Summary

SacRT Forward Network Plan: Transit Choices Report

Existing Conditions in the Sacramento Region

APRIL 2018

For Sacramento Regional Transit

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National Trends, Local Choices

This study looks at the design of the transit network in the Sacramento region and asks:

- Does it reflect the goals and values of the Sacramento region and its people?
- Are buses running in the right places and at the right times?
- What are the key choices the region will have to make about transit, and what are the benefits and downsides choosing different paths?

Sacramento is not the only region facing falling ridership and relevance

The graph at right compares transit service levels and transit ridership among Sacramento's peers, adjusted to the urban population.

National research suggests that transit ridership in many cities has been declining due to:

- *Very low costs of purchasing and driving cars*, from a combination of historically-low interest rates and low gas prices.
- *Competition by Uber and Lyft* for more affluent riders and for the most time-sensitive trips.
- *Growing distances between jobs and housing* as many regions (including Sacramento) continue to sprawl outward.
- *The suburbanization of poverty* caused by increasing desirability, property values and rents in pre-war inner city neighborhoods.

SacRT can choose to attract more ridership

Many factors that govern transit ridership are outside of the control of a transit agency, but ***SacRT does have power over a few factors that govern how much ridership it can attract*** within its fixed budget:

- How much of its investment is concentrated in services that get the highest ridership relative to their cost?
- How do transit fares compare to the costs of other options (e.g. parking a car, riding Uber or Lyft)?

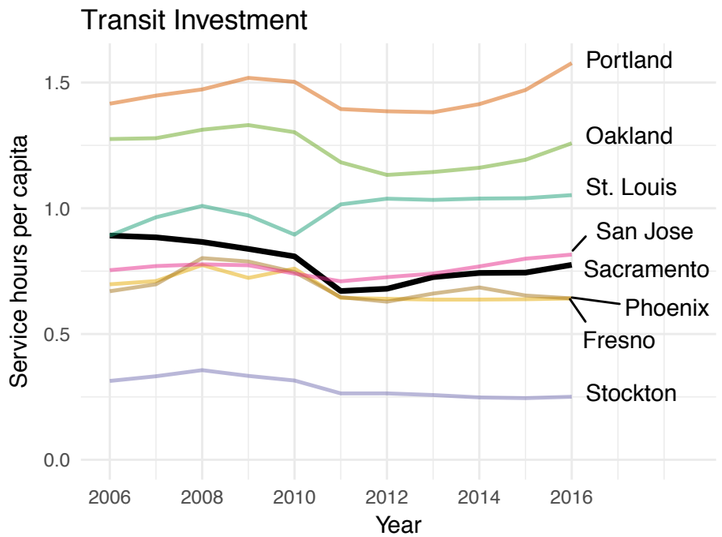


Figure 1: Transit investment (amount of service provided per capita) dropped at most agencies during the Great Recession, and has recovered to greater and lesser degrees since then.

- How well do transit fares work with the structure of the network?
- How is transit service made clear and appealing to potential riders?

It is not a given that SacRT *should* take steps to increase transit ridership, because doing so would require sacrificing other non-ridership outcomes. This trade-off, and others, are summarized here and described in detail in the full report.

This report makes no recommendation about whether SacRT should make changes that would increase ridership within its limited budget. We hope that readers of this report will form their own opinions about this difficult trade-off.

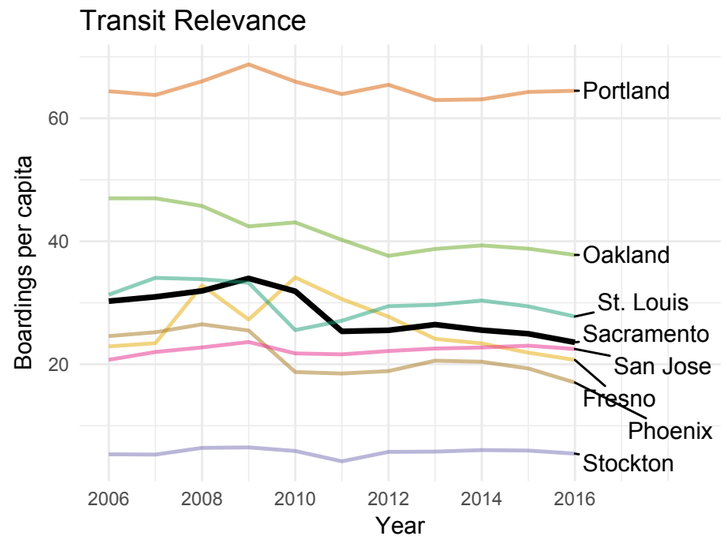


Figure 2: In Sacramento, transit relevance (ridership per capita) fell in 2010 and 2011 due to service cuts and fare increases. In many cities—including Sacramento—it has continued to fall even as service has been restored.

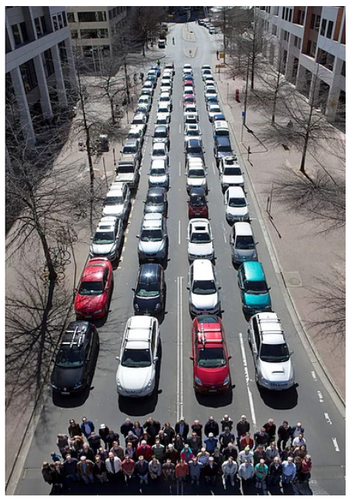


Figure 3: Large vehicles are able to move large numbers of people through very little space. (Photo: cyclingpromotion.org.)

Ridership and Coverage Goals Lead in Opposite Directions

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

The SacRT bus network is designed for a mixture of Ridership and Coverage goals:

A **Ridership Goal** seeks maximum ridership for a given budget. This goal corresponds with outcomes such as urban redevelopment, low subsidy per passenger, and environmental and congestion benefits resulting from less car use.

A Ridership Goal is often served by running interconnected frequent service in places that are dense and walkable, and where straight, logical paths for transit are available. It is also often served by long spans of service each day and each week, so that transit is running whenever people need to travel.

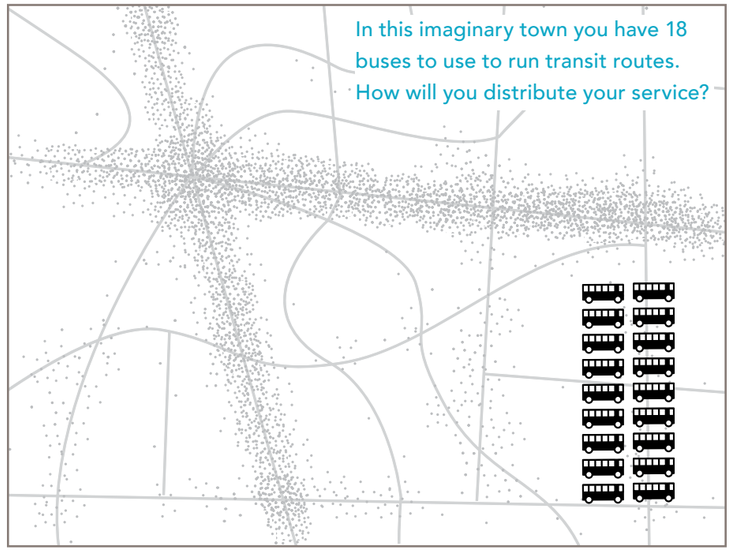
A **Coverage Goal** seeks to provide service to all parts of the region regardless of whether high ridership is a realistic expectation. This goal ensures that there is service in places where densities are low, or it is difficult or impossible to walk to and from stops, or where the road network makes it hard to draw logical routes.

A Coverage Goal corresponds to outcomes such as lifeline access for people no matter where they are, equity across cities or political districts, and access to jobs in landscapes that are not conducive to high-ridership transit, such as industrial and business park settings.

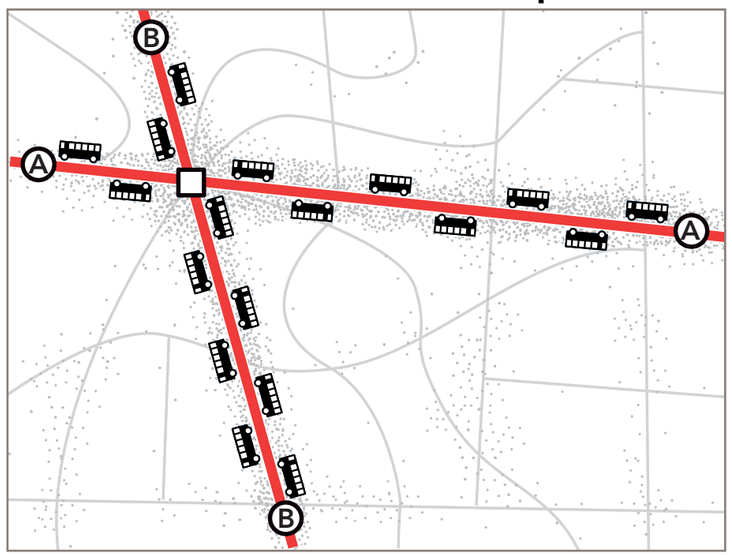
The drawings at right show the extreme ends of the Ridership-Coverage spectrum in an imaginary town.

SacRT needn't choose between these extremes—the agency can choose to pursue both goals, but the goals trade-off against one another. The more SacRT pursues one the less it can pursue the other.

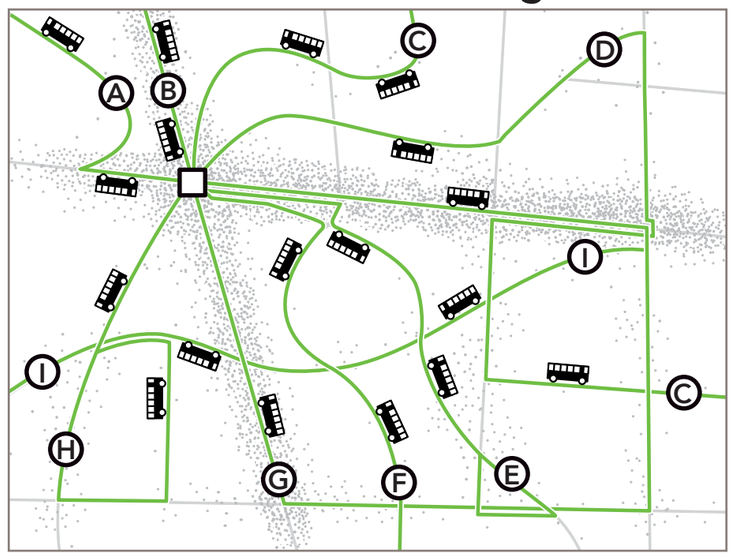
One outcome of this SacRT Forward process may be a policy establishing how much of SacRT's limited budget should be spent in pursuit of each goal.



Maximum Ridership ⟷ Maximum Coverage



You can concentrate all your buses on few routes, in the densest and busiest areas. As a result, your routes are very frequent, so waits are short, and you can offer service at nights and on weekends. This results in high ridership, but some places have no service at all.



You can run buses everywhere, but each route is served by just one or two vehicles. As a result, all routes are infrequent so waits are long, and there isn't much night or weekend service. Very few people find the routes useful. Everyone has access to minimal service but total ridership is low.

A Network Designed for (Difficult) Connections

In transit conversations, there is always a great focus on *where* transit is provided, but sometimes not enough attention paid to *when* it is provided. The "when" of transit service can be described as *frequency* (how many minutes between each bus) and *span* (how many hours per day, and days per week, it runs).

Low frequencies and short spans are one of the main ways that transit fails to be useful, because it means service is simply not there when the customer needs to travel.

The map at right shows SacRT's existing network, with every route color-coded based on its frequency during midday on a weekday. Only a few SacRT bus routes offer service every 15 minutes, and there are only a few places where a reliably quick connection can be made—where two red lines intersect on this map.

The Sacramento RT network has always been largely *radial*, since downtown is such a major and transit-friendly destination.

In the 1980s as light rail was opening, two major changes were made:

- "Grid" or "crosstown" routes were created, like Route 81 on Florin Road and 65th Street. These routes created high-frequency connections with radial services to provide travel options in many directions, not just towards downtown.
- Many radial routes into downtown were replaced by "feeders" that connect to light rail. This is a normal way to maximize returns on the investment in rail.

Both of these network design strategies depend on easy transferring. However, since they were implemented:

- Service cuts have worsened frequencies on some routes, which makes transfers more difficult.
- Connections among bus routes and light-rail lines have become harder to coordinate, so they can require very long waits.
- Fare barriers to transferring have increased. Discounted fares for a second (or third) boarding during a trip used to be offered, but were eliminated in 2009. Riders with passes can transfer for free, but for most cash purchasers a second boarding requires a whole second fare ($2.75).

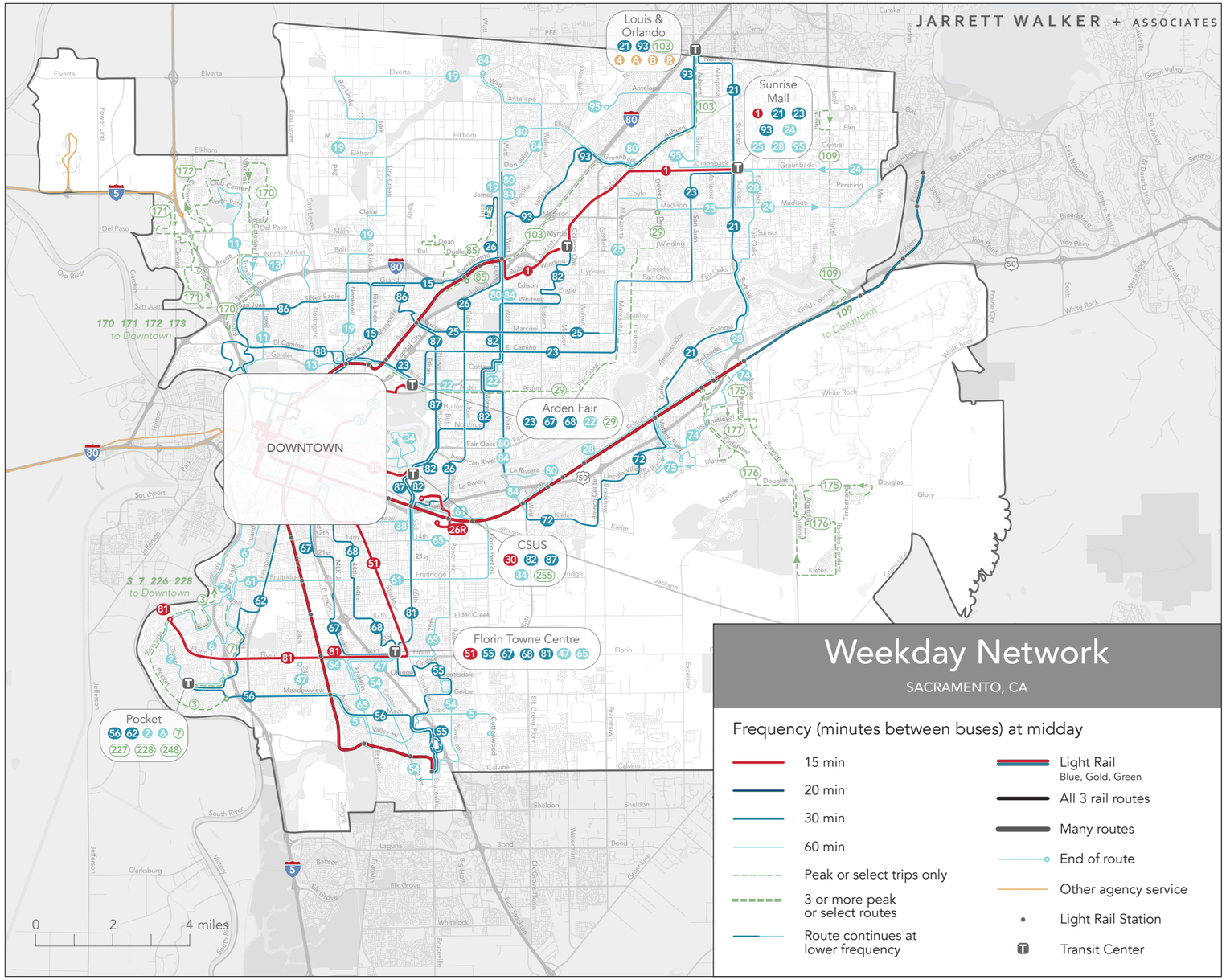


Figure 4: The existing SacRT transit network. Transit lines are color-coded based on their frequency during the midday on weekdays. Only a few routes come every 15 minutes, which is generally thought to be the level of frequency that makes catching transit, and connecting between transit lines, easy and fast.

Frequency is Freedom

Riders respond to many features of a service, including speed and reliability, but an often-overlooked factor is frequency. Frequency is the time between consecutive buses (or trains) on a line, and it determines someone's maximum waiting time.

Frequent service means public transit is coming soon, which means that it approximates the feeling of liberty you have with a private vehicle—namely that you can go anytime. Frequency has four independent benefits for the passenger:

- *Frequency reduces waiting time* (and thus overall travel time), and gives people a great deal of choice in when they travel.
- *Frequency makes connections between routes easy*, which makes it possible for a cluster of transit lines to form a network. A transit route without good connections is useful for travelling only along that line. A network massively expands the usefulness of each route.
- *Frequency improves reliability* for the customer, because if something happens to your bus, another one is always coming soon.
- *Frequency makes transit service easier to use*, by reducing the need to consult a schedule.

Real-time arrival information has made waiting for the bus or train easier. However, frequency still matters enormously, because:

- *Waiting doesn't just happen at the start of your ride*, it also happens at the end. You may not need to leave the house long before your departure, but *if your bus is infrequent, you have to choose between being very early or too late*.
- *Many of the places we go don't let us hang out until our bus's arrival is imminent*.
- *Real-time arrival information doesn't make the bus more reliable, but frequency does*. Your phone can tell you when your bus is arriving, but it cannot prevent your bus from having a problem and being severely delayed, or not showing up at all. Only frequency—which means that another bus is always coming soon—can offer this kind of reliability.

The mini-maps above show how frequencies change over the course of a weekday and the weekend in the SacRT network. *There are few places where transfers between frequent bus and rail lines are possible. By the weekend, no bus route or rail line is running frequently, and only a few come every 30 minutes.*

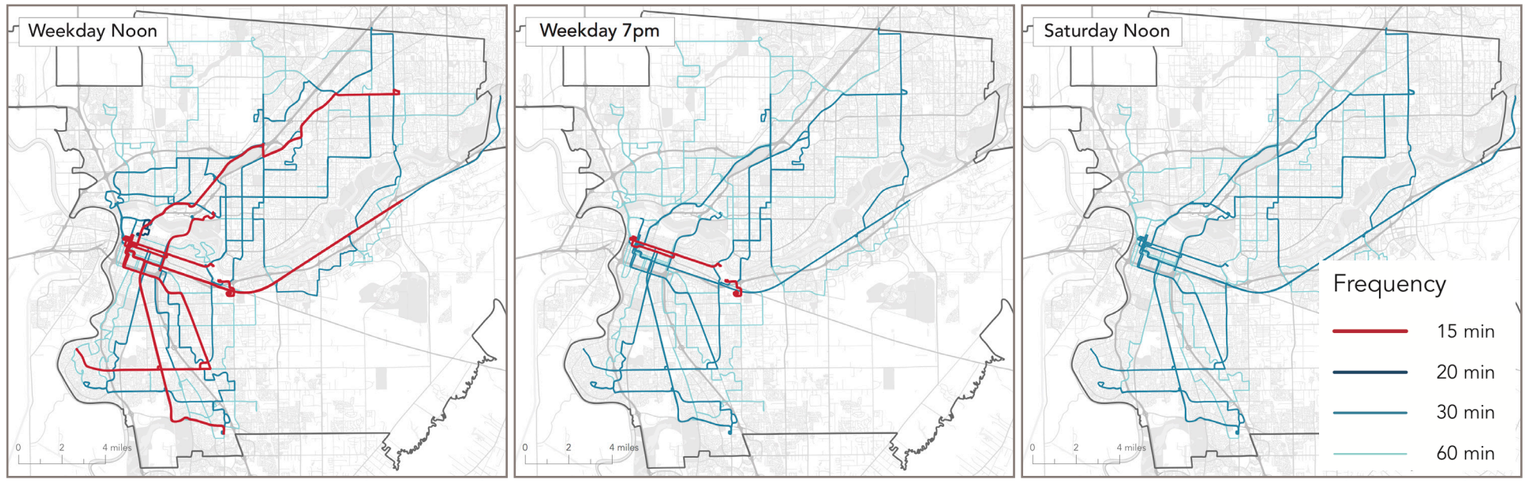


Figure 5: These mini-maps show the frequency of every route and light rail line throughout the weekday, and on Saturdays at noon. When frequencies fall so low at night and on weekends, people's waits for service become long, and using the network *as a network* requires long waits to transfer.

As shown at right, ***more frequent services are also likely to be more productive (with higher ridership relative to cost).*** This is the case even though when SacRT provides higher frequency on a route, it increases costs. This is true not only in Sacramento but also all over the world.

The more destinations and opportunities people can access in a reasonable amount of time on a transit network, the higher its ridership potential. High-frequency networks do this particularly well, because every route is useful for reaching many other places, with one short transfer.

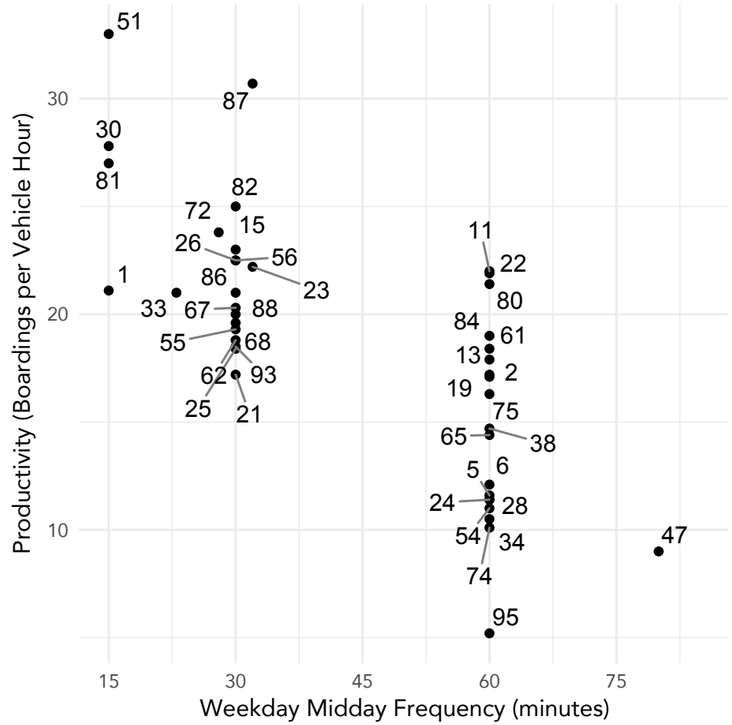


Figure 6: Frequency and productivity are correlated among SacRT routes, as among all transit routes. At right, each route is plotted based on its midday weekday frequency (on the horizontal axis) and its ridership relative to cost (on the vertical axis).

Development Patterns Affect Ridership

Achieving high ridership requires more than just good transit service. Many factors outside the control of SacRT have huge effects on transit's usefulness and therefore on potential for high ridership. This is why land-use planning by agencies like local cities, Sacramento County and SACOG is an essential part of transit's success.

The way that SacRT could attract higher ridership, within a fixed budget, is by targeting places where the "Ridership Recipe" is in effect:

- **Density**: Demand for transit is higher when there are more people, jobs and activities near each transit stop.
- **Walkability**: Transit is only useful to people who can safely and comfortably walk to a stop.
- **Linearity**: Direct paths among destinations are faster, cheaper for SacRT to operate, easier to understand and more appealing to customers.
- **Proximity**: Shorter distances between destinations are cheaper for SacRT to operate.

These are geometric facts about a region. They are not a matter of opinion or personal values.

Density and walkability tell us about the overall ridership potential: *"Are there are a lot of people around, and can they get to the transit stop?"*

Linearity and proximity tell us about both ridership potential and cost: *"Are we going to be able to serve the market with fast, direct lines, or will we have to run indirect or long routes, which cost more to operate (and cost riders time)?"*

Though it is not one of the four major factors named in the Ridership Recipe, ***the mix of uses along a corridor affects how much ridership transit can achieve, relative to cost.*** This is because a mix of uses tends to generate demand for transit ***in both directions, at many times of day***.

Transit lines serving purely residential neighborhoods tend to be used in mostly one direction and mostly during rush hours—away from the residential neighborhood, towards jobs and services. Transit serving a mix of uses can be full in both directions, all day and all week.

Most of SacRT's very productive services (including Routes 51, 30, 80 and the Blue Line light rail) run through dense mixes of housing and jobs, and as a result attract riders in both directions throughout the day.

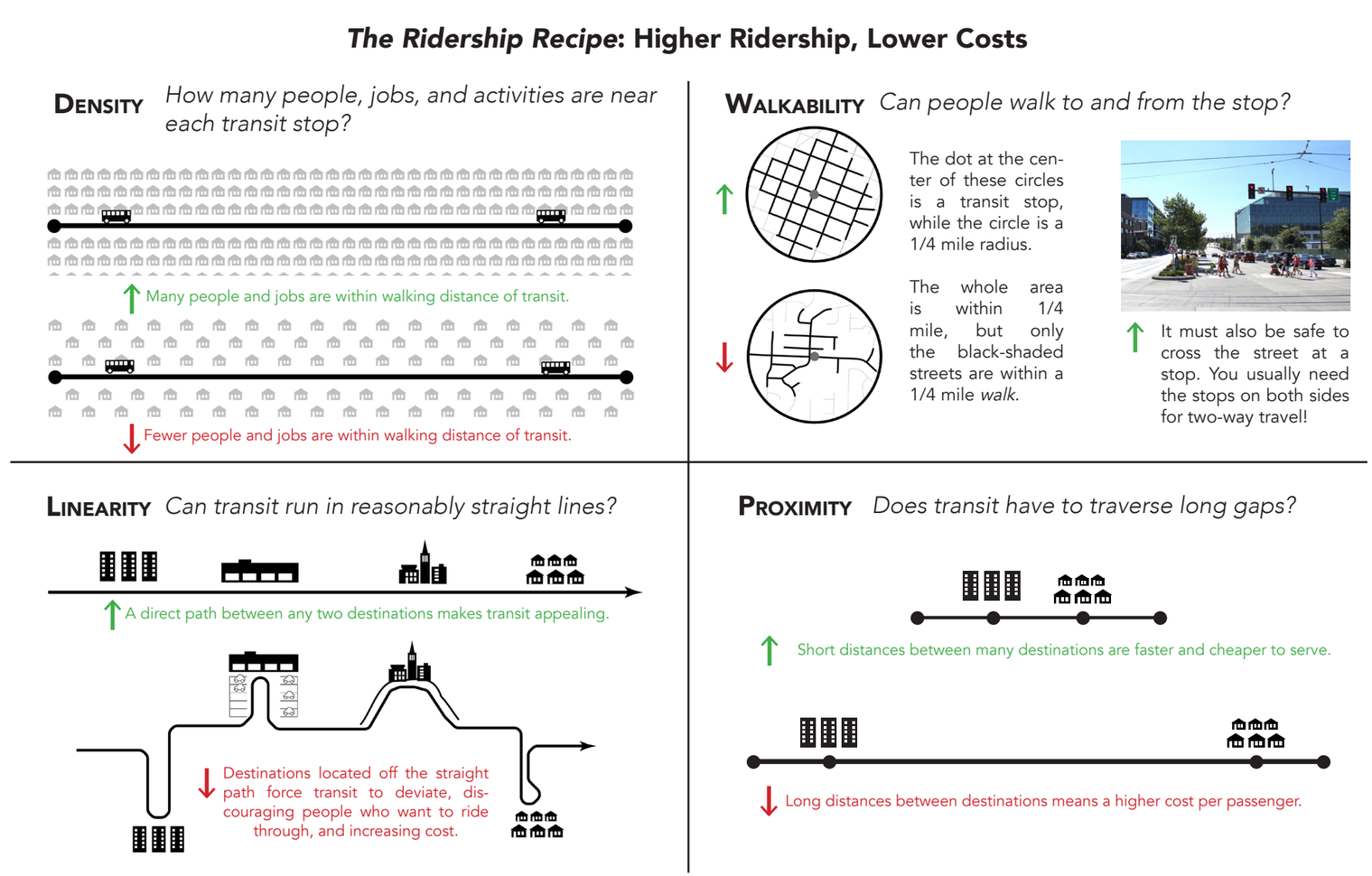


Figure 7: These four land use factors have an enormous influence over how much ridership transit can attract, and how much transit an agency can provide.

Where is Ridership Potential High?

SacRT could attract higher ridership, within a fixed budget, by targeting places where the "Ridership Recipe" is in effect. We can visualize these places by looking for density, walkability, linearity and proximity. Residential and job densities are shown combined on a single map, at right.

Along a few corridors moderate or high density development is arranged in a continuous and linear pattern:

- J Street/Fair Oaks from downtown to Fulton Ave.
- Freeport/21st Street in Curtis Park and Midtown.
- Multiple roads in Arden-Arcade.
- Auburn/Greenback from Arden-Arcade to Citrus Heights.
- Walerga Road in North Highlands.
- Folsom Blvd., through Rancho Cordova.
- Stockton Avenue from Broadway to Elk Grove.
- Elsie and Mack Roads and Center Parkway in the Parkway/ Valley-Hi neighborhoods.

The Challenge of Freeway-Oriented Development

Some of the densest development in the Sacramento area is oriented to freeways (e.g., I-5 and I-80 in South Natomas). One of the ingredients in the *Ridership Recipe* is ***linearity***, but only if the line being followed is one along which buses can serve stops, and people can access those bus stops. Neither is true of freeways—***buses running down the freeway are walled off from potential riders, and must exit the freeway and loop around to serve stops.*** For transit, freeways are barriers, not corridors.

Development concentrated near freeway exits and entrances requires people to walk in unsafe and unpleasant conditions to access transit service. Unsafe and unpleasant walking conditions will naturally suppress transit ridership.

SacRT and other transit agencies in this situation respond quite reasonably by making sure that neighborhoods on *both sides of the barrier* have access to transit. This means running two routes, instead of one. ***Dividing a fixed quantity of service into more routes means that routes have worse frequencies*** (or shorter spans of service) than they otherwise could.

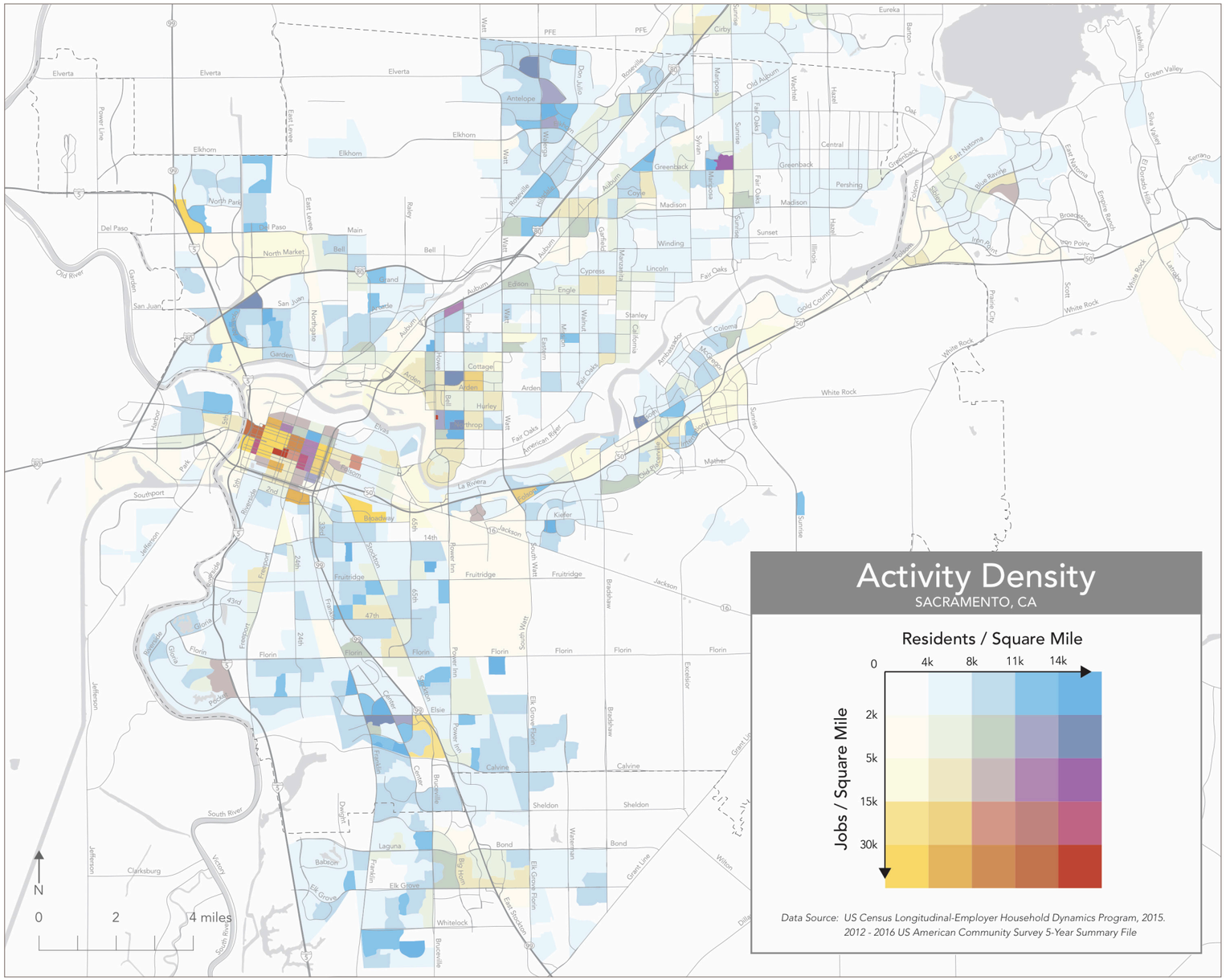


Figure 8: Areas that are dense with a mix of uses are shown in shades of red on this map. A few linear, mixed-use corridors become visible (for example, J Street, Folsom Blvd. and Stockton Blvd.), as do clusters of mixed-use density like Midtown and Arden-Arcade.

Ridership Growth Depends on Infill Development

The map at right shows changes in residential density between 1990 and 2016.

Most job and residential growth has happened at the edges of the region, in places that were previously undeveloped. These areas are not now *dense* but they have *densified the most* since 1990. (More maps illustrating growth are in the full Choices Report.)

While downtown Sacramento has attracted new investment, and more jobs, in recent years, its residential population has barely changed. Within the region, the City of Sacramento is particularly encouraging of high-density and infill development.

If growth is not close to the existing transit network, then SacRT must spend more of its budget running buses and trains longer distances, and less of its budget providing high frequencies or long hours of operation.

The lack of strong residential growth around most light rail stations (notice how many station areas, circled at right, appear mostly white or pink) has likely contributed to the decline in light rail productivity over the past 20 years, illustrated in the graph below.

If the region continues to add mostly low-density housing, away from the existing transit network, then potential for high ridership within SacRT's existing service budget will continue to fall.

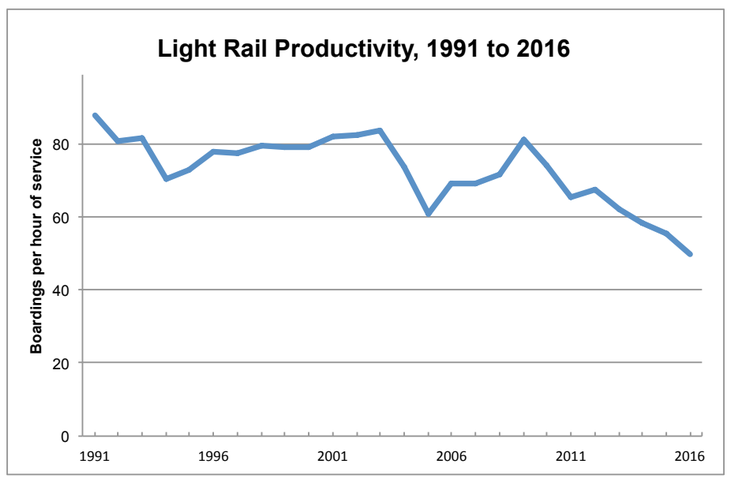


Figure 10: Light rail ridership relative to service levels has fluctuated but declined overall.

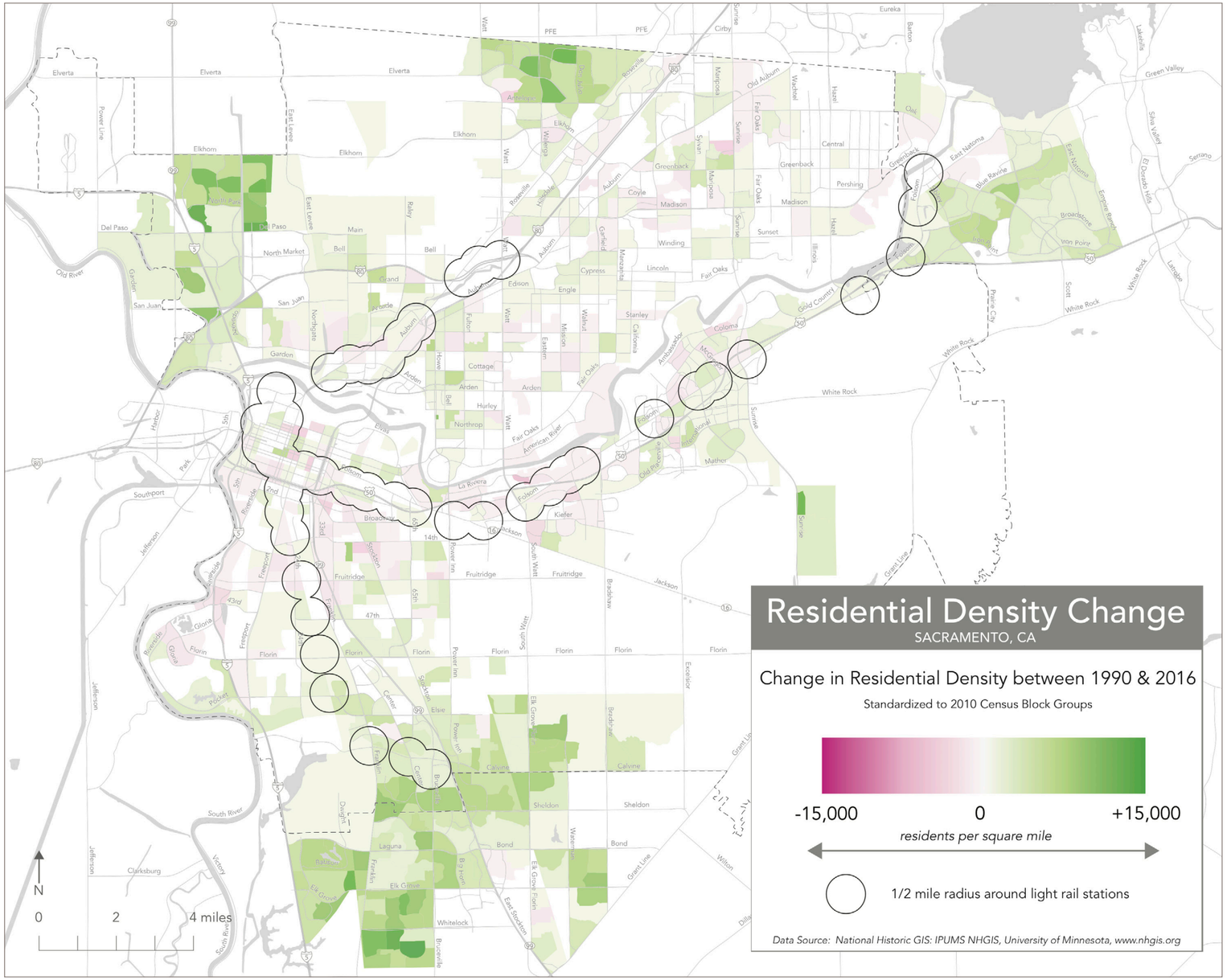


Figure 9: Mild residential growth near light-rail stations has happened along the south Blue Line and in outer Rancho Cordova and Folsom. Most other station areas have seen little increase in residents, or even a decrease in residents.

The Transit Network as an Instrument of Freedom

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

Visualizing Access

The map at right shows where someone can go if they start out from the intersection of Arden & Fulton at noon on a weekday. Areas they can reach in less than 60, 45 or 30 minutes are shown in orange, red and purple, respectively. The technical term for this illustration is an *isochrone*. (Other sample isochrones are included in the full Choices Report.)

A higher-ridership transit network is one in which isochrones are large for a great number of people.

Other factors outside of the transit network (and outside of SacRT's control) influence transit ridership. For example, transit fares and the costs associated with driving have influence on ridership. But access, as illustrated by the isochrone at right, is a *necessary prerequisite* for high ridership, and is controlled by the quantity of service provided, and the design of the transit network.

Measuring access

What goes into the travel time reflected in this isochrone?

- Time spent walking to a bus or light rail stop.
- Time spent waiting for the bus or train, which is on average one-half of the frequency.
- Time spent riding the bus or train. The faster the vehicle goes, the farther someone can get.
- Time spent waiting for a second bus or train, if the trip involves making a connection, and riding that second vehicle.
- Time spent walking to the final destination.

Frequency, speed and distance govern people's travel time on transit. While speed and distance are mostly out of the control of SacRT, the frequency of different transit services is a decision made by SacRT. Long waits for low frequency services can consume a great deal of someone's travel time budget, making for smaller isochrones.

We can also measure the number of opportunities inside an isochrone, for example the number of jobs within a 45 minute trip of the starting point. This is the ultimate measure of access: not just the places you can go, but the things you can do once you get there.

Example: Access to and from Arden-Arcade

The difference in freedom offered by a low-frequency route and a medium-frequency route are visible within the purple part of this isochrone. The isochrone is centered at the intersection of Arden and Fulton, where Routes 26 and 22 cross. A person can get pretty far to the north and south along Fulton in 45 minutes, thanks to 30-minute frequency in that direction. In contrast, they can't get very far east and west along Arden Way in 45 minutes, because their east-west route comes only every 60 minutes.

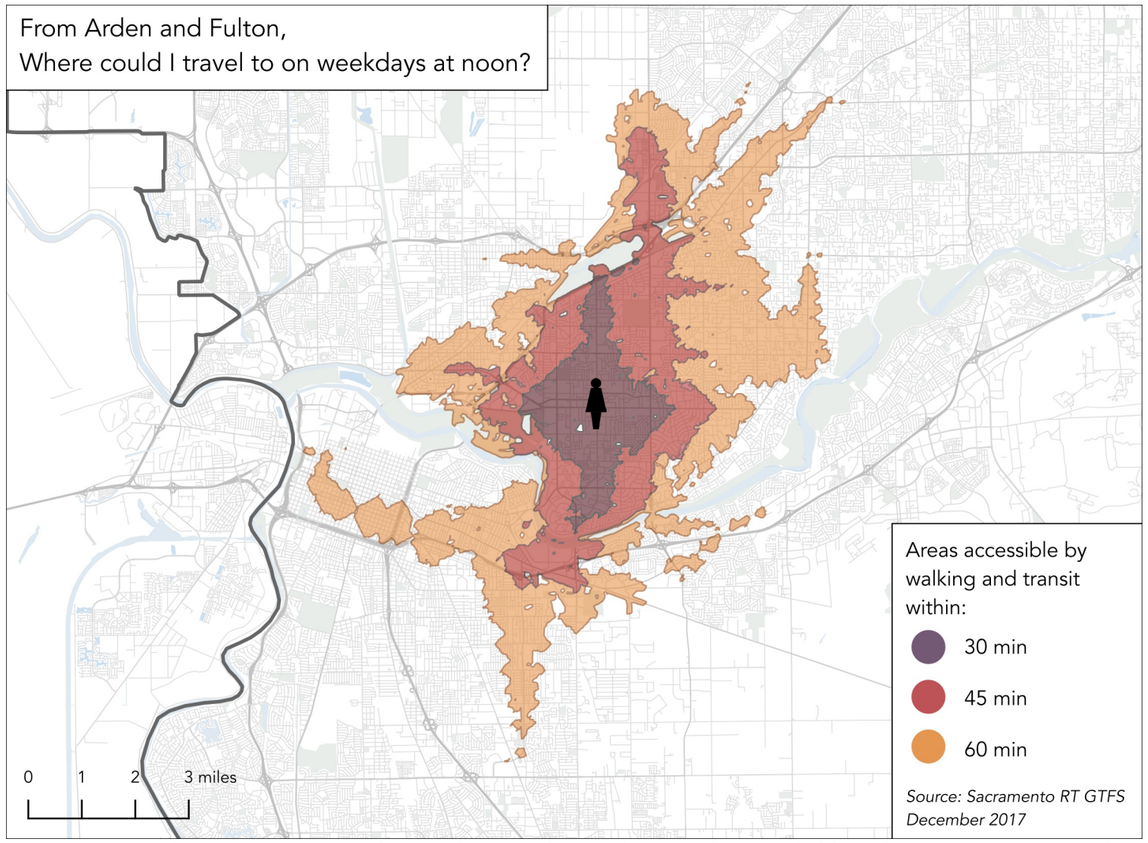


Figure 11: From the intersection of Arden & Fulton, much of Arden-Arcade is reachable within 30 minutes of travel, but Sac State is 45 minutes away, and downtown an hour or more. (More examples like this are shown in the full Choices Report.)

Even beyond usefulness, an isochrone shows the level of personal freedom and opportunity afforded by the public transport network. For people living around Arden & Fulton, where can they apply for jobs? While jobs directly on Routes 22 or 26, within Arden-Arcade, are easily reachable, only a few jobs downtown are reachable within an hour's travel. Where can people enroll in school? Sac State is reachable within 45 minutes.

If people cannot afford to spend an hour and a half or two hours of their day traveling to and from school or work, they might not pursue a job downtown or enroll at Sac State. Or they might struggle to succeed because of the length of their commute. Or they might sacrifice some other investment, to come up with the many thousands of dollars a year required to own and maintain a car.

We can think of these shapes as the walls around someone's life. Potential for ridership grows as we move these walls outward for large numbers of people.

The biggest limits on how liberating a transit network can be are the quantity of service provided, the frequency of service, and the span of service throughout each day and week.

SacRT and its stakeholders will have an opportunity to consider changes that would make the transit network more liberating for large numbers of people. However, making such changes within the existing service budget would require major trade-offs.

Coverage Levels are Equitable

The chart at right reports how much coverage is provided by the existing SacRT network, to residents and jobs within SacRT's very large 367 square mile service area.

This chart measures coverage by any service as well as by frequent service. The distinction is important because frequent service is most likely to attract high ridership relative to its cost. (Other service characteristics matter too, like span, speed and reliability. These are discussed in the full Choices Report.)

About 11% of residents are within 1/4 mile of frequent service, but *five times* as many people are near *some* kind of service.

It is encouraging to observe the lack of racial disparity in how the existing network covers Sacramento-area residents:

- Non-white residents are just as likely as all residents to be close to some transit service.
- Low-income residents are slightly more likely to live close to some service.

These conditions are not static and may change in coming years as the economy and city change. If increasing housing demand near transit and in urban areas is not matched by increases in the supply of housing, then people living on low incomes may move to seek lower rents and property prices. Whether or not this is a consequence of growth and the desirability of urban, walkable areas depends on land-use planning, growth-permitting and affordable housing policies in local jurisdictions.

The Sacramento area is both highly diverse and highly integrated by race and ethnicity. In fact, among major U.S. cities, it is the second-most integrated at the neighborhood scale. This means that when SacRT provides transit service to an area, it is able to cover people of different races and ethnicities.

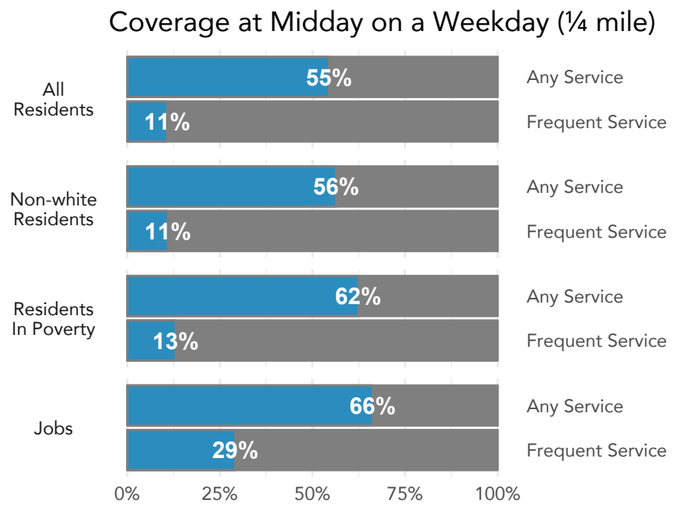


Figure 12: While a small majority (55%) of Sacramento area residents are covered with some transit service, frequent service only covers 11% of residents. Coverage of jobs by frequent service is higher, which is typical in most cities and results from jobs being concentrated downtown.

Coverage by Frequent Service is Low

Analyzing coverage for peer cities is difficult, but a few data points are available from recent JWA studies:

- In Richmond, Virginia, another state capital, ***twice as many residents live near frequent service*** (22%), and the same percentage of residents (55%) live near at least some kind of service. Coverage of jobs by frequent service and any service is almost identical between Richmond and Sacramento.
- In San Jose and Santa Clara County, ***more than twice as many residents live near frequent service*** (26%), and 66% are near any service. 37% of jobs are near frequent service, and 87% of jobs are near any service.

Coverage provided by the San Jose/Santa Clara County network is higher than that provided by SacRT, even though the two agencies are working with a similar amount of service per capita (see the graph of "Transit Investment" on page 3).

This may be partly explained by geography: Santa Clara County is "landlocked" in a way that the Sacramento region is not. Between the Bay and the mountains, most new development in Santa Clara County can't help but be near an existing transit line. In contrast, new development in Sacramento can move away from existing transit service without hitting many natural boundaries.

The greater percentage of residents and jobs that are close to frequent service in Santa Clara County, compared to the Sacramento area, arises because the Santa Clara County transit agency has focused its service into fewer, more frequent routes.

Specialized Service is Costly

While providing specialized service is a generous gesture, most of the time it is not a path to high ridership relative to cost. High ridership transit is typically transit that is *useful* for a broad range of people, rather than *perfect* for any particular group of people.

In a high-ridership transit network, routes are designed to fit together in a way that allows people to travel in all directions. Each route is useful for reaching many different destinations because of its connections with other routes. Specialized services can almost never be integrated into the rest of the network to this degree.

Long-term ridership gains will arise as people make the choice to depend on SacRT for more and more of their trips. Highly specialized services, like routes designed for school trips or temporary parking problems, rarely have this effect.

Rush Hour Ridership Potential and Costs

The transportation profession has long been focused on the weekday peaks, because those are the times when our road capacity is most-used and congested. Yet people need to travel at all times of the day and week, especially people in lower-wage retail and service jobs. In addition, fewer than 1 in 5 trips made in the U.S. is a trip to or from work.

People sometimes assume that targeting transit service at the peak of demand, in particular at rush-hours, will be most "efficient." In fact, ***peak-only routes have a very wide range of costs per boarding*** (as shown in the scatterplot at right) and are, on average, less productive than all-day routes. Even on SacRT's all-day routes, rush-hours tend to be *less* productive than the midday!

Finally, peak-only routes and higher peak frequencies have extra costs compared to all-day and all-week routes. ***They exacerbate peak vehicle and operator requirements, leading to higher costs.***

Routes Designed for School Demand

SacRT's supplemental routes designed around schools attract fairly high ridership relative to service levels. (These routes have numbers in the 200's, and they are not included in the chart at right.) However, like peak-only routes they impose peak fleet and labor costs.

These school-oriented routes are provided in some parts of the region but not others, due to a mix of historical factors and local advocacy.

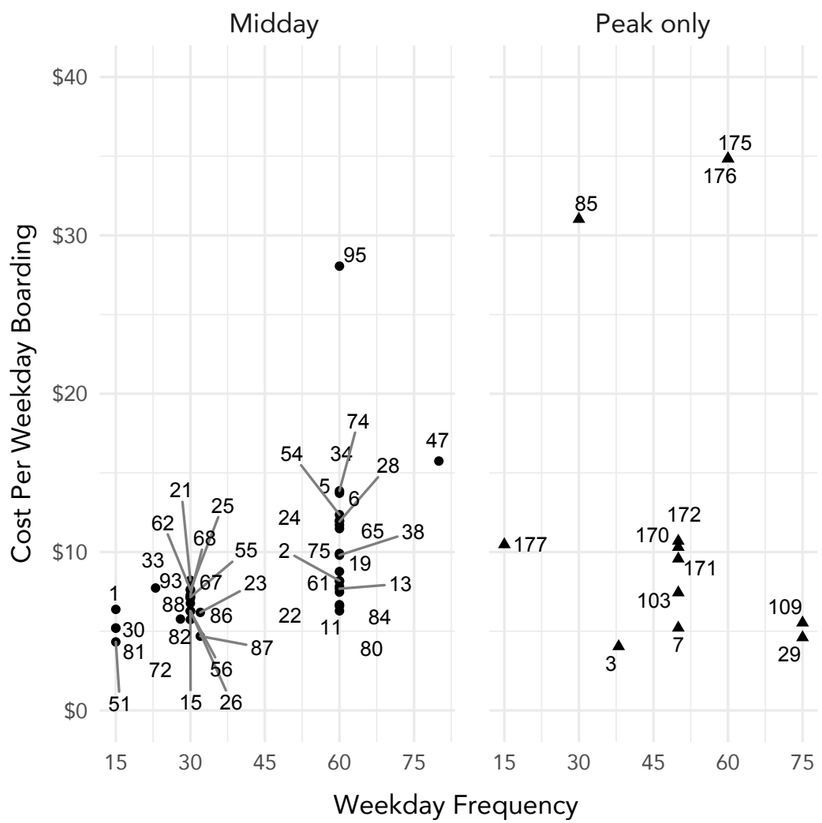


Figure 13: Routes specialized around peak commutes have a wide range of costs per boarding, but are on average less productive than all-day routes and therefore have on average higher costs per boarding. They also require extra vehicles and drivers, which raises an agency's costs but is not captured by this particular measure.

Parking Shuttles

SacRT currently funds parking shuttles for Kings' Arena employees and for Sac State (the latter is one of the few frequent routes that SacRT offers). While these shuttles are open to the public and charge a fare, they are designed entirely around the special needs of these organizations.

The Sac State shuttle is temporary and will soon stop operating. This makes clear that it cannot be part of a long-term ridership strategy, because no one has sold a car, or selected an apartment, or made similar life plans thanks to this temporary shuttle.

Continuation and funding of the parking shuttle for Arena employees is currently under discussion among SacRT, the Kings and the City of Sacramento.

Demand-Response Service ("Dial-a-Ride" or "Microtransit")

SacRT provides a demand-response service in Citrus Heights. Until recently, it was operated as dial-a-ride, in which people call in advance to make a reservation, and are then picked up and dropped off at places of their choosing (within a defined zone).

More recently, SacRT started allowing people to request a ride anytime they want, without needing to make an advanced reservation. The new service is marketed as "SmaRT Ride" but also referred to as "microtransit."

"Microtransit" provides a very high quality of service to riders, because it allows people to travel when they want, on short notice. It also allows people to get a ride without walking to or from a bus stop, which is particularly attractive in places where walking distances are long and walking conditions are not comfortable.

Demand-response service of any kind—including new "microtransit" services—cannot achieve high ridership relative to service levels, simply because driving to and from everyone's requested places takes a lot of time. This is a physical limitation and is not altered by the size of the vehicle, or the amount of demand.

No app-enabled demand-response service has exceeded 3 boardings per hour. Recent results from SacRT's "microtransit" pilot show a productivity and cost per boarding that are nearly identical to those of the dial-a-ride service it replaced.

The productivity of the new "SmaRT Ride" service and the old dial-a-ride are both shown in the chart at right, along with SacRT's fixed routes. The very low productivity of these demand-response services is not due to low demand or inadequate marketing, it is simply a reflection of what is physically possible when a transit service responds to people's demands for service where they want, when they want.

While "microtransit" may be part of SacRT's toolkit for low-ridership coverage services, it will not contribute to a high-ridership strategy.

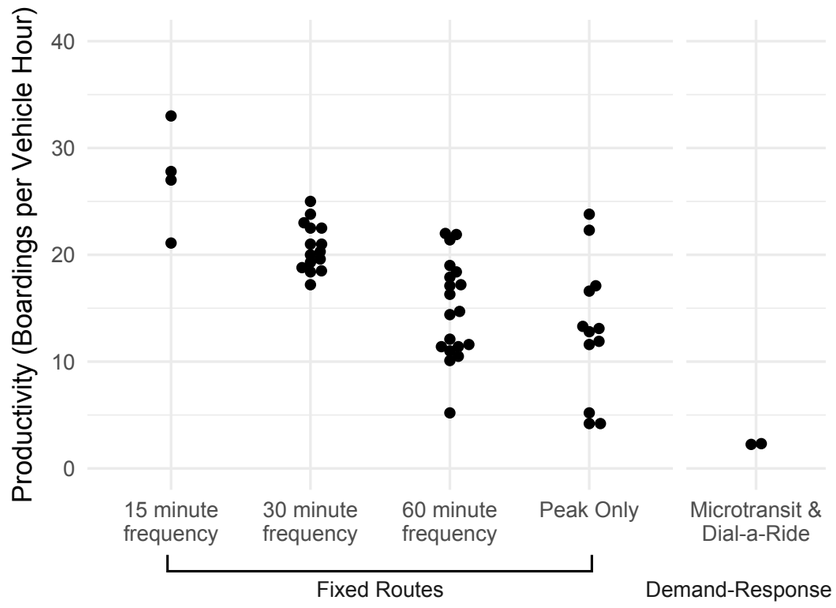


Figure 14: The productivity of SacRT services plotted by type of service. The new "SmaRT Ride" demand-response service is included at right. While "microtransit" may be a tool for providing an excellent customer experience, it cannot be scaled up to serve many people. Even with very high demand, it is not *physically* possible to serve more than 6 trips per hour, if you are picking people up where they want and when they want.

Thin Weekend Service

On weekends, nearly all SacRT routes run at much-reduced frequencies, if at all. Spans of service on weekends are mostly shorter than on weekdays.

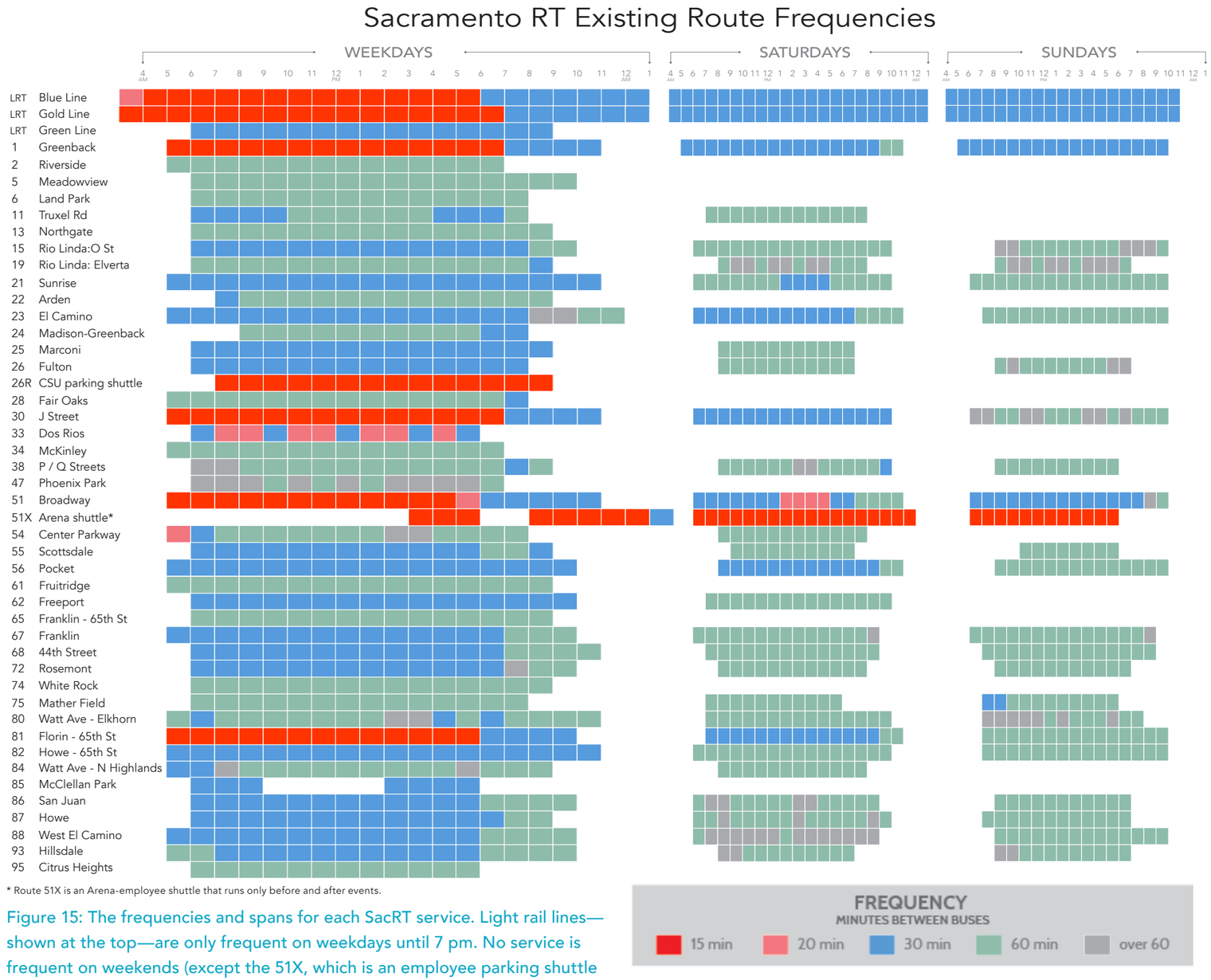
Mini-maps on page 6 showed how much the frequent network dwindles and then disappears from weekdays to Saturdays. On Sundays, some routes are less frequent and some don't run at all. SacRT is one of the few transit agencies that runs light rail only every 30 minutes on weekends.

Most people need to travel at many different times of the day and week. People working in the service industry commute at all different times, and particularly on weekends when restaurants and retail are "all hands on deck."

Ridership levels on Saturdays and Sundays are not much lower than on weekdays, relative to the levels of service provided by SacRT. A few routes are even more productive on weekends than on weekdays, despite the fact that the transit network as a whole becomes much less useful.

This suggests that, at least along some routes, service is high relative to demand during the weekday, and low relative to demand on the weekends. ***Some strategic shifts of service from weekdays to weekends might even result in higher total ridership relative to costs***.

Aside from potential ridership, there are reasons to provide Saturday and Sunday service even if it does not increase ridership. People need to travel on weekends for many different reasons, including for essential trips to work, medical care and services. Giving people access to their city on the weekend is a valuable outcome for community and personal health. This is an example of a *ridership vs. coverage* trade-off that is about span of service and "temporal" coverage, rather than geographic coverage.



* Route 51X is an Arena-employee shuttle that runs only before and after events.

Figure 15: The frequencies and spans for each SacRT service. Light rail lines—shown at the top—are only frequent on weekdays until 7 pm. No service is frequent on weekends (except the 51X, which is an employee parking shuttle for the Arena).

Key Choices

This SacRT Forward Network Plan is a unique opportunity for the Sacramento region to rethink the purpose of the transit system.

The current transit network is a legacy of past generations, and has accrued years of good intentions, good ideas, stop-gap measures, fiscal crises, and special requests. Much of the existing network may be worth keeping as is, because it serves people's current values or because its familiarity to current riders is highly valuable.

It is also possible to start afresh. Transit networks are intricate, interwoven, living things, and adapting them incrementally over time is not always possible. SacRT staff has done a laudable job of making service cuts that were as un-damaging as possible, and restoring service in strategic ways since then. Despite their best efforts, ridership has continued to fall, and stakeholders have expressed concerns that the transit network is no longer meeting community goals.

Higher Ridership, or Wide Coverage?

The most difficult choice for the Sacramento area will be between focusing on services that attract high ridership relative to their costs; and providing wide geographic coverage.

Access is defined on page 10 as the amount of space, and the number of opportunities inside that space, that a person can reach within a given travel time.

High access for large numbers of people is a *necessary prerequisite* for high ridership, and is controlled by the design of the transit network.

Other factors also influence transit ridership. For example, transit fares and the costs associated with driving have influence on ridership. In this Network Plan, we will focus on the ways that the transit network can provide access, and can thereby create potential for high ridership.

High frequencies are a key part of a high ridership strategy. Long spans of service, in which transit runs into the night and on weekends, are also often part of a high ridership strategy.

High ridership serves several popular goals for transit, including:

- Reducing car costs, emissions and traffic.
- Achieving low public subsidy per rider.
- Allowing continued development, even at higher densities, without apocalyptic traffic congestion.
- Giving more people personal and economic freedom.

On the other hand, many popular transit goals do not require high ridership in order to be achieved. These include:

- Ensuring that everyone in the service area has access to at least *some* transit service.
- Providing lifeline access to critical civic and health services.
- Providing access for people with severe needs, no matter where they live.

No transit agency focuses solely on either of these goals. Most transit agencies have some direct, frequent, long-span routes on which ridership and productivity are high, and others which run at lower frequencies and more limited times, for specific coverage purposes.

We suggest that people think about this choice not as binary, "yes-or-no" decision, but as a sliding scale (as in the drawing above) that the community can help to set:

How much of the SacRT budget should be spent on the most useful and frequent services, in pursuit of high ridership? How much should be spent providing low-frequency coverage so that people with severe needs have access to some service?

This is not a technical question, but one that relates to the values and needs of a community.

One way to manage the trade-off between frequency and coverage is to define the percentage of the budget that should be spent in pursuit of each one. SacRT could, as a result of this study, establish that it will continue to spend a the same percentage of its budget providing high frequency services and maximizing ridership, or it could decide to spend more or less towards that purpose.

The direction of that shift—either towards higher frequencies or towards wider coverage—is a question for stakeholders to discuss as part of this Network Plan.

A transit network can be well-designed for any balance point between these two goals. The best design of the network will depend on that balance point:

- A redesigned higher-ridership network would concentrate service into fewer, more-frequent routes, possibly with longer spans of service, especially at night and on weekends.
- A redesigned high-coverage network for SacRT would not concentrate service into frequent routes. It might include some pulsed connections, so that transfers between low-frequency routes are shorter. In this way it might improve conditions for existing riders, but the potential for high ridership would not increase by much.

Broadly Useful or Specialized?

SacRT currently provides specialized services, funded mostly or entirely out of its general budget, with modest contributions from local partners in some cases. While these services add up to a small part of SacRT's operating budget, most of them add an entire bus and driver to SacRT's peak fleet and personnel requirements. They also demand agency staff's attention to plan, schedule, market and maintain them.

As individuals it is tempting to think that a transit service designed to be perfect for us, and for people like us, will attract high ridership relative to its costs. Yet high ridership transit services are rarely specialized around any particular group of people's needs. Instead of being *perfect* for a small number of people, they are *good enough* for large numbers of people.

On a high-ridership transit network, each route is designed to be broadly useful both along the route itself and through the connections it makes with other routes. Specialized services contribute much less to the usefulness of the whole network, if they are integrated into the network at all.

If SacRT wants to pursue higher ridership relative to costs, one way to do so will be to take a look at its current practices around specialization, and evaluate whether those practices should be maintained or changed in light of long-term ridership goals.

Specialized services raise a question of precedent. If the taxpayer pays for shuttles at certain employers or schools, why not at others? Where specialized services exist, agencies need an answer to this question.

SacRT may wish to define the conditions under which it will provide specialized services, and how much "local match" funding is required. This may help municipal and organizational partners understand what they can expect from SacRT and feel they are treated fairly compared to their neighbors.

Should We Focus Growth in Places Where Transit Works Best?

Parts of this report describe the current development patterns in the Sacramento area, and how those patterns have affected the usefulness of transit service and transit ridership. The immediate concern of SacRT Forward is to improve the value of the transit network in the near term.

However, this report can also inform the land-use, development and street-design policies that are made in the cities and the County, wherever people want transit to be a relevant and useful part of local life.

Through its land-use policies, partners in the Sacramento region could encourage more development that reinforces the "Ridership Recipe":

- **Density**: Demand for transportation increases as the number of people, jobs and activities around a bus stop increase.
- **Walkability**: Transit is only useful to people who can safely and comfortably walk to a stop.
- **Linearity**: Direct paths among destinations are faster, cheaper to operate, easier to understand and more appealing to customers.
- **Proximity**: Shorter distances between developed areas are cheaper for SacRT to serve.

All of these factors affect both the costs of providing transit in a particular place and how many people will find the service useful. A key choice for the public and for elected officials, in future land-use planning efforts in the region, will be: How much of the region's future development should follow the *Ridership Recipe?*

Get Involved

The planning process will include multiple rounds of public consultation:

- In the spring of 2018, starting with the publication of this Choices Report, the project team will request community input on key trade-offs described in this report.
- In the fall of 2018, the project team will engage the community about potential alternatives that illustrate very different ways SacRT could change its transit network.
- If SacRT decides to move ahead with any of the recommendations of this Plan, then there will be additional community engagement, first when those recommendations are incorporated into SacRT's updated Short Range Transit Plan, and again before any actual service changes are made.

You have already taken a great first step to understanding and influencing the SacRT Forward Network Plan, by reading this report. A shorter Summary report is also available on the website. We hope you will encourage other people you know to learn about this effort and get involved by:

- Visiting www.sacrt.com/apps/sacrtforward/
- Joining the email list by contacting us at sacrtforward@sacrt.com or (916) 321-2877.
- Providing input via an online survey, which will be available soon at the project website.
- Meeting the project team at a public event—places and times are listed on the project website and will be announced to the project email list as well.