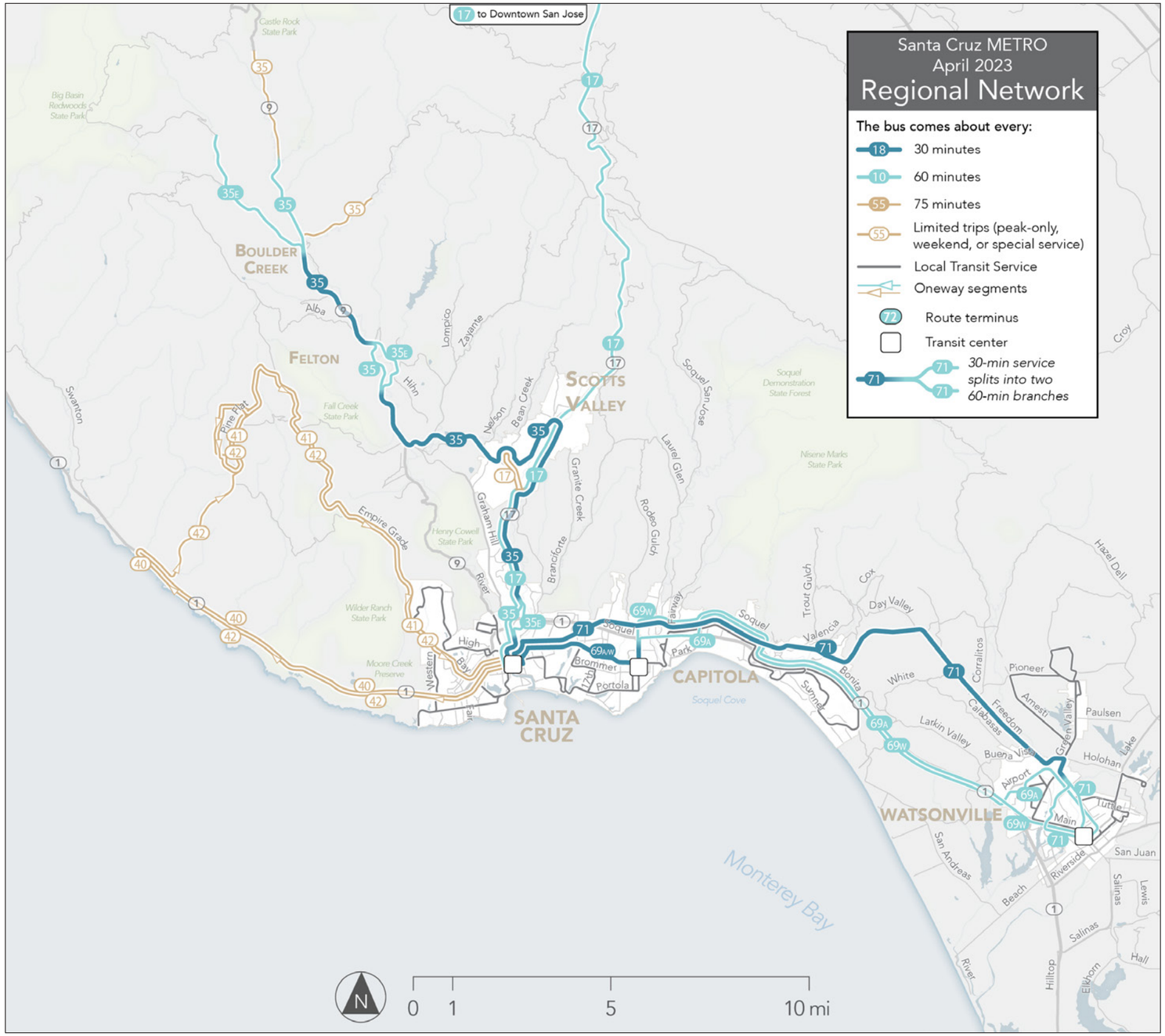


Figure 36: Santa Cruz Metro Regional Network (April 2023). No existing route better than every 30 minutes in the region. See the following page for a map of routes that service the core urbanized areas.

Existing Local Network Map (April 2023)

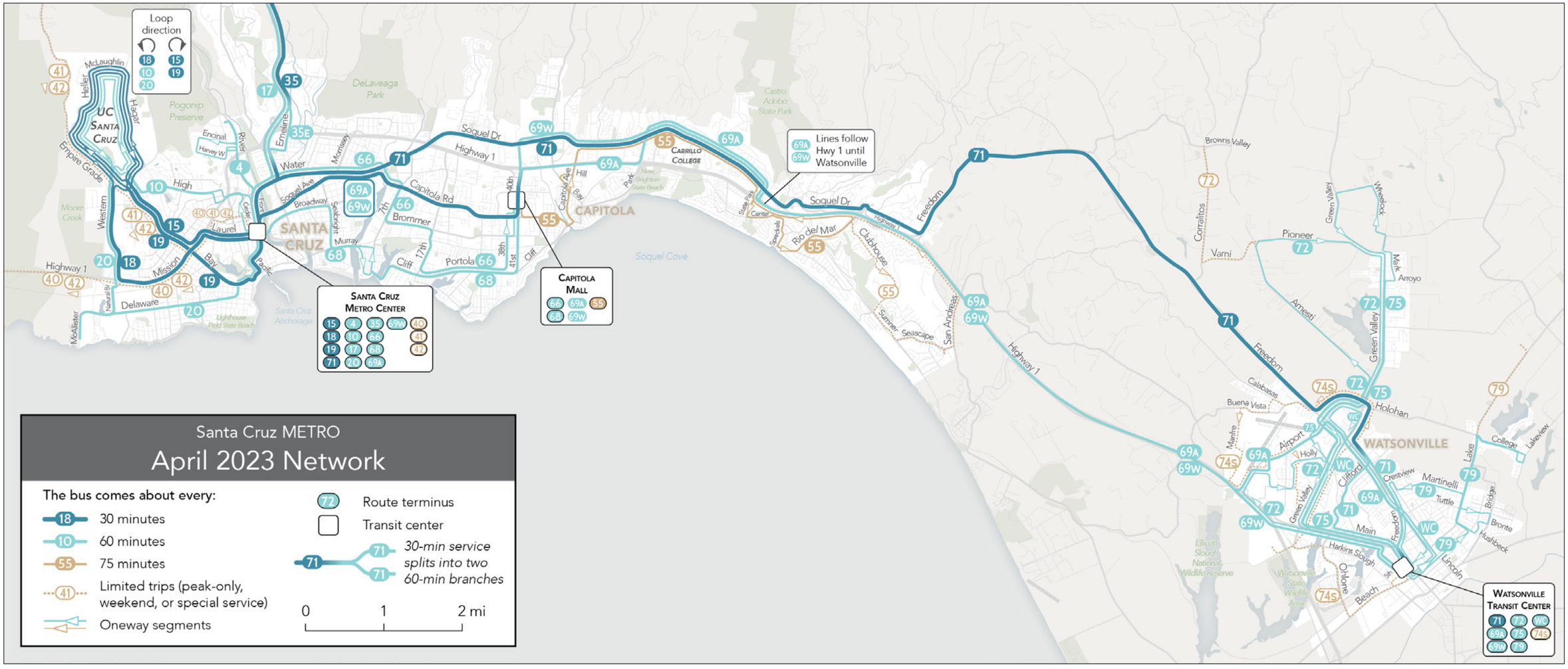


Figure 37: Santa Cruz Metro Network (April 2023) in the core urbanized areas, from Santa Cruz to Watsonville.

Existing Network - Frequency Chart

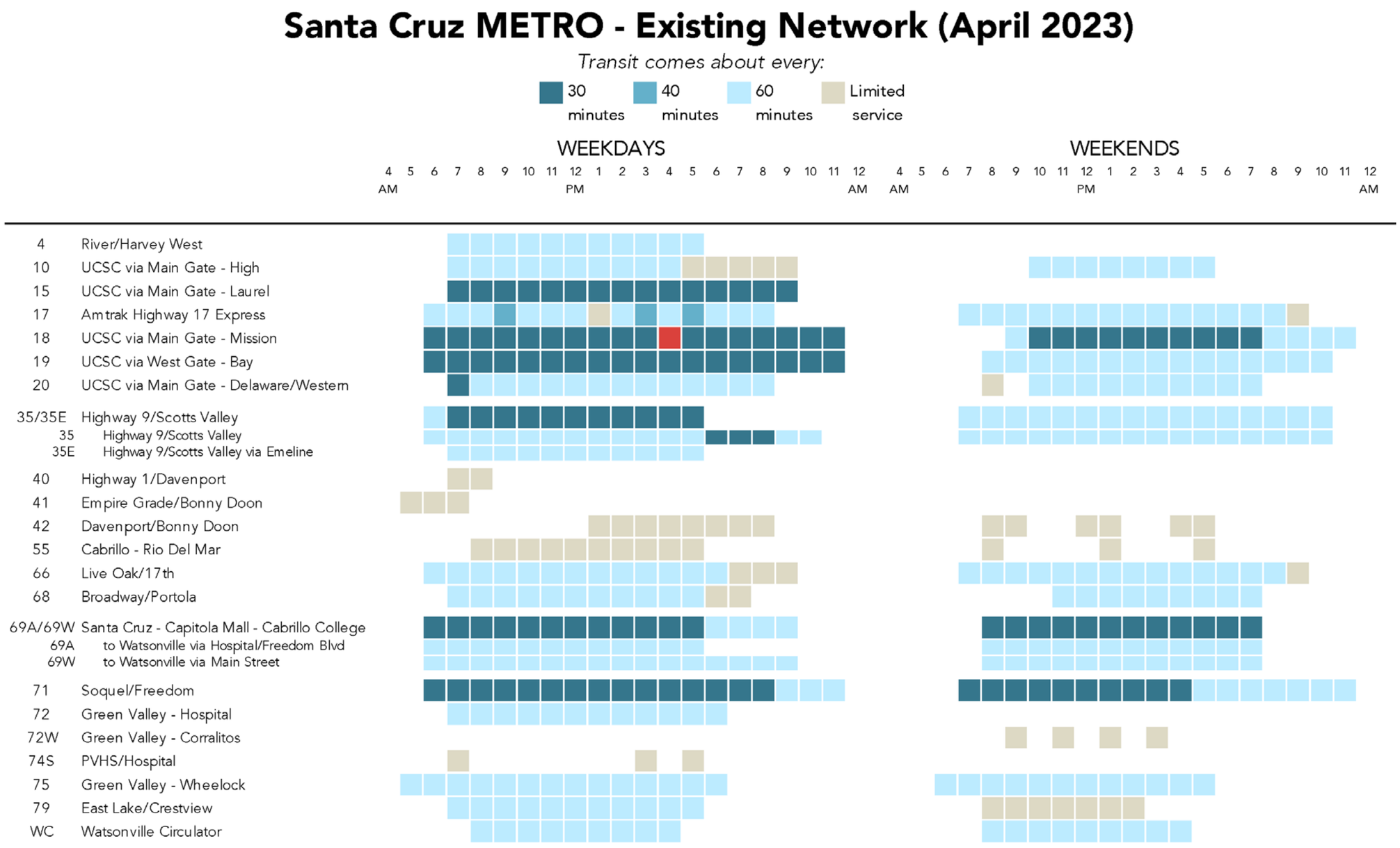
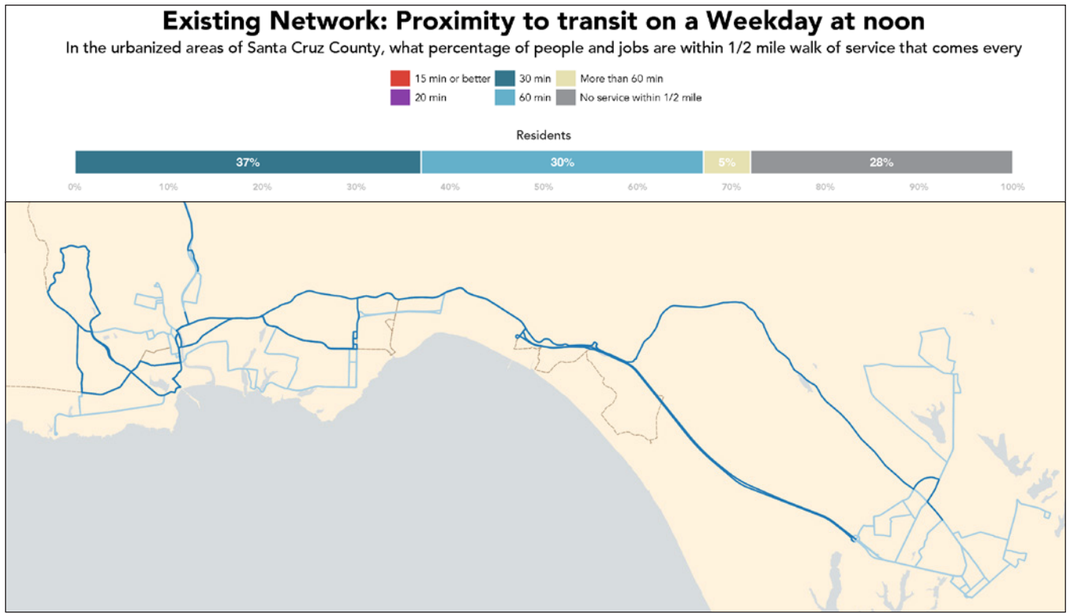
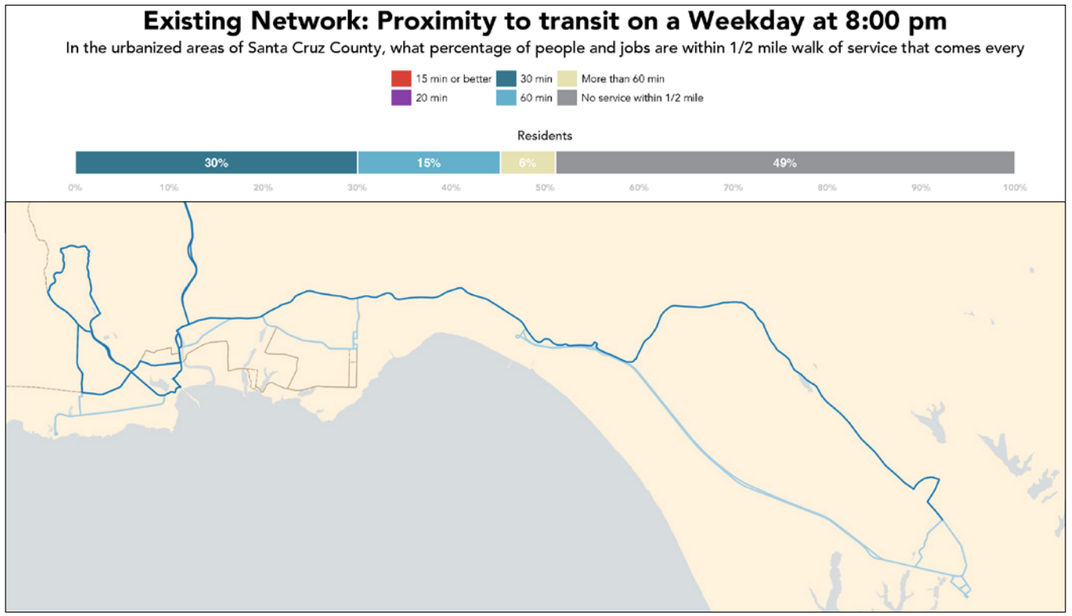


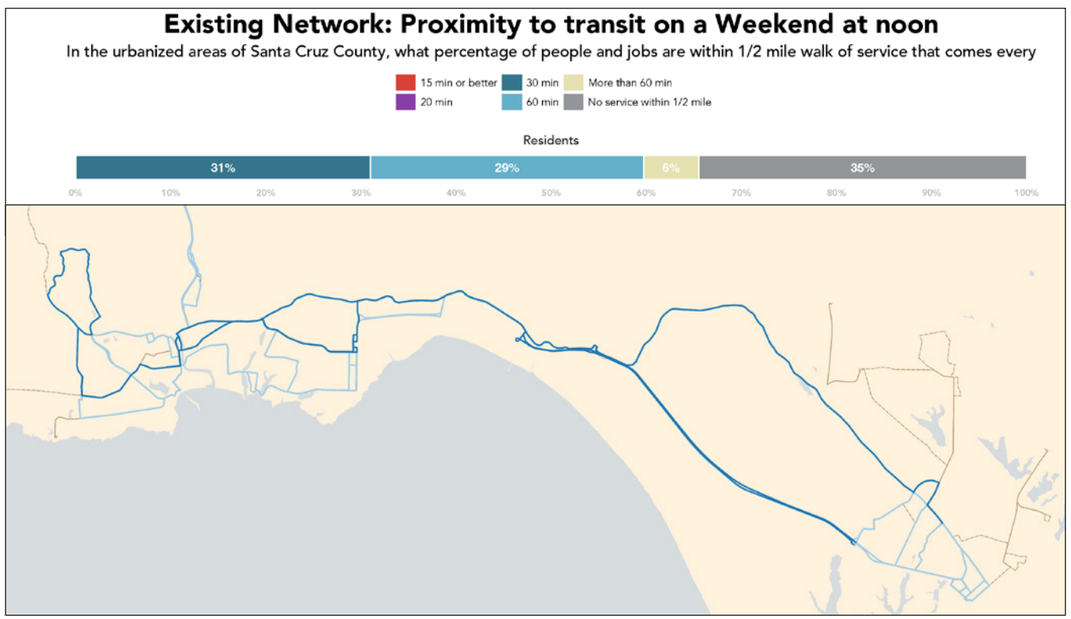
Figure 38: Chart showing service frequency by route, day of the week, and time of day for the Existing Network.

Visualizing Weekday, Weekend and Evening Service Levels

These images show how frequency is reduced on weekends and evenings, and how this affects the percentage of people near service.







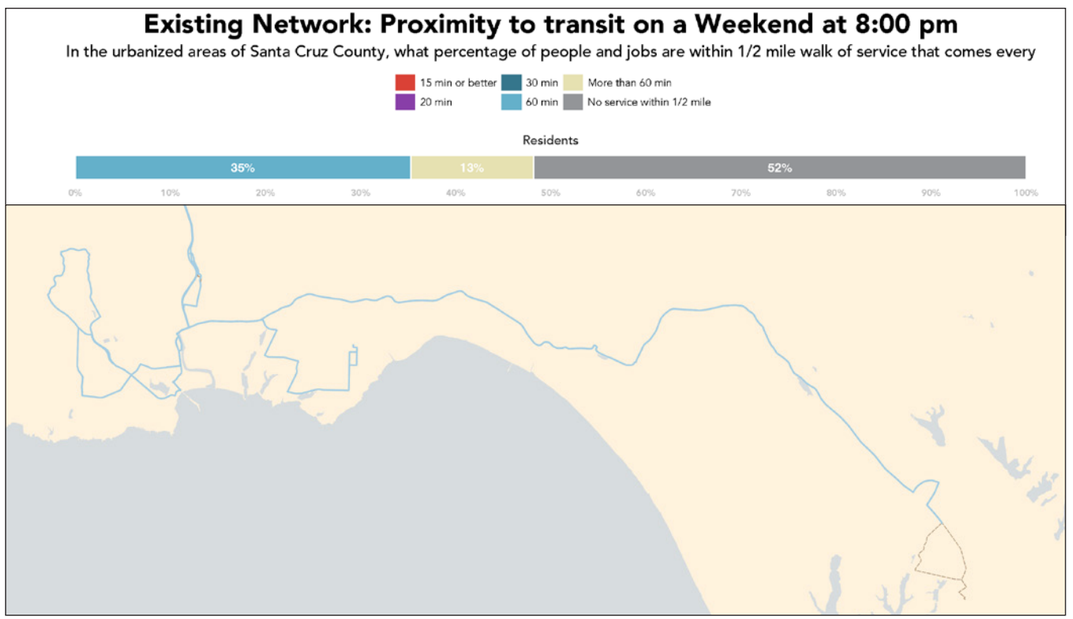


Figure 39: Maps showing METRO service frequencies in the core urbanized areas, comparing weekdays at noon and 8 PM, to weekends at noon and 8 PM.

Local Network Description: UCSC

Routes serving the University of California - Santa Cruz (UCSC) account for nearly half of Santa Cruz METRO's ridership. Many UCSC students live off-campus, as do most faculty and staff. Parking on campus is limited and expensive, and student pass programs further encourage transit ridership.

METRO Routes and Campus Shuttles

The campus is organized around a two-way loop of roads. On-campus shuttles are provided by UCSC (Routes CL, UC and N on the map), but Santa Cruz METRO buses also circulate the entire loop on Routes 10, 15, 18, 19 and 20.

The two services overlap but are not tightly integrated. While the shuttles are intended for on-campus travel and the METRO buses for travel off the campus, people understandably use the METRO buses for on-campus trips if one happens to come first, which reduces capacity for people needing METRO service to leave the campus.

Frequencies

METRO routes on campus include:

- Routes 18 and 19, which operate every 30 minutes on weekdays, year-round.
- Routes 10 and 20, which operate every 60 minutes on weekdays, year-round.
- Route 15 which operates every 30 minutes on weekdays, when classes are in session.

These routes add up to 8 buses per hour, but because the routes in each direction of the loop come from different locations and have different lengths, there is not a consistent frequency of service in either direction at most times of day.

Overcrowding and Low Speeds

This level of service is not adequate for the amount of demand at the university, and reflects the impacts of METRO's staffing shortage. Overcrowding is common, often due to long gaps between buses at high-demand times.

Service is also often slowed by the large numbers of people getting on and off each bus, and the very limited capacity of campus roadways. As a result, travel times to and from campus tend to be unreliable, especially in the afternoons when classes are in session.

No East-West Service

A common complaint from students and staff is that METRO's on-campus routes all end in downtown Santa Cruz, where passengers must transfer to reach any other destinations. This problem is worsened by the difficulty with on-time performance, which makes connections in downtown Santa Cruz unreliable.

The lack of continuous services to points beyond downtown is the result of the lack of a functional terminal location on the campus. All METRO buses entering the campus must flow through the loop and return, without an opportunity for a scheduled break.

By the time a bus has left downtown Santa Cruz, driven the whole campus loop, and returned downtown, it has been running for almost an hour and needs a break (called a layover) both for the bus operator's convenience and to enable the bus to catch up to its schedule if it is late.

The problem is not just the lack of a physical place on the campus to take a break. The continuity of university buildings along most of the loop means that if the bus took a break at almost any point, it would interrupt the trips of some people riding through that point.

For these reasons, the service alternatives that follow focus on improving the frequency of connections in the city center, but within the current limits of METRO's resources they do not propose adding new services.

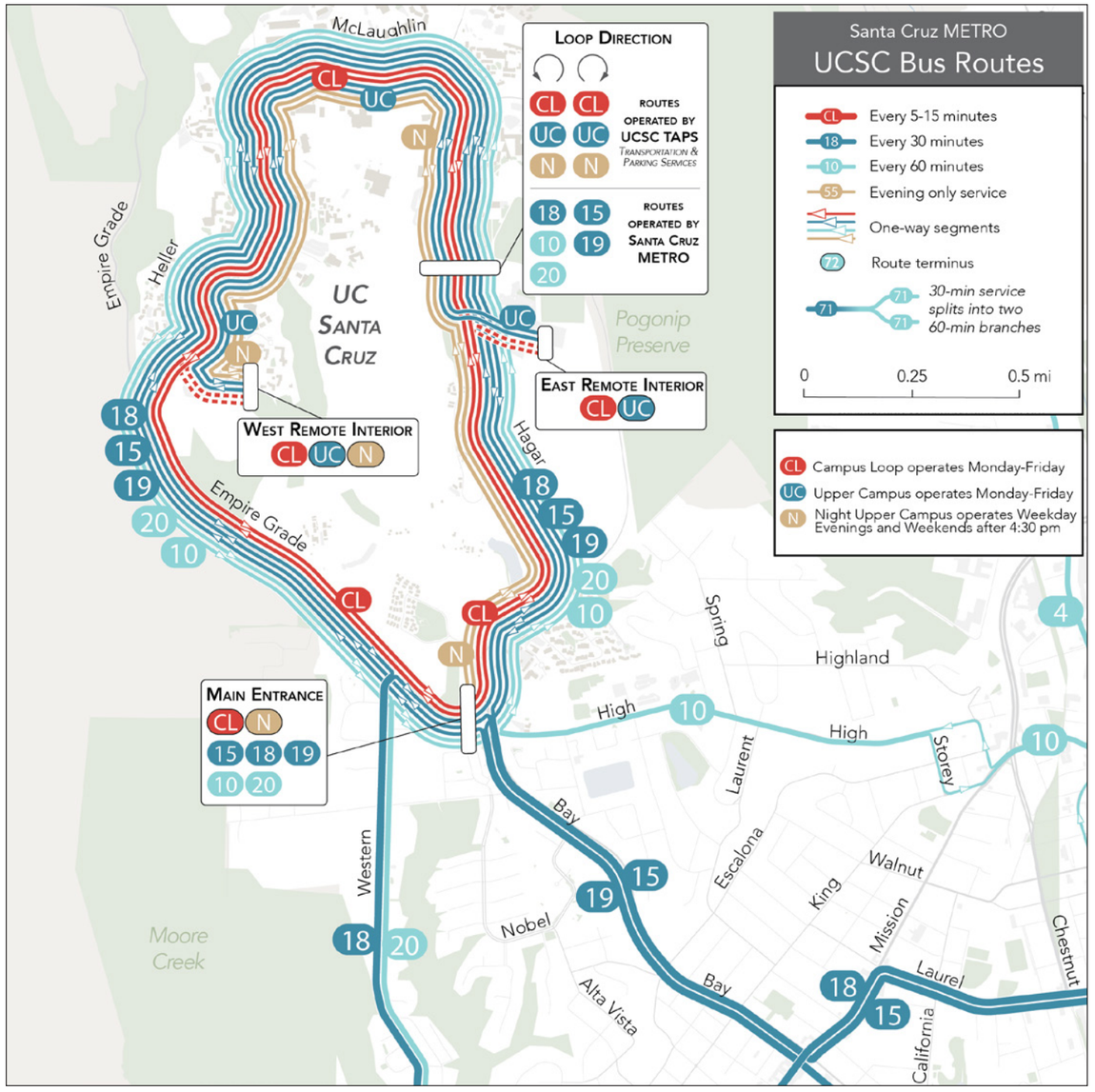


Figure 40: Map of existing transit routes serving UCSC. This map includes both METRO and UCSC TAPS on-campus shuttles.

Local Network Description: Santa Cruz

METRO's network on the west side of Santa Cruz is designed to connect all neighborhoods to UCSC at one end and downtown at the other.

Routes 18 and 19 jointly cover the most densely developed areas of the west side with service every 30 minutes, including Bay St, Mission St, and the Boardwalk. Routes 10 and 20 supplement them with service every 60 minutes that covers less dense areas along Delaware St. and High St.

On the east side of Santa Cruz, METRO's network includes:

- Routes 69 and 71, each running every 30 minutes, and both ultimately going to Watsonville on various paths. Route 69 actually includes both 69A and 69W, which follow a joint path to Capitola Mall, but split as two separate hourly routes further east.
- Routes 66 and 68, which cover the other areas of east side Santa Cruz and the southern half of Live Oak with service every 60 minutes. These frequencies are low for an area of relatively high density. Line 66 also duplicates Line 71 for a long distance along Water Street.

North of downtown Santa Cruz, Line 4 serves the industrial areas along River Road every 60 minutes. However, San Lorenzo Valley service cannot be routed this way because Highway 9 south of Felton has curves that are too tight for buses.

Instead, San Lorenzo Valley services (Routes 35 and 35E) depart from Santa Cruz along Highway 17, approximately every 30 minutes. Half of this service (Route 35E) deviates once an hour via Emeline St to serve the county service facilities. This adds several minutes' time to trips to and from Scotts Valley and the San Lorenzo Valley.

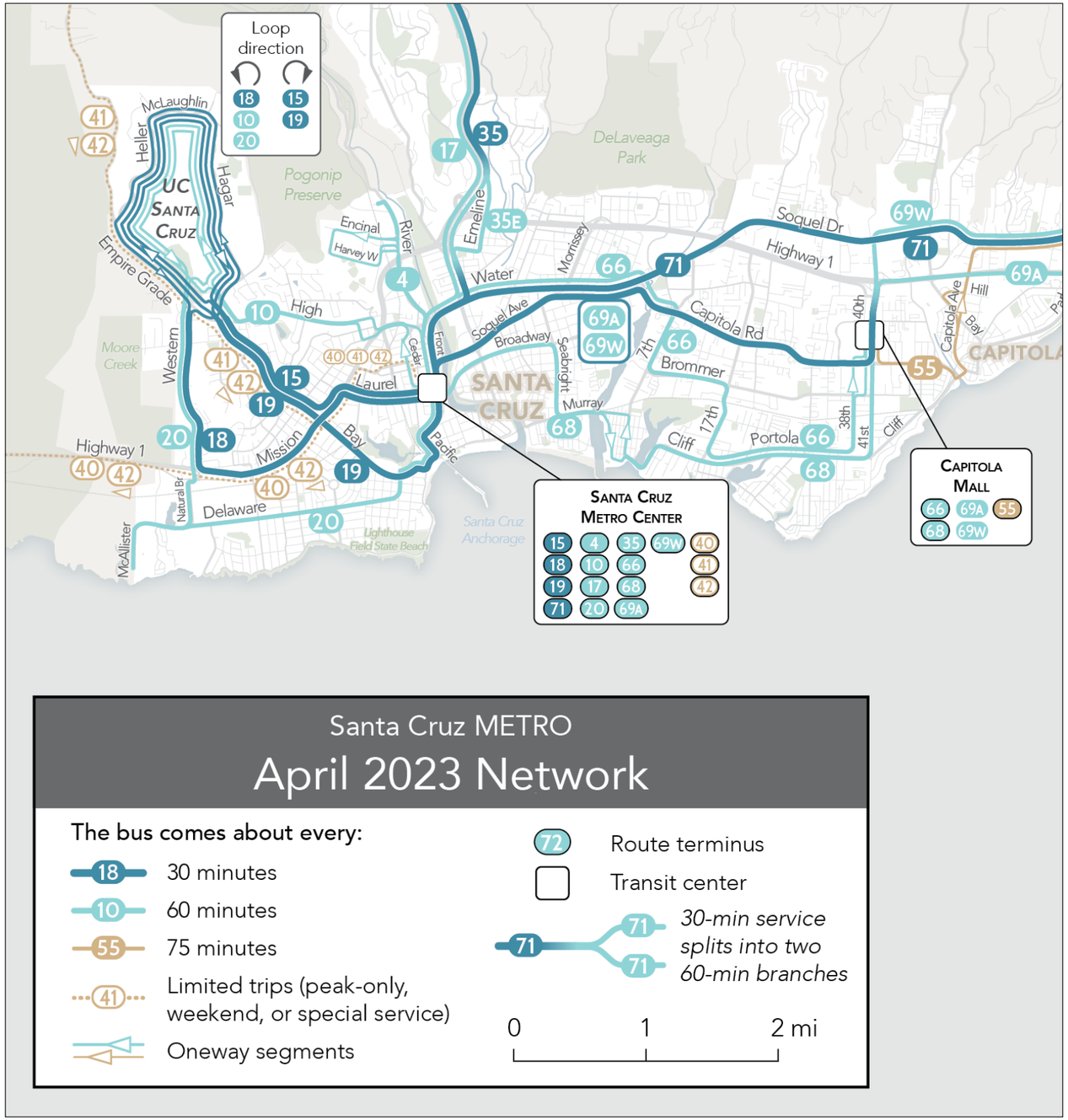


Figure 41: Map of existing Santa Cruz METRO service in and near Santa Cruz.

Local Network Description: Live Oak, Soquel, Capitola, Aptos

This area is characterized by routes that serve a mix of local and regional needs.

Route 71, the most direct service between Santa Cruz and Watsonville, runs through this area every 30 minutes on Soquel Drive.

Routes 69A and 69W operate together every 30 minutes on Capitola Road, then split into two separate branches running every 60 minutes. Both branches serve Cabrillo College, but Route 69A skips much of Soquel Drive. This allows Route 69A to reach Watsonville sooner, but contributes to the irregular frequency of eastbound service at Cabrillo College.

Routes 66 and 68 provide service only every 60 minutes to some relatively dense and low-income areas south and west of Capitola, a notably low level of service compared to the ridership potential. They provide a nearly half-hourly service where they are together on Portola between 17th and 38th, but north of Portola, half the service uses 38th, where there are many mobile home communities, while the other half uses 41st, where there are commercial destinations. This split, and the poor frequencies that result, are due to the difficulty of walking between 38th and 41st in this segment.

Downtown Capitola has limited service on route 55, running about every 75 minutes, ending at Capitola Mall and also serving Cabrillo College and points further east. The connection at Capitola Mall is not timed: a 75-minute frequency and a 30-minute frequency cannot connect in a consistent pattern. As a result, route 55 is difficult to access from the rest of the network and has very low ridership.

Downtown Capitola is difficult to serve because the street geometry is challenging for buses, and heavy congestion at certain times makes reliability impossible.

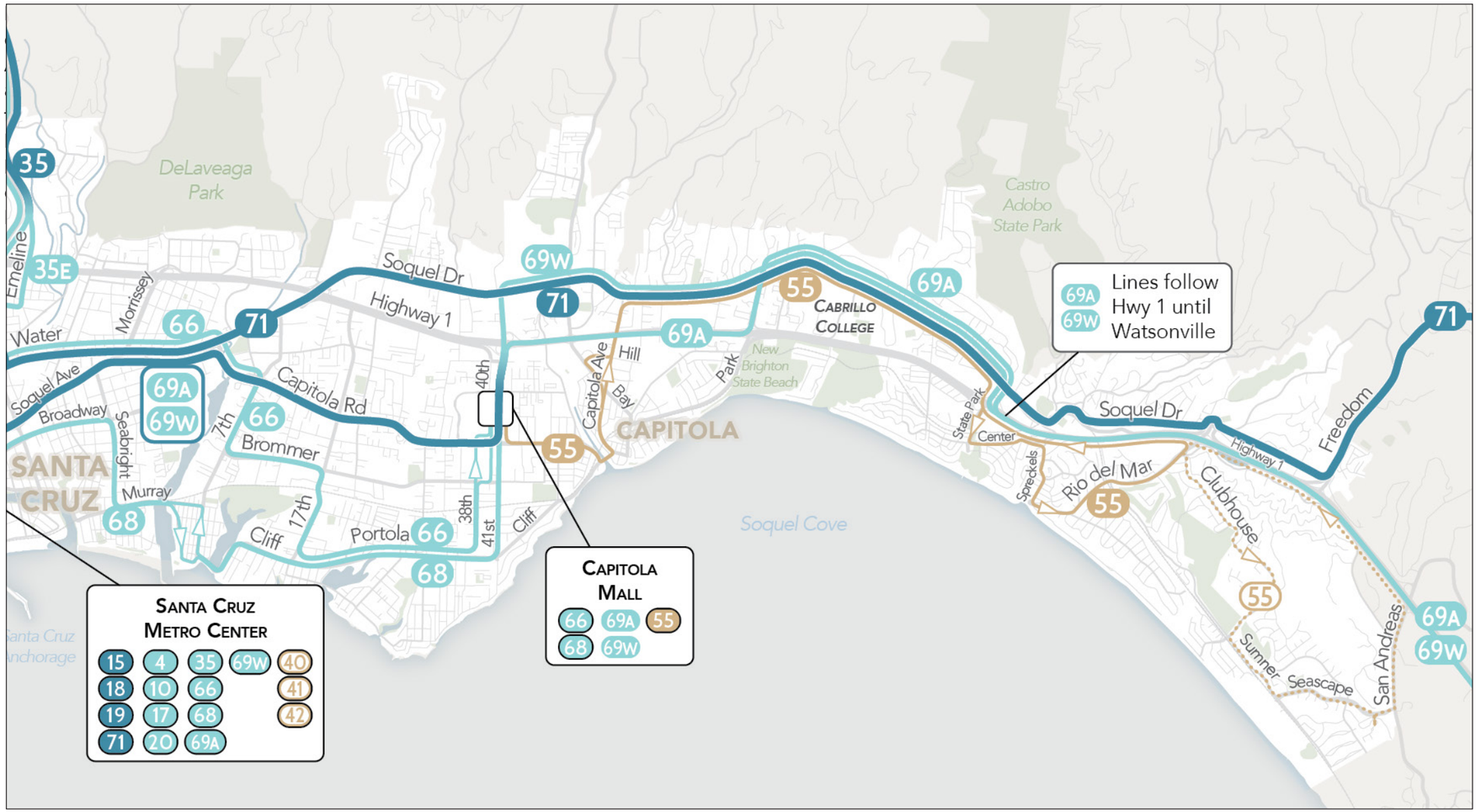
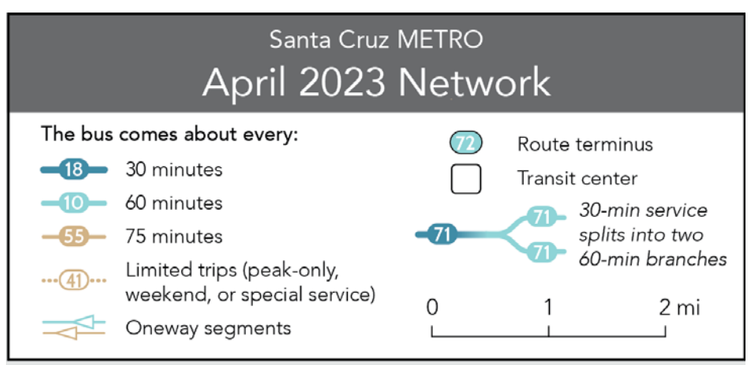


Figure 42: Map of existing Santa Cruz METRO service in and near Live Oak, Capitola, Soquel and Aptos.



Local Network Description: Watsonville

Watsonville is served by a complex tangle of infrequent and overlapping routes.

Regional Routes

Service from Watsonville to Santa Cruz runs four times an hour—the combination of Routes 69A, 69W and 71—but using four different paths, such that service is almost equally inconvenient in many places:

- Route 69A serves Lincoln Street, Freedom Boulevard and Airport Boulevard and goes to Aptos on Highway 1.
- Route 69W serves Main Street and goes to Aptos on Highway 1.
- Route 71 takes two different hourly paths between Watsonville Transit Center and Freedom Center. One path takes Main Street and Clifford Street, while the other one uses Freedom Boulevard.

Route 71 north of Clifford Street is the only line in the city that runs every 30 minutes. The only other location that experiences a comparable frequency of service is Watsonville Transit Center itself, where all local and regional routes converge.

Local Routes

No local routes operate more frequently than every 60 minutes, and the usefulness of many of these routes is limited by long one-way loops.

For example, the neighborhood just east of Watsonville Community Hospital is served by a one way segment of Route 72. While a bus comes through once an hour, it will take you on a large rural loop via Pioneer Rd and Amesti Road before it brings you back downtown. Other routes, like Routes 79 and the Watsonville Circulator, consist almost entirely of one-way segments that make the journey between any two points highly circuitous in at least one direction.

This network appears to have evolved over time in response to many individual requests. It connects some important destinations directly to each other without requiring a change of buses, but at the price of high complexity and very low frequency. The network also produces longer travel times, at least in one direction, due to the one way loops.

As a result, these services are unlikely to be coming when someone needs them, which is a key reason for their fairly low ridership. The dizzying complexity of the network probably also deters new riders.

Watsonville may have the most opportunities to dramatically expand the usefulness of METRO service. The key would be to provide simpler patterns of service running more frequently, in some cases asking people to walk further to more useful service. The service alternatives presented later in this report suggest some possibilities.

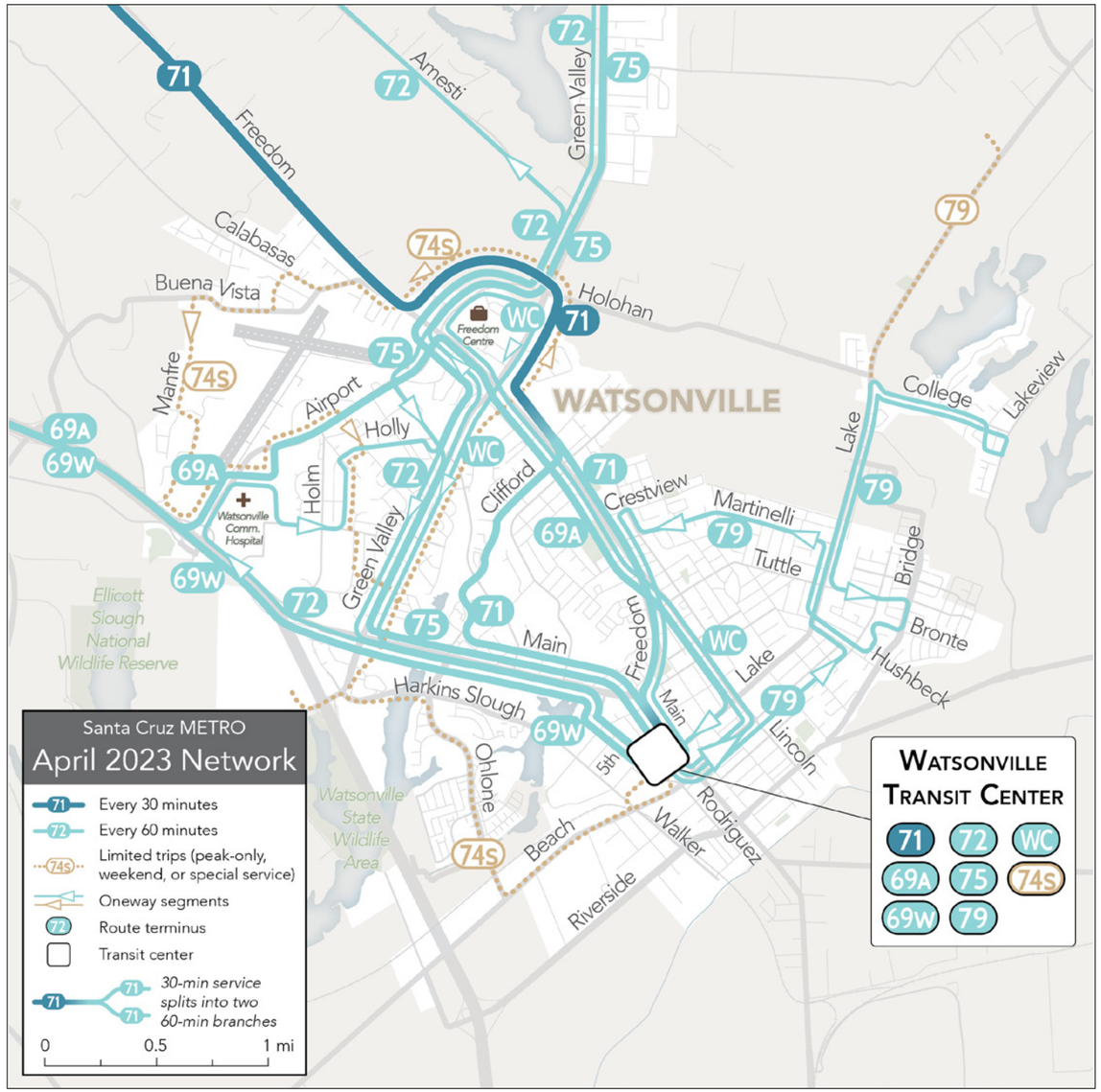


Figure 43: Map of existing Santa Cruz METRO service in and near Watsonville.

Local Network Description: Scotts Valley, San Lorenzo Valley, North County

Scotts Valley and San Lorenzo Valley

Routes 35 and 35E are the main link to San Lorenzo Valley along Highway 9, including Felton and Boulder Creek. These routes each operate every 60 minutes, and are spaced such that buses on shared segments come almost every 30 minutes.

However, Highway 9 is not operable to low-floor buses between Felton and Santa Cruz. As a result, buses take Mount Hermon Road and Highway 17 through Scotts Valley to Santa Cruz. In Scotts Valley, Routes 35 and 35E make a further deviation on Scotts Valley Drive so that all of these areas can be served by a single line. This maximizes the number of destinations reachable with a one-seat ride, but adds time to trips between the San Lorenzo Valley and points further south.

Routes 35 and 35E split at three points, including once between Scotts Valley and Santa Cruz to serve the county government offices on Emeline St.

The separate Highway 17 express service has five peak-hour trips that stop at the transit center in Scotts Valley, but the all-day service pattern bypasses the area. This route also charges a higher fare.

West of Santa Cruz

Santa Cruz METRO offers a limited service to the towns of Bonny Doon and Davenport.

On weekdays in the morning, there are two separate routes, Route 40 on Highway 1 to Davenport and Route 41 on Empire Grade to Bonny Doon. Starting at noon, both are replaced by a one-way loop, running counterclockwise once every three hours.

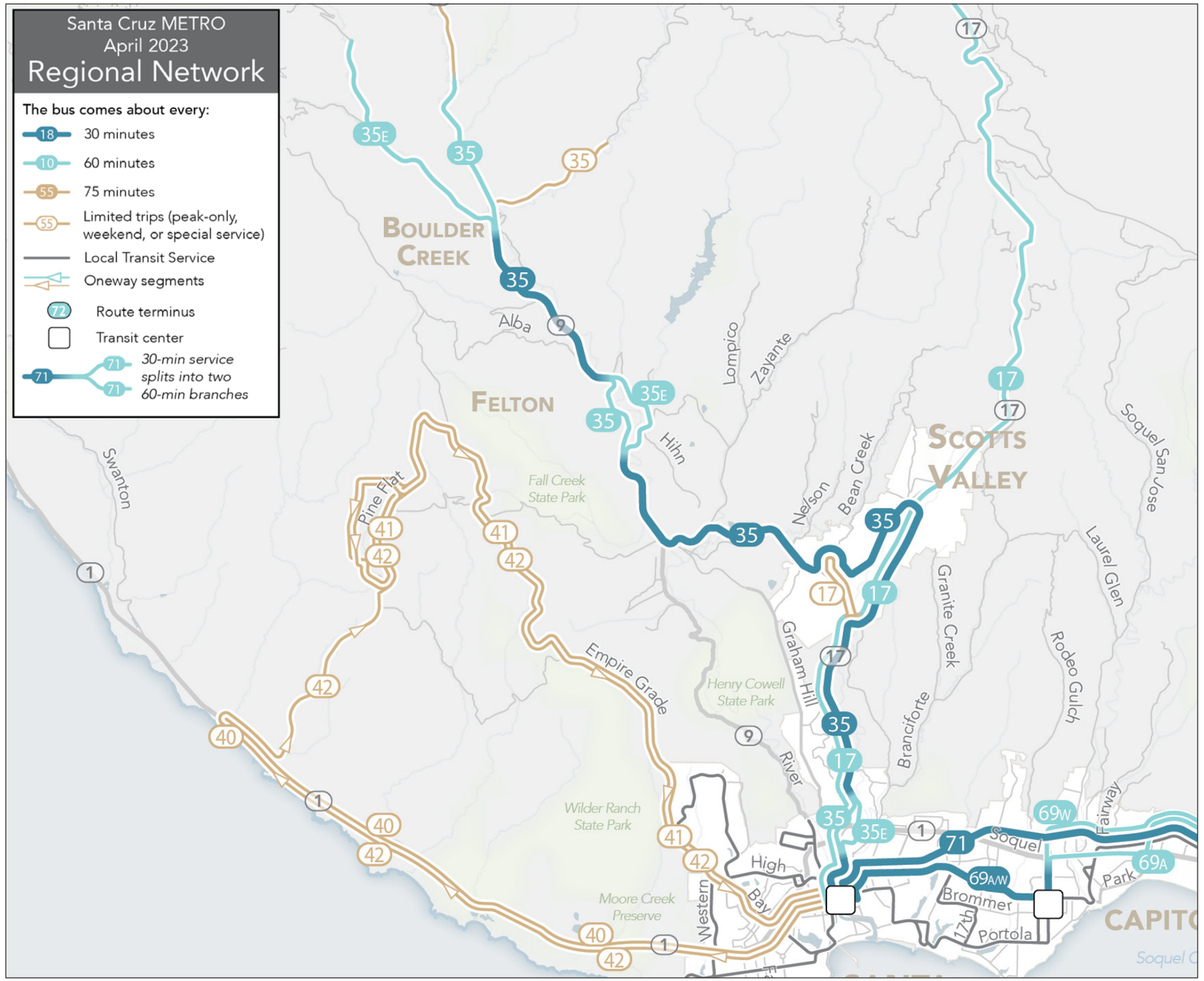


Figure 44: Map of existing Santa Cruz METRO regional services, to the north and west of Santa Cruz.

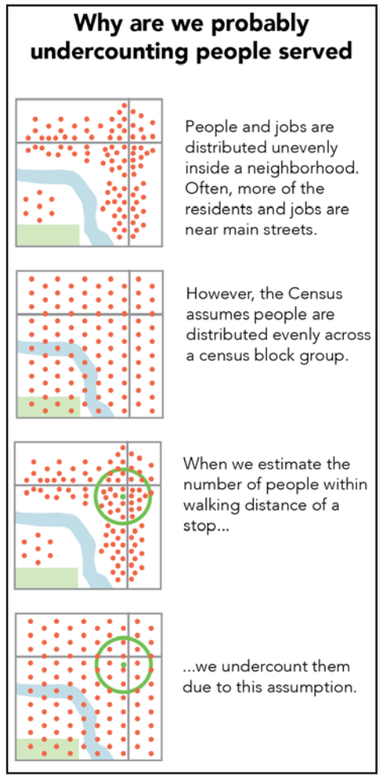
How many people are near service?

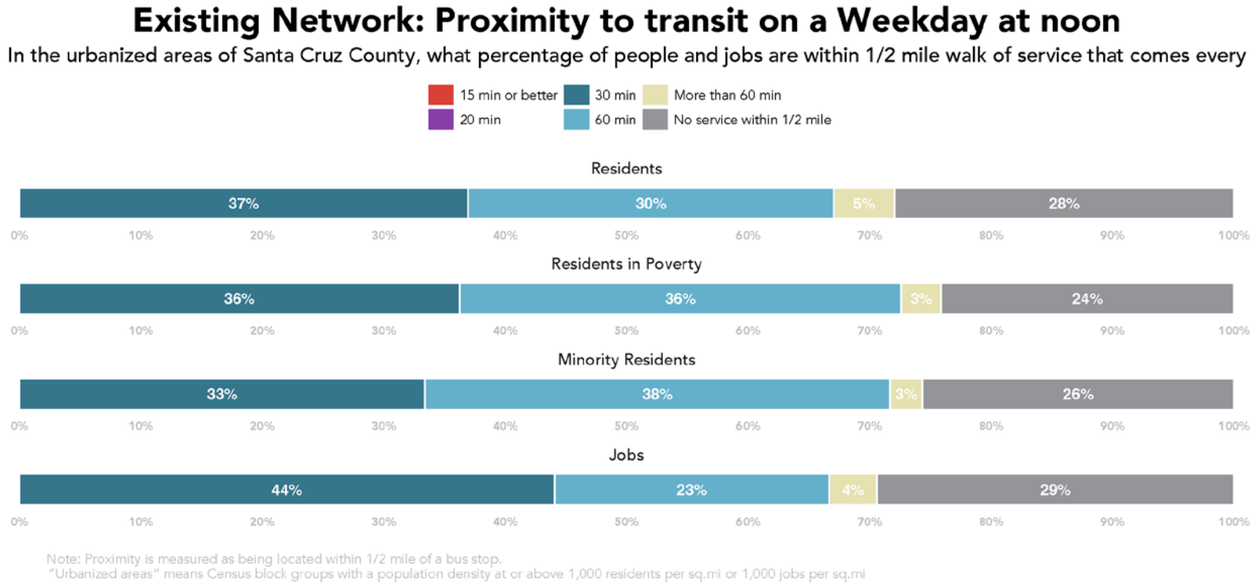
How many people live or work close to transit service? The graphics on this page shows how the breakdown of population and jobs in the urbanized area according to the frequency of the nearest transit service. The grey portion of each bar represents people and jobs that have no service within 1/2 mile walk.

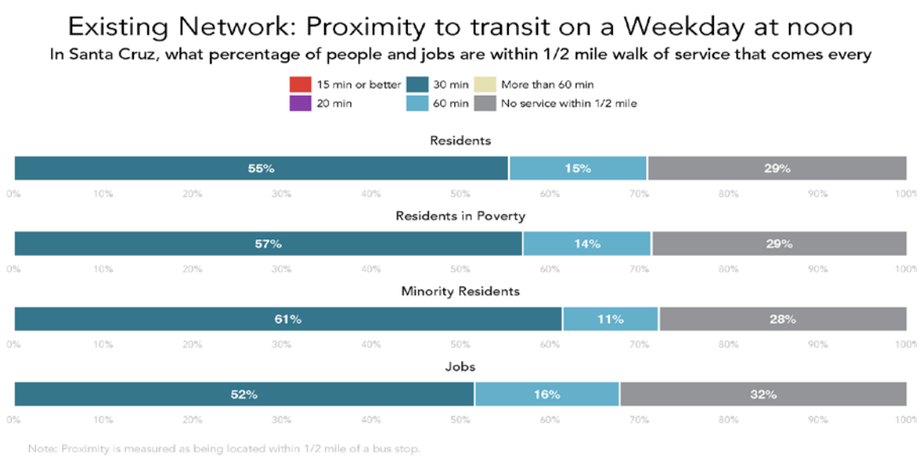
This is almost certainly an underestimate of how many people have service nearby. That's because in many census zones, the people and jobs are more likely to be on main streets. But it's impossible to know exactly where specific people are located, so our methodology spreads them evenly over the zone. This likely counts more people as being outside of walking distance to transit than is actually the case.

Service every 30 minutes reaches about 40% of the population of the county's urbanized areas[1]. However, as you can see in the maps on the previous pages, this benefit is very unevenly distributed.

The images at bottom show the data just for the cities of Santa Cruz (left) and Watsonville (right). Most Santa Cruz residents are near service every 30 minutes, compared to very few Watsonville residents. This is the result of the existing network pattern: in Watsonville, there is a great deal of service, but it is almost all apportioned to overlapping routes that come only once an hour.







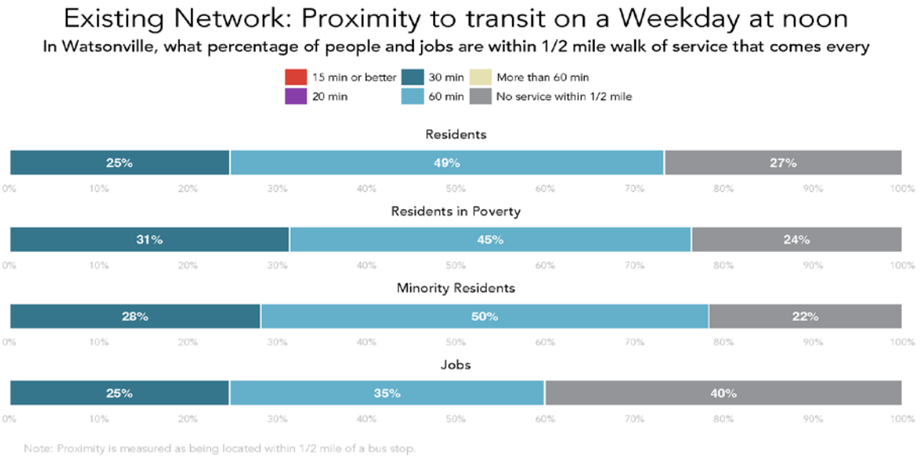


Figure 45: Charts showing the percentage of people within a 1/2 mile of transit in all urbanized areas of Santa Cruz County (top), the City of Santa Cruz (bottom left) and the City of Watsonville (bottom right).

1 This report defines the urbanized areas as areas with either more than 1,000 residents per square mile, or more than 1,000 jobs per square mile, or both. This measure covers the entire area from UCSC to Aptos; Rio del Mar and La Selva Beach, Watsonville, Freedom and Amesti; Scotts Valley; and parts of the San Lorenzo Valley. Narrow roads and extremely low densities in other areas make it very impractical for METRO to operate transit service in most other areas.

Ridership in Fall 2022

The maps on this page and the next show the patterns of ridership for an average weekday in the fall of 2022. This was measured using a set of rented Automated Passenger Counters (APCs) on a selected set of METRO buses that was rotated throughout the network.

The dots are based on a count of how many people board a bus at each location in a typical day. The next page zooms in on the area extending from Santa Cruz to Watsonville.

The dominant stops are on the UCSC campus, followed by Cabrillo College and the four transit centers (Santa Cruz downtown, Capitola Mall, Watsonville, and Scotts Valley).

If you compare this map to the maps earlier in this chapter, you can see the combined effects of various ridership-generating factors discussed.

The single strongest factor may be the presence of UCSC. Otherwise, the relationship between ridership and job density is the strongest. Income has some effect on these numbers, although it is weaker than the effect of overall density.

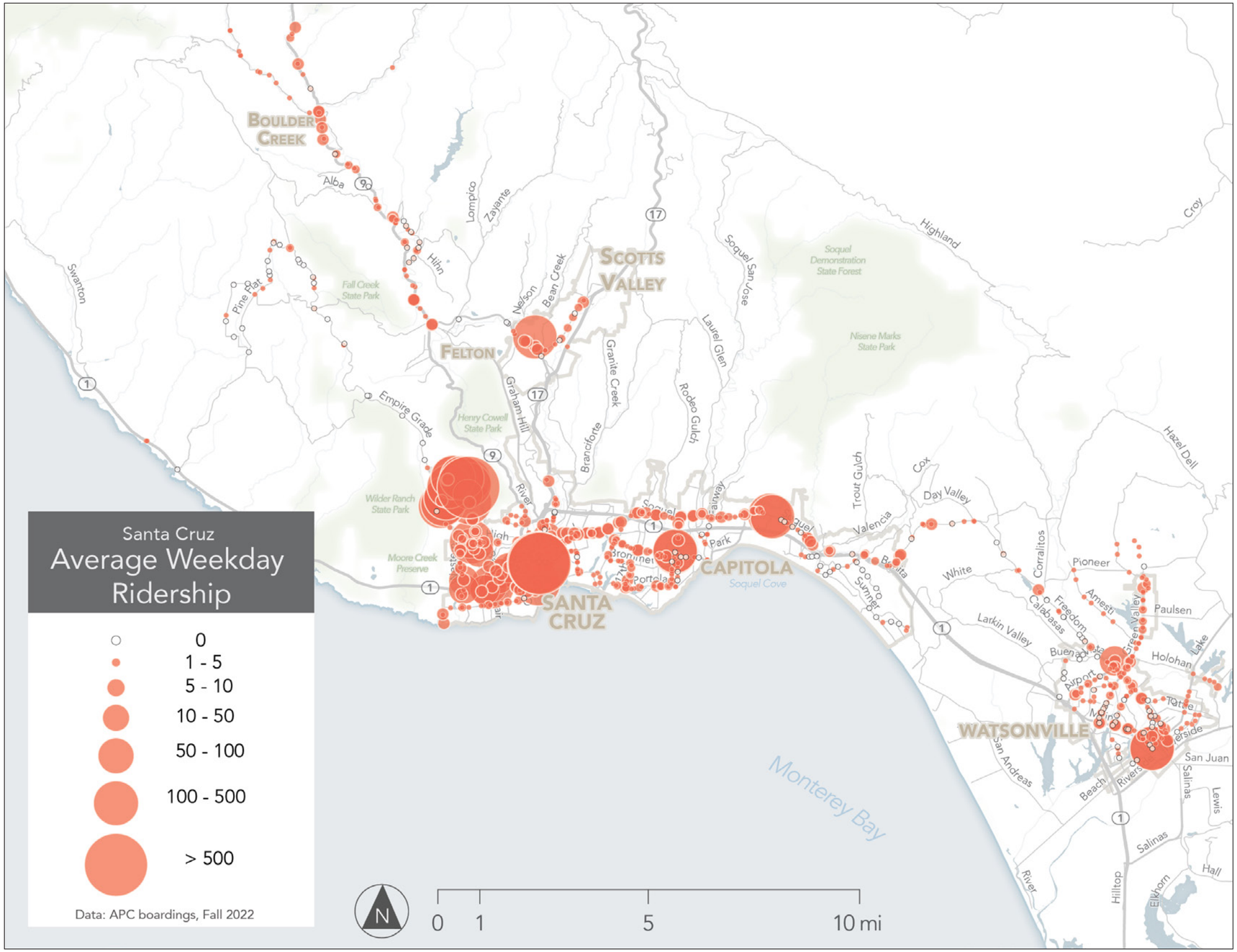


Figure 46: Map of ridership by stop on Santa Cruz METRO buses in Fall 2022.

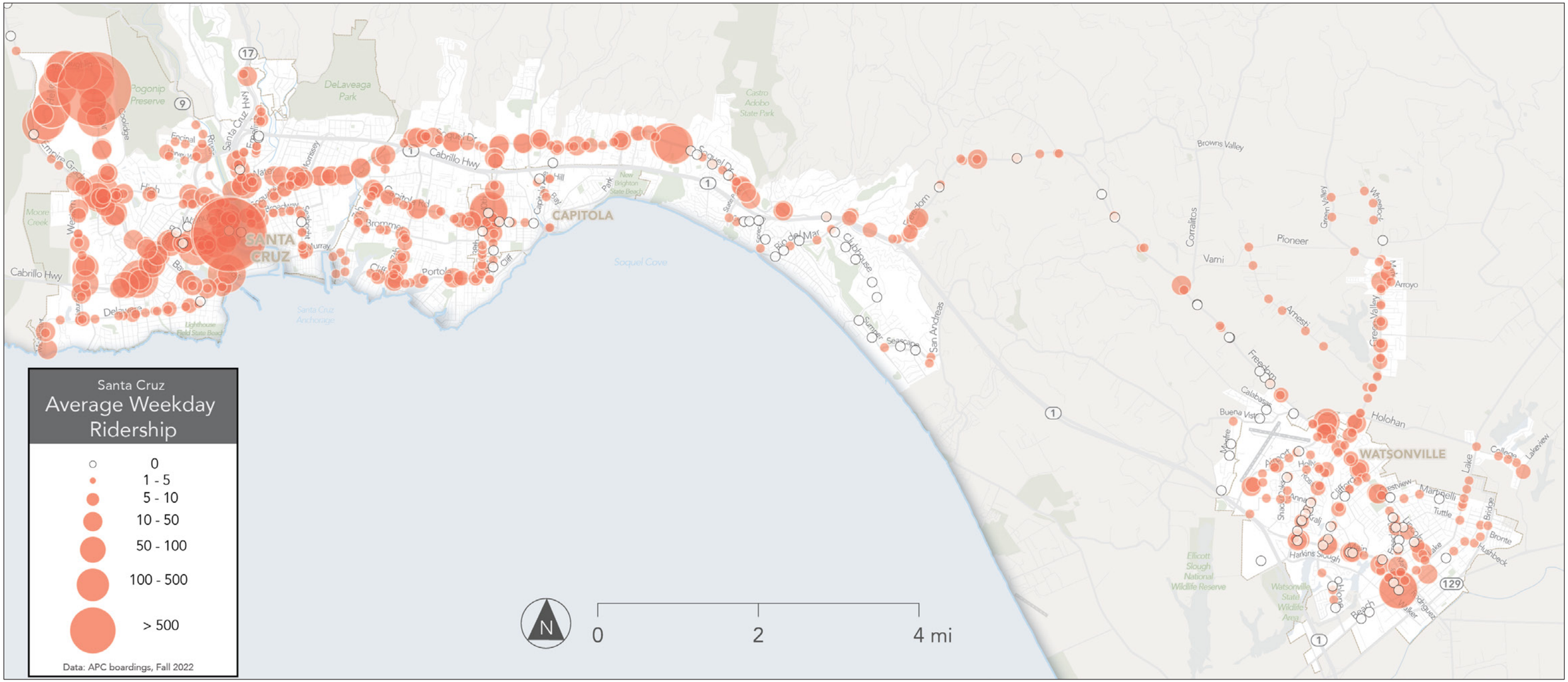


Figure 47: Map of ridership by stop in the core urbanized areas, from Santa Cruz to Watsonville.

Frequency and Productivity

Productivity is the number of people who board a bus for each hour that a bus is operating. As such, it is a "bang for buck" measure, weighing ridership against the cost of serving it.

Figure 48 shows the productivity for each route in the system on the vertical axis, and the frequency on the horizontal axis. On this chart, UCSC routes are shown in green, and other routes in orange.

This type of chart is often useful for identifying routes that perform especially well or badly given the level of investment being made in them. A high performance within a frequency category, for example, can be one signal that the route could support better service,

Figure 13 on page 14 shows a similar diagram for routes from many transit agencies, showing that in general, higher frequency correlates with higher productivity.

Within the Santa Cruz Metro system the relationship is not as obvious because:

- The difference between UCSC and other routes is so overwhelming.
- The routes differ in length and how much rural distance they need to cover.

For example, both Routes 35 (Felton/Boulder Creek) and 71 (Soquel/Freedom Blvd.) have low productivity despite fairly high frequency mostly because they carry people over long average distances, and go through long rural segments with few riders.

At the opposite extreme, Route 40 (the morning-only runs to Davenport) do rather well despite the rural nature of the service because they are timed to meet school needs. This specialized market generates much higher productivity than an all-day service in the same corridor would do.

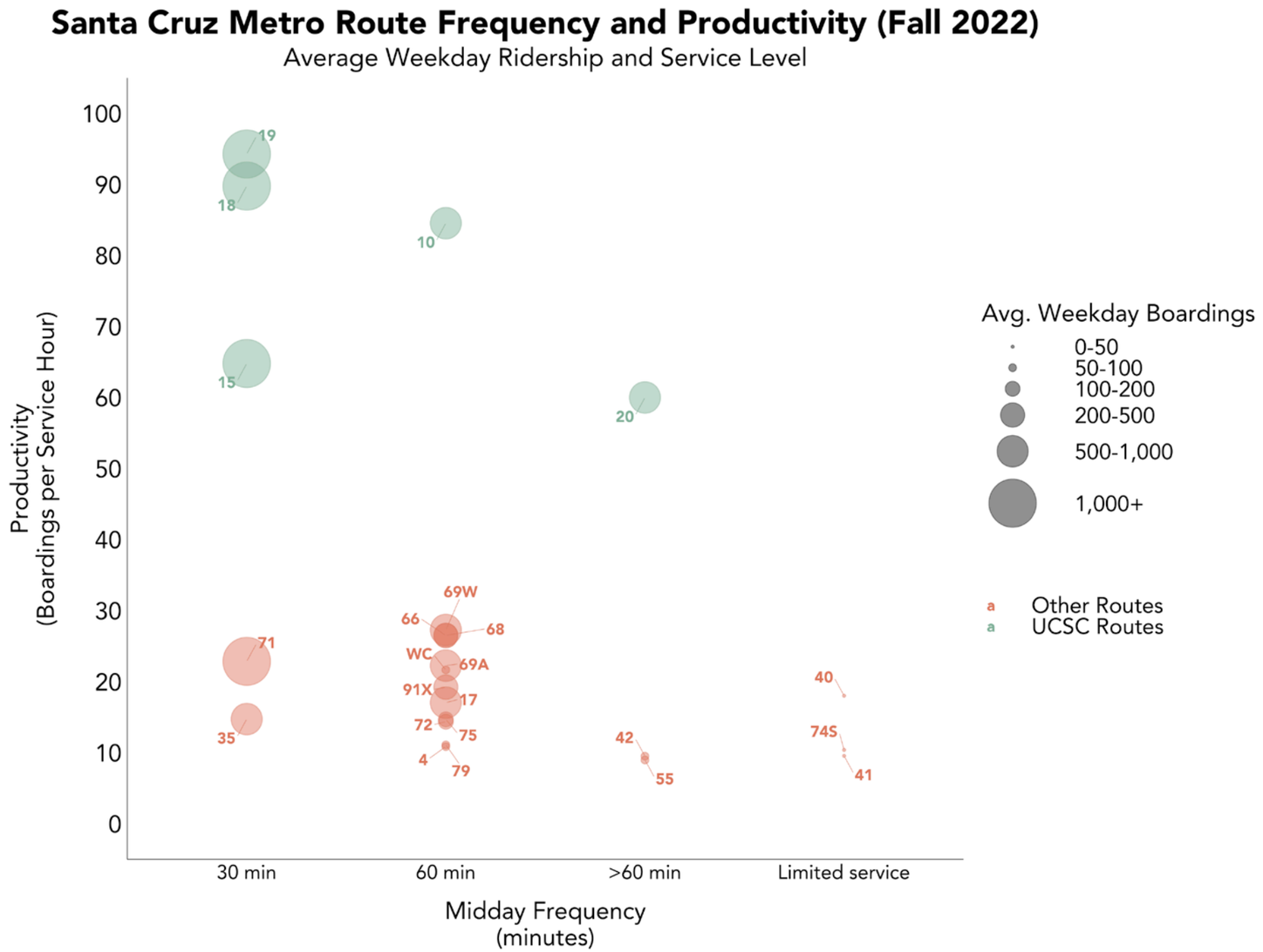


Figure 48: Chart of productivity (boardings per revenue hour) by route and daytime frequency on Santa Cruz METRO's existing network. Routes that serve UCSC are the most productive routes in the system.

How Service and Ridership Vary by Time of Day

The distribution of transit trips by time of day in Santa Cruz County is typical of communities with large universities, especially in the wake of COVID-19, which caused a lasting decline in commuting at the traditional rush hour.

In the chart in Figure 49, the vertical axis shows how ridership, service quantity, and productivity (measured in boardings per trip) is higher or lower than the daily average in each hour.

METRO provides a fairly consistent amount of service from about 7 AM to 6 PM, during which ridership is well above the daily average. This corresponds to the period when demand to the university campus is high, and when trips of many kinds are happening all over the region.

Ridership appears to have several peaks, around 11:30 AM, 2:00 PM, 5:30 PM and 8:00 PM. These may correspond to times when demand on the UCSC campus is significantly higher than usual due to class changes.

Because ridership responds to service, of course, we cannot read the "boardings" line as an absolute description of demand. For example, while it is normal for ridership to fall off in the evening, and especially after dark, cities with universities usually generate some robust evening travel demand. It is possible that some of this demand is being suppressed by inadequate evening service.

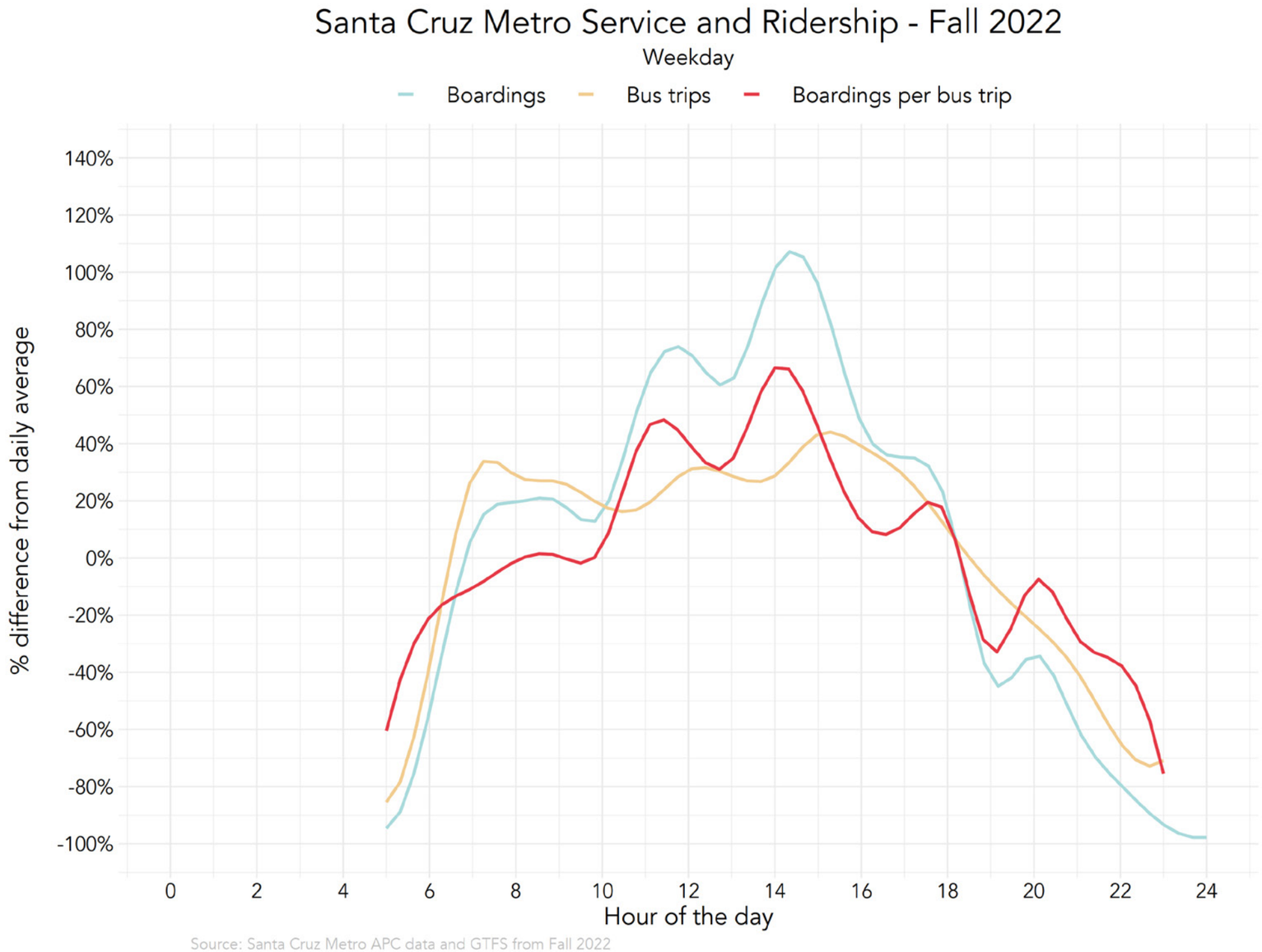


Figure 49: Ridership and Service by Time of Day, Weekdays. There are no traditional ridership peaks in the regions as the UCSC demand happens throughout the day.

5 What We Heard From the Public

Community Outreach at Many Levels

Reimagine METRO seeks to include the voices of Santa Cruz County residents and community members at each stage of the planning process.

Before developing the alternatives presented in this report, the project team worked to understand the transportation needs and challenges of the many constituencies served by METRO. The team's outreach efforts included a mix of online and in-person approaches.

Stakeholder Groups

Developing a Stakeholder List

An extensive research effort in January and February 2023 produced a list of more than 100 stakeholder organizations representing social services, education, medical services, employment, advocacy and local governments.

Stakeholder Focus Groups

This list was used to recruit participants for online stakeholder focus groups, held in March. The project team held discussions with people representing 33 responding organizations. Each group discussion explored the transportation needs of their constituents, the barriers they face in using METRO and specific improvements that would enhance their travel.

Current METRO Riders

Rider E-Survey

Over 600 transit users completed an online survey which was promoted on buses and social media in February 2023. The survey was available in English and Spanish. Data collected in the survey was used to recruit focus groups of riders representing the diversity of METRO's user base.

Rider Focus Groups

In March, this diverse array of METRO users engaged in wide-ranging discussions of how they use METRO, what works and doesn't work, and what improvements would enhance their passenger experience. Some groups focused on specific segments (e.g. UCSC students and Watsonville residents), while others included riders from throughout the county. Participating riders were incentivized with $30 gift cards to ensure broad inclusion.

Intercept Surveys (in-person)

To expand the input from Spanish-speaking riders, informal intercept surveys were conducted with riders at the Watsonville Transit Center and on Watsonville bus routes on Friday, May 24th, 2023.

General Public

Online Public Meeting

A community wide public meeting was held online on March 21, 2024 to share early findings of the study and provide the general public with an opportunity for input regarding desired priorities for the network design.

Phone Survey

In September and October 2022, in preparation for the Reimagine project, Santa Cruz METRO hired FM3 Research to conduct a telephone poll. This poll was used to gauge public opinions on what METRO's priorities should be to better serve county residents. The poll gathered information from 1,054 people, selected to be a statistically representative sample of the population of Santa Cruz County.

Reimagine METRO - Phase 1 Outreach Efforts

19 Stakeholder Focus Groups, with **33** Community Organizations	Santa Cruz County City of Santa Cruz Watsonville Scotts Valley Capitola UC Santa Cruz Cabrillo College Social Service Agencies Medical Services Veterans Agencies Services for Older Adults Services for Persons with Disabilities Services for Persons of Low Income Transit and Environmental Advocacy Groups Metro Pass Programs
10 METRO Rider Focus Groups	**56** Participants 8 groups on-line 2 groups in-person
Intercept Interviews with METRO Riders	**20+** individuals in Watsonville
On-line Public Meetings	**75+** Participants
Telephone Survey	**1,054** Respondents

Figure 50: Efforts undertaken during Phase 1 of community outreach for the Reimagine METRO project.

What We Learned From Polling Residents Countywide

General Awareness

Few local residents ride METRO regularly. Most don't ride METRO at all.

68% of poll respondents stated that they never ride METRO. Only 14% said they ride at least once a month, and only 8% said they ride at least once per week.

This is consistent with the relatively low overall ridership numbers at METRO. As of Fall 2022, weekday ridership of METRO buses stood around 14,000 riders, but 270,000 people live in Santa Cruz County.

These low numbers are also apparent from METRO's relatively low name recognition. 31% of poll respondents said they could not name the local transit agency.

Residents and riders familiar with METRO tend to have a favorable opinion of the agency.

52% of all respondents polled expressed a "very" or "somewhat" favorable view of METRO, compared to 24% who expressed an unfavorable view.

However, among those respondents who ride METRO at least once a month, 81% expressed a favorable view, while only 16% expressed an unfavorable view.

In other words, the more value people receive from transit, the more likely they are to favorably view transit service.

Future Relevance

Local residents overwhelmingly think METRO should play a part in solving a broad range of the community's transportation needs

Despite the relatively low awareness of existing services, large majorities of respondents expressed that it was "extremely" or "very" important that Santa Cruz METRO provide the following types of service:

- Connecting workers to areas with many jobs (87%)
- Affordable transportation where many people don't own cars (85%)
- Services for the elderly and disabled (85%)
- Service to colleges and universities (82%)
- Help reduce congestion (81%)
- Make it possible to get to stores and appointments (81%)
- Connect to other public transportation (79%)
- Reduce pollution and greenhouse gases (77%)
- Service to high schools (74%)
- More service in general (71%)
- Service that supports dense and walkable development (66%)

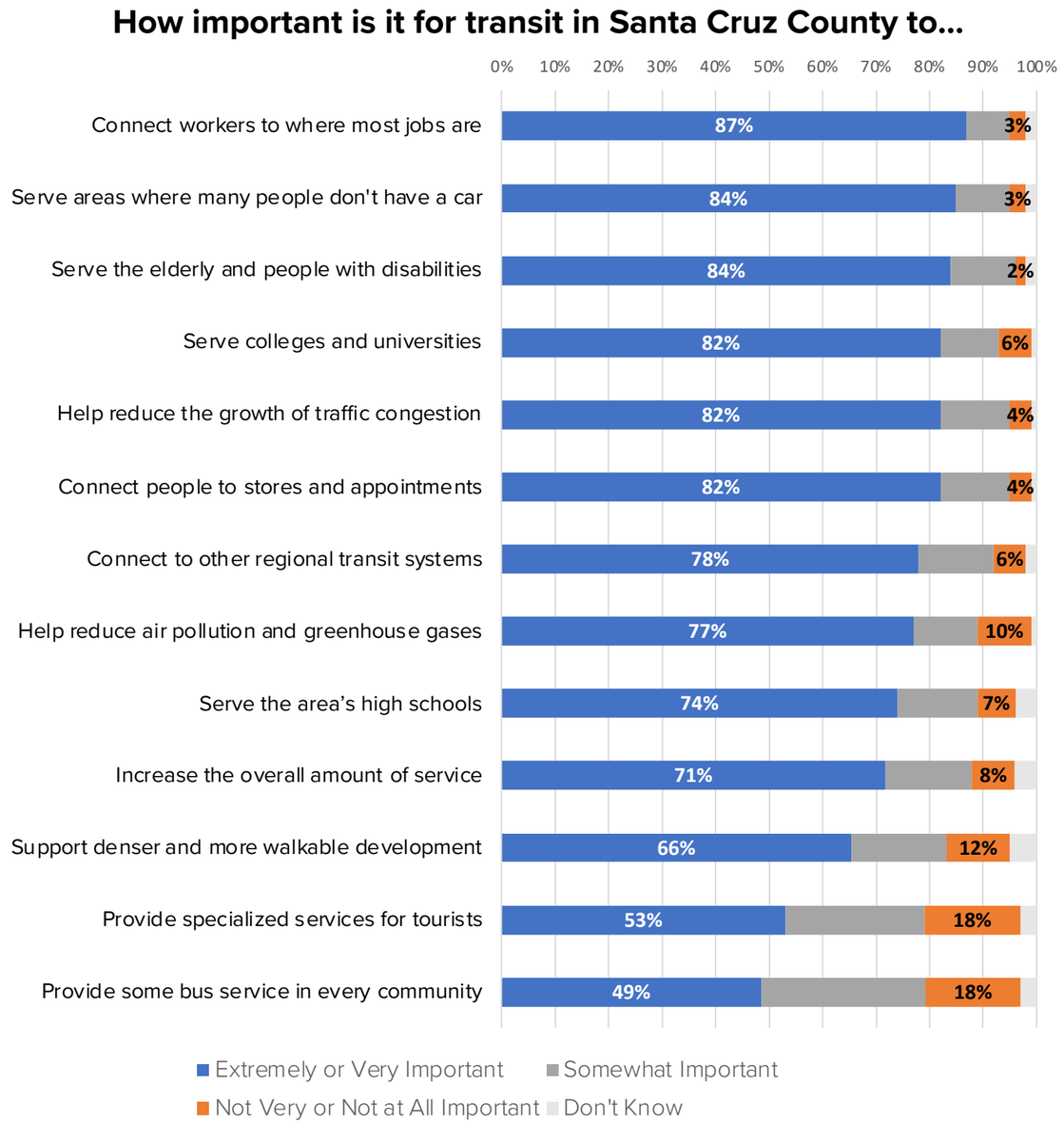


Figure 51: Chart showing Santa Cruz County resident's priorities for transit, based on a poll conducted online and by phone in Fall 2022. The poll included a statistically significant sample of 1,054 respondents, and its results have a margin of error of +/- 4% at a 95% confidence level.

Priorities for Change

Providing more timely and frequent service in key areas is more important than providing a minimum level of service everywhere.

The poll of county residents explained that METRO has a limited number of buses, and limited money to operate them. In that context, METRO must make hard choices about where and how much service to provide.

The poll then proceeded to ask about the Ridership vs. Coverage trade-off in three different ways, as shown in Figure 52. See Chapter 2 for a more complete explanation of the Ridership vs. Coverage trade-off.

In all three cases, a large majority of respondents (69 to 74%) expressed a preference for focusing on frequent service in more targeted areas, while a relatively small minority (22 to 26%) expressed a preference for low-frequency coverage to as many places as possible.

This distribution of opinions was consistent across lines of age, occupation, race and levels of transit usage.

METRO should focus more on the needs of communities where many people have low incomes or don't own a car.

The poll also asked whether METRO should:

- Focus more on communities where many people have low incomes or don't have a personal vehicle

or instead

- Provide service equally to all communities, regardless of income and access to personal vehicles.

In response, a similarly large majority (72%) responded that METRO should focus more on low-income and low-car areas.

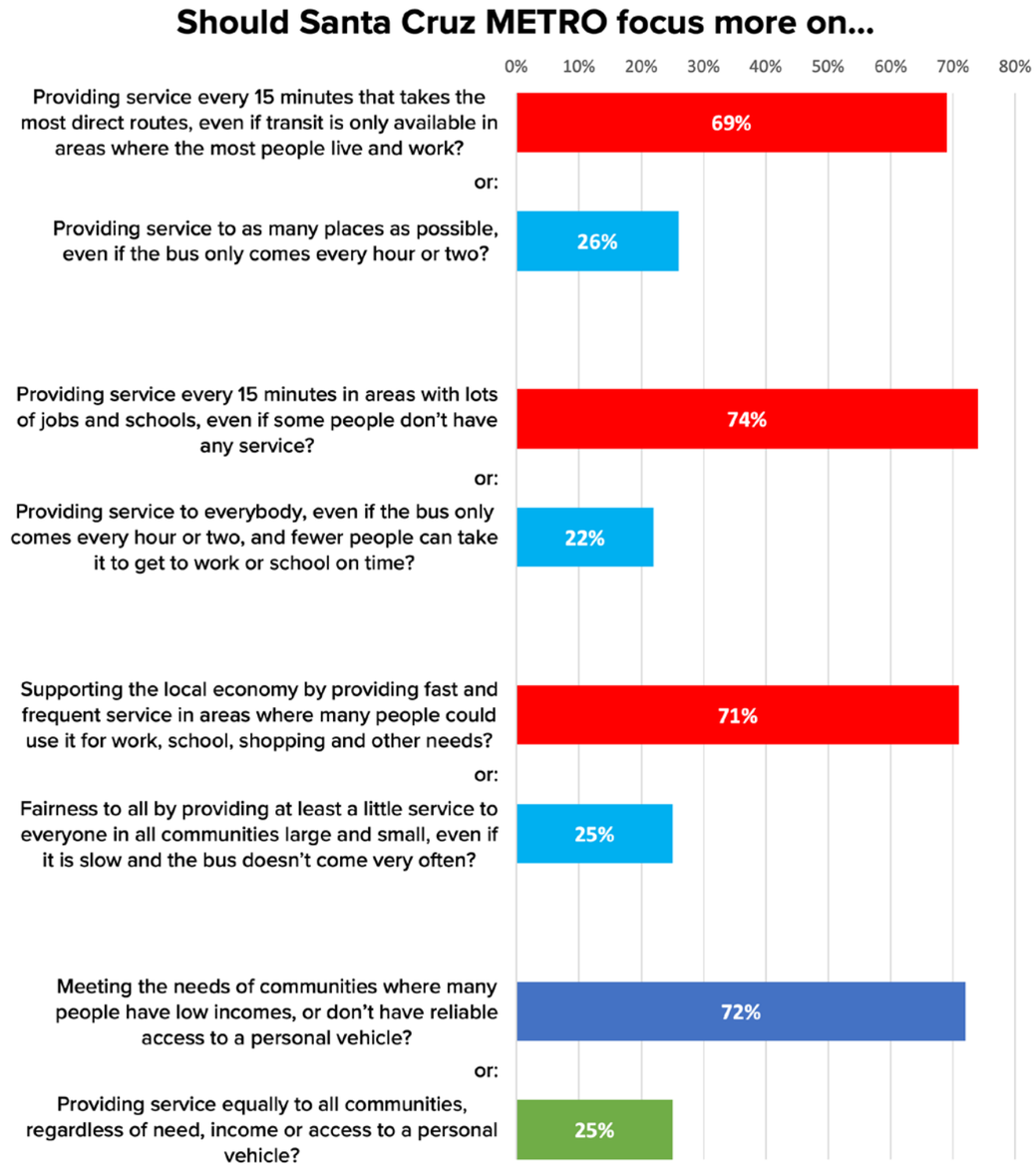


Figure 52: Chart showing how Santa Cruz County residents respond to trade-offs about transit service, based on a poll conducted online and by phone in Fall 2022. The poll included a statistically significant sample of 1,054 respondents, and its results have a margin of error of +/- 4% at a 95% confidence level.

What We Learned From Riders and Stakeholder Groups

Broad Issues and Specific Needs

We asked participants in the rider and stakeholder groups to describe their current METRO experience and then to reimagine METRO as they'd like it.

Transportation needs and experiences of METRO riders and potential riders are diverse. They vary based on where people live and work or go to school, the types of trips they make, the times of day they travel and their mobility limitations.

We will first address broad issues that are experienced Countywide, then look at concerns that are specific to individual communities or populations.

Many of these issues are not necessarily directly related to network or route design addressed by this study, but instead represent aspects of METRO operations that may need to change more broadly.

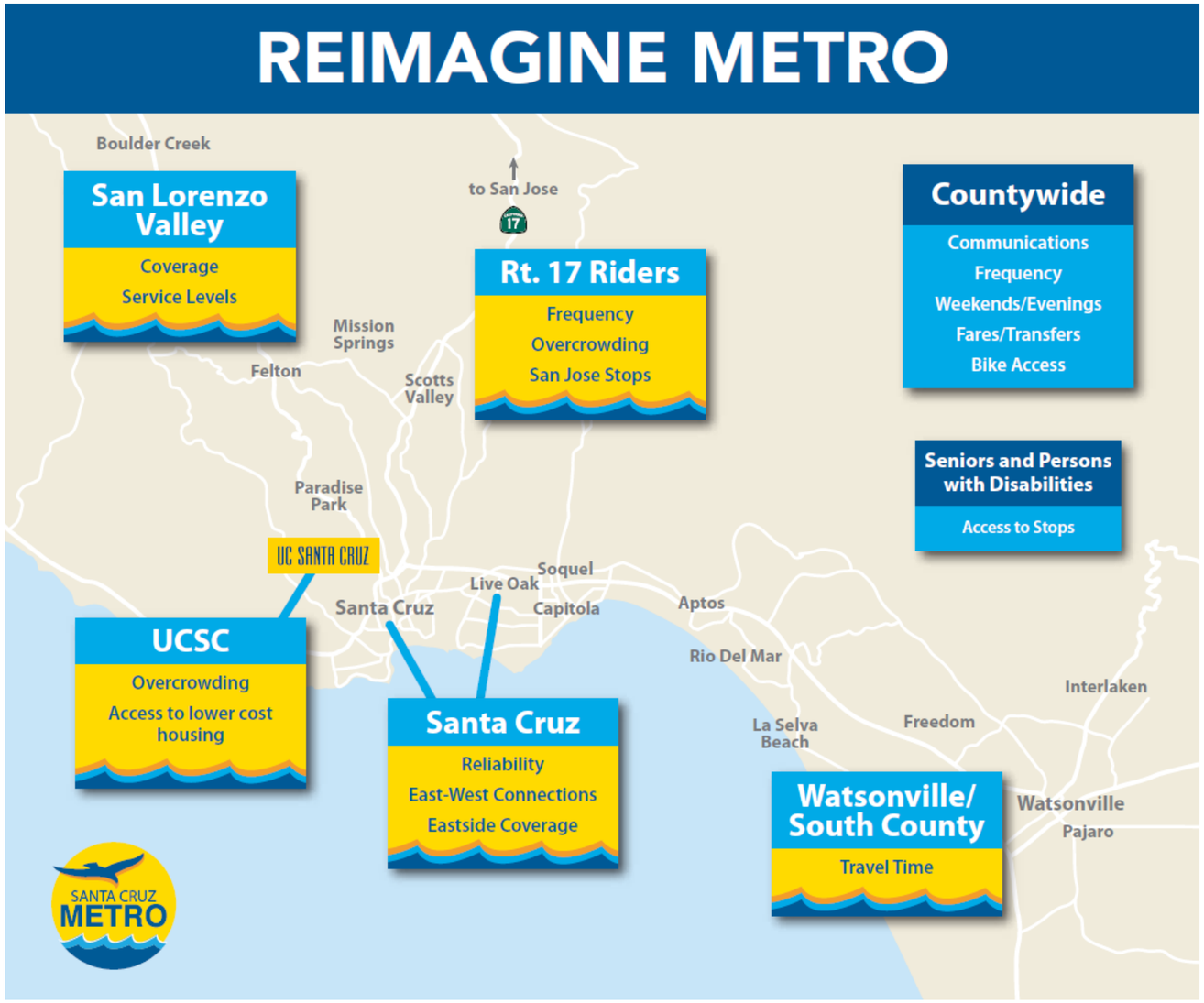


Figure 53: Map of key issues expressed by interviewed riders and stakeholders during focus groups, by area and countywide.

Communications and Rider Information

The issue of communications came up in every stakeholder and rider focus group. Both riders and the agencies that serve them are confused about the best way to get reliable information regarding METRO's services and schedules.

Riders report using multiple information sources in an effort to get accurate information. No source is ideal.

METRO provides customer information through its website, e-mail and text alerts, social media, and printed publications. However, riders and the agencies that serve them are often confused by the information provided.

- Many riders used Google or Apple Maps, but perceived that information as inaccurate, likely because at the time the information displayed represents scheduled service, rather than real-time conditions.
- The METRO website has schedule information and maps but is cumbersome to navigate or to use for trip planning.
- Less tech-savvy riders asked that electronic next bus displays be provided at transit centers and major bus stops.

"METRO drivers are helpful and patient, but METRO as an organization could be more responsive to community needs"

Community Organization representative

METRO drivers receive high marks.

Riders throughout the system described METRO drivers as helpful, professional, and an important source of information.

Low reliability and trip cancellations make real-time information extremely important to riders.

In an environment where published schedules are not reliable, riders are looking for a way to make the system work for them.

At the time these meetings were held (February and March 2023), a website that is now obsolete had become the go-to source of information about METRO routes for "those who have discovered it." Because the platform was never approved by METRO and was not always accurate, it was not linked to the METRO website or promoted in any way.

METRO's recent introduction of a real-time GTFS feed (now available via text message, Google Maps, Apple Maps, Transit App and on the web at https://rt.scmetro.org) offers the opportunity to greatly enhance the customer experience and should be broadly promoted.

Watsonville riders' confusion regarding service changes is exacerbated by language and literacy issues.

A series of service changes in Watsonville during the six months prior to this outreach had left riders confused and annoyed. Long-term routes on which they relied (e.g. Route 91X) had been replaced with less direct routes and service hours had been adjusted.

While the Watsonville Transit Center was virtually wallpapered with notices in English and Spanish, the information was wordy, fragmented and confusing, particularly to a population with low levels of English or Spanish proficiency and/or literacy.

Stakeholders who work with these populations only heard about the changes after the fact, and were not able to assist with the education effort.

Insufficient communication to stakeholders limits their ability to serve as information conduits.

Of the 33 agencies and more than 60 individuals who participated in the stakeholder focus groups, few had a direct relationship with METRO.

As a result, they are generally unaware of service changes and unable to proactively assist clients with their transit problems. If engaged and provided with tools, stakeholders believe they can be a valuable marketing channel.

The stakeholder contact list developed as part of this project provides a starting point for building an effective communications network.

Reliability, Frequency and Transfers

Reliability, frequency, and transfers all adversely impact the passenger experience for METRO riders, particularly in Santa Cruz.

Riders reported numerous instances of late and no-show buses. They reported that this poor reliability, combined with low frequencies, made traveling by transit time-consuming and frustrating.

These issues are exacerbated if a rider must transfer, because in those cases they ave to deal with frequency and reliability issues on two routes. In addition, for riders without a pass, transfers require paying a second fare, as described on page 12.

All of these factors make existing riders very reluctant to consider transfers on existing trips, or to accept the idea that a future service change might require more transfers.

Frequency and hours of service on weekends and evenings is a major concern for riders.

Among several constituencies, low levels of service on weekends and evenings is a particular problem.

- UCSC students in focus groups expressed a desire for later night connections to downtown Santa Cruz for recreation and jobs.
- Service workers in downtown Santa Cruz reported needing later evening and weekend service in order to use METRO as a commute option.
- Residents in parts of the San Lorenzo Valley noted that hourly service on weekdays is tolerable, but on weekends buses run only every 2 hours and during much shorter hours, severely limiting their usability.
- Watsonville residents argued for earlier and later connections to Santa Cruz on weekdays and weekends.

Many riders reported feeling that there should be a common level of service 7 days a week. There was also a general sentiment that some level of service is needed on holidays.

Travel time is a significant deterrent to ridership – whatever will reduce it is good.

Excessive travel time impacts riders throughout METRO's service area. Riders who spoke with the project team mentioned the following issues:

- UCSC riders asked for direct routes from campus to the east side and Watsonville (where lower cost housing is available) because the combination of low frequencies, unreliable schedules and missed transfers make any trip long and unpredictable.
- Watsonville riders remembered Route 91X which provided a direct trip to Downtown Santa Cruz without serving Capitola Mall or most of Soquel Drive west of 41st Avenue, which increase travel time.
- East side residents said they can bike to Cabrillo College faster than taking METRO, due to a combination of limited coverage and low frequencies.

Some riders reported they have stopped using METRO regularly because it takes too much time. In the Fall 2022 telephone poll, "it takes too long to get where I need to go" was the most cited reason for respondents who reported that they rode METRO less than in the past.

Reliability is critical in the absence of frequency.

Because METRO bus routes run infrequently (every 30 to 60 minutes on most routes), reliability is critical.

While a low frequency bus is not terribly convenient, if it comes when riders expect it to, they can plan accordingly.

When routes are both infrequent and unreliable, riders feel completely out of control of their travel and begin looking for any other option.

As a result, some riders expressed that improving reliability might need to be a higher priority than scheduling higher frequencies.

A Note on Travel Times and Reliability

METRO can take some operational steps to reduce trip times, such as reducing the number of bus stops on its routes. However, many travel time and reliability issues are caused by congestion.

A recent study found that traffic congestion adds an average of 20% of trip time on METRO's core Watsonville-to-Santa Cruz Routes. Congestion occurs at several points throughout the corridor, including on Highway 1; near Freedom Centre in Watsonville; and at the approaches to Downtown Santa Cruz. The time added to trips by congestion is highly variable.

Tackling the impacts of congestion on bus travel times is not something METRO can do alone. It will require support for bus priority measures (lanes, signals, shoulders etc.) from the agencies that control streets and roads (i.e. cities, the County and Caltrans).

Selected Quotes from Passenger and Stakeholder Interviews

"The schedule and what actually happens are two different things."

METRO rider from Santa Cruz

"A trip from the east side to the University that takes an hour in the morning, takes two hours to get home."

METRO rider traveling between the east side and UCSC

"Predictability is more important than frequency for me... if you KNOW that the bus will be there at a given time, you can plan."

Sight-impaired METRO rider

Fares and Fare Media

Having to pay for transfers is the primary complaint about fares.

Charging an additional fare each time one boards a bus has two negative impacts on riders.

- Riders resist transferring. They will walk a longer distance, ride a bike or wait longer for a direct route to avoid the cost. Hence transit use becomes less convenient.
- Riders who must transfer feel like it adds insult to injury. Their trip takes longer and costs more.

METRO offers a diverse array of fare media with sometimes conflicting rules.

Throughout the outreach process, the project teams interviewers kept learning about additional fare media – Cruz Cash, Cruz Pass, Splash Pass, Highway 17 Pass etc.

During focus groups, riders educated each other about available fare media. The list of options seemed to be endless.

While this is great for giving each rider what they need, there was significant confusion about the rules surrounding each medium and how to purchase them. A sampling of concerns we heard follows:

- A rider believed that the physical Route 17 pass is good on VTA, but the app pass is not.
- A rider believed you could not use the Route 17 pass on local METRO buses, so rode her bike to avoid paying more[1].
- App fares expire after 6 months, while physical passes don't.

Repeatedly we heard riders ask for something "like the Clipper Card" – a single medium that would cover all services. It was clear that riders would appreciate greater clarity regarding fare offerings.

A contactless tap card of this type also could provide other benefits, such as the ability to more easily implement free transfers, or to implement fare capping for frequent riders (e.g. it would be impossible to pay more than the value of a daily pass over the course of day).

1 Note: Both riders cited appear to be incorrect based on publicly-available information. However, their error reflects the complexity of the fare structure in general, and around the Highway 17-specific pass and its interaction with other services in particular.

Bikes to Buses

Bikes are a favored first mile/last mile solution.

The issue of bikes as a first mile/last mile mode, came up in every stakeholder and rider focus group. Bikes are used by a broad spectrum of Santa Cruz County residents.

Riders fear full bus bike racks.

There is broad sentiment that buses need to be able to accommodate more bikes, but no clear consensus on how. A broad range of different riders – UCSC students, San Jose commuters and rural residents – expressed a "fear" of not being able to get their bike on the bus. This has the potential to leave them stranded, waiting an hour for another bus, or making a difficult ride up the hill to campus.

Bike share, bike racks, and bike lockers all offer some potential.

Recognizing that the number of bikes which can be transported on a bus is limited, the focus groups discussed the potential to explore other solutions.

- The planned e-bike share program was perceived as promising, but likely to be too costly for low-income riders unless it was included in the bus fare. At the time of launch in June 2023 (several months after these conversations), general public unlimited use for this program was $12.50/month.
- Secure bike parking at transit hubs and major stops may serve some riders, but not those who rely on their bike on both ends of the trip.

Figure 54: Picture of a bike on a Santa Cruz METRO bus.

Differences in Experience, Tied to Geography

Some aspects of the customer experience differed significantly based on where people live and travel to.

UC Santa Cruz

UCSC riders experience a unique set of problems due to heavy ridership and the very limited road network on campus.

Overcrowding is a major problem for UCSC riders.

All METRO routes serving UCSC follow the single narrow roadway available and stop at every bus stop. UCSC students use METRO buses both to circulate on campus and to travel off campus. Most on-campus travelers take the first bus that comes along, rather than waiting for the campus transit shuttles. As a result, many METRO buses end up overcrowded with on-campus travelers and unable to pick up students waiting for that particular route.

Frequent pass-bys make leaving campus difficult.

The overcrowding results in frequent pass-bys, which may mean a rider has to wait another hour for the next bus. This can make getting off campus at peak travel times (afternoons) very difficult, and is exacerbated by low frequency on many routes.

Bus bunching and long dwell times reduce service reliability.

Buses serving campus spend most of their travel time on the UCSC loop. This is the result of overcrowding, leading to bus bunching and long dwell times. One factor exacerbating this is the requirement that riders all board through the front door and show their ID, despite the fact that all students ride free. All-door boarding on campus was suggested by many students and staff as a way to reduce dwell time with minimal impact on fare collection.

“The reliability of every route that serves campus is impacted by delays on campus. Then transfers are impacted. It is a domino effect”

METRO rider from UCSC

Santa Cruz and East Side

Reliability is a major concern, exacerbated on the west side by traffic on and off the UCSC campus.

Many riders reported significant service reliability issues in Downtown Santa Cruz. Buses to this area are delayed both by on-campus factors and off-campus traffic. Riders are frustrated and choose other options when they can.

Trips between the east and west sides are difficult and take a long time.

The desire to connect between the west side (where work and school destinations are) and the east side (where less expensive housing exists) was a common theme during both stakeholder and rider focus groups. Low frequencies combined with unreliable transfer connections make trip times long and unpredictable.

Poor coverage of east side communities.

Riders and potential riders spoke of poor transit coverage in east side communities where affordable housing exists (e.g. Live Oak, Capitola, and Aptos). Long walks to the bus stop and unsafe walking conditions are largely due to the limited road and sidewalk network in these areas. The issue of pedestrian safety (due to interactions with vehicles) came up frequently during our discussions.

Street and sidewalk conditions are outside of METRO’s control, and require attention from the City and county governments.

San Lorenzo Valley

Low frequency and limited hours

San Lorenzo Valley riders did not ask for more coverage–they recognize that they live in a rural area, that does not lend itself to bus service off of the main roadways.

They argued for more frequency and longer hours on existing routes, particularly on weekends. They also reported wanting greater bike capacity on buses or safe bike lockers, as this is how many get from their homes to the bus stop.

Out-of-direction travel to get to Santa Cruz or UCSC

One complaint expressed about the current Route 35 is that it requires riders coming from Boulder Creek and Felton to ride out of direction up Scotts Valley Road. This increases travel time to Santa Cruz and UCSC–their primary destinations.

Watsonville

Riders have fewer concerns about reliability within Watsonville itself.

Buses within Watsonville are less impacted by UCSC/west side traffic delays and are perceived by the riders interviewed by the project team as quite reliable.

The primary concern expressed by riders from Watsonville is how long it takes to get to Santa Cruz.

Watsonville riders are largely concerned with their ability to travel to and from Santa Cruz efficiently. Circuitous routing which involves circulating through Freedom, Dominican Hospital and/or stopping at the Capitola Mall, all add to the travel time of getting to work or school. Many conversations mentioned the previous Route 91X.

Desire for longer span of service – earlier and later buses to Santa Cruz.

Those traveling to Santa Cruz for both work and recreation reported wanting a longer span of service weekdays and weekends, and direct service to Santa Cruz (something like the 91X) on weekends.

Desire for bus stop enhancements – shelters and posted information.

There is a perception that some bus shelters in Watsonville have been removed to discourage loitering by homeless persons. Regardless, riders would like shelters at more stops and would like to have schedule information (either static or real-time) displayed at major stops.

Highway 17

Desire for more frequency at peak times.

Route 17 to San Jose is used by a broad spectrum of METRO riders. Commuters and San Jose State University (SJSU) students ride it regularly, while UCSC students and others use it for occasional trips to San Jose. The project team heard concerns about frequency and overcrowding related primarily to peak travel days (e.g. in advance of holiday weekends).

Concern about downtown San Jose bus stops.

SJSU students and staff wanted the stop at SJSU reinstated. Some commuters had stopped using the service because the elimination of the downtown stop made it impossible for them to get back to Diridon Station in time to catch the last Route 17 bus in the evening. Other commuters asked for a shelter at Diridon Station. This would be an ideal location for a real-time information display.

At the time of writing, METRO has restored service to SJSU on some Route 17 trips.

La Selva Beach

Residents of La Selva Beach have been actively petitioning for the reinstatement of METRO bus service for some time. In a community-focused meeting, a group of residents, including older adults, young workers and families with children, spoke to the need for transit service that would connect them into METRO's network.

This group specifically asked for a stop in the core of the La Selva community (at the existing shelter) and a southbound stop on San Andreas Road at Camino Al Barranco where there is another small community. They would be satisfied with service every 60 to 120 minutes but would like it to run throughout the day (not just 2-3 trips per day), potentially from 7 AM to 7 PM on weekdays and weekends.

Selected Quotes from Passenger and Stakeholder Interviews

"On holiday weekends, I've seen 70 people in line for the Route 17. Standing for an hour ride and trying to hold on to your luggage isn't much fun."

UCSC Student

"My office is in Aptos and there is a bus stop nearby. I could ride to work, but it just takes too long. If there were a more direct route from Watsonville, I would."

Watsonville resident, occasional METRO rider

Needs and Barriers Faced by Specific Populations

Older Adults and Persons with Disabilities

Access to bus stops is a primary concern for those with limited mobility.

For seniors and persons with disabilities, getting to and from the bus stop is the greatest challenge in riding METRO's fixed routes. Communities vary in walkability, hilly terrain is a challenge and wide parking lots present obstacles. Once at the bus stop, lack of shelter was also reported as a concern in some cases.

Desire for ADA certified riders to ride fare-free on METRO.

ParaCruz fares are perceived as expensive for many seniors and persons with disabilities. A round trip between Watsonville and Santa Cruz may cost up to $12, depending on the exact origin, and even more if a will-call return is needed. As a result, riders use fixed route service when they are able. There was broad sentiment that ADA certified riders should be able to ride METRO buses for free.

Agencies that work with persons with mobility challenges would like a dedicated contact inside the agency.

Stakeholders who work with disadvantaged populations expressed the need for a dedicated contact inside METRO to coordinate the best ways to meet the needs of their clients.

Persons of Low Income

The number of individuals receiving public assistance in Santa Cruz County is more than 90,000.

- This number is up from 64,000 before the pandemic. Housing costs are pushing more people into poverty and homelessness.
- Two-thirds of the County's homeless are elderly or persons with disabilities. However, because of homelessness they have difficulty using ParaCruz or Lift Line and need to rely on fixed route service.

The Emeline County Complex and new Watsonville County offices at Westridge offer critical services for low-income populations, but are located in places that are very difficult to reach.

Social services are concentrated at two locations in the county – the Emeline complex in Santa Cruz and the County offices in Watsonville. Both locations are in areas that are difficult for buses to reach, in isolated neighborhoods with few other nearby destinations to serve.

While Emeline is currently served by transit, the County offices in Watsonville are relocating to a place not currently served by METRO. This move was not METRO's decision, but stakeholders expressed that it will be important for the new location to be served as it will be a key destination for many disadvantaged riders.

Persons with Limited English Proficiency or Literacy

Communicating with groups that don't speak English well and may not read Spanish is challenging for METRO.

Santa Cruz County has a large Spanish speaking population and a smaller population which speaks a variety of indigenous languages.

Throughout stakeholder interviews, we heard complaints of poor communication with non-English speaking communities and riders. During the recent service changes in Watsonville, this lack of communication (despite extensive efforts by METRO) resulted in a high level of confusion.

Specific comments relating to language included:

- "METRO needs to do everything in Spanish, and the translations need to be clear and high quality"
- Many indigenous speakers are not literate, therefore videos & visual communications are more effective.
- Word of mouth communication through human service providers is probably the most effective way for METRO to reach non-English speaking populations.

6 How Could Service Improve This Year?

Introducing the Short Term Alternatives

Why Make Any Big Changes?

Santa Cruz METRO has been gradually recovering from a severe staffing shortage that has prevented the agency from running as much service as it can afford. At this time, **the agency is on track to expand its service by about 10% by December 2023.**

METRO could make targeted improvements to the existing network. However, both this report's analysis of the existing data (see Chapters 3 and 4) and the extensive input from the public and riders (see Chapter 5) suggest that it's time to take a deeper look.

METRO can achieve greater improvements by taking this opportunity to fix the most inefficient features of the current network. These changes would improve access to opportunity for the majority of existing riders and make service attractive and convenient for more people and trips.

Why Make Changes This December?

There are three main reasons:

- METRO recognizes the urgency for improvements to come soon.
- METRO believes it can expand its driver roster enough to increase service by December.
- Redevelopment plans for Pacific Station mean that METRO will be required to make service changes in December regardless, on all routes that serve downtown Santa Cruz. METRO wants to limit the number of times it makes significant changes.

Changes in Both Alternatives

This chapter lays out two slightly different alternatives for doing this. The goal is to invite public discussion about (1) whether these changes are a good idea, and (2) which alternative is preferred.

Affected Areas

The proposed changes focus mostly on the areas from Santa Cruz to Watsonville.

For Scotts Valley and the San Lorenzo valley, the only proposed change would be the elimination of the 35E deviation to Emeline, to make trips more direct. Route 35 would continue to operate every 30 minutes, and all current service branches north of Scotts Valley would remain. Emeline would remain served every 60 minutes by buses departing from downtown Santa Cruz.

No changes are proposed affecting Routes 40, 41, and 42 serving Davenport and Bonny Doon.

More Frequent Service

Both alternatives seek to expand daytime service frequency. Long waiting times are the biggest constraint on access and ridership potential in the current network.

Simpler Service

Both alternatives include simpler service with fewer routes, especially in Watsonville where the existing network is extremely complicated. Nonetheless, nearly all areas close to service today would remain served.

Better Connections

To make it easier for passengers to connect across different parts of METRO's service area, both alternatives would reduce transfer waiting times in the following ways:

- Transfers in Santa Cruz would require less waiting, because the three main routes to downtown would come every 15 minutes.
- In Watsonville, buses would be scheduled to arrive and leave at the same time from the Transit Center, so passengers would only wait a few minutes between buses.

Free Transfers

In both alternatives, nobody would have to pay a second fare or a transfer fee to change buses. Fares would stay the same, regardless of the number of buses required.

How the Alternatives Differ

Both alternatives generally improve frequency and access to opportunity. However, they differ in how much they pursue ridership (and frequency) vs. coverage (see page 17).

Alternative A: Lean Toward Frequency

Alternative A removes a few segments of coverage, requiring people in those areas to walk further to service, in order to achieve larger improvements in frequency and simplicity. The result is a greater increase in access to opportunity and ridership potential, but also an increase in the number of people inconvenienced.

Alternative B: Lean Toward Coverage

Alternative B retains service to almost all existing bus stops. As a result, it is not able to offer as much frequency in certain areas, and the result is slightly less improvement in average access to opportunity and ridership potential.

Is This All METRO Can Do?

This report focuses on what METRO can do quickly with no new funding. Many good ideas could not be included because of this, such as:

- All-day Highway 1 express service between Santa Cruz and Watsonville
- Improved Highway 17 service, to San Jose
- Direct services to UCSC from more locations.
- More direct service between the San Lorenzo Valley and Santa Cruz.
- Further frequency improvements.
- Increases in evening and weekend service.

METRO is exploring how to fund more service in 2024 and beyond. These kinds of improvements will be detailed in the Draft Future Network report, coming this fall (see page 93).

How to Read This Chapter

The next two pages show maps of the two alternatives. You can compare these to the maps of the existing network on page 39.

The two pages after the maps present charts showing the frequency of each proposed route by time of day. You can compare these to the same chart for the existing network on page 40. **Remember: in maps and charts, colors indicate frequency.**

This is followed by detailed descriptions of what would change in each part of the service area, and why.

Starting on page 77, the report describes what these alternatives would achieve. This is shown both in terms of transit availability in different areas, and in terms of access to jobs and major destinations. You can use this section to help you assess which alternative you prefer.

Network Map - Short Term Alternative A - Lean Toward Frequency

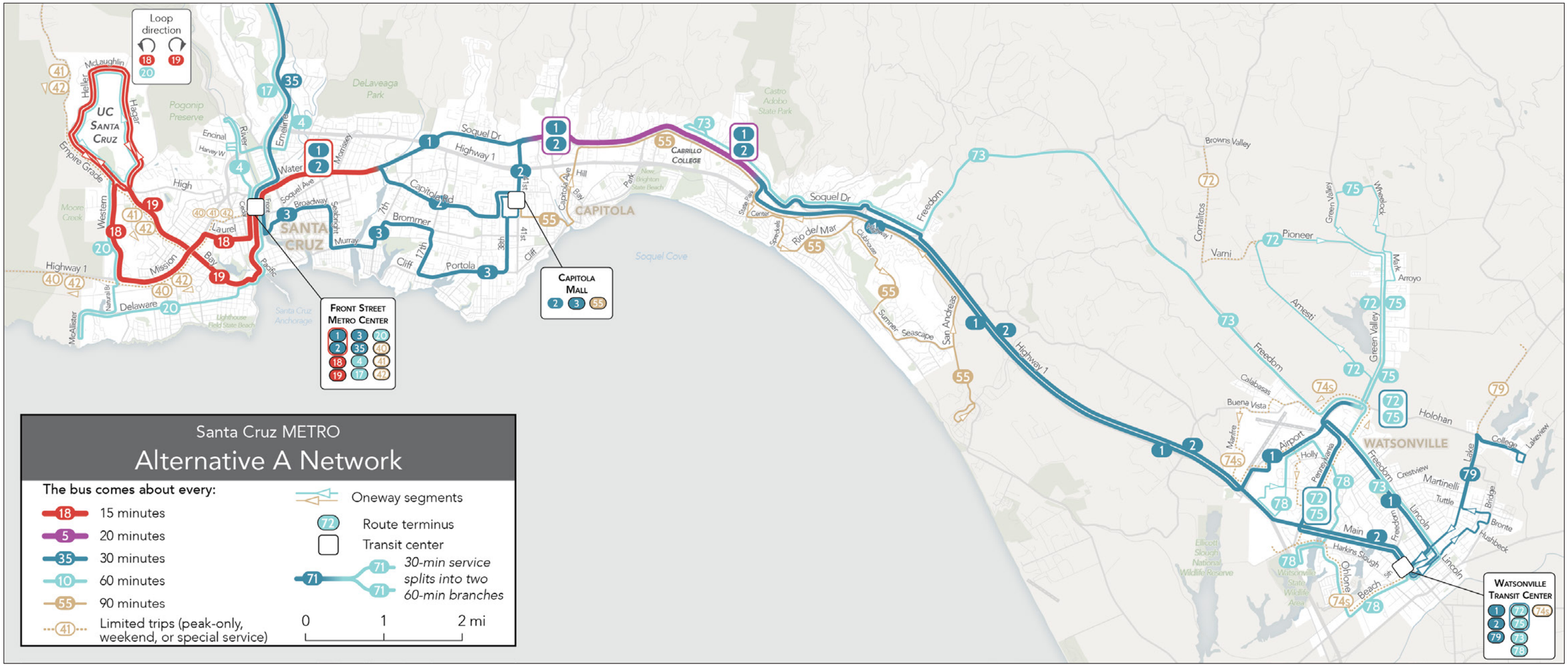


Figure 55: Map of the proposed Santa Cruz METRO network, starting in December 2023, if Alternative A were implemented.

Network Map - Short Term Alternative B - Lean towards Coverage

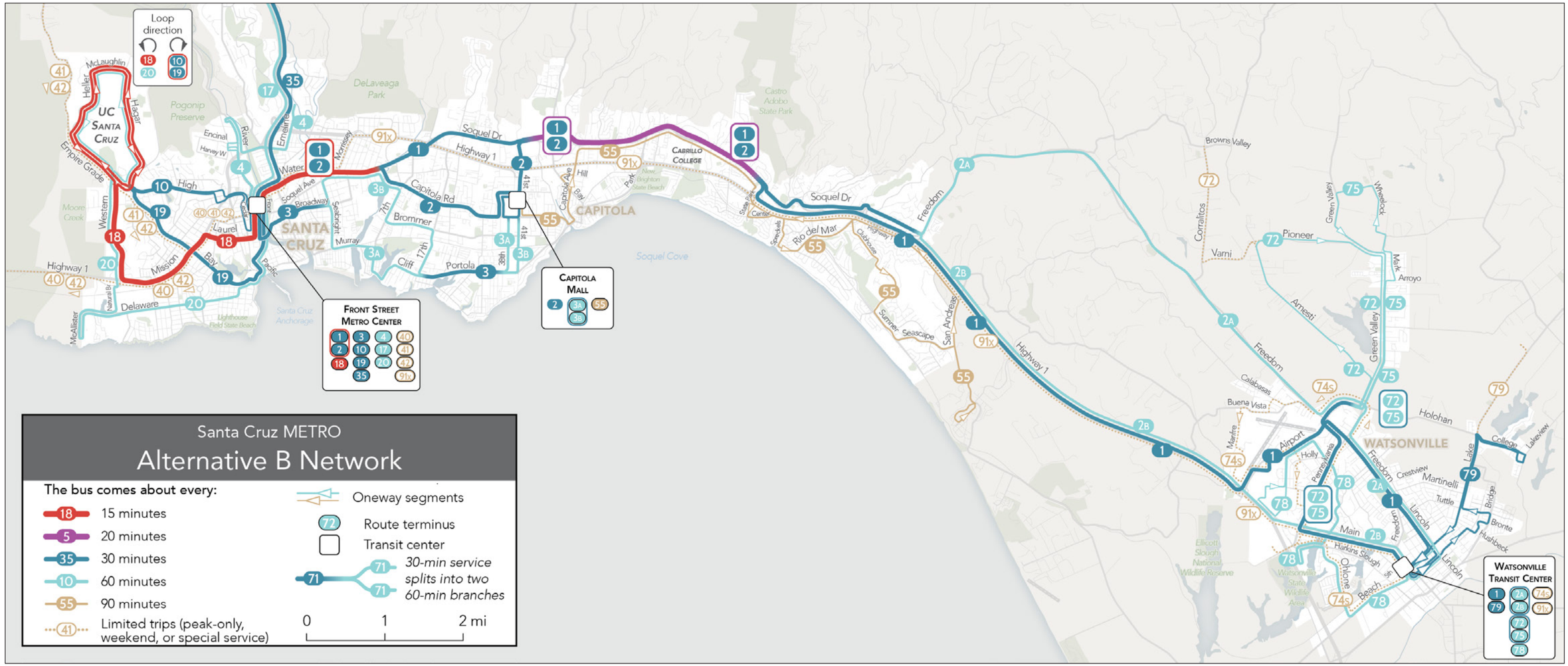


Figure 56: Map of the proposed Santa Cruz METRO network, starting in December 2023, if Alternative B were implemented.

Alternative A - Frequency Chart

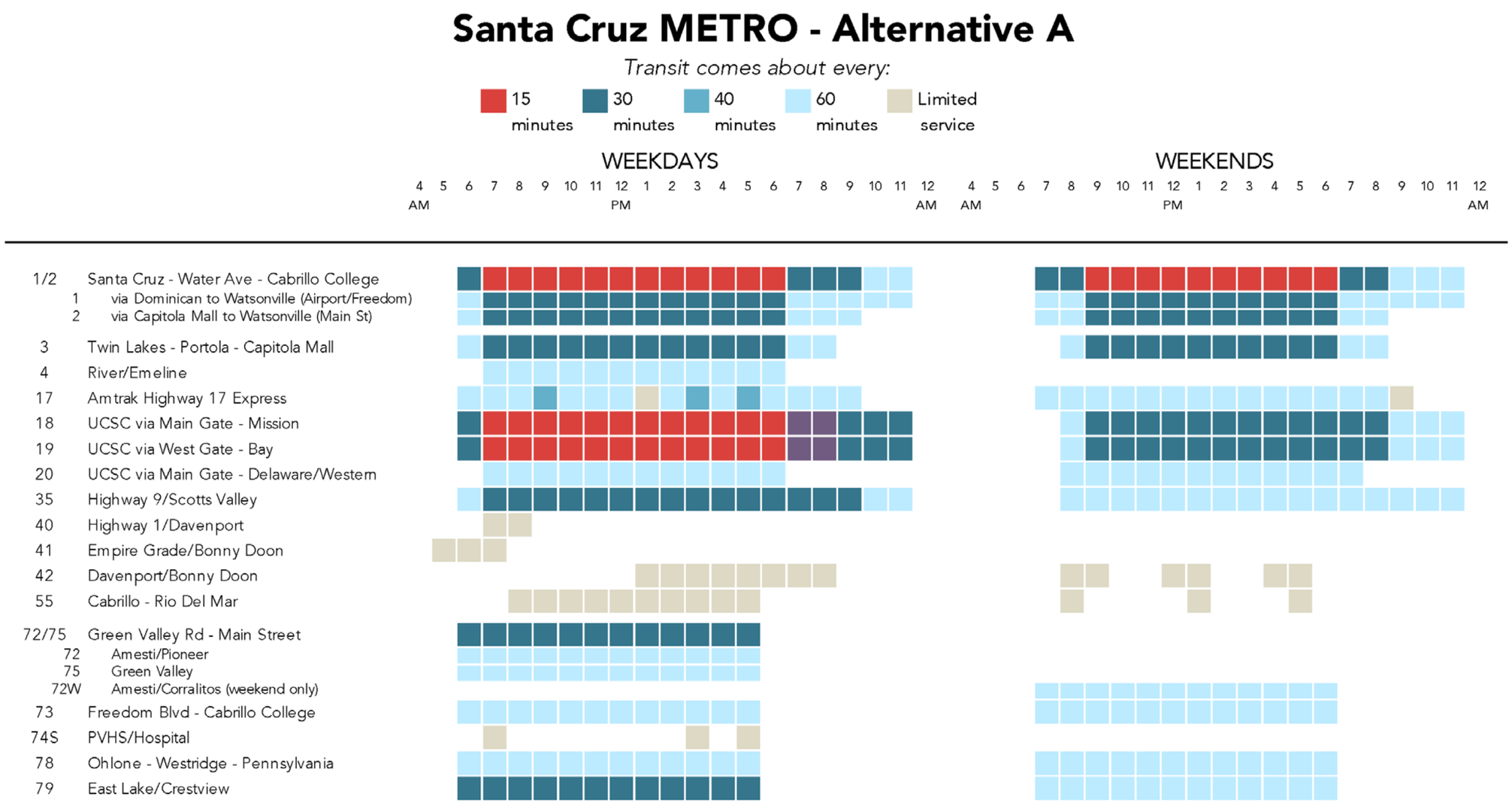


Figure 57: Chart showing the proposed service frequency by route, day of the week, and time of day for Alternative A

Alternative B - Frequency Chart

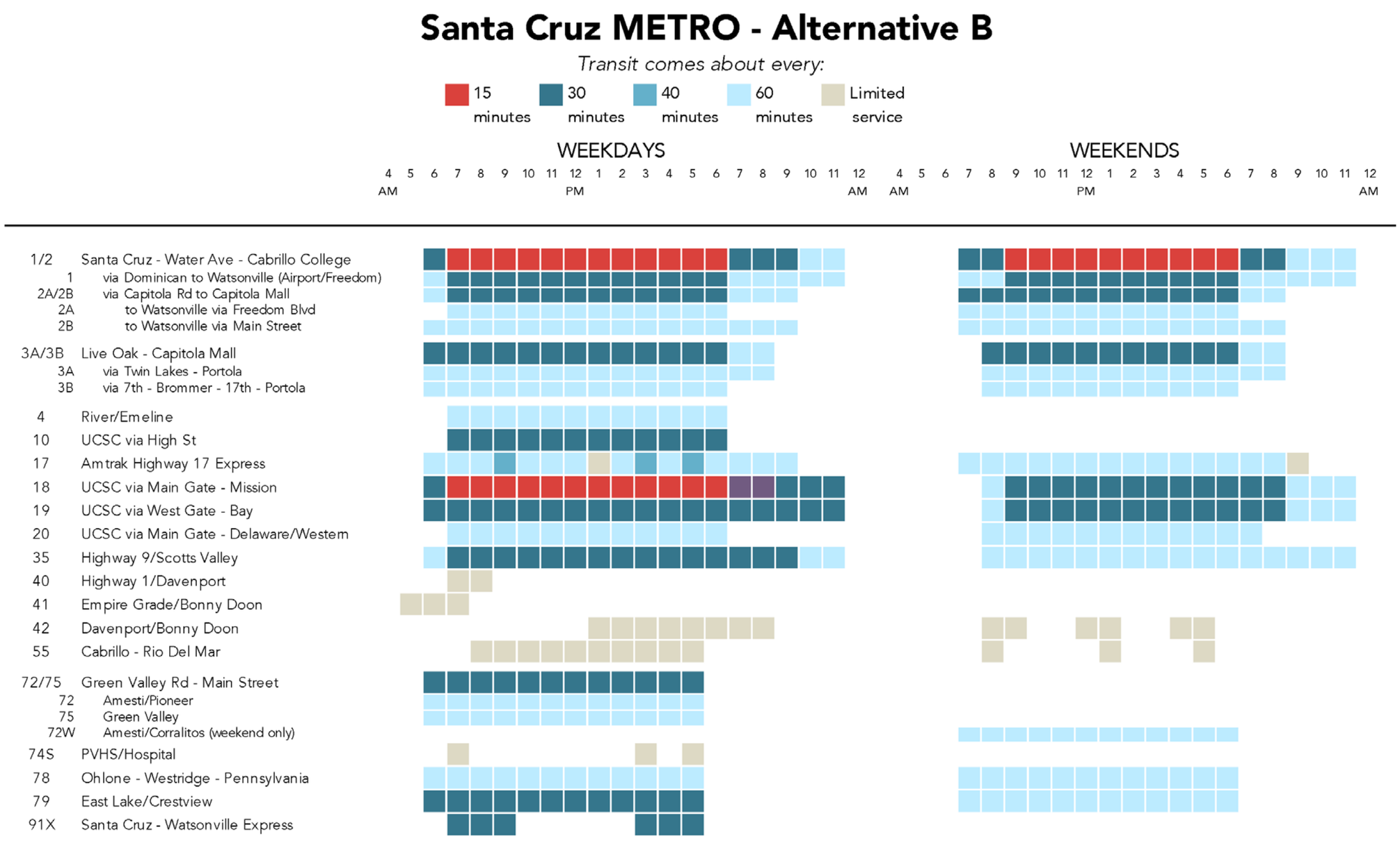


Figure 58: Chart showing the proposed service frequency by route, day of the week, and time of day for Alternative B

Alternative A: UCSC and West Side of Santa Cruz

Doubling Frequency Through the Campus and West Side

Alternative A doubles the effective frequency of service through UCSC by running the two main lines, Routes 18 and 19, every 15 minutes instead of every 30 minutes.

Currently, although four routes run through the campus, they cannot be evenly spaced, so there are gaps of as much as half an hour between buses going a certain direction. This change would provide a bus consistently every 15 minutes in both directions.

As a result, reduced waiting times would expand access to UCSC, whether travelling directly from the west side, or connecting from points east of downtown Santa Cruz.

This high frequency, combined with METRO's recent acquisition of articulated buses for service to UCSC, will reduce overcrowding on any single trip.

With the resources available in the short term, METRO cannot schedule its services around the class change times because the schedules of the whole network are interdependent. However, operating a consistent high frequency all day is the best way to ensure that adequate capacity is available whenever a class change occurs.

This frequency expansion is also a large improvement in access to the dense residential areas on the west side of Santa Cruz, as well as other major destinations such as the Boardwalk and Santa Cruz High School. The 15 minute frequency on Route 19 would be sufficient to be marketable to visitors as a way to travel between downtown and the Boardwalk.

Removing Routes 10 and 15

Unfortunately, the small increase in service that METRO can promise in the short term is not enough to deliver full frequency on all routes. In Alternative A, METRO would reallocate the resources currently dedicated to Routes 10 and 15 to increase service on Routes 18 and 19. This is justified because:

- Route 10 has the smallest unique coverage area of any of the west side routes. The stops that would no longer be within 1/4 mile of service, along High St and Highland Ave, had about 68 daily passenger boardings in the fall of 2022, almost all of them in the direction of the university.
- Route 15 provides additional capacity between downtown Santa Cruz and UCSC when school is in session. With Route 18 and 19 each providing four buses an hour, the capacity would be on those routes instead.

There is no question that Alternative A benefits far more people than it inconveniences on the west side, but the people who are inconvenienced will not be happy. Alternative B, on the next page, shows the consequences of keeping Route 10.

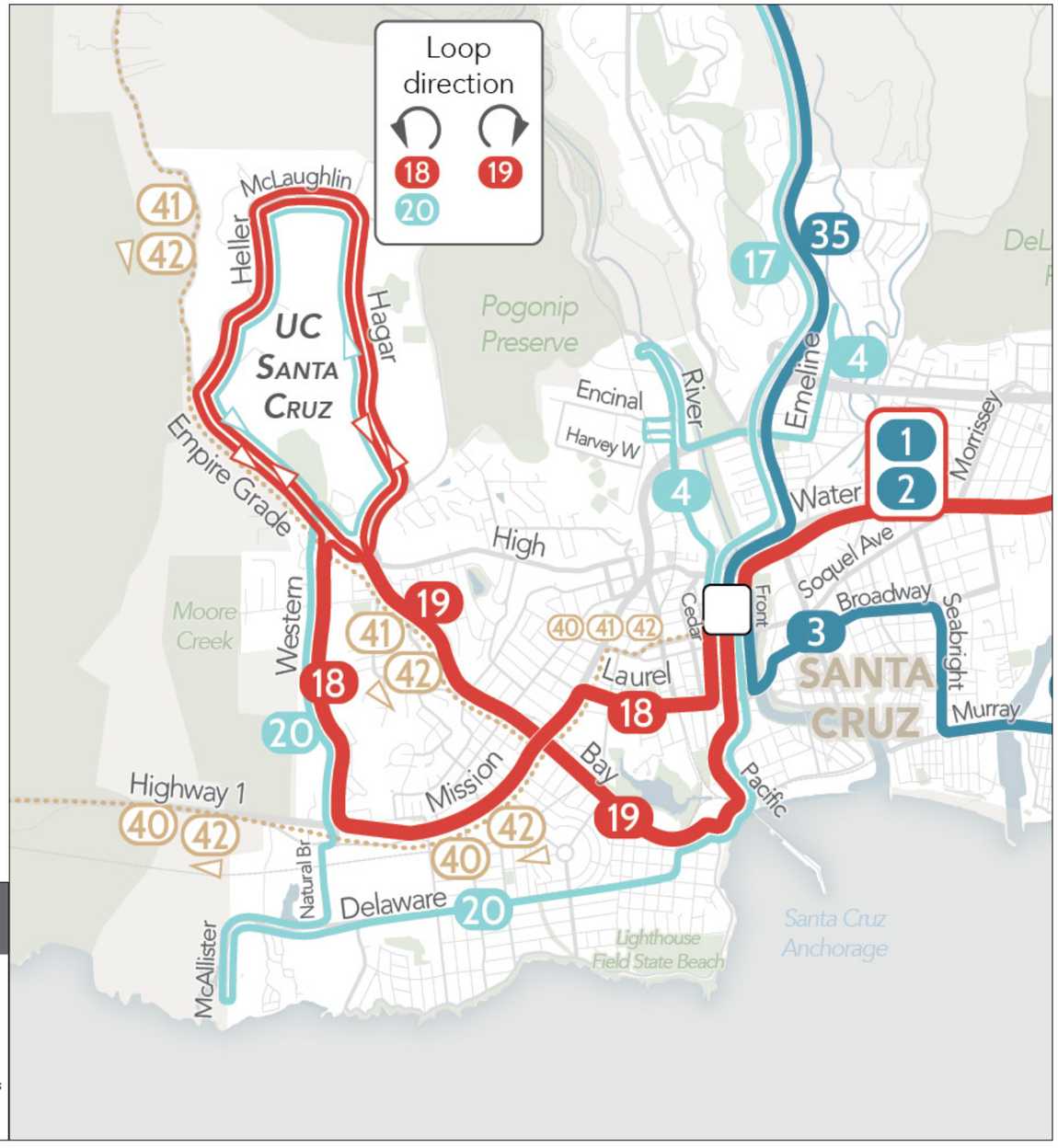


Figure 59: Map of the Alternative A network in and near the west side and downtown Santa Cruz.

Alternative B: UCSC and West Side of Santa Cruz

Retaining Route 10

Like Alternative A, this alternative provides a consistent 15-minute frequency in both directions around the UCSC loop, all going to downtown Santa Cruz. However, Alternative B would keep Route 10.

To make this possible, it would be necessary to keep Route 19 running only every 30 minutes.

- Routes 10 and 19 would be scheduled such that either a 10 or 19 bus would be entering campus every 15 minutes and serving the campus loop clockwise.
- Route 18 would provide service every 15 minutes around the campus loop in the counterclockwise direction, as in Alternative A.

Alternative B loses the opportunity to provide a high frequency through the Boardwalk area and along Bay Street, but avoids eliminating service on High Street. However, this also comes at the cost of reducing the total amount of service on Bay Street, which is currently served by Routes 19 and 15.

Emeline and Delaware

Both Alternative A and B would retain service on Route 20 on Delaware and to the UCSC Coastal Sciences Campus as it exists today.

Both alternatives would also make adjustments to Route 4 and 35, restoring them to alignments closer to what they have had in the past.

- Route 4 would be streamlined in the industrial area north of downtown, due to low ridership. It would also be extended out to the county social services offices at Emeline.
- Routes 35 and 35E would be combined in to a single pattern that would not make a deviation to Emeline, to make trips to Scotts Valley more direct.

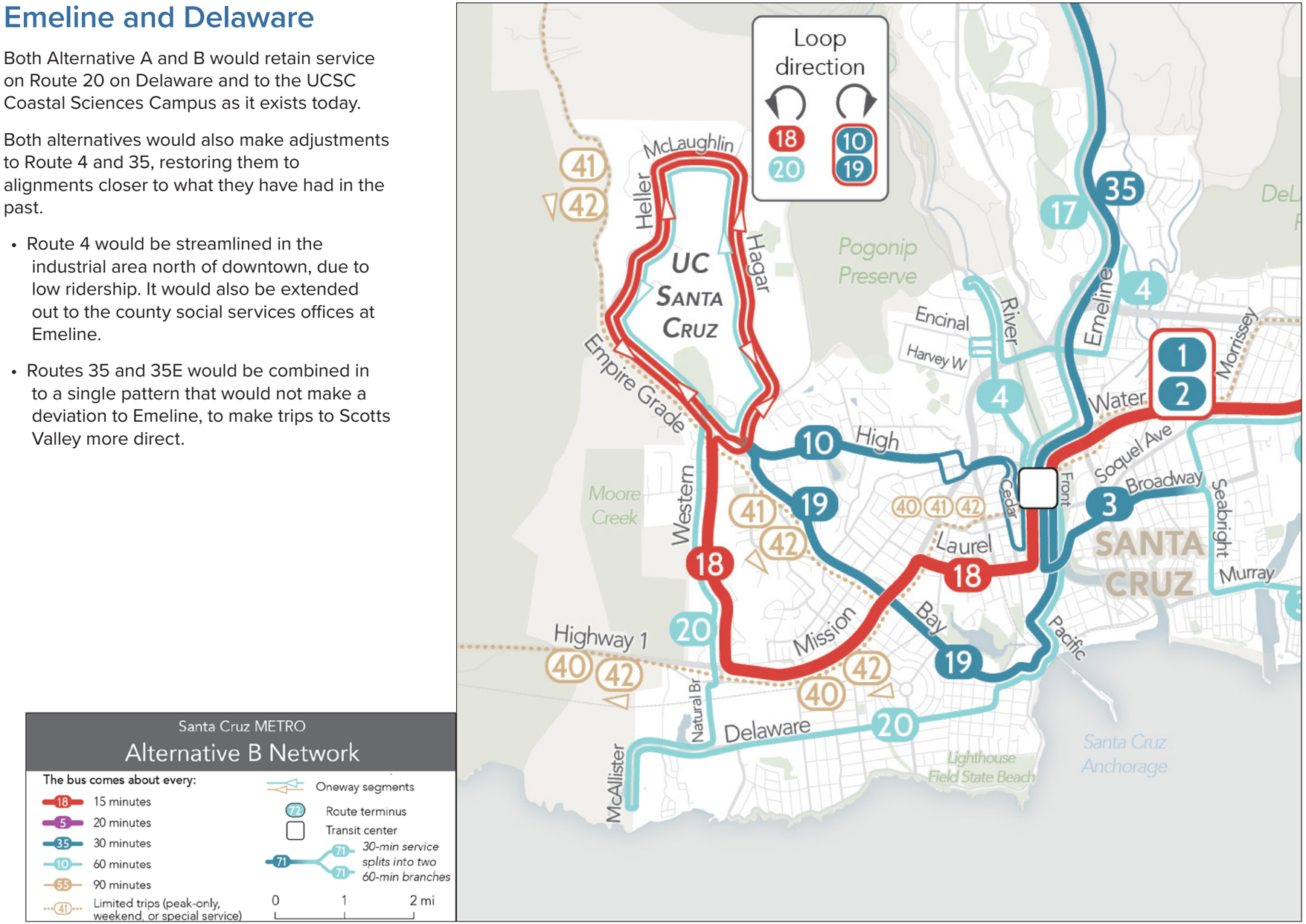


Figure 60: Map of the Alternative B network in and near the west side and downtown Santa Cruz.

Alternative A: Santa Cruz Eastside and Live Oak

Streamlined Santa Cruz to Watsonville Service

Both Alternative A and Alternative B would replace Routes 69A, 69W, and 71 with a simpler pattern called Routes 1 and 2.

Routes 1 and 2 would be scheduled together, to provide a bus every 15 minutes as far as Capitola Road. This frequent service would follow the path of existing Route 71. To make this frequency possible within available resources, there would no longer be bus service on Soquel Avenue west of Morrissey Street.

East of Capitola Road, Routes 1 and 2 would separate. Route 1 would replace today's Route 71 along Soquel Avenue, while Route 2 would replace today's Routes 69A and 69W along Capitola Road and 41st Avenue. Routes 1 and 2 would then come back together on Soquel Drive east of 41st Avenue.

At Capitola Mall, METRO is still exploring options as part of a travel time reliability study. Route 2 may:

- Use Capitola Road and 41st Avenue, but not enter the mal.
- Use Clares Street and 41st Avenue, and not enter the mall.
- Continue to enter the mall.

The next pages describe how these two routes operate as they proceed from Soquel to Watsonville.

Seabright, Twin Lakes and Pleasure Point

In Alternative A, existing Routes 66 and 68 would be combined into a single Route 3. This new route would follow a path that is designed to cover Seabright and Portola Drive, and that avoids duplicating Routes 1 and 2.

This Route 3 would not go everywhere that the current Routes 66 and 68 do, but the entire area would remain within 1/2 mile of service. Service would no longer go directly to Twin Lakes Beach, and would miss a portion of the East Cliff Drive business district east of Schwan Lagoon, but this would also avoid an area that can be very congested and that makes reliability difficult.

On the approach to Capitola Mall, all Route 3 buses in Alternative A would use 38th Avenue, where more people live, rather than the 41st Avenue business district.

Emeline St (County Offices)

As described on the previous page, both alternatives propose to extend Route 4 to serve the county government offices on Emeline Street, so that Route 35E would no longer go this way, reducing time on trips coming from Scotts Valley and the San Lorenzo Valley.

NOTE: Murray St Bridge Closure

The Murray St bridge, which connects Seabright with Twin Lakes, is expected to close for several years for replacement. This may occur as soon as December 2023. During the closure, it will not be possible to offer service along Seabright Ave, Murray St, or 7th Ave south of Brommer. A detour would bypass these segments, but these segments would be restored as soon as the bridge is available.

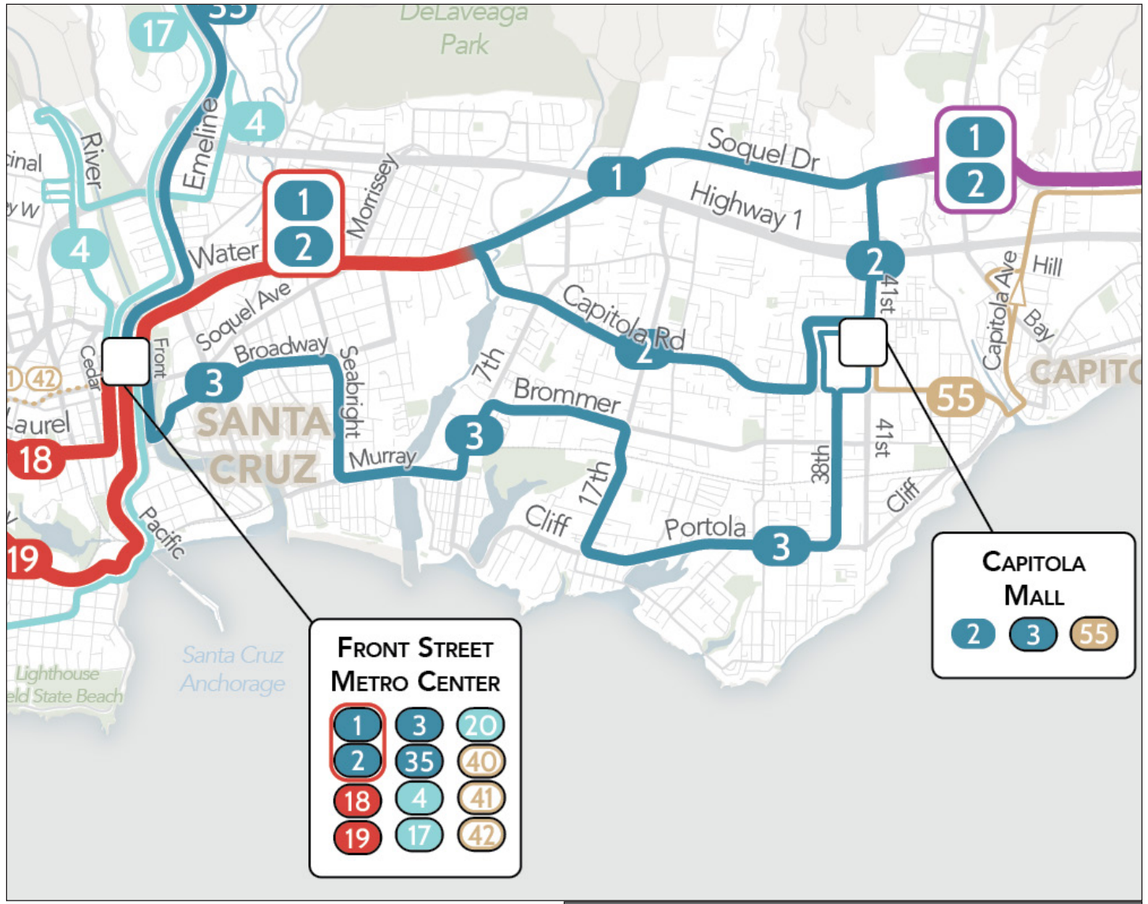
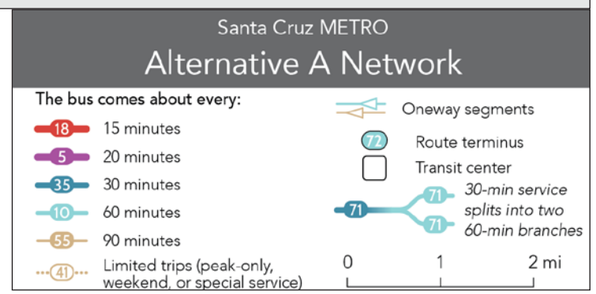


Figure 61: Map of the Alternative A network in and near the east side of Santa Cruz, and Live Oak.



Alternative B: Santa Cruz Eastside and Live Oak

Coverage in Live Oak and Pleasure Point

Alternative B is similar to Alternative A in this area except for the Seabright/Portola Drive service, Route 3. In this alternative, Route 3 would split at two points, retaining a pattern slightly more similar to existing Routes 66 and 68.

All Route 3 buses would operate on Broadway from downtown Santa Cruz to Seabright Ave. At this point, they would split into two branches, each operating every 60 minutes.

- Route 3A would serve Seabright, Twin Lakes and East Cliff Drive, similar to existing Route 68.
- Route 3B would serve Soquel Avenue, Capitola Road, 7th Avenue, Brommer Road and 17th Avenue, similar to existing Route 66.

Both branches would serve Portola Road between 17th and 38th Avenue, but they would split again with one bus every 60 minutes on 38th Avenue, and another bus every 60 minutes on 41st Avenue. Both branches would terminate in the vicinity of Capitola Mall.

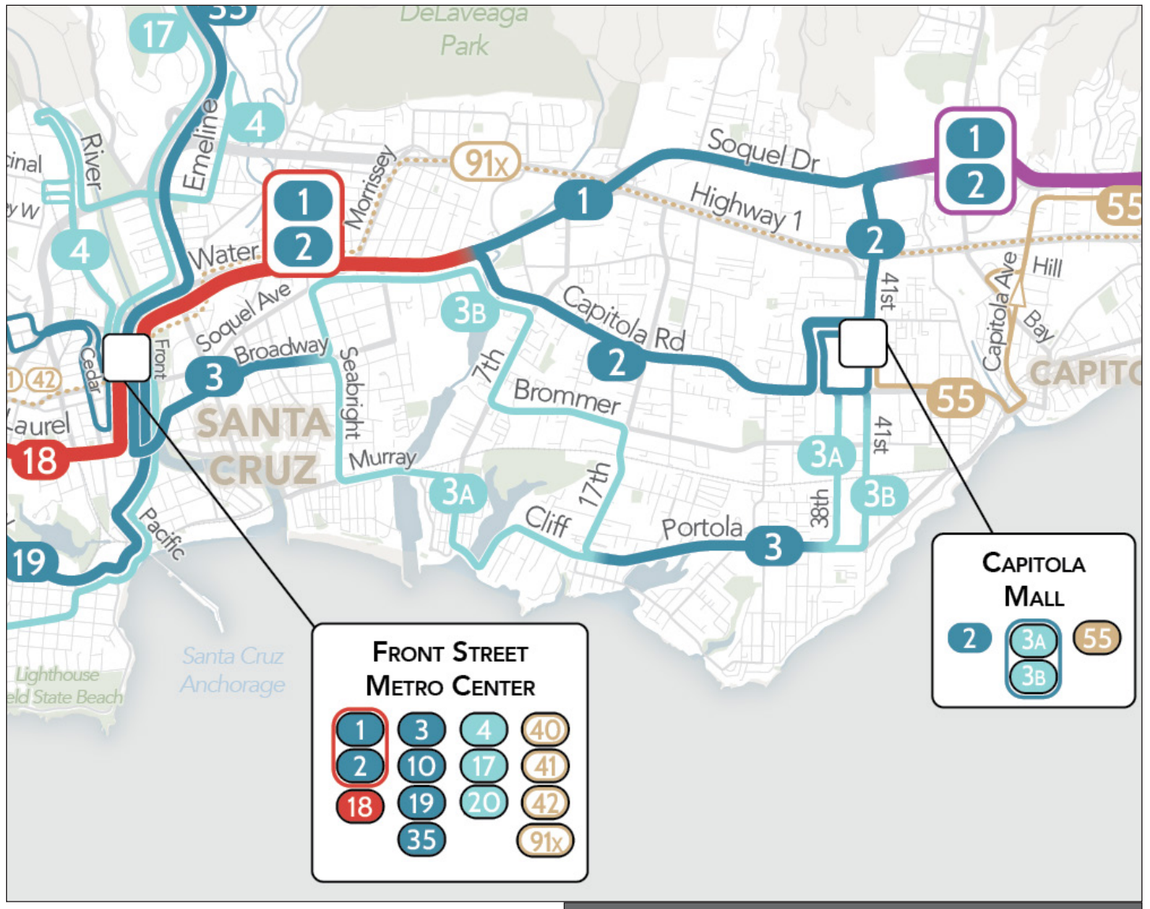


Figure 62: Map of the Alternative B network in and near the east side of Santa Cruz and Live Oak.

Alternative A: Soquel, Capitola, Aptos

Soquel Drive and Highway 1

In this area, Routes 69A, 69W and 71 would be replaced by Routes 1 and 2 on Soquel Drive. However, there would be a few differences in the details of which route serves which area.

Between Santa Cruz and 41st Avenue, Route 1 would follow Soquel Drive (like today's Route 71) and Route 2 would follow Capitola Road and 41st Avenue (like today's Routes 69A and 69W).

The proposed routes would rejoin at 41st & Soquel and remain together past Cabrillo College to State Park Drive. This combined segment is shown with a 20 minute frequency on the map because that would be the maximum scheduled wait between buses in this area.

Route 1 would leave Soquel Drive at State Park Drive, while Route 2 would remain on Soquel Drive past Aptos Village. Both routes would go to Watsonville via Highway 1, the fastest available path.

The exact routing of Route 2 at Capitola Mall remains under study. Please refer to page 71 for further information.

Freedom Blvd

Because regional Routes 1 and 2 would both be on Highway 1, service on the rural parts of Freedom Boulevard (i.e. between Soquel Drive and Watsonville) would be reduced to once an hour. In Alternative A, this would be operated as Route 73, extending from Cabrillo College to Watsonville.

South of Capitola Mall

South of Capitola Mall, there is currently hourly service on both 38th and 41st avenues. Alternative A would put service every 30 minutes on 38th, and no service on 41st. This would increase access for the mobile home parks on 38th, at the expense of longer walks to commercial destinations on 41st.

Capitola Village, Rio del Mar and La Selva Beach

Route 55 would continue to serve Capitola Village and Cabrillo College. However, it would also be extended to serve parts of Rio Del Mar and La Selva Beach on all trips, in both alternatives.

Figure 63: Map of the Alternative A network in and near Soquel, Capitola and Aptos.

Alternative B: Soquel, Capitola, Aptos

Soquel Drive, Highway 1 and Freedom Boulevard

In Alternative B, Routes 1 and 2 would be similar to Alternative A on Soquel Drive. However, Route 2 would split east of Freedom Boulevard:

- Route 2A would serve the rural parts of Freedom Boulevard (including Aptos High School). This service would be more similar to existing Route 71 in this area, but with frequency reduced from every 30 minutes to every 60 minutes.
- Route 2B would take Highway 1 from Freedom Boulevard to Watsonville, as in Alternative A.

This maintains regional connections for Aptos High School and the rural areas along Freedom Blvd, albeit at reduced frequency. However, it also makes the Santa Cruz to Watsonville corridor more complex. It has other effects in Watsonville that will be seen on the next pages.

South of Capitola Mall

Alternative B would maintain the existing split in service, with service every 60 minutes on both 38th Avenue and 41st Avenue south of Capitola Mall.

This maintains coverage near a larger number of people. Nevertheless, it is less effective from a ridership and access perspective because 38th has more demand than 41st, and hourly service requires much longer average waits.

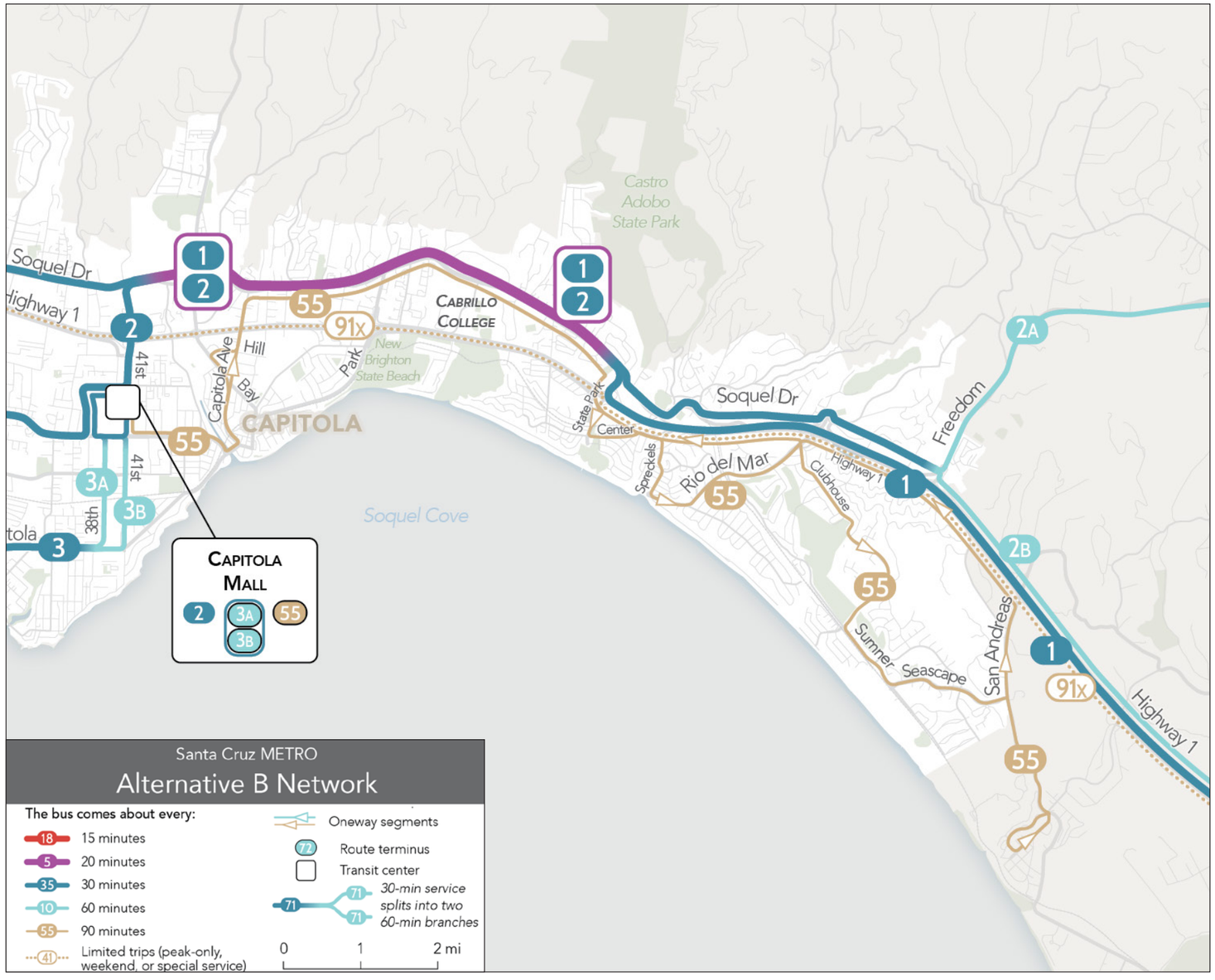


Figure 64: Map of the Alternative B network in and near Soquel, Capitola and Aptos.

Alternative A: Watsonville

Alternative A would replace Watsonville's complex tangle of overlapping hourly routes with a simpler pattern of routes that mostly run every 30 minutes.

Service to Santa Cruz and Cabrillo College

In Alternative A, Routes 69A, 69W and 71 would be replaced with:

- Route 1, every 30 minutes, which would serve Freedom Boulevard, Airport Boulevard and Watsonville Community Hospital and take Highway 1 to Cabrillo College. Route 1 would continue to Santa Cruz via Soquel Drive. This service would operate every 30 minutes.
- Route 2, every 30 minutes, which would serve Main Street and take Highway 1 to Aptos Village and Cabrillo College. Route 2 would continue to Santa Cruz via Capitola Mall.
- Route 73, every 60 minutes, which would serve Freedom Boulevard to Aptos High School and continue on Soquel Drive until Cabrillo College.

The combined effect of these changes would be that:

- There would be local and regional service every 30 minutes on Main Street, Freedom Boulevard and at Watsonville Community Hospital.
- There would be service every 10 to 20 minutes between Watsonville Transit Center, Soquel Drive and Santa Cruz. All of these buses would use the relatively faster path on Highway 1, rather than Freedom Boulevard.
- Service to rural parts of Freedom Boulevard would be reduced to every 60 minutes.

Green Valley Road

In both alternatives, Routes 72 and 75 would run every 30 minutes in both directions on Main Street, on Green Valley Road and past Freedom Centre. Outbound service would continue to split at Amesti Road, to maintain semi-rural coverage in this area.

Passengers using Route 72 from downtown to Watsonville Community Hospital would instead use the new Route 1 or the new Route 78.

New Route 78

In both alternatives, the new hourly Route 78 would serve Beach Street, Ohlone Parkway, the new County offices on Westridge Drive, then continue along Clifford, Pennsylvania, Loma Prieta, Airport Boulevard and Holm Drive to end in a loop that serves the Social Security office and the hospital's east side.

This route would replace parts of Route 71, 72 and the Watsonville Circulator, while also providing coverage to previously unserved areas south of Main Street.

East Lake Ave

In both alternatives, Route 79's frequency would be increased from every 60 minutes to every 30 minutes. This would be made possible by removing existing one-way service on Martinelli Street. The increased frequency, combined with timed transfers at Watsonville Transit Center, would increase access to opportunity and ridership potential from this area.

Timed Transfers at Watsonville Transit Center

See next page for details. This applies to both alternatives.

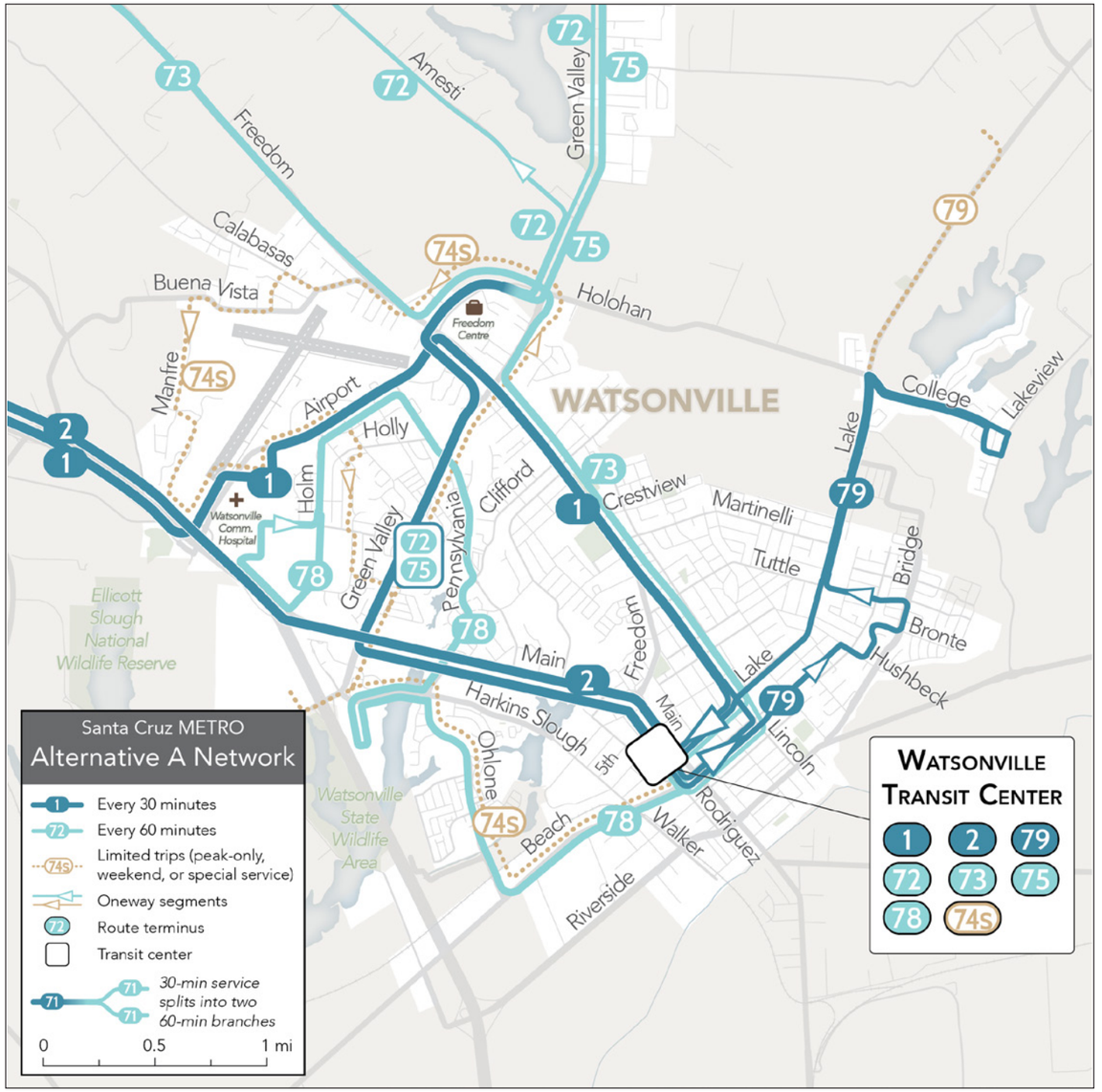


Figure 65: Map of the Alternative A network in and near Watsonville.

Alternative B: Watsonville

Alternative B would retain similar elements to Alternative A for local service in Watsonville, but with some differences in regional service.

Service to Santa Cruz and Cabrillo College

In Alternative B, regional services would be as in Alternative A except that:

- Route 2 would be divided into 2 branches, each operating every 60 minutes.
  - Route 2A would serve Freedom Boulevard to Aptos High School and Aptos Village.
  - Route 2B would serve Main Street and leave Watsonville via Highway 1. It would also serve Aptos Village.
  - East of Aptos Village, both Routes 2A and 2B would serve Cabrillo College and Capitola Mall on the way to Santa Cruz.
- Because Route 2B would serve the rural parts of Freedom Boulevard, there would be no need for a new Route 73.
- Instead, the same resources could be used to restore Route 91X, as a morning and afternoon direct express service to and from Santa Cruz.

Compared to Alternative A, this would reduce frequency on Main Street in the middle of the day: Route 2B would operate only every 60 minutes, like existing Route 69W. Trip times between Main Street and areas in Aptos, Soquel, Capitola and Live Oak would not improve. The only improvements would be for peak-hour riders going to Santa Cruz, from Watsonville Transit Center.

Timed Transfers at Watsonville Transit Center

In both alternatives, most buses operating in Watsonville would be scheduled to arrive and leave at similar times from Watsonville Transit Center. This would make it possible to connect across town and to Santa Cruz with minimal waiting, making transit easier to use for longer trips.

There would be minor differences in which routes operate the timed transfer, relating to the differences in regional service.

In Alternative A:

- Routes 2 and 79 would arrive and leave together every 30 minutes. They would meet one of either Route 72 or Route 75 every time.
- Routes 73 and 78 would meet the other routes every 60 minutes.

In Alternative B:

- Routes 1 and 79 would arrive and leave together every 30 minutes. They would meet one of either Route 72 or Route 75 every time.
- Route 78 would meet the other routes every 60 minutes.

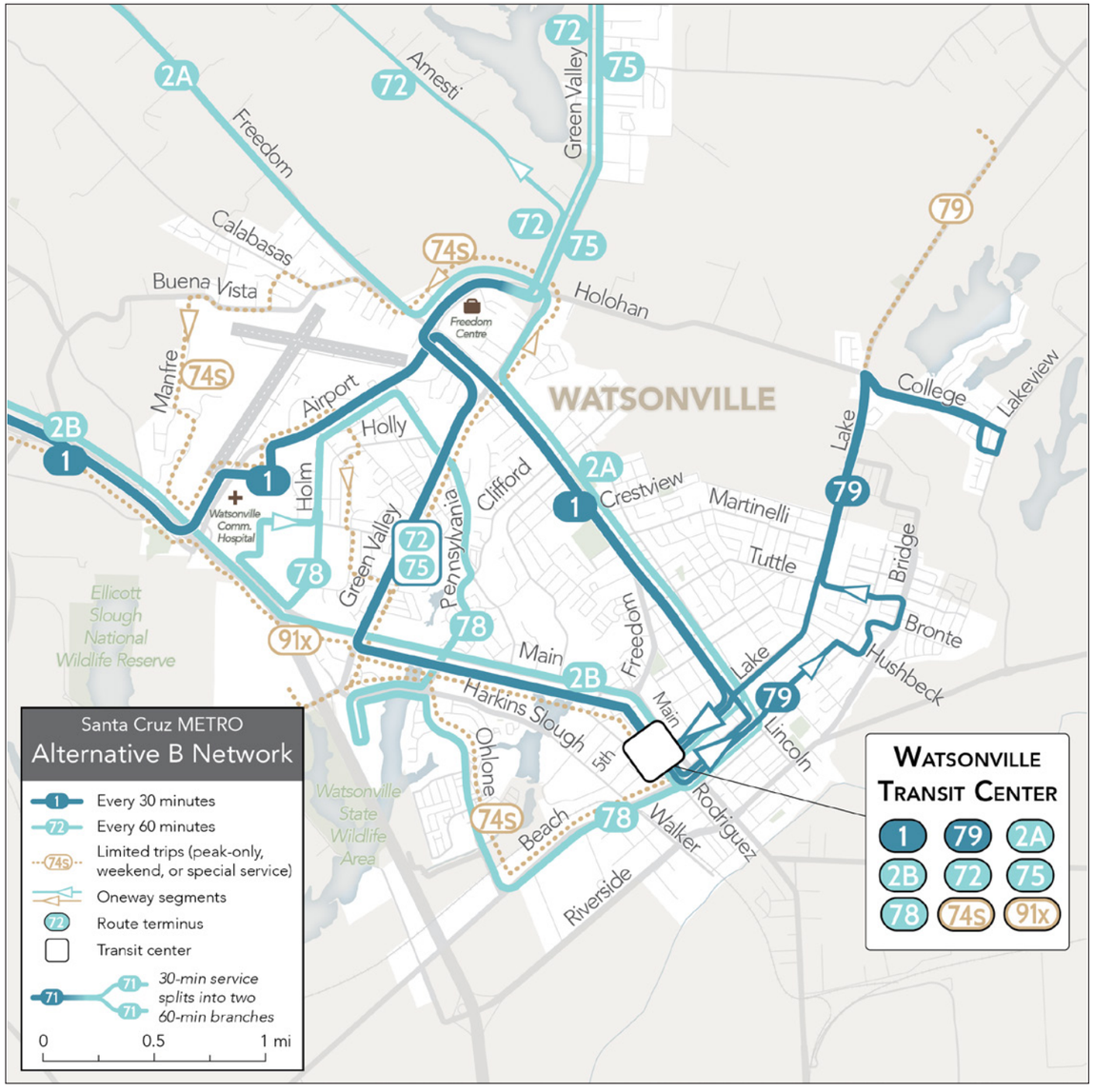


Figure 66: Map of the Alternative B network in and near Watsonville.

How would each alternative change how many people are near service?

Weekday Daytime

Most METRO lines start service around 6:30 AM. The level of service shown on this page is or would be available from about 7 AM to 7 PM.

This page shows how many people are affected by the changes to coverage and frequency in the alternatives on weekdays in the daytime. Subsequent pages illustrate the same facts for weekday evenings, weekend daytimes, and weekend evenings.

The simplified maps show, using color, the frequencies running on each segment of the network at that time. Frequencies of service are indicated by the colors of the lines, corresponding to the legend above.

The bar charts to the right show what percentage of people or jobs in the urbanized areas of Santa Cruz County[1] are or would be near service at a particular frequency. The top line in each chart represents the total population, followed by residents in poverty, people of color, and finally jobs.

The grey parts of these bars indicate the share of population and jobs located more than 1/2 mile away from a bus stop with service. These change very little as a result of the alternatives. Even in Alternative A, the areas that would no longer be covered have very small populations.

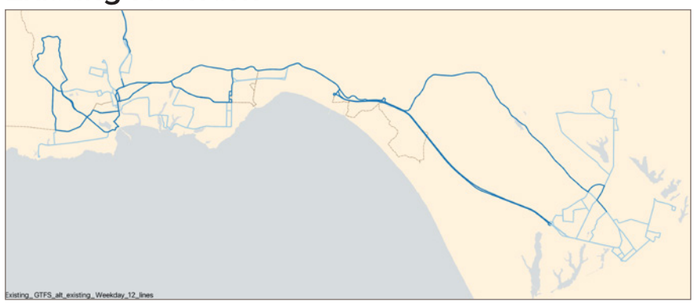
In both alternatives, over 15% of residents and over 20% of jobs would get weekday daytime service every 15 minutes (in red), and nearly 60% of residents would live within a 1/2-mile of service ever 30 minutes or better. Alternative A shows slightly more improvement than Alternative B in the number of people and jobs with frequent service.

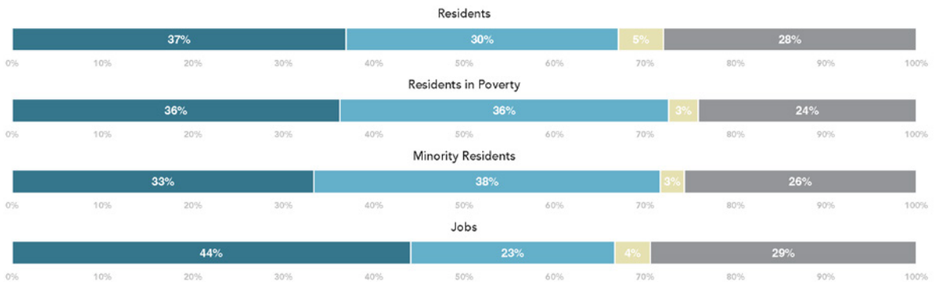
1 Includes UCSC, Santa Cruz, Live Oak, Soquel, Capitola and Aptos; Rio del Mar and La Selva Beach; Watsonville, Freedom and Amesti; Scotts Valley; and populated parts of the San Lorenzo Valley.

How many people and jobs would be within 1/2 mile walk of service, coming every:

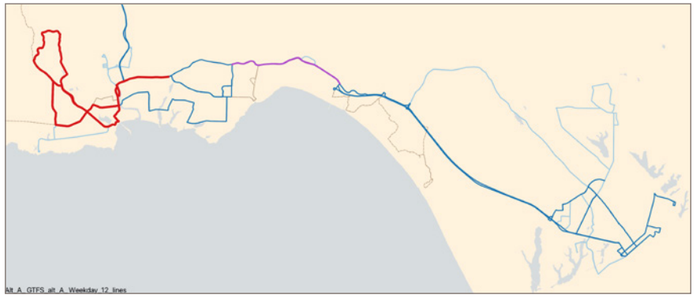
15 min or better | 20 min | 30 min | 60 min | More than 60 min | No service within 1/2 mile

Existing Network

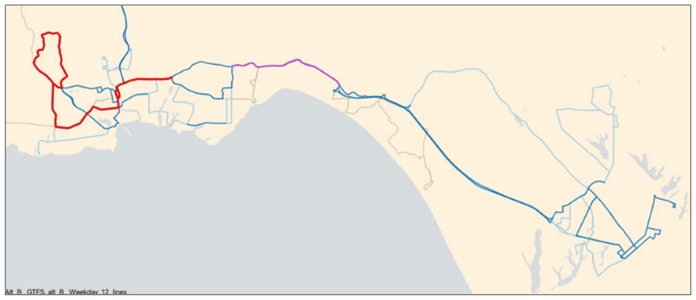


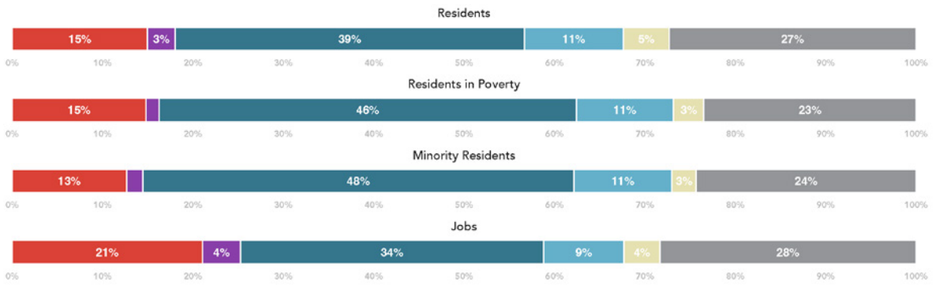


Alternative A



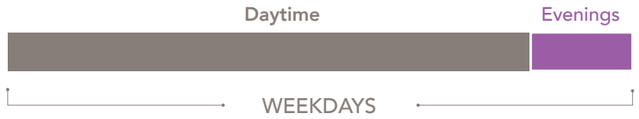
Alternative B





How would each alternative change how many people are near service?

Weekday Evening



Evening service rarely carries as many riders as daytime service, but it allows people to build their lives around transit. This page shows the levels of service that are or would be available at 8 p.m. on weekdays.

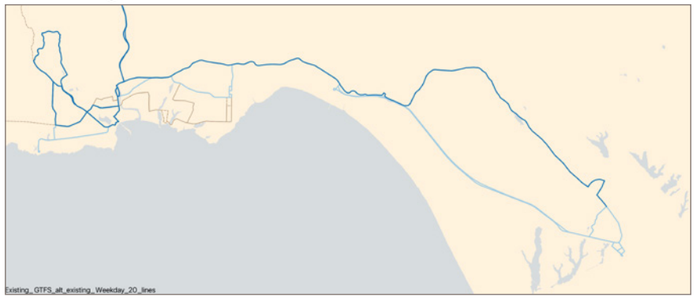
On weekdays at 8 PM, there would be very little difference in overall coverage between Alternative A and Alternative B. Both alternatives would:

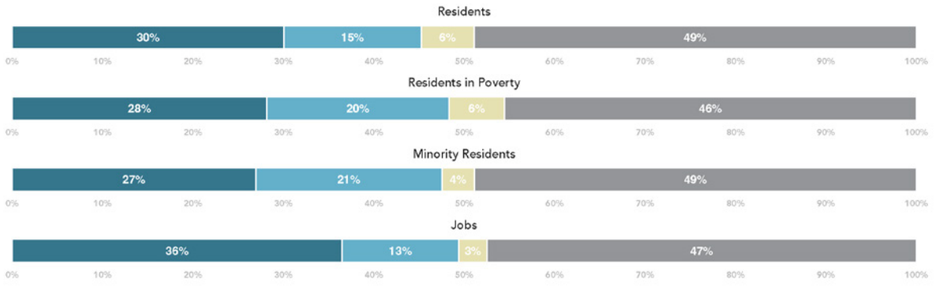
- Increase the number of urbanized area residents near service at least every 60 minutes, from 45% to 55%.
- Provide service every 20 minutes on the west side of Santa Cruz, serving about 11% of urbanized area residents.
- Reduce the number of people near METRO service every 30 minutes or better, from 35% to 24%.
  - This is largely due to a reduction in service on Soquel Drive between Capitola Road and 41st Ave, and on Freedom Boulevard.
  - Existing Route 71 provides service every 30 minutes until 9 PM.
  - The proposed Routes 1 and 2 would reduce service to every 60 minutes at 7 PM and would not serve Freedom Boulevard between Aptos and Watsonville. However, there would still be combined service every 30 minutes from Santa Cruz to Watsonville.

How many people and jobs would be within 1/2 mile walk of service, coming every:

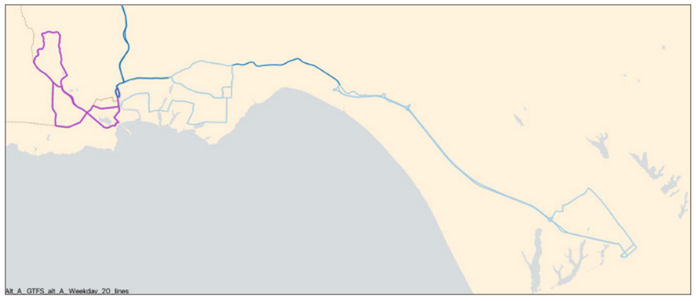
15 min or better | 20 min | 30 min | 60 min | More than 60 min | No service within 1/2 mile

Existing Network

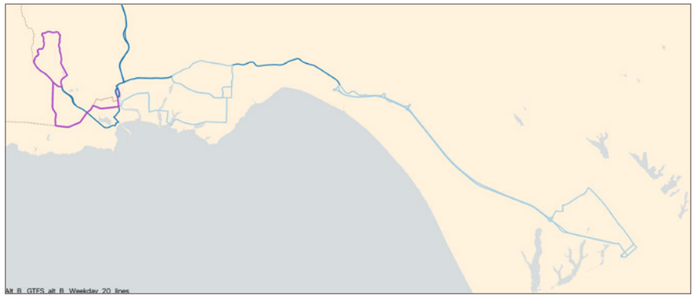


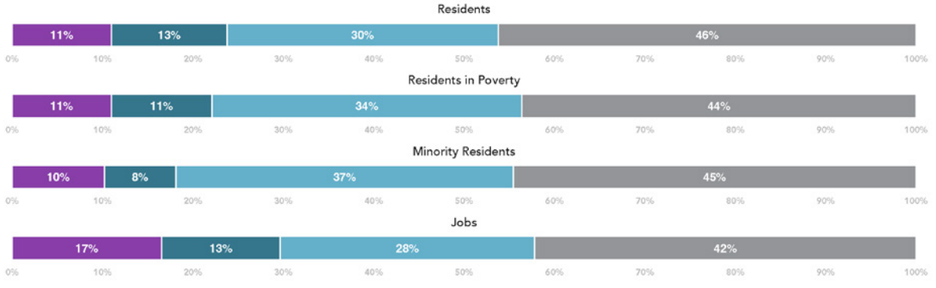


Alternative A



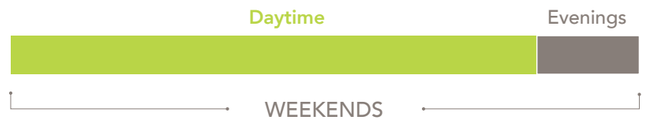
Alternative B





How would each alternative change how many people are near service?

Weekend Midday

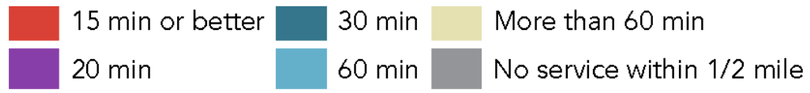


On weekends, most METRO routes start service around 7 AM. This page shows the service levels that is or would be available from about 9 AM to 7 PM, on Saturdays and Sundays.

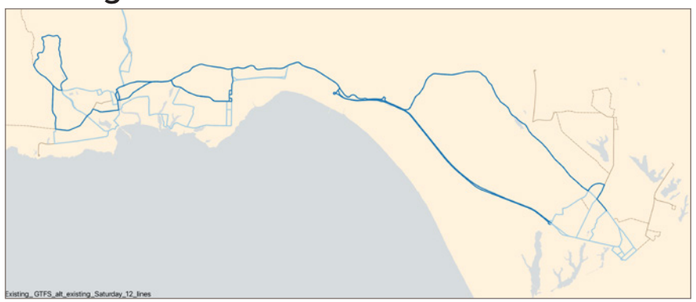
On weekends at noon:

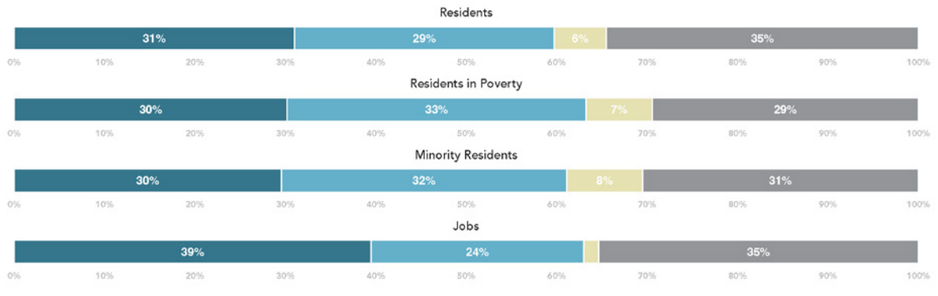
- In both alternatives, the number of people within 1/2-mile of any transit service would remain about 65% of the urbanized area population.
- In both alternatives, 9% of the urbanized area population would receive service every 20 minutes or better. This is the population that would be in areas served by both Routes 1 and 2.
- Alternative A would increase the number of people near service every 30 minutes or better to 51% of the urbanized area population, compared to only 45% in Alternative B.

How many people and jobs would be within 1/2 mile walk of service, coming every:

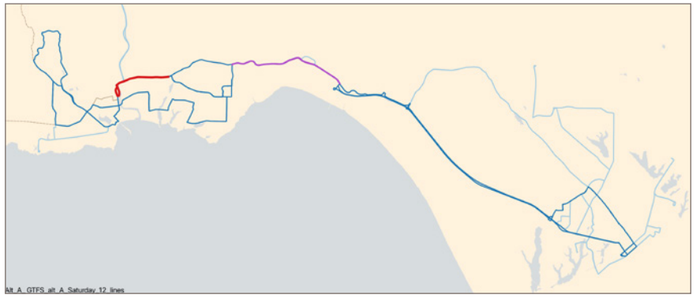


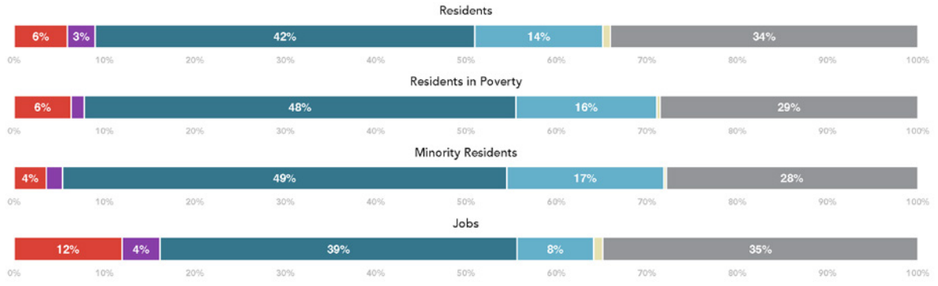
Existing Network



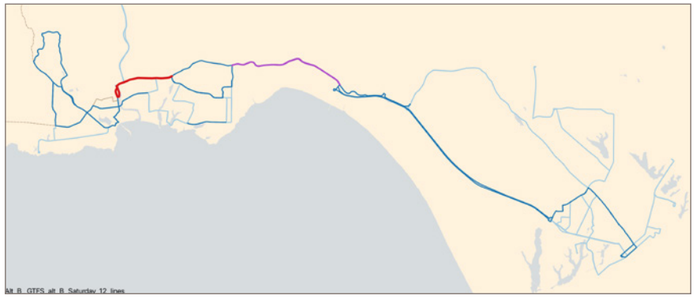


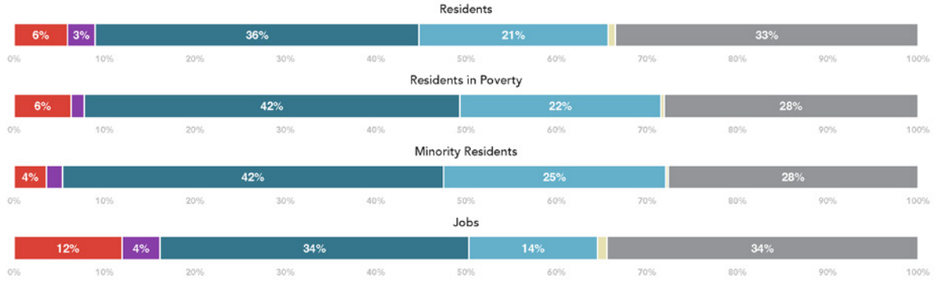
Alternative A





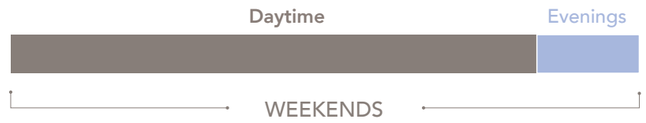
Alternative B





How would each alternative change how many people are near service?

Weekend Evening



Evening service rarely carries as many riders as daytime service, but it allows people to build their lives around transit. Weekend night service is also critical for bar, restaurant, and airport workers. This page shows who is near service at 8 p.m. on weekends.

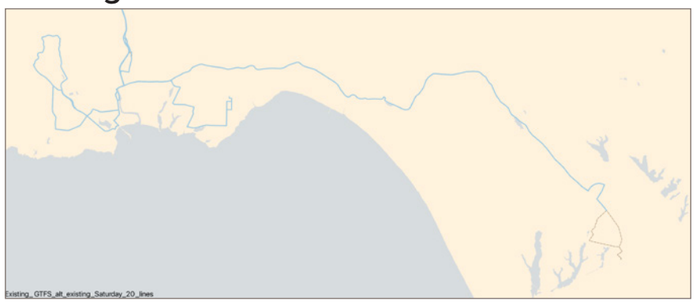
On weekends at 8 PM, there would be very little difference in overall coverage between Alternative A and Alternative B. Both alternatives would:

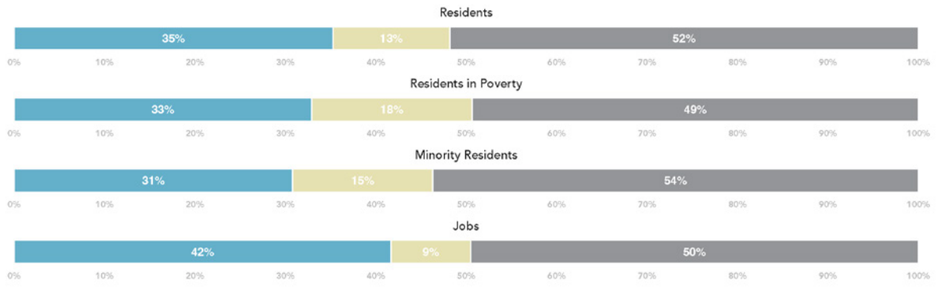
- Increase the number of people near service at least every 60 minutes from 39% to 56% of the urbanized area population.
- Provide service every 30 minutes or better to about 14% of the urbanized area population.

How many people and jobs would be within 1/2 mile walk of service, coming every:

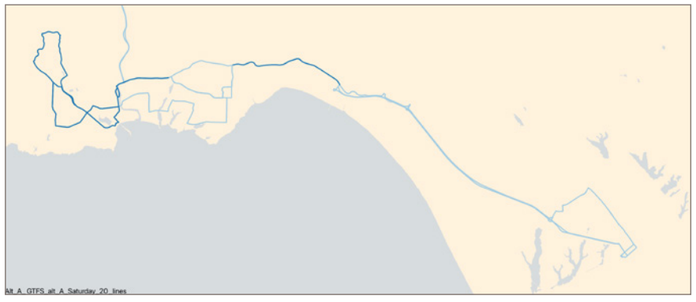
15 min or better | 20 min | 30 min | 60 min | More than 60 min | No service within 1/2 mile

Existing Network

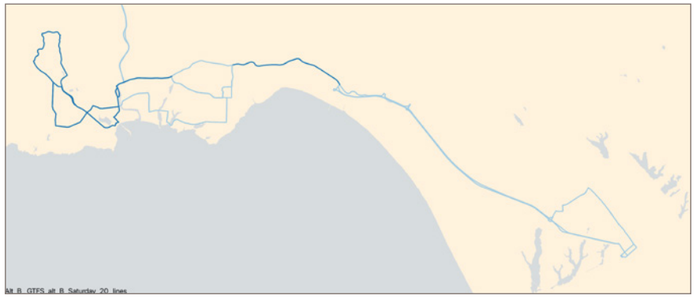


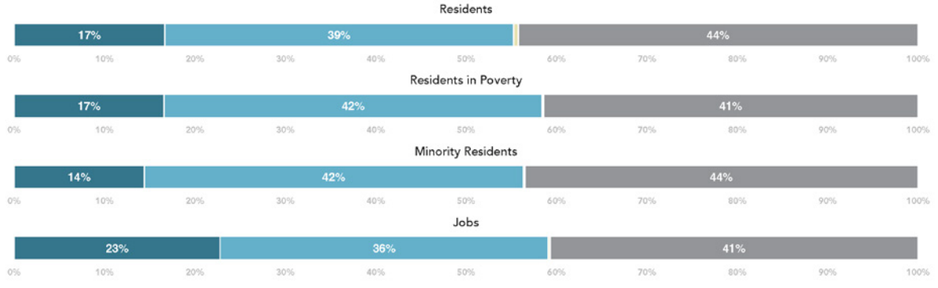


Alternative A



Alternative B





Access to Opportunity: How Many People Would Benefit

What is Access to Opportunity?

In this report, “access” refers to the number of places that can be reached in a given amount of travel time using transit. The travel time used includes all elements of a typical transit trip, including walking, waiting, riding and, where applicable, transfers.

Measuring how a network plan changes access to opportunity in a reasonable amount of time is the best way to know whether or not this plan would make service more or less useful, by how much, and to how many people.

For a complete explanation of how this report measures access to opportunity, please refer to Chapter 2.

Population-Level Charts

The charts in Figure 67 and Figure 68 show, for each alternative, what percentage of the population[1] experiences an expansion (green) or reduction (brown) in how many jobs they can reach on transit (plus walking) in 45 minutes, on weekdays in the daytime.

By this measure, both alternatives are dramatic improvements on existing service:

- **Alternative A would improve access for 69% of the population, and reduce access for 2% of the population.**
- **Alternative B would improve access for 62% of the population, and reduce access for 4% of the population.**

1 This refers to the population of the urbanized areas of Santa Cruz County, which Includes UCSC, Santa Cruz, Live Oak, Soquel, Capitola and Aptos; Rio del Mar and La Selva Beach; Watsonville, Freedom and Amesti; Scotts Valley; and populated parts of the San Lorenzo Valley. These account for about 80% of the county’s population.

In both alternatives, more than half of the population sees an expansion in access, and less than 3% see a reduction. The benefits are slightly greater for low-income people and people of color.

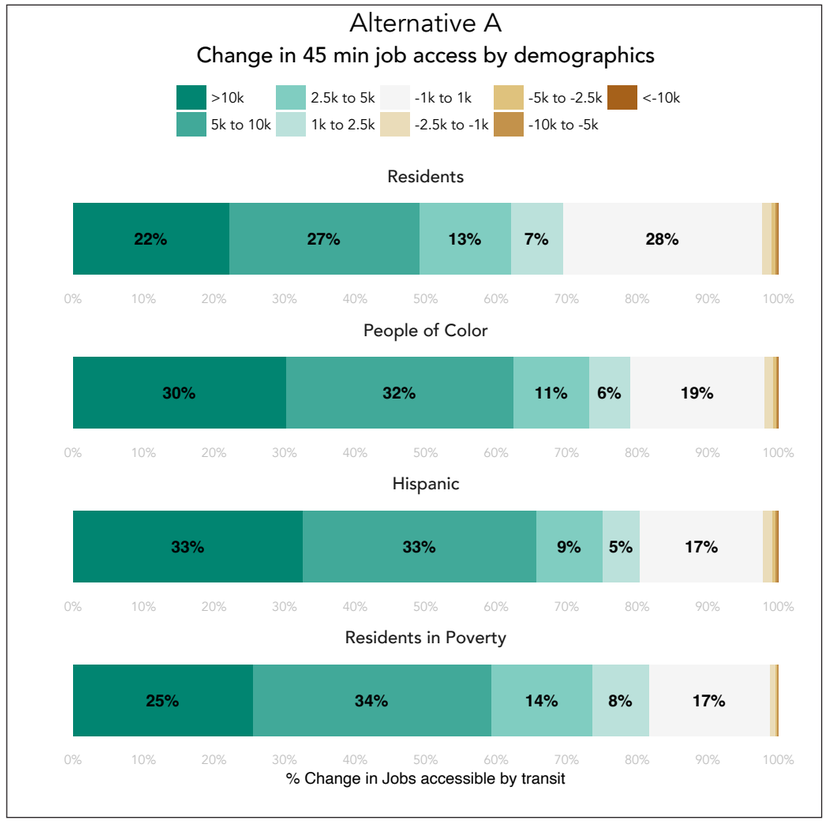


Figure 67: Alternative A, median change in access to opportunity by transit within 45 minutes by demographic group.

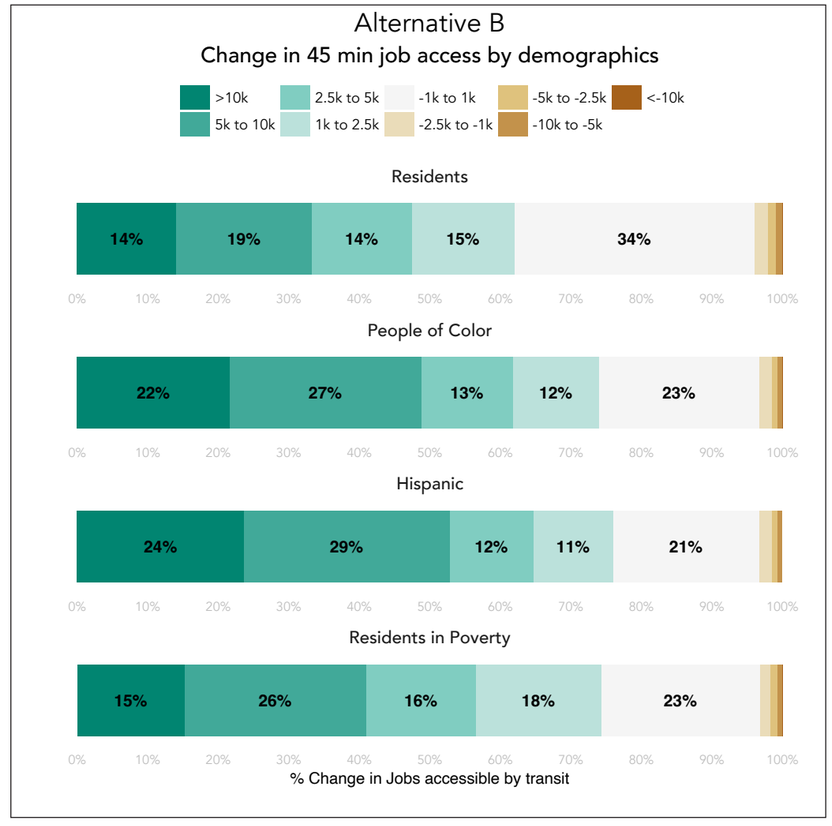


Figure 68: Alternative B, median change in access to opportunity by transit within 45 minutes by demographic group.

Access to Opportunity: Where it Grows and Shrinks

The previous page showed the overall expansion or reduction in access to opportunity. The maps on this page show exactly where those changes occur. On these maps:

- Each dot represents about 25 residents. Residential locations are not exact. They reflect population numbers by block group reported by the U.S. Census American Community Survey (ACS).
- Green dots are located in areas where access to opportunity within 45 minutes would increase.
- Brown dots are located in areas where access to opportunity within 45 minutes would decrease.
- Gray dots means the amount of access to opportunity within 45 minutes would not change, or would change very little.

Both alternatives achieve broad expansions in access to opportunity by transit across Santa Cruz METRO's service area. However, Alternative B has more negative impacts, where it has retained coverage by lowering frequencies. In the area just east of downtown Santa Cruz, for example, the separation of Route 3 into two hourly branches, one longer than the other, would result in longer travel times than in Alternative A.

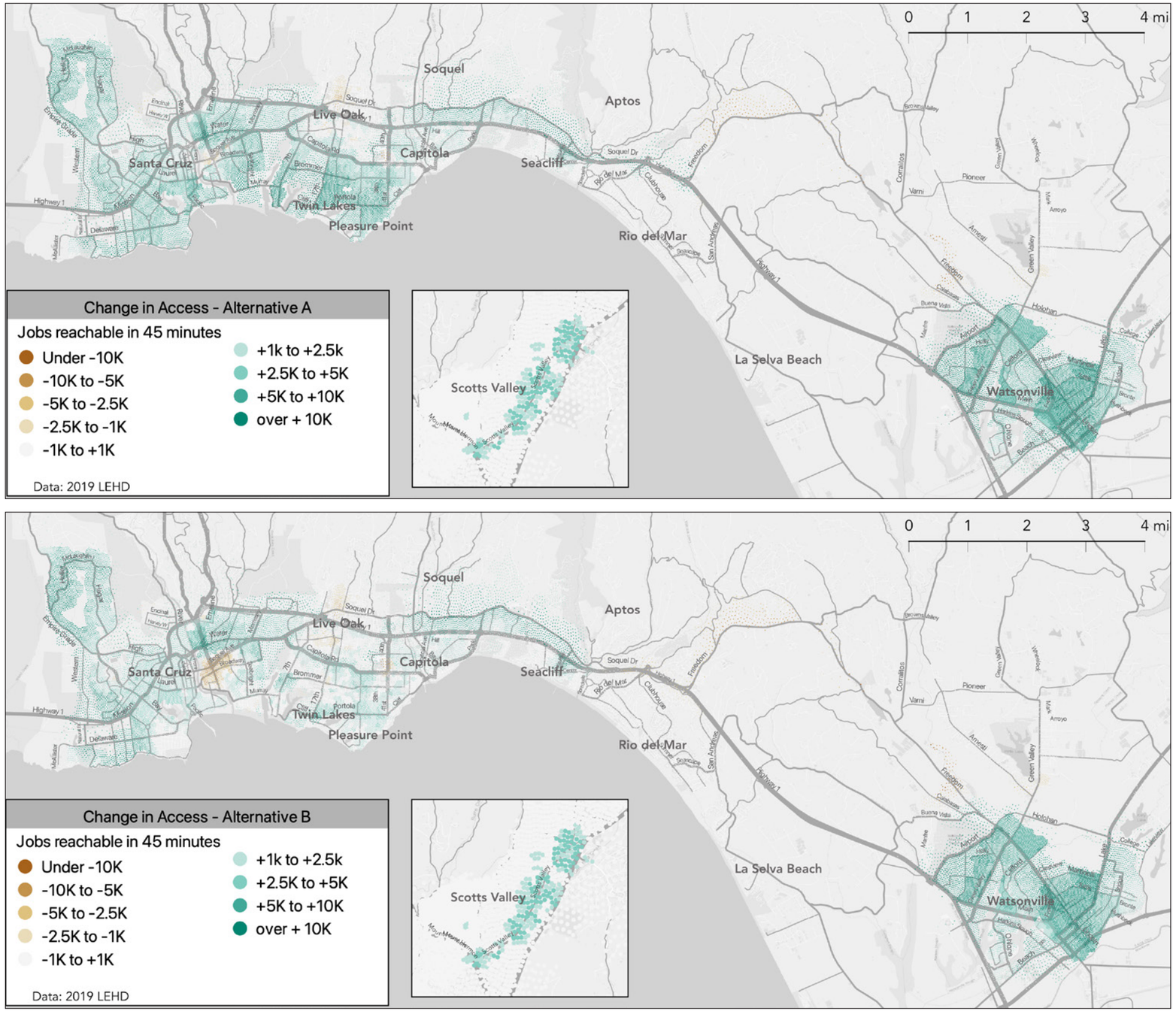


Figure 69: Maps of change in access to opportunity by transit within 45 minutes, by location and population.

Access From Central Santa Cruz in 45 Minutes

The next several pages show how access changes for destinations of major regional importance: UCSC, Cabrillo College, and the downtowns of Santa Cruz and Watsonville.

For each location, we show the area that can be reached in 45 or 60 minutes, and how this changes. In each map, the purple area retains access in this amount of time, while the blue area is where access has been gained and the red area is where it has been lost.

As with the general access calculations, these **travel times include both walking time and average waiting time, which is half the scheduled time between consecutive buses on a route.**

For example, for someone in downtown Santa Cruz, within 45 minutes of travel time:

- The whole east side of the University, along Hagar Drive, would become reachable.
- Access would also grow toward the southwest in both alternatives. Natural Bridges State Beach, for example, is newly in the 45 minute zone, the result of 15-minute frequency on Route 18 at the corner of Highway 1 and Western Drive. Route 20 is closer, but it is the higher frequency of Route 18 that makes this difference.
- Twin Lakes and a portion of Portola Drive would also become reachable within 45 minutes, but this benefit would be smaller in Alternative B where the frequency near Twin Lakes is reduced.
- There would be a small loss of access to Capitola. This appears to be the result of what would happen if Route 2 were routed via Clares St. This may be an argument for a final alignment staying on Capitola Road and 41st Street.

How far can I travel from
Downtown SC (Soquel Ave & Pacific)
in 45 minutes?

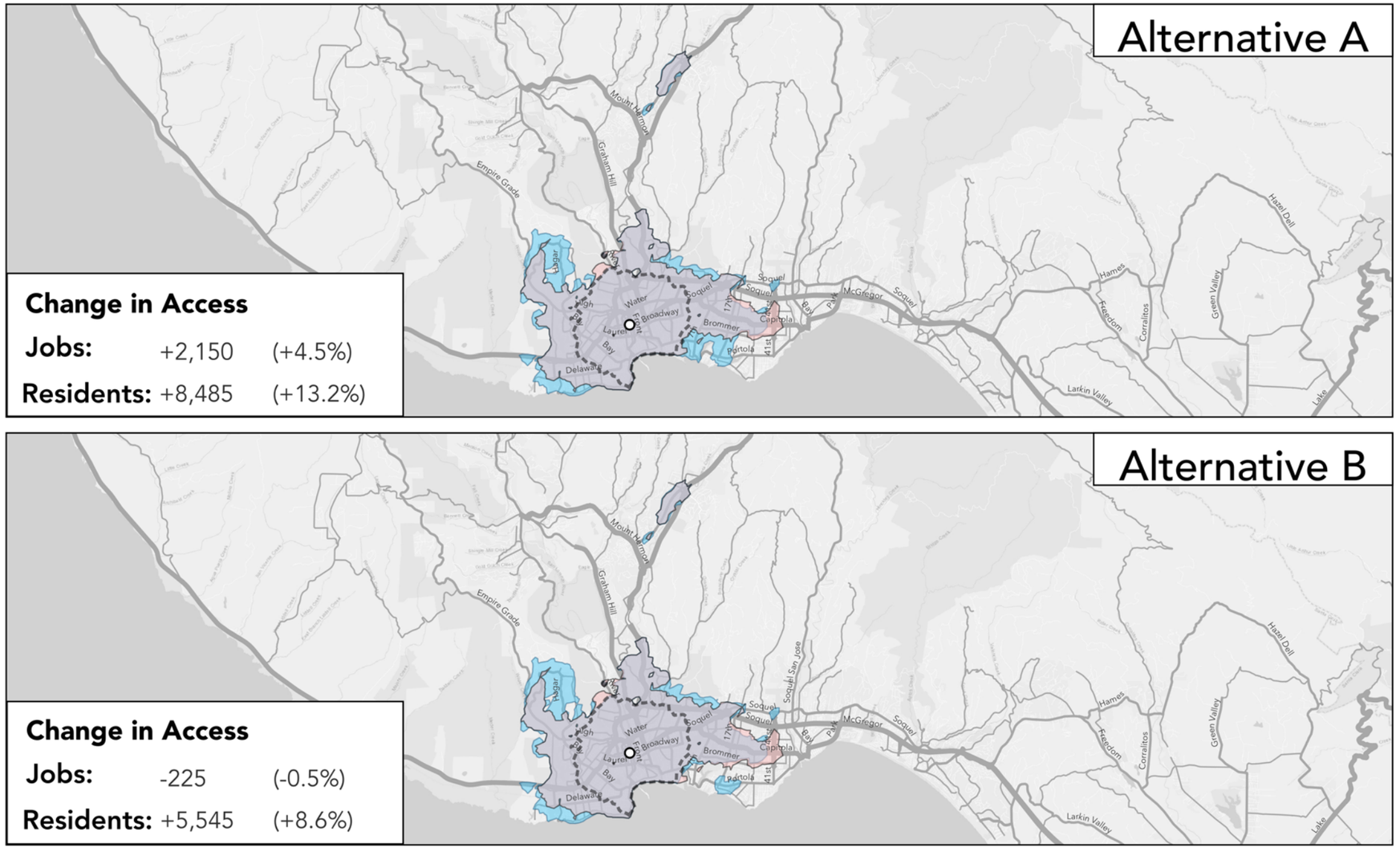


Figure 70: How many opportunities can a person reach in 45 minutes from Downtown SC?

Access From Central Santa Cruz in 60 Minutes

In 60 minutes of travel time, fewer benefits appear from the point of view of downtown Santa Cruz. The main improvement is that access reaches further into Aptos than is possible today.

How far can I travel from

Downtown SC (Soquel Ave & Pacific)

in 60 minutes?

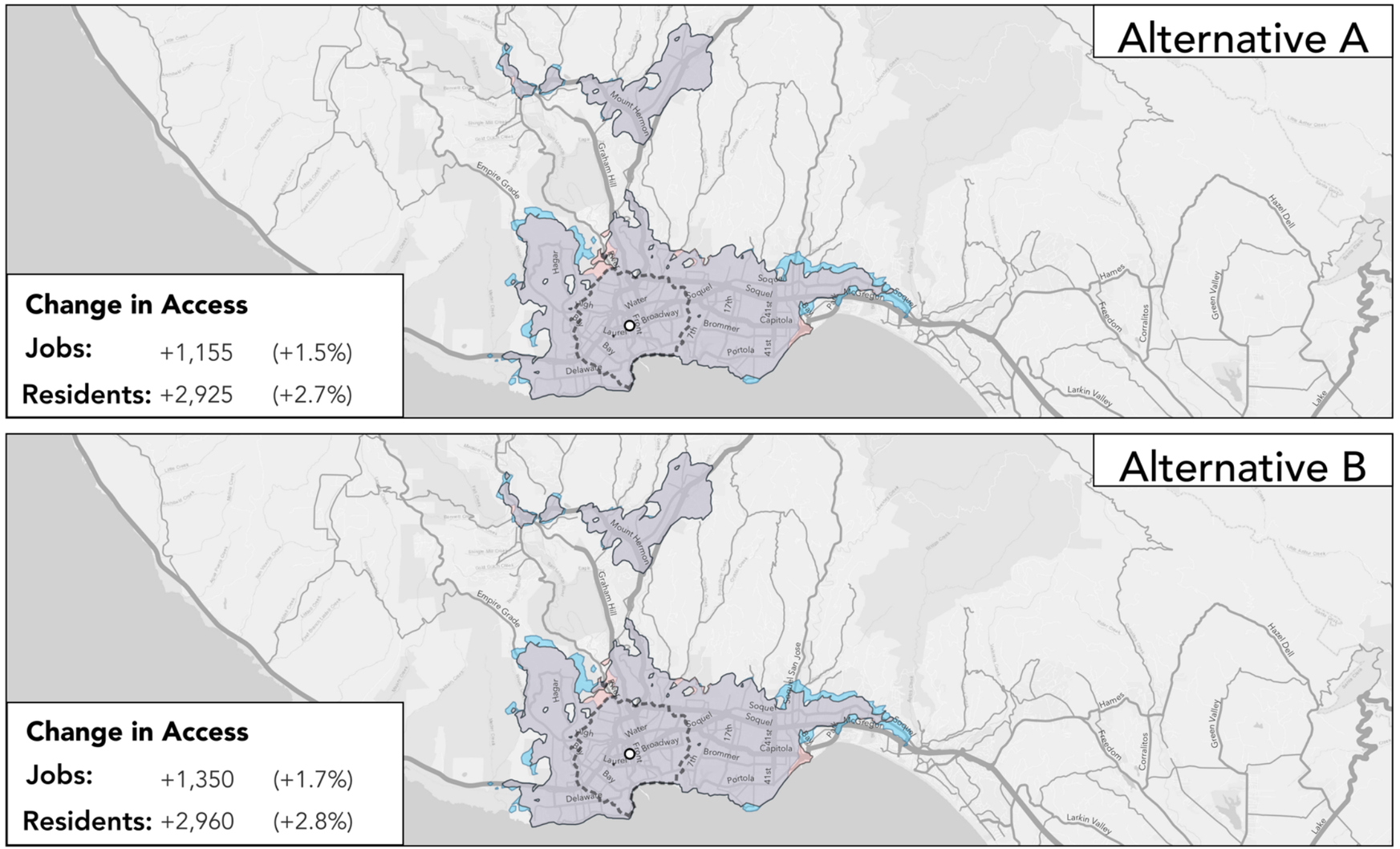


Figure 71: How many opportunities can a person reach in 60 minutes from Downtown SC?

Access From UCSC in 45 Minutes

The University of California - Santa Cruz (UCSC) is the single busiest transit destination in the county, so access to it is fundamental to the effectiveness of METRO's network.

With the low existing frequencies, a 45 minute travel time (counting walking and waiting time) will not take you from UCSC to anywhere beyond downtown Santa Cruz. The purple area on this map is the coverage area of the existing University routes, plus walking distance from the downtown transit center.

Both alternatives begin to expand this area into the east side. However, because a change of buses is still required downtown, this benefit is not as great as it is for a 60-minute travel time (next page).

This access calculation assumes no particular timing of connections in downtown Santa Cruz. It is possible that in actual scheduling this connection time could be further improved, further expanding access.

How far can I travel from
UCSC Science Hill
in 45 minutes?

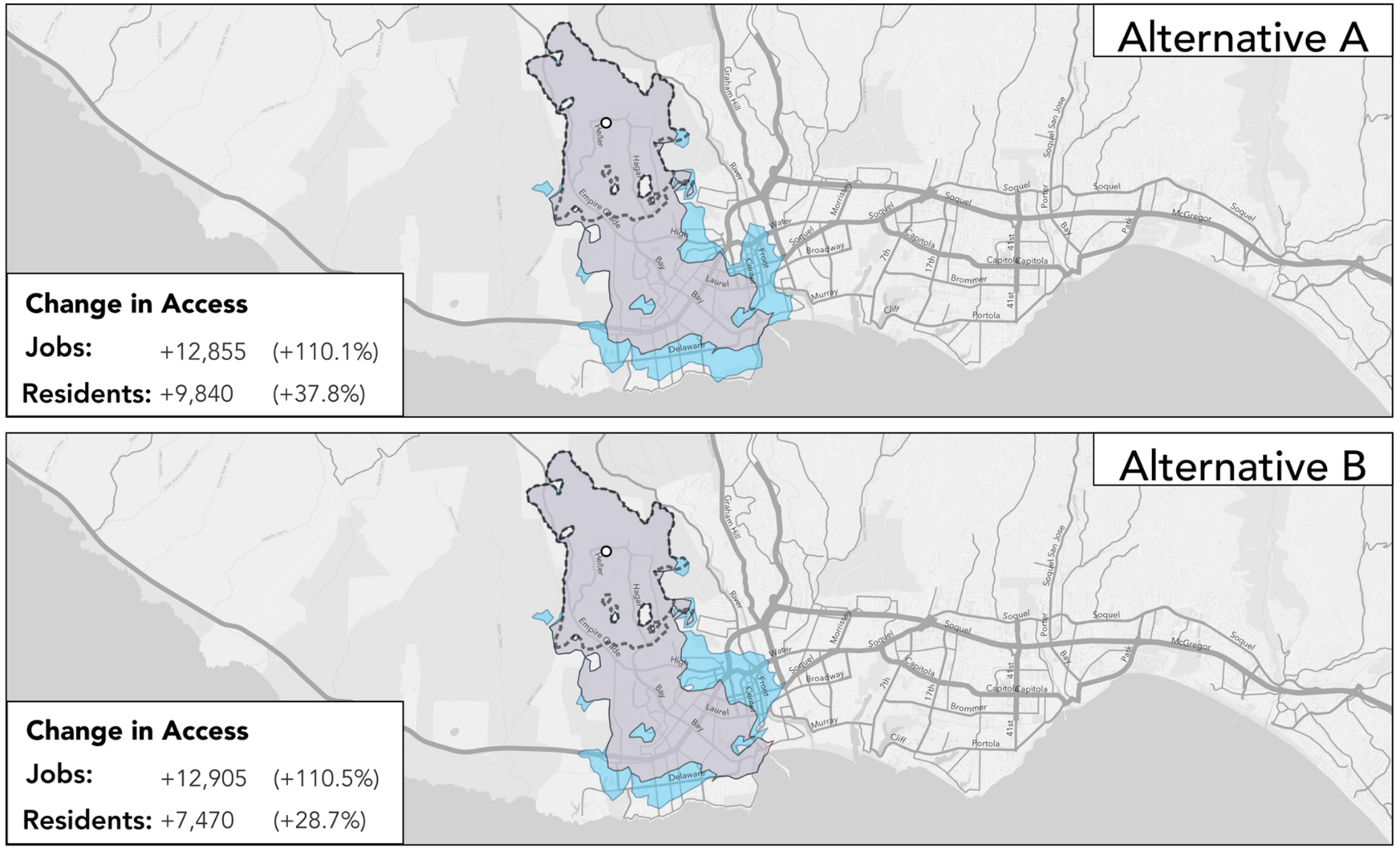


Figure 72: How many opportunities can a person reach in 45 minutes from UCSC?

Access From UCSC in 60 Minutes

Both alternatives would expand how far east you can travel in 60 minutes travel time from UCSC to parts of east Santa Cruz. The alternatives would thus expand the range of options for where someone could live and still travel to the University on a regular basis.

How far can I travel from
UCSC Science Hill
in 60 minutes?

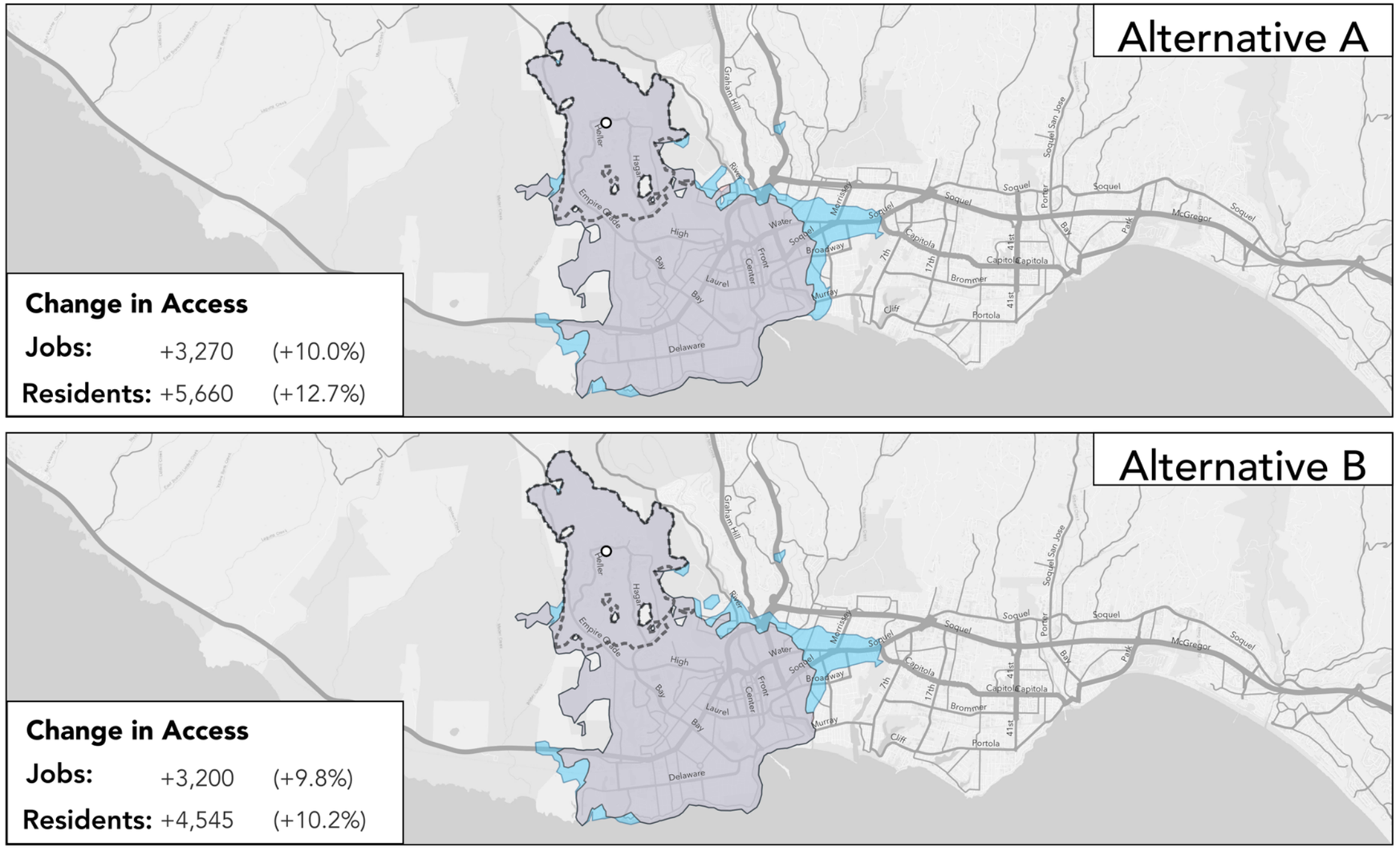


Figure 73: How many opportunities can a person reach in 60 minutes from UCSC?

Access From Downtown Watsonville in 45 Minutes

In both alternatives, access from Downtown Watsonville would increase overall within 45 minutes, except for access to the most rural segment of Freedom Blvd.

Access improvements include:

- In both alternatives, the ability to consistently reach all parts of Watsonville and Cabrillo College in less than 45 minutes.
- In Alternative A, faster travel to Cabrillo College, and the ability to reach large parts of Soquel Drive within 45 minutes, nearly to Soquel.

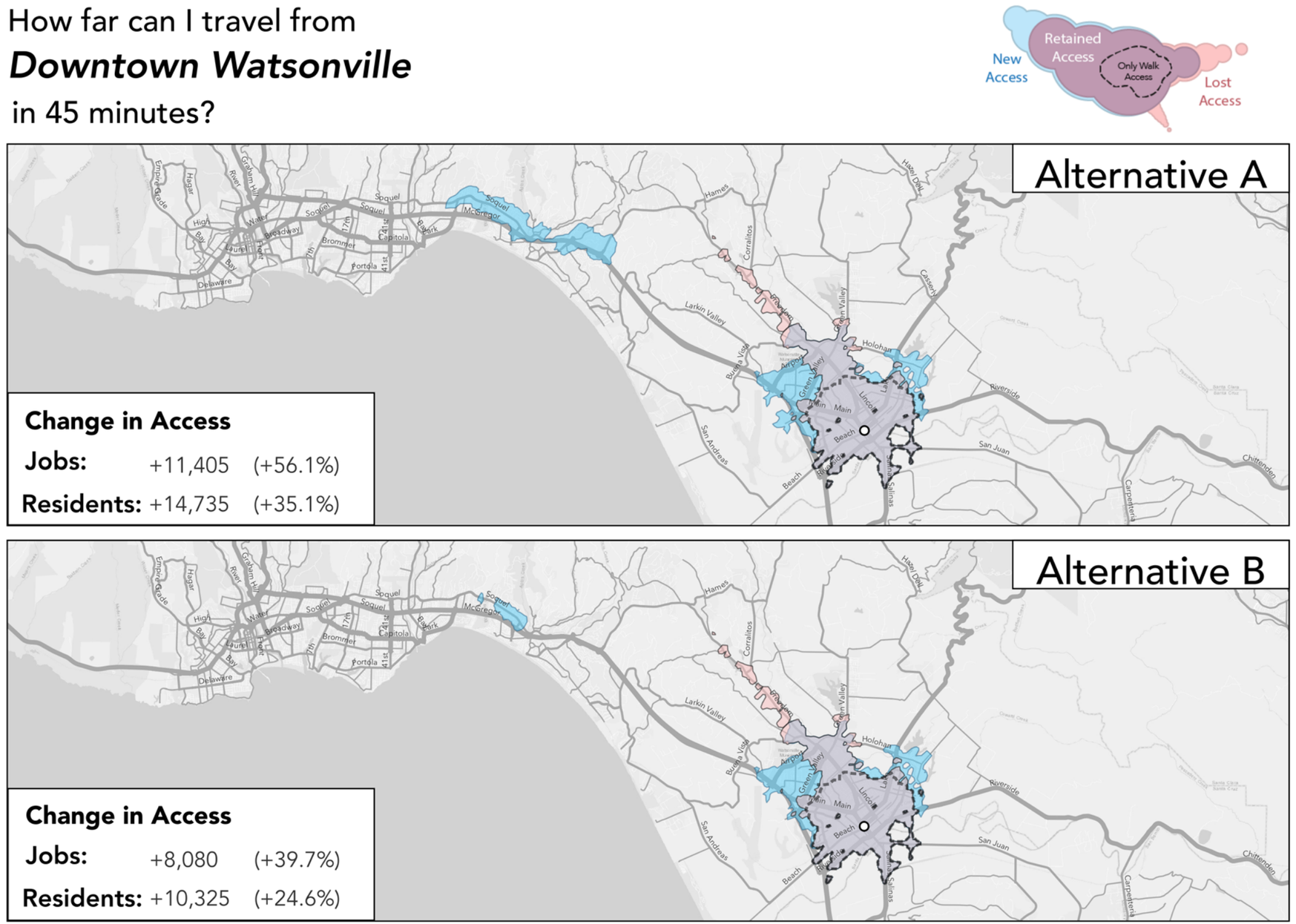


Figure 74: How many opportunities can a person reach in 45 minutes from Downtown Watsonville?

Access From Downtown Watsonville in 60 Minutes

From Downtown Watsonville, the overall pattern of access gains and losses is similar In a 60 minute travel time as within 45 minutes. However, there is an even larger expansion of access going west to Santa Cruz.

In both alternatives, it would be possible to travel from Downtown Watsonville as far as Dominican Hospital within 60 minutes, including walking and waiting time.

Overall, the number of places accessible from Downtown Watsonville in 60 minutes would increase by:

- Alternative A: +44% more jobs, +41% more residents
- +Alternative B: +35% more jobs, +28% more residents.

These are significant net gains despite the areas of lost access on the map. This is because the areas newly reachable (along Soquel Drive) are much more populated and active than the areas where access is lost (along rural parts of Freedom Boulevard).

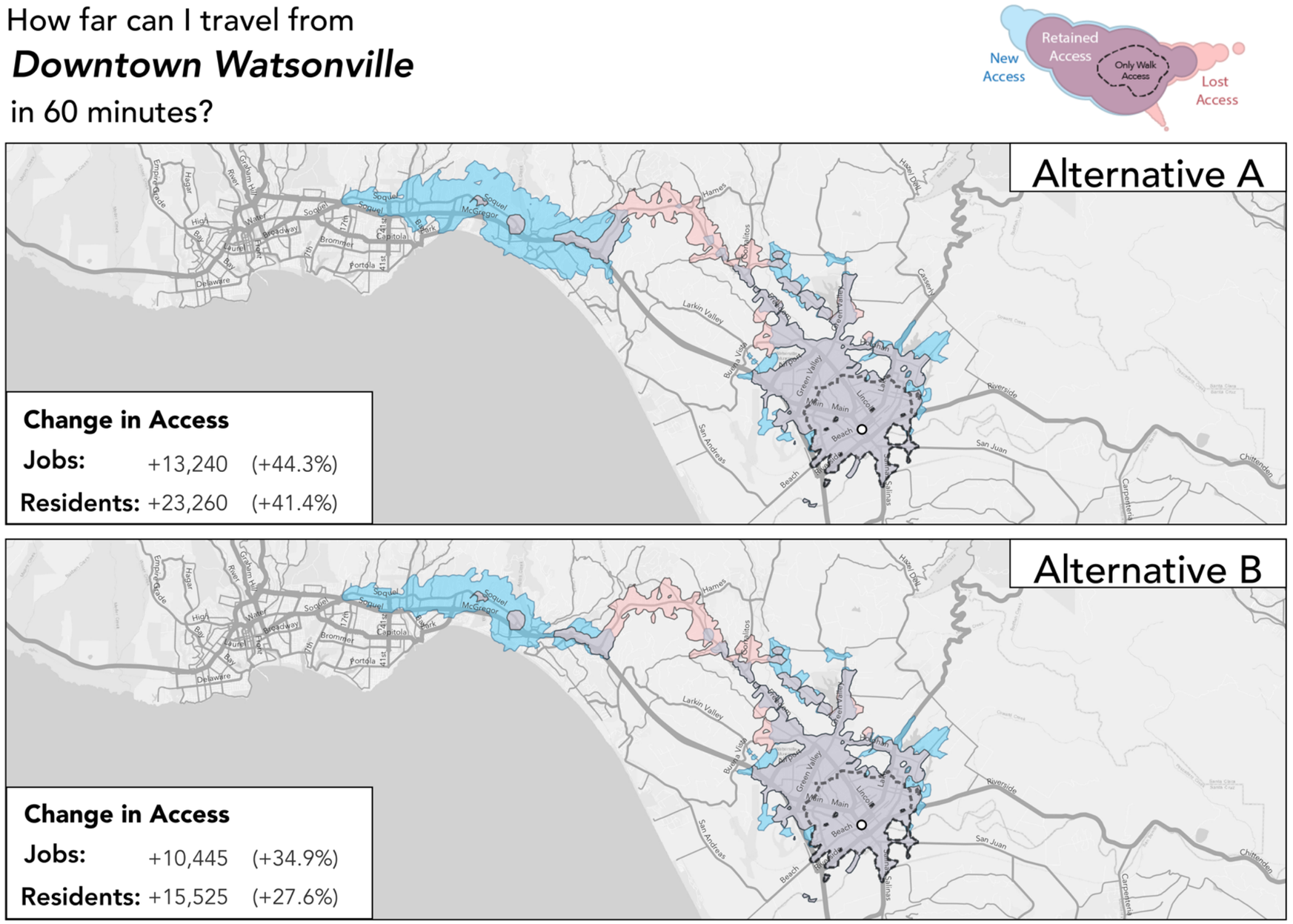


Figure 75: How many opportunities can a person reach in 60 minutes from Downtown Watsonville?

Access From Cabrillo College in 45 Minutes

Cabrillo College is a very important transit destination, drawing students from throughout the county. As a community college it offers training and education that is especially important for lower-income parts of the county.

Both alternatives would make it possible to travel in 45 minutes from Cabrillo College to large parts of Watsonville, including downtown and most of the urban part of Freedom Blvd. and Airport Blvd.

Alternative A would also add 45 minute access to Main St in Watsonville, while this trip would take longer than 45 minutes in Alternative B. This is because Route 2 runs every 30 minutes in Alternative A but only every 60 minutes in Alternative B.

In both alternatives, there would be a loss in access from Cabrillo College to rural areas along Freedom Boulevard east of Aptos, reflecting a reduction in service frequency in this area from every 30 minutes to every 60 minutes.

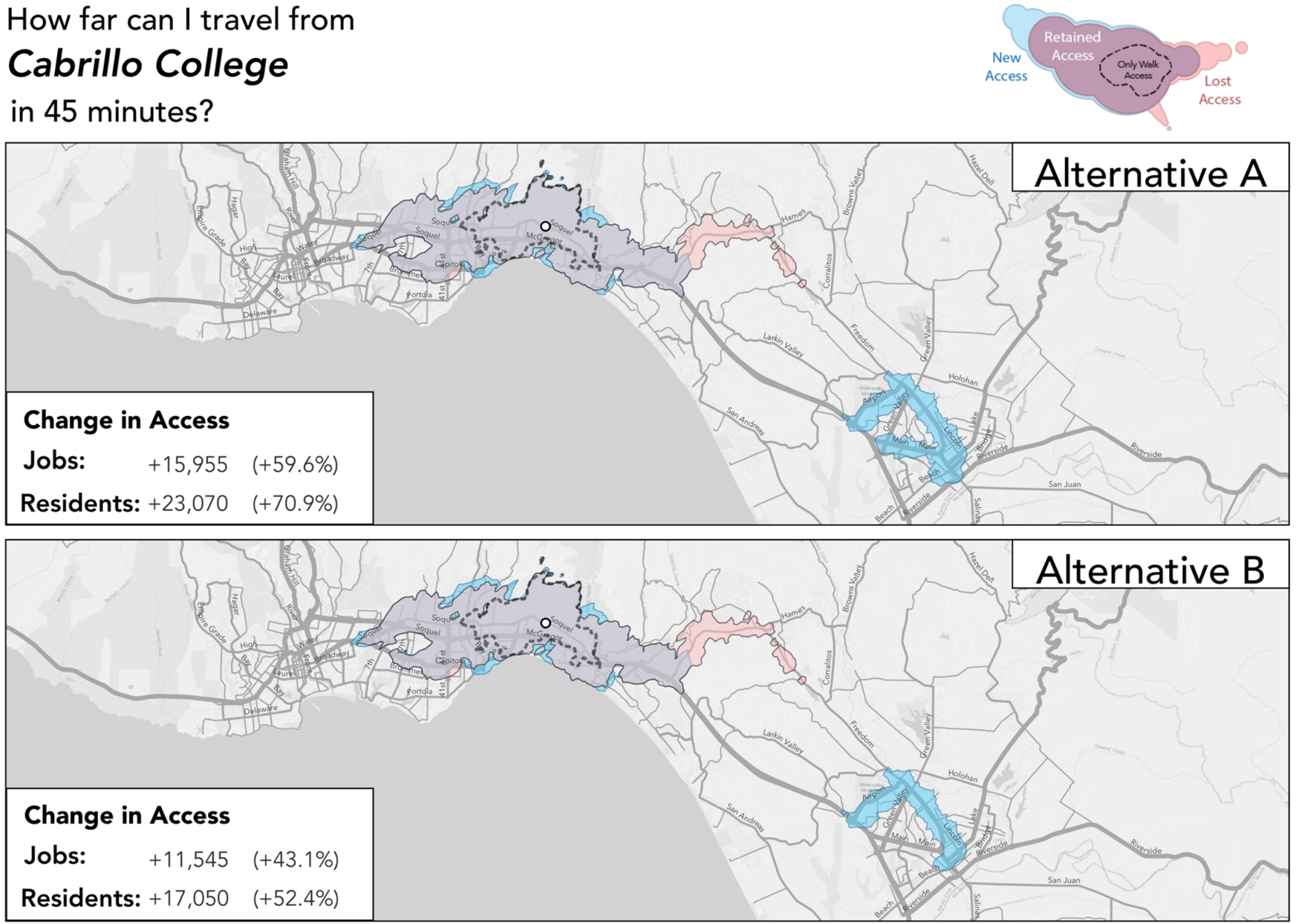


Figure 76: How many opportunities can a person reach in 45 minutes from Cabrillo College?

Access From Cabrillo College in 60 Minutes

Both alternatives would make it possible to travel to Cabrillo College from anywhere in Watsonville in 60 minutes (including walking and waiting time), a big improvement over the existing network.

However, in both alternatives, there would be a loss in access from Cabrillo College to rural areas along Freedom Boulevard east of Aptos, reflecting a reduction in service frequency in this area from every 30 minutes to every 60 minutes.

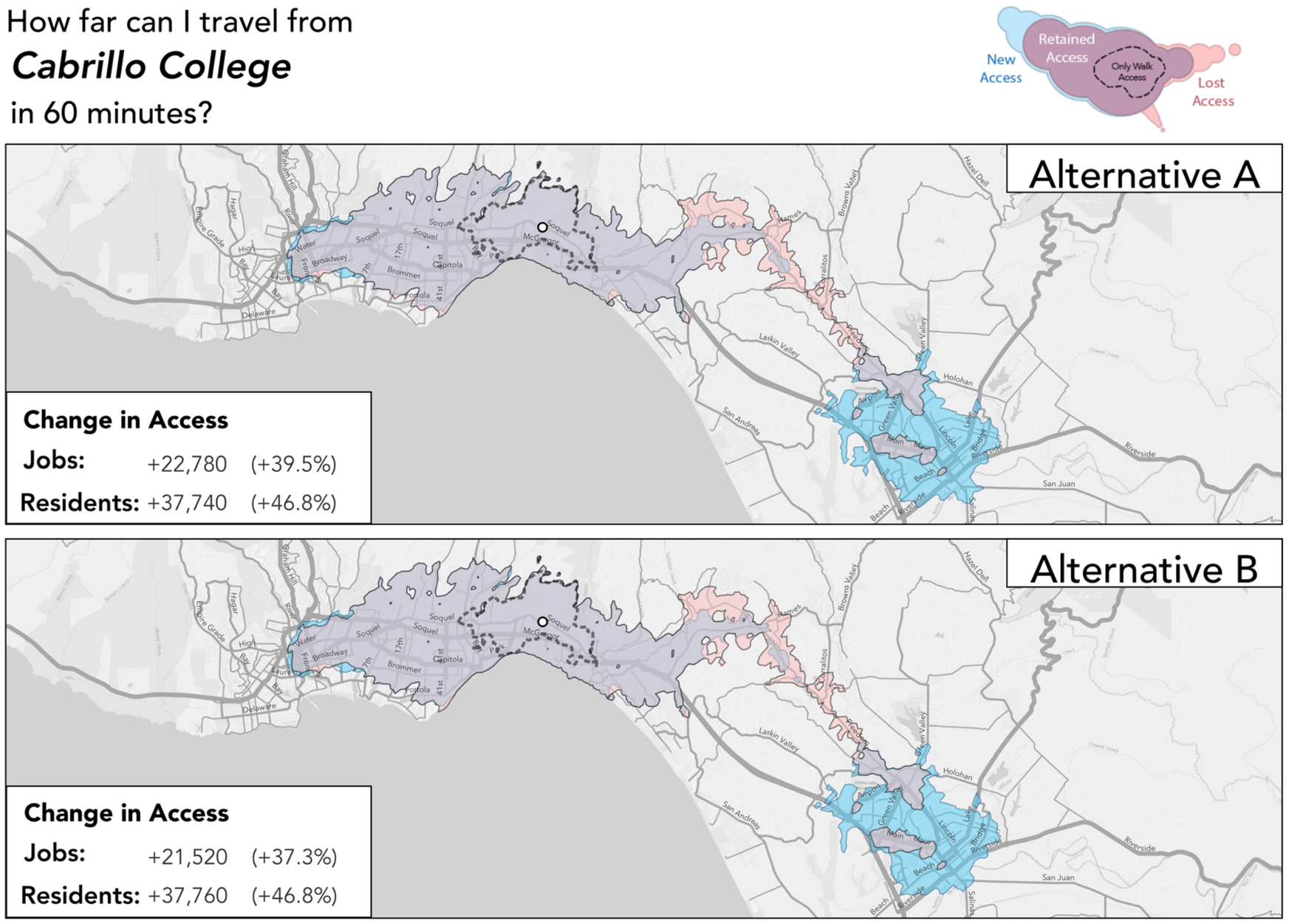


Figure 77: How many opportunities can a person reach in 60 minutes from Cabrillo College?

7 Next Steps

Let Us Know What You Think!

Public Outreach Plan

Prior to developing this report, the project team went through an extensive public and stakeholder outreach process. The outputs of this outreach are summarized in Chapter 5 of this report.

Santa Cruz Metro is now launching a second round of outreach to gauge public reaction to the proposed Network Alternatives.

Over the course of July and August, the project team will:

- Post this Alternatives Report, and summarized information on how service might change and key decision points, on the project website.
- Hold a bilingual online public meeting on Tuesday, July 18 at 5:00 PM.
- Host a series of focus groups with MST riders and stakeholder groups contacted in the first phase of public outreach.
- Hold in-person public outreach events in Watsonville, including at the Farmer's Market the Watsonville Transit Center, and others.
- Provide an online survey for all interested members of the public to comment.

Key Questions

Focus groups and the survey will encourage both open-ended and structured comment. The project team will in particular be seeking input on the following questions.

Do you agree with the overall direction of change?

- Fewer, simpler routes.
- More frequency.
- Free transfers.
- Longer walks in some areas.

In the areas that matter to you, which alternative is better for:

- You and your family?
- Your neighborhood and community?

...and why?

Santa Cruz METRO wants to increase service even more in the coming years. **What future improvements are most important to making transit more useful to you and your community?**

Let us know what you think!

Learn more about the project and fill out the online survey at:

http://www.scmtd.com/ReimagineMETRO

Project Timeline

Reimagine METRO is combining technical analysis and broad-based community input to develop a plan to improve transit in Santa Cruz County in 2023 and beyond. This includes the following steps:

- **Spring 2023: Analysis, Fieldwork and Outreach.** The project team carried out a range of data-based analyses, field visits, and remote and in-person outreach activities to gain an understanding of current transit service conditions in Santa Cruz County.
- **Early July 2023: Alternatives Report.** This report describes the project's fact-finding and outreach process, provides facts about the existing network, and proposes a choice between two alternatives for service changes in late 2023.
- **Late August 2023: Board Direction**. The project will seek direction from Santa Cruz METRO's Board of Directors on which elements of the alternatives to implement, based on public input gathered in July and August.
- **Fall 2023: Develop a Draft Future Network Plan.** The project team will develop a proposal for a major service increase using new funding. This service increase would take place between 2024 and 2028. The team will gather public input on this proposal in November and December.
- **December 2023: Major Service Change.** METRO will implement the changes approved in August.
- **Early 2024: Final Future Network Plan.** Based on public input and Board direction, the project team will make adjustments to the Future Network Plan.