LESSONS FROM PERKS

Evaluation Findings from the BART Perks Test Program

12am

BONUS
8:30-9:30

BONUS
6:30-7:30

3

6

JUNE, 2018

ACKNOWLEDGEMENTS

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APPENDICES

EXECUTIVE SUMMARY

Ridership on the San Francisco Bay Area Rapid Transit (BART) system has increased rapidly in recent years due to population and employment growth. Between 2004 and 2016, ridership grew by about 40% overall and 75% in the Transbay corridor connecting San Francisco's financial district and East Bay cities via the underwater Transbay Tube, resulting in very crowded conditions, with typical peak hour train car loads of about 140 compared to the agency's maximum target of 117. Although BART is working to expand physical capacity in the Transbay Tube, it will be several years before significant expansion can be realized.

BART Perks, offered by BART and the San Francisco County Transportation Authority (SFCTA), was a six-month test program that provided incentives to BART riders to shift their travel out of the morning peak hour to downtown San Francisco. BART and SFCTA initiated Perks with the hopes of nudging a small percentage of the approximately 26,000 peak hour, peak direction Transbay Tube riders to bonus hours (the two bonus hours on each side of the peak hour).

Nearly 18,000 participants enrolled in the program through a mobile-friendly website and provided their Clipper ID number. Linking each user with their Clipper card allowed BART and SFCTA the ability to award participants points based on the frequency, timing, and length of their trips, and to evaluate program effectiveness. This report presents the analysis, findings, and recommendations from the project team's evaluation of the program.

Key Findings

- **Recruitment**: Most participants enrolled as a result of direct recruitment at BART stations or earned media coverage. Among surveyed non-participants who had heard about the program, the most cited barrier to participation was a lack of schedule flexibility.

- **Participant Characteristics**: Young adults, non-Hispanic whites and Asians, high-income households, and information technology (IT) and finance sector workers were over-represented among Perks participants compared to BART riders as a whole. These differences were expected because Perks was targeted at peak hour commuters. Because the Perks program design did not include a pure control group, data was not available to allow comparisons between the characteristics of Perks participants to a similar group of non-participants.

- **Traveler Patterns & Shifts**: Program participants reduced inbound Transbay peak hour travel by 10.9%, and overall peak hour system travel by 9.6%. During the same period, BART riders as a whole reduced system travel by 0.3%, suggesting that the shifts among participants were due to the Perks program and not background shifts in travel patterns. The follow factors affected the degree of participant shift:

  o Participants were more likely to travel in one of the bonus hours if it was close to their typical departure time.

  o Long-distance commuters shifted more than other commuters and tended to opt for the earlier of the two bonus hours.

  o The website had a random rewards generator through which a participants' accrued points that could be played in a chutes and ladder type game, resulting in payouts

ranging from nothing to over $100. In the default setting, points would be automatically played in the game on a weekly basis. Participants who opted to manually play their points in the game on the website were more likely to travel during the bonus hours compared to participants who kept the autoplay setting.

- o Participants who worked in IT and participants who were male were also more likely to shift compared to others.
- o Transbay travelers were less likely to shift to the bonus hours. This may be because many Transbay travelers have already self-selected out of the peak hour.
- o Perks had some lingering effects on travel behavior. Of the peak hour trips that were cut during the program, 35% of those trips continued to happen outside of the peak hour in the four months after the program.

- **Engagement and Rewards Redemption**: About two-thirds of participants maintained silver status or above, meaning they were making at least two bonus hour trips a week. Most participants redeemed points using the default autoplay setting. On average, participants earned about $2.00 per month during the program.

- **Cost-effectiveness**: Perks cost about $10 in cash incentives per shifted A.M. weekday Transbay trip, and about $23 total, including all program costs and assuming ongoing program implementation.

- **Program perceptions**: Participants were satisfied overall with Perks and appeared to become more satisfied as the program progressed. As feedback on the program, many participants stated a desire for higher levels of rewards, more opportunities to earn rewards (e.g., expanded bonus hours) and better types of rewards.

Recommendations for Future Programs

The Perks program demonstrated that incentives can be successfully used to shift the departure times of peak hour travelers. Nearly 18,000 riders signed up for Perks with minimal outreach and promotion, and participants reported high levels of satisfaction with the program. Perks' incentive structure reduced participant's peak travel by about 10%, higher than the comparable Singapore program. Fully 35% of the reduction in peak travel experienced during the program persisted in the four months after the program ended. These positive outcomes suggest that incentives should continue to be explored as a promising tool for managing peak demand.

Future incentive programs can be improved with lessons learned from Perks and the following recommendations.

Program Design

- Focus rewards on behavior change and tailor rewards based on participant characteristics. Many participants already traveled in the bonus hours before the program started. To avoid this kind of self-selection, future programs should ideally be structured to reward behavior change rather than pre-existing behavior.
- More precisely target congested periods. Rather than setting a single peak hour for everyone, future programs could more precisely target congested periods by tailoring the incentivized time

periods to actual (or expected) congestion levels on BART and riders' origin and destination stations.

- Consider social equity implications. As findings showed, participants tended to be higher income and less ethnically diverse than BART riders as a whole. To reward a broader group of riders while retaining program cost-effectiveness, future programs would need to expand objectives beyond peak period crowding reduction.

- Consider using Perks as a tool to achieve multiple objectives. Related to the previous recommendation, future programs could expand to encompass other agency objectives to better justify the costs. This may include encouraging weekend or evening travel, or travel to specific destinations.

- Consider the trade-off between a Sweepstakes component and participant engagement. The random rewards generator game triggered legal and technical complications due to California Sweepstakes Law. While participants who were more engaged in the game also had higher levels of shift, future programs should consider the trade-off between the greater engagement and shift with the challenges that come with a sweepstakes component.

- Consider risk in partnering with a start-up company. The Perks platform was developed by a local Bay Area technology start-up. When a start-up is successful, it is common for it to be acquired by a larger company. This was the case with Perks, and the parent company decided not to continue to provide the platform as a service moving forward. When start-ups are not successful, there is also a risk that they could dissolve and thus can no longer provide services.

Marketing & Recruitment

- Obtain sufficient peak travelers. To have a true impact on peak congestion, future programs would need to enroll a much higher number of peak period Transbay travelers and/or significantly increase how much they shift.

- Address employer barriers to shifting later and personal barriers to shifting earlier. Work-related constraints were identified as the top barrier for participants to arrive at work late. Future employer engagement could encourage employers to allow workers to arrive late. Participants cited personal reasons as the top barrier to arriving at work early. Future programs might explore partnerships to encourage early arrival, such as discounts at gyms near their offices or discounts on foods/beverages purchased early in the morning.

User Experience

- Reconsider autoplay feature. The default autoplay setting of the random rewards generator game caused some confusion and frustration among participants who did not realize that their points would be played automatically, sometimes resulting in a loss of points. If autoplay is retained as default, this should be more clearly explained to participants with instructions on how to override it.

- Create seamless payment options. Participants redeemed points via PayPal. Many participants experienced payment delay if they did not have a PayPal account or if they registered for Perks with an email different from their PayPal account. A top request was to load incentives payments back on the user's Clipper card, or to at least provide options that do not require having a separate account and credentials to receive payment.

CHAPTER ONE

INTRODUCTION

This chapter provides an overview of the BART Perks goals and program structure.

KEY TOPICS
- Background
- Program Goals
- Program Design
- Approach for Evaluation
- Contents of this report

Background

Ridership on the San Francisco Bay Area Rapid Transit (BART) system has increased rapidly in recent years due to population and employment growth. Between 2004 and 2016, ridership grew by about 40% overall and 75% in the Transbay corridor connecting San Francisco's financial district and East Bay cities via the underwater Transbay Tube . According to Federal Transit Administration thresholds for available space per passenger , the corridor is over capacity.

Increased demand can be accommodated through expanded physical capacity, or through more efficient use of existing capacity. Although BART is working to expand physical capacity in the Transbay Tube, it will be several years before significant expansion can be realized. More efficient use of existing capacity can be an effective short-term solution for alleviating capacity constraints while infrastructure improvements are brought online. Use of price signals, such as charging higher tolls or fares during the most congested times, is sometimes used for efficiently matching demand with capacity. Peak pricing is not currently under consideration by BART's Board of Directors, so staff sought to test another approach of managing peak congestion using incentives.

BART Perks was a six-month test program that provided incentives for travelling during the bonus hours of the morning peak period instead of during the peak hour. The first program of its kind in North America, BART Perks was modeled after the Singapore Land Transport Authority's Travel Smart Rewards program. Perks and Travel Smart Rewards used the same underlying software and incentive approach, which were developed and delivered by the technology startup Urban Engines.

Perks was a joint project of BART and the San Francisco County Transportation Authority (SFCTA), the congestion management agency for San Francisco, and was funded by the Federal Highway Administration, BART, and the SFCTA.

Program Goals

The main goals of the Perks program were to:

- Reduce peak hour, peak direction crowding and improve person throughput: The program sought to test the effects of offering riders incentives for shifting travel outside the morning rush,

especially among peak hour Transbay travelers. BART and SFCTA hoped to nudge a small percentage of the approximately 26,000 peak hour, peak direction Transbay Tube riders to the bonus hours.

- Improve BART customer satisfaction: Crowding has led to historic declines in BART customer satisfaction. It was hoped that a travel incentives program could help improve satisfaction among participants.

- Increase employer support for flexible work schedules: BART Perks aimed to provide employers with technical resources to encourage adoption of flexible work hour policies. Workplace constraints have been identified as a barrier to shifting travel out of peak hours.

- Identify implementation challenges and solutions: Provide lessons learned for subsequent phases of the program, and as guidance to other regions considering similar programs.

Program Design

In the initial four months of the program, participants earned one point per mile for all travel on BART and between three and six points per mile for travel initiated during morning peak shoulder periods also known as bonus hours (Table 1), depending on their status in the program. Program status was determined by the number of bonus hour trips made in a given time period (Table 1Table 2). For the last two months of the program, the design was changed so that participants earned 17 points per trip (equivalent to the average points earned per trip during the first part of the program), rather than one point per mile traveled. The intent was to compare the effectiveness of the two approaches. Staff was especially interested in differences for certain travel markets, such as longer distance origin-destination pairs where participants would receive relatively more incentives under the initial scheme, and relatively fewer under the later scheme.

Participants' points were redeemed automatically each week, and cash rewards were paid out monthly via PayPal. To receive cash through PayPal, the participant needed to have an active PayPal account that used the same email address as their BART Perks account.

Table 1. Perks Program Points Rules

	BONUS HOUR 6:30 TO 7:30 A.M.	PEAK HOUR 7:30 TO 8:30 A.M.	BONUS HOUR 8:30 TO 9:30 A.M.	ALL OTHER TIMES
POINTS EARNED	3,4,5 or 6 points/mile* (depending on status)	1 point per mile*	3,4,5 or 6 points/mile* (depending on status)	1 point per mile*

Note: Points were awarded based on the participant's entry time into the faregates.

Table 2. BART Perks Program Status Rules

STATUS	BRONZE	SILVER	GOLD	PLATINUM
BONUS HOUR POINT MULTIPLIER	3 points/mile*	4 points/mile*	5 points/mile*	6 points/mile*
MAXIMUM REWARD (IN GAME PLAY)	$10	$20	$50	$100
NUMBER OF BONUS HOUR TRIPS REQUIRED FOR THIS STATUS	0	2/week, for at least 2 weeks	3/week for at least two weeks	4/week for at least 2 weeks

*In January 2017, the scheme was changed to award 17 points per trip instead of 1 point per mile.

Limitations of Program Design

This program design replicated the approach implemented in Singapore, because it had been shown to be successful in shifting travel behavior, and because it was felt that the design was simple and understandable to the public. However, the design had several limitations, most notably with respect to the use of a static, universal definition for the bonus hours (6:30 – 7:29 A.M. & 8:30 – 9:29 A.M.) and peak hour (7:30 – 8:29 A.M.). In reality, the peak travel period on BART varies significantly by line, day of week, season, and in response to erratic delays, therefore a single overall peak hour may or may not apply on any given day.

Additionally, a key goal of the program was to reduce crowding in the Transbay Tube in the peak hour in the peak direction. However, what constitutes a 'peak departure' varies based on the individual's origin station and distance from the Transbay tube. For example, someone departing from the end of a line (for example, the Pittsburg/Bay Point station) during the bonus hour of 6:30 – 7:29 A.M. will travel about 60 minutes before reaching the Transbay tube and could reach the tube during the exact hour (7:30 – 8:29 A.M.) that they were incentivized to avoid. The project team conducted analysis to confirm that this situation would occur for only a minority of participants and decided to prioritize the simplicity/understandability of the test program over technical precision.

Evaluation Approach

Two main sources were used to evaluate the Perks program: (1) BART fare gate data (entry and exit timestamps and stations) and (2) Survey data.

Fare gate data included the following:

- Participant trip records (tracked via Clipper smart card serial number provided upon signup).
- Non-participant trip records: A sample of approximately 700 non-participants were recruited during the program to answer survey questions and provide their Clipper ID numbers to support comparison to Perks participants. These were recruited from BART's database of individuals who have opted-in to receiving surveys from BART.
- All BART system trip records in aggregate, including from Clipper users and non-Clipper (magstripe ticket) holders.

This data was used to compare the travel patterns of Perks participants with non-participants and all BART system users six months before (March 2016 – August 2016), six months during (September 2016 – February 2017), and four months after (March 2017 – June 2017) the program.

Survey data included the following:

- A participant survey administered December 2016 (approximately 8400 participants responded) that asked about perceptions of BART, perceptions of the Perks program, travel time flexibility, and demographics.
- A second participant survey administered February 2017 (approximately 5800 participants responded) that was nearly identical to the first survey, but with some additional or modified questions. The main purpose of this second survey was to gauge whether participants attitudes changed over the course of the program.

- A survey of non-participants administered from mid-December 2016 to early January 2017 (about 700 responses). These were recruited from BART's database of individuals who have opted-in to receiving surveys from BART.
- BART's Bi-Annual Customer Satisfaction Survey, administered in September & October 2016 to a sample of all BART riders (3,793 responses).

These data sources were used to answer the following research questions:

- Reducing peak period travel: Did the Perks program reduce peak hour travel among program participants? Did this result in reduced crowding on BART? Which types of participants reduced peak travel the most? Which elements of the program design were most instrumental in reducing peak travel?
- Satisfaction: Was the Perks program well-received among participants and did it improve their satisfaction with BART?
- Cost effectiveness: What was the cost of the Perks program per trip shifted out of the peak hour? To what degree were program resources focused on rewarding shift versus other behaviors? What adjustments could be made to the program design to improve cost effectiveness?
- Employer engagement: Did the program improve support for flexible work schedules? To what degree is improving workplace flexibility necessary to support shift out of peak periods?
- Social equity: Did minority and low-income groups experience unique barriers to program participation? Were they over or under-represented among participants and what implications might this have for future programs?

Limitations to the Evaluation Approach

The Perks project design did not include a pure control group, for two reasons: (1) the project team did not wish to restrict enrollment through lottery or other means, because one of the program goals was to enroll as many people as possible to reduce crowding, (2) the Perks Spin-to-Win feature triggered California Sweepstakes law, which required that enrollment be open to any California resident over the age of 18. Instead, Perks participants travel patterns were compared to BART riders as a whole and a group of non-participants.

Remainder of this Report

The remainder of this report is organized as follows:

- Chapter 2: Enrollment & employer outreach discusses how the program was advertised, including through outreach to employers.
- Chapter 3: Participant characteristics describes the demographic characteristics of participants, their typical travel patterns, and their travel flexibility.
- Chapter 4: Traveler patterns & shifts describes the travel habits of participants, how much they shifted their departure times in response to program incentives, and the factors associated with shift. This chapter also includes a Departure Time Choice Model which summarizes a disaggregate analysis of Perks' participants departure time choices. This can help identify which aspects of the program design were most effective at getting participants to shift their travel time.

- Chapter 5: Engagement and rewards redemption describes how participants engaged with the program technology, including mobile app use and rewards redemption preferences.
- Chapter 6: Cost Effectiveness analyzes the cost effectiveness of the Perks pilot.
- Chapter 7: Program Perceptions describes both participants and non-participants perceptions of BART, the Perks program, and crowding levels.

These chapters are followed by a concluding section (Chapter 8) that summarizes the program findings compared to the original research questions and provides recommendations for future programs.

CHAPTER TWO

RECRUITMENT

This chapter describes how participants were recruited to participate in the program, including through outreach to major employers.

KEY TOPICS
- Enrollment Approach
- Employer Outreach
- Barriers to Participation

Enrollment Approach

Participants enrolled in the program through a mobile-friendly website (www.bartperks.com, now inactive). At sign-up they accepted a user agreement and were prompted to enter their Clipper ID number. Linking each user with their Clipper card was necessary to award them points based on the frequency, timing, and length of their trips, and to evaluate program effectiveness. Participants were recruited four ways:

- Direct outreach: For three days at the launch of the program, the marketing team distributed fliers to riders at the Embarcadero and Montgomery stations in San Francisco's financial district during the morning peak. There were also banners advertising the program hung at the two stations for most of the duration of the pilot period.

- Earned media coverage / word-of-mouth: Approximately 20 news outlets covered the launch.

- Employer partnership program: Employer point people who signed up as a Perks partner and promoted the program among their employees were offered a $20 gift certificate for the first 10 sign-ups from their company or organization. Employees of Perks partners received a sign-up bonus of 200 points. Employer partners were also offered resources and technical assistance from a consultant specializing in flexible work hours.

- Friend referral: Participants were offered 250 points when a friend registered for the program. Additionally, in October 2016, all participants received a special offer ("bonus box") to earn 500 points by recruiting a friend.

Table 3 summarizes enrollment by recruitment methods and indicates that corporate partnerships and friend invites contributed only 6% of total enrollment

Table 3. Enrollment by Recruitment Methods

SOURCE	NUMBER	%
CORPORATE PARTNERS	593	3.3%
FRIEND INVITE	469	2.6%
OTHER	16,744	94.0%

Most of enrollment occurred during the beginning of the program, with almost 58% of activations occurring in the first week, and over 81% of program activations occurring during the first month. Figure A illustrates the number of activations (e.g. enrollments) per day over the first few months of the program.

Figure A. Program Enrollment Through November 2016
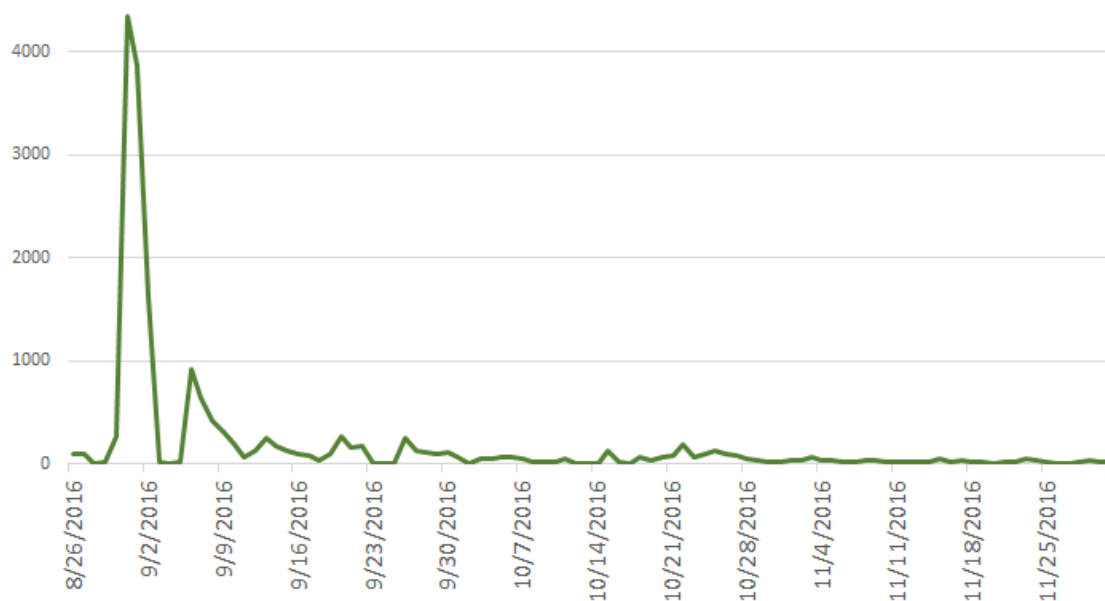
Employer Outreach

As previously mentioned, the project team's recruitment strategy included a partnership program with employers to encourage their employees to sign-up for BART Perks. Using contact information provided by the San Francisco Chamber of Commerce and other sources, staff prepared a list of large employers located near the downtown San Francisco BART stations and in industries more likely to accommodate flexible schedules (retail and hospitality sectors were excluded, for example). Over thirty employers were contacted, and fifteen ultimately signed up as Perks Partners and committed to promoting the program among their employees, including UCSF Benioff Children's Hospital, Alliant International University, CRI, and Integral Group. Nearly 600 Perks participants signed-up through their employer, which represented 3.3% of all participants.

A secondary goal of this employer outreach was to get more employers to implement flexible work hour policies which would allow for their employees to shift commute times and thus increase participation in the Perks incentivized behavior. As the strategy to reach this goal, the project team offered employer partners resources and technical assistance from a consultant specializing in flexible work hours. While many employers signed up to be partners in promoting the program, few were interested in receiving technical assistance. Only two employers requested to receive technical assistance from the flexible work schedules consultant. These consultations were more focused on questions about teleworking, rather than flexible work schedule policies. Thus, the project team was not able to successfully influence any employer to establish a new flexible work hour policy through offers of technical assistance. This may be due to the fact that many of the employers who signed up as partners

already offer flexible work schedules. Additionally, it may be that offers of technical assistance may not have provided a compelling reason for employers to initiate a change in employee policies. This is consistent with past employer engagement programs staff has undertaken in which it was difficult to persuade employers to make employee policy changes through offers of technical assistance.

Barriers to Participation

The survey of non-participants asked about the reasons that individuals did not participate in the BART Perks program. By far the most frequently cited reason was that they were unaware of the program, with over 67% of non-participants identifying this as a factor. Lack of schedule flexibility was the second most frequently cited reason. This is interesting because the program did not actually require participants to shift their schedules in order to earn rewards. The other reasons for non-participation were all cited by low single-digit percentages of non-participants.

Table 4. Reasons for Non-Participation

REASON	%
I HAVE NEVER HEARD OF IT / DON'T KNOW ENOUGH ABOUT IT	67.4%
CAN'T SHIFT MY SCHEDULE	17.6%
DON'T HAVE A PAYPAL ACCOUNT / DON'T WANT TO USE PAYPAL	5.8%
DON'T USE CLIPPER	4.8%
I DON'T HAVE TIME TO PARTICIPATE	3.8%
DON'T WANT TO SHARE MY PERSONAL INFORMATION	3.2%
THE REWARDS DON'T SEEM HIGH ENOUGH	3.1%
OTHER (SPECIFY)	3.0%
DON'T RIDE BART ENOUGH TO BE INTERESTED	0.4%
I'M NOT INTERESTED IN CASH REWARDS	0.4%

CHAPTER THREE

PARTICIPANT CHARACTERISTICS

KEY TOPICS
- Demographics
- Travel Characteristics

Demographic Characteristics

The following section compares the demographic profiles of Perks participants to all BART riders and all BART riders who use a Clipper card (as captured in the BART's 2016 Customer Satisfaction Survey), and to the non-participant survey.

These comparisons confirm that Perks participants do not represent the BART-riding population as a whole, which is to be expected since Perks was marketed to a specific group of riders (those who commute during peak periods into downtown San Francisco) and no attempts were made to ensure the program included a representative sample of all riders. Comparisons between Perks participants and a similar group of non-participants was not possible because the Perks program design did not include a control group.

The following demographic groups were over-represented in the Perks program compared to all BART riders who use Clipper:

- Young adults Almost 70% of participants were aged 25-44 compared to only 52% of all BART riders.
- Non-Hispanic whites and Asians: Almost 84% of participants identified as non-Hispanic white or Asian compared to 65% among all BART riders. Meanwhile, Blacks and Hispanics comprised only 14% of participants, as compared to 29% of all BART riders.
- IT and finance sectors: Participants were more likely to work in the information technology (IT) and finance sectors, and less likely to work in the retail, education, and service industries compared with non-participants. Job classification data for all BART riders was not available.
- High income: Almost 60% of participants come from households with incomes in excess of $100,000, as compared to only 37% of all BART riders.
- English speakers: About 73% of participants only speak English at home, compared to 60% of all BART riders.

The project team analyzed additional variables including gender, smartphone availability, and household size. There were not major differences between Perks participants and all BART riders by these characteristics. The analysis for these additional demographic characteristics can be found in Appendix A.

Age Range

Figure B summarizes the age distribution of all BART riders, Perks participants, and Perks non-participants. This figure indicates that Perks participants were more likely to be in their early- to mid-adulthood stage, with almost 70% of participants being aged 25-44, as compared to only 52% of all BART riders being in this cohort. Younger riders (those aged 24 or less) and older riders (those aged 45 or more) comprise less of Perks participants than they do of BART riders overall.

Figure B. Participation by Age
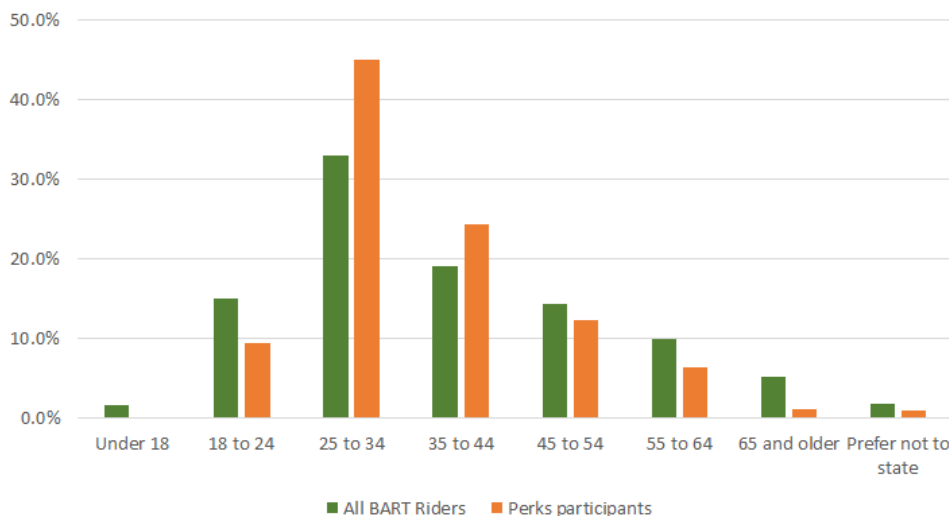
Race/Ethnicity

Table 5 summarizes the distribution of the derived ethnicity of all BART riders, Perks participants, and Perks non-participants. This table indicates non-Hispanic whites and Asians comprised a greater share of participants (almost 84%) than their share of overall BART riders (65%), while non-Hispanic Black travelers and Hispanic travelers comprised only 14% of participants, as compared to 29% of all BART riders.

Table 5. Participation by Race/Ethnicity

	WHITE, NON-HISPANIC	BLACK, NON-HISPANIC	ASIAN, NON-HISPANIC	HISPANIC	OTHER	TOTAL
ALL BART RIDERS	36.7%	10.2%	28.3%	18.7%	6.2%	100.0%
ALL CLIPPER USERS	38%	8%	32%	17%	5%	100.0%
PARTICIPANTS	43.7%	4.5%	40.2%	9.3%	2.3%	100.0%
NON-PARTICIPANTS	45.9%	12.5%	22.4%	16.1%	3.2%	100.0%

Type of Work

Table 6 summarizes the distribution by job industry sector for Perks participants and Perks non-participants. Information on job industry sector for all BART riders is not available. This table indicates

participants were significantly more likely to work in the information technology and finance sectors, and noticeably less likely to work in the retail, education, and service industries compared with non-participants.

Table 6. Participation by Type of Work

	EDUCATION	GOVERNMENT	HEALTH	INFORMATION TECHNOLOGY (IT)	RETAIL	SERVICE	FINANCE	OTHER	RETIIRED	UNEMPEMPLOYED	TOTAL
PARTICIPANTS	7.8%	9.2%	9.1%	28.2%	5.6%	2.2%	10.1%	26.6%	0.4%	0.8%	100.0%
NON-PARTICIPANTS	10.9%	10.2%	13.0%	15.2%	9.3%	4.8%	5.5%	29.0%	0.7%	1.6%	100.0%

Income Range

Figure C summarizes the distribution of household income for all BART riders, Perks participants, and Perks non-participants. This figure indicates that participants disproportionately come from high-income households, with almost 60% from households with incomes in excess of $100,000, as compared to only 37% of all BART.

Figure C. Participation by Income
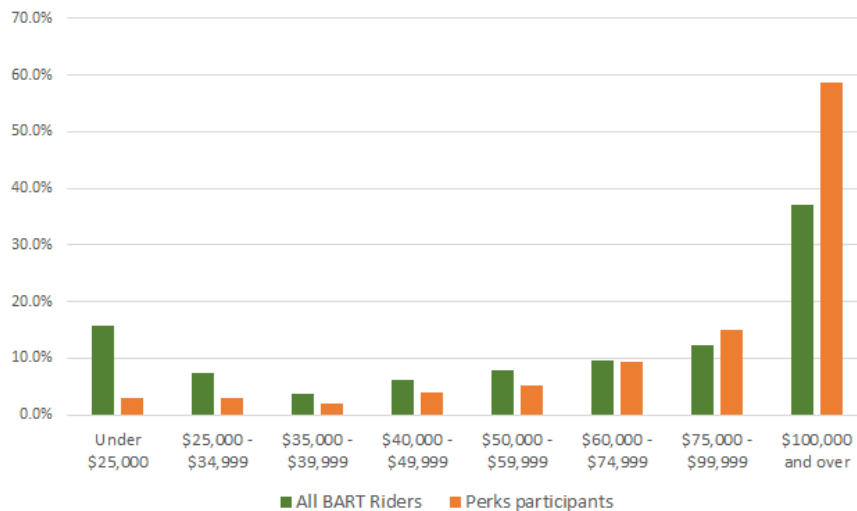
Non-English at Home

Table 7 shows the proportion of all BART riders, Perks participants, and Perks non-participants that speak a language other than English at home. This table indicates that Perks participants are less likely than BART riders overall to speak a non-English language at home.

Table 7. Participation by Non-English at Home

	NO	YES	TOTAL
ALL BART RIDERS	60.3%	39.7%	100.0%
CLIPPER USERS	60.2%	39.8%	100.0%
PERKS PARTICIPANTS	72.6%	27.4%	100.0%
NOT PERKS PARTICIPANTS	74.2%	25.8%	100.0%

Travel Characteristics

Table 8 summarizes participants by their "usual" commute time (this was determined by the timing of their commute travel prior to the program initiation). It shows that approximately 50% of program participants were regular A.M. commuters. However, A.M. peak hour Transbay commuters comprised at most 13% of all program participants. This indicates that significant numbers of program participants were not regular users of the congested Transbay Tube during the peak hour, which was the focus of the Perks program.

Table 8. Participants by Regular Morning Commute Travel Pattern

TOTAL PARTICIPANTS	17,800	100%
REGULAR A.M. COMMUTE		
USUAL PEAK HOUR	1,737	10%
SOMETIMES PEAK HOUR	1,917	11%
NOT PEAK HOUR	5,272	30%
TOTAL	8,926	50%
REGULAR TRANSBAY A.M. COMMUTE		
USUAL PEAK HOUR	1,155	6%
SOMETIMES PEAK HOUR	1,230	7%
NOT PEAK HOUR	3,403	19%
TOTAL	5,788	33%

Commute Travel Time Flexibility

The participant and non-participant surveys also explored travelers' travel time flexibility. Overall, about half of Perks participants had the flexibility to arrive at work either before 7:30 A.M. or after 8:30 A.M. These questions were intended to capture participants overall work flexibility, but do not precisely capture whether participants had the flexibility to adhere to the Perks program design, which involved entering the BART system (not arriving at work) either before 7:30 or after 8:30.

The top reason for not wanting to travel at a different time was personal preference, but work constraints (e.g. employer won't allow it, nature of work won't allow it) are also a top factor preventing

travelling later (arriving at work after 8:30 or 9:30 A.M.). The following sections discuss the results in more detail.

FLEXIBILITY TO ARRIVE AT WORK BEFORE 7:30 A.M.

Approximately half of Perks participants had the flexibility to travel before 7:30 A.M., which would allow them to receive extra rewards for travelling in the early bonus hour. Non-participants were less likely to have a flexible schedule that would allow them to travel during the bonus hour.

Table 9. Option to Arrive at Work Before 7:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
YES	47.0%	38.5%
NO	47.8%	57.2%
DON'T KNOW	5.2%	4.3%

As shown in Table 10, personal preference is the top factor that prevents arriving at work before 7:30 A.M, followed by work constraints, either due to the nature of the work or employer limitations. Personal constraints such as child care and after-work constraints were slightly less of a factor than work constraints.

Table 10. Factors that Prevent Arriving at Work Before 7:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
PERSONAL PREFERENCE	45.7%	39.9%
NATURE OF THE WORK WOULD NOT ALLOW IT	14.8%	16.7%
EMPLOYER WOULD NOT ALLOW IT	10.4%	13.3%
CHILD CARE CONSTRAINTS	10.3%	9.8%
OTHER AFTER-WORK COMMITMENTS	9.8%	7.5%
OTHER (SPECIFY)	6.6%	7.7%
NONE OF THE ABOVE	2.4%	5.1%

FLEXIBILITY TO ARRIVE AT WORK BEFORE 8:30 A.M.

Like with the early bonus hour, about half of Perks participants had the flexibility to arrive at work after 8:30 A.M., which would allow them to receive extra rewards for travelling in the late bonus hour. Non-participants were less likely to have a flexible schedule that would allow them to travel during the bonus hour.

Table 11. Option to Arrive at Work After 8:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
YES	46.5%	37.2%
NO	51.4%	62.8%
DON'T KNOW	2.1%	0.0%

The top factor preventing arriving at work after 8:30 A.M. is personal preference, which was cited by almost half of all participants. Relative to arriving early, significantly higher shares of participants cited work constraints, either due to the nature of the work or employer limitations. Following work constraints, parking availability was the next highest factor cited by respondents. This reflects the fact that many BART station parking lots fill early in the morning, presenting a barrier to those who wish to arrive at the station later. BART is working over the next several years to create a more demand-based parking system that will provide greater availability to those who wish to arrive at the station later in the morning. In the shorter term, BART is addressing this issue by offering advanced parking reservations to those who carpool to the station. Compared to parking, personal constraints such as child care and after-work complaints were noticeably less of a factor than work constraints.

Table 12. Factors that Prevent Arriving at Work After 8:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
PERSONAL PREFERENCE	44.1%	37.2%
EMPLOYER WOULD NOT ALLOW IT	35.1%	32.6%
NATURE OF THE WORK WOULD NOT ALLOW IT	26.0%	30.2%
PARKING AVAILABILITY	23.1%	27.9%
OTHER AFTER-WORK COMMITMENTS	14.3%	2.3%
CHILD CARE CONSTRAINTS	7.6%	4.7%
OTHER (SPECIFY)	5.4%	7.0%
NONE OF THE ABOVE	4.9%	4.7%

FLEXIBILITY TO ARRIVE AT WORK AFTER 9:30 A.M.

When asked if they had the flexibility to arrive at work after 9:30 A.M., only about 33% of participants responded yes (in round 1) compared to 46.5% who said yes to arriving after 8:30 A.M. It seems reasonable that a smaller share of people can arrive after 9:30 A.M. than can after 8:30 A.M., as this later arrival time is later than typical business opening hours for many industries. For example, prior to the Perks program, approximately 22.9% of A.M. inbound Transbay trips occurred between 8:30 and 9:30 A.M., while only 8.6% of these trips occurred after 9:30 A.M. Note that there was a slight difference in the question about options to arrive at work later between the two rounds of participant surveys. The first participant survey asked about the option to arrive at work after 9:30 A.M., while the second participant survey asked about the option to arrive at work after 8:30 A.M.

Table 13. Option to Arrive at Work After 9:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
YES	33.1%	27.9%
NO	63.6%	66.0%
DON'T KNOW	3.3%	6.1%

The factors that prevent people from traveling to work after 9:30 A.M. were primarily work constraints. Personal preferences do not appear to play a large role in preventing later travel.

Table 14. Factors that Prevent Arriving at Work After 9:30 A.M.

	PARTICIPANT	NON-PARTICIPANT
EMPLOYER WOULD NOT ALLOW IT	29.5%	33.4%
NATURE OF THE WORK WOULD NOT ALLOW IT	21.5%	21.7%
PERSONAL PREFERENCE	21.0%	17.8%
PARKING AVAILABILITY	10.8%	8.4%
OTHER AFTER-WORK COMMITMENTS	8.7%	8.2%
CHILD CARE CONSTRAINTS	3.1%	3.6%
NONE OF THE ABOVE	3.0%	3.8%
OTHER (SPECIFY)	2.3%	3.0%

CHAPTER FOUR

TRAVEL PATTERNS & SHIFTS

This chapter summarizes the behavioral outcomes of the program in terms of changes in the total numbers of trips and the timing of trips. It also includes a detailed analysis of the factors that appear to be correlated with peak shift at an aggregate level. The chapter first describes participant trips by broad geographic market (Transbay Inbound, Transbay Outbound, and non-Transbay), and by timing (Weekday A.M., Weekday non-A.M., and Weekend/Holiday). The chapter then summarizes the estimated shift in travel associated with the program, compares the timing of participant Transbay travel to all BART Transbay travel, and illustrates how participants have changed the timing of their trips.

KEY TOPICS
- Trip Geography
- Changes in Peak Travel
- Persistence of Behavior Change After the Program
- Effectiveness of Mileage-based vs. Trip-based

Trip Geography

This section shows how participants traveled by geography and time-of-day. The three geographies shown include:

- Transbay Eastbound (San Francisco/Peninsula origin to East Bay destination)
- Transbay Westbound (East Bay origin to San Francisco/Peninsula destination), and
- Non-Transbay (trips that did not require travel through the Transbay tube).

Approximately 1.1 million trips were made by Perks participants during the program. About 70% of these trips were made in the Transbay corridor (including both directions).

Figure D. Share of Participant Trips by Geography

non-TransBay   TransBay-Eastbound   TransBay-Westbound
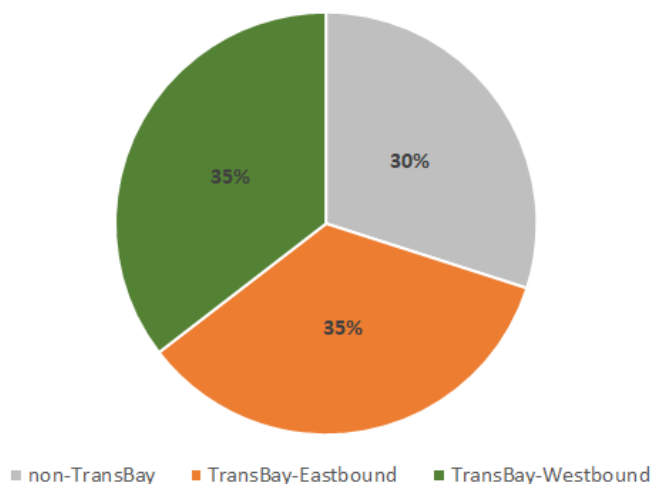
Figure E illustrates this distribution by time-of-day and geography. This shows that approximately 30% of all participant trips were made in the A.M. period (between 5:00 A.M. and noon) in the Transbay Westbound (inbound) direction.

Figure E. Share of Participant Trips by Time-of-Day and Geography
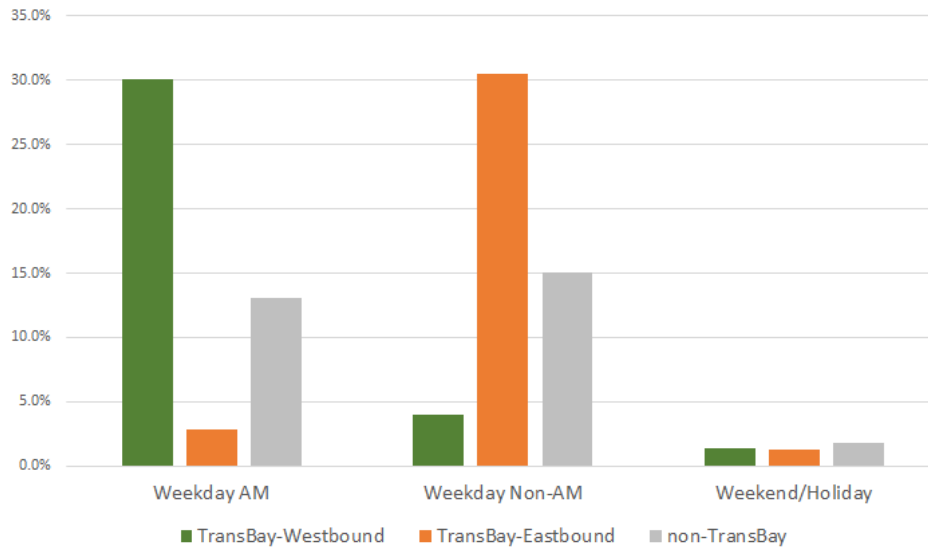
Figure F further breaks down the A.M. weekday trips by hour and geography. This reveals that approximately 16% of all participant trips were made during the two bonus peak hours, meaning that 84% of all participant trips were made during time periods that were not incentivized. Note that participants were awarded points for all travel, although participants received more points per mile or per trip when travel during the bonus hours.

Figure F. A.M. Trips by Hour and Geography
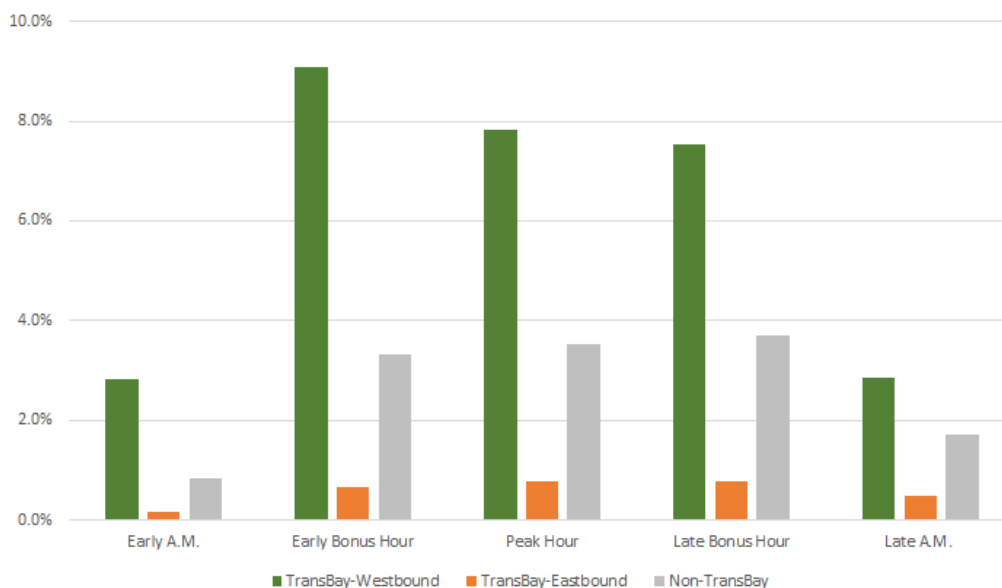
Reduction in Peak Travel

Table 15 compares the percent reduction in peak hour trips by participants and all BART riders before and during the program, for both the entire BART system and for the Transbay inbound direction only. This table shows that Perks participants reduced peak hour travel by almost 10% systemwide, and by almost 11% in the inbound Transbay direction. This far exceeds the <1% reduction in peak hour Transbay inbound trips by all BART riders before versus during the program. Perks participants made approximately 200 fewer inbound A.M. peak hour trips as a result of the program.

Table 15. Percent Reduction in Peak Hour Trips

| | ALL BART RIDERS | | PERKS PARTICIPANTS | |
	SYSTEM	TRANSBAY INBOUND	SYSTEM	TRANSBAY INBOUND
DAILY TRIPS	420,300	113,875	18,181	6,303
PEAK HOUR TRIPS - BEFORE	47,792	23,320	2,602	1,674
PEAK HOUR TRIPS - DURING	47,913	23,107	2,352	1,491
CHANGE	121	-213	-250	-183
% CHANGE IN PEAK HOUR TRIPS	0.3%	-0.9%	-9.6%	-10.9%

Note: Change in All BART Riders trips may be reflective of changes in ridership.

Figure G illustrates the distribution of trips in the morning before the Perks program, for both Perks participants and for non-participants for the Transbay inbound travel. It shows that many participants tended to travel during the bonus hours before the program, indicating some self-selection amongst program participants. That is, people who already tended to travel in the bonus hours were more likely to enroll in the program. Staff observed a similar pattern when looking at the distribution of trips systemwide.

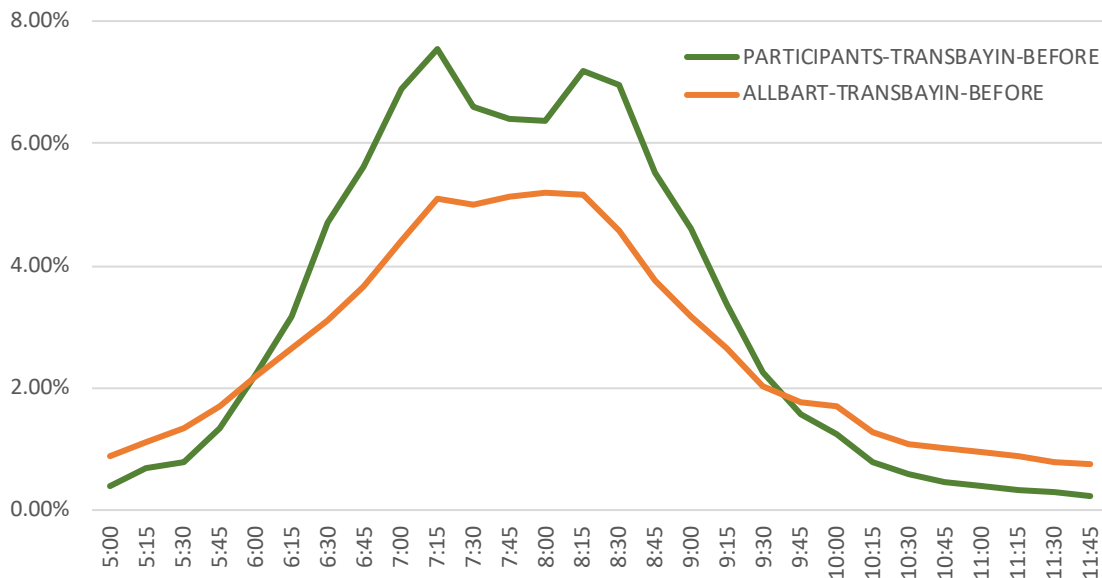Figure G. Distribution of A.M. Transbay Trips Before Perks Program

Figure H illustrates the change in timing of Perks participants' A.M. trips before the program and during the program. During the program, the proportion of trips made by participants during the peak hour declined noticeably as shown by the, while the proportion of trips made during other time periods, especially the 15 minutes immediately preceding and following the peak hour, increased.

Figure H. Distribution of Participants' A.M. Transbay Trips Before and During Perks Program
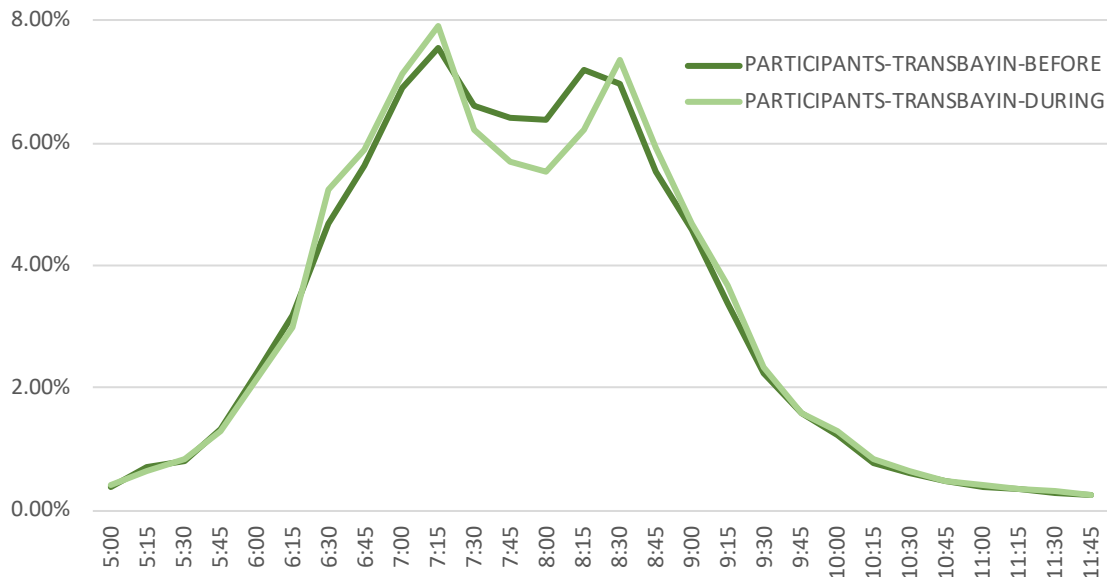
Cross-Sectional Analysis of Change in Peak Hour Travel

The project team analyzed how changes in peak hour travel vary by different participant trip characteristics or demographics categories. Participant demographic categories included age range, race/ethnicity, gender, type of work, and income range. In this cross-sectional analysis, staff compared the degree of shift away from the peak hour of subgroups within a category and identified any interesting correlations. Below is a summary of the main findings by category:

- **Commute frequency**: Frequent commuters (those taking a morning trip over 3.5 times per week) exhibited the greatest relative drop in share of peak hour trips, but there is not a clear linear relationship between commute frequency and degree of shift.
- **Commute distance:** Those who commute the longest distance overall showed the greatest reduction in peak hour trips overall and in the A.M. Transbay inbound travel market. However, short-distance trips had the flexibility to shift on either side of the peak hour while long-distance trips tended to only shift earlier.
- **Age**: There were minimal differences in percent reduction of peak hour trips across age ranges below 65.
- **Gender**: Men appeared to shift slightly more than women.
- **Type of Work**: Participants who worked in education, government and information technology sectors shifted at the highest rates compared to other types of work.

Staff also observed shift levels by certain subgroups that seemed to be outliers within their categories. For example, participants who were age 65 and over and participants who did not identify as either male or female had the greatest reductions in peak hour travel in the age range and gender categories, respectively. This is due to the small sample size of participants with these demographic subgroups. People age 65 and over only accounted for 1.5% of participants.

SHIFT BY SATISFACTION AND ENGAGEMENT

In addition to trip characteristics and demographics, staff cross-referenced participant travel patterns during the program with 1) satisfaction with BART in general and with the Perks program (from the participant surveys) and 2) engagement in the game element of the website. Engagement with the game required participants to manually play their points in the Spin-to-Win game rather than keeping the default autoplay setting which meant points were entered into a random rewards generator every week (See Chapter 5 "Engagement & Rewards Redemption" for more information about how participants redeemed their rewards). Staff wanted to investigate any correlation of shift to engagement in the game element of the program.

Below are findings for this cross-sectional analysis:

- **Satisfaction with BART**: Participants with the strongest feelings about BART, both positive and negative, were likely to shift the most. Participants who were somewhat and very satisfied with BART shifted at higher rates away from the peak hour. Not very far behind were those participants who said they were very dissatisfied with BART.

- **Satisfaction with Perks**: Similarly, participants with the strongest feelings about the BART Perks program, both negative and positive, showed the greatest reduction in peak hour travel. In fact, those who stated that they were very dissatisfied with Perks shifted at the highest rate away from the peak hour.

  - While this result may seem counterintuitive, a common complaint cited in the open-ended survey responses was that the reward amounts were too small. It could be that these participants actively shifted their behavior but ultimately were not satisfied with the reward they received in return for the action.

- **Engagement in the game element** of the website. Manual game play was associated with higher levels of shift: 27.8% of participants who only actively played the game shifted, compared to 8.7% who used autoplay. This suggests that participants who were more engaged with the game aspect of the Perks website also participated more in shifting outside of the peak hour.

More detail on the cross-sectional analysis by participant characteristics can be found in Appendix C.

Departure Time Choice Model

Beyond the cross-sectional analysis, staff and consultants conducted a deeper analysis on factors correlating to shift. This section summarizes a disaggregate analysis of Perks' participants departure time choices, which can help identify which aspects of the program design were most effective at getting participants to shift their travel time. The approach controls for many effects simultaneously and can thus provide more targeted and accurate insights regarding the causal influences of the Perks program attributes.

OVERVIEW OF METHODOLOGY

- A sample of trips was selected from Perks participants who had made at least ten A.M. trips during the program and at least ten A.M. trips in the 6-month period before the program.
    - The number of observed in-program participant trips for this sample is 1,009,459, made by 13,849 different participants.
- The model predicts the likelihood of a participant choosing one of five time periods:
    - Early A.M. period outside of bonus hour (5:00 – 6:29 A.M.)
    - Early bonus hour (6:30 – 7:29 A.M.)
    - Peak hour (7:30 – 8:29 A.M.)
    - Late bonus hour (8:30 – 9:29 A.M.)
    - Late A.M. period outside of bonus hour (9:30 – 11:59 A.M.)
- The model predicts the likelihood of choosing a time period based on a number of explanatory variables including each participants' pre-program departure time patterns, socio-demographics, and the number of Perks program points that could be earned from choosing each time period.

Model results are shown in Table 16.

KEY FINDINGS

Conditioning on pre-program behavior: This is captured by the first variable in the table: "Fraction of pre-program A.M. trips in period". As expected, the "Fraction of pre-program A.M. trips in period" is the strongest explanatory variables for departure time choice during the program, indicating that, for the most part, participants chose to travel during the same periods that they chose prior to the Perks program. This variable reflects the choice that would been made if the Perks program had not been in place, so the other variables discussed below serve to explain any changes in departure time choice during the program, relative to pre-program choices.

"Nearness" of pre-program departure times to bonus hours: For people who made trips outside the bonus hours during the pre-program period, the closer their average departure times to a bonus hour, the more likely they would be to shift to that bonus hour. In other words, if somebody made most of their pre-program trips in the peak hour (7:30 – 8:29 A.M.) and their average departure time of those trips was 7:35 A.M., they would be more likely to shift to the early bonus hour (6:30 – 7:29 A.M.), while if their average departure time of those trips was 8:23 A.M., they would be more likely to shift to the late bonus hour (8:30 – 9:29 A.M.). Similarly, if somebody made pre-program trips in the early A.M. period, they would be more likely to shift those trips to the early bonus hour (6:30 - 7:29 A.M.) if the average departure time of those early A.M. trips was, say, 6:20 A.M. rather than 5:20 A.M.

Travelling in the Westbound Transbay market: There are negative coefficients for shifting to the bonus hours for Transbay trips to the Financial District, and also for Transbay Westbound trips to other stations beyond the Financial District (these are relative to non-Transbay and Transbay Eastbound trips). This result indicates that, all else equal, it is more difficult to get Transbay Westbound commuters to shift into the bonus hours. This may be due to the fact that peak period congestion is the worst for Transbay Westbound trips, so some self-selection out of the peak may already have taken place for that origin-destination market, with the remaining travelers tending to have less flexible schedules.

Bonus points and bonus boxes: In addition to earning points per mile or per trip, randomly selected participants also received occasional special offers or "bonus boxes" of additional points during the

program. The purpose of these bonus boxes was to test the sensitivity of participants to different types and levels of targeted incentives, and to encourage additional shift among the target market. Three offers ranging from 20 to 500 points were made during the program duration to encourage additional shift among regular Transbay tube participants. Select regular Transbay Tube participants were offered the following bonus boxes for a specific week during that month:

- Round 1, November 2016: 20 or 40 additional points to shift one or more trips from the peak hour to either the early bonus hour or late bonus hour.
- Round 2, December 2016: 50 or 100 additional points for shifting a trip to the half hour before the early bonus hour (6:00 – 6:30 A.M.) or the half hour after the late bonus hour (9:30 – 10:00 A.M.)
- Round 3, February 2017: 40 or 500 points additional points for same shift as Round 1.

In the time choice model analysis, there is a significant positive effect for the number of points offered to make trips in the bonus hours—both as part of regular trip bonuses and as part of special bonus boxes. The more bonus points offered for choosing one of the bonus hours, the more likely one of those periods was chosen. The bonus box offers also had a positive effect on choosing a bonus hour, with the coefficient per point earned about twice as high as for the standard trip bonuses. (There is a counter-intuitive finding in the model for Round 2, but Urban Engines reported that there are some errors in the data for those particular bonus box offers.) For Round 3 bonus boxes, the project team tested different levels of awards and found that when 500 bonus points were offered in the bonus box, the coefficient per point is only about one tenth as high as when 40 bonus points were offered. This result suggests that participants were not very sensitive to the number of points offered in the bonus boxes—only to the fact that an extra bonus was offered at all.

Mileage-based versus trip-based bonus points: For the last couple months of the Perks Program, bonus points were awarded on a per-trip basis rather than a per-mile basis. The overall effect of this on choosing to travel in the bonus hours, all else equal, was not statistically significant, though there does appear to be a slight shift away from the late bonus hour and towards the early bonus hour. Additional variables were tested to interact this effect with participants' trip frequency and usual trip distance, but no significant effect could be found. Similar to the bonus boxes discussed above, this result provides evidence that participants were not very sensitive to the exact amount of bonus points being offered. Staff conducted additional complementary analysis comparing the effectiveness of the mileage-based and trip-based point schemes. That can be found at the end of Chapter 4. In this additional analysis, staff found that the share of peak hour trips that occurred within shorter distance trips was lower in the trip-based scheme than in the mileage-based scheme.

Participation in the gaming aspect: As previously mentioned, participants were enrolled by default in the autoplay option. However, some participants opted to use their points more actively in the Spin-to-Win game. Those who participated in the active game-playing aspect for redeeming and earning points were also more likely to choose one of the bonus hours. Similar to the findings in the cross-sectional analysis, this suggests that offering the active gaming option may have helped to spur people to participate in the departure time shifts as desired—more so than the passive autoplay option.

Table 16. Departure Time Choice Model Estimation Results

PERIOD	EARLY A.M. (5:00- 6:29)		EARLY A.M. BONUS HOUR (6:30-7:29)		A.M. PEAK (7:30-8:29)		LATE A.M. BONUS HOUR (8:30-9:29)		LATE A.M. (9:30-11:59)	
	COEF	T	COEF	T	COEF	T	COEF	T	COEF	T
FRACTION OF PRE-PROGRAM A.M. TRIPS IN PERIOD	6.76	23.9	3.92	28	5.54	17.8	3.89	25.9	5.63	19.0
VARIABLES APPLIED ONLY TO BONUS HOURS										
FRACTION OF PRE-PROGRAM TRIPS IN PEAK HOUR * NEARNESS OF AVERAGE PRE-PROGRAM DEPARTURE TO BONUS HOUR			3.08	11.8			4.12	15.5		
FRACTION OF PRE-PROGRAM TRIPS IN EARLY/LATE PERIOD * NEARNESS OF AVERAGE PRE-PROGRAM DEPARTURE TO EARLY/LATE BONUS HOUR			2.67	8.3			2.69	8.5		
TRANSBAY TO FINANCIAL DISTRICT STATION			-0.29	-3.0			-0.215	-2.4		
TRANSBAY WESTBOUND TO OTHER STATIONS			-0.226	-1.8			-0.316	-2.7		
BONUS POINTS OFFERED			0.016	11.0			0.0137	9.8		
BONUS BOX FRIEND INVITE + ROUND 1			0.0436	4.3			0.0351	3.5		
BONUS BOX ROUND 2			-0.0082	-1.6			-0.0072	-1.5		
BONUS BOX ROUND 3, 40 POINTS OFFERED			0.0351	2.9			0.0349	3.0		
BONUS BOX ROUND 3, 500 POINTS OFFERED			0.0028	2.9			0.003	3.2		
POINTS TRIP-BASED RATHER THAN DISTANCE-BASED			0.0479	0.5			-0.119	-1.3		
FRACTION OF POINTS FROM GAME PLAYING			0.564	3.2			0.584	3.4		
CANNOT TRAVEL EARLIER/LATER THAN PEAK BECAUSE OF…										
PERSONAL REASONS							-0.604	-3.1		
EMPLOYER POLICY							-0.852	-3.3		
CHILDCARE COMMITMENTS			-0.0943	-1.0			-0.947	-1.8		
APPLIED TO ALL PERIODS EXCEPT PEAK										
MALE									0.245	2.7
AGE 50 AND UP	0.408	2.5	0.261	2.3						
STUDENT									0.348	1.8
PART-TIME WORKER									0.463	2.0
BUSINESS = INFORMATION TECHNOLOGY	-0.324	-1.7					0.217	2.3	0.279	2.1
ALTERNATIVE-SPECIFIC CONSTANT	-1.40	-10.9	-0.92	-5.3			-0.419	-2.3	0.0054	0.0

Change in behavior as the program progressed: Additional variables (not shown in the table) were tested for the effect of length of time participating in the Perks program on the likelihood of selecting the bonus hours, all else equal. These variables were not significant and were removed from the final models. Thus, there was no apparent "fatigue" or "warmup" effect of the program—the probability of choosing the bonus hours in response to bonus points did not vary significantly with the duration of participating in the program.

Self-stated impediments to shifting out the peak hour: Many of the program participants also participated in an additional survey which asked what types of things might inhibit them from traveling before 7:30 A.M. and from traveling after 8:30 A.M. Respondents who said that they could not travel after 8:30 A.M. because of personal reasons, employers' policies, and/or childcare commitments were also significantly less likely to travel in the late bonus hour in reality. For the Early bonus hour, none of the stated reasons for not being able to travel before 7:30 A.M. were highly significant, although childcare commitments are marginally significant. Overall, the impediments toward traveling later appear to be more strongly related to choice behavior than those for traveling earlier, and childcare commitments appear to be the strongest impediment.

Socio-demographic variables: Several socio-economic variables were tested in the model: age group, gender, occupation, income, race/ethnicity, and industry type. As can be seen in the table, very few of the variables were statistically significant. Participants age 50 and up were more likely than others to shift to the early A.M. and early bonus hours. Males, students, and part-time workers were more likely than others to shift to the late A.M. period. Participants working in the Information technology industry were more likely than others to shift to the late bonus hour and late A.M. periods and less likely to shift to the early A.M. period. It is likely that several of the socio-economic variables would be significant in a purely cross-sectional model explaining people's departure times, but they are not very significant in this dynamic model specification explaining relative shifts in departure time due to the incentive program.

Trip distance effect: Because the chosen period was based on the A.M. departure time rather than the arrival time at the destination station, participants who make longer trips tend to depart earlier in order to reach their destination on time. An index was set at 5 for the early A.M. period down to 1 for the late A.M. period and multiplied by the trip distance. The effect is significantly positive, meaning that people with longer trips are more likely to shift to the earlier periods with higher index values. It is important to include this distance effect in the models because the bonus points offered were also based on trip distance (in the early months of the program).

Persistence of Shift After the Program

This section explores whether the shift behavior seen during the program persisted after the program concluded. It compares participants' travel behavior before (March 2016 – August 2016), during (Sept 2016 – Feb 2017), and after (March 2017 – June 2017) the program.

The figures in this section represent trip-making by peak hour for "regular commuters" which was defined as those travelers who made at least 15 A.M. peak trips before the program was initiated, at least 30 A.M. peak trips during the program, and at least 15 trips after the program ended.

Note that the average number of trips made by regular commuters during the program phases was significantly higher - approximately 60 trips per commuter during the 3 month pre- and post-program phases, and nearly 90 trips per commuter during the 6-month program. Regular commuters reduced

their share of peak hour trip-making from 29.9% before the program to 26.2% during the program (slightly more change than the reduction from 26.6% to 23.7% of all Transbay inbound trips). However, after the program ended, this share then rose back to 28.6%, suggesting that, for the target market of A.M. peak hour inbound commuters, the program effects partially, but not completely, persisted after the program ended.

Figure I and Table 17 show that during the program, regular Transbay commuters reduced their share of peak hour trip-making by 4%. After the program ended, about half returned to the peak hour and half continued to travel outside.

Figure I. Change in Transbay Shares of Trips by Time Period
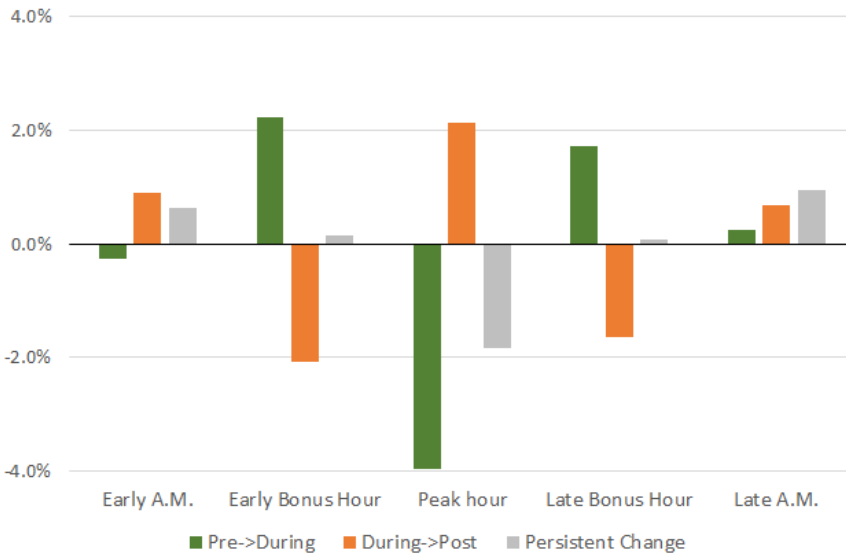
Table 17. Change in Transbay Share of Trips by Time Period

	PRE-PROGRAM	DURING	POST-PROGRAM	PRE → DURING	DURING → POST	PERSISTENT CHANGE
EARLY A.M.	9.7%	9.4%	10.3%	-0.3%	0.9%	0.6%
EARLY BONUS HOUR	27.9%	30.2%	28.1%	2.2%	-2.1%	0.2%
PEAK HOUR	30.0%	26.0%	28.2%	-4.0%	2.1%	-1.8%
LATE BONUS HOUR	23.3%	25.0%	23.4%	1.7%	-1.6%	0.1%
LATE A.M.	9.1%	9.4%	10.1%	0.3%	0.7%	0.9%

Figure J. Change in A.M. Peak Hour Share of Trips by Commute Distance

Table 18. Change in A.M. Peak Hour Share of Trips by Commute Distance

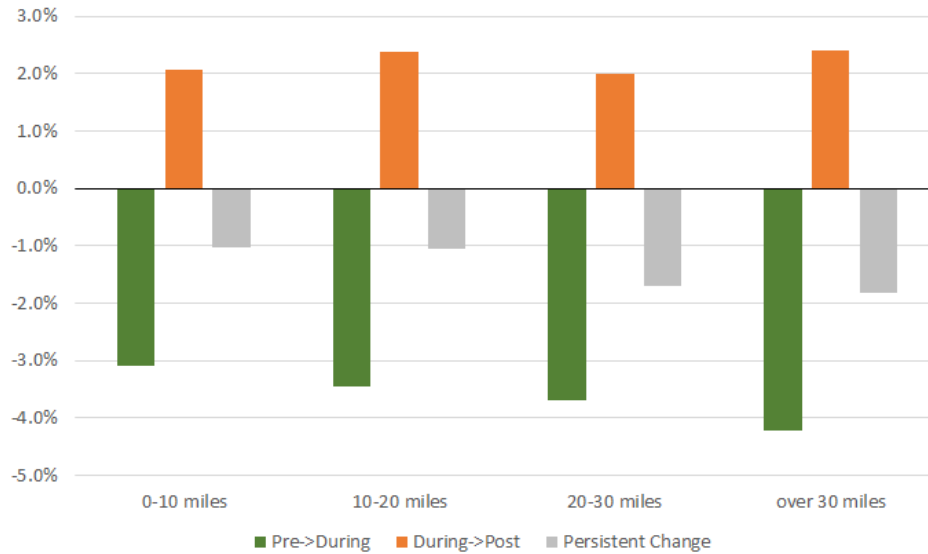|	0-10 MILES	10-20 MILES	20-30 MILES	OVER 30 MILES
PRE ➔ DURING	-3.1%	-3.4%	-3.7%	-4.2%
DURING ➔ POST	2.1%	2.4%	2.0%	2.4%
PERSISTENT CHANGE	-1.0%	-1.1%	-1.7%	-1.8%

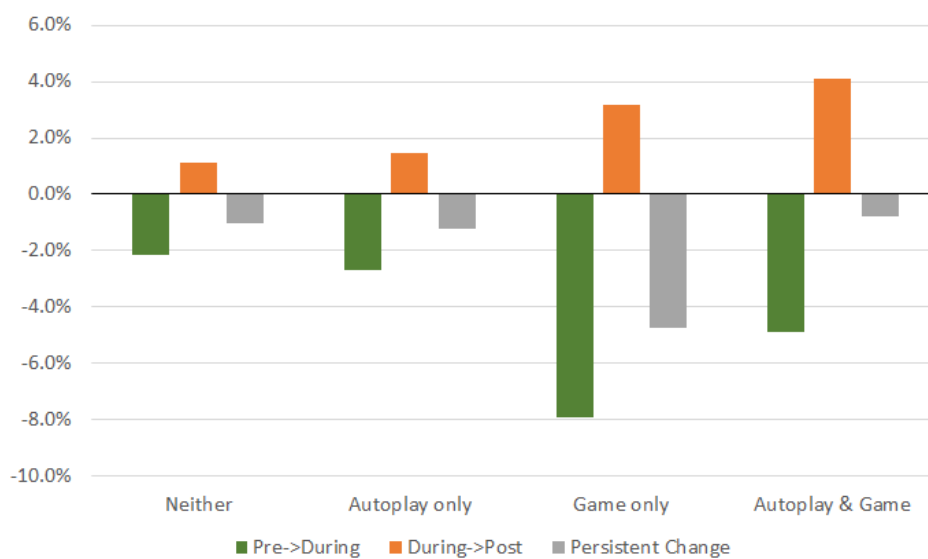Figure K. Change in A.M. Peak Hour Share of Trips by Game Engagement

Table 19. Change in A.M. Peak Hour Share of Trips by Game Engagement

	0-10 MILES	10-20 MILES	20-30 MILES	OVER 30 MILES
PRE → DURING	-3.1%	-3.4%	-3.7%	-4.2%
DURING → POST	2.1%	2.4%	2.0%	2.4%
PERSISTENT CHANGE	-1.0%	-1.1%	-1.7%	-1.8%

Game play was also associated with greater persistence of shift (Figure K and Table 19).

Effectiveness of Mileage-based vs Trip-based Incentives Schemes

As previously mentioned, the project team changed how participants earned points for the last two months of the program. The design was changed so that participants earned 17 points per trip (equivalent to the average points earned per trip during the first part of the program), rather than one point per mile traveled. In order to understand the effectiveness, the project team compared participant trips under the mileage-based design to the trip-based design.

Figure L compares the share of peak hour and bonus hour Transbay Westbound trips under the trip- and distance-based schemes and shows that the two approaches performed similarly. There was a similar pattern between the two schemes when looking at trips systemwide (see Appendix C).

Figure L. Share of A.M. Peak Transbay Westbound trips by Incentives Scheme and Hour
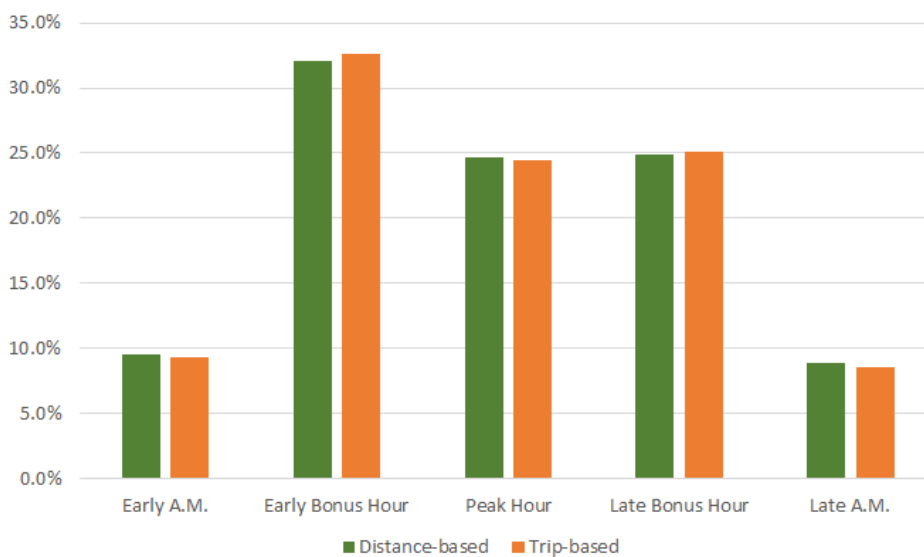
Figure M shows the difference in the share of A.M. trips occurring in the peak hour between the mileage-based and trip-based schemes by trip distance. It demonstrates that the share of peak hour trips that occurred within shorter distance trips was lower in the trip-based scheme than in the mileage-based scheme. This makes sense as reducing peak hour short trips is incentivized more in the trip-based scheme. However, the difference in share was not great - it was approximately 1.5% lower in the trip-based scheme.

Figure M. Difference in Share of Trips by Peak Hour between Mileage-based and Trip-based schemes by Distance
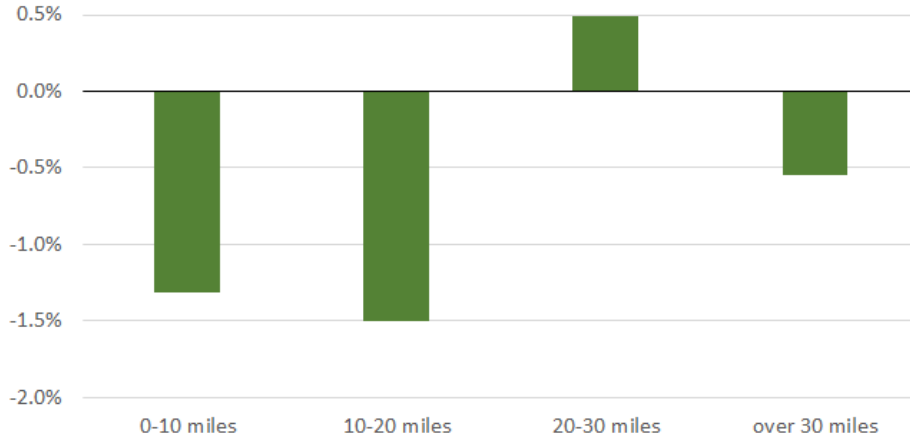
CHAPTER FIVE

ENGAGEMENT & REWARDS REDEMPTION

KEY TOPICS
- Participant Engagement & Status
- Rewards Earnings

This chapter describes how participants engaged with the program technology, including mobile app use and rewards redemption preferences.

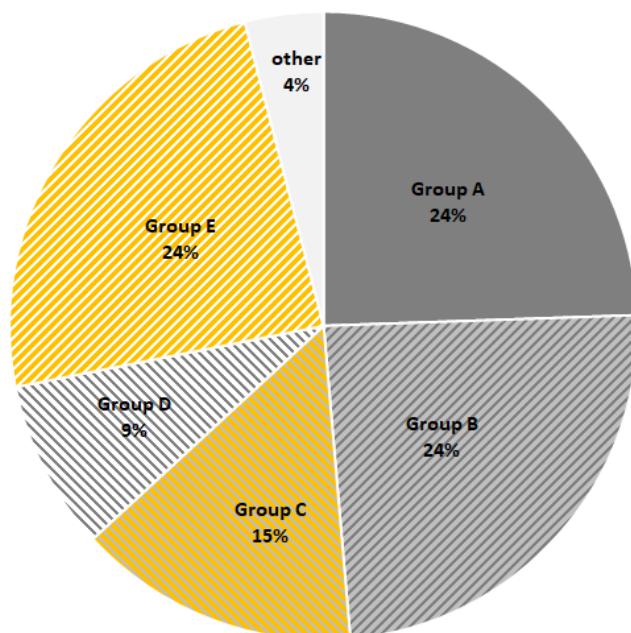## Participant Engagement & Status

Participant status (Level 4 - Platinum, Level 3 - Gold, Level 2 - Silver, Level 1 - Bronze) was based on the frequency of bonus hour trips made in the most recent two-week period (see Table 2). In this section, changes in the participants status level is used as a proxy for their level of engagement with the program, under the assumption that more motivated participants would work to keep their status level as high as possible. All participants were temporarily upgraded to gold status upon enrolling in the program.

Participants are grouped into the following categories based on how their status level changed during the pilot, where Group A had the consistently highest status level and Group E had the lowest:

- Group A: Always 4 (Platinum)
- Group B: Early 4, Always 2+ (Silver)
- Group C: Early 3 (Gold), Always 2+ (Silver)
- Group D: Early 4 (Platinum), drop below 2 (Silver)
- Group E: Early 3 (Gold), drop below 2 (Silver)

Group A members are presumed to have a higher level of engagement than those in Group E. However, membership in a group would also be expected to be strongly predicted by frequency of travelling on BART, since achieving higher status required making more frequent trips.

Figure N. Participants by Status Trajectory

A more detailed analysis of status/engagement level by participant characteristics is contained in Appendix D. Highlights from this analysis include:

- Reduced engagement (lower status) among older people, likely related to the fact that they commute less on BART / are more likely to be retired.
- Higher engagement/status among those who redeemed their points through the online game, and lower engagement/status among those who redeemed their points via autoplay and particularly cash-buyout.
- Higher engagement/status among those who showed low levels of satisfaction with BART, likely reflecting the fact that those with high status are frequent BART commuters and experience the most crowded conditions and therefore have the lowest levels of BART satisfaction. Conversely, those with high engagement/status tended to be most satisfied with the Perks program, likely because high status participants earned the most rewards.

Rewards Earnings

Participants earned BART Perks rewards through a combination of travel (awarded on either a per-mile or per-trip basis) and status (based on the frequency of bonus hour travel), through fulfilment of bonus boxes, and from inviting friends to participate in the BART Perks program. Figure O shows the share of earnings by type, with approximately 95% of points earned through trips, 4% from bonus box offers, and less than 1% from friend invites.

Figure O. Rewards Earnings by Type

4%

1%

95%

■ Trip points   ■ Bonsubox points   ■ Friend invite points
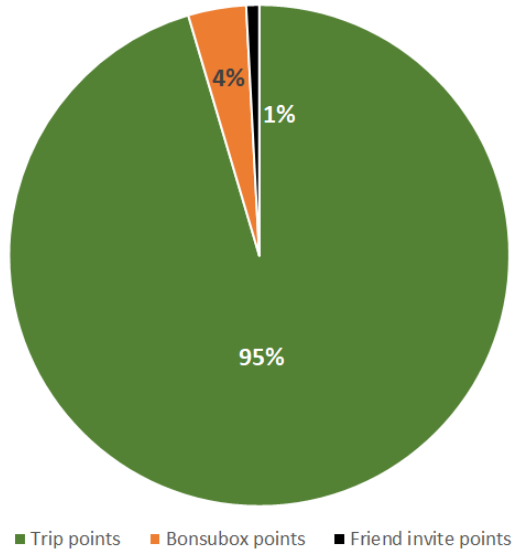
Rewards by Usual Departure Hour

The participant survey asked travelers to identify their usual departure hour. Those identified as usually traveling in the peak hour showed the greatest earnings, likely due to shifts during the program from this peak hour to the bonus hours.

Figure P. Average Points Awarded by Usual Departure Hour

■ Trip points   ■ Bonus Box Points   ■ Friend invite points
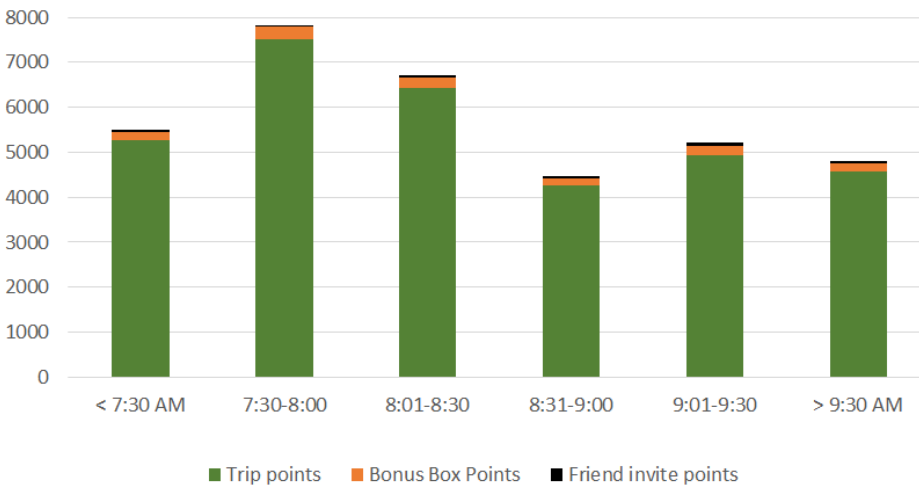
Rewards Redemption

Participants had three options for exchanging points for cash rewards:

- Autoplay: For those enrolled in autoplay, all points earned in the previous week were automatically entered into a game (effectively, a random rewards generator) once per week. Depending on the outcome, the participant could receive nothing, or a reward ranging between $1 - $100.

- Spin-to-Win game: Participants could turn off autoplay and use points to play an online chutes-and-ladders game to win more points or cash rewards. Like autoplay, this game was essentially a random rewards generator, but included an interactive element.
- Cash buyout: Participants could exchange points at a rate of $1 per 1,000 points. Note that 1,000 points was equivalent to 1,000 miles travelled on BART - a typical commuter might travel this distance in about a month and a half.
- Initially, the project team hoped to pay rewards as value added back onto participant transit smart cards, but this proved infeasible. Instead, BART paid out cash rewards once per month via PayPal. However, this arrangement was suboptimal, because participants needed to have an active PayPal account that used the same email address that was used to register for BART Perks.

Figure Q illustrates how participants redeemed their points, with approximately 82% of earnings resulting from autoplay, and 17% resulting from the game. Less than 1% was redeemed through the cash buyout. On average, participants received a little over $2.00 per month during the program.

Figure Q. Rewards Redemption by Type
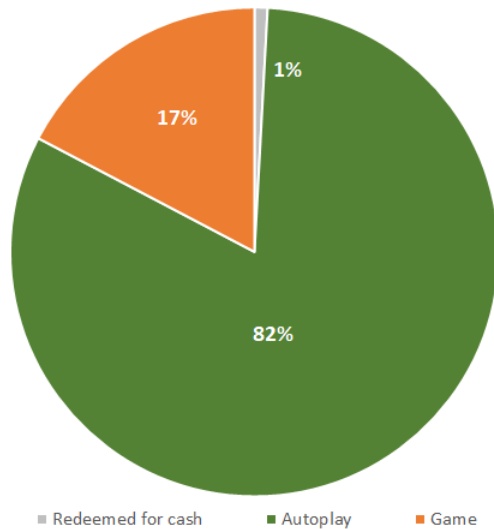
The project team analyzed how the choice of redemption approach varied across different types of participants. The only participant characteristic that seemed strongly associated with the choice of redemption approach was age. As shown in Figure R, younger participants were far more likely to redeem points through actively playing the game, while those over 65 were far more likely to autoplay their earnings. For example, 24% of those 18 to 24 played the game compared to only 5% of those 65+. Additional analysis on redemption by Type of Work and Income Range can be found in Appendix D.

Figure R. Number of Points Redeemed by Redemption Method and Age
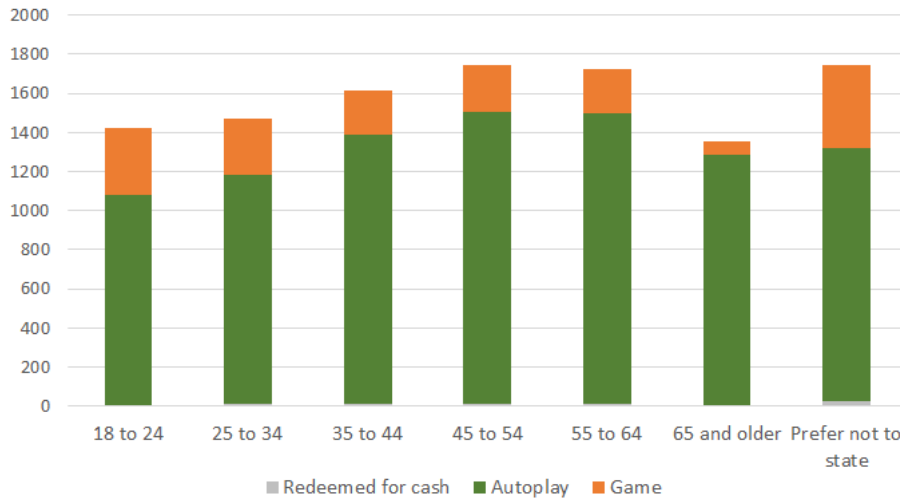
With a desire to better understand social equity impacts of Perks, the project team examined differences in reward distribution by race/ethnicity and income. This analysis is shown in Figure S and Figure T. While certain racial/ethnic groups were overrepresented than others among the participants, average points earned across different groups was relatively even.

Figure S. Average Points Earned by Race/Ethnicity
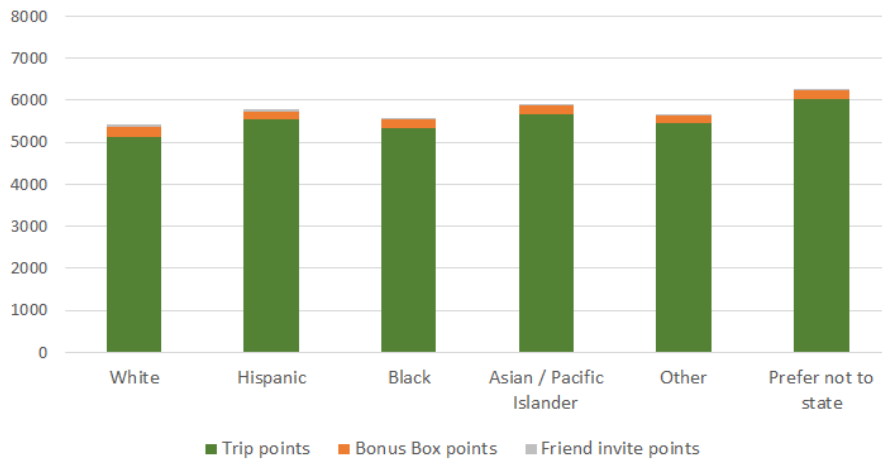
In examining rewards across different income ranges, the project team observed that participants with a household income of $50,000 and higher had similar average points earnings. Meanwhile, participants with household incomes below $50,000 earned slightly fewer points on average. Differences in average points earned by ethnicity or income result from differences in the travel patterns of these groups (for example, lower income individuals may be making fewer trips or shorter trips on average).

Figure T. Average Points Earned by Income Range
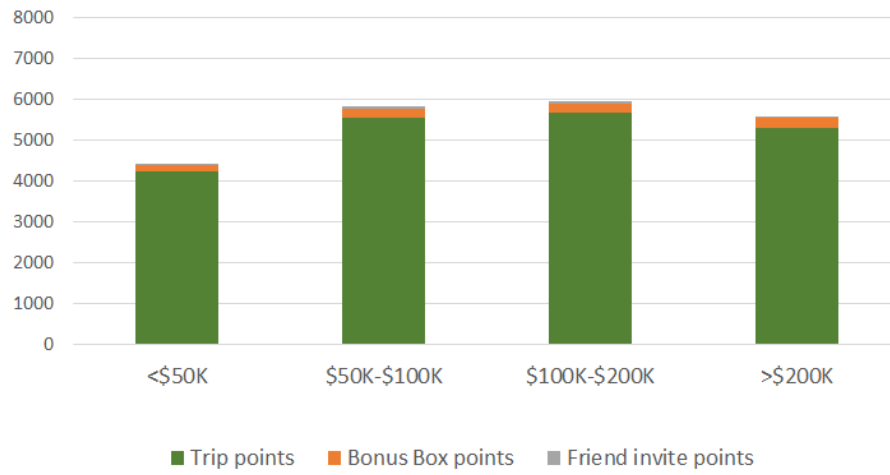
CHAPTER SIX

COST-EFFECTIVENESS

KEY TOPICS
- Points Distribution by Trip Geography
- Cost per Shifted Trip

This chapter summaries the cost effectiveness of the Perks program in terms of the degree to which rewards were focused on the target market of travelers, and the cost per shifted trip.

Points Distribution by Trip Geography

While a significant number of trips made by Perks participants were made during the non-incentivized times, a comparison of the percentage of points awarded by time-of-day and geography to the percentage of participant trips by time-of-day can provide a very basic measure of the efficiency of the program. Figure U shows the distribution of total points by geography and time-of-day, while Figure W shows distribution of points by morning time period. Figure V and Figure X show similar information but represents the ratio of the share of total points to the share of total trips. Ratios > 1 show that more points are being award for trips in these geography/time period bins, relative to the share of trips in these bins. The highest rates are for the bonus hours, and all markets within these bonus hours (Transbay Westbound, Transbay Eastbound and Non-Transbay) had the highest ratios. These figures of ratios clearly indicate that, in keeping with the program design, trips during the bonus hours received proportionally more points, and that Transbay westbound trips proportionally received the highest points.

Figure U. Percent of Perks Participants' Points by Geography and Time-of-Day
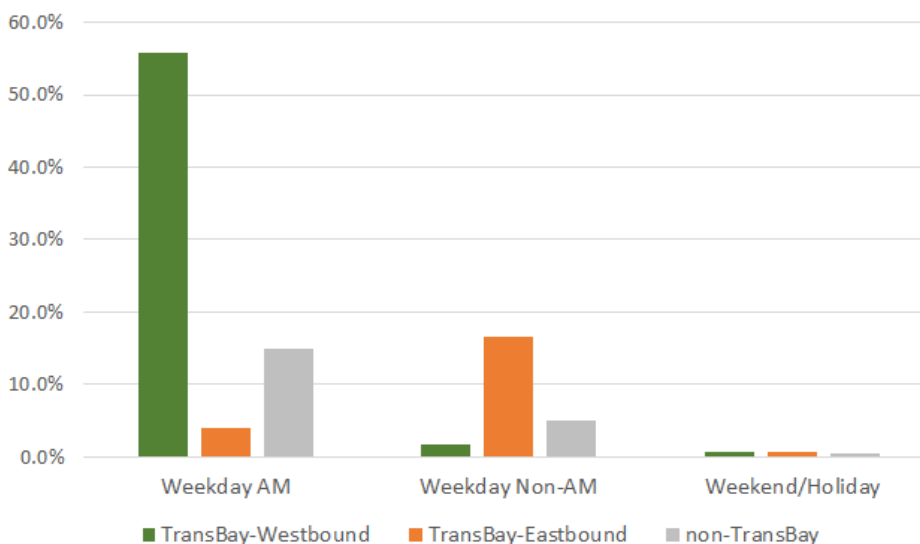
Figure V. Percent of Perks Participants' Points by Geography and A.M. Hour
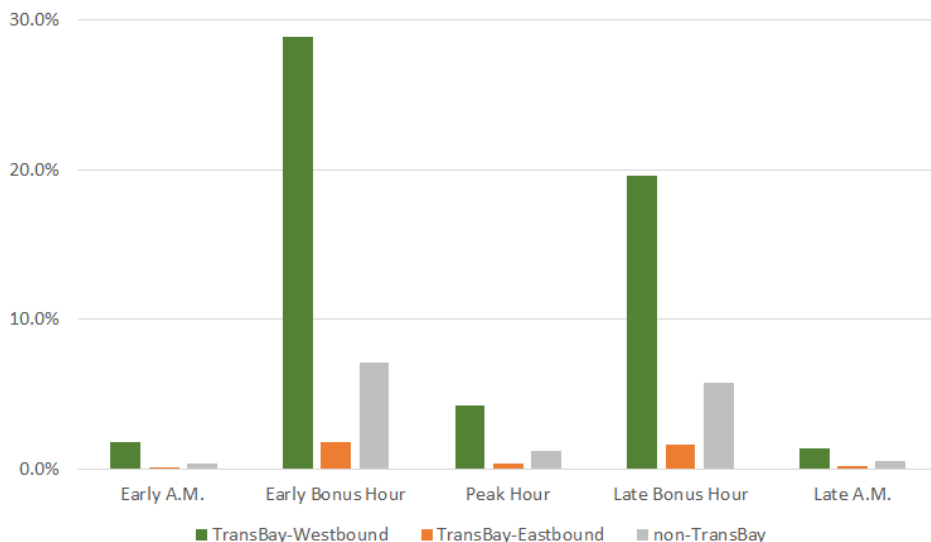
Figure W. Ratio of Share of Perks Participants' Points to Share of Perks Participants' Trips by Geography and Time-of-Day
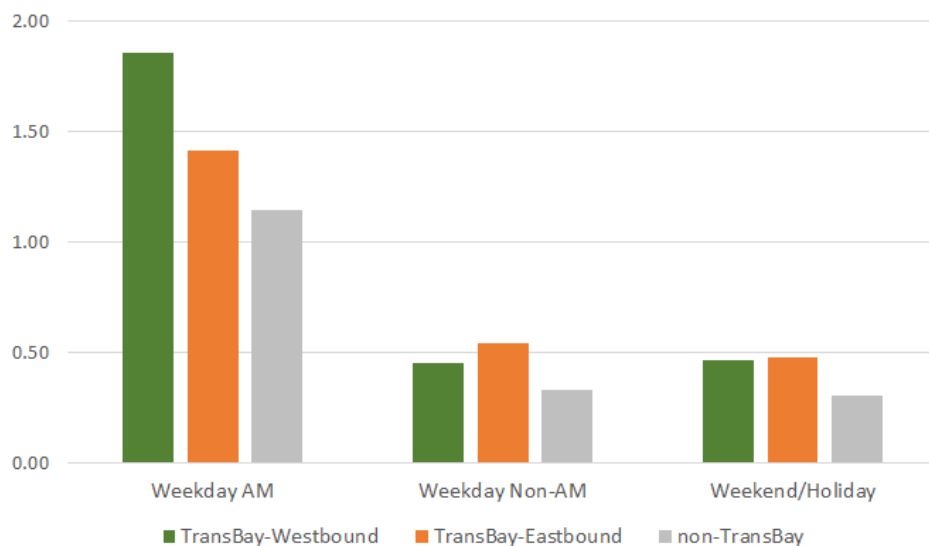
Figure X. Ratio of Share of Perks Participants' Points to Share of Perks Participants' Trips by Geography and A.M. Hour
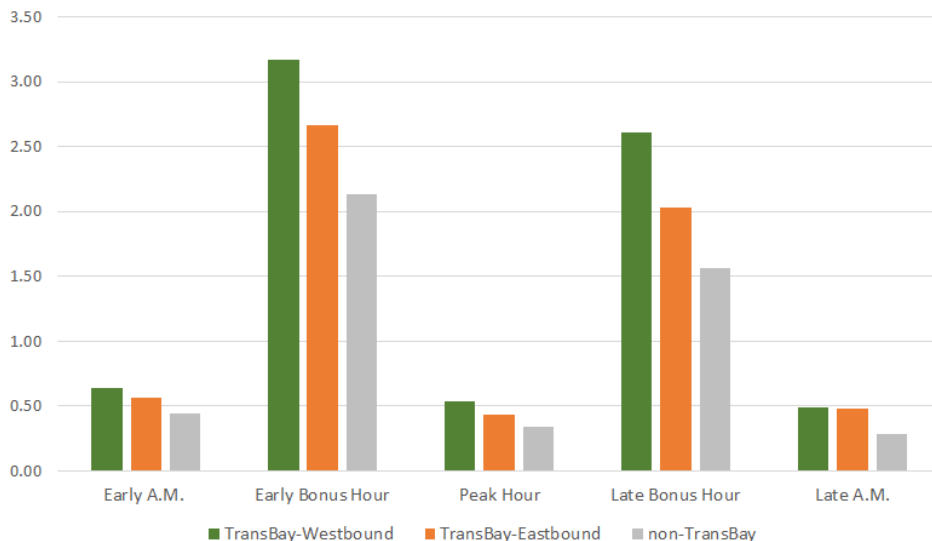
Cost per Shifted Trip

Perks cost $954,000 for a six-month pilot, including about $220,000 for the cash incentives. Since Perks shifted about 180 trips out of the Transbay A.M. peak hour on an average weekday, and about 120 weekdays occurred during the pilot period, the cost of each shifted trip was roughly $10.00 in cash incentives. If Fridays are excluded from this calculation (Fridays generally are uncongested), the cost increases to $13.00.

Taking into account the full program costs, the cost per shifted trip was about $44 ($954,000 divided by 120 weekdays times 180 trip per weekday). However, some of the pilot costs were one-time startup costs, and should not be included in the calculation. To run as an ongoing program, it is estimated that Perks would cost about $1.1 million per year (including incentives, software license (monthly fee), staff time, customer service, and periodic program improvements), assuming ongoing enrollment of 18,000 people. This translates into an estimating ongoing cost of about $23 per shifted Transbay trip for an average weekday. A typical BART one-way Transbay fare, by comparison, is around $4.50.

CHAPTER SEVEN

PROGRAM PERCEPTIONS

KEY TOPICS
- Satisfaction with the Perks Program
- Satisfaction with BART
- Customer Service Inquiries

This chapter describes participant and non-participant perceptions of BART, the Perks program, and crowding, and discusses how these perceptions may have changed during the duration of the program.

Satisfaction with the Perks Program

Participants were asked about their satisfaction with the Perks program overall, and about their satisfaction with specific aspects of the program. Table 20 illustrates that satisfaction rose over the course of the program. About 68% of participants were very or somewhat satisfied in December 2016, and this rose to 78% by the time the second-round survey was completed in February 2017.

Table 20. Perception of BART Perks Program

	PARTICIPANT ROUND 1	PARTICIPANT ROUND 2
VERY SATISFIED	26.6%	34.4%
SOMEWHAT SATISFIED	41.3%	43.9%
NEUTRAL	24.4%	15.5%
SOMEWHAT DISSATISFIED	5.9%	4.9%
VERY DISSATISFIED	1.7%	1.3%

Participants were also asked about their satisfaction with various components of the program, including the ability to earn rewards for travelling outside the morning rush, ability to earn rewards for each trip made, the amount of rewards offered, the Spin-to-Win game, the use of PayPal for monthly payouts, the autoplay feature, and the Perks website. Among these, participants were most satisfied with the overall nature of the program, as evidenced by the high levels of satisfaction with both the trip-based and mileage-based schemes, as well as with definitions of the bonus hours. Participants were least satisfied with the level of rewards offered and the Spin-to-Win game, with fewer than 50% of respondents indicating these as "excellent" or "good."

Figure Y. Perks Program Features by Participant "Excellent" or "Good" Rating
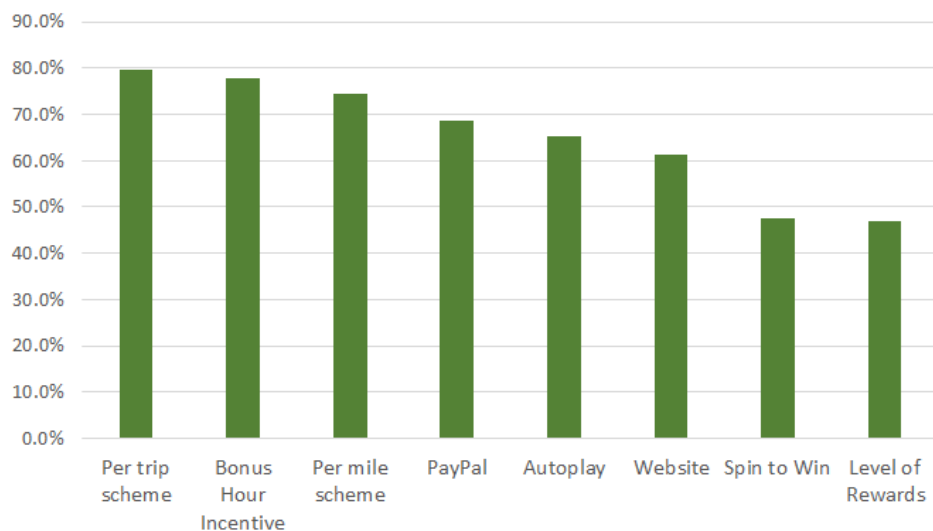
Satisfaction with BART

One of the goals of the Perks program was to improve participant satisfaction with BART overall. Because there was no Perks control group, it is not possible to say definitively how participation in Perks affected satisfaction independently of other factors. Instead, Table 18 compares Perks participant satisfaction with BART to program non-participants and all BART riders, and shows Perks participants to be the least satisfied of these groups, despite their overall relatively high satisfaction with the Perks program itself.

Table 21. Satisfaction with BART

	PARTICIPANT ROUND 1	NON-PARTICIPANT	ALL BART RIDERS
VERY SATISFIED	12.6%	18.5%	24%
SOMEWHAT SATISFIED	46.7%	50.6%	45%
NEUTRAL	18.6%	12.3%	17%
SOMEWHAT DISSATISFIED	16.2%	13.1%	11%
VERY DISSATISFIED	5.9%	5.5%	3%

Their dissatisfaction with BART is probably unrelated to their experience with the Perks program, but rather to differences in how they use BART. BART's general Customer Satisfaction Survey indicates that crowding is one of the top factors that influences customer's overall satisfaction. In addition, Perks participants reported experiencing worse crowding than do BART riders as a whole as evidenced by their lower average ratings for availability of standing room and availability of seats (Table 22). If participation in Perks improved customer satisfaction, it was not enough to offset the negative effect of experiencing very crowded conditions.

Table 22. Perks Participant Satisfaction Compared to all BART Riders

	PERKS PARTICIPANTS	ALL BART RIDERS WHO USE SMART CARDS
SATISFACTION WITH PERKS PROGRAM (% VERY OR SOMEWHAT SATISFIED)	69%	N/A
SATISFACTION WITH BART OVERALL (% VERY OR SOMEWHAT SATISFIED)	59%	67%
RATING FOR AVAILABILITY OF STANDING ROOM ON BART (1-7 SCALE, 7 IS BEST)	3.93	4.27
RATING FOR AVAILABILITY OF SEATS ON BART (1-7 SCALE, 7 IS BEST)	3.18	3.66

While Perks may not have completely offset negative perceptions of BART, Figure Z shows that slightly more participants gave higher ratings on the availability of standing room in the second-round survey as compared to in the first-round survey. In a similar analysis of responses to how frequently participants have to stand, the second-round survey showed that there was also a slight increase in the share of participants who responded that they were not standing on trains as frequently (this chart can be found in Appendix B).

Figure Z. Survey Responses: Availability of Standing Room
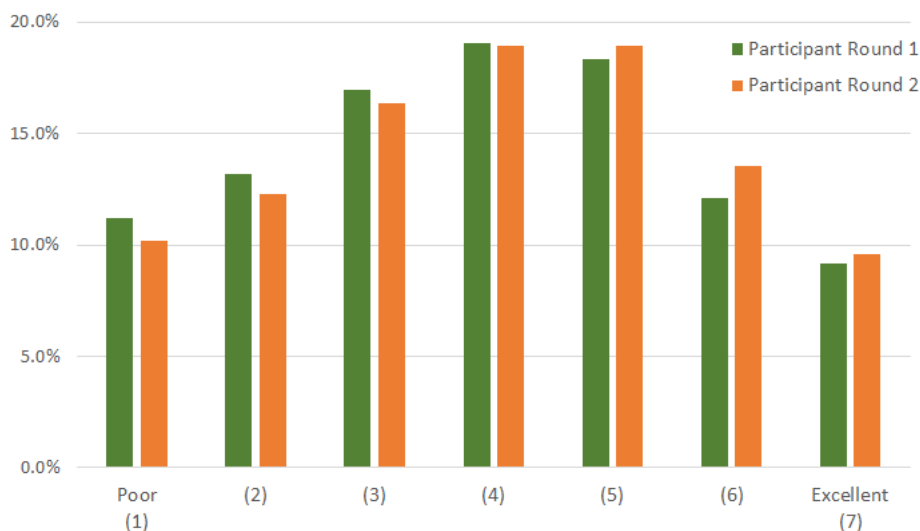
Open-ended Feedback

Perks participants provided more than 6,000 open-ended comments across the two surveys. These comments were classified by type (see Appendix E). The following major areas of feedback emerged:

DIFFERENT OR EXPANDED WAYS TO EARN POINTS (1800+ COMMENTS)

Participants wanted expanded opportunities to earn points, especially longer bonus hours and evening bonus hours. Participants didn't understand why they wouldn't be rewarded for travelling very early or late. Examples:

- "Add additional windows of time where you can earn more points."
- "Allow riders to accrue points if they travel before 6:30 am."

DIFFERENT PAYOUT OPTIONS (1,200+ COMMENTS)

Participants wanted different ways of receiving rewards besides PayPal. Most participants mentioned wanting free rides on BART or value back on their Clipper cards. Examples:

- "I think it is important to have an alternative way to receive the Bart Perks money besides through PayPal. I do not have an account and don't wish to open one."
- "BART Perks should add credit to clipper card instead of PayPal account."
- "I'd love to see points directly translated to free rides. Even if it's free weekend round trips only. Similar to how for airline frequent flyer programs you can cash in your miles for tickets."

INCREASE/IMPROVE REWARDS (1,100+ COMMENTS)

Participants wanted higher levels of rewards, or felt rewards were too low. Examples:

- "It's nice, but not quite lucrative enough to get me there earlier in the mornings."
- "Better and more frequent awards. Enrolled for a few months and only won $3 despite having platinum status many weeks."
- "Rewards should be greater. What am I going to do with $1? You can't ride anywhere with that."

GENERAL POSITIVE COMMENTS (600+ COMMENTS)

Participants thanked BART for the program and said they liked it. Examples:

- "It's very easy to sign up, and start earning points. Taking the train earlier affords me the opportunity to walk a few stops from Embarcadero to my job near Civic Center. I have enjoyed the new routine."
- "What's not to like; it's free and easy to participate and gives benefits."
- "Being rewarded for something I must do to get to work every day is greatly appreciated. Nothing more is needed :)"

DIDN'T LIKE SPIN-TO-WIN/AUTOPLAY COMPONENT (400+ COMMENTS)

Participants didn't like the uncertainty of the autoplay (automatic weekly entry of user's points in game), and the fact that the default autoplay setting could cause them to lose all their points. Examples:

- "Defaulting everyone into the autoplay mode is nasty, because it feels like using up their points to play a gambling game without their knowledge."
- "Get rid of autoplay feature. It is deceptive and I had no idea why I was losing points every week."

Customer Service Inquiries

Over the course of the pilot program, BART received about 730 customer service inquiries, or an average of 24 per week. Inquiries were classified into the following categories:

- 75% Payments (e.g., complications with receiving payment through PayPal)
- 12% Technical issues with accounts
- 8% Program rules and settings
- 5% General feedback

Customer Topic: Inquiries Regarding Payments

Approximate Percentage of Total Inquiries: 75%

To receive payment, participants needed to have an active PayPal account that used the same email address as their BART Perks account. From the start of the program, participants had questions about entering their PayPal information. These questions increased as payments began, and Customer Service frequently needed to provide instructions for linking additional email addresses to an existing PayPal account. Many of these inquiries were prompted by the email a participant automatically receives once a cash reward is won, which was often sent weeks before payments were transferred. Although the Urban Engines-generated email provides correct details about the payment timing, many participants did not read these emails through and contacted Customer Service with questions about why payments weren't showing up in their PayPal accounts. Specific points of confusion included PayPal payments being made on a monthly basis, payments posting approximately mid-month for all earnings for the prior month, and Perks/PayPal accounts needing to be linked.

Some participant payments were not able to be completed for technical reasons including unlinked or non-existent PayPal accounts, invalid names for payments, and individual account errors such as a PayPal account not being able to accept payments. In some cases, Customer Service would assist with the resolution by providing additional guidance on name changing or linking accounts; however, many of these cases required referring the participant to the PayPal Customer Support line.

Customer Topic: Technical Issues with Accounts

Approximate Percentage of Total Inquiries: 12%

A number of participants encountered complications completing the registration process due to a technical failure in verifying either their email address or their Clipper card account. Inquiries were commonly received from participants who reported they did not receive an email to enable them to verify their email addresses. Another set of participants saw an error validating their Clipper card numbers. Many of these participants had Clipper cards that were not currently being used. Resolution required Urban Engines to re-submit the card verification request and inform participants to use the Clipper card in the near future to gather new activity data. Additionally, a number of participants wanted to register multiple Clipper cards for the program and required clarification that each Perks account could be associated with only one Clipper card number.

Other technical issues encountered included unreceived points, password reset requests, and login issues. Occasionally participants would note that points for certain trips were not awarded; however, these were often (if not always) the result of delayed travel data updates to the Perks website.

Participation in Perks required entering a full name for payment purposes, and this created some initial confusion, and generated payment-related problems that persisted until the end of the program. It also caused concern about privacy and security of accounts for some users. Initially, there was one field for a participant to enter the name to be used for payment purposes; however, the field was called 'screen name', and many participants entered a false name of their choosing. BART issued an email to this group who was not eligible for payment because of an invalid name entry and received responses expressing privacy concerns about entering full names into the program. Participants understood 'screen name' to mean that the name entered would be visible throughout the program or Internet searchable, and they were reluctant to update their profile details. This issue was resolved by an update by Urban Engines to create separate "screen name" and "participant name" fields.

Customer Topic: Questions about Program Rules and Settings

Approximate Percentage of Total Inquiries: 8%

This category initially constituted the largest percentage of customer inquiries, but steadily tapered to a small percentage by the latter half of the program. Participants contacted Customer Service for clarification of program rules such as how to qualify for Bonus Hour trips and earning points. Additional guidance was required to inform some participants that the time for a trip is based on the Clipper card tag rather than on the train time.

Once riders started earning points, many did not understand the Spin-to-Win game and how its prizes were awarded. Specifically, two game designs confused several participants: the split-prize tiles and the game piece dropping down to the bottom of the board. Inquiries were received asking why a cash prize had not been awarded when landing on a split-prize tile and why the game piece was not advancing.

Another group of participants was frustrated by the program's default to autoplay setting. Although the setting is disclosed in the FAQs, upon finding accrued points being autoplayed by the system, participants were frustrated and requested reimbursement of the "lost" points. In some cases, participants expressed anger from having lost points and suggested BART was committing fraud. In other instances, participants believed their accounts had been hacked and expressed concern about the security of their accounts.

Customer Topic: General Feedback

Approximate Percentage of Total Inquiries: 5%

The general feedback submitted through customer service included praise, criticism, and suggestions for improvement to the Perks program. Overall, aside from addressing technical issues for payment, feedback was positive with many participants complimenting the program. Several participants had criticism regarding the use of PayPal for transferring rewards. Other feedback was received from participants already beginning their morning commute earlier than the program bonus hours. These participants often suggested extending the hours, so their early morning trips would qualify.

CHAPTER EIGHT

SUMMARY AND RECOMMENDATIONS

KEY TOPICS

- Findings
- Recommendations for Future Programs

This chapter summarizes findings from the prior chapters, and then provides recommendations for future programs.

Key Findings

Chapter 2: Enrollment & Employer Outreach

Most of Perks' enrollment resulted from distributing flyers in the Embarcadero and Montgomery stations and earned media coverage. While about 15 employers signed up to become partners of the program and promote it to their employees, employer partnerships accounted for only about 3% of enrollment. Most employers were not interested in receiving technical assistance to adopt policies around workplace flexibility.

A small sample of non-participants was asked about why they didn't sign up for Perks. The biggest barrier to participation was simply that non-respondents were not aware of the program. Among those who had heard of the program, the top barrier was lack of schedule flexibility, and this lack of flexibility appeared to be a more significant factor for lower income participants.

Figure AA. Why Non-Participants Surveyed Did Not Sign Up for Perks
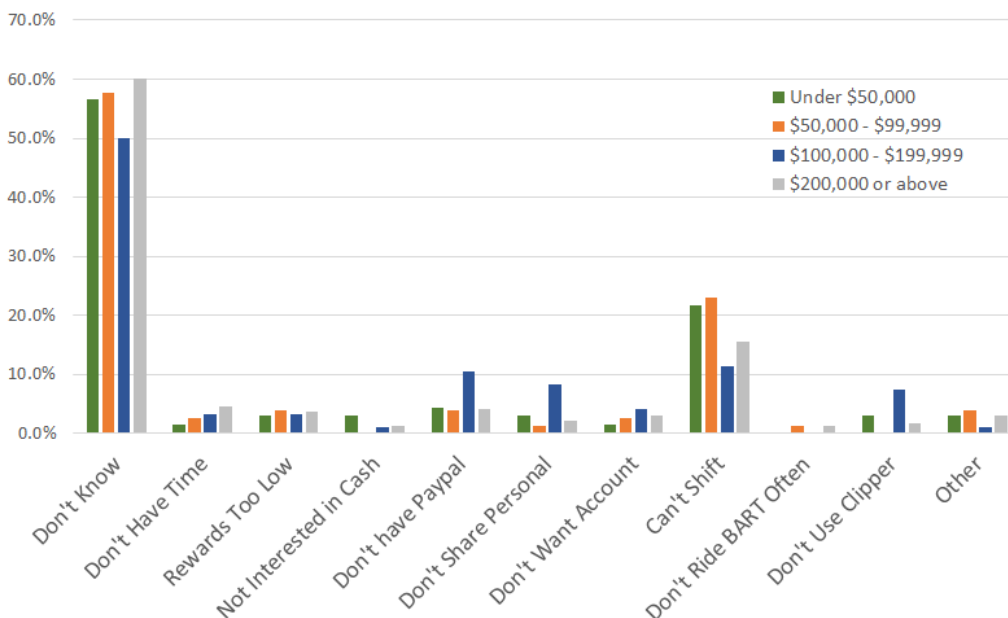
Chapter 3: Participant Characteristics

Young adults, non-Hispanic whites and Asians, high-income households, and IT and finance sector workers were over-represented among Perks participants compared to BART riders as a whole. About half of participants were regular BART commuters, and about 13% were regular peak hour, peak direction Transbay commuters. Another half of Perks participants did not regularly commute on BART.

Perks participants reported having more flexible schedules than the sampled group of non-participants. About half of Perks participants said they had the option to arrive at work before 7:30 A.M., compared to about 40% of non-participants. Personal preference was cited as the top barrier to arriving at work early.

Fewer participants (about a third) reported that they had the option to arrive at work after 9:30 A.M. "Employer would not allow it" and "nature of the work would not allow it" were listed as the top barriers.

Chapter 4: Traveler Patterns & Shifts

The Perks program demonstrated that incentives can be successfully used to shift the departure times of peak hour travelers. Program participants reduced inbound Transbay peak hour travel by 10.9%, and overall peak hour system travel by 9.6% (as shown in Table 15), slightly higher than the 7.5% reduction in peak hour trips made by participants in the Singapore Travel Smart Rewards program. Among all BART riders over the same timeframe peak travel was reduced by only 0.3%, suggesting that the reduction in peak travel among Perks participants was due to the Perks program and not background factors affecting all BART riders. Because only a small share of Perks participants regularly traveled in the peak hour before the program, the shifts that occurred during the program translated into a small number of shifted trips. On average, about 170 trips were shifted out of the A.M. inbound Transbay peak hour per weekday.

Comparing different groups of Perks participants at an aggregate level, the following factors were most clearly correlated with greater reductions in peak shift: trip distance (those who made longer distance trips shifted more); greater use of manual game play to redeem points; and being employed in sectors other than service or finance.

With the travel choice model, the project team found that among factors that appear to be causally related with choosing to travel in the bonus hours during the Perks program, the participant's behavior prior to the program was the most important. Controlling for this, the second most important factor was the nearness of the incentivized bonus hour to the participants' typical departure time (participants were most likely to travel in the bonus hour closest to their typical departure time, to minimize the amount of shift they had to make).

Other significant factors included being a long-distance commuter (longer-distance commuters shifted more, and tended to shift earlier, than other commuters), being male; working in the IT sector; and using the manual game play to redeem points rather than the autoplay.

Factors that were linked to a lower probability of travelling outside the peak hour included being a Transbay traveler (this result may be because peak period congestion is the worst for Transbay Westbound trips, so some self-selection out of the peak may already have taken place for that origin-destination market, with the remaining travelers tending to have less flexible schedules). Additionally,

those who self-reported having personal reasons, employer policies, and/or childcare commitments that prevented arriving at work after 8:30 were less likely to travel in the late bonus hour.

In the four months after the program ended, participants' peak hour travel rose back up toward pre-program levels, eliminating 65% of program benefits while retaining 35% of such benefits, indicating that Perks had some lingering effects on travel behavior. Shift persisted most among longer-distance travelers and those who had regularly used manual game play to cash out their points.

Chapter 5: Engagement and Rewards Redemption

About two-thirds of Perks participants were engaged enough in the program, and frequent-enough BART riders, to maintain a status level of silver or above (silver status required making at least two "bonus hour" trips a week over a two-week period).

Most points (82%) were redeemed through the default autoplay setting in which participants' points were automatically entered into a random rewards generator every week. Most of the remainder were redeemed through manual online game play. Less than 1% of points were redeemed through the cash buyout.

Chapter 6: Cost effectiveness

One measure of the efficiency of the Perks program is the degree to which incentive rewards were concentrated on incentivizing bonus hour travel rather than other types of travel. In keeping with the program design, by far the largest share of points (nearly 50%) were focused on rewarding Transbay Westbound weekday morning bonus hour travel, and smaller percentages were spent on rewarding other types of travel.

Although Perks incentive design focused rewards on the correct travel market, the cost of shifting individual trips was high relative to a typical BART fare. Assuming Perks were implemented as an ongoing program, it would cost about $20-$30 per shifted trip to implement, compared to about $4.50 for a typical one-way BART fare.

Chapter 7: Program perceptions

Participants were satisfied overall with the Perks program and appeared to become more satisfied as the program progressed (the percent reporting being very and somewhat satisfied rose from 68% in December 2016 to 78% in February 2017, the month the program ended). Participants satisfaction with crowding levels on BART rose during the same period, but this may or may not have had a relationship to the Perks program.

In spite of their satisfaction with Perks, participants reported low levels of satisfaction with BART compared to BART riders as a whole. This is likely because Perks participants also reported experiencing more crowded conditions than BART riders on average. If participation in Perks improved customer satisfaction, it was not enough to offset the negative effect of experiencing very crowded conditions.

Top areas of feedback received about the program included a desire for higher levels of rewards, more opportunities to earn rewards (e.g., expanded bonus hours), and better types of rewards (particularly requests for payout on Clipper rather than PayPal). Most participants did not like the uncertainty of the

autoplay (automatic weekly entry of user's points in game), and the fact that the default autoplay setting could cause them to lose all their points.

Recommendations for Future Programs

Program Design

Continue to explore incentives as a promising tool for managing peak demand. Nearly 18,000 riders signed up for Perks with minimal outreach and promotion, and participants reported high levels of satisfaction with the program. Perks' incentive structure reduced participant's peak travel by about 10%, higher than the comparable Singapore program. Fully 35% of the reduction in peak travel experienced during the program persisted in the four months after the program ended. These positive outcomes suggest that incentives should continue to be explored as a promising tool for managing peak demand.

Focus rewards on behavior change and tailor rewards based on participant characteristics. The travel patterns of participants prior to enrolling in Perks showed that many already travelled in the incentivized bonus hours before the program started. To avoid this kind of self-selection, future programs should ideally be structured to reward behavior change rather than pre-existing behavior, such as by establishing a behavior baseline (e.g. frequent peak travel) and rewarding change from that baseline. This will also help improve the program cost effectiveness.

More precisely target congested periods. The Perks program design used a single, universal definition for the peak hour, because it was felt that the design was simple and understandable to the public. In fact, the peak travel period on BART varies significantly by line, day of week, season, and in response to erratic delays; therefore, a single overall peak hour may or may not apply on any given day.

Additionally, a key goal of the program was to reduce crowding in the Transbay Tube in the peak hour in the peak direction. However, what constitutes a 'peak departure' varies based on the individual's origin station and distance from the Transbay tube. For example, someone departing from the end of a line (for example, the Pittsburg/Bay Point station) during the early bonus hour of 6:30 – 7:29 A.M. will travel about 60 minutes before reaching the Transbay tube and could reach the tube during the exact hour (7:30 – 8:29 A.M.) that the program intended travelers to avoid.

Future programs could more precisely target congested periods by tailoring the incentivized period to actual (or expected) congestion levels on BART and to the riders' origin and destination stations. Future programs should test whether riders can understand and remember incentivized periods once these complexities are added.

Incentives could also be tailored to a wider range of participant characteristics, which could allow a design that is more cost effective. For example, since Chapter 4 established that participants are most likely to make slight travel shifts, future programs could be designed to first find participants who regularly travel nearest bonus hours. Then, the project team could test if they are willing to make the slight shift to travel outside the peak for fewer bonus points than would be required to incentivize a greater change in behavior. Program marketing efforts could also be targeted at those who may be more likely to shift, such as workers in the IT sector and long-distance commuters.

Consider social equity implications. Improving social equity was not an explicit goal of the Perks program, and the cost-effectiveness of the program depended in part on the ability to target peak hour

commuters, who tend to be higher income and less ethnically diverse than BART riders as a whole. To reward a broader group of riders while retaining program cost-effectiveness, future programs would need to expand the objectives beyond peak period crowding reduction. For example, future programs could aim to encourage weekend and evening travel, reward frequent riders, or encourage travel to specific destinations. By broadening the program objectives, a larger group of riders would have the opportunity to earn rewards.

Consider using Perks as a tool to achieve multiple objectives. Perks was narrowly focused on reducing peak period crowding, but future programs could expand to encompass additional agency objectives such as encouraging travel in the evenings and weekends or rewarding frequent riders. Adding these objectives may only marginally increase the cost of running the program but could significantly expand the program benefits.

Consider the trade-off between a Sweepstakes component and participant engagement. While the team experienced legal and technical complications in including the Sweepstakes feature, we found that participants who were more engaged in the Spin-to-win game also had higher levels of shift. Future programs should consider the trade-off of Sweepstakes complications with the potential for greater engagement and shift.

Consider risk in partnering with a start-up company. When a start-up is successful, it is common for it to be acquired by a larger company. Prior to the launch of the test program, Urban Engines, the company that developed the platform for Perks, was acquired by Google. Urban Engines completed the six-month test as they were initially contracted but would not continue providing the platform as one of their services under the new ownership. As a result, BART needed to identify another vendor to develop a new platform for the next phase of work. When start-ups are not successful, there is also a risk that they could dissolve and thus can no longer provide services. Government agencies should consider these risks in partnering with a start-up company and their ability to sustain a service.

Marketing and Recruitment

Obtain sufficient peak travelers. While promising, the 10% shift experienced during Perks translated into only about 170 fewer peak hour inbound Transbay trips on an average weekday because relatively few peak hour riders were enrolled in the program. BART typically moves about 26,000 people through the inbound Transbay Tube in the peak hour. To reduce this volume by 5%, about 1,300 people, or one 10-car train worth, would need to shift. To shift these many trips, future programs would need to enroll a much higher number of peak hour Transbay travelers and/or significantly increase how much they shift.

Address employer barriers to shifting later and personal barriers to shifting earlier. Perks participant surveys revealed that work-related constraints do not appear to be a major barrier to arriving at work early but do present a barrier to arriving at work late (after 8:30 and 9:30 A.M.). Future efforts to engage employers on workplace policies could focus on encouraging employers to allow workers to arrive late. New methods of employer outreach will be needed, since Perks showed that employers are not very interested in receiving technical assistance.

Perks participants cited personal reasons, rather than work-related constraints, as the top barrier to arriving at work early. Participants were not asked to define these reasons, but they may include an unwillingness to wake up early. Future programs might explore partnerships to incentivize riders to come into work early, such as discounts at gyms near their offices or discounts on foods/beverages

purchased early in the morning. The Singapore Travel Smart Rewards program included partnerships of this kind.

User Experience

Reconsider autoplay feature. The program autoplay feature, in which participants points were entered weekly into a random rewards generator, was instrumental in allowing the program manager to ensure that the weekly budget available for incentives was not exceeded. It also benefitted participants by allowing them to redeem points automatically without logging into the website. On the other hand, autoplay caused confusion and frustration among participants who didn't realize that their points would be played automatically, potentially resulting in a total loss on any given week. To avoid this confusion in the future, the default setting could be changed to cash-buyout, or if autoplay is retained as the default setting, this should be very clearly explained to participants at the start of the program, as should how they can override this default.

Create seamless payment options. Perks participants redeemed their points via PayPal, which required them to have a PayPal account that used the same login credentials as their Perks account. This created confusion and payment delay for many participants, and many requested that other, more seamless options for payment be explored. A top request was to load incentives payments back on the user's Clipper card, or to at least provide options that do not require having a separate account and credentials to receive payment.

APPENDICES

LESSONS FROM PERKS

Evaluation Findings from the BART Perks Test Program

8:30–9:30

BONUS

12am

3

BONUS

6:30–7:30

6

SAN FRANCISCO COUNTY TRANSPORTATION AUTHORITY

BART ba

DEPARTMENT OF TRANSPORTATION · UNITED STATES OF AMERICA

JUNE, 2018
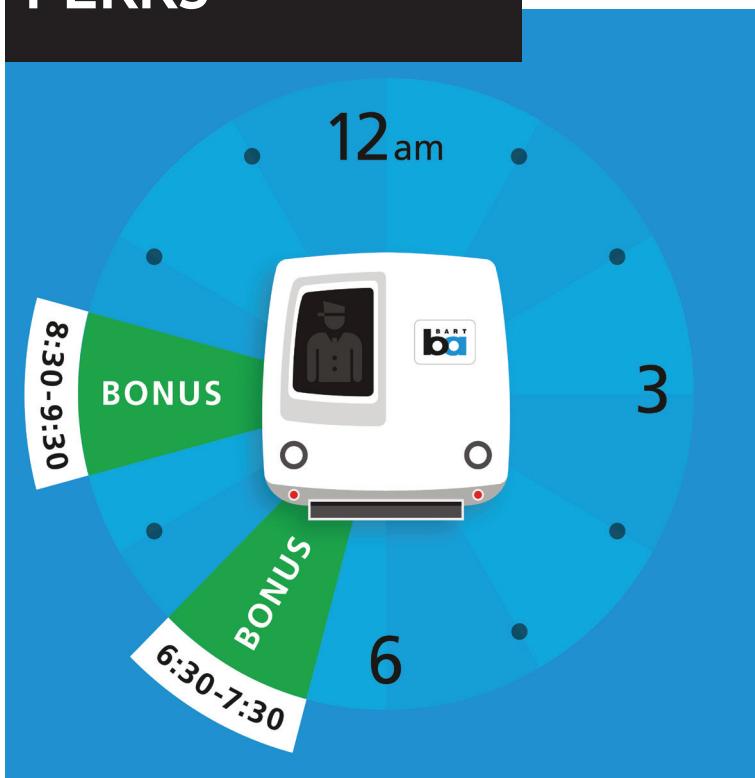
APPENDIX A: DEMOGRAPHICS

This appendix includes additional analysis completed regarding demographics of participants. Within these categories, Perks participants had demographics generally comparable to all BART riders or non-participants surveyed.

Gender

Table A- 1. Participation by Gender

	MALE	FEMALE	ANOTHER GENDER	N/A	TOTAL	N
ALL BART RIDERS	47.5%	47.9%	0.7%	3.9%	100.0%	5342
ALL CLIPPER USERS	48%	51%	1%		100.0%	n/a
PARTICIPANTS	46.4%	49.2%	0.5%	3.9%	100.0%	8432
NON-PARTICIPANTS	47.1%	49.6%	0.8%	2.4%	100.0%	709

Income Range

Table A- 2. Participation by Income

	<$25	$25-$34	$35-$39	$40-$49	$50-$59	$60-$74	$75-$99	>$100K	TOTAL	N
ALL BART RIDERS	15.7%	7.4%	3.8%	6.3%	7.9%	9.6%	12.3%	37.2%	100.0%	4892
ALL CLIPPER USERS	12%	6%	3%	6%	8%	9%	14%	43%	100.0%	n/a
PARTICIPANTS	3.1%	2.9%	1.9%	4.1%	5.2%	9.3%	15.0%	58.6%	100.0%	6781
NON-PARTICIPANTS	8.9%	6.5%	2.4%	6.6%	8.1%	8.9%	14.7%	43.9%	100.0%	619

Smartphone Availability

Table A- 3. Participation by Smartphone Availability

	YES	NO	DON'T KNOW	TOTAL	N
PARTICIPANTS	98.2%	1.5%	0.3%	100.0%	8420
NON-PARTICIPANTS	96.8%	3.1%	0.1%	100.0%	709

Note: Information on smartphone availability for all BART riders or Clipper users is not available.

Household Size

This table shows that participants are slightly more likely to come from smaller 2-person households, and less likely to come from larger households.

Table A- 4. Participation by Household Size

	1 PERSON	2 PEOPLE	3 PEOPLE	4 PEOPLE	5 PEOPLE	6+ PEOPLE	TOTAL	N
ALL BART RIDERS	18.3%	31.8%	20.8%	17.3%	6.4%	5.4%	100.0%	5202
ALL CLIPPER USERS	17.9%	34.0%	21.0%	17.1%	5.6%	4.5%	100.0%	n/a
PARTICIPANTS	18.1%	38.4%	19.0%	16.3%	5.2%	3.0%	100.0%	8432
NON-PARTICIPANTS	16.6%	35.3%	22.0%	14.7%	7.2%	4.2%	100.0%	709

APPENDIX B: PARTICIPANT / NON-PARTICIPANT SURVEY RESULTS

This appendix provides a summary of select responses from the two participant surveys compared to responses of the non-participant survey.

Table B- 1. Usual Work Arrival Time

WORK ARRIVAL TIME	PERKS PARTICIPANTS ROUND 1	PERKS PARTICIPANTS ROUND 2	NON-PARTICIPANTS
BEFORE 7:30 A.M.	13.5%	12.4%	18.6%
BETWEEN 7:30 AND 8:00 A.M.	16.8%	17.8%	13.7%
BETWEEN 8:01 AND 8:30 A.M.	15.7%	15.3%	14.0%
BETWEEN 8:31 AND 9:00 A.M.	16.4%	16.0%	14.8%
BETWEEN 9:01 AND 9:30 A.M.	19.4%	20.3%	14.4%
AFTER 9:30 A.M.	18.3%	18.2%	24.5%
N	8432	5829	709

Table B- 2. Rating of Length of Lines at Exit Gates at Your Work Station

LENGTH OF LINES	PERKS PARTICIPANTS ROUND 1	PERKS PARTICIPANTS ROUND 2	NON-PARTICIPANTS
1 - POOR	9.5%	9.4%	4.3%
2	8.3%	7.9%	6.8%
3	13.4%	12.9%	10.6%
4	18.6%	17.8%	14.6%
5	19.0%	19.2%	19.0%
6	18.0%	19.5%	22.3%
7 - EXCELLENT	13.2%	13.3%	22.4%
N	8403	5808	705

Figure B- 1. Frequency of Standing
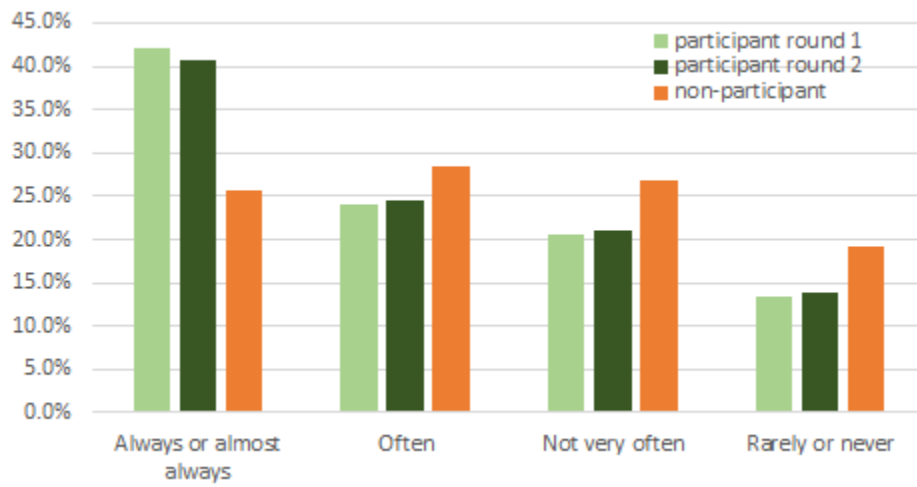
APPENDIX C: CHANGE IN PEAK HOUR TRAVEL

This appendix provides detail on the cross-sectional analysis summarized in Chapter 4.

Commute Frequency

Table C - 1 and Table C - 2 summarize the percent shift in total trips by hour from the BART Perks program by traveler commute frequency for the system overall and in the Transbay corridor, respectively. In both tables, noticeable reductions in peak hour shares are observable across all commute frequencies, with the most pronounced reductions made by infrequent commuters (0-1 times/week) and very frequent commuters (>3.5 times/week). The high reduction by infrequent commuters may be explained more by the lack of variability in their travel patterns rather than due to their participation in Perks.

Table C - 1. Shift in Total Trips by Hour by BART Commute Frequency

SHARES OF TRIPS BY PERIOD- CHANGE DURING VERSUS PRE	0 TO 1 TIMES/WEEK	1 TO 2.5 TIMES/WEEK	2.5 TO 3.5 TIMES/WEEK	OVER 3.5 TIMES/WEEK
EARLY A.M.	-12.6%	-3.4%	-6.7%	-3.2%
EARLY BONUS HOUR	-9.0%	1.1%	5.0%	7.2%
PEAK HOUR	-16.9%	-11.0%	-10.8%	-13.0%
LATE BONUS HOUR	-4.8%	5.0%	8.2%	7.8%

Table C - 2. Shift in A.M. Westbound Transbay Trips by Hour by BART Commute Frequency

SHARES OF TRIPS BY PERIOD- CHANGE DURING VERSUS PRE	0 TO 1 TIMES/WEEK	1 TO 2.5 TIMES/WEEK	2.5 TO 3.5 TIMES/WEEK	OVER 3.5 TIMES/WEEK
EARLY A.M.	-2.2%	-2.6%	-6.3%	-2.1%
EARLY BONUS HOUR	-5.4%	1.7%	3.2%	6.5%
PEAK HOUR	-20.7%	-13.1%	-10.1%	-15.0%
LATE BONUS HOUR	-0.1%	6.7%	8.1%	11.6%

Excluding infrequent commuters, Figure C - 1 illustrates the change in peak hour trips by commute frequency and shows that those who commute most frequently exhibited the greatest relative drop in the share of peak hour trips, but there is not a clear linear relationship between commute frequency and degree of shift.

Figure C - 1. Percent Reduction in Peak Hour Trips by Commute Frequency
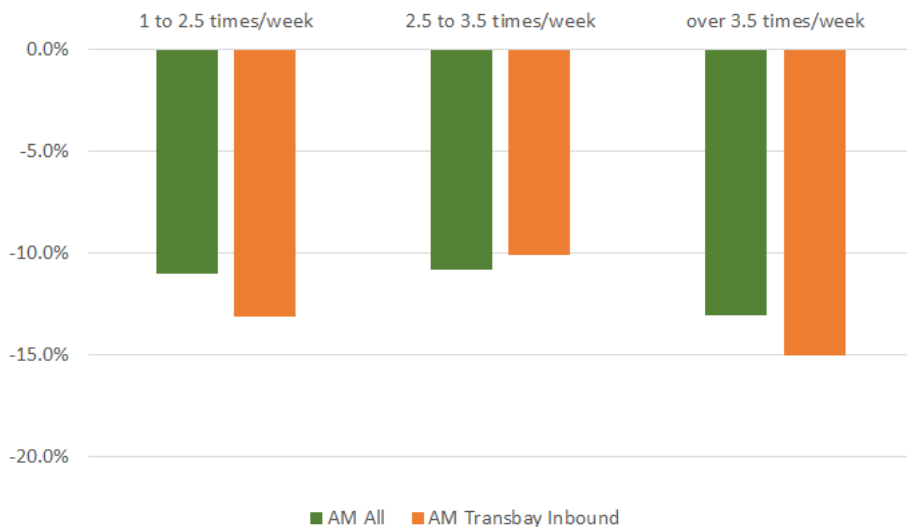
Commute Distance

Staff summarized the percent shift in total trips by hour from the BART Perks program by traveler commute distance for the system overall and in the Transbay corridor, respectively. Staff observed reductions in peak hour shares across all commute distances, with the most pronounced reductions made by longer distance commuters. Overall, it shows more shifting to the earlier bonus hour than to the late bonus hour, with this pattern especially pronounced amongst the longest distance commuters.

Figure C - 2 illustrates the change in peak hour trips by commute distance and shows that those who commute the longest distance overall showed the greatest reduction in peak hour trips. It also shows a comparable reduction in peak hour trips in the A.M. Transbay inbound travel market.

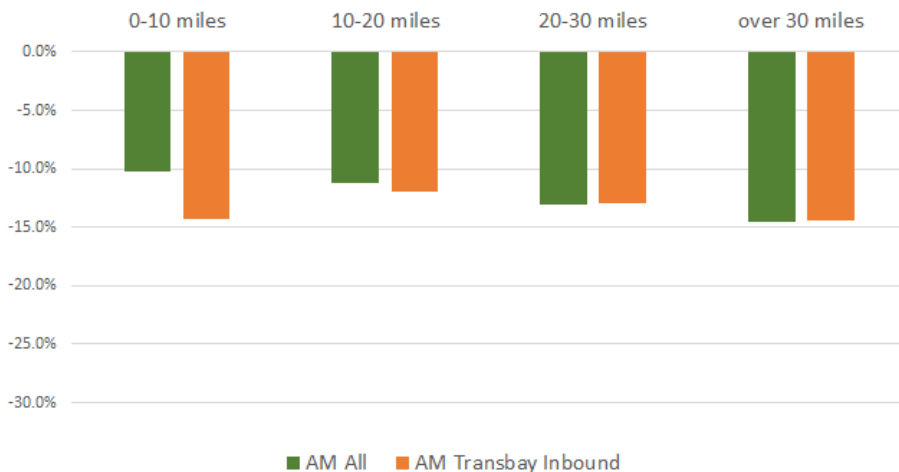Figure C - 2. Percent Reduction in Peak Hour Trips by Commute Distance

Table C - 3 shows that participants with trips greater than 30 miles long shifted at higher rates to the earlier bonus hour as well as the early morning period before then. In contrast, participants with shorter commute distances shifted to the early and late bonus hours at similar rates.

Table C - 3. Shift in Total Trips by Hour by BART Commute Distance

SHARES OF TRIPS BY PERIOD-CHANGE DURING VERSUS PRE	0-10 MILES	10-20 MILES	20-30 MILES	OVER 30 MILES	TOTAL
EARLY A.M.	-5.7%	-7.0%	-6.5%	7.4%	-3.5%
EARLY BONUS HOUR	5.9%	8.9%	9.0%	8.9%	8.5%
PEAK HOUR	-10.2%	-11.2%	-13.1%	-14.5%	-11.8%
LATE BONUS HOUR	5.1%	7.4%	7.6%	2.6%	5.8%

Table C - 4. Shift in A.M. Inbound Transbay Trips by Hour by BART Commute Distance: All Participants

SHARES OF TRIPS BY PERIOD-CHANGE DURING VERSUS PRE	0-10 MILES	10-20 MILES	20-30 MILES	OVER 30 MILES	TOTAL
EARLY A.M.	0.7%	-7.2%	-7.8%	8.6%	-2.7%
EARLY BONUS HOUR	4.2%	7.4%	8.9%	8.7%	8.0%
PEAK HOUR	-14.3%	-12.0%	-13.0%	-14.4%	-13.2%
LATE BONUS HOUR	8.6%	8.5%	8.3%	3.1%	7.4%

Age Range

There were minimal differences in percent reduction of peak hour trips across age ranges below 65. Participants age 65 and over had the greatest percent reduction, which is likely due to a small sample size of participants in that subgroup (270 participants were aged 65 or older, out of almost 18,000 total participants) or to older participants having more scheduling flexibility than others.

Figure C - 3. Percent Reduction in Peak Hour Trips by Age
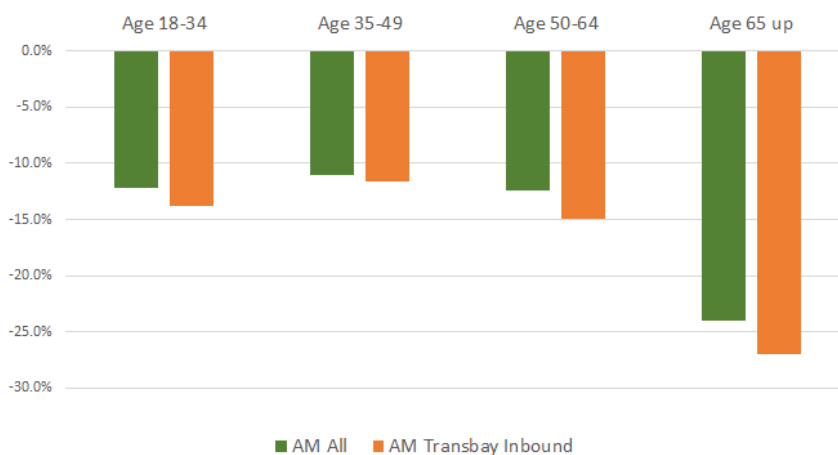
Gender

Table C - 4 summarizes the reduction in peak hour trips by gender, and illustrates that men showed slightly greater reductions in peak hour trips, although people who did not identify as either male or female had even greater reductions in peak hour travel. Similar to participants age 65 and over, there was a small sample size of participants that did not identify their gender.

Figure C - 4. Percent Reduction in Peak Hour Trips by Gender

Race/Ethnicity

Figure C - 5. Percent Reduction in Peak Hour Trips by Race/Ethnicity
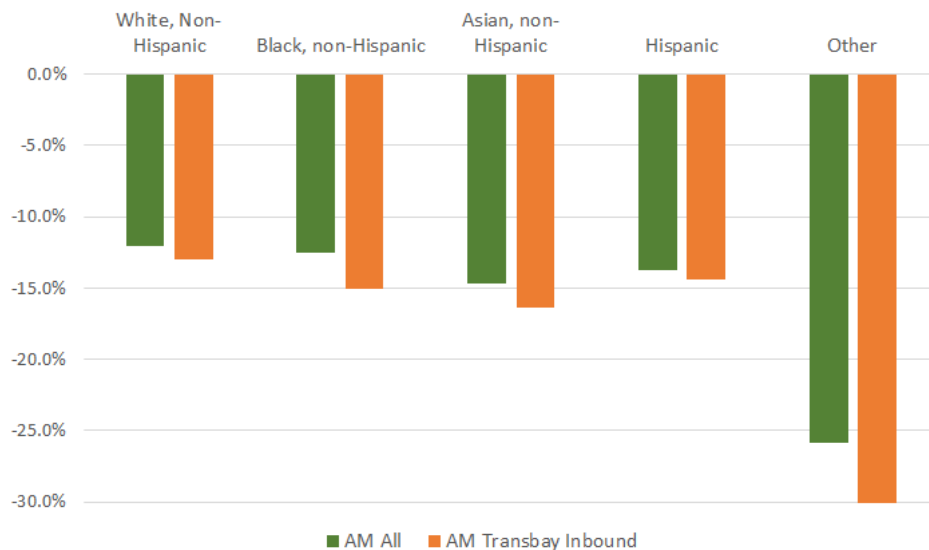
Type of Work

Participants who worked in education, government and information technology sectors shifted at the highest rates compared to participants in other types of work.

Figure C - 6. Percent Reduction in Peak Hour Trips by Industry Sector

Income Range

Figure C - 7. Percent Reduction in Peak Hour Trips by Income
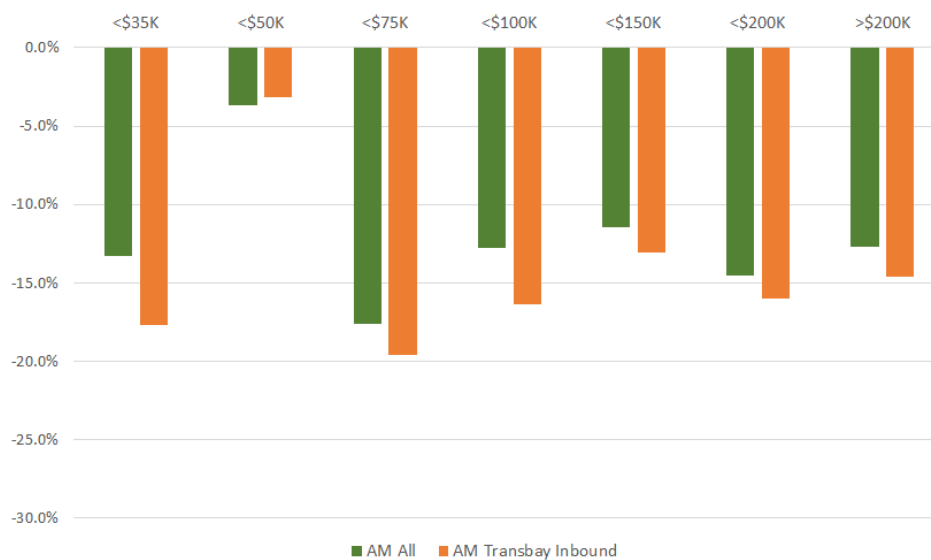
Satisfaction

Figure C - 8. Percent Reduction in Peak Hour Trips by Satisfaction with BART

Figure C - 9. Percent Reduction in Peak Hour Trips by Satisfaction with BART Perks Program
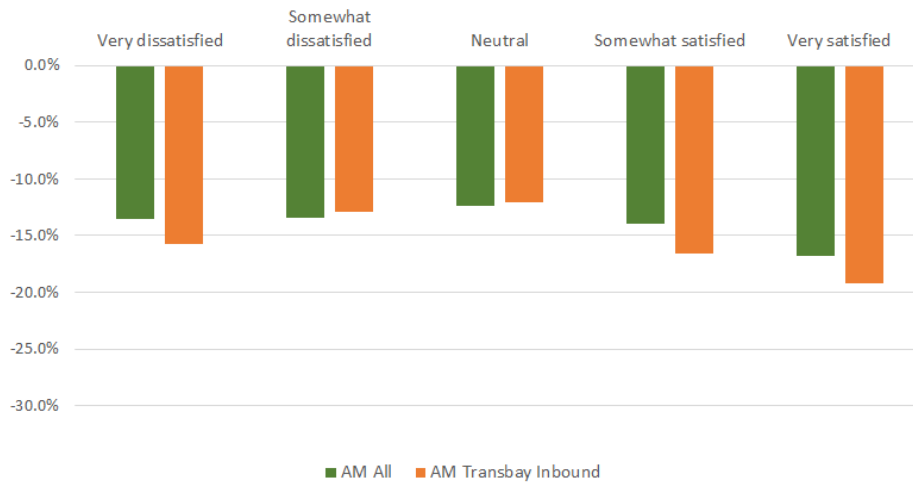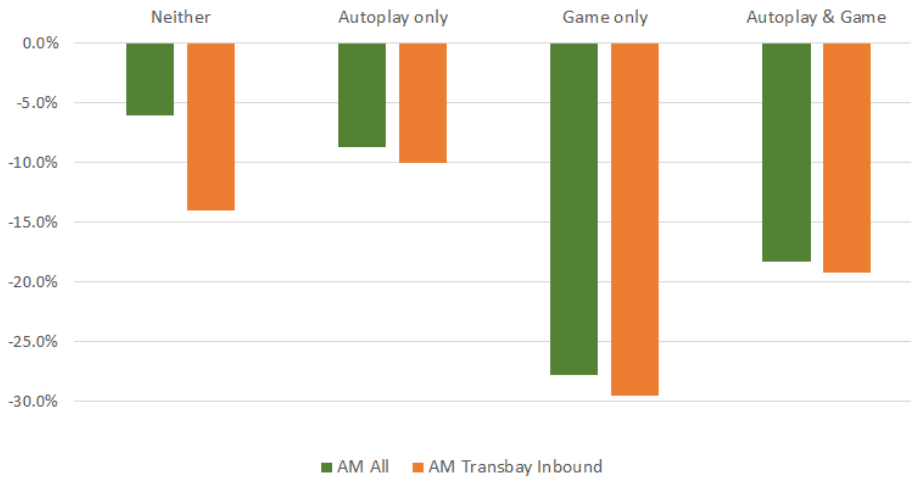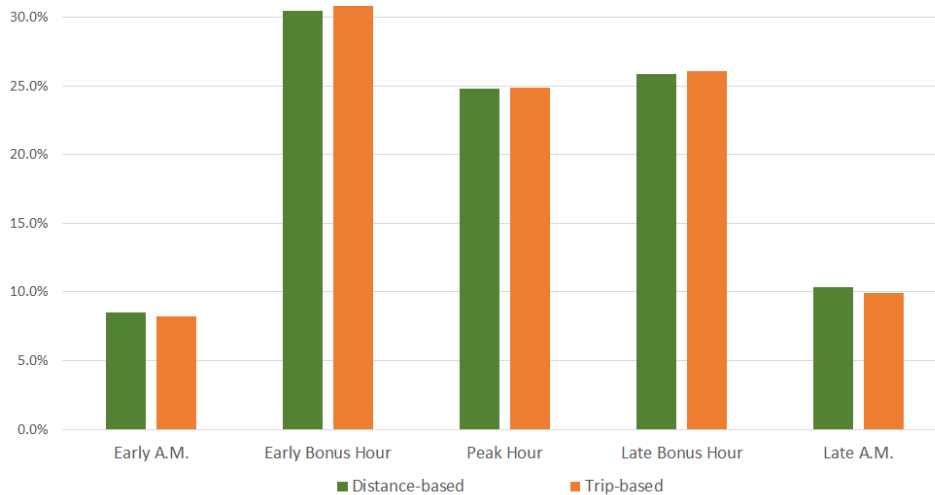
Game Engagement

Figure C - 10. Percent Reduction in Peak Hour Trips by Game Engagement

Mileage vs. Trip-based

Figure C - 11. System-wide Share of Trips by Hour and Trip Distance for Mileage-based and Trip-based Incentives

APPENDIX D: ENGAGEMENT AND REDEMPTION

Participant Engagement and Status

Status & Age Range

Table D - 1 summarizes the distribution of engagement level within each age group. While there were not significant differences in status trajectory by age group, it appears that participants aged 35-49 achieved and maintained the highest status, while participants aged 65 and over generally maintained the lowest status levels. Age 65+ had the highest share in Group E (35.3%), showing a large portion of the age group ended up in the lowest status and were not as engaged as others.

Table D - 1. Change in Status by Age

GROUP	A	B	C	D	E		
	ALWAYS 4	EARLY 4, ALWAYS 2+	EARLY 3, ALWAYS 2+	EARLY 4, DROP BELOW 2	EARLY 3, DROP BELOW 2	OTHER	N
AGE 18-34	22.5%	24.0%	15.3%	9.7%	24.4%	4.1%	4921
AGE 35-49	26.3%	26.0%	14.0%	7.6%	22.4%	3.7%	2818
AGE 50-64	28.7%	21.5%	12.4%	7.8%	25.7%	3.9%	1006
AGE 65 UP	27.7%	12.6%	11.8%	2.5%	35.3%	10.1%	119
N	2167	2143	1285	774	2134	358	8861

Status & Game Engagement

Participants were able to use points earned to win cash prizes by either using an autoplay function that was essentially a random rewards generator, or by playing a simple game. Those who used both autoplay and played the game interactively achieved and maintained the highest status levels, while those who neither used autoplay nor the game (and thus chose the cash-buyout) had the lowest status levels. Participants who played the game only had higher status than participants who autoplayed only.

Table D - 2. Change in Status by Game Engagement

GROUP	A	B	C	D	E		
	ALWAYS 4	EARLY 4, ALWAYS 2+	EARLY 3, ALWAYS 2+	EARLY 4, DROP BELOW 2	EARLY 3, DROP BELOW 2	OTHER	N
AUTOPLAY ONLY	20.4%	23.5%	15.1%	8.7%	27.8%	4.5%	6017
GAME ONLY	37.3%	21.4%	9.0%	9.3%	19.9%	3.1%	322
AUTOPLAY & GAME	34.3%	27.6%	14.4%	8.6%	13.8%	1.3%	2390

NEITHER	0.0%	2.3%	3.0%	9.1%	51.5%	34.1%	132
N	2167	2143	1285	774	2134	358	8861

Status and Satisfaction with BART and Perks

Table D - 3 summarizes status achievement and trajectory by satisfaction with BART overall. Interestingly, those participants who achieved and maintained the highest status were the least satisfied with BART, while those with the lowest status appeared to be slightly more satisfied with BART.

Table D - 3. Change in Status by Satisfaction with BART (Round 2 Survey)

GROUP	A	B	C	D	E		
	ALWAYS 4	EARLY 4, ALWAYS 2+	EARLY 3, ALWAYS 2+	EARLY 4, DROP BELOW 2	EARLY 3, DROP BELOW 2	OTHER	N
VERY DISSATISFIED	35.4%	24.0%	10.5%	6.9%	21.1%	2.1%	421
SOMEWHAT DISSATISFIED	30.7%	25.7%	13.5%	7.2%	20.4%	2.5%	942
NEUTRAL	28.0%	22.4%	15.5%	9.2%	21.1%	3.8%	1009
SOMEWHAT SATISFIED	25.6%	25.4%	14.5%	7.8%	22.6%	4.2%	2421
VERY SATISFIED	24.1%	21.9%	15.0%	9.9%	24.7%	4.4%	607

Table D - 4 reports status achievement and trajectory by satisfaction with the BART Perks program specifically. Unsurprisingly, those with the highest status levels were most satisfied with the program, while those with the lowest status were most dissatisfied.

Table D - 4. Change in Status by Satisfaction with BART Perks Program (Round 2 Survey)

GROUP	A	B	C	D	E		
	ALWAYS 4	EARLY 4, ALWAYS 2+	EARLY 3, ALWAYS 2+	EARLY 4, DROP BELOW 2	EARLY 3, DROP BELOW 2	OTHER	N
VERY DISSATISFIED	19.1%	14.7%	8.8%	10.3%	41.2%	5.9%	68
SOMEWHAT DISSATISFIED	13.3%	20.4%	17.6%	7.1%	35.7%	5.9%	255
NEUTRAL	18.8%	21.0%	14.5%	8.3%	29.8%	7.6%	805
SOMEWHAT SATISFIED	35.5%	24.3%	13.5%	8.3%	15.8%	2.6%	1876
VERY SATISFIED	26.0%	26.3%	14.4%	8.1%	22.3%	3.0%	2396

Table D - 5. Share of Points Redeemed by Source by Age

	18 TO 24	25 TO 34	35 TO 44	45 TO 54	55 TO 64	65+	N/A
AUTOPLAY	75.3%	79.3%	84.8%	85.6%	86.3%	95.2%	74.1%
GAME	24.0%	19.7%	14.2%	13.8%	13.0%	4.8%	24.2%

Reward Earnings

Rewards by Age Range

Figure D - 1 shows that, on average, people aged 45 to 64 earned the most points. The highest level of average earnings was by people who preferred not to state their age, although this group represented approximately 1% of all program participants.

Figure D - 1. Average Points Awarded by Age
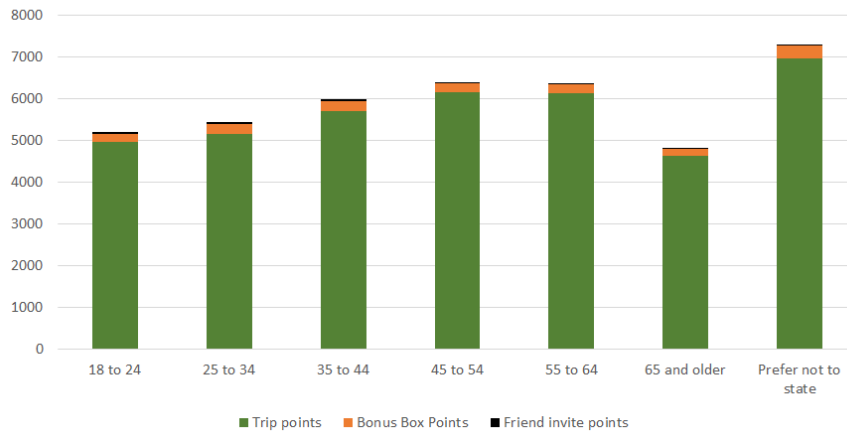
Rewards by Type of Work

There was a significant variation in the rewards earned by type of work. People in Finance and Banking had the highest levels of rewards earning, while people working in education and service industries had the lowest levels of rewards earnings, excluding those unemployed or retired. Workers in the IT and Retail industries had the highest levels of rewards from friend invites, although these comprised a very small share of the total awards even for workers in these industries.

Figure D - 2. Average Points Awarded by Type of Work
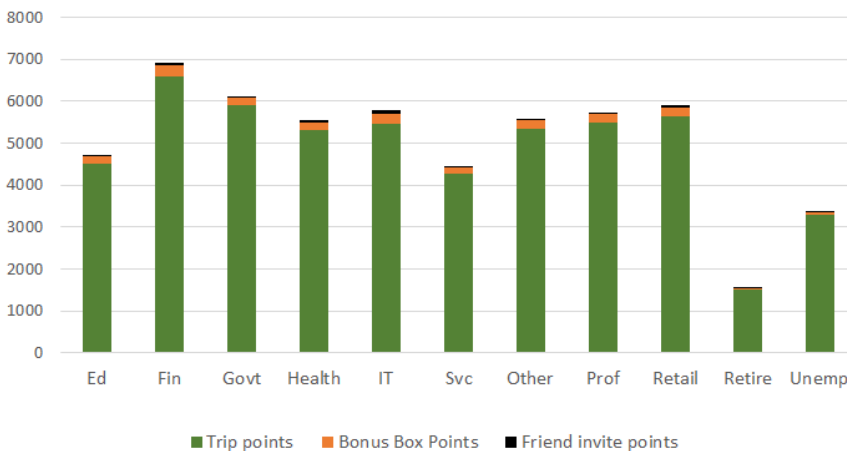
Rewards Redemption

Redemption by Type of Work

Variations in redemption were also observed by employment sector and by income, as shown in Table D - 6 and Table D - 7. Government, Education and Service sector employees redeemed points using the game at higher rates than participants in other sectors.

Table D - 6. Share of Points Redeemed by Source Type of Work

	ED	FIN	GOVT	HEALTH	IT	SVC	OTHER	PROF	RETAIL	RETIRE	UNEMP
AUTOPLAY	79.5%	84.3%	78.2%	82.5%	80.1%	78.9%	85.7%	82.9%	82.8%	89.6%	83.1%
GAME	19.5%	14.9%	20.7%	16.1%	19.3%	20.1%	13.5%	16.3%	16.2%	10.4%	15.6%

Redemption by Income Range

Very low and moderate-income participants tended to redeem points through the game at higher rates than other income levels, although the pattern there had some exceptions.

Table D - 7. Share of Points Redeemed by Income Range

	<$25K	$35K	$40K	$50K	$60K	$75K	$100K	$150K	$200K	>$200K	N/A
AUTOPLAY	76.4%	83.0%	85.7%	77.5%	78.1%	82.7%	82.7%	82.8%	83.4%	81.8%	80.2%
GAME	22.6%	16.9%	13.9%	21.3%	21.0%	16.7%	16.3%	16.4%	16.1%	17.7%	18.2%

APPENDIX E: SUMMARY OF OPEN-ENDED RESPONSES

Perks participants provided over 7,000 open-ended responses to the program. The table below provides a classification of responses by minor theme and major theme. Table E - 1 lists the major themes and Table E - 2 lists both the major and minor themes.

Table E - 1. Major Themes: Open-Ended Responses

THEME #	DESCRIPTION	NUMBER OF RESPONSES
1	Desire for different or expanded ways to earn points	1869
2	Increase or improve rewards	1120
3	Provide different payout options	1241
4	Positive comments about the program	658
5	Didn't like Spin-to-Win/Autoplay component	454
6	Other	1980

Table E - 2. Open-Ended Responses by Major and Minor Themes

	SURVEY 1	SURVEY 2	SUM	MAJOR THEME #
Desire for different bonus hours	559	333	892	1
General positive comment	329	303	632	4
Desire for evening bonus hours	356	259	615	1
Desire for rewards through Clipper	335	233	568	3
Rewards are too low	286	210	496	2
Didn't like PayPal	118	167	285	3
Didn't like the Spin-to-Win game	85	121	206	5
Desire for better rewards	275	119	394	2
Desire for miscellaneous other reward	3	95	98	3
Commented on BART service	111	90	201	6
Found program complicated/difficult to understand	142	83	225	6
Desire for alternative point calculation/earning	3	73	76	1
Desire for improved website	79	65	144	6

Desire for more payout options	120	57	177	3
Desire for more frequent rewards	69	57	126	2
General negative comment	37	56	93	1
Desire for more ways to earn points	69	53	122	1
Had issues with PayPal	113	52	165	6
Desire for off-peak fare discount	42	48	90	6
Found Spin-to-Win game complicated	21	46	67	5
Felt that there was a low probability of winning the game	81	45	126	5
Doubted the effectiveness of the program	32	40	72	6
Desire for more transparency of the award system	27	40	67	6
Desire for an app	52	39	91	6
Desire for improved game design	91	37	128	6
Desire for improved marketing	45	36	81	6
Felt that the program had no impact on their travel behavior	24	36	60	6
Preferred points per mile base earning structure (Note: only tallied for survey 2 after point earning structure had changed)	n/a	33	33	6
Desire for better tracking system	35	33	68	6
Desire for rewards for loyalty	3	29	32	6
Desire for BART parking related reward	27	28	55	2
Miscellaneous comment on communications of program	2	28	30	6
Desire for rewards by travel distance	11	27	38	1
Desire for reward levels to be linked to cost of BART	3	27	30	2
Desire for better notification of activity	91	25	116	6
Desire for reward of a free BART ride	39	25	64	3
Didn't like AutoPlay for Spin-to-Win game	32	22	54	5
Desire for different games	26	22	48	6
Desire for better instructions for program	17	22	39	6
Had strict working hours barrier	20	19	39	6
Felt that the program changed their travel behavior	8	18	26	4
Desire for reward of a discounted BART ticket	3	17	20	3
Desire for station specific bonus hours	22	16	38	6
Desire for a weekend travel bonus	2	16	18	1

Desire for better user engagement	19	15	34	6
Had problems with the system settings	23	13	36	6
Liked AutoPlay for Spin-to-Win game	10	13	23	6
Would prefer if money spent on incentives went to BART improvements instead	2	8	10	6
Liked the email notices	1	8	9	6
Liked PayPal	3	7	10	6
Desire to see program partnership with other transit agencies	1	7	8	6
Found website to be not mobile compatible	19	5	24	6
Could not register multiple Clipper cards	15	5	20	6
Desire for more points during non-peak hours	6	5	11	1
Felt that there were errors with point calculation	9	4	13	6
Desire for rewards to go to charity	7	4	11	3
Felt it was difficult to accumulate points	17	2	19	2
Desire for better customer service	9	2	11	6
Desire for reward of seating on BART	2	2	4	3
Desire for reward for taking other transportation alternatives	13	1	14	3
Desire for points to be displayed at fare gates	3	1	4	6
Desire for program to link to BARTtable rider discounts, giveaways and events program	3	1	4	6
Desire for reward if you are a Clipper Card Auto-load user	2	1	3	1
Don't use Clipper	1	1	2	6
Felt they had a better chance to win with Autoplay	3	0	3	6
Can't register discount ticket	1	0	1	6
Felt they were less likely to win with Autoplay	1	0	1	5
Desire for rewards for not using congested stations	1	0	1	1
Felt program was unfair for shorter trips	1	0	1	6