CALTRAIN GOPASS COST-EFFECTIVENESS

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1. EXECUTIVE SUMMARY

Unlimited-ride passes – also referred to as Eco Passes or U-Passes – are typically annual passes offered to employers and universities at a steep discount over the cost of purchasing monthly passes or other fare media. This is justified by the fact that the organizations participating in the programs must purchase the passes for all eligible employees/students, regardless of whether they are used. The Peninsula Corridor Joint Powers Board (PCJPB) operates the Caltrain commuter rail service through the counties of San Francisco, San Mateo, and Santa Clara. A key component of its fare structure is the GoPass, which is an unlimited-ride product offered to employers and schools looking for ways to reduce demand for parking, improve access for their employees/students, or meet congestion mitigation requirements.

This research seeks to answer the following questions: 1) does offering the GoPass to schools and employers represent a cost-effective way to increase ridership on Caltrain? And 2) regardless of cost-effectiveness, is the GoPass program driving Caltrain ridership?

The Literature review focuses on those factors that contribute to transit ridership growth, including fare, service enhancements, infrastructure upgrades, and other elements. This research was crucial in identifying the unlimited-ride pass as a compelling topic for further study. Research then focused on unlimited-ride programs, which have been studied extensively with respect to their impact on ridership and the benefits they bring to participating employers. Notably absent, however, was analysis of whether such programs serve as a cost-effective way to drive ridership from the standpoint of the transit agency.

Following discussions with Caltrain staff, the research design was developed to determine how much revenue is associated with each GoPass trip. This number is then compared to the amount of fare associated with non-GoPass trips. The research design relies on data from the 2010 and 2013 Caltrain Triennial Customer Surveys, annual GoPass surveys, and data from the National Transit Database regarding revenue and ridership for the system as a whole.

The analysis begins with a profile of the typical Caltrain customer versus that of the subset of Caltrain Customers using the GoPass as their fare medium. This includes analysis of fare type vs. ethnicity, fare type vs. age, fare type vs. household income, fare type vs. language spoken at home, fare type vs. sex, and fare type vs. educational attainment. Following development of the basic profile is analysis of the service usage characteristics of GoPass users versus users of the system as a whole. This includes data cross-tabulations of fare type (GoPass and non-Go-Pass) of fare type vs. trip purpose, fare type vs. frequency, and fare type vs. longevity (how long they have used the service).

The analysis then focuses on the cost effectiveness of the GoPass program with respect to how much revenue is associated with each GoPass trip when compared to the revenue associated with each non-GoPass trip. This is followed by analysis of the impact the program has on total ridership, regardless of fare medium used.

In comparing the amount of GoPass revenue per estimated unlinked trip taken by GoPass users versus the amount of non-GoPass revenue collected per non-GoPass trip, it is clear the GoPass is not as cost-effective as the other fare media types, taken as a whole. Altogether, Caltrain collected $1.73 per GoPass trip in 2013 versus $4.46 per trip for non-GoPass trips. The gap actually widened in 2014, with Caltrain collecting $1.79 per GoPass customer that year versus $5.41 in non-GoPass revenue.

With respect to the impact the program has had on ridership, the general growth in GoPass ridership has outpaced that of the system as a whole, indicating that GoPass users are contributing to Caltrain ridership in a significant manner. In 2014, Caltrain ridership grew by 644,817 unlinked trips (3.9 percent) over 2013. During the same period, the number of estimated unlinked trips taken by GoPass users climbed by 842,899, or 21 percent over the year prior. Without the increase in GoPass riders, the system would have actually lost 198,082 riders in 2014, or 1.2 percent of 2013's annual ridership.

Given the revenue gap between the GoPass program and all other fare media types used on the Caltrain system, the PCJPB should adjust the pricing scheme to increase the annual cost per program participant.

2. INTRODUCTION

| DEFINITION OF PROBLEM |

Transit agencies continually struggle with how to maximize ridership and productivity on their respective systems. There is a wide range of different strategies and tactics that can be used to increase ridership, from building new rail lines to building partnerships with local community-based organizations. There have been numerous studies of the issue, analyzing and ranking various actions and determining whether they are cost-effective in meeting their stated goal: increasing ridership. A selection of these as found in Fleishman 2005 is discussed below.

Large Capital Projects
Significant capital projects such as building new light or heavy rail can generate significant new ridership, but the capital and operating costs associated with it can preclude many agencies from doing so.

Increased Service
Increasing service levels in the service area, whether through introducing feeder services, enhancing frequency along key corridors, introducing express buses, or extending the service day were generally found to achieve increased ridership with moderate to high cost-effectiveness implications.

Partnerships and Coordination
Forming partnerships and enhancing coordination with other organizations and service providers ranked among the most cost-effective groups of strategies. These efforts generally involve sharing funding; offering incentives; targeting specific populations, organizations, or community groups; and working directly with employers. Some examples include university or employer pass programs, interagency transfer agreements, mobility management, parking policy changes, and vanpools.

Following review of numerous studies and reports conducted in recent years, the idea of unlimited-ride passes has shown clear potential to be a cost-effective means to increase ridership for participating transit agencies. This report will focus solely on determining whether unlimited-ride passes are truly cost effective from the standpoint of both the transit agency and the participating employers. The

research includes analysis of the Peninsula Joint Powers Board's (PCJPB) GoPass program that can be used on its Caltrain commuter rail service.

Unlimited-ride Passes

There are two common forms of unlimited-ride passes in use today in the United States. The University/School Pass Program is a partnership between a transit agency and one or multiple schools to provide for free or reduced rides for students. Employer Annual Pass Programs represent agreements between the transit agency and individual employers to offer annual passes to employees as a Travel Demand Management (TDM) strategy. The distinctions between these programs are detailed below.

University Pass Programs

Many universities that do not provide their own transit service rely upon the local transit agency for transportation services for their student body and faculty. In many such cases, universities establish partnerships with the local transit agencies to secure discounts on fare media or other payment programs for students and faculty. By providing a low-cost and convenient form of transit payment to the university community, the transit agency typically sees increased ridership. Agencies that serve – and have some type of payment arrangement with – major universities by and large have significantly higher per capita ridership figures than do other comparably-sized areas (Fleishman 2005). In return the university benefits by improving access for its students, faculty, and staff. Shifting so many students and faculty may also result in a reduction in the need for existing or forecast parking on site.

Some universities began offering such partnership programs as early as the 1980s, allowing for significant study and providing opportunity for incremental improvement over the years. In their evolution across the past several decades, a number of different iterations of the programs have emerged:

- The university pays the transit agency an annual lump sum per student in return for unlimited transit use for each participating student, faculty and staff member; this type of arrangement has been given the generic name "Unlimited Access." In this option, the student typically need only present his/her campus ID card to board a transit vehicle (Fleishman 2005).

- The university purchases monthly/semester/annual passes from the transit agency, either at the regular price or at a reduced price, and then sells them to interested students – usually at a significant price reduction. These may be specially designed passes (either electronic or flash passes) issued by the agency, or special stickers affixed to campus ID cards (Fleishman 2005).

- The transit agency actually reads the university's student/faculty/staff ID cards directly in the fare collection equipment. A predetermined cost per ride is then billed to the university, based on the total uses of the cards during the specified time (i.e., month, semester, year). (Fleishman 2005)

In some cases, arrangements involve a single university or college, while in others, the transit agency provides the same basic deal to any interested institution. Where implemented, university pass programs have typically proven quite successful at increasing transit ridership, while also providing a guaranteed revenue stream to the transit agency.

Employer Annual Pass Programs

Annual pass programs are a partnership between a given transit agency and those employers interested in providing a benefit to their employees or are compelled to reduce automobile trips by employees through a TDM requirement. Such programs made participation convenient for both employers and employees.

It is critical for the transit agency that the pricing structure for the pass ensures the agency will not be losing revenue. These programs require all employees at a participating employer to receive the pass, thus ensuring the employer is paying for some employees who will never use the pass. Should a transit agency not need to add/adjust service to meet the increased demand, any extra revenue from such programs would be positive for the bottom line. In addition, the extra revenue is often more dependable than cash fares or other media given participation in such programs is often required as a condition of approval for the buildings/employers.

Thus, employer pass and voucher programs have been shown to benefit employees, employers and transit agencies. Clearly, the simpler – and less costly – it is for employers to administer these programs, the more likely they will be to participate. Similarly, the more convenient it is for employees to take advantage of commuter benefits, the more likely they will be to use transit to get to and from work (Fleishman 2005).

| SYSTEM INFORMATION |

The Peninsula Corridor Joint Powers Board is one of three agencies operating under the umbrella of the San Mateo County Transit District (District). The District also includes SamTrans, which operates fixed-route bus and complementary Paratransit service as well as the San Mateo County Transportation Authority (SMCTA), which administers a county-wide half-cent sales tax.

Rail service in some form or another has been provided between San Jose and San Francisco, CA via the same corridor for more than 150 years. Passenger service on the Peninsula corridor began in 1863 by the San Francisco and San Jose Railroad Company. The San Francisco and San Jose Railroad Company was acquired in 1870 by another company that would soon become part of the Southern Pacific Railroad.

Following steady losses in ridership due to changing travel patterns, Southern Pacific petitioned to abandon the service in 1977, but the three counties being served (Santa Clara, San Mateo, and San Francisco – enacted a fare stabilization plan to subsidize the price of tickets for the service. From 1980 until June 30, 1992, Caltrans contracted with S.P. to provide passenger service in the corridor, sharing operating subsidies with San Francisco, San Mateo and Santa Clara counties. The state assumed sole responsibility for station acquisitions and other capital improvements until the service resulted in formation of the PCJPB in 1987. The JPB took over operations in 1992 and has operated the service ever since.

Caltrain serves stations from San Francisco to Gilroy, with the core of service focused between San Francisco and San Jose. The service carried approximately 53,500 riders on a typical weekday in Fiscal Year 2014. It operates 46 trains in each direction each weekday. Caltrain features 18 trains each

direction on Saturday and 16 on Sunday. Service is split into three different trip types: local, limited-stop, and baby bullet. Local service makes as many as 25 stops in each direction, with the longest trip times being 2 hours, 22 minutes for trips to/from Gilroy or 1 hour, 33 minutes for trips to/from San Jose. Limited-stop service cuts the number of stops to as few as 11, with a travel time to/from San Jose of 1 hour, 9 minutes. Baby Bullet service was introduced in 2004 and features as few as six stops and a travel time of 59 minutes to/from San Jose.

Exhibit 1: Caltrain System Map
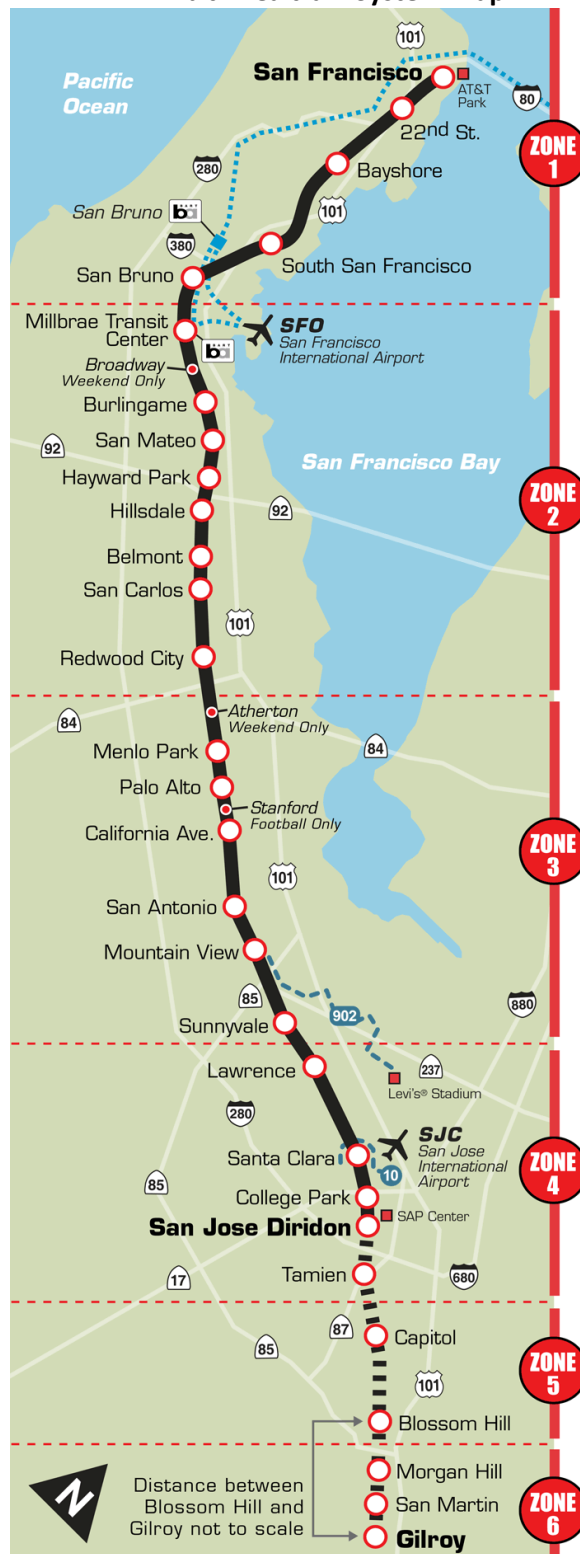
Source: www.Caltrain.com

Caltrain adjusts fares based on zones, with a total of six zones spanning the entire service area. The following chart illustrates the fare structure by zone across the available fare media.

Exhibit 2: Fare Chart

Ticket Type	How to Buy	Travel Within					
		1 Zone	2 Zones	3 Zones	4 Zones	5 Zones	6 Zones
One Way	Ticket Vending Machine	$3.25	$5.25	$7.25	$9.25	$11.25	$13.25
	Clipper Card	$2.75	$4.75	$6.75	$8.75	$10.75	$12.75
Day Pass	Ticket Vending Machine	$6.50	$10.50	$14.50	$18.50	$22.50	$26.50
Zone Upgrade	Ticket Vending Machine	$2.00					
8-ride	Clipper Card	$20.25	$35.25	$50.00	$64.75	$79.50	$94.25
Monthly Pass	Clipper Card	$73.00	$126.00	$179.00	$232.00	$285.00	$338.00

Source: www.Caltrain.com

The Caltrain GoPass is an annual, unlimited-ride pass offered to employers, schools, and residential buildings at a deep discount per employee/student/resident. The pass is open to any organization that wishes to participate, signs the user agreement, and pays the appropriate fees. As of the beginning of 2015, there are more than 100 participating organizations.

The GoPass is a sticker that is placed on an approved badge and must be renewed annually. Participating organizations must enroll every student/full-time employee/resident regardless of whether the individuals intend to use the service. The rate for the program in 2014 was $165 for each student/full-time employee/resident or $13,750, whichever is more. Beginning in October 2014, the pricing was adjusted to $180.00 for each student/full-time employee/resident or $15,120, whichever is more. Organizations joining the program mid-year receive a pro-rated rate. Given the GoPass serves as 12 six-zone monthly passes (i.e., one for each month), it represents a discount of 95.6 percent over the equivalent adult monthly pass.

The results of the research can be used by the PCJPB to make adjustments to the program. In addition, this research will serve as a way to identify best practices that can be adopted in other areas, as well as potential pitfalls or challenges that agencies considering such a program may be able to avoid.

3. LITERATURE REVIEW

The following literature review represents the transition of the research topic from "how to increase transit ridership in a cost-effective manner" to "is the Caltrain GoPass a cost-effective way to increase transit ridership." It is clear from the trajectory of the following citations that the research topic, while initially very broad, has come to focus on unlimited-ride pass programs and their effectiveness with respect to increasing transit ridership.

| FACTORS INFLUENCING RIDERSHIP GROWTH |

The cost-effectiveness of various tactics aimed at increasing transit ridership is a rich topic for researchers. What are existing systems doing and how are those specific activities impacting ridership? In reviewing existing practices used to drive ridership growth at transit properties around the country, it is clear a wide variety of different approaches are being used (Fleishman, 2005). It is critical to evaluate each approach across a series of metrics, including cost, ridership growth, and timeline for implementation.

Fleishman includes a set of strategies that have been employed in the past by various transit operators to increase transit ridership. In keeping with most Transit Cooperative Research Program reports, the purpose of the document in general is to share best practices among operators so is to see transit ridership increase. When ridership increases for the individual operators, the share of transit ridership among all modes nationwide will increase, which will yield an increase in the "clout" of transit operators, allowing them to receive more funding and continue the virtuous cycle.

The report defines those elements that drive ridership growth which are within (service adjustments, pricing, etc.) and beyond (local/regional economy, federal/state assistance) the control of a given transit agency. It also includes discussion of the trade-offs agencies must make when considering the relative merits of a given strategy. A key point within the report is that large capital projects are often inefficient with respect to increasing ridership and that some of the simplest approaches such as creating partnerships with employers or modifying fare policies can drive ridership growth more effectively.

Capital projects are often seen as an effective way to increase ridership, but many of the real benefits to transit ridership may come later, when density increases around stations. In fact, many new rail lines serve areas well short of what researchers have identified as a critical mass of density. A study of 59 different rail and BRT projects found that the average combined density of jobs and housing around the stations was 19, less than one-third of the critical density of 60 jobs and residents per acre necessary to ensure cost-effectiveness at a capital cost of $50 million per mile (Guerra, 2011).

Why are these expensive rail projects built when more cost-effective means of boosting transit ridership are available? One clear reason is that local decision-makers often rely on faulty ridership and cost forecasts to make the selection among various alternatives. In one FTA study, actual ridership on completed lines was as much as 85 percent lower than forecast, while costs were as much as 106 percent higher (Pickrell, 1990). In many cases, leveraging BRT to serve corridors is a good first step, with many properties that started BRT programs experiencing significant numbers of new transit riders, as opposed to more rides from existing customers (Peak et al, 2005).

Digging deeper into those factors influencing transit ridership, there are generally two broad categories – external and internal – with external factors being generally beyond the control of transit agencies and internal factors being within the realm of a transit manager's control (Taylor, Fink, 2003). Some of the critical external factors include the economy, population growth, land-use patterns, and availability of funding. Internal factors include service levels, service quality, reliability, and price. Price represents one of the most effective ways for a transit agency to influence usage, positively or negatively. Among the many levers within pricing that an agency can control is whether there are specific fare products that are targeted directly at students and commuters at a reduced price, such as Eco Pass programs.

This research is corroborated by analysis of transit ridership increases in the 1990s and what factors may have contributed to increased transit patronage (Haas, 2002). There was a strong correlation between an 11-percent decrease in inflation-adjusted fares and a 12-percent increase in transit ridership across the same period. The same report included a survey of transit agencies offering unlimited access programs for employers or universities and found that such programs were generally successful in driving ridership growth, with a few exceptions.

| UNLIMITED ACCESS PROGRAMS |

Often, universities form partnerships with local transit agencies to provide unlimited transit rides for students and faculty of the university. These types of programs, called "Eco Passes" or Unlimited Access programs are intended to manage congestion and parking demand on campus while also driving ridership growth for the transit operator. The passes are paid for by the university, often at a significant discount. Digging deeper into the specifics of unlimited-ride pass programs implemented in conjunction with local universities, research has shown the programs are beneficial to transit agencies for five key reasons: they reduce demand for parking, increase student mobility, help with student recruitment/retention, reduce costs associated with attending college, and increase transportation equity. The transit agencies indicated the benefits to them of the programs were threefold: increased ridership, guaranteed revenue source, and improved overall service (Brown, 2001).

Some of the leaders of the employer-based unlimited-ride effort are communities in the San Francisco Bay Area. One study focused on the efforts and cost effectiveness of Eco Passes in the Bay Area communities of Mountain View and Palo Alto, including the hypothetical benefits of those passes to developers, employers, transit agencies, and the cities themselves (Shoup, 2004).

Eco Passes are a form of Transportation Demand Management wherein transit agencies partner with employers to offer every employee at an organization a heavily-subsidized unlimited-ride pass (often as little as one percent the cost of a traditional monthly pass, which is also heavily subsidized). These passes are offered to all employees, regardless of whether they use it, and are sometimes a condition of approval for developers building office/commercial property.

Research suggests the potential cost savings for developer versus building parking, the benefit to transit agencies in filling excess capacity and having more reliable funding sources, the benefit to employees in having great flexibility, and the benefit to cities in terms of congestion, reduced requests for variances, and improved urban design (Shoup, 1999).

When looking at a single program such as the Eco Pass, as well as just a single employer, such as a local entity, can provide clear insight into the benefits of a program such as the Eco Pass. When focusing on how the Santa Clara Valley Transportation Authority (VTA) Eco Pass program works with a large public entity such as the City of San Jose, the drawbacks and benefits of the program can be understood more readily. For the first 13 years of its participation in the VTA Eco Pass program, the City of San Jose did not conduct any critical analysis of how the program was benefitting its employees (Salvano, 2009).

In addition to evaluating the program in terms of participation rates and other key indicators, Salvano also analyzed how the Eco Pass program was impacted by the fact that City of San Jose employees were also offered free parking. Salvano's research sought to determine whether the City's practice of offering free parking limited the effectiveness of the Eco Pass program, in part by evaluating how fluctuations in gas prices correlated with usage of a parking structure in downtown San Jose. Given the indirect relationship between gas prices and parking utilization rates among City employees in that garage, there may be a correlation between free parking and lower Eco Pass usage.

Salvano admits that given the lack of monitoring and evaluation of the program up to that point, he couldn't draw any firm conclusions regarding how the program had performed across its lifespan. That said, Salvano does reach a number of interesting conclusions, including the fact that while VTA expected a 3-5 percent participation rate at the outset of the program, City employees were using it at a rate of 25 percent. Given this high participation rate, the author believes the Eco Pass is currently underpriced and should be restructured to improve farebox recovery and ensure the program is sustainable for the long term. In addition, Salvano recommends the City restructure parking pricing to better align incentives for commuters.

| IMPACTS OF TRANSIT BENEFITS PROGRAMS |

Eco Passes are often part of larger employer benefits programs designed to attract and retain employees. Some key elements of transit benefits programs include vouchers, monthly passes, and universal passes. These can impact transit agencies with respect to ridership, revenue, and cost. Some examples can be found through the examination of five specific transit agencies throughout the country

to determine how the benefits programs affect ridership and revenue, how costly are the programs to administer, and the differences in terms of impacts among the various benefit types (Ecola, 2008). The agencies included in the study – unlike Caltrain – are multimodal and are geared for community-wide mobility. Caltrain is designed to serve those making trips solely along a single corridor, with a particular focus on commuters.

The research revealed that Universal Pass programs (like the GoPass) generally have complex pricing structures that vary based on location and/or size of employer. More than 2.5 Full-time Equivalents (FTEs) in staff time are required to administer Universal Pass programs and pass-holders typically account for 5-15 percent of total system ridership.

Ultimately, the authors indicate that better data are needed to study the issue in greater detail and to reach firmer conclusions regarding the impact of transit benefits packages on transit ridership.

In looking at one specific example, the Countywide EcoPass Feasibility Study for Boulder County, Colorado provides critical insight into the costs and benefits of Universal Pass programs as well as how they achieve regional goals. The report – prepared by consultants Charlier Associates, Inc. in association with Nelson/Nygaard for Boulder County and the City of Boulder – seeks to determine whether the EcoPass program could help achieve five key objectives, including increasing transit mode share and improving access to transit in the area (Charlier Associates, 2014).

The authors conducted modeling for demand, ridership, and costs associated with a countywide program (seven similar programs already exist in various communities in the area) and determined that integrating the existing programs together and extending them countywide could yield tangible benefits. These include an increase in ridership in the county of between 26 and 62 percent. The program would also yield as much as a 50-percent increase in transit mode share, with a more than doubling of the number of residents eligible for an employer-provided transit pass.

The benefits of these transit pass programs are clear, with a significant amount of research indicating the programs reduce demand for parking, while also increasing transit usage in lieu of driving alone. In a

report for the San Francisco Bay Area's regional transportation planning agency, the Metropolitan Transportation Commission (MTC), the author discusses transit benefits programs as a cost-effective means of shifting modes and driving transit ridership (Knepper, 2007). These programs are often viewed as a critical element of any comprehensive Transit Demand Management (TDM) strategy. King County Metro in the Seattle, Washington area has experienced success in more suburban transit center environments. The Village at Overlake Station in Redmond and the Metropolitan Place at the Renton Transit Center provide bus passes for all residents. Survey results suggest that as many as half of residents in those developments are now regular bus users (Shelton, 2003).

At Johns Manville Company headquarters in downtown Denver, Colorado, employees are provided with the option of subsidized parking or a free Eco Pass. The Eco Pass also comes with participation in the company's Guaranteed Ride Home program and 12 free days of parking a year. Since it adopted the program, the number of employees driving along to work has been reduced to just 55 percent, with 44 percent using public transit for their commutes (Anonymous, 2013).

When used as a tool by universities, these programs can be very successful in driving transit usage and limiting single-occupant trips. The University of California, Berkeley Class Pass Program was launched in 1997 as a partnership with Alameda-Contra Costa Transit (AC Transit) whereby students received unlimited rides on AC Transit. The program was paid for via student registration assessment. Prior to implementation, 5.6 percent of students used AC Transit for school-related trips. Following implementation, 14.1 percent used AC Transit. AC Transit, even though it was offering the passes at a discounted rate, saw a 48-percent increase in revenue from UC Berkeley students across the same period (Nuworsoo, 2005). The City of Berkeley also offers a similar program for its employees through a partnership with AC Transit. The program has helped reduce the number of employees who drive to work (Anonymous, 2002).

There is a great deal of literature regarding how to reduce parking demand and how to improve the success of Transit-oriented Developments (TODs) with respect to the share of trips made by residents using transit. In this field of research, transit benefits programs routinely appear as some of the more effective ways to reduce demand for parking. Knepper (2007) lists Transit Incentive Programs as a key

part of any comprehensive set of strategies to reduce parking demand at successful TODs. Among the possible types of transit incentives (bus passes, fare-free zones, fare discounts to seniors or school kids), she mentions pass programs, in particular, as effective at reducing parking demand by shifting commuters and residents from driving to transit service. In a matrix of the relative cost-effectiveness of strategies for reducing parking demand, transit incentive programs are listed as "medium/low" with effectiveness varying to a large degree depending on the cost of the pass programs, quality/access to transit service, and convenience of taking transit to reach key destinations. However, she notes pass programs are very high for TODs immediately adjacent to transit stations/corridors (which is where TODs should be located, by definition).

The high cost of parking spaces is a central driver of the need to reduce parking demand. Parking spaces can cost between $5,000 and $25,000 each, depending on whether they are in surface lots, underground, or in a structure. As Boroski et al (2005) notes, these costs can easily swing a potential project from profitable to unprofitable, so it is critical parking demand be mitigated to ensure the viability of many developments. They note that transit pass programs (among other strategies) are an effective way to attract residents and workers to transit. Tax deductions for employers and tax exemptions for users are also a great incentive for using such programs.

On the other side of the commute trip, Cervero (2006) determined that office workers in California were much more likely to utilize transit for commuter-related trips if frequent feeder bus service was available, as well as employer assistance with covering the cost of taking transit. A lack of parking at or near the work site was also a crucial factor in mode choice, further reinforcing the connection between mode choice and parking policy.

Donald Shoup has performed extensive analysis of parking requirements as well as potential alternatives to such requirements. Of particular relevance is his analysis of alternatives in the Silicon Valley communities of Palo Alto and Mountain View – both of which are served by Caltrain and the Santa Clara Valley Transportation Authority (VTA). His analysis determined that those employers offering VTA's Eco Pass as a benefit to their employees were able to reduce commuter parking demand by 19 percent. When translated to the cost of constructing parking spaces, this single transit benefit program allows

developers to save as much as $13.49 per square foot of space being constructed. He concludes that the low cost of reducing parking demand compared with the high cost of increasing the parking supply shows that Eco Passes are a cost-effective way to reduce the high cost of meeting parking requirements mandated by zoning ordinances (Shoup, 1999). The City of San Jose echoed these findings when staff analyzed the benefits of transit commuter benefits in lieu of parking. Their findings indicate that developers, employers, and commuters save money; public transit providers gain new riders, traffic congestion/pollution are reduced; and that positive changes in urban design are facilitated.

Commuter benefits programs don't work unless the end-user knows the program exists. In 2005, the United States Environmental Protection Agency released a guidebook for those employers seeking to improve usage of benefits programs. The guidebook features strategies and tactics design to make employees aware of the programs as well as ensure ongoing awareness levels remain high (Anonymous, 2005). Focusing on key outcomes and benefits such as saving money, reducing stress, improving health, and helping the environment are all key messages that are critical to a successful benefits program.

4. RESEARCH METHODOLOGY

The primary purpose of this research effort is to determine whether Caltrain's GoPass program is a cost-effective means of increasing ridership on its system. In so doing, the research design seeks to determine whether Caltrain loses revenue for every trip taken by GoPass users, and how many trips those riders contribute to the system. These results will then be compared to the cost-effectiveness of other fare types offered by Caltrain. This analysis is conducted using a cross-sectional methodology, comparing subsets of a larger Caltrain ridership and revenue picture to determine whether a specific program is more cost-effective than another.

The process for analyzing the cost-effectiveness of the GoPass program in terms of increasing ridership starts with a basic profile of the GoPass user versus customers of the system as a whole. This includes the share of GoPass users within the system, the number of trips they take each week, the number of years they've been using Caltrain, when they joined the program, and the purpose for which they use Caltrain.

The research will then focus on the specifics of administering the GoPass program, including the number of passes distributed each year (i.e., number of total eligible participants), the number of actual GoPass users, and analysis of how many trips occur per pass distributed.

The next step will be to analyze the amount charged to employers for the GoPass program. The 2014 rate was $165 per eligible participant or $13,750 per year, whichever is greater. The amount of revenue generated per GoPass user is calculated by dividing the amount of GoPass revenue collected each year by the number of eligible participants enrolled in the program for that given year. Next, the number of annual trips taken by GoPass users is calculated using results from the annual Caltrain GoPass Surveys in 2013 and 2014. This number will be the total amount of revenue brought in through the GoPass program divided by the approximate number of trips made using the GoPass program for those years.

These calculations set a baseline for the comparison of GoPass revenue per distributed pass to the revenue per passenger for all fare types excluding the GoPass. Comparing these two will enable the

determination of whether the GoPass is priced appropriately versus the other fare media accepted on Caltrain. In the event the GoPass program is less cost-effective than other fare media, recommendations will be made for specific changes to the pricing structure to bring it to a level of parity with the rest of the fare structure. If the GoPass is more cost-effective than other fare media, opportunities for expansion will be identified.

The cost-effectiveness of expanding the program will be based on the $165 per eligible participant figure. If necessary, the point the program will no longer be cost-effective based on increased usage of the pass among existing participants will be identified. For instance, if usage at participating employers increased from 10 percent to 20 percent, would Caltrain then be earning less revenue from each participant than if they were using other fare media?

Data Sources

This analysis is built around three primary data sources:

- Caltrain's October 2010 and 2013 Triennial Customer Surveys,
- Caltrain's Annual GoPass User Survey (GoPass Survey),
- National Transit Database, and
- GoPass distribution and revenue figures.

Taken together, these data sources will enable me to answer the key question: Is the GoPass a cost-effective means of increasing Caltrain ridership? The Triennial Survey includes 29 questions ranging in topic from household income and demographics to specific usage information such as trip frequency, fare type, and station pairings. In 2010 there were 4,428 surveys collected on the trains being sampled between October 12 and October 26, 2010. The number of responses yielded a response rate of 83 percent for the survey. This total equates to a system-wide margin of error of +/- 1.49 percent at the 95-percent confidence level. In 2013 there were 6,325 survey-eligible passengers riding on the trains being sampled between October 1 and October 10, 2013. The number of responses – 4721 – yielded a response rate of 75 percent for the survey. This total equates to a system-wide margin of error of +/- 1.41 percent at the 95-percent confidence level.

The sampling plans were designed to achieve a cross section of riders utilizing trains at various times of the day. Surveys were conducted on weekdays as well as on Saturday and Sunday. In 2010, surveyors sampled 56 weekday trips. Of the 56 weekday trips surveyed, 20 were Limited trains, 16 were Local trains, and 20 were Bullet trains. In 2013, surveyors sampled 62 weekday trips and 10 weekend trips. Of the 62 weekday trips surveyed, 29 were Limited trains, 19 were Local trains, and 14 were Bullet trains.

The raw Triennial Survey data are in a large Excel spreadsheet with individual respondents arranged as rows and their specific responses to questions arranged in columns. This dataset is utilized to perform statistical analysis, including data cross-tabulations, to support the research.

The GoPass survey is an annual survey that is required for any participant to receive a GoPass. In total, 15,784 GoPass users completed the survey in 2013 and 19,161 in 2014. The survey is conducted online using SurveyMonkey and once complete, the system authorizes the GoPass administrator to provide the participant with a GoPass sticker for his/her identification badge. The survey features questions regarding how long respondents have used the program, when they joined, how often they ride Caltrain, trip purpose, and how receiving the pass will alter Caltrain usage behavior. The survey represents a 100-percent sample of all GoPass users.

The National Transit Database is a collection of data reported annually by all transit agencies receiving federal funds. Agencies report on ridership, fare revenue, fleet characteristics, service levels, and service area characteristics. The data are accessible online and Caltrain is included within the dataset.

The final piece of the data picture is distribution and revenue figures from Caltrain's Marketing and Customer Service Department, which manages the GoPass program for the agency. Staff keeps track of the number of employers and participants at each employer and is responsible for ordering and distributing passes to those employers each year.

Research Methodology

The research methodology is broken into four primary sections: Rider Profile, Service Usage Profile, GoPass Revenue Analysis, and GoPass Ridership Impact.

Rider Profile

The first section of the capstone report focuses on a profile of the typical Caltrain customer versus that of the subset of Caltrain Customers using the GoPass as their fare medium. I will perform the following data cross-tabulations to build a profile of the typical GoPass customer:

- Fare type vs. Ethnicity

- Fare type vs. Age

- Fare type vs. Household income

- Fare type vs. Language spoken at home

- Fare type vs. Sex

- Fare type vs. Educational attainment

This profile, expressed in a series of charts, helps the reader visualize the distinctions between a typical Caltrain customer and a typical GoPass user. It also illustrates the differences in the market between the two.

Service Usage Profile

Following development of the basic profile, the service usage characteristics of GoPass users are analyzed versus users of the system as a whole. This includes data cross-tabulations of fare type (GoPass and non-Go-Pass) with the following:

- Fare type vs. Trip purpose

- Fare type vs. Frequency

- Fare type vs. Longevity (how long they have used the service)

These data cross-tabulations represent the development of the core of the research. They are critical to analyzing how often users of the GoPass patronize the service versus those using other fare media. They allow for the correlation of the number of trips made for every GoPass distributed by Caltrain staff. They also indicate how many trips are made by those not using the GoPass.

Finally, the number of GoPass participants per year of involvement with the program are analyzed. The results will be illustrated in a histogram illustrating the share of participants who began participating in

each year since program inception. These data will be taken directly from the GoPass Survey required of all participants.

GoPass Revenue Analysis

The next step is the determination of how many trips are made per eligible participant. This will be achieved by dividing the total number of trips taken by GoPass users in a typical week (as illustrated in the Triennial Survey) by the number of total eligible participants for 2014. The number of eligible participants is equal to the number of passes distributed by Caltrain to participating employers/schools. The weekly number will be multiplied by 52 to estimate the number of annual trips made by GoPass participants. This number will then be divided into the total revenue collected by Caltrain from employers participating in the program. This final figure will be the amount of revenue the agency earns for each trip taken via GoPass on an annual basis.

The trips taken by GoPass users are then subtracted from the rest of the annual unlinked trips on Caltrain and used to calculate the total number of unlinked trips they represent on an annual basis. Then the National Transit Database data for Caltrain are used to find the total amount of fare collected system-wide. Any GoPass revenue included within that metric is subtracted and the figured is then divided by the total remaining passengers (i.e., those passengers not using a GoPass). Total ridership for the year will be from the National Transit Database reports for 2013 and 2014.

These calculations will yield two numbers:
- Average GoPass revenue/GoPass unlinked trip.
- Average non-GoPass fare/non-GoPass unlinked trip trip.

These two numbers can be compared directly to determine whether the GoPass is a cost-effective means of generating ridership growth. If the GoPass revenue per trip is higher than the rest of Caltrain's fare media, the program is a cost-effective means of driving ridership through a novel fare strategy. However, if the average fare/non GoPass user is higher, then the program pricing should be re-evaluated to achieve greater parity with the rest of the codified tariff. In this case, the appropriate pricing strategy by multiplying the average fare/non GoPass trip by the number of GoPass-eligible

participants will be calculated. This will yield a total sum of GoPass program revenue necessary to achieve parity.
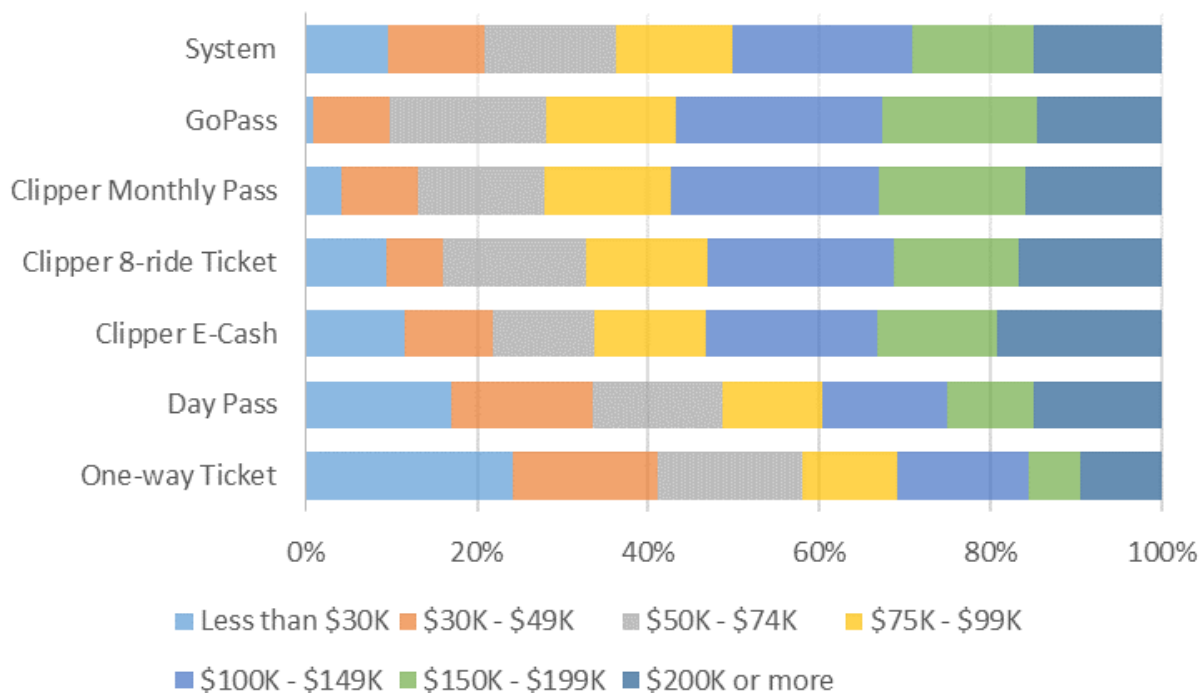
GoPass Ridership Impact

Finally, a determination of whether the GoPass has been successful in driving ridership growth regardless of its cost-effectiveness is made. First, Caltrain's own annual ridership statistics since 1999 (when the GoPass program was launched) will be used. Then the past two Triennial Surveys (2010 and 2013) will be used to calculate the change in share of GoPass users during that three-year span. Should the GoPass program grow at a greater rate than Caltrain ridership as a whole, there is a logical argument that the program is responsible for a share of the new riders on the system.

5. RIDER PROFILE

In understanding whether the GoPass is a cost-effective means of increasing Caltrain ridership, it helps to first begin by understanding who the GoPass users are and how that differs from the rest of the system's users. In the charts below, each fare category is cross-tabulated with the responses associated with a demographic question from the Caltrain 2013 Triennial Customer Survey.

With respect to Annual Household Income, GoPass users are significantly less likely to fall into the lowest income strata, with only 0.9 percent making less than $30,000 per annum versus 9.6 percent System-wide. However, Go Pass users are less likely to be in the $200,000 or more strata (14.7 percent) than the system as a whole (15.1 percent). It is clear that the GoPass, which is typically tied directly to an employer, means its users have a steady income, especially when compared with On-Way ticket and Day Pass users, who are much more likely to be in the lowest income bracket.

Exhibit 3: Fare Media vs. Annual Household Income

Legend:
- ■ Less than $30K
- ■ $30K - $49K
- ■ $50K - $74K
- ■ $75K - $99K
- ■ $100K - $149K
- ■ $150K - $199K
- ■ $200K or more

Source: Caltrain 2013 Triennial Customer Survey

The GoPass user tracks closely with the system as a whole when analyzing the ethnic breakdown of each fare category. Day Pass and 8-ride Ticket have the highest percentages of white users while the Monthly Pass has the highest share of Asian users among the fare categories.

Exhibit 4: Fare Media vs. Ethnicity
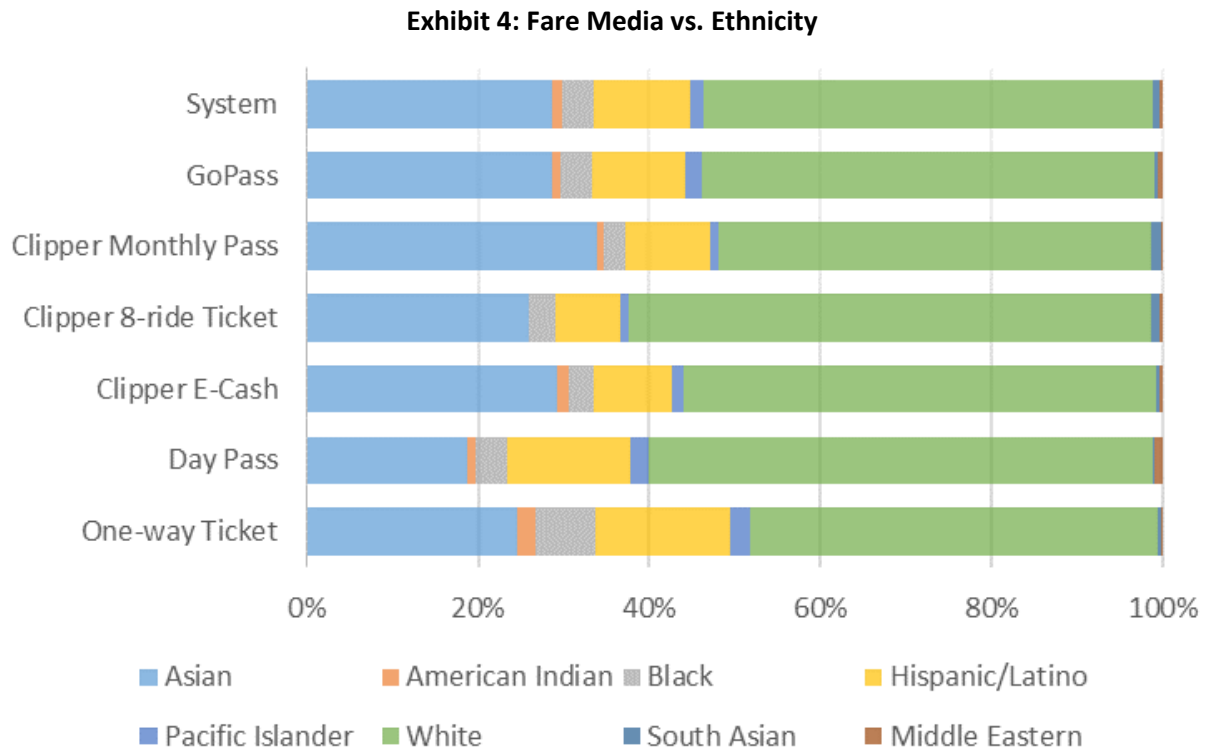
Source: Caltrain 2013 Triennial Customer Survey

Go Pass users are composed of primarily English speakers, with 8-ride Ticket users the only cohort more likely to speak English within the home. Day Pass and One-way Ticket categories have the lowest percentage of those who speak English at home and the most diversity among primary language.

Exhibit 5: Fare Media vs. Language Spoken at Home
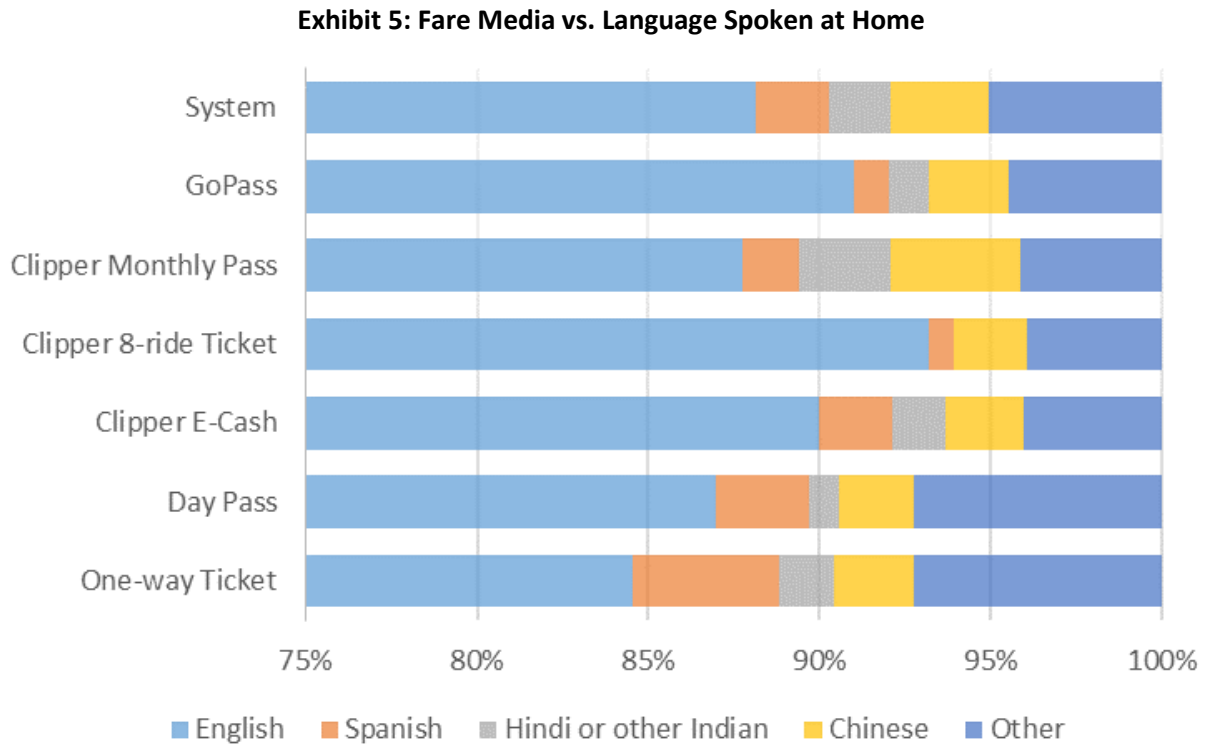
Source: Caltrain 2013 Triennial Customer Survey

Once again, the fact the GoPass is typically tied to employment makes its demographic composition much different than the system as a whole. Only 0.2 percent of GoPass users are under the age of 18 and only 1.5 percent are over the age of 65, both of which are the lowest numbers in the system. It also has the lowest percentage of those age 18-24 in the system. In total, 91.7 percent of GoPass users are between the age of 25 and 64 compared with 80.9 system-wide.

Exhibit 6: Fare Media vs. Age

Source: Caltrain 2013 Triennial Customer Survey
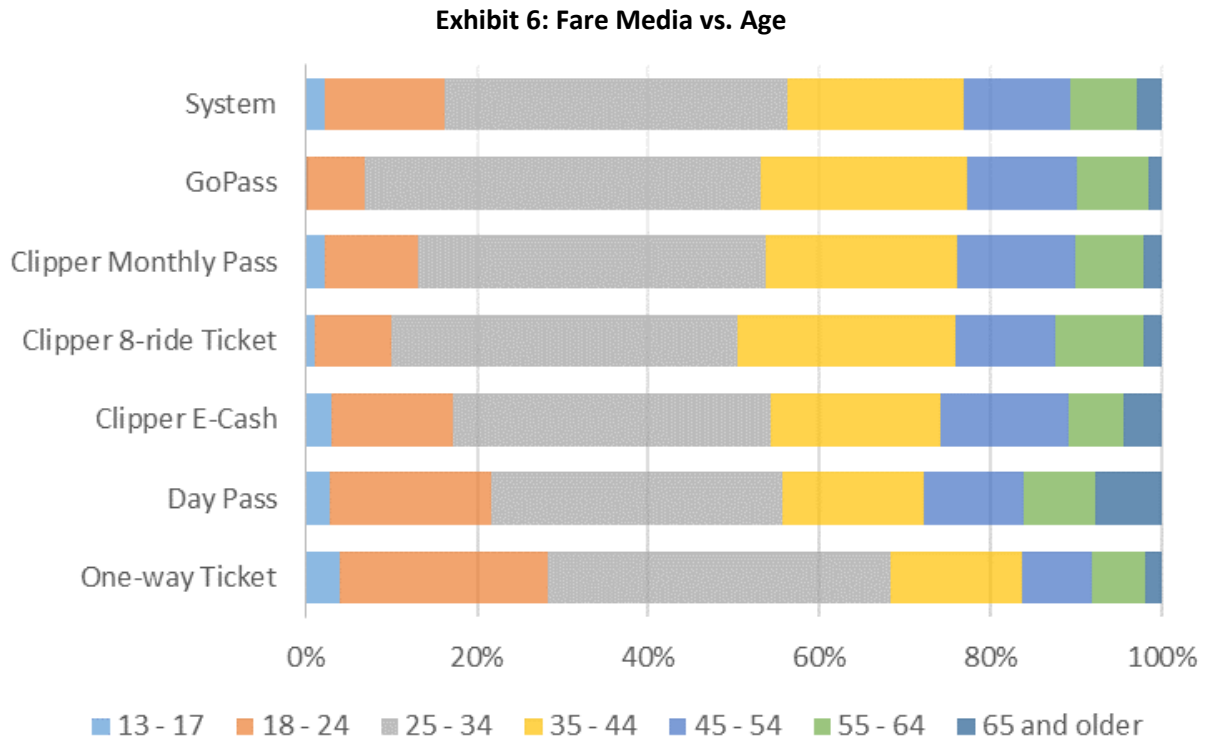
In general, Caltrain users skew male, with 60.2 percent of respondents indicating such. Monthly Pass users are even higher, at 62.9 percent. Go Pass users are the most likely to be female, with 53.9 percent of respondents indicating they are male. This indicates the GoPass program does an effective job of improving the gender split among Caltrain users simply by being available to all employees/students.

Exhibit 7: Fare Media vs. Sex
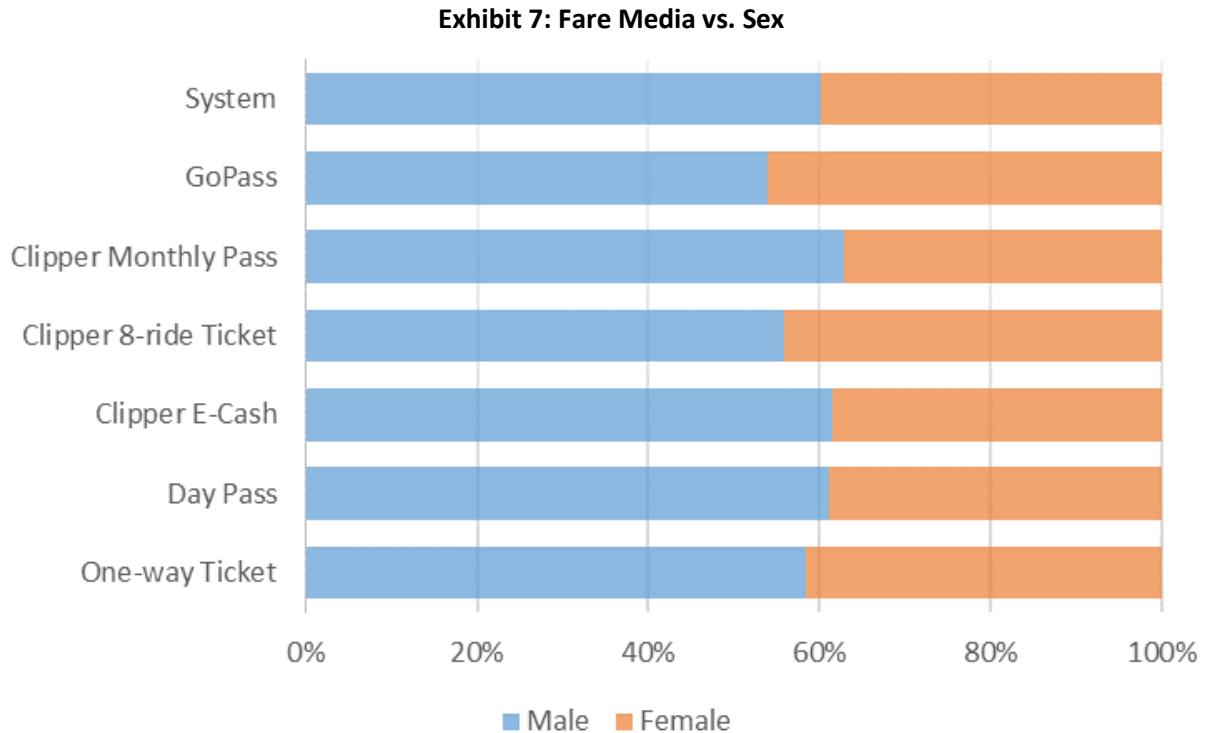
Source: Caltrain 2013 Triennial Customer Survey

GoPass users are the most likely to be college graduates or higher with respect to educational attainment, with 87.1 percent of responding as such. Once again, it is clear this is related to the fact the GoPass is employer-based.

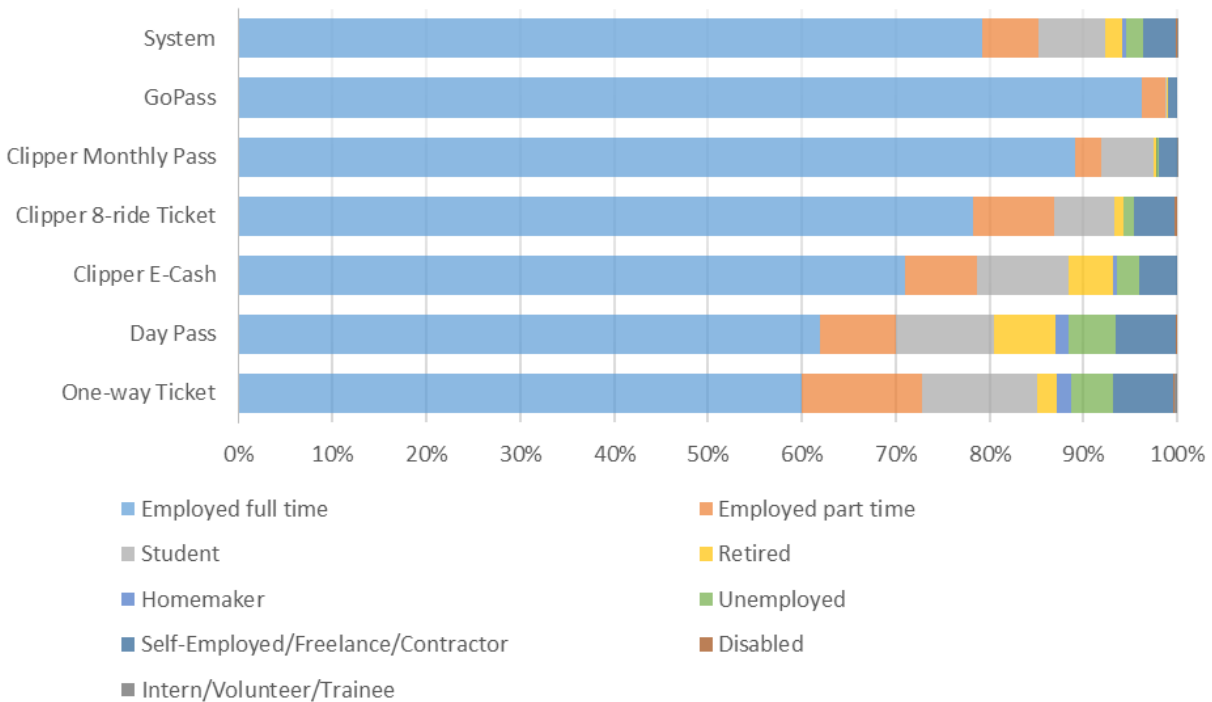**Exhibit 8: Fare Media vs. Educational Attainment**
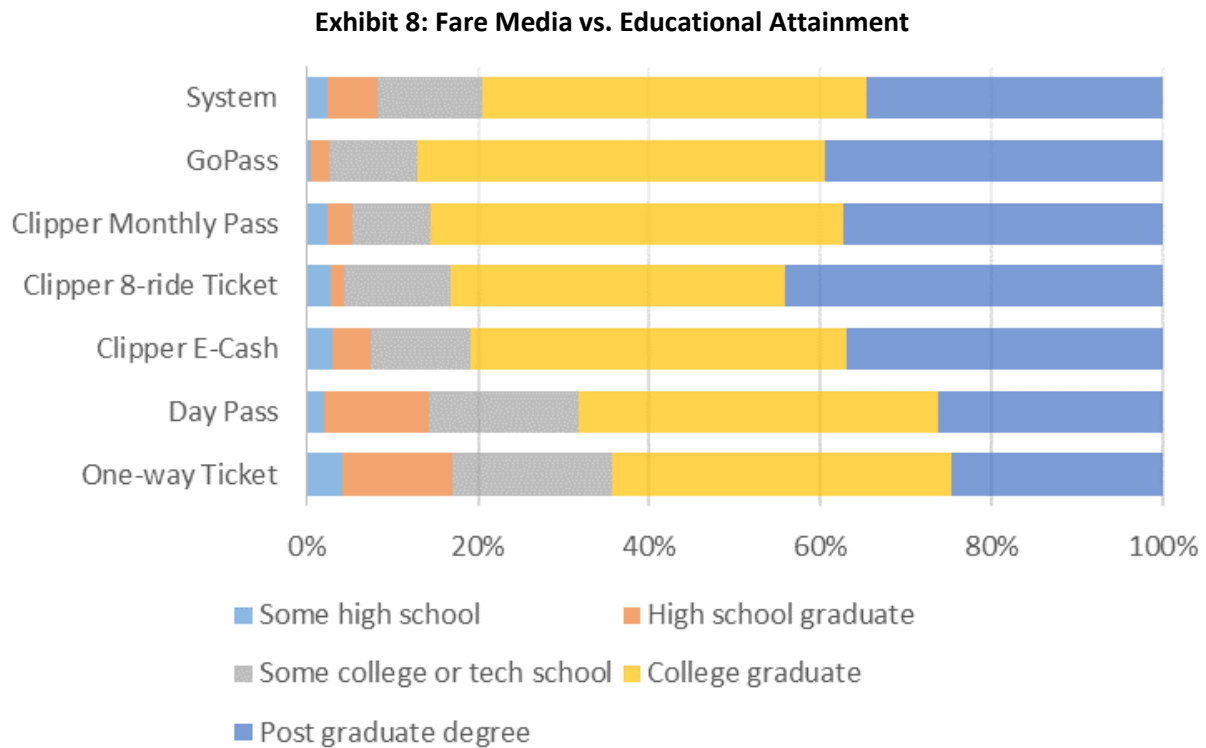
Source: Caltrain 2013 Triennial Customer Survey

System-wide, 85.2 percent of Caltrain users are employed either full or part-time, but among GoPass users, that figure jumps to 98.7 percent. Only 0.2 percent of GoPass users are students, compared with 7.1 percent system-wide.

Exhibit 9: Fare Media vs. Employment

6. SERVICE USAGE PROFILE

System-wide, only 0.2 percent of respondents were on their first trip at the time of the survey. That number jumps to 15.3 percent for GoPass users. Taking it further, 46.2 percent of GoPass users have been using the system less than one year, which is significantly higher than the system as a whole (29.8 percent). Based on these results, the GoPass appears to be an effective means of driving new users to the system. The likely explanation for this is the fact the GoPass is sponsored by employers and is provided to users for free, serving as a strong incentive to try the Caltrain system for work-related trips.

**Exhibit 10: Fare Media vs. Customer Longevity**
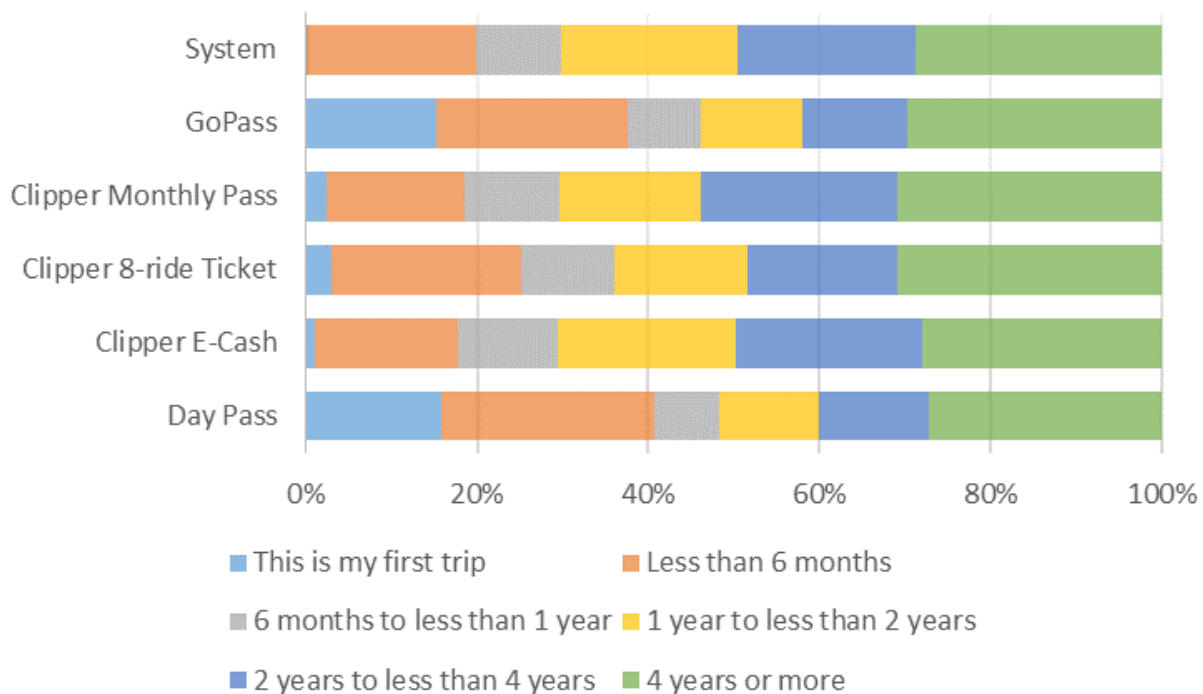
Source: Caltrain 2013 Triennial Customer Survey

The only fare category whose users are more likely to use the system at least five days a week is the monthly pass, which is 82.6 percent compared to the GoPass at 67.8 percent. Given users have to pay for the Caltrain Monthly Pass, they have an incentive to use it frequently to ensure they maximize its value. The same incentive doesn't exist for the GoPass, but its users still take more trips each week than the system as a whole.

Exhibit 11: Fare Media vs. Trip Frequency
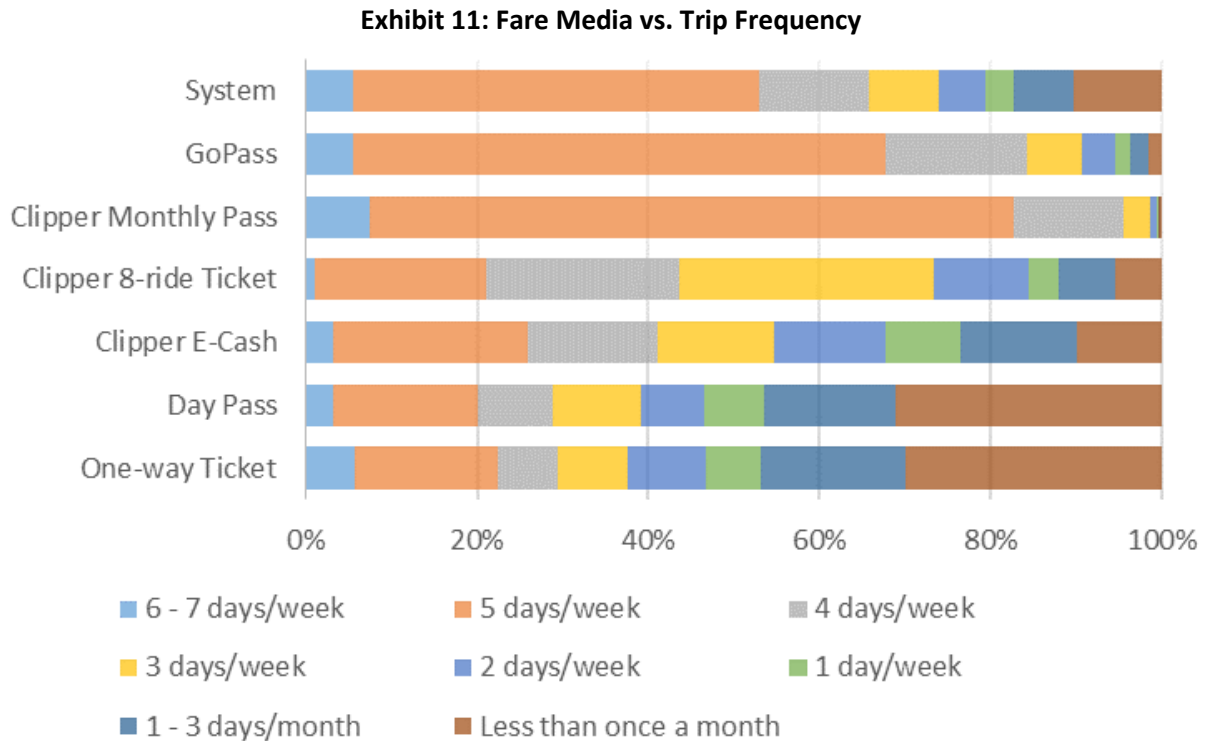
Source: Caltrain 2013 Triennial Customer Survey

The Trip Purpose results track closely with those of the Employment cross-tabulation. A total of 95 percent of GoPass users indicated their trip purpose was Work when surveyed. This compares to 73.6 percent for the system and 41.6 percent for One-way Ticket users.

Exhibit 12: Fare Media vs. Trip Purpose
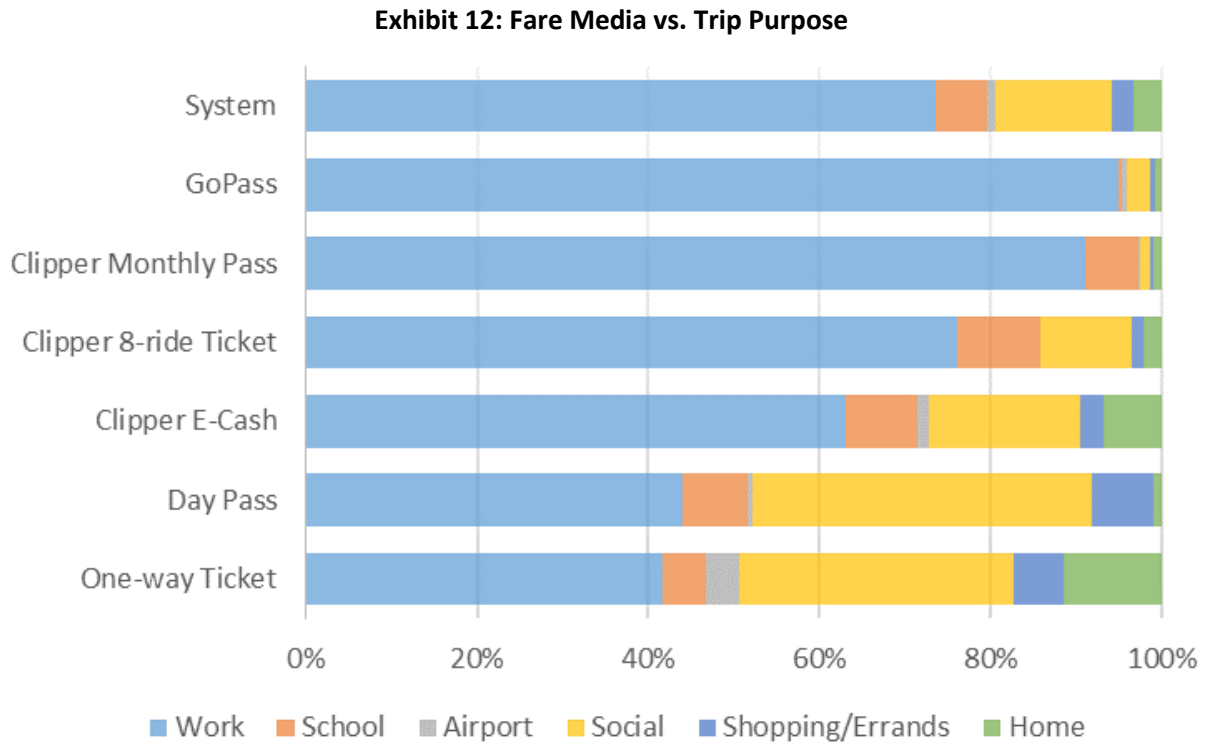
7. REVENUE ANALYSIS

This section includes a detailed breakdown of the GoPass program, including how many organizations/employees are participating and how much revenue is associated with the program. It then includes ridership and revenue history for Caltrain as a whole. Finally, the GoPass program is compared directly to the rest of the service to identify whether it is a cost-effective means of driving ridership growth.

| GOPASS PROGRAM ANALYSIS |

Staff at the San Mateo County Transit District, which administers the Caltrain service on behalf of the three-county Peninsula Corridor Joint Powers Board, has collected and maintained records for GoPass participation and revenue. The first element of this section is to illustrate some of the figures associated with the GoPass program, including analysis of the number of organizations participating, the amount of revenue collected, and the amount of revenue collected per organization and individual participant.

Since 2006, the number of employers participating in the GoPass program has increased dramatically. In 2006, only 13 employers utilized GoPass. That number has since climbed to 92 as congestion along the corridor has increased and many jurisdictions have begun to phase in Transportation Demand Management requirements (the number has climbed to 104 in 2015, though 2015 is outside the range of this study).
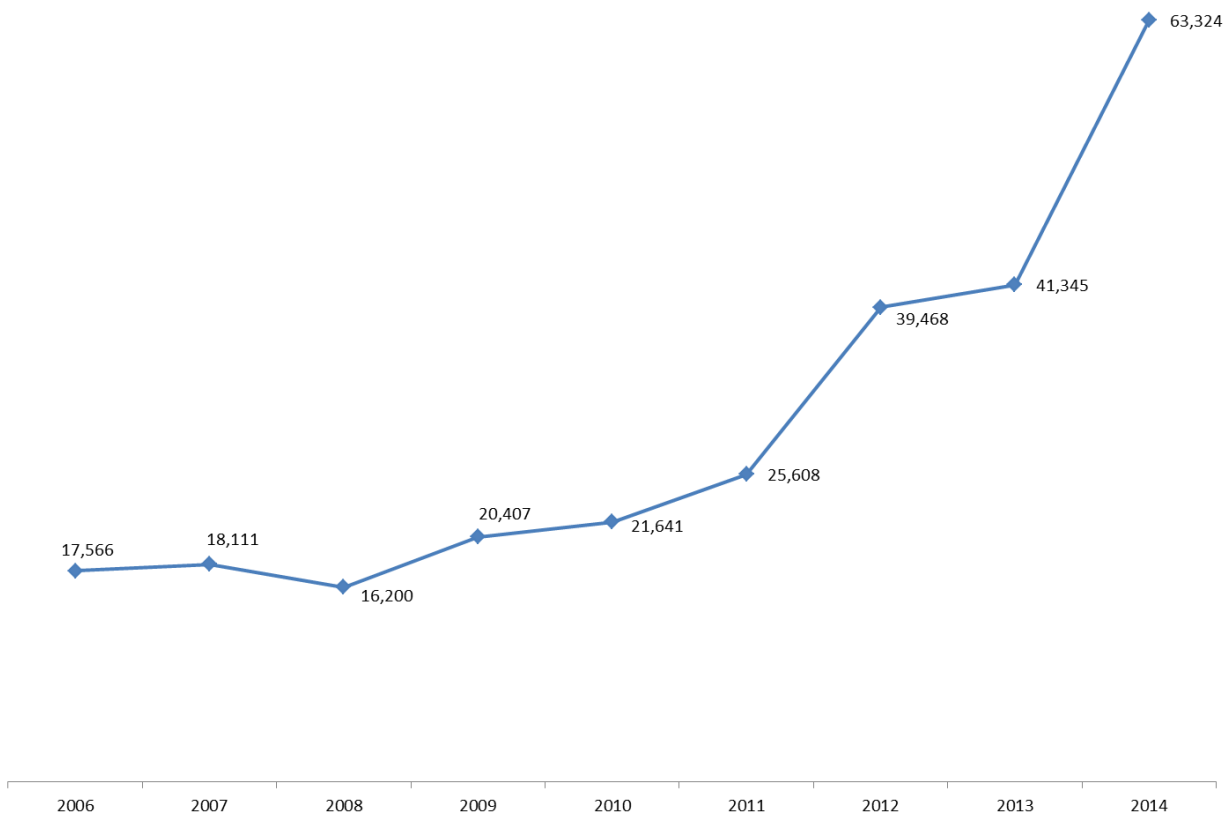
Exhibit 13: Number of Organizations Participating

Year	Value
2006	13
2007	20
2008	29
2009	35
2010	43
2011	50
2012	61
2013	72
2014	92
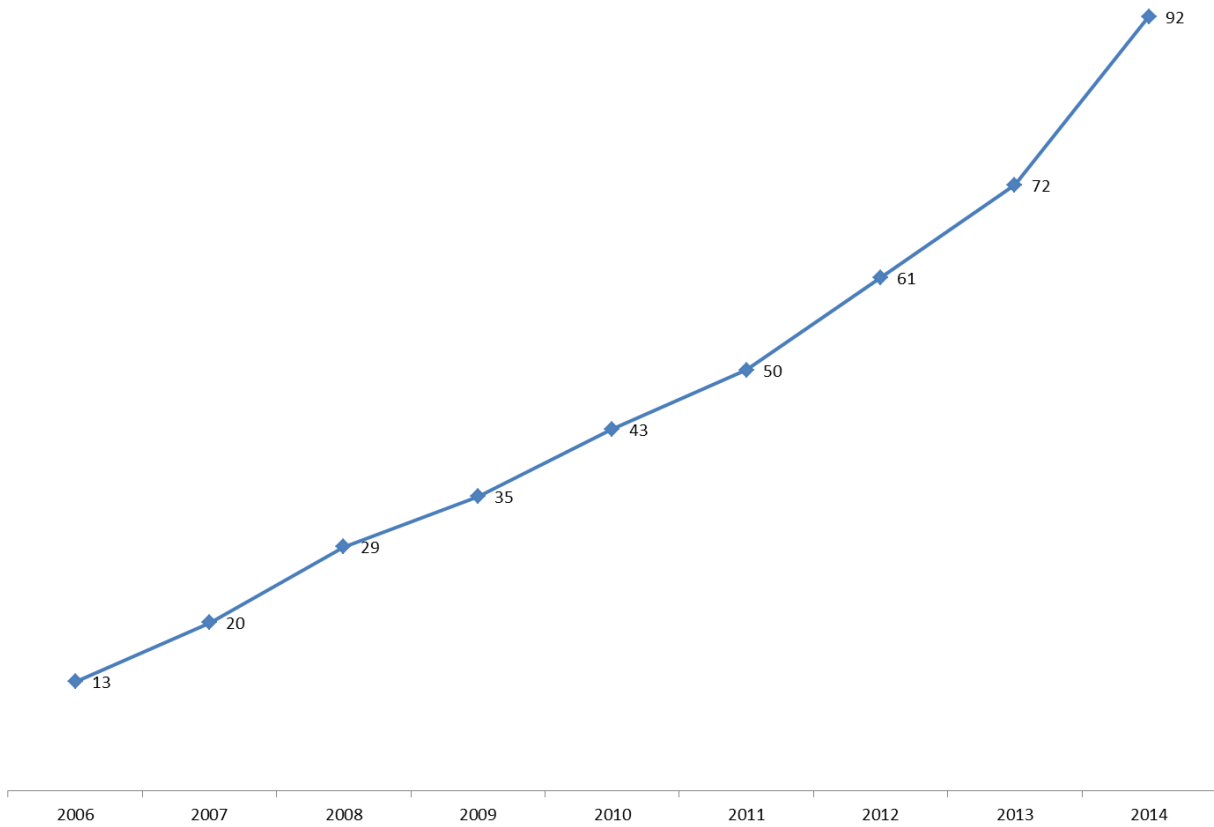
Source: Caltrain GoPass Program Data

Participation in the GoPass program has increased from 17,566 in 2006 to a peak of 63,324 in 2014. This may be correlated with increasing congestion and changes in local regulatory environments on employers, forcing them into TDM arrangements. . This trend will be discussed further in the Findings section of the document.

Exhibit 14: Number of Enrolled Participants

Source: Caltrain GoPass Program Data

Since 2006 the number of organizations participating in the GoPass program has increased significantly. This increase in the number of organizations has corresponded with a drop in the average number of participants per employer. Given all full-time employees from each organization must be included in the program, it is clear from the following exhibit the newer employers have been smaller than those participating in 2006. One possible explanation is there are no longer many large organizations along the corridor left which are not participating in the program. That said, the mean organization size is still above 500. Organizations range in size from 20 participants (D2M), to 2,600 (Adobe), and more than 10,000 (Stanford University).

**Exhibit 15: Average Organization Size**
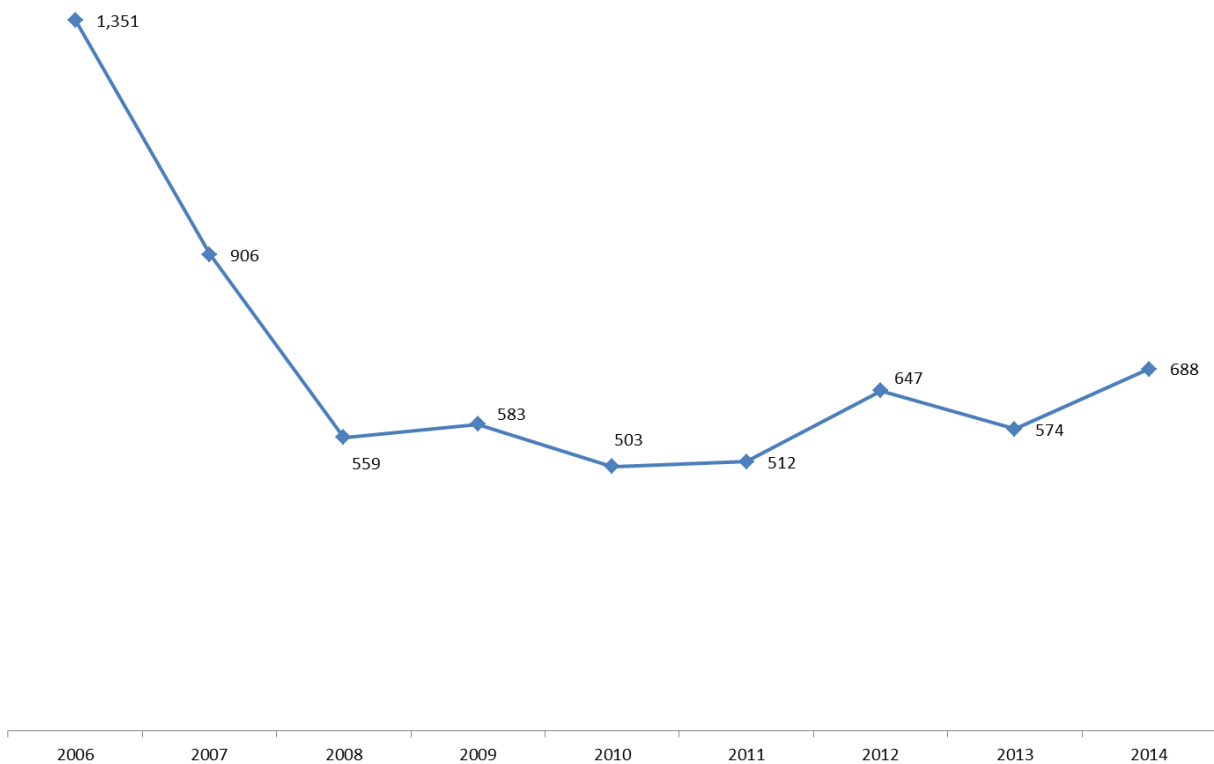
Source: Caltrain GoPass Program Data

There has been a dramatic increase in revenue associated with the GoPass program since 2008. Given the number of employers has increased 607.7 percent and the number of participants has grown 260.5 percent across that time, it is no surprise revenue has increased almost 230 percent, from just under $1.7 million in 2006 to more than $8.5 million in 2014.

Exhibit 16: GoPass Revenue
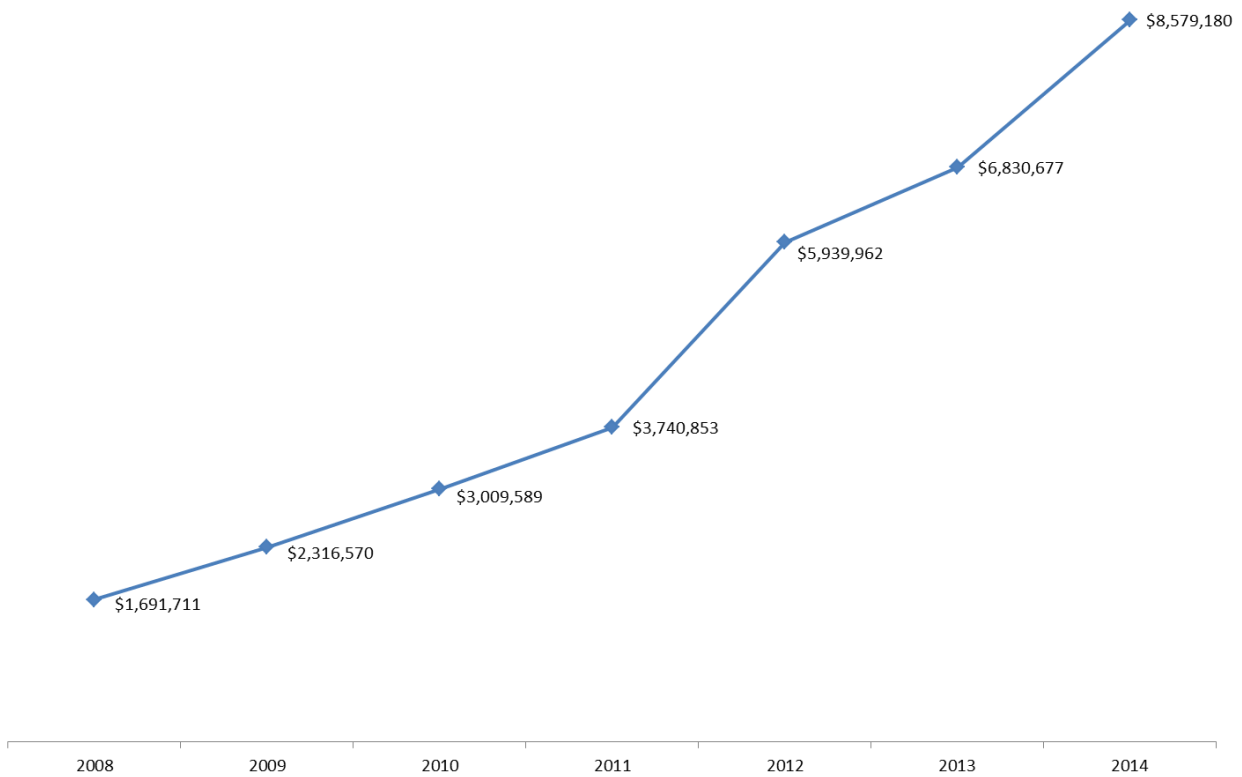
Source: Caltrain GoPass Program Data

As mentioned before, the number of organizations has increased dramatically along with the amount of revenue associated with the GoPass program. The following exhibit illustrates the amount of revenue collected per participating organization. It is clear the program has a robust amount of revenue coming in from each organization, with the average annual bill for each organization increasing from just over $58,000 in 2008 to more than $93,000 in 2014. This increase can be attributed to several increases in GoPass pricing, from $106 per employee in 2008 to $165 per employee in 2014.

Exhibit 17: GoPass Revenue per Organization
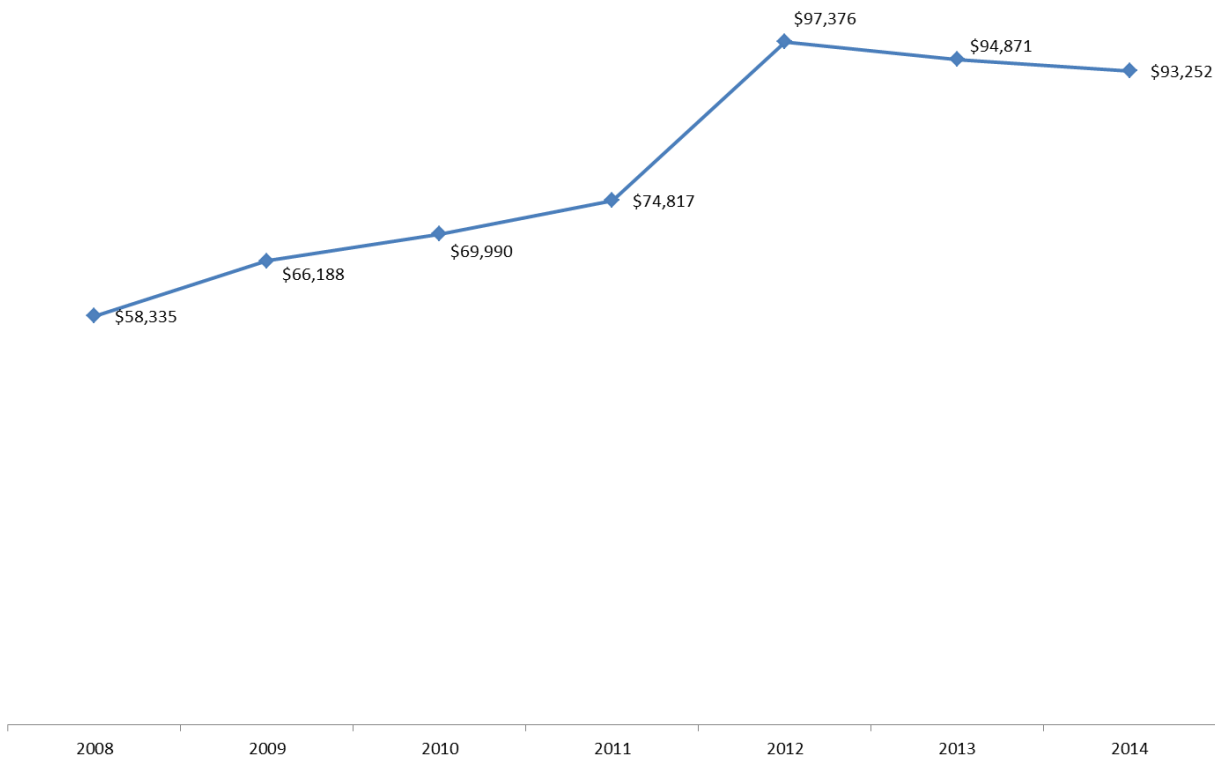
Source: Caltrain GoPass Program Data

The amount of revenue generated on an annual basis from each participant has increased from just $104 in 2008 to $165 in 2014. This number closely tracks with the regular increases in pricing structure. In addition to the per-participant fee, there is also an annual price "floor" for small companies. In 2008 this floor was $7,420, which was applied to each company with fewer than 70 eligible participants. Starting late in 2014, this figure was $15,120 for companies with fewer than 84 eligible participants. The new pricing structure has not yet had an impact on revenue as of the end of 2014. With respect to the analysis in this document, the floor in 2013 was $13,750 for those companies with fewer than 84 eligible participants and $165 for those with more than 84 participants.

Exhibit 18: GoPass Revenue per Participant
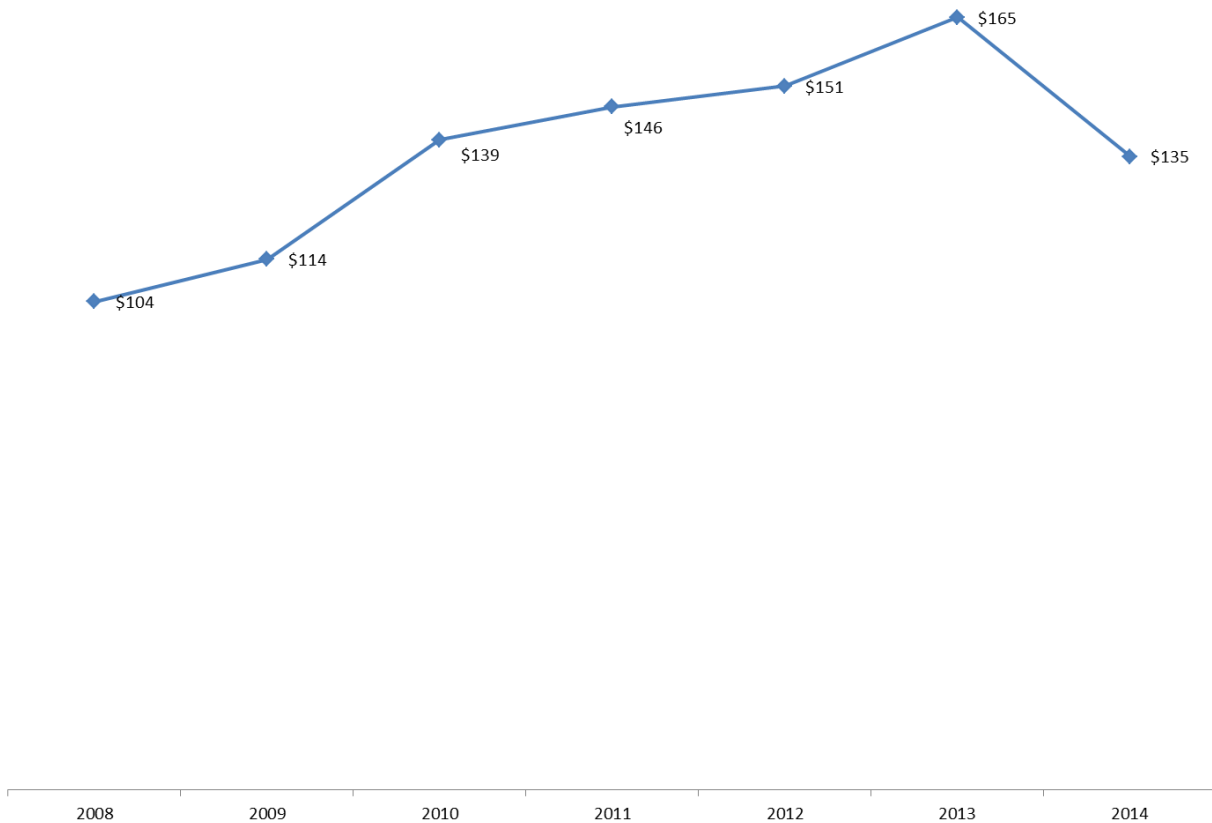
Source: Caltrain GoPass Program Data

| CALTRAIN SYSTEM ANALYSIS |

The Caltrain system has seen dramatic ridership growth across the past few years, nearly doubling between 1999 and 2013. As ridership on the system declined following the "Dot-com" bust of the early 2000s, Caltrain reacted by introducing "Baby Bullet" service in 2004, which resulted in a reversal of fortune. Ridership has nearly tripled since its trough in 2004, with only one other down year in 2010, which corresponds with service cuts at both Caltrain and its sister service, SamTrans. Since that time, the system has added several trains back into its schedule and welcomed six million more riders. Loads have become so heavy that the system recently acquired additional train cars from Metrolink in Southern California so that it can lengthen train consists on high-ridership schedules.

**Exhibit 19: Caltrain Ridership History**
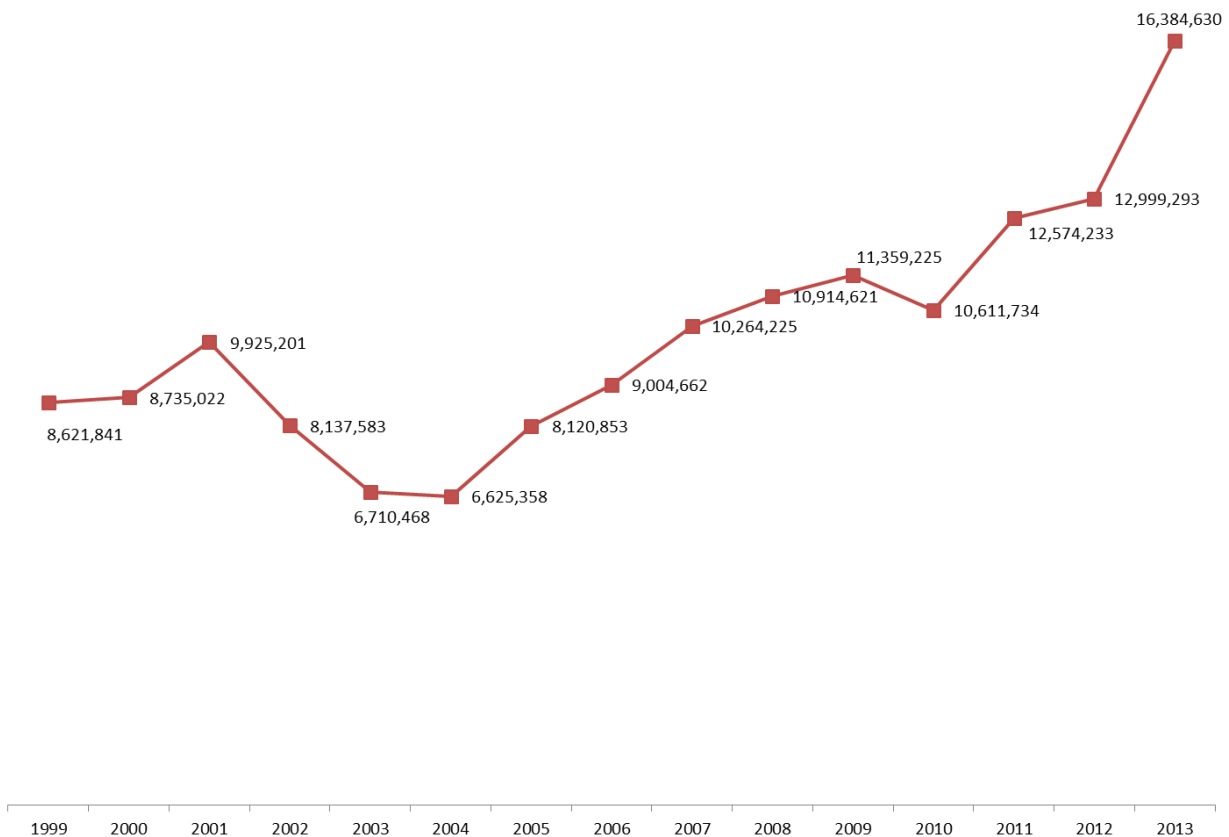
Source: National Transit Database

Fare revenue on Caltrain has increased substantially across the past 15 years. The PCJPB has adjusted fares regularly to ensure sufficient revenue is available to avoid significant service cuts and continually drive revenue growth. The PCJPB does not have a dedicated revenue stream such as a sales tax so it must rely heavily on passenger fares for its operations. It also receives funding – via formula – from each of the three participating agencies: Santa Clara Valley Transportation Authority, San Mateo County Transit District, and City and County of San Francisco.

While ridership grew 90 percent between 1999 and 2013, fare revenue increased by 226 percent, from just $19 million to more than $62 million.

Exhibit 20: Caltrain Fare Revenue History
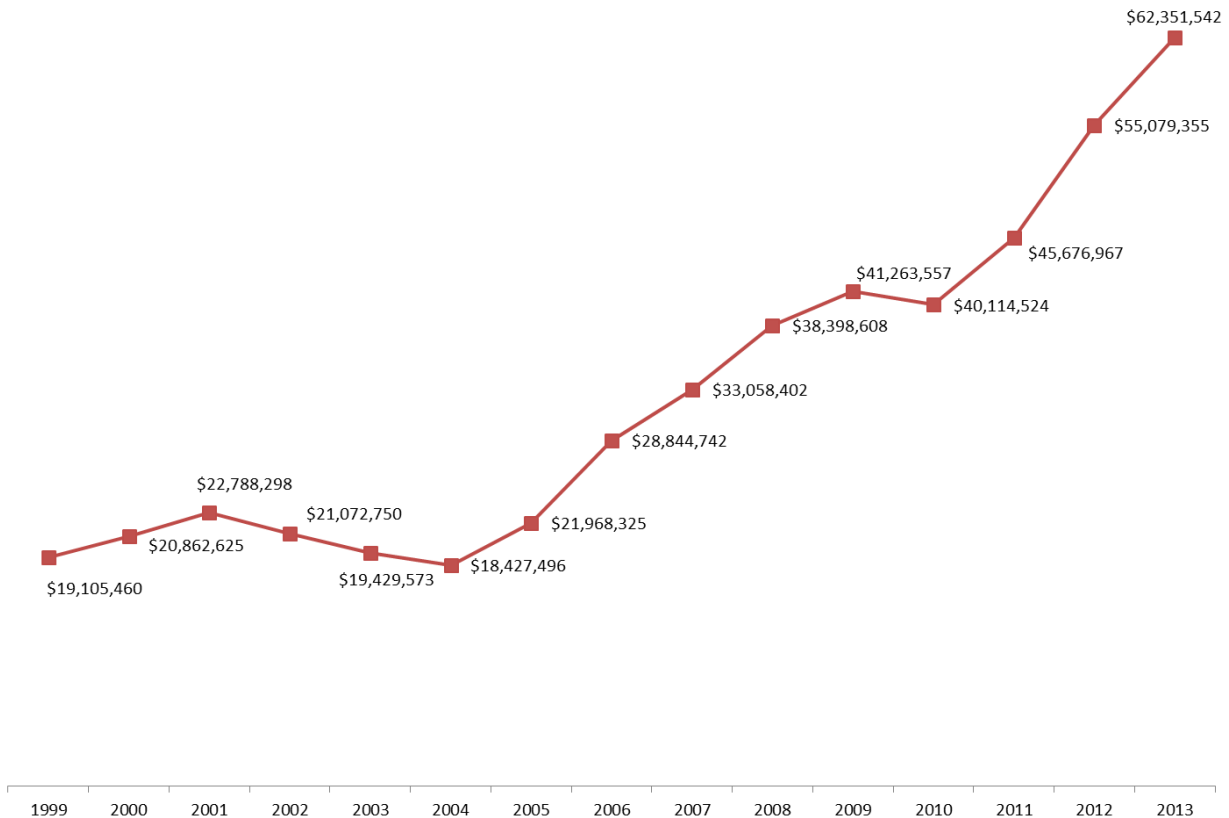
Source: National Transit Database

8. GOPASS COST EFFECTIVENESS ANALYSIS

Coinciding with the rise in overall fare revenue, GoPass program revenue – funds paid by participating employers/schools – has constituted a larger percentage of overall fare revenue each year since 2008. That year, GoPass program revenue only made up 4.4 percent of system fare revenue. In 2014, GoPass revenue accounted for 11.5 percent of total fare revenue. This can be attributed to the significant growth in the number of organizations participating in the program. Overall, GoPass revenue grew more than 400 percent between 2008 and 2014.

Exhibit 21: GoPass Revenue Share
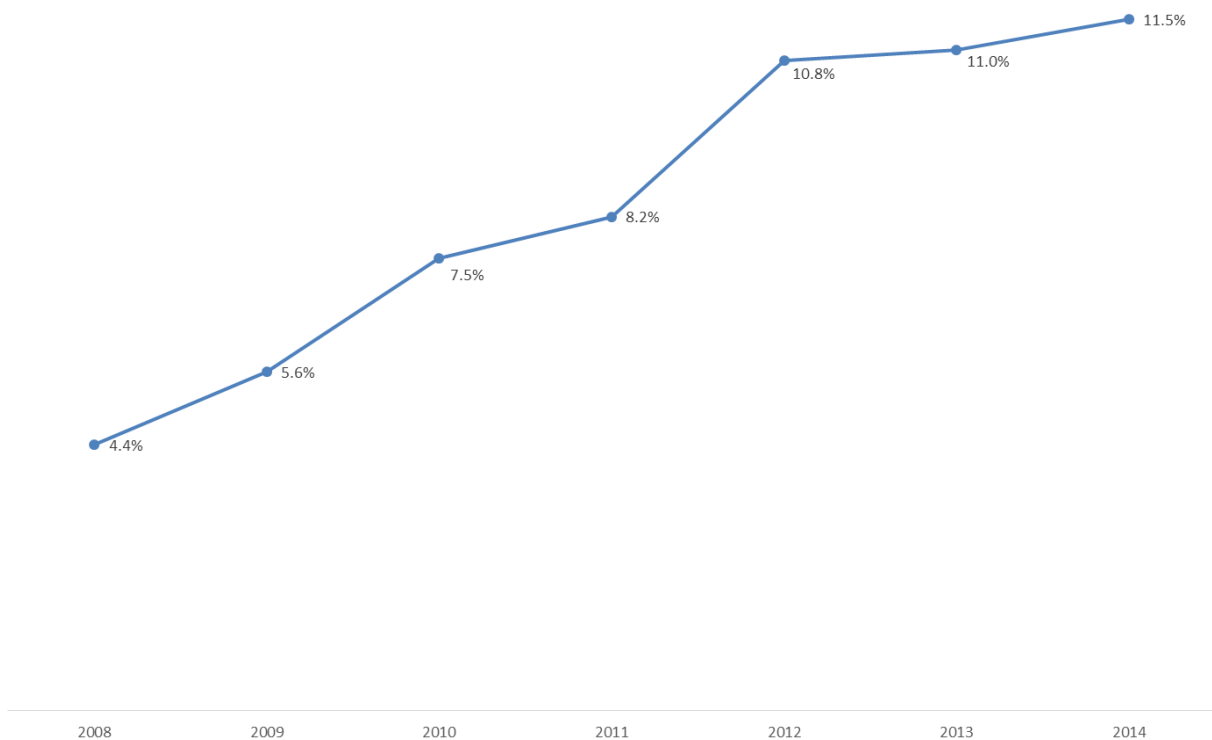
Sources: National Transit Database and Caltrain GoPass Program Data

Following analysis of customer demographics, how customers use the system, GoPass program characteristics, and Caltrain ridership and revenue, it is possible to determine whether the GoPass program represents a cost-effective means of increasing ridership on the system. Put simply, if the revenue earned from each unlinked GoPass trip is higher than the revenue earned from each unlinked Caltrain trip using any other fare media type, then it is a cost-effective way to drive new riders into the system.

This analysis is critical for future decision-making by the Peninsula Corridor Joint Powers Board in that knowing how much revenue is associated with each trip, the agency can make informed decisions regarding how to drive future ridership growth. Each new passenger places some strain on a system that already has significant capacity issues on peak-hour trips, with customers far outstripping seats and large numbers of standees. Increased fare revenue is critical to performing maintenance, purchasing rolling stock, and making infrastructure upgrades that can increase the number of trips operated on a daily basis.

Given the unique nature of the GoPass among fare media types offered by the PCJPB – not all participants actually take advantage of the benefit of having a GoPass available – the program relies upon the fact that only a small percentage of eligible participants will actually secure and use the pass. In 2013, 15,784 eligible participants actually applied for and received the GoPass sticker. This amounts to 38.2 percent of the 41,345 employees eligible for the program spread across 72 companies. Taken together, these employees took 3,939,686 unlinked trips in 2013. This figure was calculated by multiplying the number of users by the average number of days per week those users reported riding Caltrain in the 2013 GoPass Survey (2.4), then multiplying that number by the estimated number of daily trips taken by each customer (2). This yielded a total number of weekly trips which was multiplied by 52 to estimate the number of trips taken per annum. In 2014, 19,161 GoPass users took an estimated 4,782,586 unlinked trips on Caltrain.

Taken together, the 2013 trips represent 24 percent of the total system annual ridership for that year (16,384,630) and 28.1 percent of system trips in 2014. GoPass program revenue amounted to 11 percent of total fare revenue in 2013 and 11.5 percent of fare revenue in 2014. In comparing these

figures, it's clear that the percentage of trips taken by GoPass customers exceeds the percentage of fare revenue paid by employers participating in the program.

Finally, total GoPass program revenue was divided by the estimated number of trips taken by GoPass users in 2013 to calculate the amount of program revenue associated with each unlinked GoPass trip. The calculation revealed that Caltrain was "paid" $1.73 for every unlinked GoPass trip in 2013. For 2014, Caltrain received $1.79 for every unlinked trip taken by GoPass users.

Exhibit 22: GoPass Revenue per Trip Calculation

Year	Users	Average Trips/Week	Estimated Trips/Day	Total Trips/Week	Annual Trips	Percent of System	GoPass Revenue	GoPass Revenue per Trip
2013	15,784	2.4	2	75,763	3,939,686	24.0%	$ 6,830,677	$ 1.73
2014	19,161	2.4	2	91,973	4,782,586	28.1%	$ 8,579,180	$ 1.79

To put this number in context and determine whether the GoPass program represents a more cost-effective means of generating ridership than using the other fare media types available to Caltrain customers, a similar calculation was done for the system absent GoPass ridership and revenue.

First, the estimated number of GoPass unlinked trips for each year was subtracted from the total number of system unlinked trips for each respective year, yielding 12,444,944 non-GoPass trips in 2013 and 12,246,861 in 2014. Second, the total amount of GoPass program revenue was subtracted from system fare revenue for 2013, leaving $55,520,865 for the year. A total of $66,266,820 was collected via non-GoPass products in 2014.

Finally, system non-GoPass revenue was divided by the number of trips taken by non-GoPass users each year to calculate the amount of fare revenue associated with each unlinked non-GoPass trip. The calculation revealed that Caltrain earned $4.46 for every unlinked non-GoPass trip in 2013 and $5.41 in 2014.

Exhibit 23: GoPass Revenue per Trip Calculation

Year	Non GoPass Riders	Non GoPass Revenue	Non-GoPass Revenue per Trip
2013	12,444,944	$ 55,520,865	$ 4.46
2014	12,246,861	$ 66,266,820	$ 5.41

These two numbers are compared directly in the Exhibit below. In each year, Caltrain earned more revenue for every non-GoPass trip than it did for every GoPass-related trip.

**Exhibit 24: Revenue per Passenger Comparison**
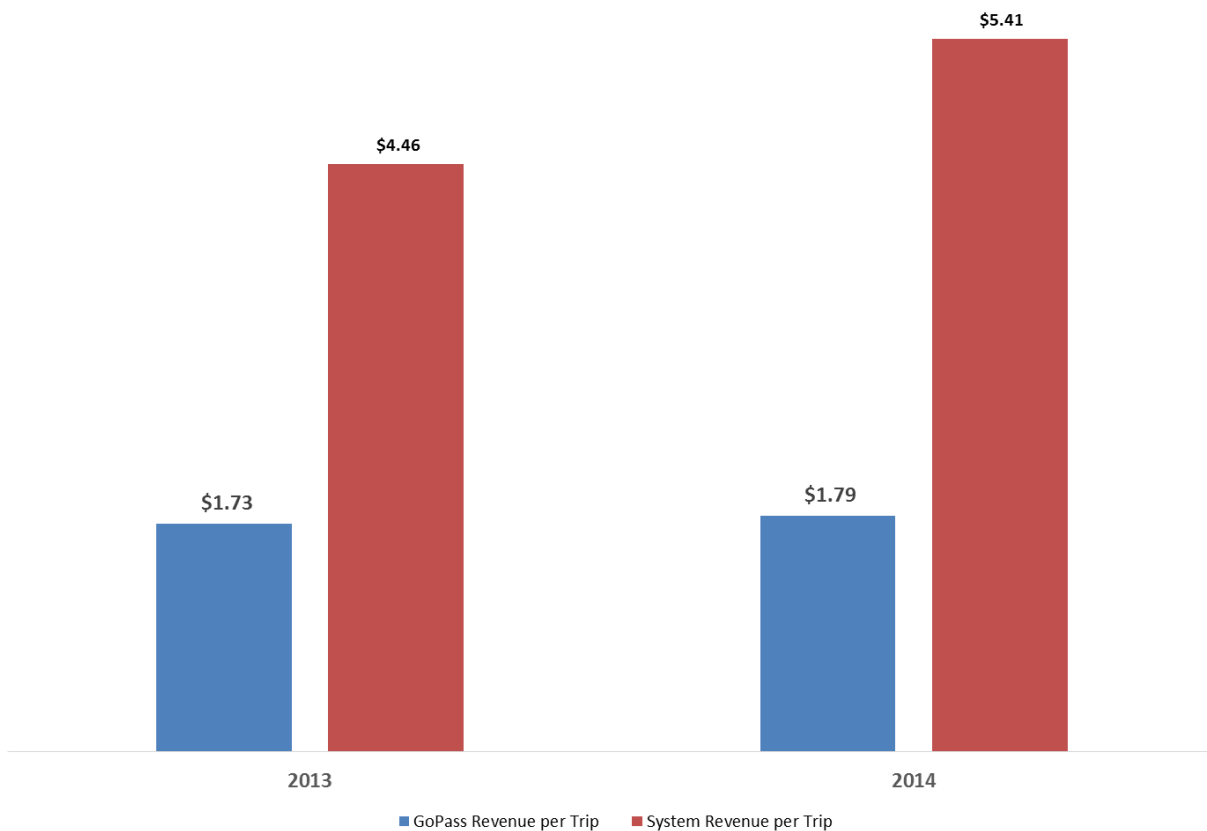
9. GOPASS RIDERSHIP IMPACT

While GoPass users are taking a disproportionate number of system-wide trips, it is also important to look into the role the GoPass plays in generating ridership, regardless of impacts on revenue. As mentioned earlier in this document, GoPass participation has grown significantly across the past decade, from 17,566 in 2006 to a peak of 63,324 in 2014 (260.5 percent). Across the same span, Caltrain ridership grew 89.1 percent, from 9,004,662 to 17,029,447.

The following exhibit illustrates this trend, with Caltrain Ridership growth and GoPass participant growth expressed on the same chart. It is clear that while Caltrain has made dramatic gains, GoPass participation has seen even more significant growth.

Exhibit 25: Caltrain Ridership vs. GoPass Participant Numerical Change
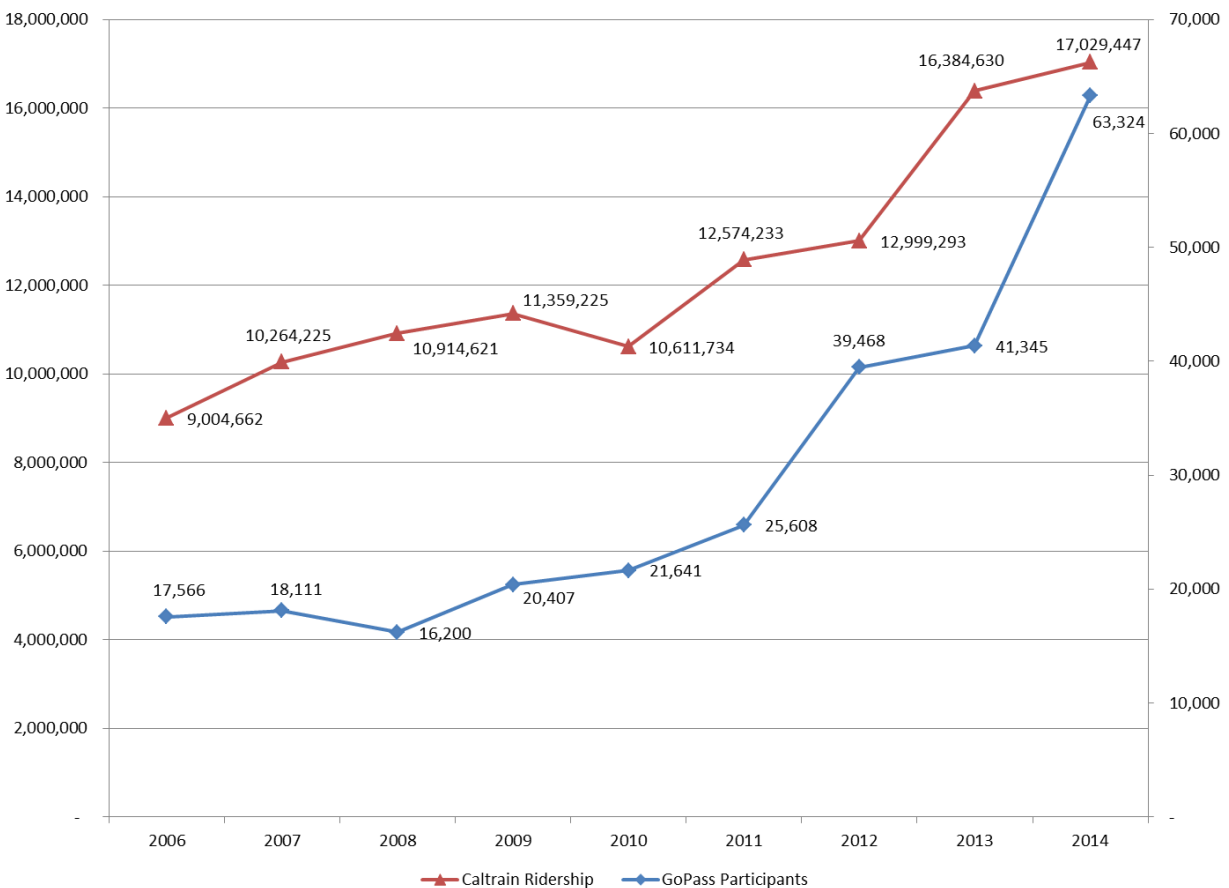
The chart below illustrates the percentage gain (or loss) for Caltrain Ridership and GoPass participation each year since 2006. Since 2009, GoPass participation has seen double-digit year-over-year growth in all but two years, with two years exceeding 50 percent. The Caltrain system, whose growth exceeds the national average for ridership growth – 2.6 percent in 2012 according to the American Planning Association (APTA 2014) – it has not kept pace with the growth of GoPass participation.

Exhibit 26: Caltrain Ridership vs. GoPass Participant Percent Change
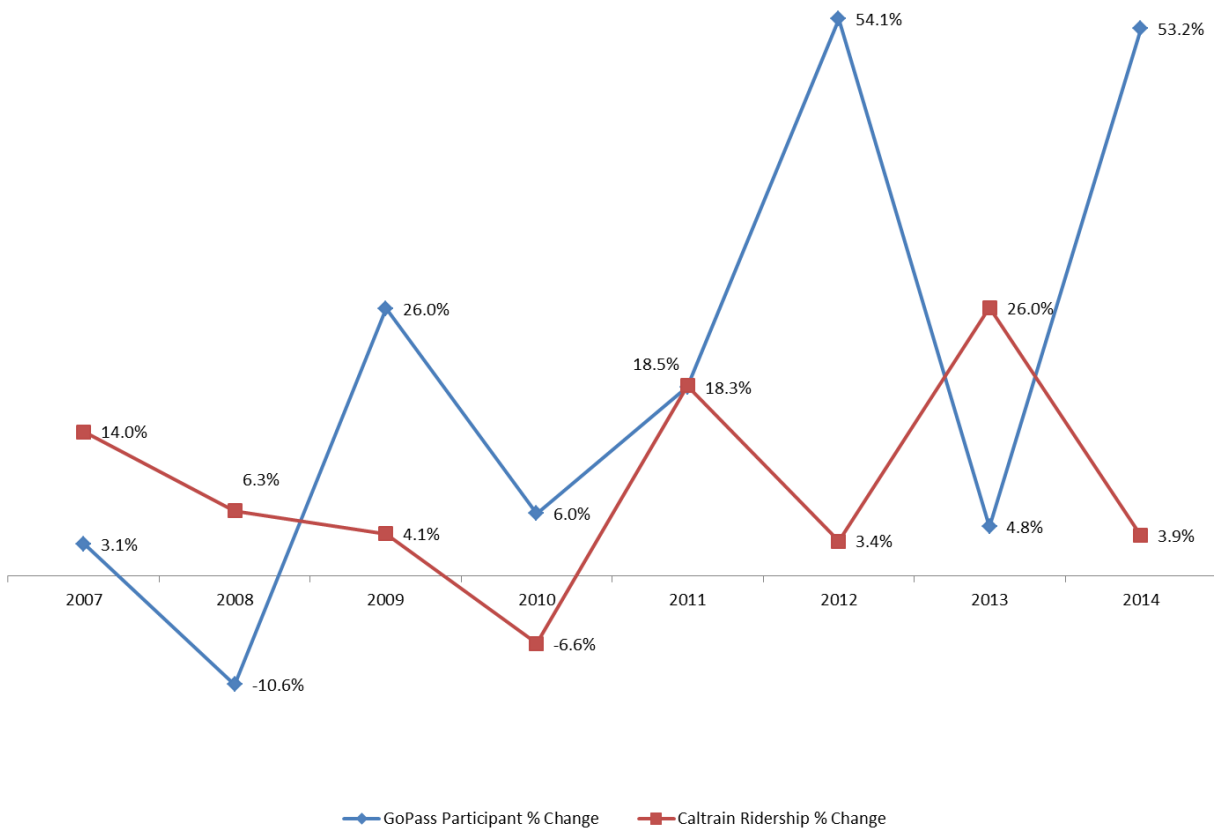
Most telling is the GoPass users' growth among the share of total system Caltrain riders. In 2013, GoPass users made an estimated 24 percent of total system unlinked trips. This number grew to 28.1 percent in 2014. As more employers sign up to participate in the program (whether of their own free will or as a result of TDM requirements), this number is projected to continue its rise.

In the 2010 Caltrain Triennial Customer Survey, 10 percent of respondents indicated they used the GoPass as their means of paying for their trip. That number escalated to 14 percent in the 2013 Triennial Survey. This growth is a result of increased GoPass participation, but it was accompanied by drops in the Monthly Pass and 8-ride ticket as these payment methods were moved entirely over to the Clipper regional fare card during that period.

**Exhibit 27: GoPass Trips as Percent of System**
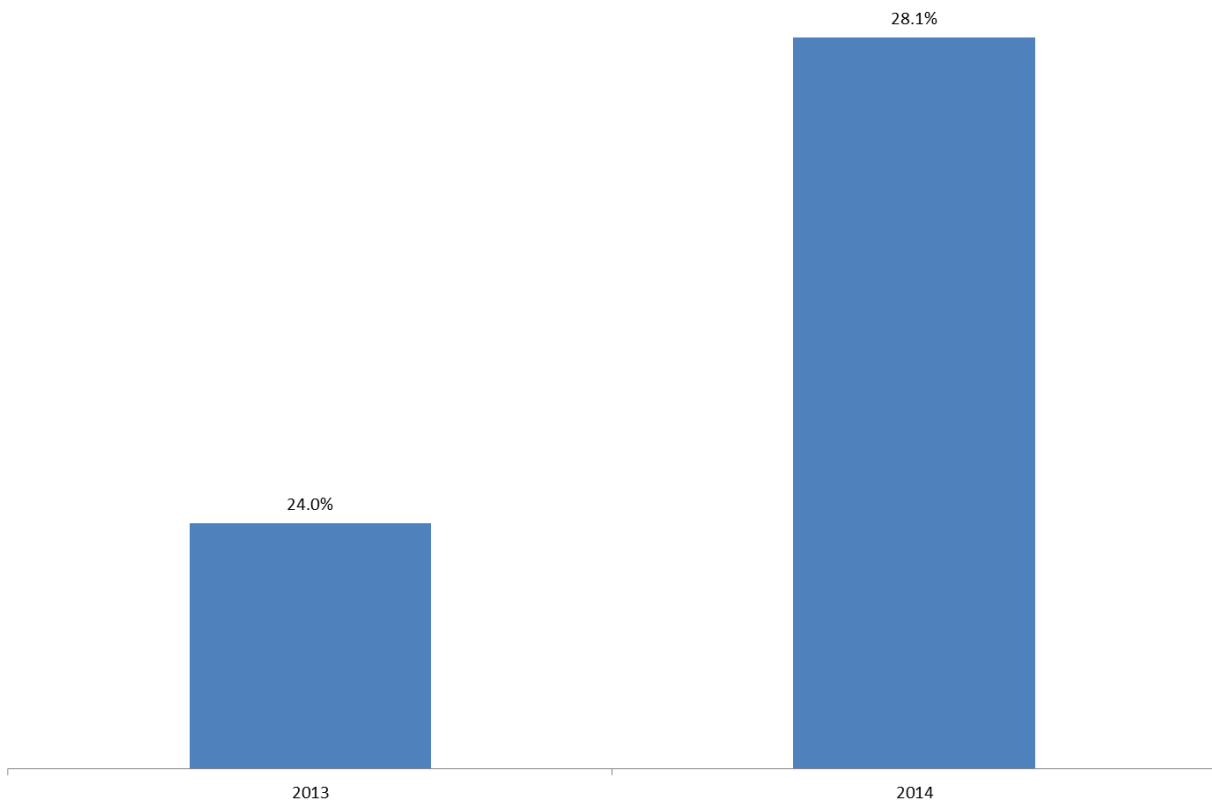
10. FINDINGS

This study seeks to identify whether Caltrain's GoPass unlimited-ride program is a cost-effective means of growing transit ridership. Secondarily, it seeks to determine whether the GoPass has been a contributor to recent Caltrain ridership growth. The study relies upon data from the 2010 and 2013 Caltrain Triennial Customer surveys, annual GoPass user surveys, and Caltrain ridership and revenue information obtained via the National Transit Database. The methodology is detailed in Chapter 4, while the calculations and analysis of the cost-effectiveness and ridership are detailed in Chapter 9. This chapter summarizes the findings and conclusions arising from that analysis.

| GOPASS COST-EFFECTIVENESS |

In comparing the amount of GoPass revenue per estimated unlinked trip taken by GoPass users versus the amount of non-GoPass revenue collected per non-GoPass trip, it is clear the GoPass is not as cost-effective as the other fare media types, taken as a whole. Altogether, Caltrain collected $1.73 per GoPass trip in 2013 versus $4.46 per trip for non-GoPass trips in 2013. The gap widened in 2014, with Caltrain collecting $1.79 per GoPass customer that year versus $5.41 in non-GoPass revenue.

The chart below illustrates the amount of revenue lost per GoPass unlinked trip, assuming those customers would use other fare media were the GoPass not available.

Exhibit 28: Revenue Loss per GoPass Trip vs. Non-GoPass Trip
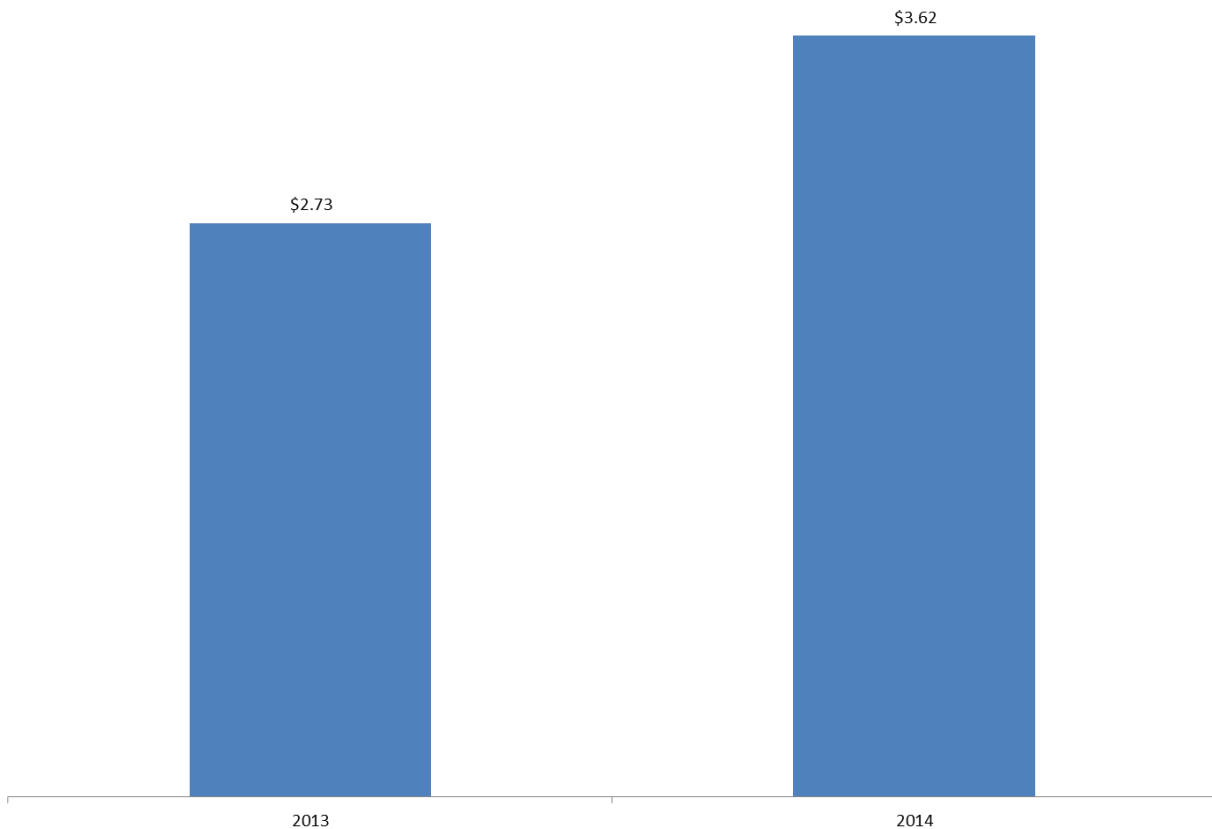
These findings indicate that when using the amount of fare collected as a proxy for cost-effectiveness, the program results in some revenue loss. GoPass revenue makes up about 11.5 percent of system fare revenue but GoPass users constitute an estimated 28.1 percent of Caltrain ridership. These GoPass riders utilize the system at a high rate based on the 2013 Customer Survey, with almost 70 percent of respondents indicating they ride five days a week or more. One huge benefit to the program is that when polled, GoPass riders also have a high likelihood of being new to the system, with 46.2 percent having used it for less than one year, much higher than the system average (29.8). Based on these results, the GoPass appears to be an effective means of driving new users to the system. The likely explanation for this is the fact the GoPass is sponsored by employers and is provided to users for free, serving as a strong incentive to try the Caltrain system for work-related trips.

These extra riders place some strain on the system, especially given many trips are already operating above capacity. The PCJPB recently acquired some new rail cars that will allow for longer trains on many trips. This should alleviate some of the capacity issues, but demand for the service is only growing and no major enhancements to the system's capacity are expected until the completion of the Caltrain Modernization Project, which includes electrification of the mainline, in 2019 at the earliest. In the meantime, ridership growth will continue to strain capacity on the system.

It is critical to note this analysis is blind to the actual cost of administering the GoPass program (staff, producing stickers, managing revenue, etc.) as well as the costs of collecting and administering other fare media. Future analysis should take these administrative costs into account when comparing the two for cost-effectiveness. In addition, this analysis does not take into account the externalities associated with the loss of riders currently using the GoPass. Were the GoPass program not available, it is likely some of those riders would still use Caltrain, but many others would make different employment/housing decisions, use another mode (such as a car), or both. The increase in car users would have impacts on congestion, air quality, parking requirements, etc.

| GOPASS RIDERSHIP IMPACT |

Independent of the cost-effectiveness of the GoPass in terms of fare revenue per unlinked trip, the analysis revealed the GoPass program has been a key driver of ridership growth. GoPass users made 24 percent of the system's unlinked trips in 2013 and 28.1 percent in 2014. This trend tracks with the overall growth in GoPass program participation. The number of organizations (employers and schools) opting into the program climbed from 13 in 2006 to 92 in 2014 (607.7 percent) and the number of eligible participants climbed from 17,566 in 2006 to 63,324 in 2014 (260.5 percent).

The general growth in GoPass ridership has outpaced that of the system as a whole, indicating that GoPass users are contributing to Caltrain ridership in a significant way. In 2014, Caltrain ridership grew by 644,817 unlinked trips (3.9 percent) over 2013. During the same period, the number of estimated unlinked trips taken by GoPass users climbed by 842,899, or 21 percent over the year prior. Without the

increase in GoPass riders, the system would have actually lost 198,082 riders in 2014, or 1.2 percent of 2013's ridership.

As a fixed system, Caltrain does not actually pay more to operate the service as ridership climbs. Therefore, the new GoPass riders – even though they contribute less revenue per trip than non-GoPass riders – are still a net positive for system "profitability."

11. RECOMMENDATIONS

Given the revenue gap between the GoPass program and all other fare media types used on the Caltrain system, the PCJPB should adjust the pricing scheme to increase the annual cost per program participant. As of 2014, the GoPass program yielded about $8.5 million in revenue, or 11.5 percent of system fare revenue. That same year, GoPass participants accounted for an estimated 4,782,586 unlinked trips, or 28.1 percent of the system total. To break even with respect to cost effectiveness, the PCJPB should adjust the GoPass program pricing structure so as to earn 28.1 percent of system revenue. Using 2014 numbers, that figure would be $21,019,908, or 2.45 times the 2014 GoPass revenue number.

Exhibit 29: GoPass Revenue Target for Cost Effectiveness

GoPass Revenue 2014	$ 8,579,180
GoPass Ridership Share 2014	28.1%
GoPass Break-even Point	$21,019,908
Per Participant Adjustment	2.45

In fact, the PCJPB did adjust program pricing on October 5, 2014, increasing the per-participant price from $165 to $180, an increase of 9.1 percent. Based on preliminary numbers, this resulted in $10,671,506 in program revenue for 2015, an increase of 24.3 percent. When annual ridership numbers become available, future analysis should strive to re-calculate the GoPass program's share of Caltrain ridership and adjust the recommendation for per-participant pricing.   Future analysis should also incorporate the fact the PCJPB adjusted Caltrain fare prices multiple times in the past five years as a result of a budget crises and to promote the use of Clipper over paper tickets and day passes.

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