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Solving the Bay Area's Fare Policy Problem

How streamlined, integrated fares can help the region realize the promise of transit

www.spur.org/transitfares

Acknowledgments

Author: Arielle Fleisher, Senior Transportation Policy Associate

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SPUR

654 Mission Street
San Francisco, CA 94105
tel. 415.781.8726
info@spur.org

76 South First Street
San Jose, CA 95113
tel. 408.638.0083
infosj@spur.org

1554 Broadway
Oakland, CA 94612
tel. 510.827.1900
infooakland@spur.org

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Executive Summary

The Bay Area has a problem with transit fares. There are more than two dozen public transit operators in the region, and each sets its own fare policy — the rules the agency uses to determine how much to charge for a ride. This has led to a hodgepodge of different fare structures, passes and prices that ultimately holds the Bay Area back from realizing the promise of transit.

Disparate and disjoined fares create customer confusion, inhibit people from using more than one transit service and undermine the benefits the region should derive from the significant investments it is making in new transit infrastructure and fare payment technology. The region's fragmented approach to fares pushes people to make inefficient and often costly transit decisions — or to get behind the wheel and drive themselves, adding to traffic congestion, pollution and carbon emissions.

We have identified five problems that result from the region's disjointed approach to fare policy:

Problem 1: Disparate fare policies limit the use of transit.

Inconsistent fare policies can make navigating the transit system inefficient, cumbersome and costly. It largely remains the responsibility of the rider to understand and gather information on transfers, discounts and other fare policies. Evidence from other regions indicates that strategic changes to fare policy can help grow ridership and have the potential to drive operational benefits.

Problem 2: Fare policies penalize riders who take multi-operator trips.

The lack of fare coordination among connecting transit agencies means that riders who need to transfer between operators often must pay two or more different fares. Rather than reward people for making the choice to use transit, riders are instead penalized for switching from one operator to another. Similarly, transit passes are operator specific, which means they don't match how people actually use — or could use — transit, a missed opportunity to grow transit use.

Problem 3: Fare policies price some people out of transit.

Many riders with low incomes need to transfer between routes, and in many cases between transit systems, to reach their destination. But having to pay two or more different fares can put such a trip — and the access to opportunity it provides — out of reach. Unlimited monthly passes offer the lowest price per ride, but only riders who can afford the high upfront cost of a pass get the benefit. This means that the poorest riders are stuck paying the highest fares.

Problem 4: Fare policies don't support plans for integrated stations and services.

California's big transportation initiatives will require integration between operators in order to succeed. The region is spending billions of dollars to expand the Bay Area's transit network to support connections between different modes of travel. And yet, we don't have multi-operator fare policies that support the type of trips we are explicitly building for — let alone the types of trips riders are currently taking.

Problem 5: Disparate fares limit the usability and appeal of Clipper.

A fare payment system requires a strategic and clear underlying fare policy. If that fare policy is confusing, inconsistent and complex, the shortcomings will manifest in the fare payment system. Transit riders are choosing not to use Clipper because they don't understand what Clipper supports and offers: whether it calculates transfers and discounts, whether it works across systems and whether it holds cash as well as transit passes — shortcomings that are rooted in disjointed fare policy.

A New Vision for Fare Policy — One That Cannot Wait

It doesn't have to be this way. Transit in the Bay Area — and across the state — will work best when all the pieces fit together. A solution is long overdue and there are two pressing reasons why it can't wait any longer. First, the Metropolitan Transportation Commission is in the process of developing Clipper 2.0, the next generation of the Bay Area's transit fare payment system — a tremendous opportunity to rethink and reimagine fare policy. At the same time, the California State Transportation Agency is endeavoring to create a statewide integrated ticking system, and integrated fares will be fundamental to that aim. Second, access to the Bay Area's transit network is uneven, readily available only to those who can afford passes, longer-distance rail trips or who aren't burdened by the need to pay again when switching operators. Widening inequalities and the suburbanization of poverty will continue to put the full ecosystem of the Bay Area's vast transportation infrastructure out of reach for many Bay Area residents unless the region solves its fare policy problem.

In order to grow transit ridership, make transit more affordable, get the greatest benefit from investments in the regional transit network, improve the usability of Clipper and pave the way for integrated trips through and across the region and the state, Bay Area fare policies must look beyond transit operator service boundaries.

It's time to approach fare policy strategically *as a region* to achieve a different set of outcomes, one where:

- It's easy for transit riders to understand and calculate the price of a ride on transit.
- Crossing city or county boundaries and switching between transit systems is simple and hassle-free.
- Transit is affordable and Bay Area residents of all income levels have full access to quality transportation options.
- The same types of trips cost the same throughout the region.
- Transit operators are in the best position to compete in an era of rapid private-sector innovation in transportation and to get the greatest benefit from new transit infrastructure.

We can achieve this vision by streamlining and integrating transit fares across the region. This would entail transit operators working together to align their fare policies and collectively organize their fare structures so that transferring between systems is simpler and more affordable. While there is no single way to achieve fare integration, SPUR believes the best remedy for the Bay Area's disjointed fare policy is a single common fare structure for the region.

SPUR proposes four strategies for achieving a new vision for fare policy and fare payment, one that prioritizes the needs of the rider and the region:

Strategy 1: Streamline and integrate fares.

The region's transit fares should be coordinated across transit operators to make it easier, more intuitive and more affordable for riders to use the many transit services available to them. We propose a step-by-step process, with a focus on streamlining and integrating the fares of the biggest and most connected operators first. MTC and transit operators should standardize and simply fares before the new Clipper payment system launches and conduct a business case for fare integration to evaluate the potential impacts and benefits of fare integration.

Strategy 2: Manage fare policy and fare payment to supports seamless transit.

To deliver a regional vision for fare policy, MTC, the Clipper Executive Board, transit operators and their boards, and the California State Transportation Agency will need to shift their practices and roles and/or assume new responsibilities or mindsets. A public entity will need to hold the authority for coordinating fares among the region's multiple transit operators. To successfully support fare integration, MTC will need to develop capacity around fare policy (i.e., increase or rededicate staff). Transit operator boards should also commit to designing a fare structure that supports access to all available transit options in the region. As fare integration is likely to have an impact on revenues, a subsidy is a perquisite for success.

Strategy 3: Make fare payment work for everyone.

Clipper 2.0 can and should be a nimble, flexible payment system grounded in a rational fare policy that supports the seamless use of multiple operators. Strategic changes to Clipper and fare policy can help the region achieve many of its long-term goals. To increase the use and appeal of Clipper the region should move toward cashless payment and use Clipper data for research and operations.

Strategy 4: Integrate transit fare payment with payment for other transportation costs.

Riders should be able to use a single account to pay for different transportation costs — from buses and trains to electric scooters and ride sharing to bridge tolls and parking. MTC and transit operators should develop a framework and strategy to guide the development of this new vision for payment, launch integrated payment pilots and steward the development of a single payment platform that customers could use to pay for their various transportation needs. A single payment platform would allow riders with low-incomes to more easily qualify for reduced fares and enable the region to quickly incentivize customers with promo codes and discounts that can be conveniently shared across programs; it also paves the way for integrated fare payment programs.

The Bay Area Has a Fare Policy Problem

There are more than two dozen public transit operators in the Bay Area, and each sets its own policy for determining the fares it will charge. This has led to a hodgepodge of different fare structures, passes and prices throughout the region that ultimately holds the Bay Area back from realizing the promise of transit.

Disparate and disjointed fares create customer confusion, discourage people from using more than one transit service and undermine the benefits the region should derive from the significant investments it is making in new transit infrastructure and fare payment technology. The region's fragmented approach to fares pushes people to make inefficient and often costly transit decisions — or to get behind the wheel and drive themselves, adding to traffic congestion, pollution and carbon emissions.

A Problem That Can't Wait

The problem of disjointed fares has been known for a long time but has gone unsolved because aligning fares across multiple public transit operators is complex and fraught — in particular, because no government entity holds responsibility for regional fare policy.[1] An attempt to identify a remedy was made over a decade ago, but the effort was hamstrung by the requirement that solutions would not negatively impact the revenues operators earn from fares — a condition that is nearly impossible to meet.[2] Since then, various ad hoc efforts have tried to make fares fairer and more rational, but these efforts have not been at the right scale and have not been prioritized or well resourced.

A solution is long overdue. Other regions around the globe have streamlined and simplified fares across transit operators in order to improve user experience and encourage transit use. Bay Area transit riders have asked for seamless transit: Improving the region's fare policy was one of the top five recommendations the Metropolitan Transportation Commission (MTC) received as part of its recent public outreach regarding fare payment.[3] To grow transit ridership, optimize use of the regional transit network and create a more sustainable region, Bay Area fare policies must look beyond transit operator service boundaries. SPUR believes the region must address its fare policy problem now. There are two key reasons why this can't wait any longer.

[1] The Metropolitan Transportation Commission (MTC) has the authority to coordinate transit operators' fares, but the specifics of this coordinating power have never been defined. The state directed MTC to coordinate transit fares in Senate Bill 1474 in 1996, although the legislation provided little guidance as to how the agency could do so. MTC Resolution 3866 instructed transit operators to coordinate on fare payment but did not provide policy direction regarding fare pricing and products on a regional scale. The resolution documents coordination requirements for Bay Area transit operators to improve the transit customer experience when transferring between transit operators and in support of regional transit projects such as Clipper. See: MTC Resolution 3866, http://clipper.mtc.ca.gov/pdf/RES-3866_approved.pdf

[2] Booz Allen Hamilton, Integrated Fare Study, 2008.

[3] MTC, "Future of Clipper 2017 Public Engagement Executive Summary," 2018, https://www.futureofclipper.com/files/managed/Document/98/FutureofClipper_2017_PublicEngagement_ExecutiveSummary_EN.pdf

1. The region is on the cusp of major changes in fare payment.

Two significant changes in how riders pay for transit are on the horizon, and each has implications for the region's fare policy:

Clipper 2.0

MTC is in the process of developing Clipper 2.0, the next generation of the Bay Area's transit fare payment system, with anticipated release in the early 2020s.[4] Clipper allows riders to pay for transit using a reloadable card. The introduction of Clipper in 2010 was a remarkable achievement in transit coordination for the Bay Area. Clipper made it much easier for people to switch between different transit systems and travel throughout the region on transit.

Clipper plays a major role in discussions about fare policy because it is the instrument that delivers fare policies to transit riders. Nearly 35,00 fare rules — reflecting all of the transfers, discounts, promotions and other fare variations among the Bay Area's 27 different transit agencies — run the Clipper system, determining how much riders pays when they tap their Clipper cards.

It's important to note, however, that Clipper's introduction was also a significant missed opportunity with respect to streamlining fares. During its development, the system's designers attempted to streamline fares, but in the end transit operators were not required to change their fare policies or fare products (such as passes and discounts). Instead, they simply rolled their individual approaches to fares onto the new system.[5]

With Clipper 2.0, the region will be conceiving a fare payment system once again and will have a window of opportunity to streamline and integrate fare policies across the Bay Area. The region cannot miss the opportunity to rethink and re-imagine fare policy for the second time — especially since it might not come again for another decade.

Statewide Integrated Ticketing

The 2018 California State Rail Plan lays out a vision for a network of rail services that would provide seamless mobility throughout the region and the state. The plan identifies fare coordination and integrated ticketing across service providers as necessary components to fulfill this vision.[6] To that end, the California State Transportation Agency (CalSTA) intends to create an integrated ticketing system that will make it possible for transit riders to use a single ticket to pay for and access a broad range of mobility services, private and public, throughout the state.[7] Implementing CalSTA's vision could transform mobility for California residents and visitors alike. But fare policies will play a significant role in the success of this initiative: Integrated fares are fundamental to integrated ticketing. Complex fares — in the Bay Area and beyond — will limit California's ability to develop an efficient, nimble, cost-competitive statewide ticketing system.[8]

[4] In September 2018, MTC awarded the Clipper 2.0 contract to Cubic Transportation Systems. See: MTC, "Clipper Update Wins Commission Approval," 2018, https://mtc.ca.gov/whats-happening/news/clipper-update-wins-commission-approval

[5] SPUR, *Seamless Transit*, 2015, https://www.spur.org/publications/spur-report/2015-03-31/seamless-transit

[6] California State Rail Plan, 2018, http://www.dot.ca.gov/californiarail/docs/CSRP_Final.pdf

[7] Jim Baker, "California Integrated Travel Project: Phase 2 Report," 2018.

[8] Cubic is Clipper's current system integrator and was the lone bidder for the role of the new system integrator. According to an MTC staff report regarding the selection of the new system integrator for Clipper 2.0, one of the reasons other companies opted not to bid was because they were discouraged by the complexity of the region's fare policy. The collection of Bay Area fare policies limited the pool of potential bidders to design, build and manage Clipper 2.0; Clipper 2.0 was a less competitive contract as a result. There is a lesson here the state needs to heed as it moves forward with its effort. See: Steve Heminger, Executive Director, MTC to MTC Operations Committee, Sept. 7, 2017.

2. Public transit is not fulfilling its mandate to connect people to opportunity.

The Bay Area's public transit system is intended to provide access to opportunity for everyone. But when the access that a fare provides is limited to one system — Point A to Point B, and no more — how well is public transit fulfilling its mission as the great connector?

The Bay Area's public transit system should enable people of all income levels to access the wealth of opportunities the Bay Area provides — employment, education, recreation — in order to secure a better future for themselves and their families.[9] Each of the region's transit systems in and of itself offers access to opportunity, but the greatest access comes from the transit network — the combined reach of the region's transit services. Today, access to the network is uneven, readily available only to those who can afford passes, longer-distance rail trips or who aren't burdened by the need to pay again when switching between operators.[10] Widening inequalities and the suburbanization of poverty will continue to put the full ecosystem of the Bay Area's vast transportation infrastructure — which the region spends significant sums to build and maintain — out of reach for many Bay Area residents unless the region solves its fare policy problem.[11]

What Is Fare Policy?

"Fare policy" refers to the rules defining how much people pay to use public transit. There are four main components that transit operators consider when setting fares:

Fare structure – How will the price of a ride be set: by distance, by zone or as a single flat fare? Will riders receive discounts when transferring to a different system, such as from BART to a bus? Are there different prices at different times of day? Will riders be charged extra for special services, such as taking an express bus? The fare structure provides the foundation for a transit system's fare policy; products, discounts and prices are derived from the fare structure.
Payment options – How will riders pay: single-ride tickets or daily, weekly, monthly or annual passes?
Discount categories – Which riders (such as youth, seniors and people with disabilities) will qualify for a discounted fare, and how much will those discounts be? Will fares be capped at a certain daily, weekly or monthly threshold?
Price – What is the cost of a ride?

Fare policy is a powerful tool because it impacts all aspects of the transit system: the number of people who ride, boarding times, operating costs, customer satisfaction and affordability. Fare policy can be designed to meet a number of different objectives. How fares are set is ultimately a balancing act between fiscal goals, policy goals, public support and political feasibility.[12]

[9] Community Service Society, "The Transit Affordability Crisis," 2016.

[10] Several transit agencies, including SamTrans, SolTrans, FAST, Tri Delta Transit and AC Transit, do not offer intra-agency discounts. While the penalty for transferring between systems is understood to be a barrier to transit use for people with low incomes, MTC's Means-Based Fare Study found that the lack of intra-agency transfers also contributes to transit unaffordability for people with low incomes. See: Means-Based Fare Study, 2017, https://mtc.ca.gov/our-work/plans-projects/other-plans/means-based-fare-study

[11] Providing affordable, accessible regional transportation is key to economic mobility. SPUR's research found that workers who leave their county for work are more likely to have higher wages than those who stay within their county and that transportation is the single largest barrier to middle-wage work for lower-wage workers who lack cars. See: SPUR, *Economic Prosperity Strategy*, 2014, https://www.spur.org/publications/spur-report/2014-10-01/economic-prosperity-strategy

[12] Tourism & Transport Forum, "Ticket to Ride: Reforming Fares and Tickets for Sustainable Public Transportation," 2016.

Removing Barriers to Realize Seamless Transit

Over time, a series of choices made by decision-makers at different levels — from governing institutions to transit operators — has led to a bewildering and complex array of fare options. But those involved in setting fares can make different choices. Instead of considering options with one agency or locality in mind, decision-makers can choose to approach fare policy strategically as a region to achieve a different set of outcomes, one where:

- It's easy for transit riders to understand and calculate the price of a ride on transit.
- Crossing city or county boundaries and switching between transit systems is simple and hassle-free.
- Transit is affordable and Bay Area residents of all income levels have full access to quality transportation options.
- The same types of trips cost the same throughout the region.
- Transit operators are in the best position to compete in an era of rapid private-sector innovation in transportation and to get the greatest benefit from new transit infrastructure.

We can achieve this vision by streamlining and integrating transit fares across the region. This would entail transit operators working together to align their fare policies and collectively organize their fare structures so that transferring between systems is simpler and more affordable. There is no single way to achieve fare integration. For example, it could be achieved through multi-operator passes that more or less leave the region's hybrid fare structure intact. While this might suffice, SPUR believes it an incomplete solution.

The best remedy for the Bay Area's disjointed fare policy is a single common fare structure for the region. A single fare structure would eliminate the penalty for transferring between transit systems because fares would be calculated not according to how many transfers are made or how many different operators are used, but on the total cost of the journey (i.e., calculate the fare for multi-step transit trips as if they were a single trip). Furthermore, it would ensure that all transit products, discounts and prices offered in the region are derived from the same foundation, offering consistency and predictability. A simple, easy to understand, single fare structure for the region would be a transformational change and would most likely emerge over time, the result of step-by-step efforts, ongoing communication and sustained leadership. SPUR believes a single fare structure for the region is the North Star to work toward.

Many Will Benefit From Fare Streamlining and Integration

SPUR's research shows that streamlining and integrating fares would benefit not only Bay Area residents and transit operators but also employers, cities and the region itself.

Transit riders who use — or could use — multiple operators would stand to gain considerably if the financial burden of transferring from one operator to another were greatly reduced or eliminated. Transit riders with low incomes, in particular, would benefit significantly from such a change as they are among the most adversely affected the Bay Area's poorly integrated public transportation system. All riders would be helped by a simplified user experience.

Transit operators would likely see new riders: Research shows that simple, coordinated fares could attract new riders to transit, particularly in markets where the existing fare structures suppress demand. Transit operators would also be better able to manage crowding (because coordinated fares could help optimize use of the Bay Area's complete transit network), offer a more competitively priced service and fully realize their investments in transit infrastructure. As fare integration is likely to have an impact on operator revenues, a subsidy is a perquisite for success.[13]

[13] For example, Transport for New South Wales implemented a $2 AUS ($1.40 U.S.) rebate when transferring between modes. Since implementing the rebate, they've seen a 50% increase in multimodal transfers, but the revenue impact is substantial, around $100 million per year (the total farebox recovery for the entire transit system is $1.5B). Nevertheless, there hasn't been much interest in the cost of implementing the change. It has been seen as a good thing, given that the region intends to implement more integrated service. Aaron Murray, interview by author, email, April. 2019.

Businesses and institutions would be in a better position to attract workers from across the region, meet their sustainability goals and achieve broad social benefits. Cities, too, would benefit from a simplified approach to fares because it would allow them to offer better mobility for residents and workers, accommodate economic development and support higher-density housing and transit with less parking.

We should streamline fares and pursue fare integration to achieve any one of these benefits. But it is the opportunity to achieve so many at the same time that makes it particularly worthwhile.

At the same time, regional mobility is a complex challenge and requires a combination of solutions. It will take more than streamlined, integrated fares to grow and encourage transit use. Achieving this outcome requires addressing many components of the transit experience — including the reliability and frequency of transit service, consistency between transit maps and wayfinding, and safety. Shortcomings in these areas combine to make transit unappealing compared with driving; solving for them in isolation ignores the impacts they have on each other and the overall transit experience. The region's fragmented approach to fares must be solved, but it should be approached as a foundational step toward transit ridership growth and a more sustainable future.

How to Use This Report

The goal of this report is to provide policymakers, transit operators and advocates with information on regional fare integration, fare streamlining and fare payment technology so that they have a well-researched agenda and can make informed decisions about the future of Clipper and fare policy.

This paper examines in depth the problems caused by the region's disjointed fare policy, discusses the challenges to overcoming our patchwork approach to fares and offers a series of actions to realize a new vision for fares by tackling two key questions:

1. How do we offer a customer-centric fare policy, one that supports different types of trips and different kinds of customers?
2. How can we shift to making decisions as a region in order to better serve current and future riders?

SPUR interviewed stakeholders and experts from around the globe, reviewed case studies and looked at the academic literature on fare payment and fare policy to determine the strategies and actions necessary to achieve a new vision for fare policy for the Bay Area. We have identified four strategies for achieving a new approach to fare policy and fare payment:

Strategy 1: Streamline and integrate fares.
Strategy 2: Manage fare policy and fare payment to support seamless transit.
Strategy 3: Make fare payment work for everyone.
Strategy 4: Integrate transit fare payment with payment for other transportation costs.

SPUR outlined the limitations of Clipper and the region's current approach to fare policy in our report *Seamless Transit*.[14] This paper builds on the findings from that report, offering a more comprehensive set of recommendations on how to achieve regional fare integration and, in turn, a more seamless transit experience. This paper discusses Clipper 2.0 only as it relates to fare policy; it does not make recommendations regarding the technical specifications for Clipper 2.0. Those are outlined in detail in *Seamless Transit.*

[14] SPUR, *Seamless Transit*, 2015, https://www.spur.org/publications/spur-report/2015-03-31/seamless-transit

Five Problems With Today's Approach to Fares

We have identified five problems that result from the region's disparate and disjointed approach to fare polices.

Problem 1: Disparate fare policies limit the use of transit.

Bay Area transit riders contend with an array of different fares and passes (not to mention uncoordinated schedules, maps and wayfinding systems).[15] Disparate fare policies can make navigating the transit system inefficient, cumbersome and costly, leaving riders feeling confused and discouraged.

Figure 1. Fare Policies Differ Across Bay Area Transit Operators

Fare structures, transfer policies and products differ across Bay Area transit operators.

Agency	AC Transit	BART	Caltrain	Golden Gate Transit	Muni	SamTrans	VTA
Fare structure							
Flat fare	✓				✓	✓	✓
Zone-based			✓	✓			
Distance-based		✓					
Free transfers within system							
Yes		✓		✓	✓		✓
No	✓					✓	
Transfers to other systems							
Free with fare	✓*			✓*			
Free with monthly pass			✓*		✓*		✓*
Discounted with fare	✓*		✓*	✓*	✓*	✓*	✓*
Discounted with monthly pass							
Passes							
Daily	✓		✓		✓	✓	✓
Monthly	✓		✓		✓	✓	✓
Income-Based					✓		

** The discount is only available on some but not all connecting transit systems.*

Source: Jason Lee and Eddy Ionescu, "Move Bay Area: A Blueprint for Sustainable Transportation Through 2050," 2018.

As new technologies proliferate and new options emerge for setting transit fares, it's entirely probable that operator fare policies will continue to evolve independently of one another, leading to even greater inconsistency and divergence. For example, different transit operators might make different choices about whether to offer time-of-day discounts and which

[15] See the SPUR report *Finding Transit* for more on how divergent maps and schedules are a barrier to transit use and what the Bay Area can do to make it easier for people to find and use the transit services available to them. See: SPUR, *Finding Transit*, 2019, https://www.spur.org/publications/white-paper/2019-01-03/finding-transit

time periods the discounts would cover. Just as different fares and discounts confuse riders and make transit less useful, it's likely that variations in time-of-day discounts would do the same.[16]

Research shows that strategic changes to fare policy that eliminate confusion and support seamless travel can help grow ridership and drive operational benefits. For example, Transport for London (TfL), which operates the London Underground, experienced a "simplification effect" when it reduced the number of fare zones for buses from 6 to 1. TfL found that riders appeared to be making new journeys merely because the new fare structure was easier to understand. The simplification effect increased tube and bus patronage by 3 to 4 percent in the long run.[17] Similarly, in Barcelona, transit use in the metropolitan region increased by 7 percent in the first year the region introduced an integrated fare system.[18]

Transfer policies are unclear and undervalued.

The most common way that Bay Area transit operators coordinate fares is by offering a discount to riders who transfer between buses, trains or transit operators. For example, several bus operators offer a discount for passengers transferring to their service from BART. These discounts can vary by time or based on the route or fare category (i.e., some discounts are for adults only).

Transfer discounts are powerful tools. They can encourage people to use transit for each leg of their journey. But with so many different transfer discounts in the Bay Area, it's unclear whether or not the discounts are actually incentivizing people to transfer.[19] The plethora of transfer discounts adds unnecessary complexity with little justification — either economically or in shifting travel behavior.

It largely remains the responsibility of the rider to understand and gather disparate information on transfer policies. Transfer discounts are not well advertised; they are not listed on many operator maps or on the fare tables posted on buses or at rail stations, and they can be hard to find on transit operator websites. Not surprisingly, many transfer discounts across the region aren't well used: In 2017, for example, only 85 Clipper rides triggered the Caltrain to AC Transit transfer discount.[20]

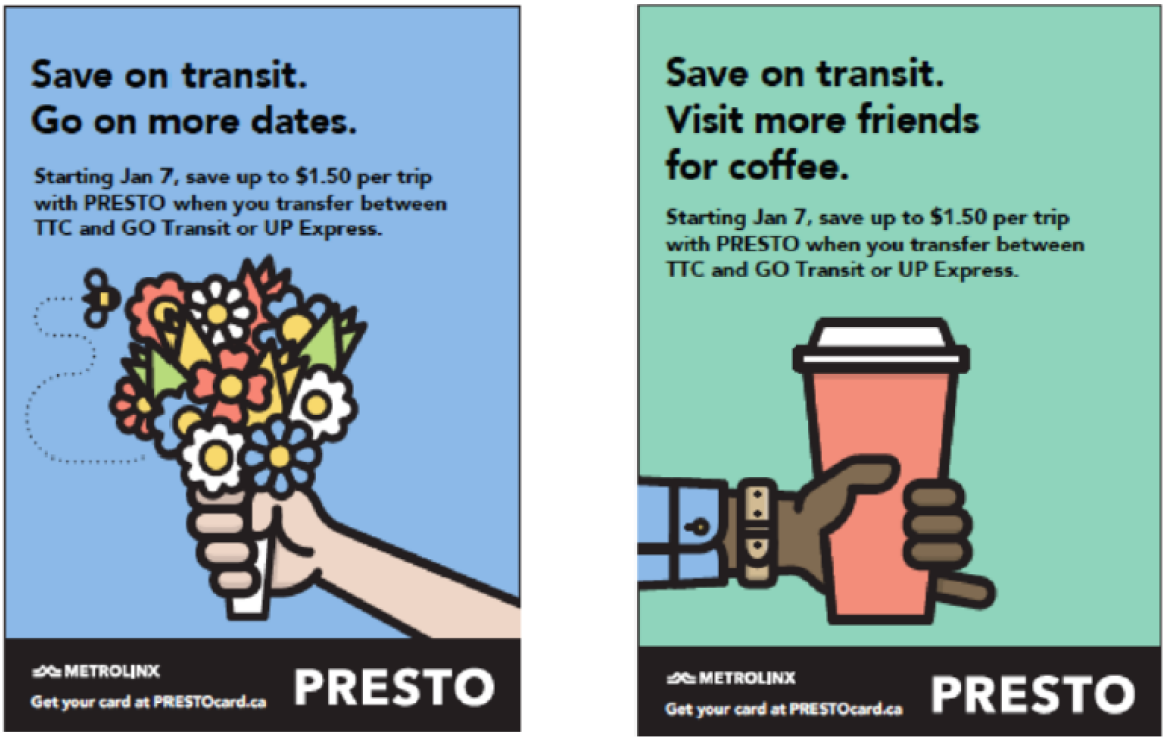
[16] Cities that currently offer time-of-day discounts do so consistently across modes. For example, Melbourne's 30 percent off-peak discount applies to the city's tram, bus and rail services.

[17] Booze & Company, *The Benefits of Simplified and Integrated Ticketing in Public Transport*, 2011, http://www.urbantransportgroup.org/system/files/general-docs/integratedticketingreportFINALOct09.pdf

[18] The Autoritat del Transport Metropolità (ATM), created in 1997, is a public consortium responsible for the coordination of public transportation in the Area of Barcelona (the city and surrounding 253 municipalities). ATM introduced an integrated fare system in the Barcelona metropolitan region in 2001. Riders can transfer as many as times as necessary for free between modes in a single trip. Before this, each operator issued its own ticket, regardless of whether two operators provided part of a single journey, much like fares in the Bay Area. See: Marc Garcia and Xavier Roselló, "ATM: A Challenging Decade," *Intelligent Transport,* 2008, https://www.intelligenttransport.com/transport-articles/991/atm-a-challenging-decade/

[19] The "Fares" section on VTA's website explicitly acknowledges this complexity, stating, "Current arrangements for riders transferring between VTA and neighboring transit systems are often complex and inconsistent. Transfer procedures elsewhere in the Bay Area also vary widely. This complexity of transfer policies has created challenges for customers, especially when using Clipper." See: VTA, http://www.vta.org/getting-around/Fares/BART

[20] Caltrain riders who pay with Clipper and have a two-zone or greater monthly pass are provided with one free transfer to the local portion of AC Transit Route M or one discounted transfer to the transbay portion of AC Transit Route M within two hours of tagging off on Caltrain. The actual discount is not listed on the AC Transit "Fares" webpage or on the Caltrain "Fares" webpage. AC Transit's "Fares" page also refers to AC Transit's Route M as the "Dumbarton Express" and not "Route M," as it is referred to on the Caltrain website. See: AC Transit, "Inter-Agency Transfer Chart," http://www.actransit.org/inter-agency-transfer/



Metrolinx, the planning agency for the Greater Toronto and Hamilton Area, launched a marketing campaign to advertise a new transfer discount. Publicly advertising a transit discount to promote the use of the transit network has not been done in the Bay Area. Images courtesy of Metrolinx.

The variety and complexity of the different transfer schemes also make it difficult to create passes that work on more than one transit operator. That's because each agency defines "trip" differently. For some, a trip is a single transit ride, but for others a trip is a series of rides within a certain period of time. This can make it challenging for operators to agree to revenue-sharing agreements for multi-operator passes, as each may expect a different return from a trip.[21]

Discount categories and amounts are inconsistent.

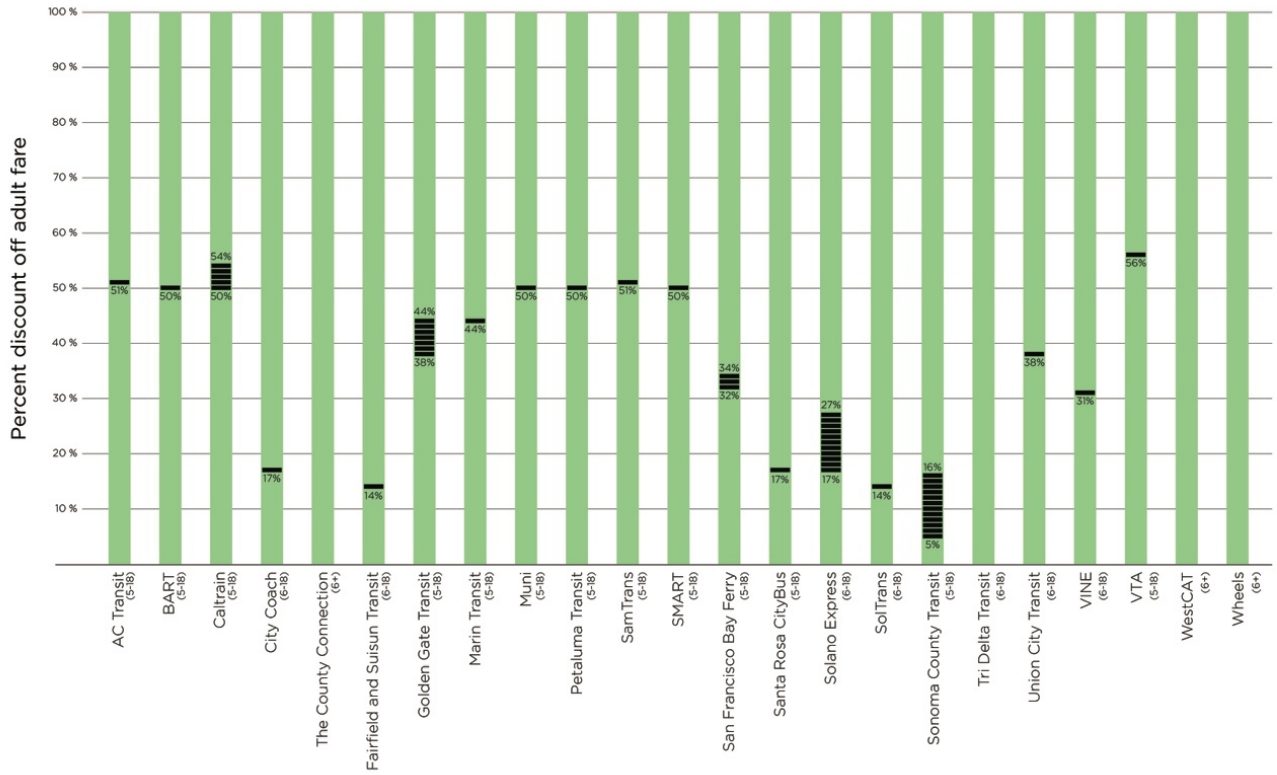
Most Bay Area transit agencies provide fare discounts to seniors, youth and people with disabilities, but the discounts vary by operator, as do the definitions of who qualifies for the discount. BART recently expanded the eligible ages for its youth discount; while it once covered ages 5 to 12, now the discount applies for ages 5 to 18 to match the discount offered by the majority of other transit operators in the region.[22] BART's effort is notable and is helping achieve regional consistency in youth fare discounts. Nevertheless, discrepancies remain. For example, the percentage of the discount for qualifying riders (youth, seniors and people with disabilities) varies significantly throughout the region.

[21] The Treasure Island Mobility Management Plan requires that all market-rate buildings on the island provide their residents with a transit pass that includes Muni and AC Transit. The Treasure Island Mobility Management Agency (TIMMA) needed to develop this pass because it didn't exist. The pass development process was complicated by the fact that both agencies define "trip" differently: For AC Transit, a trip is a single ride; AC Transit does not offer intra-agency transfers. (AC Transit does offer a $0.10 transfer discount to passengers who transfer from a local bus to a transbay bus.) For Muni, a trip includes unlimited rides within two hours. As a result, the agencies expect to earn different amounts of money for each trip. This made it difficult for the agencies to agree on the cost of the pass itself and to develop a revenue-sharing scheme that was satisfactory to both parties.

[22] With the exception of Fairfield and Suisun Transit (FAST), Union City Transit, VINE, Vacaville City Coach SolTrans and Solano Express as well as County Connection, Tri Delta, Wheels and WestCAT, the eligibility age range for the youth transit discount is 6 to 18. FAST, Union City Transit, Vine, Vacaville City Coach, SolTrans and Solano Express begin the eligibility at age 5; County Connection, Tri Delta, Wheels and WestCAT do not offer a youth transit discount.

Figure 2. Youth Discounts Vary by Transit Agency

The Clipper discount for youth varies dramatically throughout the Bay Area. It ranges from as low as 5 percent off of the adult fare on Sonoma County Transit to as high as 56 percent off on VTA.



Source: Operator websites, current as of Jan. 2019.

The language used to describe fares varies widely.

Not only does the complexity in transit fares make using transit confusing, but it also makes it challenging for transit operators to clearly inform riders as to the price of a ride. Operators use a wide variety of terms and nomenclature to describe the price of a trip. Across the region, transfer discounts are referred to as "discounts," as "local fare credit" and as "full fare payment." (See Appendix A for a complete analysis of the discrepancies in the language used by transit operators to describe interagency transfers). "E-cash," "stored value," "Clipper cash" and "cash value" are all used to refer to money stored on a Clipper card. Transit operators even use different phrasing when describing the exact same product.

Figure 3. Transit Operators Describe the Same Product Differently

Tri Delta Transit, County Connection, Wheels and WestCAT offer a daily accumulator pass that works across the four operators. Once riders pay $3.75 on any combination of the transit systems, their rides are free for the rest of the day. Each of the operators uses different language to describe the product. Source: Operator websites, current as of Jan. 2019.

Agency	Day Pass Explanation
Tri Delta Transit	"Unlimited rides on all Tri Delta Transit buses, except paratransit buses, the day of purchase/validation."
County Connection	"The East Bay Day Pass gives you unlimited rides for a single day on most County Connection, Tri Delta Transit, WestCAT and Wheels routes ($3.75 for adults and youth/$1.75 for senior and RTC customers). "The Day Pass discount is applied automatically. Once you pay $3.75 in fares in a day ($1.75 for senior and RTC customers) on any combination of the participating transit services, your rides will be free of charge for the rest of that day. Clipper Cards still need to be tagged to show the drivers the passenger has paid the fare."
Wheels	"A Day Pass gives you unlimited rides on a single day ($3.75 for Adult and Youth/$1.75 for Senior and RTC customers). The Day Pass is a regional pass that is good on most Wheels, County Connection, Tri Delta Transit and WestCAT routes. You get the Day Pass discount automatically. Once you pay $3.75 in fares in a day ($1.75 for Senior and RTC customers) on any combination of the participating transit services, your rides will be free of charge for the rest of that day. Free transfers and fares paid on WestCAT Lynx Transbay service do not apply toward a Day Pass."
WestCAT	"If you pay cash value with your Clipper card, you can automatically earn a day pass for unlimited rides in a single day on most County Connection, Tri Delta Transit, WestCAT and Wheels routes. Once you pay $3.75 in fares in a day ($1.75 for senior and RTC customers) on any combination of these transit services, your rides will be free of charge for the rest of that day."

Source: Operator websites, current as of Jan. 2019.

Compare this variation to a ride-hailing app. Wherever it's accessed — Oakland, San Francisco, Palo Alto, New York City or Atlanta — the interface looks exactly the same. Minimizing uncertainty builds customer confidence. Transit riders shouldn't have to learn a new fare language just because they've crossed a county line. They shouldn't have to scroll endlessly on a website to understand what, if any, transfers are offered. They should be able to learn something once and then use that knowledge anywhere in the region.

What Can We Learn From Other Regions That Have Integrated Fares?

Many regions around the world have integrated fares. The greatest lesson the Bay Area can take from them is that fare integration is possible: Regions that have integrated fares across multiple travel modes and/or transit systems have lived to tell the tale. Their transit systems continue to run, and they have not gone bankrupt.

There are other lessons for the Bay Area as well, including that fare integration can help grow ridership, increase revenues and build trust in transit as a practical option.

Transfer rebates and travel rewards in New South Wales: All transit in the Sydney metropolitan area is run by Transport for New South Wales (TNSW). The entire region operates under a single unified fare structure, all based on fares calculated by distance and mode (bus, ferry, train and light rail). The fare structure also incorporates variable rates for peak and off-peak travel, as well as a daily and weekly cap. Initially, the fare structure did not offer transfers between modes (for example, from the bus to train or train to ferry). TNSW realized that this was discouraging people from using the transit system as a network. To remedy this, the agency instituted a $2 AUS ($1.40 U.S.) rebate when transferring between modes. TNSW has seen a nearly 50 percent increase in intermodal transfers since offering the rebate.[23]

In addition to the rebate, TNSW also offers a transit rewards program through its Opal card: Once a rider completes eight paid journeys between Monday and Sunday, their fares for the rest of the week are half-price. (An online activity log makes it very easy for riders to track their progress toward half-priced fares and view the other discounts they've accessed. See image below.) In 2017, TNSW experienced about an 8 percent growth in ridership, 2 to 3 percent of which it attributes to the rebate and transit rewards program.[24]

opal

Activity statement

Journeys and top ups from 01 August 2018 to 31 August 2018

Transactions may take up to 48 hours to appear on your activity statement

Transaction number	Date	Time	Mode	Details	Journey number	Fare applied	Full fare $	Discount $	Amount $
4219	Fri 10/08/18	07:27	T	Thirroul to Central	5		8.69	0.00	-8.69
4221	Fri 10/08/18	16:18	T	Central to Thirroul	6	Day Cap	8.69	1.58	-7.11
4222	Fri 10/08/18	17:52		Auto top up - Thirroul					40.00
4224	Mon 13/08/18	07:27	T	Thirroul to Central	1		8.69	0.00	-8.69
4226	Mon 13/08/18	17:01	T	Central to Thirroul	2	Day Cap	8.69	1.58	-7.11
4228	Tue 14/08/18	07:26	T	Thirroul to Central	3		8.69	0.00	-8.69
4230	Tue 14/08/18	17:03	T	Central to Thirroul	4	Day Cap	8.69	1.58	-7.11
4232	Wed 15/08/18	07:26	T	Thirroul to Central	5		8.69	0.00	-8.69
4233	Wed 15/08/18	08:49		Auto top up - Central					40.00
4235	Wed 15/08/18	15:09	T	Central to Thirroul	6	Off-peak	8.69	2.61	-6.08
4237	Fri 17/08/18	06:45	T	Thirroul to Central	7		8.69	0.00	-8.69
4239	Fri 17/08/18	15:41	T	Central to Thirroul	8	Off-peak	8.69	2.61	-6.08

Mode F Ferry T Train B Bus opal pay

Once transit riders in the Sydney metropolitan area complete eight journeys in a week, their fares are half off for the remainder of the week. The Opal activity log makes it very easy for riders to track their progress toward the discount and see the other deals they've accessed.

[23] Aaron Murray and Tony Braxton-Smith, interview by author, phone, Oct. 2017.

[24] *Ibid.*

Fare capping in London and Portland: Fare capping is a policy that accumulates a rider's single-ride fares and then stops charging new fares when the rider reaches the equivalent daily, weekly or monthly pass rate. Transit ridership in London increased by 3 to 5 percent when Transport for London (TfL) started offering riders the option to "pay as you go" with capping across five different modes of transportation. TfL found that guaranteeing transit riders the best fare increased their trust in transit, which translated to more rides and revenue for the agency.[25]

In 2017, TriMet debuted its first electronic fare payment system for the Portland area, the Hop Fastpass. The pass works on all three of the area's local operators and offers daily and monthly capping. Even though the fare structures on the three systems are not identical, trips on any system contribute to the fare cap. TriMet instituted fare capping to make paying for transit simple and affordable and to help the agency curtail fare collection costs.[26]

A multi-operator pass in Seattle: Like Portland, Seattle offers an example of how to create a coordinated fare product or pass without coordinating fare structures. The region's transit operators worked together for 12 years to develop the regional PugetPass, which largely leaves intact the hybrid collection of zone-based, flat and distance-based fares that individual operators use. The pass debuted in 1999, works across six of the transit agencies in the Puget Sound region and is only available via the ORCA card, Seattle's fare payment system.[27]

Transitioning to distance-based fares in Toronto: Transit service in the Greater Toronto and Hamilton Area (GTHA) is provided by 10 different transit operators, and each sets its own fare policy. In 2014, Metrolinx, the planning agency for the GTHA, initiated a process to move the region to fare integration. Metrolinx hired a director of fare integration and conducted a business case for fare integration, which found that charging fares by distance across all operators had the greatest potential to increase ridership and revenues and offer a seamless, simple transit experience. The study found that with a 5 percent revenue investment, changing to distance-based fares would increase ridership by 135 percent. But moving to a distance-based fare structure for the entire region is a transformative change, so as a first step Metrolinx implemented a transfer rebate between two major transit systems. Since the launch of the rebate, transfers are 20 to 25 percent higher than in the same period last year.[28]

Eliminating zones in Vancouver: TransLink, the authority responsible for the regional transportation network of Metro Vancouver, adopted its three-zone fare structure in 1984. In the intervening years, the transit network changed dramatically and urban development and travel patterns evolved; now people make trips to and from all parts of the region, but the fare structure has stayed relatively the same. Recognizing this, TransLink launched a comprehensive fare review process in 2016 with the goal of adopting a new approach to fares. As a result of the study, the authority intends to eliminate fare zones and shift to pricing by distance for its rapid bus and transit system while maintaining a flat fare for regular buses.[29]

[25] Matthew Hudson, interview by author, phone, July 2017.

[26] Rhyan Schaub, "Portland, Oregon Is Realizing Its Smart Future," *Intelligent Transport,* 2018, https://www.intelligenttransport.com/transport-articles/68888/portland-trimet-smart-future/

[27] SPUR, *Seamless Transit*, 2015, https://www.spur.org/publications/spur-report/2015-03-31/seamless-transit

[28] Riders transferring to/from the TTC and GO Transit receive a $1.50 (CA) rebate. Data courtesy of Martin Powell, director of fare integration, Metrolinx.

[29] TransLink, "Transit Fare Review Final Recommendations," https://www.translink.ca/Plans-and-Projects/Transit-Fare-Review.aspx

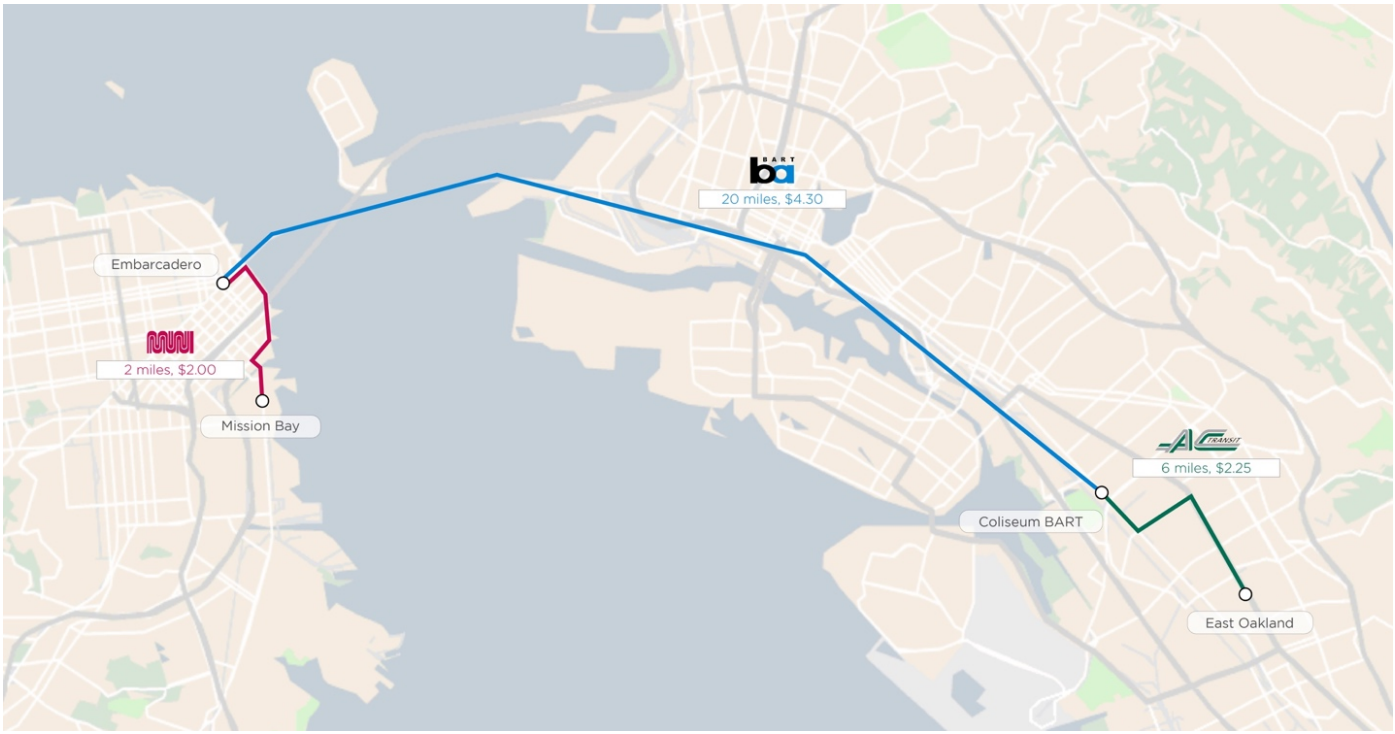
Problem 2: Fare policies penalize riders who take multi-operator trips.

Those who live and travel exclusively within a single operator's transit service district are not affected by the mix of fare policies. However, the many people who travel through and between transit service districts are not served by the status quo: The lack of fare coordination among connecting transit agencies means that riders who need to transfer between operators often must pay two or more different fares. (See the sidebar "Many Transit Riders Use More Than One Operator" for an overview of multi-operator travel patterns.) Rather than being rewarded for making the choice to use transit, riders are instead "penalized" for switching from one operator to another. This is in spite of the fact that large parts of the region's transit system are explicitly designed to encourage and support transferring: Many bus operators orient a large portion of their services to bringing riders to the rail system (e.g., AC Transit and BART), and many rail systems connect at hubs (e.g., Caltrain and BART meet at Millbrae).

The way fares are designed discourages riders from transferring to another operator, even with transfer discounts. Many transit trips require one regional operator and at least one local operator. The distance traveled on the local leg may be negligible, but transit riders still pay nearly the full local fare to travel that first or last mile. The part of the trip that's the shortest in length often ends up being the most costly. This puts transit at a disadvantage against competing options. In many parts of the region, it's cheaper to pay a toll and/or park than to take transit that involves multiple operators.

The "Transfer Penalty" Creates a Barrier to Ridership

A transit trip from East Oakland to Mission Bay in San Francisco requires a trip on BART as well as a Muni bus ride, for a total cost of $6.30 with a Clipper card (which reflects the transfer discount). The cost jumps to $8.55 with a Clipper card if the journey includes an initial ride on AC Transit. Riders pay almost double the cost per mile for the first leg of the journey and nearly five times the cost per mile for the final leg of the journey.



Source: Operator websites, current as of Jan. 2019.

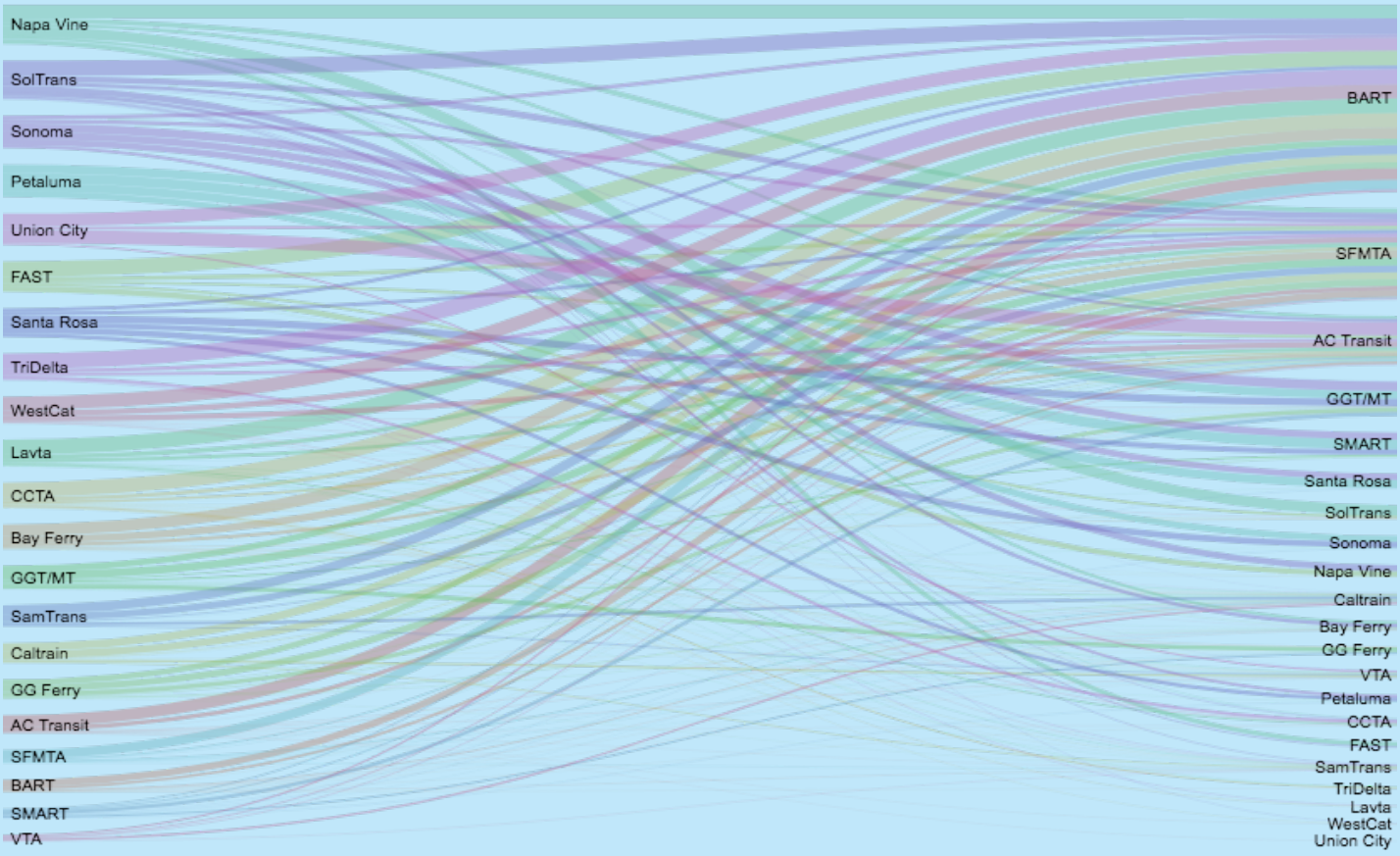
Many Transit Riders Use More Than One Operator

SPUR analyzed Clipper data to understand how riders use more than one operator. We looked at a dataset that calculates the number of individual Clipper cards used on any given pair of operators each month from 2014 to 2018. Our analysis confirmed that riders regularly use more than one transit operator to move about the region (see Figure 4). For example, in an average month in 2017, 22 percent of individual Clipper cardholders who rode Santa Rosa CityBus also rode Muni, as did 33 percent of cardholders who rode SolTrans and 26 percent who rode Napa's VINE system. This is not just true for Muni — across all the transit systems in the region, riders regularly use more than one operator. (See Appendix B for an analysis of how transit riders use multiple systems.)

Figure 4. Many Transit Riders Use More Than One System

Use of Multiple Transit Operators in the Bay Area, 2017

Transit riders who use one system are also frequent users of other transit systems. For example, in 2017, 22 percent of Clipper card riders who rode Fairfield and Suisun Transit (FAST) also rode Muni.



Source: Analysis by MTC using Clipper card fare payment and pass validation transactions between 3 a.m. PT on Jan. 1, 2014 and 3 a.m. PT on Jan. 1, 2018. This chart shows 2017 data only

It's not surprising that riders use multiple systems given that our economy and labor market are increasingly regional. More than a third of all workers cross a county boundary to reach their job. The question is how many riders would make multi-operator trips — or would make more multi-operator trips — for either work or for leisure if transit operator fare policies actually encouraged it.

Transit passes do not match how people use multiple operators.

Even though many transit trips involve more than one operator, or could involve more than one operator, most transit passes are specific to each operator. These passes reward loyalty for taking trips with a specific operator rather than for consistently taking trips by transit. Some sub-regional passes do exist. For example, the Muni + BART pass provides unlimited rides on Muni and on BART when traveling within San Francisco. County Connection, Wheels, WestCAT and Tri Delta Transit offer shared daily and monthly passes (although three of these operators also offer their own passes, which compete directly with the regional pass, undermining its value). It is unclear why different transit agencies need their own transit passes. For example, AC Transit and Union City Transit each offer their own 31-day pass, yet nearly every Clipper cardholder who rode Union City Transit from 2014 to 2017 also rode AC Transit.[30]

The lack of fare passes that help riders access all available transit options is a missed opportunity to grow ridership, especially when considered from an institutional perspective. Transportation management associations, property managers, colleges and universities can't offer constituents passes that match their travel patterns. Several transit agencies (including VTA, Caltrain and SMART) offer a transit pass program for employers. But these passes serve the location where the business is based and do not necessarily reflect how people travel to get there.[31] For Google to meet the transit needs of its employees when it expands to the Diridon Station area,[32] for example, it would need to buy Go Passes for rides on Caltrain, SmartPasses for rides on VTA *and* individual passes for other agencies.

Research shows that transit passes subsidized by third parties such as universities and large employers generate more profitable trips per passenger for transit operators. They also help cities accommodate growth. For example, data gathered in King County, Washington, demonstrate that employees in the Seattle area use the multi-agency passes provided by their employers for all types of trips, not just commuting: 65 percent of transit trips in King County are made by someone with an employer-subsidized fare card.[33] The pass has helped Seattle reduce drive-alone trips to downtown: Commuters overwhelmingly reach downtown either by transit, ride sharing, walking or biking.[34]

SPUR analyzed Clipper data to understand how the various passes Bay Area transit operators offer are used. According to our analysis, over the last four years, more and more transit riders are opting to pay for transit with cash they've put on their Clipper card as opposed to using a pass (see Figure 5). As the transportation landscape becomes more complex and less predictable — with multiple transit systems, new mobility options like bike sharing and ride sharing, and the rise in telecommuting — it's not surprising that transit riders are moving away from traditional fare products like monthly passes, which do not meet their full mobility needs, and choosing instead to pay for transit as they go.

30 Clipper data, 2014–2017, TLR002 reports.

31 In 2017, the City of San Jose purchased VTA's SmartPass (then called the Eco Pass) for 4,065 city employees. Of that total, 896, or 22 percent, used the pass at least once during the calendar year, and 51 percent of those who used the pass used it less than five times. Given that nearly half of the people who work for the city live outside the city, it's not surprising that the utilization rate is so low. According to our conversations with city staff, given the low-utilization rate, it would be more economical for the city to pay the fare for its employees when they use transit than to pay for the SmartPass. And this is true even though the pass is heavily discounted over VTA's annual pass. See: VTA Board of Directors Meeting, Item 7.2, page 407, https://vtaorgcontent.s3-us-west-1.amazonaws.com/Site_Content/bod_060117_packet.pdf

32 Google plans to build a transit-centered village in downtown San Jose adjacent to Diridon Station, bringing 15,000 to 20,000 Google employees into the city. See: Emily Deruy, "What Google's San Jose Project Means for Downtown," San Jose Mercury News, 2018, https://www.mercurynews.com/2018/12/02/what-googles-san-jose-project-means-for-downtown/

33 Jonathan Hopkins, "Something's Different Here: Seattle Companies Note Job Growth Requires Great Transit," Seattle Transit blog, July 2017, https://seattletransitblog.com/2017/07/05/somethings-different-here-seattle-companies-note-job-growth-requires-great-transit/

34 Andrew Glass Hastings, "Urban Mobility in Seattle: A Recipe for Success Any City Can Make Their Own," Seattle Transit blog, Aug. 2018, https://seattletransitblog.com/2018/08/13/urban-mobility-seattle-recipe-success-city-can-make/

Figure 5. Riders Are Paying for Transit With E-Cash Over Passes

Change in Use of E-Cash and Passes to Pay for Transit, 2014–2017

Transit riders are opting to pay for transit with E-cash (cash value stored on a Clipper card) as opposed to using a pass. Use of E-cash to pay for transit is growing faster than use of transit passes.

Agency and fare product	Percent change in rides paid for by pass, E-cash (2014–2017)
AC Transit	
Monthly pass, adult local	9%
Monthly pass, transbay	4%
E-cash	21%
BART	
BART High Value Discount (HVD)* 45/48	14%
BART HVD 60/64	16%
SF Muni Fastpass, adult	–25%
E-cash	33%
SamTrans	
Local monthly pass	–3%
Local/SF monthly pass	–1%
E-cash	10%

** High Value Discount tickets provides riders a 6.25% discount on BART rides. It is available in two denominations: a $48 ride value ticket for $45; a $64 value ticket for $60.*

Source: Clipper data, 2014–2017, TLR002 reports.

Problem 3: Fare policies price some people out of transit.

Bay Area residents of all income levels should have full access to quality transportation options. In 2016, MTC launched a Means-Based Fare Study to understand how fares prevent people with low incomes from using transit. The study found that many riders with low incomes need to transfer between routes, and in many cases between transit systems, to reach their destination.[35] Often riders with low incomes take a very long bus ride or transfer several times within one system to avoid higher-priced rail trips or costly transfers between operators. These trips are less efficient and can cut people off from access to jobs, education and health care that are farther away.

MTC's Means-Based Fare Program is attempting to solve for this. A pilot program that MTC unanimously approved in May 2018 and that's expected to begin in the fall of 2019, will offer qualifying low-income people a 20 percent discount on BART, Golden Gate Transit and Caltrain and a 50 percent discount on Muni.[36] While these discounts are likely to enhance

[35] In 2015, MTC launched a study to determine if a transit fare program based on household income would be feasible and effective. The resulting pilot program, slated to begin in the fall of 2019, will provide a 20 percent discount off the adult single-ride fare for BART, Caltrain and Golden Gate Transit as well as a 50 percent discount off the adult single-ride fare for Muni. Regional passes were considered to be too complicated to develop and not as feasible as the other options. See: Means-Based Fare Study, 2017, https://mtc.ca.gov/our-work/plans-projects/other-plans/means-based-fare-study

[36] The SFMTA is opting to offer a steeper discount to low-income transit riders. However, the SFMTA will only be reimbursed by MTC for a 20 percent discount. The regional funding will only be used to compensate for participating in the new regional program. In other words, the SFMTA will have to make up the difference using its own funds. The MTC website states that the SFMTA will also be offering a 20 percent discount when in fact they will be offering a 50 percent discount. As discussed in Problem 1, it is challenging to present disparate fares legibly and this results in misinformation. See: MTC Resolution 4320, https://mtc.ca.gov/sites/default/files/MTC%20Resolution%204320%20Regional%20Means-Based%20Transit%20Fare%20Pilot%20Program%20Framework.pdf

transit affordability for riders with low incomes, it's important to note that this wasn't the solution preferred by the low-income residents surveyed for the study. They preferred a solution that would make transfers more affordable plus a regional pass that would include trips on different operators.[37]

Riders who can afford the up-front cost of a transit pass get the best price.

Unlimited monthly passes offer the lowest price per ride. Yet only riders who can afford the high up-front cost of such passes benefit from significant per-ride savings; riders with less cash on hand often pay the more expensive single-ride fare. This means that the poorest riders are stuck paying the highest fares. To remedy this, many transit operators are adopting fare capping, which caps the amount riders pay when they reach the cost of a daily, weekly or monthly pass. With fare capping, riders who can't afford the up-front cost of a pass no longer end up paying more overall. See the sidebar "Four Models for Regional Fare Capping" for more on fare capping.

In 2018, Caltrain undertook a review of its fare policy and found that riders with lower incomes were paying more per ride. Caltrain makes the most revenue per passenger, and per passenger mile, from one-way tickets and day passes purchased at ticket vending machines — products that are overwhelmingly purchased by riders with low incomes. Caltrain makes the least amount of money per passenger, and per passenger mile, from the Go Pass, its deep-discount pass program — a product more likely to be used by higher-income riders.[38] (See Figure 6.)

Figure 6. Riders With Low Incomes Buy Costlier One-Way Tickets

Caltrain Fare Products by Annual Household Income

Caltrain riders with low incomes are more likely to purchase the costlier one-way ticket or day pass, whereas riders with higher incomes are more likely to purchase a monthly pass, which offers the deepest discount.

Fare product	Under $50,000	$50,000–$100,000	$100,000–$150,000	$150,000–$200,000	$200,00 or more
One-way ticket	38%	23%	16%	8%	15%
Day pass	29%	25%	15%	12%	15%
Go Pass	5%	27%	25%	17%	19%
Clipper cash value	17%	23%	21%	14%	26%
Clipper 8-ticket ride	12%	19%	22%	18%	25%
Monthly pass	9%	24%	25%	18%	29%
All riders	16%	24%	22%	15%	24%

Source: 2016 Caltrain Triannual Survey.

[37] MTC, Regional Means-Based Transit Fare Pricing Study, Technical Memorandum #3: Evaluation of Alternative Means-Based Transit Fare Scenarios, Means-Based Appendix A: Focus Group Input on Discounted Fare Media Alternatives, 2016.

[38] Presentation to the Caltrain Board of Directors, Caltrain Fare Study Update, 2018, http://www.caltrain.com/Assets/__Agendas+and+Minutes/JPB/Board+of+Directors/Presentations/2018/2018-01-04+Fare+Study+Update.pdf

Transit fares are not family-friendly or group-friendly.

When multiple people who are traveling together in the Bay Area use public transit, fares can add up to the point that it's more cost-effective to drive or use a ride-hailing service; with those options, there's no cost for additional people.[39] For this reason, some transit systems offer discounted public transportation tickets for groups. For instance, in Berlin, groups of five people can purchase a "small group ticket," which allows them one-day use of all public transportation services for a flat fee. Manheim, also in Germany, offers discounted tickets for groups of two, three, four or five people across all transportation modes. In Västra Götaland, Sweden, four people (so long as three of the four are under age 20) can travel for the price of one on all trains, buses, trams and ferries in the area.[40] Group tickets can help make transit a more attractive option for families in particular.

Some systems allow multiple riders to use the same smart card to pay for a ride. For example, in Chicago, the Ventra card can be used for up to seven people at once.[41] This makes it easier for visitors or infrequent riders to use transit because each person doesn't have to purchase their own fare payment card.

Transit operators in the Bay Area do not offer group discounts, although BART will soon offer a 50 percent discount to groups of three of more traveling to or from the San Francisco and Oakland airports. This is a step in the right direction, but group pricing similar to what's offered in other regions can make transit a competitive option for groups regardless of where the trip is starting or ending.

Employer pass programs are not designed for small businesses or service workers.

The employer pass programs offered by Bay Area transit operators are designed for large employers and for businesses with low turnover. (See Figure 7 for an overview of select transit pass programs for employers.) Caltrain's Go Pass, for example, is priced for a minimum of 85 employees; businesses with fewer employees end up paying significantly more per employee. With the exception of SMART, which offers its Eco Pass in four-, six- and 12-month increments, all other employer-sponsored transit passes are available as annual passes only. In the retail and service industry, where turnover tends to be higher, employers aren't inclined to invest in annual transit passes for their employees.[42] Furthermore, contract workers (who often perform janitorial, security and food service jobs, among others) are not eligible for employer-sponsored transit passes. By not designing programs to meet the needs of different types of workers and businesses, the region misses opportunities to encourage sustainable travel and is not offering equitable access to transit benefits.

The Palo Alto Transit Management Association (PATMA) created its own employer-sponsored transit program in an attempt to work around these issues. In 2017, PATMA launched a free transit pass program for service workers making up to $50,000.[43] As of March 2018, 115 downtown workers were enrolled in the program, which offers free Caltrain, VTA or SamTrans passes.[44] While laudable, the program is expensive and not necessarily sustainable, as PATMA is buying the passes at their retail value with financial support from a local business.

[39] This applies to UberX and Lyft only. For their pooling service, adding an additional person typically increases the fare by $1. That said, even with the increase it might be more cost-effective for two people to use a shared pool service than to take public transit, depending on the time of day and location.

[40] Vasttrafik, "Period Tickets: Four Travel for the Price of One," https://www.vasttrafik.se/en/tickets/period-tickets/

[41] Ventra, "How-To: Paying for Multiple Riders With a Single Card," https://www.ventrachicago.com/how-to/multiride/

[42] Wendy Silvani, interview by author, Dec. 2018.

[43] PATMA, "Free Transit Passes," http://www.paloaltotma.org/transit/

[44] Gennady Sheyner, "Nonprofit Revs Up Efforts to Reduce Traffic," *Palo Alto Weekly*, 2018, https://www.paloaltoonline.com/news/2018/03/14/palo-alto-nonprofit-revs-up-efforts-to-reduce-traffic

Figure 7. Employer Transit Pass Programs Have Limited Reach

Select Transit Pass Programs for Employers

The employer pass programs offered by Bay Area transit operators are designed for large employers and for businesses with low turnover. Smaller employers and contract employees do not benefit from these programs, which can be effective in encouraging transit use.

Operator	Pricing structure	Program cost to employers	Pass time period
SMART (Eco Pass)	Based on the number of participants in the program	The price ranges from $213 per person for up to 50 passes to $155 per person for over 500 passes.	4, 6 or 12 months
Caltrain (Go Pass)	Participating employers are required to purchase a Go Pass for every user at the worksite. Pricing is based on a minimum of 85 participants. All employees working more than 20 hours per week excluding contractors, consultants, interns and temporary employees are eligible.	The total cost of participating in the Go Pass program is the greater of $237.50 per eligible user or $19,950.	12 months
VTA (SmartPass)	Pricing is based on a number of factors: the VTA service available at the site's location, the SmartPass category (collegiate, not for profit or corporate), the type of SmartPass (standard or express) and the quantity of passes desired (1–2,999 or 3000+). Institutions are required to purchase passes for all eligible individuals.	The price ranges from $20.75 to $207. A minimum annual charge of $2,500 applies to all SmartPass contracts.	12 months

Sources: SMART, "SMART Eco Pass Fact Sheet," https://sonomamarintrain.org/sites/default/files/Documents/Eco-Pass%20Fact%20Sheet-062017.pdf; Caltrain, "Go Pass," http://www.caltrain.com/Fares/tickettypes/GO_Pass.html; and VTA, "SmartPass," http://www.vta.org/getting-around/fares/smartpass

Problem 4: Fare policies don't support plans for integrated stations and services.

Current projects to grow and expand the transit network in the Bay Area are being designed to support connections between modes of travel — and therefore between different transit operators. The region is spending billions of dollars to build Diridon Station and the Transbay Transit Center, which will connect many different transportation modes and operators, and to expand and connect existing transit infrastructure, such as extending the SMART train to the Larkspur Ferry terminal. The goal is to provide seamless access to employment, education and recreation across the region, with connections to the rest of the state.[45] California's big transportation initiatives will require integration between operators in order to succeed. And yet there are no plans to develop multi-operator fare policies to support the type of trips we are explicitly building for — let alone the types of trips riders are currently taking.

Moreover, the need to pay a second fare when transferring contributes to awkward, unwelcoming station designs that make it harder to use multiple operators. Riders must climb and then descend multiple sets of stairs or navigate confusing station layouts just so they can tap out of one system and into another.[46] Multi-operator fare policy can support planning for transit in a more integrated way.

[45] The extent to which connecting will be a part of transit trips is poised to grow considerably. Done well, connections can help maximize mobility. For example, Diridon Station is expected to see nearly as many transfers between transit agencies in 2040 as there are transit trips today among all of the local and regional agencies that use the station. See: Adina Levin, "San Jose Diridon Expects Nearly as Many Transfers in 2040 as Transit Trips Today," Green Caltrain blog, 2017, http://www.greencaltrain.com/2017/04/san-jose-diridon-expects-nearly-as-many-transfers-in-2040-as-transit-trips-today

[46] At key transfer points in the region, such as the BART and Caltrain transfer at Millbrae, there are no signs making it clear that tapping into BART doesn't automatically end a Caltrain trip and that a rider must in fact tap out of Caltrain and into BART — a common misconception among infrequent users of the systems. That transfer and the transfers under Market Street are emblematic of how the need to pay again creates physical barriers that make transferring intimidating and unintuitive.

Fare policy decisions are made without considering adjacent systems.

When a transit operator makes a change to its fare policy, it assesses the impacts of the change to its ridership and revenue — but not to the transportation network overall. For instance, in 2019, AC Transit increased its transbay bus fares by $1 to $5.50. AC Transit expects ridership to stagnate after the fare increase.[47] But this increase could push more riders onto BART during overcrowded peak hours, or it could encourage people to drive at a time when the Bay Bridge is at capacity. Yet AC Transit did not consider these impacts in its fare study, nor was the agency required to do so. The complexity of the region's fares limits our ability to use fare policy as part of our regional planning discussions. In contrast, some cities use fares strategically to manage demand across multiple modes of travel. In London, for example, the flat-price bus fare is low in part to divert users away from the congested tube network and to encourage them to use buses for short trips.[48]

Ultimately it doesn't matter that an individual transit operator's fare policy is coherent if the cumulative design of the region's fare policy is not. What's more, no one is looking out for these regional inconsistencies. By not taking a holistic approach to fare policy, the region misses opportunities to use pricing to manage demand across the transportation system, influence regional planning decisions and achieve the transit ridership goals we have for our region.

Fare policy does not help during a service disruption.

If a delay or disruption happens on their usual transit service, riders may be unlikely to switch to another operator with an unfamiliar set of practices, prices and products. During service disruptions, operators do not always honor each other's tickets or passes, even though doing so could help mitigate the impacts of the disruption and keep people moving.

Furthermore, riders might not have the right "currency" to use a different service. Products that mimic E-cash, such as BART's High Value Discount (HVD) ticket, are particularly problematic in that they give users the sense of having currency that can be used on any transit system but are in fact specific to one operator. During an emergency, riders can't use their BART HVD fare balance to take the ferry or a transbay bus — and this is often news to them.

Problem 5: Disparate fares limit the usability and appeal of Clipper.

Fare payment systems such as Clipper are deeply linked to fare policy; each exerts an influence on the other. A fare payment system should have a strategic and clear underlying fare policy. If that fare policy is confusing, inconsistent and complex, the shortcomings will manifest in the fare payment system. According to MTC surveys, transit riders struggle to understand what Clipper supports and offers, whether it calculates transfers and discounts, whether it works across systems and whether it holds cash as well as transit passes — shortcomings that are rooted in disjointed fare policy.[49] All of this makes Clipper less appealing and can affect whether people choose to use it.

For example, a key point of frustration that prevents riders with low incomes from adopting Clipper is the card's minimum balance requirement. Not only does it make their money inaccessible, but they have to be mindful when switching operators because the balance requirements vary from one operator to the next (see Figure 8). The need to memorize every required balance can leave people stranded far from home without a payment option.

[47] Michael A. Hursh, General Manager, AC Transit to AC Transit Board of Directors, Feb. 28, 2018.

[48] Peter Lipscombe, "Transit Fare Policy: An International Best Practice Review for Metro Vancouver," University of British Columbia, 2016.

[49] In 2018, the Clipper program conducted surveys to gauge customer satisfaction with Clipper and its features and to better understand the reasons why transit riders opt not to pay with Clipper. Notable findings from the survey of non-Clipper users include: 38 percent don't know if you can get a transfer with Clipper; 41 percent don't know if agencies offer a discount if you use Clipper; 30 percent don't know if Clipper is only for people who use monthly passes; 59 percent were more like to use Clipper after learning that you can load cash value and passes for multiple transit agencies on a single card; and 56 percent were more like to use Clipper after learning that Clipper automatically calculates the cost of your ride including discounts and transfers. See: Clipper Fall 2017 Survey Results; Carol Kuester, "Next-Generation Clipper (C2) Public Engagement," to Clipper Executive Board, 2018.

Figure 8. Clipper Card Minimum Balance Requirement Differs by Operator

Transit operator	Clipper minimum balance requirement
AC Transit, Dumbarton Express	$0.01
BART	$2.00 (Adult); $1.00 (Y/S/D)*
Caltrain	$1.25
City Coach	$6.00 (Adult); $5.50 (Y/S/D)
The County Connection	$1.75 (Adult); $0.75 (Y/S/D)
FAST	$6.00 (Adult); $5.50 (Y/S/D)
Golden Gate Transit	$2.25 (Ferry only)
Marin Transit	$1.80 (Adult); $1.00 (Y/S/D)
Muni	$2.00 (Adult); $1.25 (Y/S/D)
Petaluma Transit	$1.50 (Adult); $1.25 (Y); $0.75 (S/D)
San Francisco Bay Ferry	$5.30 (Adult); $3.50 (Y/S/D)
Santa Rosa CityBus	$1.50 (Adult); $1.25 (Y); $0.75 (S/D)
SamTrans	$0.01
SMART	$3.50 (Adult); $1.75 (Y/S/D); no minimum balance is required if using a 31-day pass
Solano Express	$6.00 (Adult/Y); $5.50 (S/D)
SolTrans	$6.00 (Adult); $5.50 (Y/S/D)
Sonoma County Transit	$3.00 (Adult); $2.75 (Y); $1.50 (S/D)
Tri Delta Transit	$1.75 (Adult/Y); $0.75 (S/D)
Union City Transit	$0.25; no minimum balance is required if using a 31-day pass
VINE	$6.00 (Adult); $5.50 (Y/S/D)
VTA	$1.75 (Adult/Youth); $0.75 (S/D)
Wheels	$1.75 (Adult/Youth); $0.75 (S/D)
WestCAT	$1.75 (Adult); $0.75 (Y/S/D)

** Y= Youth; S= Senior; D= People with disabilities*

Source: SPUR analysis, current as of Jan. 2019.

This is just one example of how Clipper, meant to simplify the Bay Area transit experience, instead acts as a mask, covering up layers and layers of complex and disjointed fare policy. As a result, it works best for commuters, higher-income earners and people willing to wade into the complexity, when it should work equally well for people of all income levels for all types of trips. The majority of transit riders who don't use Clipper are over 55, have a household income under $35,000 and are frequent transit users.[50] SPUR found that a key reason people with low incomes opt not to use Clipper and instead pay for transit with cash is to maintain control; the variety of price points can be challenging to manage, and there are few surprises when paying with cash.[51] Fare complexity weighs on riders who need to know and plan for what they're paying

[50] Frequency was defined in the survey as riding transit three or more times a week. See: Clipper Fall 2017 Survey Results; Carol Kuester, "Next-Generation Clipper (C2) Public Engagement," to Clipper Executive Board, 2018.

[51] In 2017, SPUR, MTC and the Alameda County Transportation Commission partnered with the Haas School at UC Berkeley to host a case competition focused on the challenge "How might we increase mobility for low-income families through the Clipper card system?" The students interviewed transit riders with low incomes to understand their reasons for using and not using Clipper to pay for transit. Anxiety, vulnerability, stress and distrust when using Clipper emerged as common themes among the interviewees.

and who don't want to put all their trust in the transit system to correctly calculate their fare. When Clipper is inaccessible to riders with low incomes, it means that they pay more for transit, since most systems offer a discount for paying with Clipper.

Complex fares make retail Clipper sales more challenging.

Clipper's retail network — the locations where people can purchase and add cash value and passes to a Clipper card — is anemic.[52] There are a number of reasons why the Clipper retail network is insignificant — retailers, for example, find the "add value" equipment clunky and hard to use. But disjointed fare policy is also a contributor.

The experience of buying and loading value to a Clipper card at a Walgreens or another retail location is complicated by the volume of passes offered by transit operators. At retail locations, the Clipper card isn't visible or easily accessible; it's behind the counter. Once riders figure out how to acquire it, they need to decide if they want to load their card with cash, a pass (and if a pass, which pass) or both. Since there are simply too many options to fit nicely on a page, there's no visual (such as a graphic) for a rider to look at to scan their cash and pass options — and retail clerks can't possibly remember all the details of the more than two dozen passes available to riders. This makes for an unintuitive, off-putting buying experience for riders and a less than ideal vending experience for retailers, many of which opt not to engage in Clipper sales at all. The retail network accounts for roughly 13 percent of all Clipper sales.[53] Most of the time, Clipper users purchase Clipper cards and/or add value either online or at ticket vending machines.

Portland offers an example of how simplified fare policy can support a more extensive retail network. The Hop Fastpass, the fare payment card for the Portland region, is essentially a gift card and can be sold wherever gifts cards are sold. At major grocery and convenience stores in the Portland region, it hangs in the same rack as gift cards for other retailers. All a rider has to do is take a Hop Fastpass from the shelf and ask a clerk to add money to it — just as they would with a Starbucks or Amazon gift card. This simple exchange is possible because the Hop Fastpass doesn't support passes. There's no need for passes; instead, all riders get a good deal because they automatically have access to fare capping — a loyalty reward derived from the cash value stored on the card. Retailers prefer this scheme because not only are they already familiar with gift card processing, but also they don't have to become a walking encyclopedia of fare passes. The expanded retail network and fare capping combine to provide increased equity and access for transit users in the Portland region.[54]

Fragmented fare policies drive up the cost to run Clipper.

The plethora of passes and the wide variety of transfer discounts Clipper supports are two of the system's biggest expenses. That's because whenever there is a change to the system, extensive testing must be done to make sure that the new fare works with all the existing fare policies. While testing will be less onerous in Clipper 2.0, it will still be necessary; as long as fares remain fragmented, testing will continue to be costly and time-consuming.

Industry experts maintain that MTC and transit operators could save $3 million to $4 million in the design and development of Clipper 2.0 — and millions more throughout the lifetime of Clipper — if they streamlined fare policies before transitioning to the new system. These savings would accrue to transit operators in particular because they pay the bulk of the costs when making updates or changes to Clipper's fare rules.

[52] The Clipper retail network is especially anemic in lower-income areas. For example, an analysis of Clipper retail locations by Marin Transit found that in the areas with the highest transit ridership and highest concentration of minorities, there is only one Clipper retail outlet. See: Marin Transit, 2016–2025 Short Range Transit Plan, Appendix B: Fare Analysis. The Clipper 2.0 Request for Proposals included a requirement that a minimum of 25 percent of all Clipper retail sites be in "communities of concern." This was a SPUR recommendation.

[53] In September 2018, Clipper sales via Autoload were $23 million, as were sales via ticket machines. Retail sales were $7.5 million. See: MTC, Current Clipper Program Update, Oct. 2018.

[54] "Interview with Tim McHugh and Rhyan Schaub — Lessons from TriMet's Hop Fastpass," Trillium blog, https://trilliumtransit.com/2018/08/16/trimet-hop-interview/#retail

Public transportation may be left out of the new mobility marketplace.

The world of fare payment has changed dramatically since the transit smartcard was conceived. The next frontier in transit payment is the integration of different travel modes — public, private, shared — on the same platform and payment system. This is often called "mobility as a service" (MaaS); it's a nascent concept and many of its core assumptions have been proven in only a few markets.[55] Nevertheless, by making it easier for people to pay for a trip regardless of the mode used, MaaS holds the potential to help grow transit's market share and reduce reliance on private cars.

Clipper 2.0 will provide the technology required to create a MaaS experience in the Bay Area. The functionality could allow a visitor from Seattle to purchase a BART ticket through their Google Maps app or an Oakland resident to buy a subscription bundle that includes Ford GoBike, AC Transit and BART, for example. However, MTC and Bay Area transit operators are not ready to take advantage of these new features.

The region's disjointed fare policy, lack of coordinated fare products and lack of revenue-sharing agreements will make it very difficult for public transit operators to participate in MaaS schemes. The 35,000 business rules that run the Clipper system discourage software developers from building solutions that will work across transit operators, and make it harder to develop loyalty programs that reward frequent transit use regardless of operator. The region's fare policies are so complicated that they can't be found on most transit apps. And the region has yet to decide whether allowing commercial operators to sell transit tickets is a good thing or how to even approach the idea. Only a handful of multi-operator passes are available, and there is no such thing as a pass that includes transit-adjacent services like bike sharing or car sharing. These are prerequisites for participating in a MaaS system.

It is entirely feasible that without leadership from the public sector, the region's individual transit operators could opt to join certain MaaS platforms and not others. Already transit operators are each developing their own apps, putting the region at risk of repeating in the digital realm what Clipper solved for when it sewed our patchwork transit network together. It's also possible that public transportation could be sidelined by a commercial MaaS platform. Ride-sharing services like Uber and Lyft are already entering the MaaS space, aiming to cultivate an audience that will turn to their app, and their app alone, to navigate cities.[56] Advents in technology are making it possible for private companies to develop mobility subscription bundles that include public transit — without public transit's knowledge. In London, the transit app Citymapper went around TfL to develop a subscription service for multiple transportation options, including rail, bikeshare and ridesourcing. Citymapper created fare policy where there was none to meet a market demand that the public sector had failed to meet.[57] Both Google and Apple are already trip planners with associated ticket prices in some places. In addition, both Apple and Google Pay are gaining popularity as are virtual transit cards which offer the same functionality as smart cards, without having to get a smart card — leading to the possibility that smart phones could provide everything many riders need to get around. Indeed, transit apps are no longer cutting edge. Why should you have to have special currency to pay for transit, when you can now just as easily pay for it directly with a contactless credit card or Apple and Google Pay? Apps are helpful for account management, but beyond that their utility is waning.

Should public transit operators not work together to unlock the value of its existing market position, the future of fare payment is likely to undermine the region's investment in Clipper as well as public transit's ability to function as a network. This is not to recommend transit operators have to develop the software or design the interface. But to achieve policy goals and maintain trust, they need to take ownership of the integration process and steward the development of MaaS.

[55] As of 2018, the forerunner in MaaS space is Whim, a private company that operators a MaaS platform in Helsinki, Finland, among other locations. With Whim, users can choose between different service bundles that provide differing levels of access to public transit, taxis and bike and car sharing.

[56] Jessi Hempel, "Why Lyft Is Trying to Become the Next Subscription Business," *Wired,* 2018, https://www.wired.com/story/why-lyft-is-trying-to-become-the-next-subscription-business/

[57] Nicole Kobie, "Citymapper just announced a subscription service for London's muddled transport network," *Wired,* 2019, https://www.wired.co.uk/article/citymapper-pass-london-transport-subscription

CHAPTER 2

Challenges to Regional Fare Integration

Streamlining and integrating fares across the region will be politically and technically complex. We will need to overcome many long-standing challenges and question many assumptions and practices that are deeply embedded in how the Bay Area conceives and delivers transit. But it is essential work. We've highlighted those barriers that we feel are most salient and need to be solved in order to move this conversation forward.

Challenge: No one is responsible for regional fare policy.

No single agency or central authority in the region is responsible for overseeing and coordinating regional fares on an ongoing basis. MTC does not set fare policy for transit operators, and while it does have fare coordination power, the specifics of this power have never been defined. The Clipper Executive Board (CEB) — which is comprised of the top executives from the seven largest transit agencies, two smaller transit operators and MTC — was formed in 2016 and is responsible for the management of the Clipper fare payment system and strategic planning for the next-generation system.[58] The CEB provides policy, oversight, direction and authorization of significant business matters for Clipper, but its purview does not include fare policy.[59] And while the boards of directors at transit operators have ultimate approval over their agencies' fare policies, they are not required to consider the regional implications of their fare policies or to coordinate with other operators; these regional effects can go overlooked or unaccounted for as a result. With no one to care for regional fare policy, the issue has been punted from one entity to another, and the remedies have been ad hoc and piecemeal.

There is no universal agreement on who should coordinate fares for the region.[60] Were MTC to take this role, it is unclear how the existing MTC committee structure would allow the commissioners to discuss fare policy. No MTC committee has been given the responsibility for transit coordination even though state law assigns this responsibility to MTC. For the most part, topics related to transit coordination are addressed at various MTC committee meetings, if and when they are agenized and typically as part of funding decisions. By way of contrast, MTC has committees specific to freeways (Bay Area Infrastructure Financing Authority) and tolls (Bay Area Toll Authority), which elevates the importance and the profile of these parts of our transportation system. But transit decision-making at MTC is fragmented; there is little if any space where commissioners can evaluate and solve for the ways individual decisions — including but not limited to fares, Clipper and other transportation pricing initiatives such as bridge tolls and high-occupancy vehicle lanes — support and encourage transit use throughout the region.

[58] In 2010, MTC and the transit operators participating in what was then Translink (the predecessor to Clipper) overhauled the governance structure for the region's fare payment program. Previously, a Translink Management Group was comprised of one representative from each of the original six operators in the program (Muni, BART, AC Transit, SamTrans/Caltrain, VTA and Golden Gate Transit), a representative from the region's smaller transit systems, and a representative from MTC. The Translink Management Group dissolved in 2010, and MTC assumed the lead role for program management and direction as well as contract ownership. Citing a desire to have more input and control with respect to the current Clipper system and planning for the next-generation Clipper system, transit operators worked with MTC to establish the Clipper Executive Board in 2015. See: Celia Kupersmith, "TransLink Governance: Where Do We Go From Here?," Presentation at APTA Fare Collection Workshop. See also: Clipper Memorandum of Understanding (MOU), http://clipper.mtc.ca.gov/pdf/Clipper_Amended_and_Restated_MOU.pdf

[59] These responsibilities are defined in the Clipper MOU, which also outlines MTC's and transit operators' responsibilities with respect to the Clipper fare payment system. The MOU does not list fare policy as a "significant business matter" over which the CEB has jurisdiction, nor is it listed as one of the CEB's "key duties."

[60] Eleanor Leshner and Sara Barz, "Trouble at the Fare Gates: Understanding Barriers to Providing Seamless Regional Fare Payment in the San Francisco Bay Area," Conference Proceedings of the 94th Annual Meeting of the Transportation Research Board, Jan. 2015.

Challenge: The public has few tools for shaping regional fare policy and Clipper.

The status quo does not adequately include the perspectives of transit riders and other key stakeholders when it comes to decisions about fare policy and payment. Yet these decisions have a major impact on transit riders, businesses, institutions and cities. While individual operators and the Clipper program may survey or consult riders and other stakeholders for input, these groups are not part of the design or decision-making processes for Clipper; such processes for regional fare policy don't exist.

Challenge: The impacts of fare integration have not been studied.

The potential impacts of regional fare integration are not well understood, and the issue has not been studied for more than 10 years. While transit operators have expressed some interest in fare streamlining and fare integration, the overriding assumption is that fare coordination will negatively impact revenues and ridership. In the absence of useful information, fear and assumptions are driving the decision to maintain the status quo.

Challenge: The customer experience does not get prioritized in decision-making.

What transit riders pay for a ride and how they pay are major components of the experience of riding transit. Customer experience highly influences the decision to use or not to use transit.[61] Yet the impact that fare policy and Clipper have on the rider experience is not always acknowledged, let alone measured or accounted for. The needs of transit operators often supersede the needs of riders in decision-making and policy-setting.

Challenge: Transit operators fear losing revenue.

To varying degrees, transit agencies rely on their farebox revenues to support their operations. For some operators, the fare revenues make up a significant portion of their operating revenues. As a result, they're reluctant to risk any losses to farebox revenue that may result from changes to fares and fare products.[62] Regional fare integration would require transit operators to give up some independence and control over their revenues. Fare integration could increase revenues regionally, although an individual operator could see its revenues decline. To offset declines, revenues could be distributed from a central authority to individual transit operators. But this approach would demand a recalibration of how fares are collected and how fare revenues are distributed, a significant departure from the status quo.

[61] Alexis Perrotta, "Fare Collection and Fare Policy," Transit Leadership Summit, https://transitleadership.org/docs/TLS-WP-Fare-Collection-and-Fare-Policy.pdf

[62] By way of contrast, Metra, the commuter rail system in the Chicago region, adopted a "nothing ventured, nothing gained" mentality and opted to pilot changes to its fare structure and introduce a day pass in an effort to increase ridership and revenues. Metra figures the pilot will cost about $500,000, but the agency hopes that in time ridership will grow and revenues will increase. See: Mark Wisniewski, "Metra Will Test a New Fare Structure, One Day Pass," *Chicago Tribune,* 2018, https://www.chicagotribune.com/news/local/breaking/ct-met-metra-fare-structure-20180509-story.html

CHAPTER 3

Action Plan

It doesn't have to be this way. While each transit operator sets its own fare policy, transit in the Bay Area — and across the state — will work best when all the pieces fit together. No single municipality or transit agency can solve this problem alone. They will all need to work together to harmonize fare structures, encourage the seamless use of transit in multiple cities and make it attractive to use transit for all types of trips, not just commuting. Integrating and simplifying fares will not be easy. It will require investment from the state, individual operators, cities and employers, as well as riders. It will also require detailed policy changes, agency by agency and city by city.

SPUR recognizes that this is a major shift from the status quo and that it is a big risk for transit operators to support regional collaboration on fares. But the status quo is unacceptable; a holistic approach to fare policy is crucial to overcoming the problems caused by the region's disjointed fare policy and to preventing a downward spiral that leads to even greater inconsistency and divergence.

SPUR has developed an Action Plan for realizing a new vision for fare policy, one that prioritizes the needs of the rider and the region. We recommend pursuing the 15 actions below in concert: They are a checklist of necessary steps rather than a menu of options to choose from. Fixing the region's fare policy and realizing the promise of the Clipper redesign requires careful attention to each action.

Within the following action items, three are particularly urgent and salient:

Action 3: Conduct a business case for fare integration.
Action 4: Establish a fare integration fund and adopt a regional revenue-sharing agreement.
Action 7: Determine a body to oversee regional fare policy.

Action 3 addresses the need for information on the actual impacts of regional fare streamlining and integration — essential if the region is to move beyond the long-held fears and assumptions that maintain the status quo approach to fare policy. **Action 4** tackles the need to incentivize coordination and manage the risk of falling revenues from fare streamlining and integration. And **Action 7** calls for the establishment of a body to officially oversee regional fare policy — long missing and crucial; its absence has allowed the issue of disjointed fares to fester without resolution.

Together, these actions form the necessary foundation for a different approach to fare policy in the Bay Area. They are big moves, and achieving these actions requires significant time, effort and diligence on the part of policymakers and transit operators.

Strategy 1: Streamline and integrate fares.

The region's transit fares should be coordinated across transit operators to make it easier, more intuitive and more affordable for riders to use the many transit services available to them. SPUR believes that we must make immediate improvements while also planning for the long term. We propose a step-by-step process, with a focus on streamlining and integrating the fares of the biggest and most connected operators first.

Action 1: Establish a vision, goals and objectives for regional fare integration.

Who: MTC, transit operator boards, transit operators

To support and guide a conversation around fare integration, MTC and transit operators should establish a shared vision, goals and objectives. The vision should focus on growing transit use — especially drawing riders away from autos and not penalizing those using multi-operator trips — and supporting the seamless use of multiple operators — which in turn supports the ways that Bay Area cities plan to grow — while maintaining the financial stability of the region's transit operators.[63] SPUR recommends the following goals for regional fare integration:

- Transit is affordable and Bay Area residents of all income levels have full access to quality transportation options; it should be cheaper to ride transit than drive.
- It is easy for transit riders to understand and calculate the price of a ride on transit.
- Transit fares attract new and infrequent riders to transit, optimize the use of the region's transit network and put transit operators in the best position to take advantage of innovation in fare payment.
- The transit customer experience is simple and consistent across the region.
- The same types of trips should cost the same throughout the region.
- Fare management and operations are simple so that rules are practical to implement, manage and modify.

Action 2: Standardize and simplify fares before Clipper 2.0 launches.

Who: MTC, Clipper Executive Board, transit operator boards, transit operators

There is no good reason to saddle Clipper 2.0 with all the complexities and limitations of current fare policies. We recommend addressing the following before Clipper 2.0 launches:

1. Standardize Clipper transfer discounts.

Transfer discounts should be approached strategically to support the use of transit as a network. MTC and transit operators should develop standard transfer discounts for the region. Creating a flat transfer rule would offer a better rider experience while at the same time reducing engineering and testing time.[64] One option would be to offer a steep transfer discount (for example, $1.50 as in Toronto and New South Wales) when transferring between systems.

2. Standardize fare categories and their discounts.

The criteria for fare discount categories and the discount amount should not shift from operator to operator or city to city. Standardized fare categories and discounts would make it easier for customers to understand and predict the cost of a ride and would support transit use by different groups of riders.

3. Replace the minimum balance requirement with a "one more ride" benefit.

Eliminating the minimum balance and replacing it with a "one more ride" benefit could make transit more accessible to riders with low incomes while increasing the number of riders who adopt Clipper. The "one more ride" benefit would allow

[63] These goals are modeled on the fare integration goals Metrolinx created to guide its fare integration effort. See: Metrolinx, "Fare Integration," http://www.metrolinx.com/en/regionalplanning/fareintegration/default.aspx

[64] For example, in the Greater Toronto and Hamilton Area, riders who transfer between bus operators (there are nine) within two hours do not have to pay another fare (i.e., there is no transfer penalty).

riders to make one more trip even if they don't have sufficient funds, as long as they have a positive balance on their Clipper card when they board. Riders would have to add more funds to clear the negative balance before they could use their Clipper card again.

At the very least, the minimum balance should be standardized across operators — or across regional operators first and then across local operators later.

4. Replace passes with fare capping.

MTC and the Clipper Executive Board should establish a use threshold for passes to be included in Clipper 2.0 and eliminate products that mimic E-cash (cash value on a Clipper card), such as BART's High Value Discount. SPUR recommends this use threshold: If, over a four-year period, less than 10 percent of an agency's riders pay for transit with a pass or if the use of a particular pass has not increased as much as ridership, that pass should be eliminated and not retained in Clipper 2.0. Passes that are widely used should transition to fare caps for Clipper 2.0.

The trend to paying for transit with E-cash as opposed to passes suggests that single-agency passes are becoming less attractive to transit riders. A loyalty product based on E-cash (i.e., fare capping) might be better aligned with riders' needs and could lead to greater revenues for transit operators by attracting more people to transit for all types of trips and by encouraging them to use Clipper in order to get the best fare.[65] MTC's research supports this: 75 percent of the non-Clipper users MTC surveyed said they would be much more likely to use Clipper if there was a daily or monthly maximum after which the rest of their trips were free.

While there are many advantages to fare capping, riders should not be tasked with remembering a host of different caps, one for each transit system. Fare caps should reward loyalty for using transit regardless of the operator. See the sidebar "Four Models for Regional Fare Capping" for examples of how the region could approach fare capping.

[65] Carol Kuester, "Next-Generation Clipper (C2) Public Engagement," to Clipper Executive Board, 2018.

Four Models for Regional Fare Capping

Fare capping is a policy that accumulates a rider's single-ride fares and then stops charging new fares when the rider reaches the equivalent daily, weekly or monthly pass rate. Fare capping ensures that all riders get the lowest price for transit, not just those with the means to purchase a pass up front. For budget-sensitive people, fare capping offers predictability, as riders know that they will never need to pay more than the cap. Many regions have adopted fare capping to ensure that low-income riders gain from new and more flexible fare payment systems.[66]

AC Transit, VTA, Muni and SMART each offer a daily fare cap. While these caps have their benefits, single-agency fare capping is not sufficient because it prioritizes loyalty to individual transit operators rather than to the transit system as a whole. It also does nothing to address the multi-operator fare penalty. As people with low incomes are displaced to the outer edges of the region, the likelihood that their transit trips will require a second operator increases. The equity benefits of fare capping would be more meaningful and significant if applied across transit operators and modes of transportation. Multi-operator and multi-modal fare caps are standard offerings in many regions throughout the world.[67]

Clipper 2.0 will have the functionality to support daily, weekly and monthly fare capping both for individual transit operators and across transit operators. For these reasons, SPUR recommends that the Bay Area pursue regional fare capping. Lower fare caps could be offered to seniors and/or youth to provide an additional discount for family groups. SPUR has identified several ways transit operators could approach regional fare capping. The options are not necessarily mutually exclusive and could be phased in over time.

Bus fare cap: Instead of each bus agency adopting its own fare cap, the fare cap could be offered across all buses. Under this scheme, each local bus trip a rider takes, regardless of the operator, would contribute to the daily, weekly or monthly bus fare cap. Many riders currently use more than one bus operator, which suggests that there is a market for a bus cap offered across operators. For example, in 2017: [68]

- 31 percent of Clipper cardholders who rode Santa Rosa CityBus also rode Sonoma County Transit
- 28 percent of Clipper cardholders who rode FAST also rode Napa VINE
- 22 percent of Clipper cardholders who rode AC Transit also rode Muni
- 17 percent of Clipper cardholders who rode SolTrans also rode AC Transit

This cap could be launched first in the markets where riders commonly use more than one bus operator to get around.

Inner-core, outer-core and mega-regional cap: Because some riders travel significant distances on transit, it's possible that a single daily, weekly and monthly fare cap for the region would need to be set so high that the majority of transit riders would never reach it. Transit operators might want to develop an "inner-core cap" that aligns with where the region's high-frequency bus and transit service is offered and an "outer-core cap" that aligns with longer trips. A "mega-regional cap" could also be established to capture trips on regional rail such as the Altamont Corridor Express (ACE).

Weekend rail caps: A lower weekend cap across the rail systems (SMART, BART and Caltrain) could encourage people to use transit on off-peak days for non-work trips. Transport for New South Wales, for example, offers a Sunday rail cap that is a sixth of the cost of the usual daily cap.[69]

Weekly travel reward: One version of a fare cap is a weekly travel reward. Once riders complete a set number of paid journeys per week, their fares for the rest of the week are half-price. To make such a scheme viable, the region's transit agencies would need to agree on the definition of a "journey." For example, Transport for New South Wales defines a journey as transfers between modes (trains, bus, ferry and/or light rail) that occur within 60 minutes.[70]

[66] Colin Wright, Vincent Pellecchia and Nick Sifuentes, "A New Way to Ride," TransitCenter blog, Feb. 2018, http://transitcenter.org/2018/02/28/new-way-ride/; and Greater Washington Partnership, "Unlocking the Promise of Integrated Mobility in the Capital Region," July 2018, http://www.greaterwashingtonpartnership.com/wp-content/uploads/2018/05/201807_GWP_Issue-Brief_Integrated-Mobility.pdf

[67] Cities that offer fare capping include London; Dublin, Ireland; and Canberra, Melbourne, Perth and Sydney, Australia. Unlike in Bay Area cities that offer fare capping, the fare caps in these cities accumulate across modes.

[68] Analysis by MTC using Clipper fare payment and pass validation transactions between 3 a.m. PT on Jan. 1, 2014 and 3 a.m. PT on Jan. 1, 2018. The figures shown here are for 2017 only.

[69] The regulatory body in charge of setting fares for Transport for New South Wales found that the Sunday cap stimulated substantial additional public transport use on Sundays, particularly on ferries. However, it also determined that at least some of the additional demand for ferry service on Sundays comes from customers shifting Saturday travel to Sunday travel in response to the substantial discounts under the Sunday cap. Therefore, the regulatory body is considering setting the Saturday daily cap at the same level as the Sunday cap to spread demand more evenly over the weekend. See: Independent Pricing and Regulatory Tribunal of New South Wales, "More Efficient, More Integrated Opal Fares," Dec. 2015, https://www.ipart.nsw.gov.au/Home/Industries/Transport/Reviews/Public-Transport-Fares/Public-Transport-Fares-in-Sydney-and-Surrounds/10-May-2016-Final-Report/More-efficient-more-integrated-Opal-fares-May-2016

[70] Transport for New South Wales, "Trip, journey and transfer explained," https://www.opal.com.au/en/opal-fares/trip_journey_and_transfer_explained/

Action 3: Conduct a business case for fare integration.

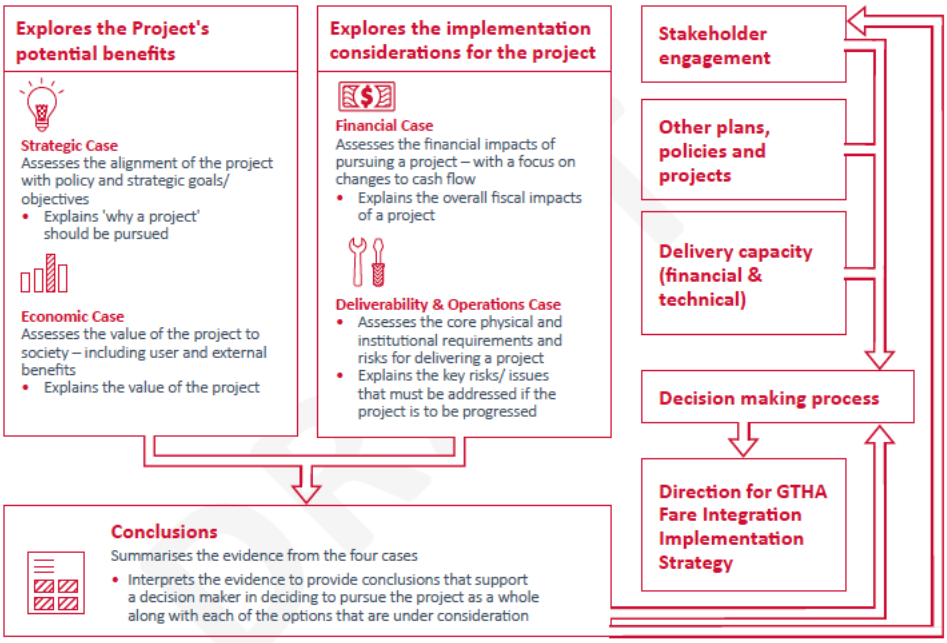
Who: MTC, Clipper Executive Board, Transit Operator Boards, Transit Operators, civic leaders and organizations

The region should conduct a business case for fare integration to identify and evaluate different integrated fare structures for the region. The business case should outline a clear process for full implementation, including any additional funding that may be needed for implementation.

A business case is a tool to inform decision-making that provides a robust analysis of a project's benefits, costs and impacts from multiple perspectives. The analysis itself is not intended to make the decision but rather to support decision-makers in understanding the trade-offs of potential investments.[71] The business case for fare integration would consider the merit of various options for fare integration by assessing how well the different concepts would achieve ridership and revenue targets, as well as broader transit objectives. Figure 9 shows the business case structure that Metrolinx, the transportation authority for the Greater Toronto and Hamilton Area, uses to evaluate the potential benefits and impacts of a project, program or plan.

Figure 9. Metrolinx Four-Part Business Case

Metrolinx uses a four-part business case (strategic, economic, financial and deliverability/operations) to evaluate the potential benefits and impacts of a project, program or plan. Metrolinx requires business cases for capital infrastructure investments with a $50 million or more budget and for replacement investments with an impact of $75 million or more. As the figure shows, a business case is one of many inputs that guides the decision-making process at Metrolinx.



Source: Steer Davis Gleave, "GTHA Fare Integration: Draft Preliminary Business Case," Sept. 2017.

The business case for fare integration would need to include assumptions relating to revenues — for example, whether or not operators could lose revenue under a regional fare structure. These assumptions dictate how well a fare structure performs; it may perform well with one set of pricing assumptions and poorly with another set.[72] The 2008 Fare Integration Study only included a revenue-neutral scenario, in which operators would not lose revenues from fare integration.

[71] Steer Davis Gleave, "GTHA Fare Integration: Draft Preliminary Business Case," Sept. 2017.

[72] *Ibid.*

Consequently, the integrated fare options the study analyzed were priced high, because the revenues earned needed to cover the revenues lost. As a result, the options weren't financially feasible for riders, and the study was dismissed. To avoid the same outcome, SPUR recommends that the business case for fare integration include two different scenarios: revenue neutrality and revenue investment.[73] The revenue-neutral scenario should consider the potential of an integrated fare structure to increase ridership overall and thus increase revenue for the regional system, which could then be distributed among operators through revenue sharing. (The 2008 Fare Integration Study only considered the revenue impacts experienced by individual operators.) The revenue-investment scenario should assume that a certain amount would be invested, ether by the region or the state or both, to support the development of an integrated fare structure. It's important that the business case be informed by Clipper data, as well as user research with a human-centered design approach.[74]

Finally, to ensure the business case is successful and prioritizes the customer experience, MTC should convene a steering committee comprised of transit agency staff and board members as well as transit advocates. Transit agency board members understand the operating needs of transit agencies as well as the broader role public transit serves in the community by providing access to opportunity; furthermore, they set fare policy. As such, we believe it is imperative that they be part of the steering committee and that it not be limited to transit agency staff.

Action 4: Establish a fare integration fund and adopt a regional revenue-sharing agreement.

Who: MTC, California State Transportation Agency (CalSTA)

To incentivize participation and compensate operators for possible losses, MTC and CalSTA should develop a fare integration fund. The funding should also support the development of regional revenue sharing and fare collection systems.

There are precedents for this approach. For example, the Seattle region established such a fund to support the development of the PugetPass, a transit pass that works on six different operators in the region. In 1996, voters in the Seattle area approved a local tax increase to fund transportation system enhancements detailed in the Sound Move plan. The plan included a $60 million fare integration budget to support the development of a "single-ticket ride." The funds were used to compensate some of the participating agencies for financial losses for participating in the regional pass program.[75] Another example comes from the Greater Toronto and Hamilton Area. As an initial step to full fare integration, the Toronto Transit Commission and GO Transit systems began offering a transfer rebate to customers who switch between the systems; the Government of Ontario provided general provincial revenues to protect the operators from potential losses.[76]

The size of the budget for a fare integration fund for the Bay Area would depend on the scale and scope of the fare integration that's planned and would need to grow as the region pursues more ambitious fare integration efforts. Revenue losses from participating in a multi-operator accumulator, for example, are likely to be less than revenue losses from

[73] *Ibid.* For example, Metrolinx's fare integration business case analyzed two scenarios: a revenue-neutral scenario, in which the total revenue generated under fare integration equals the status quo revenue, and a revenue-investment scenario, in which the government invests an additional 5 percent to lower the amount needed from customers (i.e., how much the transit system would have to charge for a ride to cover costs), in order to show how investment may augment fare integration.

[74] Vancouver's TransLink used a human-centered design to guide the development of its new fare structure. See: Sagal Kahin, "Design for Policy: Bringing a Design Thinking Approach to TransLink's Fare Review Process," June 2018, https://www.openroad.ca/blog/design-thinking-translink/

[75] Sound Move identified eight different funding categories. Included among them was a Regional Fund (totaling $280 million) to pay for the systemwide elements of Sound Move. This included funding to support the coordination of regional and local fare structures that would allow customers to use a single ticket or pass to travel on all public transit services in the regional network. This came to be the PugetPass. The Regional Fund was created with an equal percentage of local tax revenues contributed by five subareas in the region. See: Ann Joslin, "Regional Fare Policy and Fare Allocation, Innovations in Fare Equipment and Data Collection," *National Center for Transit Research,* 2010, http://www.nctr.usf.edu/abstracts/abs77705.htm

[76] The province of Ontario is covering the losses from the transfer agreement. Provincial support will be based on actual ridership using PRESTO data up to the agreed-on level of support: up to $7.15 million in Year 1, and up to $18.4 million in Years 2 and 3, for a total of $43.95 million. See: City of Toronto, "Advancing Fare Integration," Oct. 2017, https://www.toronto.ca/legdocs/mmis/2017/ex/bgrd/backgroundfile-107766.pdf

implementing a common fare structure throughout the region; a scheme involving a multi-operator accumulator, therefore, would call for a smaller fare integration fund than a single common fare structure would. This would be teased out in the business case.

Just as importantly, operators would need to agree on revenue sharing. For instance, transit operators allocate the revenues from the PugetPass in proportion to the total value of services used on each operator during the period in which the pass is valid.[77]

Funding for the fare integration fund could come from CalSTA. This would make sense given the alignment between regional fare integration and the state's vision for integrated transportation. Also, California has ambitious greenhouse gas reduction goals, and increasing transit use is critical; disjointed fare policies that confuse and frustrate riders and degrade the experience of using transit run in direct opposition to these aims. As in Seattle, regionwide funding measures are also a potential source of funding for the fare integration fund.

Action 5: Improve and enhance the regional Means-Based Fare Program.

Who: MTC, transit operator boards, transit operators

The Means-Based Fare Program pilot, scheduled to take effect in the fall of 2019, will offer qualifying low-income people a 20 percent discount on BART, Golden Gate Transit and Caltrain and a 50 percent discount on Muni. The pilot is an important first step toward easing the costs of transit for riders with low incomes. The program can be improved through evaluation, outreach and comprehensive user research.[78]

Specifically, SPUR recommends that MTC and transit operators take the following next steps to improve and enhance the program:

- Fund an independent organization to evaluate the pilot program, and seek to understand how each aspect of the pilot — from outreach to enrollment to use — is received by users and non-users in addition to the participating transit operators.
- Develop a detailed road map for bringing additional transit services into the program. We suggest prioritizing higher-priced services and/or services that provide the connecting legs of multi-operator trips. The road map should be informed by the program evaluation and should include a timeline for program expansion, identify additional funding sources and address the potential for deeper discounts.
- Conduct comprehensive user research to understand the many pain points people with low incomes experience when paying for transit.[79]

A major shortcoming of the Means-Based Fare Program pilot is that the discount will only be available on certain operators; the program will not provide equal access to the entire regional transit system, and it won't address the cost burden of relying on multiple operators. Furthermore, mobility is evolving. Flexible mobility options like ride sharing, bike sharing, scooters and microtransit offer new ways to get around and may become more dominant options in a new era of mobility. Clipper 2.0 will offer the functionality to pay for these services using a Clipper account. The region should consider the feasibility of providing a transportation subsidy to people with low incomes in lieu of operator-specific discounts. This idea was explored as part of the Means-Based Fare Program but was ultimately dismissed in favor of the

[77] Oran Viriyincy, "How RCA Fare Revenue Is Apportioned," Seattle Transit blog, https://seattletransitblog.com/2011/06/20/how-orca-fare-revenue-is-apportioned/

[78] For additional details regarding SPUR's recommendation on how the Means-Based Fare Program can be improved, see: https://www.spur.org/publications/policy-letter/2018-04-23/spur-comments-proposed-regional-means-based-transit-fare

[79] A good example of this is the "Unheard Third" survey, a public opinion poll conducted by the Community Service Society in New York City to elevate the concerns of low-income New Yorkers. For example, the survey found that one in four New Yorkers cannot afford a subway or bus fare. As a result of this research, in June 2018 New York City's mayor and city council adopted a half-price fare discount for low-income transit riders. See: Community Service Society, "The Transit Affordability Crisis," 2015, http://www.cssny.org/publications/entry/the-transit-affordability-crisis

individual agency discounts.[80] A transportation subsidy would ease the cost burden for riders regardless of the transit systems they use and would ensure that people with low incomes have access to mobility in whichever direction it evolves.

Action 6: Create versatile transit programs for institutions and employers.

Who: MTC, transit management associations, transit operators, cities, large institutions and employers

The transportation needs of employers and institutions are complex and require solutions that are agile and comprehensive. Employer-sponsored transit programs should be flexible, work for businesses of all sizes and support access to a wide range of transit options across the region. Transit operators should allow transportation management associations and/or chambers of commerce to serve as bulk transit pass purchasing agents for a consortium of smaller businesses. Part-time and contract workers should also be eligible to receive employer-sponsored transit passes.

Strategy 2: Manage fare policy and fare payment to support seamless transit.

MTC, the Clipper Executive Board, transit operators and their boards and CalSTA all play an integral role in fare streamlining and regional fare integration. Yet these entities are not designed to deliver a regional vision for fare policy. This section identifies the ways in which they need to shift their practices and roles or assume new responsibilities or mindsets to set the Bay Area on the path toward regional fare integration.

Action 7: Determine a body to oversee regional fare policy.

Who: MTC, Clipper Executive Board, transit operator boards, CalSTA

The business case will offer important findings as to how the region can best pursue regional fare integration, but without the right governance structures in place to implement its findings, we're unlikely to see anything other than piecemeal, ad hoc solutions. To avoid the same inertia that has hobbled fare integration efforts to date, it is important to assign a public entity the authority to coordinate fares among the region's multiple transit operators. In parallel to the business case, we recommend the region launch a governance study to identify how best to govern regional fare policy.

SPUR offers three different governance ideas:

1. Establish a Transit Coordinating Committee of the MTC Commission.

As the region's authorized coordinator of transit fares and schedules, MTC has a role to play in establishing — and enforcing — a regional vision for coordinating fares and using fares to achieve regional transportation goals.[81] Furthermore, MTC must take on some responsibility for coordinating fare policy to meet shared goals if it is to manage the Clipper program effectively. Co-locating decisions about fare policy where decisions about bridge tolls and high-occupancy lane pricing are made would support integrated decision-making.

[80] The Means-Based Fare Study explored the idea of providing low-income riders with a stipend in the form of cash value added to a Clipper card, which could be used to ride any transit service in the region that accepts Clipper for payment. This option scored the highest against two of the study goals (administration and regional consistency) but was ultimately dismissed in part out of a desire to focus the pilot program on those operators with the lowest low-income ridership (BART, Caltrain and Golden Gate Transit) and because smaller bus operators, concerned about revenue loss, were hesitant to participate in the program. The latter concern, however, could be remedied through regional revenue-sharing agreements. The Means-Based Fare Program is defraying up to 50 percent of operators' revenue losses. The program could choose to defray a higher percentage of smaller bus operators' revenue losses and/or could develop revenue-sharing agreements in which transit operators could cross-subsidize losses on those transit operators that experience the highest use of the subsidy. It should be noted that other means-based safety net programs do not lock users into a specific provider. For example, people who receive EBT (food stamps) can redeem them at any grocery store that accepts the vouchers (of which there are hundreds). See: Regional Means-Based Transit Fare Pricing Study, Technical Memorandum #4: Alternatives Evaluation and Recommended Actions, 2016.

[81] The state directed MTC to coordinate transit fares in Senate Bill 1474, although the legislation provided little guidance as to how the agency could do so. MTC Resolution 3866 instructed transit operators to coordinate on fare payment but did not provide policy direction regarding fare pricing and products on a regional scale. The resolution documents coordination requirements for Bay Area transit operators to improve the transit customer experience when transferring between transit operators and in support of regional transit projects such as Clipper. See: MTC Resolution 3866, http://clipper.mtc.ca.gov/pdf/RES-3866_approved.pdf

To that end, MTC could establish a transit coordinating committee of the MTC Commission.[82] Commission members (and, in particular, the local elected officials — primarily city council members, county supervisors or mayors — who sit on both transit operator boards and MTC) could successfully coordinate and guide fare policy across the Bay Area because they understand the operating needs of agencies as well as the broader role public transit serves in the community by providing access to opportunity.[83] At the same time, it would be critical to include the board members of transit operators at every step of this effort. The committee could be structured as follows:

- The board presidents of:
  - Alameda–Contra Costa Transit District
  - Bay Area Rapid Transit District
  - Caltrain/SamTrans
  - Golden Gate Transit
  - San Francisco Municipal Transportation Agency
  - Santa Clara Valley Transportation Authority
- Three representatives elected by the presidents of the remaining operator boards
- Nine members of the MTC Commission

The committee would provide a forum where commissioners could consider a wide range of planning, funding, management and policy questions related to transit coordination across the region, including but not limited to Clipper, regional fare policy and road pricing. To streamline transportation funding decisions and ensure accountability and compliance, the committee could be responsible for managing and distributing MTC's principal transit funding programs, including the Transit Capital Priorities program and the annual operations funding included in MTC's Fund Estimate, as well as the transit-related funding from bridge tolls. These funding decisions are currently made by either the Programming and Allocations Committee or the Operations Committee. While we understand that the proposed committee would therefore be taking responsibilities from other committees, SPUR believes that consolidating transportation funding decision-making at MTC is critical for transit coordination.

With respect to fare policy and Clipper, the committee could be responsible for the following:

- Developing a vision and goals for regional fare policy
- Establishing a regional fare structure and regional fare products
- Developing one set of standardized transfer options on Clipper
- Determining regionally consistent fare categories (senior, disabled, youth, low-income) and working with transit operators to standardize the discounts offered
- Establishing regionwide criteria for promotions and incentives, such as peak pricing and the Clipper discount
- Establishing regionwide policy for payment integration with private mobility providers and third-party apps
- Developing a transit payments strategic plan to guide the adoption of Clipper and other payment options (e.g., contactless credit cards and apps)
- Developing consistent language about fares for transit operator websites, maps and other communications
- Coordinating between transit pricing and road pricing
- Monitoring and evaluating the use of various transit fare products and transfer policies

[82] Because there's new authority in this committee and its membership would extend beyond MTC commissioners, legislative authority may be necessarily to create the committee.

[83] The MTC Commission consists of 21 members, 18 of them voting members. Nine of these voting members currently serve as full voting members of a governing board for a Bay Area transit operator.

The question remains whether a body like this would have the authority to set fares as well as coordinate fares. This is a difficult distinction and something MTC and transit operator boards would need to discuss and determine over time. Fare coordination alone is an important role, and much can be accomplished through coordinated, integrated decision-making.

Statutory authority may be necessary to establish this body (and to give it the authority to set fares, should the region decide to go in this direction). This may take time. MTC could establish the committee as a first step, to initiate the consolidation of transit decision-making at MTC, and transit board presidents could be brought on once statutory authority is granted.

2. Expand the scope of the Clipper Executive Board to include fare policy.
The responsibility to integrate and streamline fares could sit with the Clipper Executive Board (CEB). The CEB is comprised of transit operator general managers and they offer an important perspective for conversations on regional fare policy as they understand the intricacies of managing and running a transit agency. Fare policy and fare payment are also linked; to successfully manage Clipper, the CEB needs to be able to consider the cost and operational impacts of operators' fare policies when making decisions and recommendations regarding Clipper operations. At the same time, despite having the people in the room who could together make fare coordination decisions, the CEB has thus far resisted any type of fare coordination. It is possible that empowering them to coordinate fare policy could change this outcome. Nevertheless, fare policy is set by transit agency boards and this could complicate the CEB's ability to coordinate fares.

3. Create a Bay Area transit independent pricing board.
Working together MTC, CalSTA and transit operator boards could establish a fully independent regulatory organization to oversee fare coordination. Several regions around the world rely on an independent organization to set fares.

For example, in New South Wales, the Independent Pricing and Regulatory Tribunal (IPART), has jurisdiction over fares. IPART was established in 1992 and is led by a government-appointed panel of three permanent members and is advised by economists, financial analysts, lawyers, engineers and other professionals. IPART determines the maximum average increase in fares for buses, trains, light rail and ferry services transportation in the Sydney area.[84] IPART also makes recommendations on how fares should be set for individual trips, journeys and across a week.[85]

A Bay Area transit independent pricing board could be responsible for designing and developing a regional fare structure and regional fare products, as well as establishing regionally consistent transfer options, fare categories and discounts, and criteria for promotions and incentives. The body could be made up of members from a wide variety of sectors, including policymakers and transit operators as well as members of the public and private sector, in addition to economists, financial analysts and behavioral scientists.

Action 8: Establish fare policy leaders at MTC.

Who: MTC

To coordinate fares successfully, MTC will need to develop capacity around fare policy (i.e., increase or rededicate staff). Staff dedicated to fare policy could manage efforts to coordinate fares and provide technical assistance to transit operators. In addition, these staff members could work with operators that may not have the capacity to take advantage of all the new features Clipper 2.0 will support or to analyze and make use of Clipper data. Fare policy staff could regularly use Clipper data to monitor and evaluate the use of various fare products and transfer policies in order to understand

[84] To determine the cap on the average fare change, IPART considers what the most efficient cost of providing the service would be, and also how much benefit public transport provides for the overall community in terms of reduced congestion and pollution. IPART then determines how much passengers who use the services should pay as fares. See: Independent Pricing and Regulatory Tribunal of New South Wales, "More Efficient, More Integrated Opal Fares," Dec. 2015, https://www.ipart.nsw.gov.au/Home/Industries/Transport/Reviews/Public-Transport-Fares/Public-Transport-Fares-in-Sydney-and-Surrounds/10-May-2016-Final-Report/More-efficient-more-integrated-Opal-fares-May-2016

[85] Ibid. While the New South Wales government does not have to heed IPART's recommendations, it is required to adhere to what they decide is the maximum change in the average fare over the determination period— and IPART checks to make sure that fares do not exceed the maximums allowed.

regional travel patterns. The staff could also conduct focus groups and in-person surveys to gain a fuller understanding of attitudes toward fares and Clipper across the region. Staff could develop clear and consistent language for the fares sections transit operator websites as well as the Clipper website.

Action 9: Set integrating fares with other operators as a fare policy goal, and use the goal to guide fare structure development.

Who: Transit operator boards

Transit operator boards have ultimate approval over their agencies' fare policies. When approving fare policy, transit operator boards weigh a number of different factors, such as their system's financial sustainability needs, Title V1 and the impacts to their ridership. The regional implications of fare policy — how it could impact riders who use multiple systems — are often overlooked.[86] By not acknowledging these impacts when setting fares, transit operator boards discount the full needs of their ridership and fail to see where they could make their service more competitive and grow their ridership. Each transit operator should set a goal to integrate its fare policies with those of other operators' fare programs and commit to designing a fare structure that supports access to all available transit options in the region.

Strategy 3: Make fare payment work for everyone.

Clipper 2.0 can and should be a nimble, flexible payment system grounded in a rational fare policy that supports the seamless use of multiple operators for all income levels. It should be easy to use and cost-effective to maintain. Strategic changes to Clipper and fare policy can help the region achieve many of its long-term goals. The actions detailed in this section focus on optimizing Clipper 2.0 to increase its use and appeal.

Action 10: Move toward cashless payment to improve transit reliability and costs.

Who: MTC, Clipper Executive Board, transit operator boards, transit operators

SPUR recommends that transit operators and MTC aim for 90 percent of all transit trips in the region be paid for with Clipper or another noncash payment option, such as a contactless credit card.[87] (Note this is not the same as removing cash from the transit system: Riders could still use cash to reload their Clipper card, but they could not use cash to purchase a paper ticket or to pay on board a bus.) In Clipper's governing document, the outlined goals for transit systems include moving 100 percent of all fare payments to Clipper or incentivizing the use of Clipper, depending on the mode of travel.[88] Currently, only five transit operators have a Clipper market share above 50 percent, and not all transit operators offer a discount for using Clipper (see Figure 10).

When implemented equitably for all users, removing cash as a fare payment option has many benefits, including:

[86] For example, the SFMTA's fare policy goals are to incentivize transit ridership, incentivize prepayment, enhance customer convenience and promote equity. The agency does not have as a goal meeting the needs of the regional rider. By way of contrast, one of Caltrain's fare policy goals is to "seek integration with and participate in state and regional fare programs." For SFMTA fare policy goals, see: Ed Reiskin, Presentation to the SFMTA Board of Directors on the FY 2019 and FY 2020 Operating Budget, 2018, https://www.sfmta.com/sites/default/files/reports-and-documents/2018/02/2-20-18_item_11_fy19_and_fy20_budget_-_slide_presentation_1.pdf. For Caltrain's fare policy goals, see: "Caltrain Fare Policy Adoption," 2018, http://www.caltrain.com/Assets/__Agendas+and+Minutes/JPB/CAC/Presentations/2018/2018-11-14+JPB+CAC+Fare+Policy+Update+presentation.pdf

[87] Many regions in the United States and around the world have eliminated cash as a payment option. Melbourne eliminated cash completely from their transit system in 2010. Transport for London eliminated on-board cash fare payment on buses in 2014. Both Singapore and the Massachusetts Bay Transportation Authority are taking steps to remove cash as a payment option by the early 2020s. In Washington, D.C. and Chicago, a paper ticket cannot be used to pay for a train ride. Washington D.C.'s bus system still allows cash payment, although they are piloting a ban on cash payment on a popular limited-bus route; if the pilot is successful, the ban would become permanent. See: Travis Maiers, "Metro Is Testing a New Cashless Bus Route," Greater Greater Washington blog, 2018, https://ggwash.org/view/68328/metro-is-testing-a-cashless-bus-route-as-dc-mulls-banning-cashless-eateries

[88] The Clipper Memorandum of Understanding (MOU) states that heavy-commuter rail and ferry systems should accept only Clipper and that bus/light rail operators should adopt fare differentials to incentivize use of Clipper. See: Clipper MOU, http://clipper.mtc.ca.gov/pdf/Clipper_Amended_and_Restated_MOU.pdf

Improved transit reliability: Fares paid for with cash are time-consuming: riders paying cash can take two to three times longer to board.[89] Reducing cash payment is an effective way to speed boarding times and help keep buses reliable and on schedule.

Operational cost savings: Maintaining two ticketing systems — Clipper and paper tickets —is very costly. Cash is expensive for transportation agencies to process; all other ticketing options are cheaper than cash.[90] Savings could be redirected to increase transit service and to fund programs that support Clipper use among riders with low incomes.

Cost saving for riders: Most Bay Area transit operators offer a discount for paying with Clipper so that more people will use it. If cash were removed from the system, greater numbers of customers would have access to the discount.

The biggest obstacle to removing cash as a direct payment option is that Clipper does not work for people of all income levels. Operators maintain cash ticketing systems largely because of this. We believe that paper tickets aren't the right the solution and that our charge is to do everything we can to make Clipper accessible to people of all income levels. Clipper offers convenience and cash savings; these benefits must be available to every transit rider. Barriers to Clipper adoption (such as minimum balance requirements, purchase fees and the paucity of places to buy and add value to a Clipper card, especially in lower-income communities) must be addressed in full before the region pursues payment by Clipper only.[91] We can't make Clipper a more attractive, usable product — one that works for everyone, truly encourages the seamless use of multiple operators and helps to grow transit's market share — without addressing fare policy.

[89] Colin Wright, Vincent Pellecchia and Nick Sifuentes, "A New Way to Ride," TransitCenter blog, Feb. 2018.

[90] All other ticketing options are cheaper than cash, with the cost of issuing a paper ticket accounting for an average of 5 percent of transportation agencies' total cost to serve a passenger, smart cards consuming 3 to 4 percent, and mobile ticketing only 2 to 3 percent. Allowing contactless payments with a phone or debit card reduced the cost of collecting fares from 14 percent of total revenue to 9 percent in just over a year. See: Greater Washington Partnership, "Unlocking the Promise of Integrated Mobility in the Capital Region," July 2018, http://www.greaterwashingtonpartnership.com/wp-content/uploads/2018/05/201807_GWP_Issue-Brief_Integrated-Mobility.pdf

[91] For example, prior to implementing the cashless policy, Transport for London was able to reduce cash usage on buses to approximately 1 percent by implementing a combination of strategies, including significantly expanding retail locations where riders could add value to their Oyster card (the fare payment card for London), offering fare capping, providing a significant discount when paying with Oyster, relaxing policies around the minimum balance requirement and instituting a "one more ride" benefit. See: Dave King and Mark Streeting, "Ticket to Ride: Reforming Fares and Ticketing for Sustainable Public Transport," Tourism & Transport Forum, Dec. 2016. We recommend that MTC explore transit payment options such as payment by text or via services like PayNearMe because these can make Clipper easier to use for riders with low incomes. With PayNearMe, users sign up for cash membership online and receive a barcode that they can either print out or load onto their mobile phone. They then visit a participating 7-Eleven or Family Dollar, where the cashier scans the barcode and accepts the cash payment. Philadelphia's bike-share program, Indego, utilizes PayNearMe, and LA Metro intends to use the feature as part of its TAPforce Wallet. See: PayNearMe, "Philadelphia Bike Share Program Becomes First in U.S. to Launch with Cash Payment Option," https://cash.paynearme.com/en/about/press/philadelphia-bike-share-program-becomes-first-in-u-s-to-launch-with-cash-payment-option; and "TAP Wallet Overview," https://www.taptogo.net/articles/en_US/Website_content/TAP-Wallet-Overview?r=1&ui-knowledge-aloha-components-aura-components-knowledgeone.ArticleActions.handleEditPublished=1

Figure 10. Clipper Use Varies Across Operators

Clipper Market Share by Operator and Discount Offered, February 2018

Transit operator	Clipper market share (February 2018)	Offers a discount for using Clipper
Golden Gate Ferry	96.4%	Yes
SMART*	83.6%	N/A
BART	78.9%	Yes
Caltrain	71.7%	Yes
San Francisco Bay Ferry	65.8%	Yes
Golden Gate Transit	48.2%	Yes
AC Transit**	46.2%	Yes
VTA	45.2%	No
SamTrans	40.8%	Yes
WestCAT	39.0%	No
Muni	38.2%	Yes
Union City Transit	38.1%	No
Wheels	22.2%	No
County Connection	22.1%	No
FAST	19.4%	No
SolTrans	21.0%	No
Tri Delta Transit	17.1%	No
Petaluma Transit	5.2%	No
Sonoma County Transit	3.8%	No
Santa Rosa CityBus	3.8%	No
VINE	3.2%	No
City Coach	1.6%	No

*SMART does not offer a discount for using Clipper because SMART only accepts payment via Clipper or its mobile app. The cost of a ride is the same regardless of which option is used.

**The Clipper discount is not applied to transbay rides; it is only applied to local rides.

Source: Clipper Monthly Report, Feb. 2018, http://www.actransit.org/wpcontent/uploads/board_memos/18-093%20Clipper.pdf

Several Bay Area transit operators are actively working to eliminate paper tickets and encourage payment with Clipper only. According to SPUR's interviews with BART staff, the transit system intends to do away with paper tickets in the next few years and move to payment with Clipper only. As BART is one of the region's major operators, this change can set a new norm and encourage other transit operators to start making the shift.

Any effort to move to Clipper-only payment should be addressed on a regional scale. The issues and concerns transit operators will face when transitioning to payment by Clipper only do not vary significantly throughout the region. Furthermore, given that riders use more than one operator, if the parameters governing Clipper-only payment differ throughout the region, riders will be forced to contend with a patchwork of rules and regulations. MTC and transit operators should develop a regional wide strategy for moving to cashless payment.

As long as cash remains a payment option, the Clipper Executive Board should follow through on its goal for operators to incentivize Clipper use by adopting fare differentials (i.e., a lower fare for paying with Clipper). We recommend that the Clipper Executive Board set a floor for the fare differential to ensure that Clipper has a competitive advantage.[92]

[92] Caltrain is updating its fare policy and, in an effort to raise revenue, is considering reducing the Clipper card discount from 55 cents to 20 cents or eliminating that discount altogether. Such a move could reduce the relevancy of Clipper at a time when the region is actively working to increase Clipper adoption. See: Zachary Clark, "Caltrain Looking at Fares," *Daily Journal*, 2018, https://www.smdailyjournal.com/news/local/caltrain-looking-at-fares/article_6e347d9e-51ab-11e8-ab15-f777c1bdff2e.html

Action 11: Launch Clipper 2.0 to support open payments on select systems

Who: MTC, Clipper Executive Board, transit operators

The Clipper 2.0 system will be designed to support payment by contactless credit cards or mobile wallets but this feature is not planned to part of the system until well after the initial rollout. These payment options offer an easy and convenient way for less frequent riders to pay for transit, especially key in a region that attracts thousands of visitors a year. The slow adoption of contactless credit cards in the United States, coupled with a desire to not introduce too much change at once when the new system launches, motivated this decision. However, while contactless credit card use in the United States is low, use of mobile payment is increasing and is expected to be widespread by 2022, when Clipper 2.0 will launch.

TFL has seen a tremendous uptake of contactless credit cards and mobile wallets as payment for transit,[93] but other cities where the concept is more nascent are also seeing strong use of the options. For example, after just six months of availability, between two and four percent of TriMet's monthly revenue monthly is from contactless payment cards or mobile wallets.[94] Transport for New South Wales launched a trail of contactless payments using credit cards and mobile wallets on the ferry route most popular with tourists in 2016[95]; in the fall of 2017, after a successful pilot, they extended the contactless payment system to all ferries and the light rail system. Singapore began a contactless payment pilot in March 2017 to drive progress towards its vision to remove cash completely from the transit system by 2020. The pilots allowed both Singapore and Sydney to assess consumer demand and better understand the technology requirements. The New York City MTA will launch a mobile payment pilot in May of 2019 along a stretch of the 4, 5 and 6 trains and across all bus routes on Staten Island. Given the size of the transit market in the New York region, this is likely to have a strong impact on the uptake and use of contactless credit cards and mobile wallets around the United States.

Concerns about the slow adoption of mobile wallets may be unfounded, but there is merit to wanting to minimize change in the transition to C2. We recommend MTC pilot open payments on at least one of the region's rail or ferry systems. The pilot should utilize a back-office payment platform built on an open architecture as doing so lays the groundwork for accepting payment from other mobility service and the option to pilot pricing incentives (as discussed in more detail in Action 14). The learnings from the trail should inform the larger rollout.

Action 12: Use Clipper data for research and operations.

Who: MTC, transit operators

Clipper data are underutilized. Transit operators can respond better to the market and maximize the benefits to riders when they have more information. Clipper data should be used to improve actual performance of our transit systems and roads and to enhance the customer experience. Clipper data can provide insight into how people respond to a service or fare change and how people use multiple transit operators, offering us a better understanding of how regional our transit system truly is and the fare barriers customers face.

Clipper data should also be made available to the public in an anonymized way to protect individual privacy; privacy policies will need to be developed to facilitate this. (Protecting privacy should be a chief concern for all involved, and both legal and technological solutions exist to safeguard privacy.) MTC and transit operators should consider entering into formal agreements with universities to analyze Clipper data in conjunction with other relevant transit data.[96]

[93] Almost half of all pay-as-you-go journeys on the city's underground, buses and commuter railway are now paid for with contactless credit cards way. And this share continues to grow steadily; Visitors from more than 100 countries have used contactless payment cards and mobile devices to make journeys on London's public transport network. See: Transport for London, https://tfl-newsroom.prgloo.com/news/tfl-press-release-half-of-all-tube-and-rail-pay-as-you-go-journeys-across-london-now-made-using-contactless-payments

[94] Rhyan Schaub, "Portland, Oregon Is Realizing Its Smart Future," *Intelligent Transport,* 2018, https://www.intelligenttransport.com/transport-articles/68888/portland-trimet-smart-future/

[95] https://www.itnews.com.au/news/nsw-trials-contactless-ferry-payments-467768

[96] For example: MIT's Transit Lab, the research division of the University's Master of Science in Transportation program, has formal research agreements with the MBTA, Transport for London and the Chicago Transportation Agency (CTA); in the past they worked with Singapore, Buenos Aires and Puerto Rico as well. To support analysis, the Transit Lab built for the MBTA and CTA a transit data repository containing years of fare payment, scheduling and

Strategy 4: Integrate transit fare payment with payment for other transportation costs.

The transportation landscape is changing rapidly. Riders expect to be able to pay for different modes of transportation — from buses and trains to electric scooters and ride sharing — seamlessly. For many riders, mobility subscriptions are an attractive idea. Achieving this future, however, requires not only public transit fare integration but also fare coordination with private mobility providers as well as bridge tolls, express lanes and parking. This section details the actions necessary to realize these outcomes.

Action 13: Develop a framework and strategy to guide the adoption of "Mobility as a Service."

Who: MTC, Clipper Executive Board, transit operator boards

Over the past few years, the idea of "Mobility as a Service" (MaaS) — making lots of transportation choices available through a single platform and payment system — has moved closer to becoming a reality. MaaS poses new challenges and opportunities for the region. MaaS could help grow transit's market share and reduce reliance on private cars. At the same time, it could significantly impact the brand, image, customer relationships and business models of public transit operators. Realizing the potential of MaaS will likely require new forms of public-private partnerships in which private companies will play a larger role in the creation of public value. New organizational models, processes and forums to support greater collaboration will be needed to ensure the success of MaaS.[97]

The Clipper Executive Board and MTC should develop a vision and strategy for achieving MaaS that is centered around public transportation in the Bay Area. As part of this effort, the Clipper Executive Board, MTC and CalSTA should develop a working group where transit operators, the Bay Area Toll Authority, and private-sector companies can come together to discuss opportunities and options for MaaS development and payment integration.[98] One of the most important roles for government in MaaS development is to bring everyone involved to the table.

Action 14: Launch Bay Area MaaS pilots.

Who: MTC, transit operators, congestion management agencies, CalSTA

Experimenting to test the benefits of new technologies before making bigger investments is critical. Implementing MaaS in the Bay Area, where there are a plethora of public and private mobility operators, will be complicated. Conducting pilot projects would provide insight into the policies, regulations, agreements and technologies that are required for the successful deployment of MaaS here. The pilots would also allow transit providers to better understand customer expectations. Any MaaS pilots that the region develops should be launched in tandem with the state's integrated ticketing pilot to ensure that the efforts are complementary.

One way to conduct pilots would be to solicit ideas for MaaS from the private sector. This is the approach Transport for New South Wales (TNSW) is taking. The agency first developed a road map to guide the introduction of new technology into transportation. Then it launched an Innovation Challenge, calling on innovators, designers, technology professionals and app developers to submit ideas for a MaaS offering that met community and customer needs and offered compelling alternatives to car ownership. TNSW selected five technology companies to participate in MaaS pilots.[99]

other data. The master's and PhD students enrolled in the program, in addition to university faculty, work collaboratively with the agencies to design and carry out research projects. MTC and transit operators could consider working with MIT's Transit Lab or working with local universities to do something similar.

[97] Goran Smith, Jana Sochor and Steven Sarasini, "Mobility as a Service: Comparing Developments in Sweden and Finland," *Research in Transportation Business and Management*, 2018, https://www.viktoria.se/sites/default/files/pub/viktoria.se/upload/publications/smith_et_al._2017_1.pdf

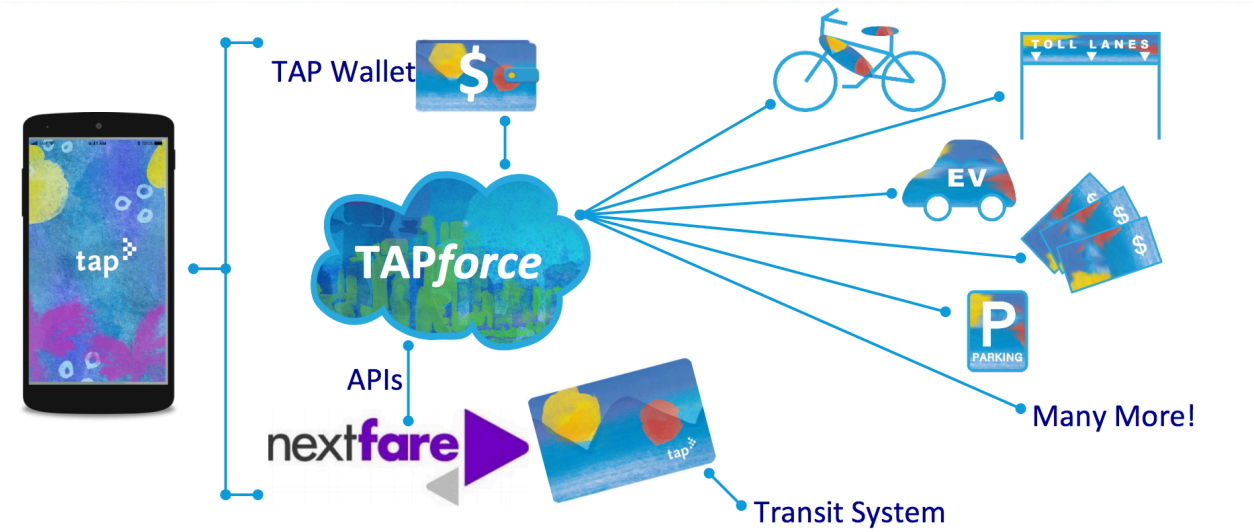
[98] For example, the European Union created the MaaS Alliance, a public-private partnership to facilitate information sharing and to consider legal and technical issues, the user experience and the social impact of MaaS. Forums like the MaaS Alliance are enabling players across the ecosystems to collaborate, share best practices and spur the development of MaaS in a way that works for transit operators and riders.

[99] TNSW launched a Future Transport Digital Accelerator to facilitate direct collaboration between the public and private sectors, connecting teams from the TNSW Transport cluster with industry, researchers, entrepreneurs and startups in the digital space. The goal of the accelerator is to fast-track 15 "no

Action 15: Steward the development a digital platform for mobility services.

Who: MTC, transit operators, Bay Area Toll Authority

MaaS requires a digital platform that integrates end-to-end trip planning, booking, electronic ticketing and payment services across all modes of transportation, public or private. To facilitate the development of MaaS and offer a frictionless customer experience, MTC should steward the development of a single digital platform for mobility services linked to Clipper; the platform should be built on an open architecture, be deeply flexible and designed to allow significant innovation to occur on it. By "steward" we mean that MTC, working with transit operators, should own the platform, but it does not have to build, operate nor maintain it. The public sector has a strong interest in how mobility is shaped, and what behaviors are rewarded or penalized, but how that experience is delivered really should not require the public sector to work in ways that it doesn't do well. Owning the platform, however, is integral, as the public sector could then design the rules and expectations for private mobility providers to participate in the platform.



LA Metro reworked its TAP fare payment system to create TAPforce, a Salesforce-based cloud system that allows riders to pay for traditional public transportation as well as mobility systems outside of public transit — such as electric scooters, ride sharing and parking — with the same account.

Source: Robin O'Hara, Towards a Regional Mobility-as-a-Service Solution: Leveraging a Transit Smart Card Program Across Multiple Transit Agencies, webinar, https://meetingoftheminds.org/cal/towards-a-regional-mobility-as-a-service-solution-leveraging-a-transit-smart-card-program-across-multiple-transit-agencies

A single mobility platform would mean that customers could load money into a single account and then use that account to pay for public transit trips and bridge tolls, as well as trips on private mobility providers. A single mobility account not only offers convenience, but also provides a way for people without bank accounts to pay for services that traditionally require debit or credit cards. LA Metro has developed such a program for its TAP transit card. Furthermore, the platform should make it easy to offer discounts and incentives to encourage transit use. For example, once someone is deemed eligible for a certain discount, that person would be eligible for the same discount from any other service provider that is integrated into the payment platform. Data on payment transactions could help future transportation planning.

regrets" initiatives focused on enhancing the customer experience and how TNSW delivers services. The initiatives were identified in TNSW's Future Transport Technology Roadmap. The accelerator issued the challenge to the private sector "How would you give customers an ideal door-to-door mobility service experience and seamless combinations, including the first and last mile options?" For more information, see: Transport for New South Wales, Future Transport Technology, https://future.transport.nsw.gov.au/technology/roadmap-in-delivery/digital-accelerator/about. For more information on the challenge winners, see: Dylan Bushell-Embling, "NSW to Trial Mobility-as-a-Service," *GovTech Review*, Nov. 2018, https://www.govtechreview.com.au/content/gov-mobility/article/nsw-to-trial-mobility-as-a-service-878042808

APPENDIX A

Many Discrepancies in Describing Transfer Discounts

Clipper and transit operators use different phrasing to describe the same transfer discount. For example, in the first row of the table below, the discount a rider receives when transferring from AC Transit to FAST is explained two different ways on the Clipper website, and no information is given on the AC Transit website or the FAST website. As the table demonstrates, having so many different phrases and terms makes it challenging to clearly and consistently present transfer information. But this is not simply a design problem: By having so many varieties of transfer policies, we forfeit the opportunity to use pricing to influence behavior.

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
AC Transit to FAST	"free or discounted transfer," not agency-specific	"discounted transfer"	*No information*	*No information*
AC Transit to Golden Gate Transit	"free or discounted transfer," not agency-specific	"discounted transfer" $2.00/$1.00 "discount"	*No information*	$2.25/$2.15/$1.10/$1.05 "fare credit" on Routes 40/40X
AC Transit to Muni	"free or discounted transfer," not agency-specific	$0.50 "discount" w/in two hours	*No information*	$0.50 "discount"
AC Transit/ Dumbarton Express to SamTrans	"free or discounted transfer," not agency-specific	SamTrans accepts AC Transit local/transbay 31-day pass on local routes w/in two hours	"fare credit" w/in two hours w/ monthly/31-day AC Transit Pass or Interagency Voucher	Local "fare credit" w/in 2 hours w/ AC Transit 31-Day Pass or presenting Interagency Voucher
AC Transit to San Francisco Bay Ferry	"free or discounted transfer," not agency-specific	"transfer discount"	"discounted ride" w/in 90 minutes; $2.10/$1.05 discount	$2.25/$1.10 "discount"
AC Transit/ Dumbarton Express to Union City Transit	"free or discounted transfer," not agency-specific	"discounted transfer"	one local "fare credit" w/in 2 hours	accepts AC Transit transfers
AC Transit/ Dumbarton Express to VTA	"free or discounted transfer," not agency-specific	"free or discounted transfers"	one local "fare credit" w/in 2 hours	one local "fare credit" w/in2 hours
AC Transit to WestCAT	"free or discounted transfer," not agency-specific	"discounted transfer"	"discounted fare" w/in 2 hours, $1.00/$0.50	$1.00/$0.50 "discounted fare" w/in 2 hours

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
BART to AC Transit	"discounted transfer"	$0.50 "discount" w/in 1.5 hours	$0.50 "discount" w/in 1.5 hours w/ Clipper; $0.25 "discount" w/ cash	*No information*
BART to County Connection	"discounted transfer"	"discounted transfer"	*No information*	BART transfer plus additional charge
BART to Muni	No information	$0.50 "discount"	*No information*	$0.50 "discount"
BART to Tri Delta Transit	"discounted transfer"	"discounted transfer"	*No information*	transfer slip w/ additional fare; $1.75/$1.25/$0.85
BART to Union City Transit	"discounted transfer"	"discounted transfer"	*No information*	accepts BART-to-bus transfer
BART to VTA	"discounted transfer"	"free or discounted transfer"	*No information*	"fare credit" of $0.50
BART to WestCAT	"discounted transfer"	"discounted transfer" w/in 2 hours	*No information*	$1.00/$0.50 fares w/in 2 hours
BART to Wheels	"discounted transfer"	"discounted transfer"	*No information*	$1.00/$0.80/$0.50 "fare credit"
Caltrain to AC Transit/Dumbarton Express	"transfer discount" w/in 2 hours	"free transfer" to local/"discounted transfer" to transbay w/in 2 hours w/ monthly pass (≥2 zones)	"free transfer" to local/"discounted transfer" to transbay w/in 2 hours w/ monthly pass (≥2 zones)	"transfer credit of a local fare" w/in 2 hours w/ monthly pass (≥2 zones)
Caltrain to Muni	"discount" w/in 1 hour	$0.50 "discount"	$0.50 "discount"	$0.50 "discount"
Caltrain to SamTrans	accepts monthly passes ≥2/1 zone(s) as "fare payment"	accepts monthly passes ≥2/1 zone(s) as "fare payment"	accepts monthly passes ≥2 zones for "local ride credit"/"free local rides"	accepts monthly passes ≥2/1 zone(s) for "local fare credit"
Caltrain to VTA	accepts monthly passes ≥2/1 zone(s) as "fare payment"	accepts monthly passes ≥2/1 zone(s) as "fare payment"	accepts monthly passes ≥2/1 zone(s) for "local fare credit," free/$2.00 transfer to express	"free transfer" w/ monthly passes ≥2/1 zone(s), free/$2.50 transfer to express
Capitol Corridor to AC Transit	N/A	N/A	"good for connections to" local, "not valid" on transbay	"free transfer" to local, "fare credit" to transbay: $3.15/$1.60

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
Capitol Corridor to County Connection	N/A	N/A	"good for connections"	"accepts transfers as full fare payment"
Capitol Corridor to FAST	N/A	N/A	"good for connections"	transfers valid on local routes 2, 5
Capitol Corridor to VTA	N/A	N/A	"good for connections"	"accepted as a one-time local single-ride fare," $2.50 fare to express
Capitol Corridor to WestCAT	N/A	N/A	"good for connections"	"transfers" are free except on Lynx
City Coach to FAST	"discounted transfer"	"discounted transfer"	*No information*	"transfers accepted" with $0.60/$0.75/$1.25/ $1.75/$2.75/$3.50 "upcharge"
County Connection to SolTrans	*No information*	*No information*	*No information*	County Connection "not yet on Clipper," paper transfer required
County Connection to Tri Delta Transit	*No information*	"free transfer"	transfers are "full fare payment"	"transfer for free" w/ Interagency Transfer or Clipper
County Connection to WestCAT	*No information*	*No information*	transfers are "full fare payment"	"transfers free" w/ a valid transfer/Clipper w/in 2 hours
County Connection to Wheels	*No information*	"free transfer"	*No information*	"single transfer" permitted w/in 2 hours
FAST to AC Transit	*No information*	"free or discounted transfer," not agency-specific	*No information*	"free transfer" to local
FAST to SolTrans	*No information*	"transfer discount"	*No information*	"supports transfers" from routes 2, 3, 6, 7, 20
FAST to VINE	*No information*	"transfer discount"	*No information*	No information
FAST to WestCAT	*No information*	"discounted transfer" from route 90	*No information*	transfer fare $0.50/$1.00
Golden Gate Transit to AC Transit	"free or discounted transfer," not agency-specific	"free transfer" to local, "discounted transfer" to transbay w/in 2.5 hours from route 40	transfers "full local fare" from Routes 40, 40X	"free transfer" to local, "discounted transfer" to transbay w/in 2.5 hours, $3.15/$1.60 "upgrade"

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
Golden Gate Transit to FAST	"free or discounted transfer," not agency-specific	"discounted transfer"	*No information*	*No information*
Golden Gate Transit to Marin Transit	"free one-way transfers"	full fare deduction, then full fare credit when tagging off w/in 3 hours	"transfers accepted for free continuing travel"	"up to three free transfers" w/in 3 hours"
Golden Gate Transit to Muni	"free or discounted transfer," not agency-specific	$0.50 "discount" w/in 2 hours	$0.50 "fare credit"	$0.50 "discount"
Golden Gate Transit to Petaluma Transit	"free or discounted transfer," not agency-specific	"discounted transfer" from routes 74, 76, 101	transfers are "full local fare"	transfer fare $0.75/$1.00/$1.50
Golden Gate Transit to Santa Rosa CityBus	"free or discounted transfer," not agency-specific	"free transfer" from routes 72, 74, 101	transfers are"full local fare"	transfers "good" for one trip
Golden Gate Transit to SMART	"free or discounted transfer," not agency-specific	$0.75/$1.50 "discount" w/in 4 hours	$0.75/$1.25/$1.50 "fare credit"	$0.75/$1.50 "discount"
Golden Gate Transit to SolTrans	"free or discounted transfer," not agency-specific	"transfer discount"	$0.85/$1.50/$1.75 "fare credit" from routes 40, 40X	transfers "support[ed]" from routes 40, 42
Golden Gate Transit to Sonoma County Transit	"free or discounted transfer," not agency-specific	"discounted transfer"	$0.75/$1.25/$1.50 "fare credit"	transfers "worth" $0.75/$1.25/$1.50, not agency-specific
Golden Gate Transit to WestCAT	"free or discounted transfer," not agency-specific	"discounted transfers" from routes 40E, 42E	$0.50/$1.00 "fare credit" from routes 40, 40X	transfers $1.00/$0.50
Marin Transit to Golden Gate Transit	full fare deduction, then full fare credit when tagging off w/in 3 hours	"free one-way transfers"	"up to three free transfers" w/in 3 hours"	$1.00/$2.00 "local fare credit"
Marin Transit to SMART	$0.75/$1.50 "transfer discount"	$0.75/$1.50 "discount" w/in 4 hours	$0.75/$1.50 "discount"	$0.75/$1.50 "discount"

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
Muni to Golden Gate Transit	$0.25/$0.50 "discount" w/in 3 hours	$0.25/$0.50 "discount" on select routes	$0.50 "discount"	$0.25/$0.50 "fare credit" w/in 2 hours
Muni to San Francisco Bay Ferry	*No information*	"transfer discount"	$0.50 "discount"	$0.50 "transfer discount"
Petaluma Transit to Golden Gate Transit	"discounted transfer" to routes 74, 76, 101	"discounted transfer," $0.75/$1.50 "discount" on select routes	transfer fare $0.75/$1.00/$1.50	$0.75/$1.50 "fare credit"
Petaluma Transit to SMART	$0.75/$1.50 "off"	$0.75/$1.50 "discount" w/in 4 hours	transfer fare $0.75/$1.50	$0.75/$1.50 "discount"
Petaluma Transit to Sonoma County Transit	"discounted transfer"	"discounted transfer"	transfer fare $0.75/$1.25/$1.50	transfers "worth" $0.75/$1.25/$1.50, not agency-specific
SamTrans to AC Transit/Dumbarton Express	*No information*	monthly pass is "free transfer" to local, "discounted transfer" to transbay w/in 2 hours	monthly pass is "local fare credit" w/in 2 hours	monthly pass is "free transfer" to local/"full local fare," "discounted transfer"/"partial fare credit" to transbay w/in 2 hours
SamTrans to Muni	*No information*	$0.50 "discount" w/in 2 hours	$0.50 "discount" w/in 2 hours	$0.50 "discount"
SamTrans to VTA	*No information*	"free or discounted transfer"	"local fare credit" w/in 2 hours	"local fare credit" w/in 2 hours, $2.50 charge to express
San Francisco Bay Ferry to AC Transit	"transfer discount"	"free transfer" to local, "discounted transfer" to transbay w/in 1.5 hours	"free transfer" to local, "discounted transfer" to transbay w/in 1.5 hours	$1.10/$2.25 "discount"
San Francisco Bay Ferry to Muni	"transfer discount"	$0.50 "discount" w/in 2 hours	$0.50 "transfer discount"	$0.50 "discount"
San Francisco Bay Ferry to SolTrans	"transfer discount"	"transfer discount"	*No information*	$0.85/$1.50/$1.75 "local fare credit," "transfers are free"
Santa Rosa CityBus to Golden Gate Transit	*No information*	"discounted transfer," $0.75/$1.50 "discount" on select routes	transfers "valid for a discount"	$0.75/$1.50 "fare credit"

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
Santa Rosa CityBus to SMART	$0.75/$1.50 "off"	$0.75/$1.50 "discount" w/in 4 hours	"discount equal to the amount of your bus fare"	$0.75/$1.50 "discount"
Santa Rosa CityBus to Sonoma County Transit	*No information*	"discounted transfer"	transfers "valid for a discount or one-zone ride"	"discounted fare" w/in 1.5 hours
SMART to Golden Gate Transit	"free or discounted bus trip" w/in 3 hours (one county travel), 4 hours (≥2 county travel)	"discounted transfer," $0.75/$1.50 "discount" on select routes	$0.75/$1.50 "discount"	$0.75/$1.50 "fare credit"
SMART to Marin Transit	"free or discounted bus trip" w/in 3 hours	$0.75/$1.50 "transfer discount"	$0.75/$1.50 "discount"	*No information*
SMART to Petaluma Transit	"free or discounted bus trip" w/in 2 hours	"free transfer"	$0.75/$1.50 "discount"	transfer fare $0.75/$1.00/$1.50
SMART to Santa Rosa CityBus	"free or discounted bus trip" w/in 2 hours	"free transfer"	$0.75/$1.50 "discount"	"discount equal to the amount of your bus fare"
SMART to Sonoma County Transit	"free or discounted bus trip" w/in 3 hours	"free transfer"	$0.75/$1.50 "discount"	transfers "worth" $0.75/$1.25/$1.50, not agency-specific
SolTrans to County Connection	*No information*	"free or discounted transfer"	*No information*	*No information*
SolTrans to FAST	"transfer discount"	"discounted transfer"	"supports transfers" from routes 2, 3, 6, 7, 20	*No information*
SolTrans to Golden Gate Transit	"transfer discount"	"discounted transfer," $1.00/$2.00 "discount" on select routes	"supports transfers" from routes 40, 42	$1.05/$2.15 "fare credit" w/ Clipper, $1.10/$2.25 "fare credit" w/ cash to routes 40, 40X
SolTrans to San Francisco Bay Ferry	"transfer discount"	"transfer discount"	$0.85/$1.50/$1.75 "local fare credit," "reduced cash fare" of $5.00/$5.65/$8.00	*No information*
SolTrans to VINE	"transfer discount"	"transfer discount"	"supports transfers" from route 11	*No information*
SolTrans to WestCAT	*No information*	"discounted transfer" from route 80S	*No information*	transfer fare $0.50/$1.00

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
Sonoma County Transit to Golden Gate Transit	*No information*	"discounted transfer," $0.75/$1.50 "discount" on select routes	*No information*	$0.75/$1.50 "fare credit"
Sonoma County Transit to Petaluma Transit	*No information*	"discounted transfer"	*No information*	transfer fare $0.75/$1.00/$1.50
Sonoma County Transit to Santa Rosa CityBus	*No information*	"free transfer"	*No information*	transfers "good" for one trip
Sonoma County Transit to SMART	$0.75/$1.50 "off"	$0.75/$1.50 "discount" w/in 4 hours	*No information*	$0.75/$1.50 "discount"
Tri Delta Transit to County Connection	*No information*	"free transfer"	"transfer for free" w/ Interagency Transfer or Clipper	"full fare payment"
Tri Delta Transit to WestCAT	*No information*	"free transfer" to local routes	"transfer for free" w/ Interagency Transfer or Clipper	"free w/ valid transfer" w/in 2 hours
Tri Delta Transit to Wheels	*No information*	"free transfer"	"transfer for free" w/ Interagency Transfer or Clipper	"single transfer" permitted w/in 2 hours
Union City Transit to AC Transit/Dumbarton Express	*No information*	"free transfer" to local, "discounted transfer" to transbay w/in 1.5 hours	*No information*	"free transfer" to local, "discounted transfer" to transbay w/in 1.5 hours, $3.15/$1.60 "upgrade"
VINE to FAST	"transfer discount"	"discounted transfer"	*No information*	*No information*
VINE to SolTrans	"transfer discount"	"transfer discount"	*No information*	"supports transfers" to route 11
VINE to WestCAT	*No information*	"discounted transfer" from route 29	*No information*	*No information*
VTA to AC Transit/Dumbarton Express	*No information*	monthly pass/EcoPass is "free transfer" to local, "discounted transfer" to transbay w/in 2.5 hours	*No information*	monthly pass/EcoPass is "free transfer" to local, "discounted transfer" to transbay w/in 1.5 hours, $3.15/$1.60 "upgrade"

Transfer	Clipper Web Page for First Agency	Clipper Web Page for Second Agency	Website of First Agency	Website of Second Agency
VTA to SamTrans	*No information*	monthly pass is "payment" for local routes w/in 2 hours	monthly pass customers get "local fare credit" w/in 2 hours	monthly pass customers get "local fare credit" w/in 2 hours
WestCAT to AC Transit	*No information*	"free transfer" to local from local routes w/in 1 hour	"free or discounted transfer" w/in 2 hours, not agency-specific	"free transfer" to local from local routes w/in 1 hour
WestCAT to County Connection	"free transfer" from local routes	"free transfer"	"free or discounted transfer" w/in 2 hours, not agency-specific	"accepts transfers as full fare payment"
WestCAT to Golden Gate Transit	*No information*	"discounted transfer," $0.50/$1.00 "discount" on select routes	"free or discounted transfer" w/in 2 hours, not agency-specific	$1.05/$2.15 "fare credit" w/ Clipper, $1.10/$2.25 "fare credit" w/ cash to routes 40, 40X
WestCAT to SolTrans	*No information*	*No information*	"free or discounted transfer" w/in 2 hours, not agency-specific	WestCAT "not yet on Clipper," paper transfer required
WestCAT to Tri Delta Transit	"free transfer" from local routes	"free transfer"	"free or discounted transfer" w/in 2 hours, not agency-specific	"transfer for free" w/ Interagency Transfer or Clipper
WestCAT to Wheels	"free transfer" from local routes	"free transfer"	"free or discounted transfer" w/in 2 hours, not agency-specific	"single transfer" permitted w/in 2 hours
Wheels to County Connection	*No information*	"free transfer"	"single transfer" permitted w/in 2 hours	"free transfer"
Wheels to Tri Delta Transit	*No information*	"free transfer"	"single transfer" permitted w/in 2 hours	"transfer for free" w/ Interagency Transfer or Clipper
Wheels to WestCAT	*No information*	"free transfer" to local routes	"single transfer" permitted w/in 2 hours	*No information*

APPENDIX B

Many Transit Riders Use More Than One Operator

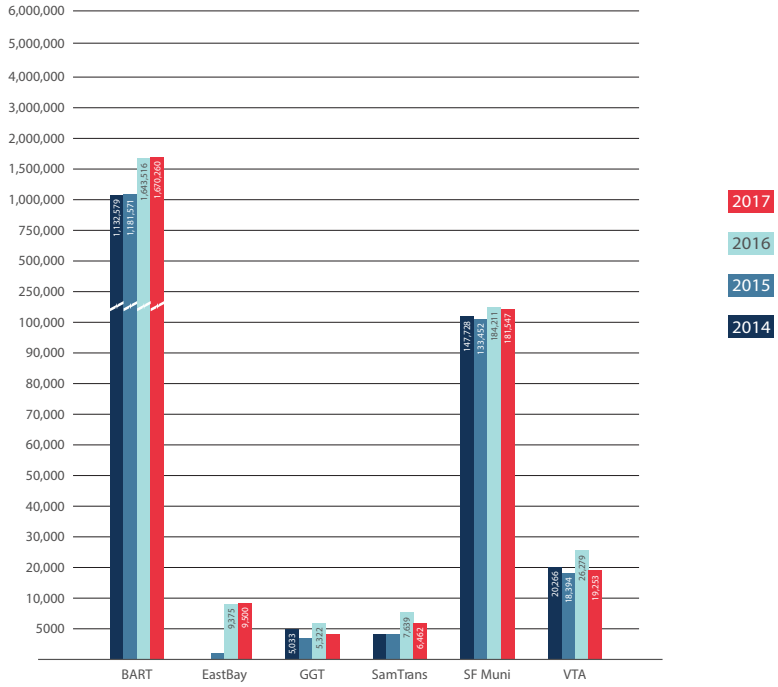
SPUR analyzed Clipper data from 2014 to 2017 to understand how riders use more than one operator. In the following pages, we show two different analyses. The bar charts show the number of individual Clipper cards used on one transit operator and another transit operator within 90 minutes. The tables show the number of individual Clipper cards used on any given pair of operators in an average month from 2014 to 2017.

The data clearly demonstrate that people use more than one transit system to get around, despite the barriers to doing so. The question is how many riders *would* make multi-operator trips — or would make more multi-operator trips — for either work or for leisure if transit operator fare policies actually encouraged it.

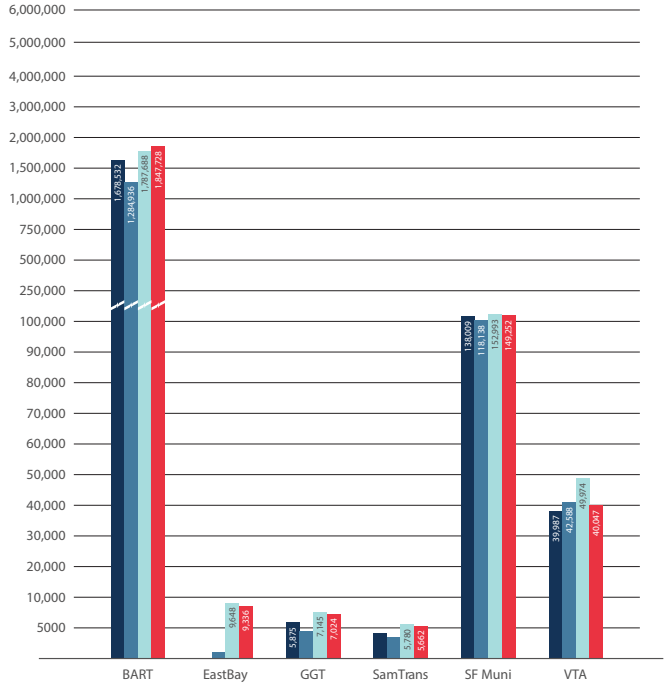
AC Transit

At a Glance: How Transit Riders Use AC Transit

NUMBERS OF TRIPS INVOLVING TRANSFERS TO AC TRANSIT FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM AC TRANSIT TO:



SYSTEM OVERLAP

How to read the chart:

In an average month in 2017, 15% of Clipper card riders who rode BART also rode AC Transit.

	2015	2016	2017
BART	14%	14%	15%
WETA	20%	19%	18%
CalTrain	4%	4%	4%
CCTA	-	19%	14%
FAST	12%	13%	15%
GGF	3%	3%	3%
GGT/MT	6%	7%	7%
Lavta	-	23%	18%
Napa Vine	15%	14%	16%
SamTrans	6%	6%	6%
Santa Rosa	-	-	-
SFMTA	6%	6%	7%
SMART	-	-	1%
SolTrans	16%	14%	17%
Sonoma	-	-	-
TriDelta	-	19%	16%
Union City	-	-	72%
VTA	6%	5%	4%
WestCat	-	33%	29%

How to read the chart:

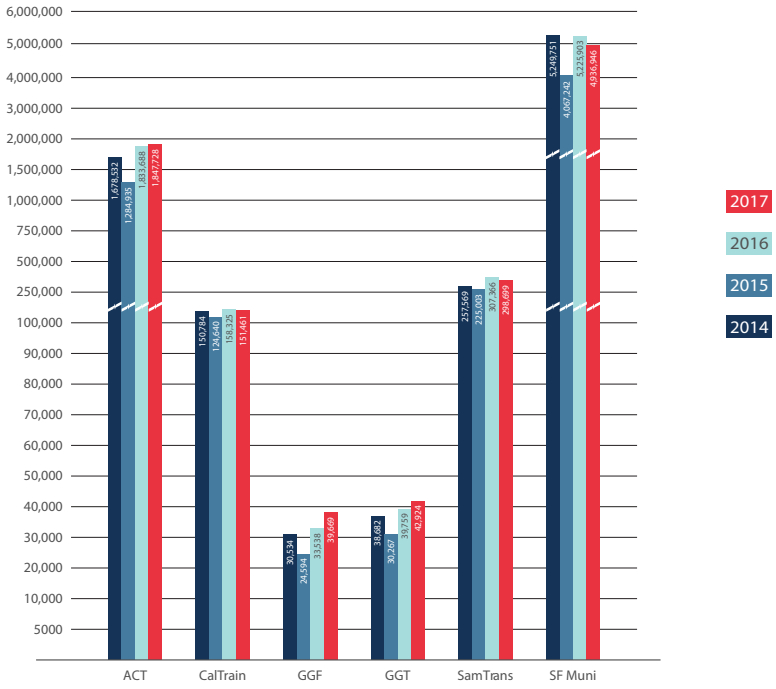
In an average month in 2017, 63% of Clipper card riders who rode AC Transit also rode BART

	2015	2016	2017
BART	64%	63%	63%
WETA	2%	2%	2%
CalTrain	2%	2%	2%
CCTA	-	1%	1%
FAST	-	-	-
GGF	1%	-	-
GGT/MT	1%	1%	1%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	1%	1%	1%
Santa Rosa	-	-	-
SFMTA	26%	24%	22%
SMART	-	-	-
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	1%
VTA	3%	3%	2%
WestCat	-	1%	1%

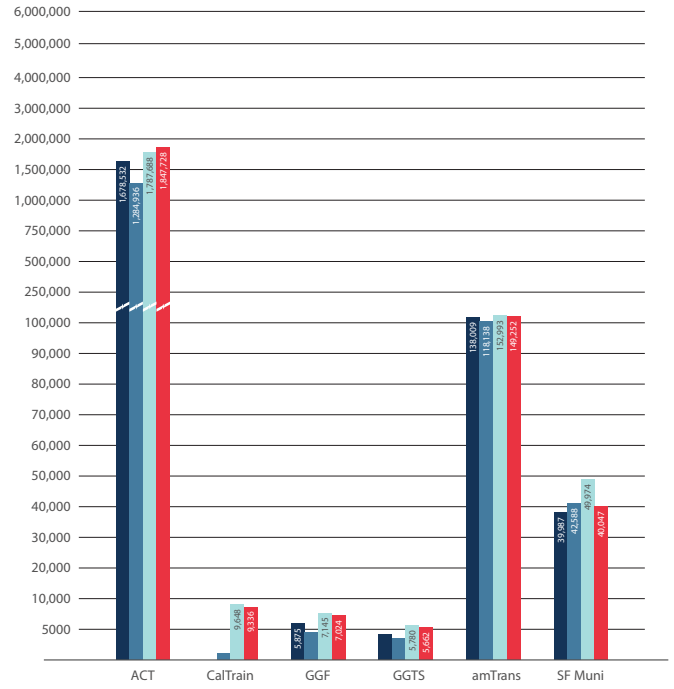
source: Clipper data 2014–2017; SPUR Analysis

BART
At a Glance: How Transit Riders Use BART

NUMBERS OF TRIPS INVOLVING TRANSFERS TO BART FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM BART TO:



SYSTEM OVERLAP

How to read the chart:

In an average month in 2017, 63% of Clipper card riders who rode AC Transit also rode BART.

	2015	2016	2017
AC Transit	64%	63%	63%
WETA	66%	63%	62%
CalTrain	45%	44%	43%
CCTA	-	88%	78%
FAST	83%	80%	81%
GGF	32%	31%	31%
GGT/MT	32%	33%	33%
Lavta	-	85%	80%
Napa Vine	73%	71%	72%
SamTrans	51%	50%	49%
Santa Rosa	-	9%	18%
SFMTA	48%	48%	48%
SMART	-	-	7%
SolTrans	75%	73%	83%
Sonoma	-	19%	20%
TriDelta	-	86%	84%
Union City	-	-	70%
VTA	12%	11%	11%
WestCat	-	78%	73%

How to read the chart:

In an average month in 2017, 15% of Clipper card riders who rode BART also rode AC Transit.

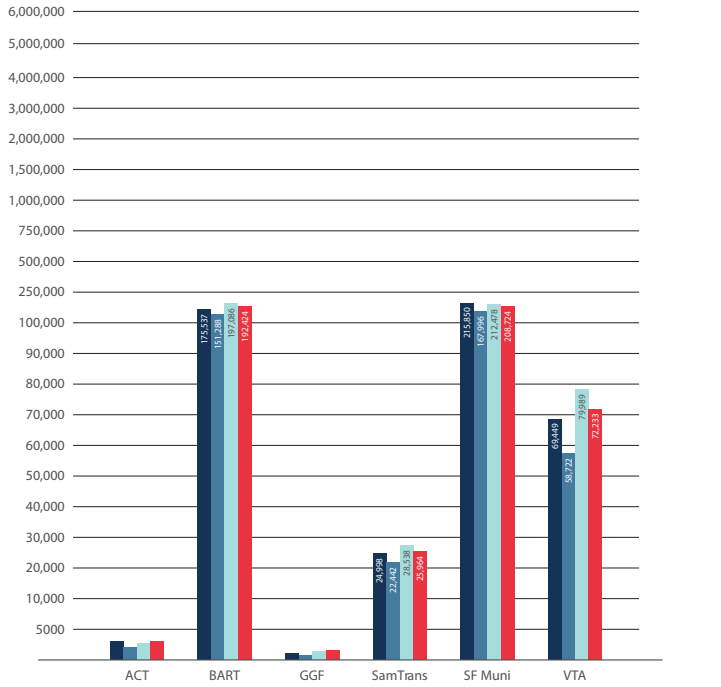
	2015	2016	2017
AC Transit	14%	14%	15%
WETA	2%	2%	2%
CalTrain	6%	6%	5%
CCTA	-	1%	1%
FAST	-	-	-
GGF	1%	1%	1%
GGT/MT	1%	1%	1%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	2%	2%	2%
Santa Rosa	-	-	-
SFMTA	42%	40%	38%
SMART	-	-	-
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	1%
Union City	-	-	-
VTA	2%	2%	1%
WestCat	-	-	-

source: Clipper data 2014–2017; SPUR Analysis

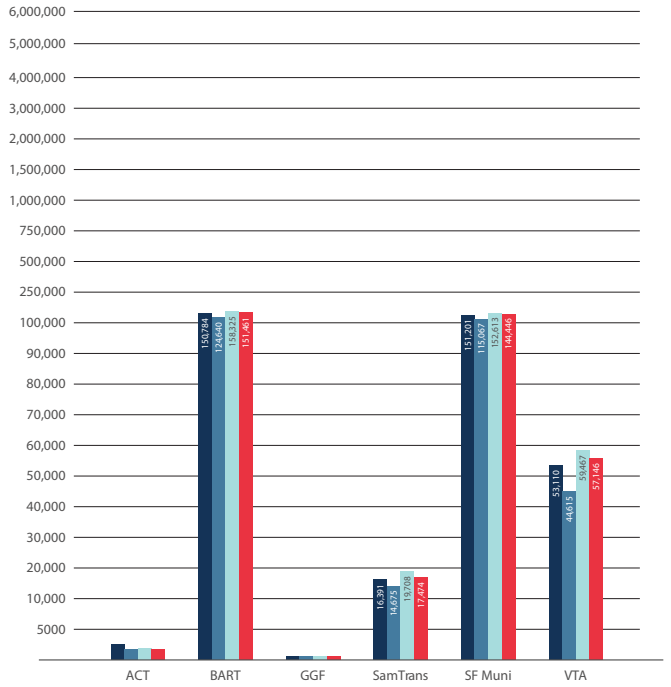
CalTrain

At a Glance: How Transit Riders Use CalTrain

NUMBERS OF TRIPS INVOLVING TRANSFERS TO CALTRAIN FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM CALTRAIN TO:



SYSTEM OVERLAP

How to read the chart:

In an average month in 2017, 2% of Clipper card riders who rode AC Transit also rode CalTrain.

	2015	2016	2017
AC Transit	2%	2%	2%
BART	6%	6%	5%
WETA	3%	3%	3%
CCTA	-	2%	2%
FAST	-	-	-
GGF	4%	4%	4%
GGT/MT	4%	4%	4%
Lavta	-	5%	3%
Napa Vine	-	-	-
SamTrans	18%	17%	16%
Santa Rosa	-	-	-
SFMTA	6%	6%	6%
SMART	-	-	1%
SolTrans	3%	2%	1%
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	-
VTA	13%	11%	11%
WestCat	-	1%	1%

How to read the chart:

In an average month in 2017, 4% of Clipper card riders who rode CalTrain also rode AC Transit.

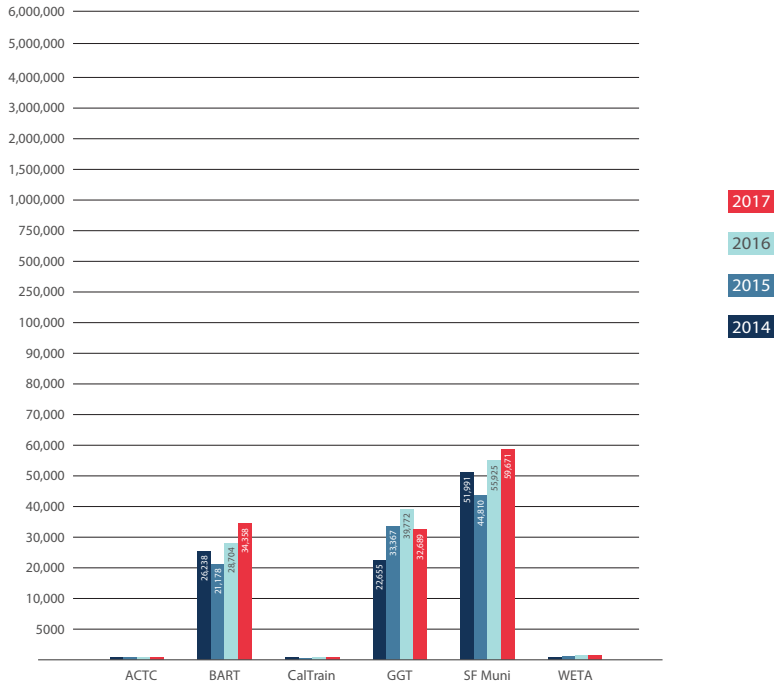
	2015	2016	2017
AC Transit	4%	4%	4%
BART	45%	44%	43%
WETA	1%	1%	1%
CCTA	-	-	-
FAST	-	-	-
GGF	1%	1%	1%
GGT/MT	1%	1%	1%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	7%	6%	6%
Santa Rosa	-	-	-
SFMTA	41%	40%	38%
SMART	-	-	-
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	-
VTA	12%	12%	11%
WestCat	-	-	-

source: Clipper data 2014–2017; SPUR Analysis

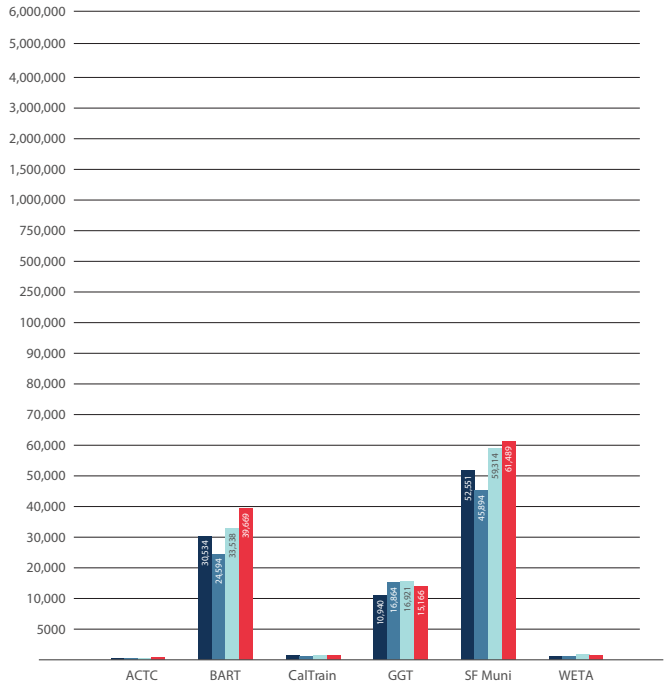
Golden Gate Ferry

At a Glance: How Transit Riders Use Golden Gate Ferry

NUMBERS OF TRIPS INVOLVING TRANSFERS TO GOLDEN GATE FERRY FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM GOLDEN GATE FERRY TO:



SYSTEM OVERLAP

How to read the chart:

In an average month in 2015, 1% of Clipper card riders who rode AC Transit also rode Golden Gate Ferry.

	2015	2016	2017
AC Transit	1%	-	-
BART	1%	1%	1%
WETA	3%	2%	3%
Caltrain	1%	1%	1%
CCTA	-	-	-
FAST	-	-	-
GGT/MT	24%	23%	23%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	-	-	-
Santa Rosa	-	-	-
SFMTA	2%	2%	2%
SMART	-	-	9%
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	
Union City	-	-	-
VTA	-	-	-
WestCat	-	-	-

How to read the chart:

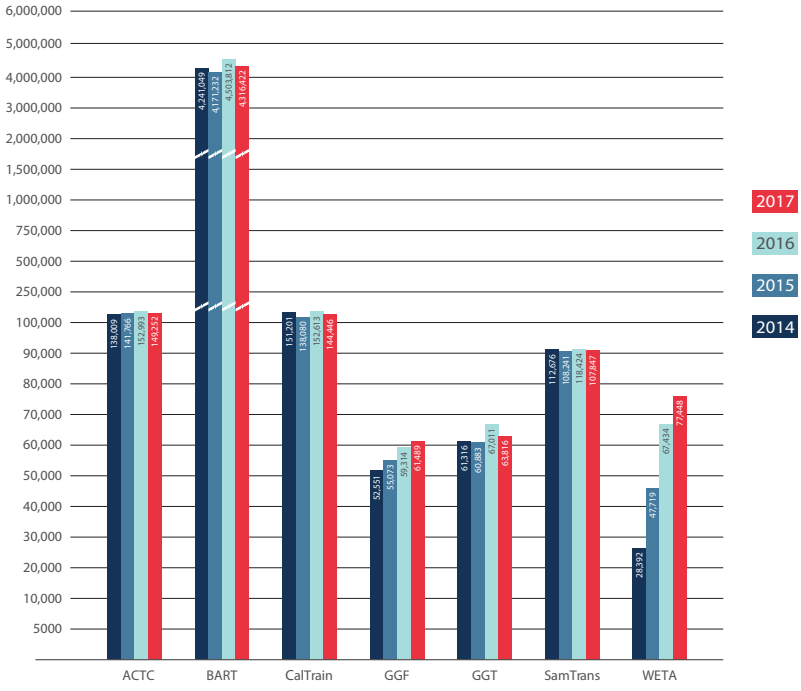
In an average month in 2017, 3% of Clipper card riders who rode Golden Gate Ferry also rode AC Transit.

	2015	2016	2017
AC Transit	3%	3%	3%
BART	32%	31%	31%
WETA	2%	2%	2%
Caltrain	4%	4%	4%
CCTA	-	-	-
FAST	-	-	-
GGT/MT	25%	23%	22%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	1%	1%	1%
Santa Rosa	-	-	-
SFMTA	39%	37%	36%
SMART	-	-	4%
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	-
VTA	1%	1%	-
WestCat	-	-	-

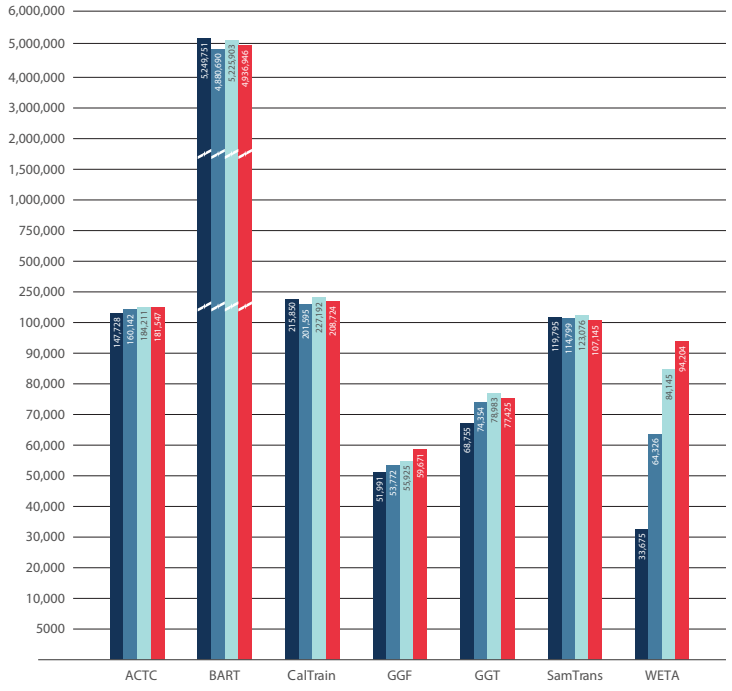
source: Clipper data 2014–2017; SPUR Analysis

SFMTA
At a Glance: How Transit Riders Use SFMTA

NUMBERS OF TRIPS INVOLVING TRANSFERS TO SFMTA FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM SFMTA TO:



SYSTEM OVERLAP

how to read the chart:

"In 2017, 22% of Clipper card riders who rode AC Transit also rode SFMTA."

	2015	2016	2017
AC Transit	26%	24%	22%
BART	42%	40%	38%
WETA	43%	40%	39%
Caltrain	41%	40%	38%
CCTA	-	25%	20%
FAST	27%	25%	22%
GGF	39%	37%	36%
GGT/MT	42%	42%	41%
Lavta	-	27%	23%
Napa Vine	32%	29%	25%
SamTrans	39%	37%	36%
Santa Rosa	-	16%	18%
SMART	-	-	7%
SolTrans	37%	34%	32%
Sonoma	-	19%	20%
TriDelta	-	22%	21%
Union City	-	-	16%
VTA	7%	6%	6%
WestCat	-	30%	29%

how to read the chart:

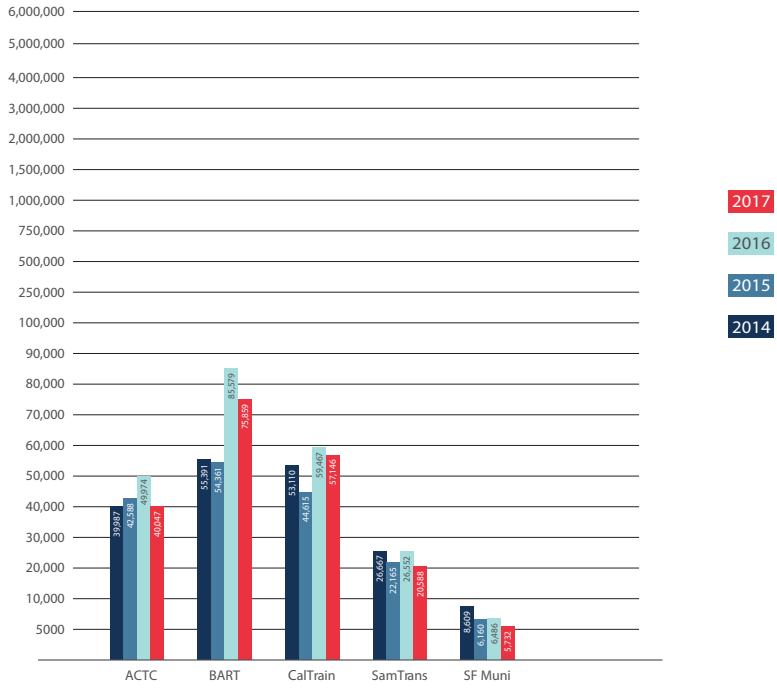
"In 2017, 7% of Clipper card riders who rode SFMTA also rode AC Transit."

	2015	2016	2017
AC Transit	6%	6%	7%
BART	48%	48%	48%
WETA	1%	1%	2%
Caltrain	6%	6%	6%
CCTA	-	-	-
FAST	-	-	-
GGF	2%	2%	2%
GGT/MT	2%	2%	2%
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	2%	2%	2%
Santa Rosa	-	-	-
SMART	-	-	-
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	-
VTA	1%	1%	1%
WestCat	-	-	-

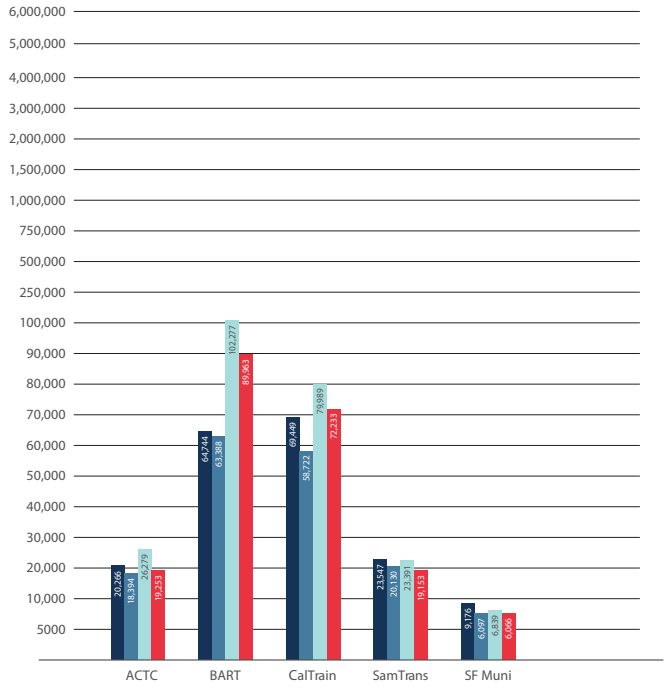
source: Clipper data 2014–2017; SPUR Analysis

VTA
At a Glance: How Transit Riders Use VTA

NUMBERS OF TRIPS INVOLVING TRANSFERS TO VTA FROM:



NUMBERS OF TRIPS INVOLVING TRANSFERS FROM VTA TO:



SYSTEM OVERLAP

how to read the chart:

"In 2017, 2% of Clipper card riders who rode AC Transit also rode VTA."

	2015	2016	2017
AC Transit	3%	3%	2%
BART	2%	2%	1%
WETA	1%	1%	1%
Caltrain	12%	12%	11%
CCTA	-	2%	2%
FAST	-	-	-
GGF	1%	1%	-
GGT/MT	1%	1%	1%
Lavta	-	5%	3%
Napa Vine	-	-	-
SamTrans	7%	7%	6%
Santa Rosa	-	-	-
SFMTA	1%	1%	1%
SMART	-	-	-
SolTrans	-	1%	1%
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	10%
WestCat	-	-	-

how to read the chart:

"In 2017, 4% of Clipper card riders who rode VTA also rode AC Transit."

	2015	2016	2017
AC Transit	6%	5%	4%
BART	12%	11%	11%
WETA	-	-	-
Caltrain	13%	11%	11%
CCTA	-	-	-
FAST	-	-	-
GGF	-	-	-
GGT/MT	-	-	-
Lavta	-	-	-
Napa Vine	-	-	-
SamTrans	3%	2%	2%
Santa Rosa	-	-	-
SFMTA	7%	6%	6%
SMART	-	-	-
SolTrans	-	-	-
Sonoma	-	-	-
TriDelta	-	-	-
Union City	-	-	-
WestCat	-	-	-

source: Clipper data 2014–2017; SPUR Analysis

Through research, education and advocacy, SPUR promotes good planning and good government in the San Francisco Bay Area. We are a member-supported nonprofit organization.
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www.spur.org

SPUR

654 Mission Street
San Francisco, CA 94105
Tel. 415.781.8726
info@spur.org

75 South First Street
San Jose, CA 95113
tel. 408.638.0083
infosj@spur.org

1544 Broadway
Oakland, CA 94612
tel. 510.827.1900
infooakland@spur.org