Caltrain
2014 On-Board Transit Survey

Final Report

Prepared for:
Caltrain and MTC

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Acronyms and Abbreviations

FTA	Federal Transit Administration
Project	Caltrain On-Board Survey
QA/QC	Quality Assurance/Quality Control
RTD	Route, Time Period, and Direction
SRRT	Survey Records Review Team
VSEP	Visual Survey Editor Program
MTC	Metropolitan Transportation Commission

1 Survey Overview

The 2014 Caltrain On-Board Transit Survey involved two types of on-board surveys with commuter rail riders on the Caltrain system. The project was done in cooperation with the following agencies: Caltrain, MTC and the Federal Transit Administration (FTA).

The survey consisted of two major elements. The On-to-Off element is intended to identify boarding and alighting patterns of transit riders as well as provide a basis for expanding the results of the Main Survey. The Main Survey element consisted of detailed surveys of riders conducted on-board the trains or at the stations. Overall, the contracted goals were to complete approximately 10,500 On-to-Off surveys and approximately 4,000 main surveys during weekday service. Ultimately more than 19,000 On-to-Off surveys and more than 5,000 main surveys were completed. There was an additional goal to complete 400 weekend main surveys as well. The following sections further describe the survey process.

1.1 Purpose and Objectives

The purpose of the project was to gather updated travel behavior data from transit users of the Caltrain rail system. The data collected will be used to:

- Improve regional transit ridership forecasts produced by the regional travel demand model
- Compile statistically accurate information about transit customers and how they use the transit system
- Generate reliable linked Origin-Destination data to support computerized travel demand modeling and transportation network simulation activities

1.2 Survey Development Process

The survey development process began by having representatives from Caltrain and MTC in cooperation with ETC Institute reviewing the data requirements for the Transit On-Board Survey. Since the primary objective for the project was to improve the regional transit ridership forecasts produced by MTC's travel demand model, most of the questions focused on collecting data that will support current and future transportation forecasting efforts.

After multiple iterations of input and review, the survey instrument was shared with representatives of the FTA to ensure all Federal requirements and

expectations for the design of the survey were met. All of the suggestions from the FTA staff were incorporated into the final version of the survey.

1.2.1 Required Data Collected

Required data involved questions for which a response from a respondent was required in order for the survey to be considered complete. Some of the data required to fulfill the objectives of the project are listed below:

- Type of place where the trip began
- Address where the trip began
- Mode of access to the transit system
- Boarding station
- Alighting station
- Transfers used to get to and from the station where the rider boarded/alighted
- Mode of egress from the transit system
- Destination address
- Type of place where the trip ended
- Respondent's home address
- Respondent's employment status
- Respondent's student status
- Respondent's driver's license status
- Number of operational vehicles available in the household

1.3 Tablet PC Survey

The survey instrument was designed to be administered as a face-to-face interview using tablet PCs. The tablet PCs were the preferred method as the tablet PC's have an on-screen mapping feature that allows for real-time geocoding of addresses and places based off of either address, intersection or place searches based on feedback from respondents. The respondents can then confirm the geocoded location based on the on-screen map that shows the searched address/location via a Google Maps indicator icon. In addition to using the mapping feature to collect the major survey locations geo coordinates (home address, origin address, destination address, boarding location, alighting location), the tablet PC also allows the surveyor to walk through each question with the respondent to answer any questions as well as to ensure the quality of the data collected. The respondent can also press the answers to the questions during the demographic section in order to allow for more privacy.

Respondents who did not have time to complete the survey during their trip were also given the option of providing their phone numbers for follow-up. Those who provided their phone numbers were then contacted by ETC Institute's call center within three days of the original attempt to survey the rider to gather the remaining information needed to create a complete survey record.

Bilingual interviewers were also hired to administer the surveys on tablet PCs in Spanish.

2 Sampling Procedures

This chapter describes the procedures used for carrying out the sampling of riders. Three major areas are addressed by these procedures: (1) sampling goals, (2) methods for selecting survey participants, and (3) other techniques used to manage the sampling process.

2.1 Sampling Goals

In order to ensure that the distribution of completed surveys mirrored the actual distribution of riders, ETC Institute developed a sampling plan that would ensure the completion of the On-to-Off survey with at least 10,500 of the system's riders, and at least 4,000 surveys of the full Origin-and-Destination. The On-to-Off survey was administered to Caltrain riders during all normal operating hours of the Caltrain system (4:30 am to 1:32 am) and included boarding and alighting data being collected from all stations in the Caltrain system.

2.1.1 Sampling Goals for On-to-Off Survey

Table 2-1 shows the actual number of completed On-to-Off surveys that were obtained by boarding station, time period, and direction and the percentage of the overall goal that was obtained. The program used by surveyors to collect the On-to-Off surveys was a stand-alone program (described in section 3 of this report) that saved locally to the surveyor's tablet PC and was then synced with an online database, which could then be immediately reviewed by supervisors. During peak hours, additional surveyors were added to do surveys at platforms where ridership was higher. This was done to ensure that specific stations would not be underrepresented.

Table 2-1. On-to-Off Surveys Completed by Station and Direction

On-to-Off Surveys Completed by Station

Station	Direction	Before 10:00 A.M.	10:00 A.M. - 3:00 P.M.	3:00 P.M. - 7:00 P.M.	After 7 P.M.	Direction Total	Route Total	% of Overall Goal
San Francisco	NB	0	0	0	0	0	5245	224%
	SB	2297	771	1535	642	5,245		
22nd Street	NB	5	3	4	1	13	576	202%
	SB	442	80	28	13	563		
Bayshore	NB	17	2	1	1	21	123	250%
	SB	65	28	6	3	102		
So. San Francisco	NB	17	4	17	5	43	155	179%
	SB	39	30	37	6	112		
San Bruno	NB	32	8	9	5	54	188	175%
	SB	77	30	25	2	134		
Millbrae	NB	100	16	34	6	156	896	136%
	SB	355	176	167	42	740		
Burlingame	NB	50	21	19	10	100	304	158%
	SB	91	26	80	7	204		
San Mateo	NB	262	92	124	14	492	921	247%
	SB	230	77	107	15	429		
Hayward Park	NB	10	6	36	6	58	105	147%
	SB	26	12	7	2	47		

Table 2-1. On-to-Off Surveys Completed by Station and Direction (CONTINUED)

On-to-Off Surveys Completed by Station								
Station	Direction	Before 10:00 A.M.	10:00 A.M. - 3:00 P.M.	3:00 P.M. - 7:00 P.M.	After 7 P.M.	Direction Total	Route Total	% of Overall Goal
Hillsdale	NB	178	42	195	15	430	782	152%
	SB	120	42	181	9	352		
Belmont	NB	22	30	40	9	101	164	121%
	SB	29	21	11	2	63		
San Carlos	NB	31	23	43	14	111	223	81%
	SB	60	18	29	5	112		
Redwood City	NB	560	78	243	44	925	1236	208%
	SB	72	37	183	19	311		
Menlo Park	NB	161	62	232	32	487	746	222%
	SB	102	21	134	2	259		
Palo Alto	NB	221	108	858	185	1,372	1732	139%
	SB	57	50	210	43	360		
California Avenue	NB	49	50	39	29	167	226	79%
	SB	4	18	32	5	59		
San Antonio	NB	38	53	36	18	145	185	124%
	SB	4	13	19	4	40		
Mountain View	NB	348	162	641	111	1,262	1375	158%
	SB	39	23	41	10	113		
Sunnyvale	NB	442	147	61	29	679	722	136%
	SB	21	11	10	1	43		
Lawrence	NB	56	54	72	25	207	236	150%
	SB	6	6	16	1	29		
Santa Clara	NB	115	103	89	41	348	360	198%
	SB	1	5	3	3	12		
College Park	NB	6	0	74	0	80	83	453%
	SB	2	0	1	0	3		
San Jose Diridon	NB	1032	427	461	126	2,046	2063	278%
	SB	1	0	12	4	17		
Tamien	NB	273	14	2	4	293	298	153%
	SB	0	0	1	4	5		
Capitol	NB	4	0	0	0	4	8	120%
	SB	0	0	1	3	4		
Blossom Hill	NB	17	0	0	0	17	21	126%
	SB	0	0	1	3	4		
Morgan Hill	NB	23	0	0	0	23	25	84%
	SB	0	0	1	1	2		
San Martin	NB	4	0	0	0	4	4	35%
	SB	0	0	0	1	0		
Gilroy	NB	28	0	0	0	28	28	100%
	SB	0	0	0	0	0		
Total		8241	3000	6208	1582		19030	181%

2.1.2 Sampling Goals for the Main Survey

Table 2-2 below shows the actual number of completed main surveys that were obtained by boarding station, time period, and direction and the percentage of the overall goal that was obtained.

Table 2-2. Main Weekday Surveys Completed by Station and Direction

Main Surveys Completed by Station								
Station	Direction	AM Before 10:00 A.M.	Midday 10:00 A.M. - 2:59 P.M.	PM 3:00 P.M. - 6:59 P.M.	Evening After 7 P.M.	Direction Total	Route Total	% Of Overall Goal
		Weekday Completed Records						
San Francisco	**NB**	0	0	0	0	0	1245	137%
	SB	450	157	561	77	1245		
22nd Street	**NB**	2	1	3	1	7	184	166%
	SB	112	19	34	12	177		
Bayshore	**NB**	3	1	1	0	5	31	163%
	SB	19	3	4	0	26		
So. San Francisco	**NB**	13	4	10	0	27	81	242%
	SB	9	6	36	3	54		
San Bruno	**NB**	19	3	6	3	31	93	223%
	SB	30	13	14	5	62		
Millbrae	**NB**	17	5	6	3	31	266	104%
	SB	96	50	71	18	235		
Burlingame	**NB**	15	12	8	2	37	112	150%
	SB	32	23	18	2	75		
San Mateo	**NB**	32	8	22	3	65	175	121%
	SB	61	13	29	7	110		
Hayward Park	**NB**	6	1	8	0	15	31	112%
	SB	10	3	3	0	16		
Hillsdale	**NB**	48	17	39	3	107	238	120%
	SB	51	16	56	8	131		
Belmont	**NB**	17	9	14	1	41	79	150%
	SB	18	7	11	2	38		
San Carlos	**NB**	15	8	23	4	50	110	103%
	SB	25	7	27	1	60		
Redwood City	**NB**	61	28	54	7	150	258	112%
	SB	45	17	42	4	108		
Menlo Park	**NB**	26	9	30	5	70	135	103%
	SB	21	11	28	5	65		
Palo Alto	**NB**	67	42	195	34	338	518	107%
	SB	38	21	97	24	180		
California Avenue	**NB**	23	15	26	6	70	100	90%
	SB	4	4	21	1	30		
San Antonio	**NB**	22	15	11	3	51	73	126%
	SB	9	4	8	1	22		
Mountain View	**NB**	112	31	151	21	315	366	109%
	SB	20	3	25	3	51		
Sunnyvale	**NB**	151	27	25	5	208	224	109%
	SB	4	2	8	2	16		

Table 2-2. ***Main Weekday Surveys Completed by Station and Direction (CONTINUED)***

Main Surveys Completed by Station								
Station	Direction	AM Before 10:00 A.M.	Midday 10:00 A.M. - 2:59 P.M.	PM 3:00 P.M. - 6:59 P.M.	Evening After 7 P.M.	Direction Total	Route Total	% Of Overall Goal
		Weekday Completed Records						
Lawrence	**NB**	25	13	29	5	72	80	131%
	SB	2	2	4	0	8		
Santa Clara	**NB**	45	25	32	10	112	128	182%
	SB	8	2	6	0	16		
College Park	**NB**	0	0	12	0	12	12	169%
	SB	0	0	0	0	0		
San Jose Diridon	**NB**	277	101	187	32	597	598	208%
	SB	0	0	1	0	1		
Tamien	**NB**	57	0	8	0	65	65	86%
	SB	0	0	0	0	0		
Capitol	**NB**	3	0	0	0	3	3	117%
	SB	0	0	0	0	0		
Blossom Hill	**NB**	9	0	0	0	9	9	139%
	SB	0	0	0	0	0		
Morgan Hill	**NB**	8	0	0	0	8	8	69%
	SB	0	0	0	0	0		
San Martin	**NB**	6	0	0	0	6	6	135%
	SB	0	0	0	0	0		
Gilroy	**NB**	7	0	0	0	7	7	64%
	SB	0	0	0	0	0		
Total		**2,150**	**758**	**2,004**	**323**		**5,235**	**129%**

A survey was considered “complete” if all of the required information was collected, as described in Section 1.2.1. A survey was considered “useable” if it met 100 percent of the quality assurance and quality control tests that were applied to each record. Overall, the total number of “complete and useable surveys” exceeded the contractual requirements by more than 1,000 surveys. More information on the QA/QC process can be found in Section 5.2.

2.2 Methods for Selecting Survey Participants

2.2.1 Methods for Selecting On-to-Off Survey Participants

An online survey was used that allowed an interviewer to ask rail users which station they boarded their current train and which station they would alight. This was used in place of the scanning technology ETC typically uses on buses because unlike bus users, essentially all rail users know the name of the locations they board and alight at. The shortness of this two question survey, and the high level of knowledge regarding the boarding and alighting location by the rail users, allowed for one surveyor to survey essentially every rider per train car. Two surveyors were typically deployed per train, each in their own randomly

assigned car on the train. All cars of any given train had the same probability of being selected, including the bike car.

2.2.2 Methods for Selecting Main Survey Participants

When surveyors were surveying from the platform of a station, the platform interviewers would watch the access points to the station and select every third person to interview. When surveyors were going to survey on-board, they followed the following procedures:

1. Enter into the tablet PC the number of cars on the approaching train into the station and the tablet provided a random selection of which car to board.

2. Then the tablet PC would randomly determine whether the surveyor would move to the right part of the car or the left part of the car.

3. Then the tablet PC would randomly determine the zone quadrant the surveyor should interview on that half of the car.

4. Then the tablet PC would randomly select which person to interview in that zone.

After the surveyor completed the surveyor with the rider , they would then repeat procedures 3 and 4 listed above to determine the next rider to interview.

2.3 Other Techniques Used to Manage the Sampling Process

Some of the other techniques that were used to manage the sampling of riders are described below:

- **Daily Reviews of Interviewer Performance** — During each day, the research team evaluated the performance of each interviewer. This included a review of the characteristics of the passengers who were interviewed with regard to age, gender, race, the number of reported transfers, the number of required data fields that were completed, the number of desired data fields that were completed, and the average length of each interview. These reviews are completed while the surveyor is on the train and the findings are discussed with that surveyor when they check in. This allowed the research team to provide immediate feedback to interviewers to improve their overall performance. It also allowed the research team to quickly identify and remove interviewers who were not conducting the survey properly.

- **Management of the Sample by Time of Day**—In addition to managing the total number of surveys that were completed for each station, ETC Institute also managed the number of surveys that were completed during each of the following four time periods: “AM” time period (before 10 am), “MIDDAY” time period (10 am - 2:59 pm), “PM” time period (3 pm - 6:59 pm), and “EVENING” time period (after 7 pm). This was done to ensure that the number of completed surveys for each time period would adequately support data expansion requirements for travel demand forecasting. The data expansion process is further described in Chapter 6 of this report.

Figure 2-1 to the right shows the estimated ridership by time period. Figure 2-2 shows the number of On-to-Off surveys that were collected by time period, and Figure 2-3 shows the number of main surveys that were collected by time period.

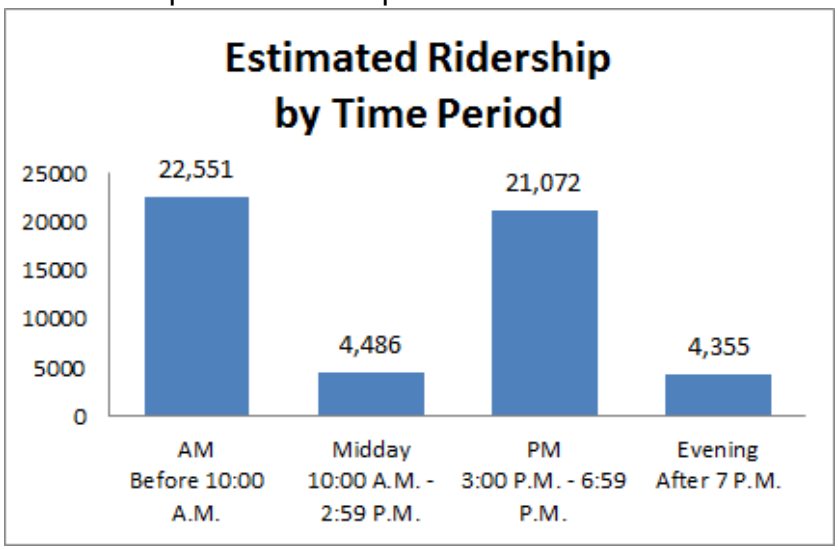

Figure 2-1. Estimated Ridership by Time Period

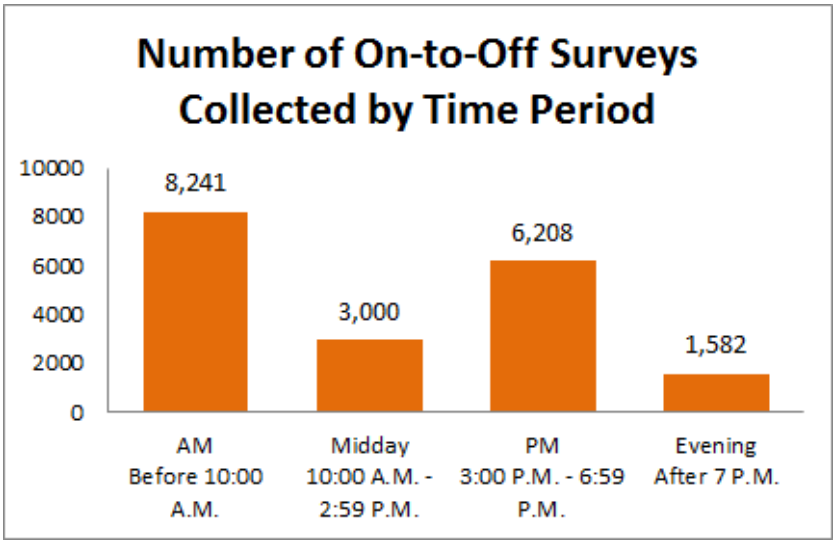

Figure 2-2. Number of On-to-Off Surveys Collected by Time Period

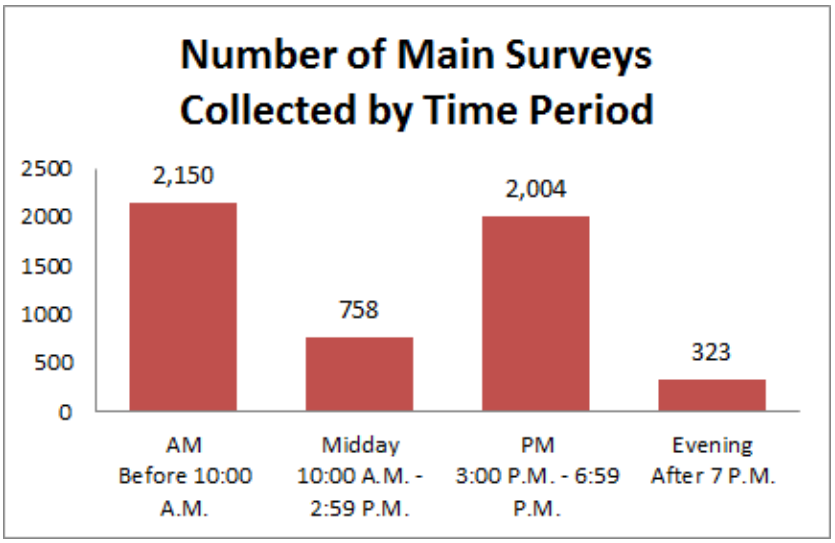

Figure 2-3. Number of Main Surveys Collected by Time Period

3 On-to-Off Administration Methodology

An On-to-Off Survey is meant to capture the ridership flow of the rail line. In-other- words, the On-to-Off Survey captures where the individual rider boarded the train and the corresponding location where the rider alighted. This allows for a more comprehensive understanding of the true ridership flow of the route, which then allows the Main Survey data to be more accurately expanded.

3.1 Recruiting and Training Surveyors

Assembling a team of high-quality surveyors was one of the most important steps in the On-to-Off administration process. For this project, ETC Institute complemented its team of supervisors with temporary surveyors who were local to the area. Surveyors recruited by the staffing agency were required to have a familiarity with the service areas, a solid work history, ability to work with the public, a professional attitude and appearance, and an ability to operate a tablet PC and become proficient with ETC Institute's On-to-Off software program.

Each surveyor was required to attend ETC Institute's training session. During this training session, surveyors were taught how to operate the tablet PCs and the On-to-Off software, execute the On-to-Off surveying procedures, and deal with various situations that could be encountered during their surveying period.

The surveyor training was conducted in a classroom style setting at the Caltrain main office. The classroom provided ETC Institute a quiet and convenient location to train its team efficiently. The training provided to all personnel who participated in the administration of the On-to-Off Survey to ensure that they were fully prepared for the project is described below:

- Overview of the on-board survey objectives
- On-to-Off equipment/software overview and training
- On-to-Off administrating procedures
- Overview of rules and procedures and a code of conduct to be followed while representing Caltrain and ETC in the field.

In addition to the training provided, the project also required all surveyors to go through a safety training session conducted by Christiane Kwok, Manager, Market Research & Development at Caltrain, so that surveyors would be as safe as possible while conducting surveys at the stations and on-board the trains. Once all training was completed, and each interviewer was approved by an ETC Institute supervisor, interviewers spent several days under the supervision of a supervisor who assessed each interviewer's ability to properly conduct surveys. Surveyors who did not demonstrate proficiency in all of the required tasks were released.

3.2 ETC Institute On-to-Off Program Procedure

For rail lines, an online survey was used that allowed an interviewer to ask riders which station they boarded their current train and which station they would alight. The supervisor would randomly assign the surveyor to one of the train cars during the run for which the surveyor was assigned. The surveyor was then able to survey everyone in that car, and only that car during the duration of the run. The shortness of this two question survey, and the high level of knowledge regarding the boarding and alighting location by the riders, allowed for one surveyor to survey essentially every rider per assigned train car.

The purpose of the On-to-Off software program is to identify ridership patterns based on an individual's boarding and alighting locations which are used to help develop the sampling plan for the Main Survey. The On-to-Off software used was developed specifically for this project by ETC programmers in order to be easy and intuitive to use, as well as adapt to any changes in Wi-Fi connectivity that could possibly occur without the loss of data. Note: Wi-Fi connectivity was not an issue during the project at any station.

The On-to-Off surveying team used the On-to-Off software with a tablet PC to record the rider's boarding station and alighting station. For each record, the custom program recorded the: date the survey took place, time the survey took place, boarding station, boarding station id, boarding station latitude, boarding station longitude, alighting station, alighting station id, alighting station latitude, and alighting station longitude.

A screen shot of the interface of the On-to-Off boarding/alighting software that was used to record the information is shown in Figure 3-1 below.

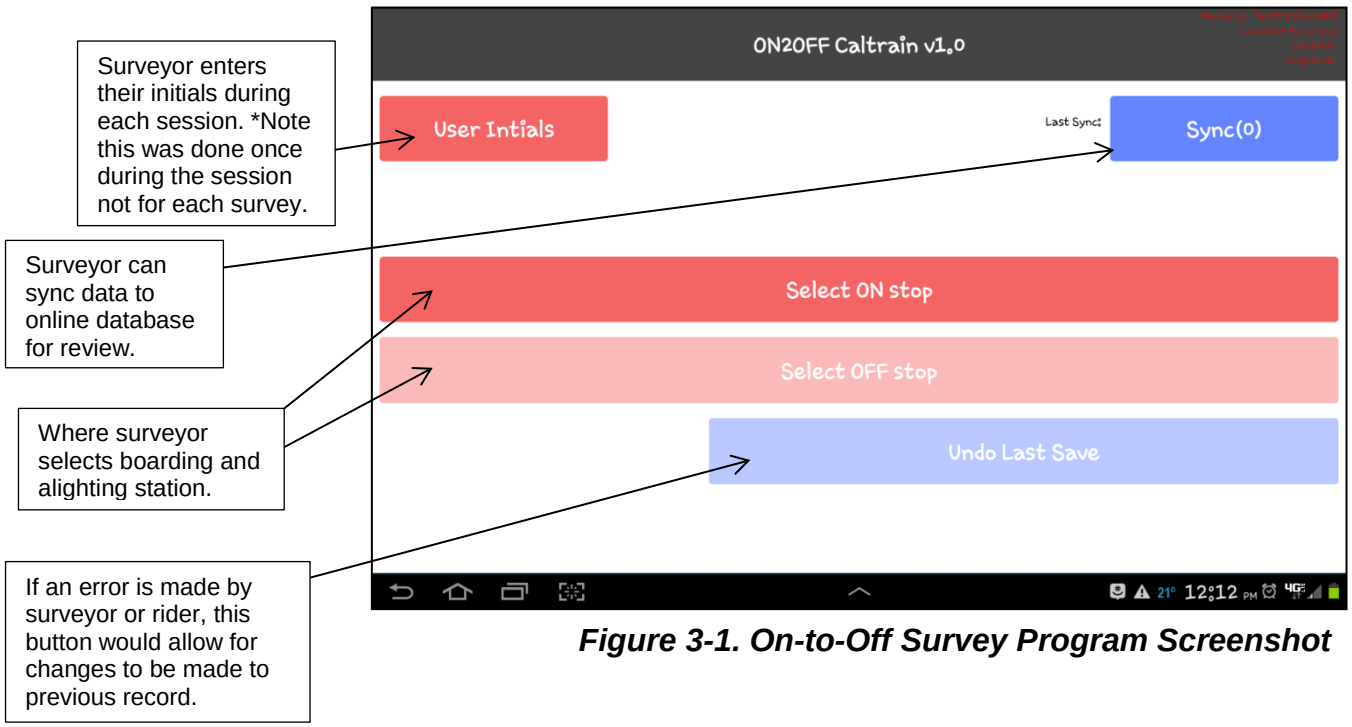

Figure 3-1. On-to-Off Survey Program Screenshot

With significantly more On-to-Off surveys collected than necessary along with good distribution among stations, the On-to-Off survey was deemed a complete success.

3.3 Organization of the Survey Team

The On-to-Off Survey was administered by teams that were directly supervised by an ETC Institute supervisor. The supervisors were responsible for reviewing the performance of each team and ensuring that all parts of the On-to-Off procedure were being followed and the sampling goals were being met. The supervisors operated from centralized locations, such as Millbrae station, so that the performance of all surveyors could be evaluated.

The program used by surveyors to collect the On-to-Off data was a stand-alone program that saved locally to the surveyor's tablet PC and was then synced with an online database, which could then be immediately reviewed by supervisors. During peak hours, additional surveyors were added to do surveys at platforms where ridership was higher. This was done to ensure that specific stations would not be underrepresented.

3.4 Timing of the On-to-Off Survey

ETC Institute conducted a pilot-test of the Caltrain Origin-Destination survey on October 7 - 9, 2014. The On-to-Off survey was administered to Caltrain riders during all normal operating hours of the Caltrain system (4:30 am to 1:32 am) and included boarding and alighting data being collected from all stations in the Caltrain system.

4 Main Survey Administration Methodology

The following sections describe the methodology used for the Main Survey. This methodology includes recruiting and training of interviewers, procedures used for the survey, and organization of the survey teams.

4.1 Recruiting and Training Interviewers

Assembling a team of high quality interviewers was one of the most important steps in the Main Survey administration process. For this project, ETC Institute also used local temporary interviewers who were recruited by a staffing agency to complement ETC Institute's experienced supervisors.

Interviewers recruited by the agency were required to have a familiarity with the Caltrain service areas. They were also required to document a solid work history, show a professional attitude and appearance, prove to supervisors the ability to interact with the public, display an ability to work a tablet PC, and show proficiency with ETC Institute's surveying program.

The surveyor training was conducted in a classroom style setting at the Caltrain main office. The classroom provided ETC Institute a quiet and convenient location to train its team efficiently. The training provided to all personnel who participated in the administration of the Main Survey to ensure that they were fully prepared for the project is described below:

- An overview of the on-board survey objectives
- How to operate the tablet PC and surveying software
- How to approach riders and sampling procedures
- Survey etiquette
- How to deal with various situations that could be encountered during a survey
- Role-playing and one-on-one tutoring with an ETC Institute supervisor
- Overview of rules and procedures and a code of conduct to be followed while representing Caltrain and ETC in the field.

In addition to the training provided, the project also required all surveyors to go through a safety training session conducted by Christiane Kwok, Manager, Market Research & Development at San Mateo County Transit District, so that surveyors would be as safe as possible while conducting surveys. Once all training was completed, and each interviewer was approved by an ETC Institute supervisor, interviewers spent several days under the supervision of a supervisor, who assessed each interviewer's ability to properly conduct surveys. Those who did not demonstrate proficiency in all of the required tasks for the Main Survey were released.

4.2 Prior to the Administration of the Survey

A pilot test was also conducted on Caltrain from Monday, Oct. 6, to Thursday, Oct. 9, of 2014. The purpose of the pilot test was to thoroughly test the equipment, the surveyors, the logistics, and the survey instrument. There were no issues and the pilot test was considered a success and ready for the main survey administration to begin.

4.3 Main Survey Administration Procedure

Prior to administration of the main survey, the results of the On-to-Off survey were reviewed to ensure the survey team fully understood the trip patterns along the rail line. Some of the specific aspects of the On-to-Off survey data that were reviewed included:

- Whether any pairs of stops along the route account for at least 10% of the one-way trips that were completed on the route during a particular time period.
    - If a high percentage of trips involved the same set of boarding and alighting pairs, ETC Institute placed additional interviewers at stations to be sure these trips were not underrepresented. Without the On-to-Off data, these trips may have been underrepresented using traditional sampling techniques.

- The percentage of boarding/alighting pairs along the route that were "short trips", which means the distance between the boarding and alighting locations was less than one mile.
    - If more than 10% of the records from the On-to-Off survey for a given route involved boarding/alighting pairs that were less than one mile apart, additional interviewers were staffed at the stations and interviewers were told to conduct the full interview even if the rider said that he/she did not have enough time to complete the survey. The interviewer would then get off the train with the rider and complete the survey after getting off the train.

Additional surveyors were also placed at high volume stations during specific times of day so that those stations would not be underrepresented.

The main survey was conducted using tablet PCs, as described in Section 1.3. Interviewers selected people for the survey in accordance with the sampling procedures described in Chapter 2 of this report.
Once an interviewer had selected a person for the survey, the interviewer:

- Approached the person who was selected and asked him or her to participate in the survey.
- If the person refused, the interviewer ended the survey.

- If the person agreed to participate, the interviewer asked the respondent if he/she had at least 5 minutes to complete the survey.
- If the person did not have at least 5 minutes on the rail line, the interviewer asked the person to provide his/her home address, boarding location, alighting location, name, and phone number. A phone interviewer from ETC Institute's call center contacted the respondent and asked him/her to provide the information by phone. This methodology ensured that people who completed "short-trips" on public transit were well represented.
- If the person had at least 5 minutes on the rail line, the interviewer began administering the survey to the respondent as a face-to-face interview using a tablet PC. After all of the questions that involved capturing geo-coordinates had been answered, the interviewer asked the respondent if he or she had 2 to 3 more minutes to complete the additional Title VI and Caltrain specific questions. If the respondent agreed, the interviewer then asked the remaining questions on the survey.

  In the event that the additional questions were not completed onboard, interviewers working in ETC Institute's call center called respondents to complete the additional questions at a later date. Since surveyors were able to board the trains with the riders, time was seldom an issue, so less than 1% of the surveys in the database required completion by ETC's call center.

4.3.1 After the Administration of the Survey

Surveys submitted with tablet PCs were reviewed by an ETC Supervisor in real-time using ETC Institute's survey program's on-line database to ensure that the following information had been provided:

- Type of place where the trip began
- Complete address where the trip began
- Mode of access to the transit system
- Boarding location
- Alighting location
- Mode of egress from the transit system
- Complete destination address
- Type of place where the trip ended
- Respondent's home address
- Respondent's employment status
- Respondent's student status
- Respondent's driver's license status
- Respondent's age
- Number of operating vehicles available in the household

- Number of occupants in the respondent's household
- Number of workers (employed persons) in the respondent's household
- Annual household income

If any item listed above was missing or incomplete, the supervisor flagged the record for reviewing. ETC Institute's Project Manager then forwarded all flagged survey records and the corresponding name and phone number to ETC Institute's call center. Interviewers working in ETC Institute's call center then called respondents who had provided their names and phone numbers to retrieve the missing information by phone.

4.4 Organization of the Main Survey Team

The Main Survey was administered by teams who were directly supervised by an ETC Institute supervisor. The supervisors were responsible for reviewing the performance of each interviewer ensuring that all parts of the surveying procedure were being followed and the sampling goals were met. The supervisors operated from centralized locations, such as Millbrae station, so that the performance of all surveyors could be evaluated.

The responsibilities for each of the positions on the Main Survey team are described below.

- The supervisor was responsible for ensuring that interviewers were properly trained, equipping interviewers to conduct surveys, scheduling interviewers, inspecting work, and reviewing the data collected.
- The interviewer was responsible for administering surveys while following surveying procedures.

4.5 Timing of the Main Survey Administration

The Main Survey was administered at the time of day that coincided with the hours that Caltrain was operational. This was to ensure that the administration of the survey began prior to peak ridership levels in the morning and continued after peak ridership levels in the evening. Although the administration of the Main Survey began as early as 4:30 am and continued to as late as 10 pm, most of the surveys were administered between the hours of 6 am and 8 pm.

The bulk of the Main Survey was administered during weekdays (Monday through Thursday) in October and November of 2014. Upon completion of this Main Survey, the analysis of results indicated some gaps regarding the targeted number of responses per station, and boarding and alighting location by time of day. To fill in the gaps, additional Main Surveys were conducted on-board in December .

Many of the processes described in the first four sections of this report were essential elements of the overall quality assurance/quality control (QA/QC) process that was implemented throughout the survey administration process. The establishment of specific sampling goals and procedures for managing the goals ensured that a representative sample was obtained. Training of interviewers and the high levels of oversight provided by team leaders and the project manager ensured that the survey was administered properly. Also, the use of the latest geocoding tools contributed to the high quality of geocoding accuracy that was achieved.

The following sections describe the QA/QC processes that were implemented after the data was collected.

5.1 Process for Identifying "Complete and Useable" Surveys

Once a survey had been classified as being *complete*, meaning all of the required data was provided, the next phase of the QA/QC process was to determine the usability of each survey record. The term *useable* was used to identify records that passed all of the QA/QC tests that were applied to a record after it was classified as being complete. (A list of *required* data that were needed to meet the ETC requirements for completeness is provided in Section 1.)

5.1.1 Pre-processing Tests

The first step in this process involved the application of a series of QA/QC tests that were conducted before the address fields were processed for geocoding. Some of the specific checks that were conducted during the pre-processing phase included:

- Checking for valid *home* street names, city names, and zip codes
- Checking for valid *origin* street names, city names, and zip codes
- Checking for valid *destination* street names, city names, and zip codes
- Checking for *origin* place names that could be matched to a pre-existing list of major destinations that had been previously geocoded
- Checking for *destination* place names that could be matched to a pre-existing list of major destinations that had been previously geocoded
- Ensuring the number of household occupants was greater than or equal to the number of employed members of the household
- Ensuring the number of household occupants was greater than or equal to number of adults in the household

- Ensuring the respondents who indicated that they were employed also reported that at least one member of their household was employed
- Ensuring that bus route transfer names were consistently spelled and coded correctly
- Ensuring that transfers to Caltrain were possible
- Ensuring that transfers from Caltrain were possible
- Ensuring the time of day a survey was completed was reasonable
- Ensuring the origin type of place code matched the type of place reported by the respondent
- Ensuring the destination type of place code matched the type of place reported by the respondent

Records that passed all the QA/QC tests described above were forwarded to ETC Institute's geocoding team. Records that did not pass all of the tests were sent to ETC Institute's Survey Records Review Team (SRRT) for further review. The SRRT members then took one of the following actions:

- They corrected the deficiency in record.
- They directed ETC Institute's Call Center to contact the respondent by phone (if a phone number was available) to retrieve additional information or to confirm whether or not their responses were correct.
- They reclassified the record as *incomplete* by assigning a value of "3" for the record's Quality Control Flag. This assignment removed the record from further consideration for the final survey database.

5.1.2 Post-processing Tests

The next step in this process involved the application of a series of QA/QC tests that were conducted after all five addresses were successfully geocoded. Once all five addresses had been geocoded, the following QA/QC checks were performed to assess the logic and other attributes of the reported trip.

- Ensuring the origin and destination addresses were not the same
- Ensuring the boarding and alighting addresses were not the same
- Ensuring that the respondent did not list the same route as both a "transfer from" and a "transfer to" during their one-way trip
- Checking to be sure the access mode was appropriate given the distance of travel from the trip origin to the place where the respondent initially accessed transit (For example, if a rider reported that he/she accessed transit by car but the distance from his/her origin to the entry point for transit was less than 0.25 mile, the record would have been flagged for further review. Similarly, if a respondent reported that he/she walked to transit but the distance from the origin to transit was more than 2 miles, the record would have been flagged to

check for a missing transfer since 2 miles or more is well beyond typical walk distance.)

- Checking to ensure that the egress mode was appropriate given the distance of travel from place where the respondent exited the transit system to his/her destination
- Reviewing the total distance the respondent traveled on transit compared to the distance the respondent traveled from the origin to the destination for his/her trip (For example, if a respondent reported traveling 6 miles on transit in order to travel 0.5 mile from the origin to the destination for his/her trip, the record would have been flagged for further review. Similarly, if a respondent reported traveling just 1 mile on transit to complete a 10-mile trip, the records would have been flagged to check for a missing transfer.)

Records that passed all the QA/QC tests described above were forwarded to ETC Institute's SRRT for a final visual review of the trip using the Visual Survey Editor Program (VSEP), which is described in the following section.

Records that were flagged for further review were forwarded to the appropriate section based on the nature of the flag.

- Issues that involved address geocoding assignments were referred to ETC Institute's geocoding team.
- Issues that needed clarification of data were directed to ETC Institute's Call Center (if a phone number was available). The Call Center then contacted the respondent to retrieve additional information as needed.
- All other issues were directed to ETC Institute's SRRT.

Records that were corrected were then forwarded to the SRRT for a final visual inspection using the VSEP. Records that were complete but could have problems with the trip logic or other attributes of the trip were reclassified as *problematic* by assigning a value of "2" as the record's Quality Control Flag. This assignment removed the record from further consideration for the final survey database.

5.1.3 Visual Inspection

The final step of the QA/QC data review process involved a visual inspection of the trip record using the VSEP. The key tasks that were conducted as part of this visual inspection included the sensibility of results for the following areas:

- Key variables of survey trips with very short distances (less than 1 mile)
- Trips with zero transfers given location of boarding and alighting locations relative to the origin and destination
- Trips that reported three or more transfers
- Drive access/egress trips given the distance traveled by car relative to the distance traveled by rail
- Drive access/egress trips with more than one transfer

- Looking at the origin-to-destination to ensure that it was appropriate for the survey route that was used for the trip

If a record passed all the visual checks listed above, the record was classified as *useable* and tagged for inclusion in the final survey database by assigning a value of “1” as the record’s Quality Control Flag.

If a record did not pass all the visual checks, the record was sent back to the SRRT for further review. If the SRRT was not able to resolve the problem that was identified, the record was reclassified as *problematic* by assigning a value of “2” as the record’s Quality Control Flag. This assignment removed the record from further consideration for the final survey database.

The Caltrain On-Board Transit Surveys were expanded, by time of day, and by the boarding and corresponding alighting rail station of the rider. The data expansion process is explained in more detail for each of the above areas later in sections: 6.2, 6.3, and 6.4.

6.1 Methodology for Calculating Unlinked Expansion Factors for Caltrain

Although daily boarding and alighting data by station for the Caltrain system was calculated and approved, data on the number of trips between stations was not available. While the number of passengers that board and alight at each stop is important, the next step is learning where a passenger boards and then correspondingly where that same passenger alights. In order to estimate actual ridership between stops along the rail system, an On-to-Off survey was administered with the goal of obtaining a sample of approximately 20% of the rail passengers. Ultimately 36% of the estimated daily ridership participated in an On-to-Off survey.

Table 6-1 below shows a portion of the results for the On-to-Off Survey that was administered during the "AM" period. Each row in the table identifies the station where passengers boarded the train. The columns in the table identify the stations where people got off the train. For illustration purposes, only boarding stations for 5 of the 29 operational weekday stations, and 4 of the 29 alighting stations are shown.

Table 6-1. Caltrain Data Expansion Table Results of On-to-Off Survey

Before 10am	ACTUAL RIDERSHIP COUNTS FROM THE ON/OFF SURVEY				
Stop Name	Total	San Francisco	22nd Street	Bayshore	So. San Francisco
San Francisco	2297		13	1	32
22nd Street	447	5		1	3
Bayshore	82	15	2		1
So. San Francisco	56	15	2		
San Bruno	109	29	2	1	

Table 6-2 shows the distribution of the data in Table 6-1 as a percentage of all boardings for the rail line. For example, 0.1% of all trips during the AM peak board at 22nd Street station and end at the San Francisco station.

Table 6-2. Red Line Data Expansion Table Distribution of On-to-Off Survey

Before 10am	PERCENTAGE DISTRIBUTION OF RIDERSHIP COUNTS FROM THE ON/OFF SURVEY				
Stop Name	Total	San Francisco	22nd Street	Bayshore	So. San Francisco
San Francisco	27.9%	0.0%	0.2%	0.0%	0.4%
22nd Street	5.4%	0.1%	0.0%	0.0%	0.0%
Bayshore	1.0%	0.2%	0.0%	0.0%	0.0%
So. San Francisco	0.7%	0.2%	0.0%	0.0%	0.0%
San Bruno	1.3%	0.4%	0.0%	0.0%	0.0%

To develop an initial estimate of the ridership flow based on the Station-on to the Station-off, the Caltrain total ridership for this time period and direction was applied to the distribution shown in Table 6-2. Table 6-3 shows the initial estimate of ridership from Station-on to Station-Off. Based on this estimate, 14 trips during the AM peak begin at 22nd Street station and end at the San Francisco station.

Table 6-3. Caltrain Data Expansion Table Initial Estimate of Ridership Flows Between Stations

Before 10am	PROJECTED RIDERSHIP BASED ON THE ON-TO-OFF SURVEY				
STATION	Total	San Francisco	22nd Street	Bayshore	So. San Francisco
San Francisco	6286	0	36	3	88
22nd Street	1223	14	0	3	8
Bayshore	224	41	5	0	3
So. San Francisco	153	41	5	0	0
San Bruno	298	79	5	3	0

Since the On-to-Off Survey did not cover 100 percent of the boardings and alightings, the distribution in Table 6-3 was compared to the actual boarding and alighting data collected for each major station. The top portion of Table 6-4 below shows the boarding and alighting counts for each major station on the route based on the calculations described in Section 6.1. The bottom portion of the table shows the difference between the projected boardings and alightings at each station (from Table 6-3) and the average calculated counts.

Table 6-4. Caltrain Data Expansion Table Actual Boardings and Alightings by Station

Before 10am					
Average Weekday Ridership	Total	San Francisco	22nd Street	Bayshore	So. San Francisco
Calculated BOARDINGS	22551	3196	1229	149	129
Adjusted ALIGHTINGS to match Boardings	22551	7335	81	30	234
DIFFERENCE FROM PROJECTED					
ACTUAL BOARDINGS	0	-3089	6	-76	-24
ADJUSTED ALIGHTINGS	0	535	-152	-9	-100

In order to develop a more accurate estimate of the ridership flows between major stations on each route, ETC Institute developed an Iterative Proportional Fitting Algorithm to balance the differences between the ridership projected from the On-to-Off Survey (shown in Table 6-3) and the average calculated counts at each station (shown in Table 6-4).

The key steps to the iterative process are described on the following page.

Step 1: Correction for the Boardings. The estimated ridership from the On-to-Off data (shown in Table 6-3) was multiplied by the ratio of the calculated boardings from Caltrain counts for each stop by the estimated boardings for each stop. For example, if the calculated boardings for Station A were 120 and the estimated boardings were 100, each cell associated with Station A would have been multiplied by 1.2 (120 / 100) to adjust the estimated boardings to calculated boardings.

Step 2: Correction for the Alightings. Once the correction in Step 1 (described above) was applied, the estimated boardings would have equaled the calculated boardings. However, the adjustment to the boardings total may have changed the alighting estimates. In order to correct the alighting estimate, the new values calculated in Step 1 were adjusted by multiplying the ratio of the calculated alightings for each stop by the estimated alightings for each stop from Step 1. For example, if the calculated alightings for Station B were 220 and the estimated alightings from Step 1 were 200, each cell associated with Station B would have been multiplied by 1.1 (220 / 200) to adjust the estimated alightings from Step 1 to calculated alightings.

The processes described in Steps 1 and Steps 2 were repeated sequentially until the difference between the calculated and estimated boardings and alightings was zero. After eight balancing iterations in this algorithm, there were no differences between the projected distribution and the calculated boardings and alightings for the "A" time period.

The final estimate for ridership flows is shown in Table 6-5. To calculate the expansion factors, the final estimate of ridership between major stations shown in Table 6-5 was divided by the actual number of main surveys that were completed by station shown in Table 6-6.

Table 6-5. Final Estimate of Ridership Flows Between Stations

Before 10am							
Stop Name	Total	DIFFERENCE FROM ACTUAL BOARDINGS	San Francisco	22nd Street	Bayshore	So. San Francisco	San Bruno
San Francisco	3196	0	0	5	1	29	16
22nd Street	1229	0	10	0	2	5	2
Bayshore	149	0	20	1	0	1	2
So. San Francisco	129	0	27	1	0	0	2
San Bruno	328	0	70	2	2	0	0

Table 6-6. Number of Completed Surveys

Before 10am					
STATION	Total	San Francisco	22nd Street	Bayshore	So. San Francisco
San Francisco	450			2	8
22nd Street	114	2			
Bayshore	22	3			
So. San Francisco	22	13			
San Bruno	49	18			1

The next step after creating the weighting factors was to give each Caltrain record in the Main Survey database a weight factor name based on time period, boarding station, and alighting station. For example, the weight factor name of "Weekday_1_2_1" indicates that the record is from the Weekday, AM PEAK (1), the rider boarded at the "22nd Street" station (2), the rider alighted at the "San Francisco" station (1). Stations were numbered sequentially from San Francisco station heading south.

Since there is so much daily variation of ridership between the 29 weekday stations during the peak time periods (AM and PM time periods), there are areas where there are completed surveys that have no estimated ridership and vice versa. In order to address the daily variation that takes place, the remaining "leftover" surveys were given a weight factor based on the ridership data that was unaccounted for and divided by those unaccounted for completed surveys.

For the other two time periods where there is substantially lower ridership levels, there were much fewer "leftover" surveys. So the few remaining surveys that did not have ridership figures associated with them in those time periods were given a weight factor of 1, and the remaining unaccounted for ridership was accounted for using "synthetic" variables. A synthetic variable/ record, also called a "dummy record", is essentially a manufactured record that has a weight factor that represents missing ridership that was not captured during the survey for a given boarding segment to alighting segment during a specific time period and direction. Since the synthetic record is manufactured, it does not contain any demographic information. The average synthetic variable regardless of time period was 5.03, and the synthetic records made up only 5.8% of the records in the final Main Survey database.

Validating the Expansion

After all the expansion factors were added into the Main Survey database, the weighting factors were summed by time period. Those summed weighting factors by time period were then compared to the overall ridership numbers by time period in order to make sure they were the same.

This section highlights selected demographic and trip-related findings from the weekday survey records. Three major categories are presented regarding the survey findings: (1) demographic characteristics, (2) travel characteristics, and (3) rider characteristics. The percentages shown in the tables of this section are based off of the expanded unlinked weight factors (UNLNKD_WGT_FCTR_BtoA in the database) created during the data expansion process, excluding the "synthetic" variables since the synthetic variables do not contain any demographic information. The database was expanded to the total daily weekday ridership which equals 52,464.

7.1 Most Common Types of Places Riders are Coming from and Going To

Figure 7-1 below and Figure 7-2 on the following page show the estimated most common types of places that riders were coming from and also going to during their one-way trips.

Figure 7-1 below indicates that over 25,000 trips per day originate from the user's home, more than18,000 trips originate from their workplace, and approximately 1,800 trips originate from a college or university.

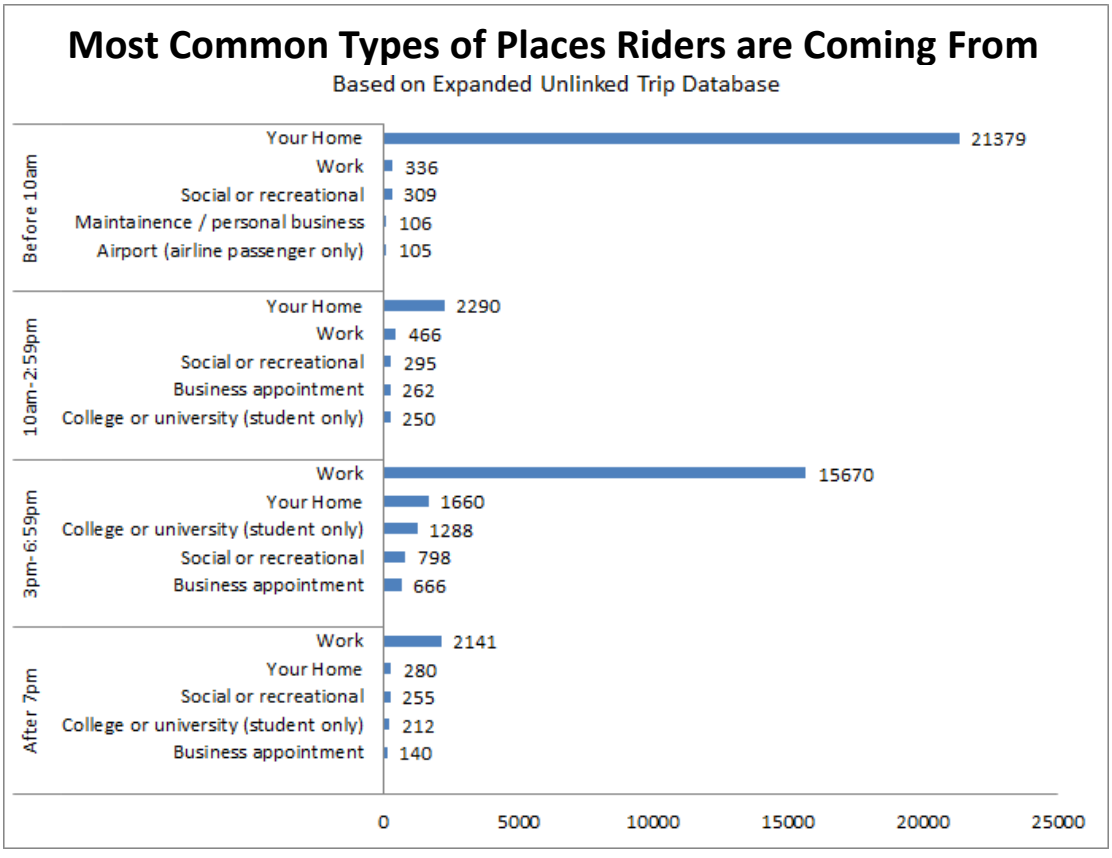

Figure 7-1. *Most common types of places riders are coming from*

Figure 7-2 below indicates that over 21,000 trips per day terminate at the user's workplace, approximately 21,000 trips terminate at their home, and approximately 2,800 trips terminate at a social or recreational visit.

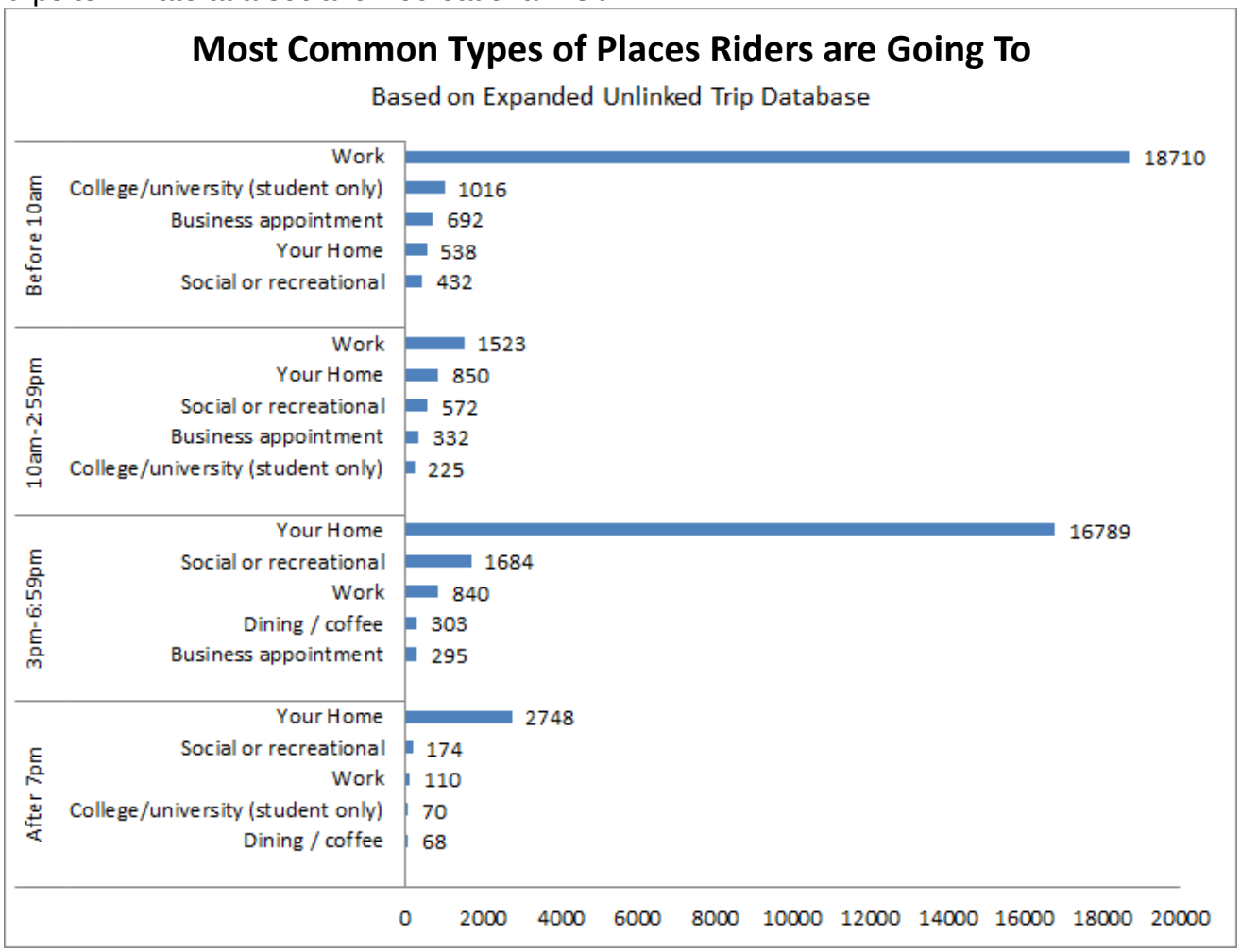

Figure 7-2. *Most common types of places riders are going to*

7.2 Travel Characteristics

7.2.1 How Passengers Access Caltrain System from Their Origin

Thirty-two percent (32%) access Caltrain by walking all the way from their origin, compared to 33% who access by some form of passenger vehicle, 17% who bicycle, and 17% who access Caltrain via a transfer from another form of public transit as shown in Table 7-1 on the following page.

Table 7-1. How Passengers Access Caltrain from Their Origin

Travel from Origin to Caltrain Station	
Bicycled	17%
Drove alone and parked	15%
Drove or rode with others and parked / carpooled	1%
Motorcycled / motorized scooter / moped	0%
Taxi	3%
Walked all the way (includes skateboard / non-motorized scooter)	32%
Was dropped off by someone	14%
Transferred from another form of public transit	17%
Grand Total	**100%**

7.2.2 How Passengers Reach Final Destination after Exiting Caltrain System

After exiting their last Caltrain station on their one-way trip, about one-third (34%) arrive at their destination by walking all the way; 29% use some form of passenger vehicle, 17% bicycle, and the remainder (20%) transfer to another form of public transit before arriving at their final destination as shown in Table 7-2.

Table 7-2. How Passengers Reach Final Destination after Exiting Caltrain

Travel From Final Caltrain Station to Final Destination	
Bicycled	17%
Drove alone	11%
Drove or rode with others / carpool	1%
Got picked up by someone	13%
Motorcycled / motorized scooter / moped	0%
Taxi	4%
Walked all the way (includes skateboard / non-motorized scooter)	34%
Transferred to another form of public transit	20%
Grand Total	**100%**

7.2.3 Transfers

The majority of all riders (68%) did not make a transfer along their one-way trip as shown in Table 7-3 below. Of those that made transfers, most (82%) transferred just one time.

Table 7-3. Total Number of Transfers

TOTAL_TRANSFERS	
0	68%
1	27%
2	5%
3	1%
Grand Total	**100%**

7.3 Other Findings

7.3.1 How Riders Paid for Train Trip

Forty-one percent (41%) of riders used a Clipper Caltrain Monthly pass in order to pay for their train trip as shown in Table 7-4 below.

Table 7-4. How Riders Paid for Train Trip

PAY_MODE	
Caltrain Employee/Law Enforcement/Exempt	0%
Clipper 8-ride Ticket	4%
Clipper Caltrain Monthly Pass	41%
Clipper e-cash	16%
Day Pass	10%
Go Pass	18%
One-way ticket	11%
Grand Total	**100%**

7.3.2 Type of Fare

The majority of all riders' (96%) fare type fit into the category of "Adult" as shown in Table 7-5 below.

Table 7-5. Type of Fare

FARE_TYPE	
Adult (Age 18 through 64)	96%
Disabled	0%
Medicare cardholder	0%
Senior (Age 65 & older)	2%
Youth (Age 17 & younger)	1%
Grand Total	**100%**

7.3.3 How Long Riders Have Used Caltrain

A quarter (25%) of riders have been using Caltrain for 4 years or more and 26% of riders have been riding for less than 6 months as shown in Table 7-6 below.

Table 7-6. How Long Riders Have Used Caltrain

HOW_LONG_USECALTRAIN	
This is my first trip	3%
Less than 6 months	23%
6 months to less than 1 year	14%
1 year to less than 2 years	18%
2 years to less than 4 years	18%
4 years or more	25%
Grand Total	**100%**

7.3.4 How Often Riders Use Caltrain

Almost half (48%) of riders use Caltrain 5 days a week as shown in Table 7-7 below.

Table 7-7. How Often Riders Use Caltrain

HOW_OFTEN_USE_CALTRA	
Less than once a month	7%
1-3 days/month	6%
1 day/week	3%
2 days/week	5%
3 days/week	10%
4 days/week	16%
5 days/week	48%
6-7 days	4%
Grand Total	**100%**

7.3.5 People in the Household

Almost three quarters of riders (72%) have three or fewer people in their household as shown in Table 7-8 below.

Table 7-8. People in the Household

PPL_IN_HH	
1	16%
2	34%
3	22%
4	18%
5	6%
6	3%
7	1%
8	0%
9	0%
10+	0%
Grand Total	**100%**

7.3.6 Employed in Household

Almost all riders (97%) have at least one employed person in their household as shown in Table 7-9 below.

Table 7-9. Employed in Household

EMPLYD_IN_HH	
1	28%
2	46%
3	16%
4	5%
5	1%
6 or more	1%
None	3%
Grand Total	**100%**

7.3.7 Mobile Phone

The majority of all riders (93%) have a mobile phone as shown in Table 7-10 below. Of those riders that have a mobile phone: 90% have phones with wifi connectivity capabilities, 86% have a data plan, and only 5% have phones with neither of these.

Table 7-10. Mobile Phone

MOBILE_PHONE	
YES	93%
NO	2%
Refused	5%
Grand Total	**100%**

7.3.8 Bank/Credit Union Accounts

Almost two-thirds (64%) of riders have a checking account as shown in Table 7-11 below.

Table 7-11. Bank/Credit Union Accounts

Bank/Credit Union Accounts (Multiple Responses Allowed)	
Checking	64%
Savings	57%
Credit Card	56%
None	5%
Refused	26%
Other	0%

7.4 Demographic Characteristics

7.4.1 Vehicle Availability

The majority of the riders (87%) have at least one vehicle available to their household as shown in Table 7-12 below.

Table 7-12. Number of Working Vehicles in Household (by percentage of transit riders surveyed)

VEH_IN_HH	
None	14%
1	33%
2	37%
3	12%
4 or more	5%
Grand Total	**100%**

7.4.2 Student Status

Thirteen percent (13%) of all riders are a student of some kind as shown in Table 7-13.

Table 7-13. Student Status

STUDENT_STATUS	
Yes	13%
No	87%
Grand Total	**100%**

7.4.3 Employed Status of Transit Rider

The majority (88%) of riders are employed as shown in Table 7-14 below.

Table 7-14. Employment Status of Respondent

EMPLOYMENT_STATUS	
Yes	88%
No	12%
Grand Total	**100%**

7.4.4 Driver's License

Most riders (88%) have a valid driver's license as shown in Table 7-15 below.

Table 7-15. Valid Driver's License

HAVE_DRIVERS_LIC	
Yes	88%
No	12%
Grand Total	**100%**

7.4.5 Age

The majority of riders are between the ages of 25 and 44 (61%) as shown in Table 7-16. *Note: For this survey, unaccompanied youth under 16 without a guardian present were not surveyed.

Table 7-16. Age of Transit Riders

AGE	
Under age 18	1%
Ages 18 to 24	11%
Ages 25 to 34	39%
Ages 35 to 44	22%
Ages 45 to 54	14%
Ages 55 to 64	8%
Ages 65 to 74	3%
Ages 75+	1%
Grand Total	**100%**

7.4.6 Income

Nearly three-quarters of riders (73%) report their annual household income is above $60,000 as shown in Table 7-17 below

Table 7-17. Total Annual Household Income

HH_INCOME	
Less than $10,000	3%
$10,000-$24,999	4%
$25,000-$34,999	4%
$35,000-$39,999	3%
$40,000-$49,999	4%
$50,000-$59,999	5%
$60,000-$74,999	10%
$75,000-$99,999	16%
$100,000-$149,999	20%
$150,000 or more	27%
I don't know	1%
Refused	3%
Grand Total	**100%**

7.4.7 Gender

Consistent with the workforce population, more men than women ride the rail as shown in Table 7-18 below.

Table 7-18. Gender of Transit Riders

RESP_GENDER	
Female	44%
Male	56%
Grand Total	**100%**

7.4.8 Race/Ethnicity

More than half of all rail riders (54%) identify as White, while another 28% identify as Asian as shown in Table 7-19 below. Fifteen percent of riders identify themselves as Hispanic or Latino.

Table 7-19. Race/Ethnicity

RACE and ETHNICITY (Multiple Responses Allowed)	
American Indian/Alaskan Native	1%
Asian	28%
Black/African American	8%
Native Hawaiian/Pacific Islander	2%
White	54%
Other	9%
Not Provided	3%

7.4.9 Transit Riders that Speak Another Language Besides English at Home

Nearly one-third of rail riders (32%) speak a language other than English at home as shown in Table 7-20.

Table 7-20. Transit Riders that Speak another Language besides English at home

LANG_OTHER_THAN_ENG	
Yes	32%
No	68%
Grand Total	**100%**