Multimodal Transportation Study: Transit Onboard Survey

Final Report
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San Francisco County Transportation Authority
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1. Executive Summary

The Multimodal Transportation Survey was a major data collection effort intended to sharpen the Authority’s travel demand forecasting capabilities, and support transit planning efforts at MUNI. The study goals were to develop a rich dataset describing the tripmaking patterns of transit riders within the city, and to integrate previously collected household survey data in order to recalibrate the San Francisco Travel Demand Forecasting Model. The Authority ensured close coordination with MUNI at each stage of the project. The final product is a database of survey results that will be used to enhance forecasting capabilities and to support numerous transit planning activities citywide.

Prior to this survey, the exact origins and destinations of MUNI passengers were largely unknown. While MUNI periodically collects line-level boarding and alighting data, there has not been a comprehensive survey of passenger trip characteristics since 1976, almost 30 years ago. Recent information on trip locations, passenger demographics, transfers, and fare payment is critical to understanding the needs of transit riders in San Francisco.

The survey database comprises more than 15,000 completed passenger surveys. This represents a passenger response rate of 28 percent, exceeding the study target of 25 percent. The database includes detailed information about the individual trips, such as origin, destination, mode of access, transfer rates, and fare payment. Also included are data on passenger attributes, such as age, employment status, and auto availability, enabling detailed demographic analysis.

The survey questionnaires were collected from adult passengers on all MUNI routes, and represent a system-wide confidence level of 95% with a margin of error of ±0.8%. In layman terms this means that, when taken as a whole, there is a 95% probability that survey responses are within 0.8% of actual value.

The dataset is already being used for current planning studies at the Authority, and will be critical for many future endeavors as well. Projects as wide-ranging as the Geary Bus Rapid Transit Study, MUNI's New Central Subway proposal to extend Third Street LRT to Chinatown, and the Folsom Street Strategic Analysis Report, are already benefiting from this data.

The data from the multimodal surveys will enable the Authority to better assess the travel patterns and needs of city residents, visitors, and workers, and will be useful for transit operators and city departments interested in better meeting transit users’ needs within the city. The data will be used for several purposes, including calibration and validation of travel demand models, analysis of demographic and access mode trends, and examination of transit system performance (e.g. opportunities to reduce trips with more than two transfers).

Organization of this Report

Chapter 2 of the final report describes the purpose and need for a comprehensive transit ridership survey. It includes discussion of the need to cover all MUNI routes, at all times of day, for a representative sample of passengers. For example, the study team made special efforts to reach out to non-English speakers by translating survey forms into Spanish and Chinese, and offered a mail-back option for passengers who had difficulty completing the survey while on the transit vehicle.
Chapter 3 describes the survey process in detail, from survey design, to the pilot test in November 2003, to the actual survey ground effort in February and March of 2004. Numerous issues arose during the survey, including bus bunching and back-door boardings that complicated survey efforts. The study team took proactive measures to ensure that the survey nonetheless generated high quality results.

Chapter 4 summarizes the analysis and findings of the survey. This section includes a demographic description of MUNI passengers, including gender, age, ethnicity, and income characteristics. It also describes aspects of the trips such as number of transfers, mode of access to MUNI, and fare payments. Comparisons to recent Census data indicate that the survey likely succeeded in its goal of capturing the true diversity of passengers aboard MUNI.

Chapter 5 details the next steps for the Authority now that the survey data has been collected and reviewed. The San Francisco Travel Demand Forecasting Model will be recalibrated to match the transit origin/destination characteristics that have been revealed. In addition the dataset is starting to be used for current planning studies at the Authority and MUNI, and will be critical for many future endeavors as well.

Key Findings

The vast majority of bus passengers (93 percent) lives in San Francisco. Only one percent of MUNI bus riders are visitors to the Bay Area. Although the majority of rail passengers live in San Francisco (86 percent), rail is a more attractive travel option for visitors than bus service, with 6 percent of rail passengers stating that they are visiting the Bay Area compared to one percent of bus passengers who identified themselves as visitors.

The majority of MUNI passengers were female (56 percent), and low-income riders were also more likely to be women. Women were also more likely to be transit-dependent than men (i.e., no auto was available for the trip).

Forty-one percent of all bus passengers had annual household earnings of less than $25,000, compared to 25 percent of rail riders. But MUNI also carries large numbers of passengers from middle- and high-income households: 11% of bus and 22% of rail passengers are from households with more than $100,000 annual income. Passengers from higher-income households are more likely to be “choice” riders.

Rail passengers are more affluent than bus passengers. 53% of rail passengers who live in San Francisco and 54% of those who live in the Bay Area reported that their household income was over $45,000 annually.

The most common form of fare payment for bus trips was Fast Pass / Senior Pass / Youth Pass (47 percent). Full fare was the next most common type of bus fare paid, at 31 percent. Tokens accounted for 5 percent of bus fares. Bus passengers paying full fare were frequently in the lower income brackets.

Eighty five percent of MUNI riders walk to their stop or station; between nine and twelve percent transfer from another line. Only a small remainder are dropped off, share a ride, or drive to the stop.
2. Purpose and Need

Prior to this survey, the exact origins and destinations of MUNI passengers were largely unknown. While MUNI regularly collects line-level boarding and alighting data, there has not been a comprehensive survey of passenger trip characteristics since 1976, almost 30 years ago. Recent information on trip locations, passenger demographics, transfers, and fare payment is critical to understanding the needs of transit riders in San Francisco.

The main effort of the Multimodal Transportation Study is a transit on-board survey of passengers on the entire MUNI system, which carries over 700,000 boardings per day. The survey also captures major transfer movements between MUNI and other local and regional transit systems.

The data from the multimodal surveys will be used for several purposes, including calibration and validation of travel demand models, analysis of demographic and market share trends, and examination of transportation system performance. It will also enable the Authority to better assess the travel patterns and needs of city residents, visitors, and workers, and will be useful for transit operators and city departments interested in better meeting transit users' needs within the City.

In addition to a transit onboard survey, the study includes augmenting a recent household travel survey collected by MTC, known as the 2000 Bay Area Travel Survey (BATS). That survey undersampled San Francisco, but additional surveys were collected by BART. The surveys collected by BART were not included in the main BATS sample, and their inclusion in this Multimodal Transportation Study alleviates the undersampling of San Francisco households that occurred in MTC's survey. This enhanced dataset goes beyond the transit survey, and improves the Authority's ability to understand characteristics of all travel modes available in San Francisco.

Ultimately, through this study the Authority seeks to improve its ability to model travel behavior, using the San Francisco County Travel Demand Forecasting Model (the San Francisco Model). A key feature of this model is its ability to accurately forecast transit trips, which is very important given the high transit mode share in San Francisco and the City’s “Transit First” policy. Completed in 1999, the San Francisco Model is based on data from the 1990 Bay Area Travel Survey (BATS), U.S. Census data, and numerous other data sources. The transit onboard survey results and enhanced household survey data will support a more detailed calibration and validation of the model.

This study did not attempt to obtain an independent estimate of the number of riders on MUNI. Rather, discovering the characteristics of the trips and the people making those trips was the primary goal. It also was not a customer satisfaction survey, although many passengers wrote their opinions about the quality of MUNI service in the margins of the survey forms, and these were provided to MUNI.
3. Survey Overview

The Authority established specific goals for the study, completed a pilot survey before embarking on the full data collection effort, and then reviewed the dataset for quality and coverage. Each of these steps is described below.

3.1. Goals

In order to create a robust data set that would be useful for the wide array of purposes identified above, the following survey goals were defined.

Comprehensive Route System

The survey design ensured that every line MUNI operates was surveyed, including all local, limited, and express routes. Weekend travel was not surveyed. Surveying was performed at all times of day, from early morning to late at night. The diurnal distribution of surveys was designed to match ridership levels throughout the day; thus more surveys were collected in the morning and evening peak periods than during the midday or late night.

All Passengers

The study team made extensive efforts to solicit the participation of a representative sample of all MUNI passengers in the survey. The form was printed in English, Spanish, and Chinese. Forms could be filled out on the vehicle, or dropped in any mailbox if more time or assistance was necessary to complete it. Prizes (MUNI Fast Passes) and one-ride token “thank you” incentives were provided to further encourage all passengers to participate.

Statistical Significance

The overall statistical goal for the survey was set at the 95% confidence level. Since some lines have much higher ridership than others, a tiered strategy was adopted which allowed 95%±5% for heavily utilized routes, and 95%±10% or 95%±20% for medium- and low-ridership routes. Using this technique, the survey needed to collect 15,000 surveys. Ultimately the study collected over 15,300 completed surveys, representing a response rate of 28%, which exceeds the original study target of 25%.

3.2. Pilot Survey

Before launching the main survey, the study team developed and tested various questions and study designs. A mock-up of the questionnaire was printed for a trial run “pilot test” to ensure that the questions were understandable and the form was easy to fill out.

Developing the Questions

The list of questions that could be asked was limited by several factors. First, the survey needed to physically fit on a form that was easy to hand out and wasn’t unwieldy for passengers. Second, too many
questions could result in lower response rates due to “survey fatigue.” Generally, the first questions on a survey form get answered the most accurately and the most frequently by respondents.

The questions were specifically designed to help calibrate the San Francisco travel model; thus information on the trip origin and destination were most important. Many questions had particular usefulness for planning studies as well. For instance, the survey included questions on fare payment, vehicle availability, transfers, and passenger demographics.

Pilot Test Procedure

The study team conducted a two-day pilot test on some of the most challenging lines that MUNI operates: the 30-Stockton, 38-Geary, 44-Silver, N-Judah, and Powell-Hyde cable car. These lines were chosen because they exhibit some of the toughest crowding, harshest language barriers, and the most unfamiliar tourist riders on the system.

The pilot test revealed several useful findings:

**Language Barriers.** The pilot test form was printed in English, Spanish, and Chinese, but the two non-English forms were folded inside the English form. Non-English speaking riders had no way of knowing that there were other languages available unless they unfolded the forms. Thus, it was more likely that the pages were left as garbage on the bus floor. The final survey featured a new design which included all three languages on the same page, including bright, consistent coloring for each language.

**Incentives.** The study team tested the effectiveness of handing out a one-ride MUNI token upon completion of the survey as a means to boost responses. The response rate for these runs was noticeably higher than the runs that did not have an incentive. As expected, longer trips and rail trips had higher response rates as well, due to the increased comfort of those trips.

**Back Door Boardings.** The survey plan expected a surveyor to stand by the front door and count passengers as they were handed (or refused) survey forms. It became apparent that at certain locations during crowded conditions, a large percentage of riders would board at the rear doors, even though this is only allowed by MUNI on “Proof of Payment” (POP) routes. The practice reduces dwell time, and many of these passengers probably use monthly passes, so it is not necessarily problematic for MUNI operations. However, it did cause trouble for surveyors trying to implement a consistent sampling plan. To address this for the final survey, a selected subset of bus trips assigned two surveyors: one for the front door to hand out surveys, and one for the rear door(s) to just count boardings. A factor was then developed to estimate back door boardings, for use when developing survey expansion factors.

Final Survey Form Design

The final survey form for bus passengers is shown in Appendix A. The rail survey was identical, except it listed major boarding and alighting rail stations. These forms reflected the modifications to wording and layout that arose in the pilot.
3.3. Data Collection

The transit onboard survey ran on weekdays from February 3 to March 25, 2004. Surveyor assignments were matched to surveyors’ unique skills or situation (i.e., proximity of start location to the surveyor’s home, familiarity with route, etc.) Special attention was given to surveyors with language skills in Chinese and Spanish, and these surveyors were assigned to lines in Chinatown and the Mission. Surveyors were asked to board the bus and introduce themselves to the operator, as well as confirm they were surveying the correct block according to the information provided on the assignment sheet. A questionnaire return box was placed in the rear stairwell and a “Survey Today” sign was affixed to the fare box facing the front stairwell.

Questionnaires were given to all adult riders age 13 or older, with instructions to complete the questionnaire and return it to the surveyor prior to exiting the vehicle. Passengers returning completed questionnaires received a complimentary one-ride MUNI token as an incentive for participating in the study.

The form also had a business reply mail return address, so the forms could be dropped in any mailbox. This helped reduce the bias toward longer trips being surveyed, and also meant that the form could be filled out with assistance from others in the case of language or sight difficulties. Surprisingly, more than one quarter of all survey respondents used the mail-back option. This is much higher than most other cities have experienced in recent onboard surveys. This may be due to the form's length or to crowding on some routes making completion difficult during the trip itself.

Bunching Issues

The survey plan identified a target number of trips to survey per route, based on average daily ridership by trip and route supplied by MUNI. However, schedule adherence problems necessitated an increase in the number of trips required to be surveyed in order to reach route quotas. On approximately 25% of sampled trips, surveyors encountered scheduled service to be running off schedule by 10 to 30 minutes. This resulted in bunched buses, where one bus was excessively crowded followed by a second bus that carried significantly lower than average ridership levels, thereby compromising the calculated average passenger loads. For example, passengers waiting for a bus that was supposed to arrive at 8:20 a.m., would board the 7:50 a.m. bus that was running 25 minutes late, thus overloading the late 7:50 a.m. bus and underutilizing the 8:20 a.m. bus.

Surveyors were provided with a supply of questionnaires based on calculated average ridership figures per trip plus an additional 10 to 15 percent to account for ridership fluctuation. As surveyors returned to the survey headquarters, supervisors collected unused questionnaires and one-ride tickets that were not distributed to passengers completing a questionnaire while on-board vehicles. In approximately 30% to 35% of the assignments completed by the surveyors, an excessive amount of questionnaires was unused due to lower than anticipated ridership levels or surveyors. Conversely, some surveyors depleted their entire supply of questionnaires sooner than expected due to a higher than expected ridership.

In addition to requiring additional trips to be sampled in order to meet route quotas, the bunching of service impacted the response rate. On overcrowded buses, passengers more than likely refused to
participate in the survey because they were in a standing-room-only situation and completing the questionnaire was awkward and difficult. On underutilized routes the passenger loads were insufficient to reach response rate projections. The study team extended the survey by three weeks to correct for these problems.

Data Entry and Data Cleaning

Data entry was conducted using ScanTron scanning technology in order to minimize human error resulting from traditional data entry methods. The scanning process involved scanning batches of approximately 100 questionnaires to produce an image file of the documents. Data results derived from the image files were individually reviewed and verified by comparing the scanned image to the data contained in the data file. Text data (primarily origin and destination address information) was reviewed for the purpose of correcting misspellings and verifying that the scanner correctly read numeric data. The data file developed from scanned documents was maintained unaltered for comparison purposes.

Various edit routines were programmed to check the consistency of data and to identify reporting, scanning or entry errors. Routine edit checks were conducted to examine questionnaire responses for reasonableness and consistency across items.

Following completion of the routine edit checks, a series of customized automated and manual checks were also performed. These checks were based on specific questions in the survey instrument.

Geocoding

The onboard survey bus and rail questionnaire location data consisted of seven location types: home address (captured in the contest entry form), bus-on/rail station, trip origin, bus-off/rail station, trip destination, work address, and school address. Each of these data had a slightly different strategy for conducting the geocoding processes.

Once geocoded, records were subjected to a series of quality control checks. The checks included:

**Visual Quality Control Check.** Geocoding was verified for location accuracy. Since this study was comprised of one county, a visual check was done by querying approx 10% of the geocoded records and checking one by one for visual placement accuracy.

**Zip Code Comparison.** Using the zip code coverage, a shape-to-shape join on the address data file and the zip code coverage was performed. This "join" attached the geocoded zip code number to the data file, allowing a comparison to the zip code given by the respondent. Those two zip codes were then compared and differences were selected and researched to ensure the highest accuracy of geocoding.

<table>
<thead>
<tr>
<th>Address Type</th>
<th>Matched</th>
<th>Unmatched</th>
<th>Blank</th>
<th>Out Of Area</th>
<th>Total</th>
<th>Match Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>8,601</td>
<td>2,135</td>
<td>4,575</td>
<td>40</td>
<td>15,351</td>
<td>80%</td>
</tr>
<tr>
<td>Bus On</td>
<td>12,652</td>
<td>2,181</td>
<td>518</td>
<td>0</td>
<td>15,351</td>
<td>85%</td>
</tr>
<tr>
<td>Origin</td>
<td>11,722</td>
<td>1,711</td>
<td>1,918</td>
<td>0</td>
<td>15,351</td>
<td>87%</td>
</tr>
<tr>
<td>Bus Off</td>
<td>12,100</td>
<td>2,220</td>
<td>1,031</td>
<td>0</td>
<td>15,351</td>
<td>84%</td>
</tr>
<tr>
<td>Destination</td>
<td>10,688</td>
<td>1,765</td>
<td>2,898</td>
<td>0</td>
<td>15,351</td>
<td>86%</td>
</tr>
<tr>
<td>Work</td>
<td>3,458</td>
<td>1,126</td>
<td>10,749</td>
<td>18</td>
<td>15,351</td>
<td>75%</td>
</tr>
<tr>
<td>School</td>
<td>1,336</td>
<td>592</td>
<td>13,411</td>
<td>12</td>
<td>15,351</td>
<td>69%</td>
</tr>
</tbody>
</table>
Geocoding Results

Table 1 identifies the final geocode match rate for each of the two survey instruments by the seven location types. Match rates were calculated as a percentage of matched to unmatched address records. Blank records (where data was not provided by the respondent) and locations outside the study area are shown for informational purposes only, and were not used to calculate match rate. Passengers only provided work and school locations if the trip was directly related to school or work, so the number of blank responses for those address categories is higher than the other address types.

3.4. Dataset Quality and Overview

Well over 15,000 survey forms were received during the course of the ground effort. Each was subjected to the quality checks described in the section above and then geocoded.

Response Rate

The system-wide response rate for the On-Board Passenger Survey was 28%. The response rate was calculated based on the number of questionnaires distributed to eligible respondents (sample universe) who actually completed a questionnaire. The formula for calculating response rate is as follows.

\[
\text{Response Rate (\%)} = \frac{\text{Complete/Partial Questionnaires}}{\text{Questionnaires Distributed to Eligible Respondents}^*}
\]

*For the purposes of this study, an eligible respondent was defined as an individual age 13 or older.

A total of 55,261 questionnaires were distributed to all eligible respondents meeting the criteria described above. The 15,351 collected questionnaires comprising the final data file (and exceeding the sample plan goal of 14,691 by 4%) equates to a 28% response rate. The higher than expected response rate is due in part to the use of respondent incentives (one-ride tickets) during the last half of the data collection period and an unusually high number of questionnaires returned by passengers through the mail.

Non-Response Bias

In any survey, there is a risk that the people who return surveys are somehow different than the people who are offered surveys but refuse to participate. Survey experience in other cities has shown that some groups in particular are difficult to capture in transit surveys. For example, as a whole, Asian riders tend to respond less frequently than non-Asian riders. Seniors also generally respond at lower rates than other age groups. Based on comparisons of the percentage of Asian and senior riders in the survey to citywide averages, it appears that Asians and seniors may have lower response rates than other groups.

Other people who choose not to participate may also behave differently than people who do. Unfortunately it is impossible to go back and interview the riders who choose not to be included. Users of the survey results need to be aware that some rider types may utilize MUNI in different proportions than are reported.
Confidence Level System-wide

The total of 15,351 completed questionnaires was collected from adult passengers system-wide, which exceeded the system-wide confidence level goal of 95% with a margin of error of ±.8%. In layman terms this means that when taken as a whole, we are 95% confident the survey data is within 0.8% of the actual value.

Comparison to 2003 Census Averages

The 2003 American Community Survey (ACS, or Census) provides a demographic snapshot of San Francisco residents that can be used for comparison purposes. It is unlikely that the demographics of MUNI passengers match Census data, since transit typically serves some groups more than others. Exploring the differences between ACS Census and MUNI patrons can help shed light on which groups are using, or not using, MUNI.

Gender

There are slightly more men than women in San Francisco (50.5 vs. 49.5 percent), but MUNI passengers are slightly more female than male. This was also true in the 1976 MUNI survey, and is generally true in transit systems across the United States. Figure 1 shows the gender of riders versus ACS Census.

![Figure 1. Gender of Riders vs. ACS Census](image)
**Age**

The age profile of MUNI passengers follows Census trends closely. The survey did not collect information from passengers under the age of 13, so the first Census category for comparison starts at age 16. The survey results show that seniors are a smaller portion of MUNI passengers than Census, but this could be due to passenger under-reporting; seniors may have had a more difficult time completing the form, or were more reluctant to do so. It is also possible that seniors are more likely to walk or use paratransit instead of riding MUNI. Figure 2 shows the age of riders versus ACS Census.

**Ethnicity**

The MUNI bus system has a larger percentage of African American passengers than the city as a whole. Likewise, the MUNI rail system has a larger percentage of Caucasian passengers than the city as a whole. The survey data shows that Asian American passengers, which make up more than 30 percent of the city population, are only 20 percent of MUNI riders. This may be due to known cultural biases in the Asian community against participating in identifiable surveys; the survey form asked for name and home address information. Figure 3 shows the ethnicity of riders versus ACS Census.

**Household Income**

MUNI serves passengers at all ranges of household income, including the upper echelons. While very low-income bus passengers make up a quarter of MUNI bus ridership, households with income greater than $75,000 comprise 60 percent of MUNI rail ridership. Figure 4 shows the household income of riders versus ACS Census.

**Completed Surveys**

After cleaning and verification, the final dataset included 15,351 usable records, where “usable” is defined as containing full origin and destination information, and at least 50 percent of all other questions answered. The breakout of surveys by mode and by time period is listed below in table 2. Appendix B lists the survey responses by route.

**Table 2. Completed Surveys by Time Period**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Bus</th>
<th>Rail</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:00am–5:59am</td>
<td>330</td>
<td>109</td>
<td>3%</td>
</tr>
<tr>
<td>6:00am–8:59pm</td>
<td>3241</td>
<td>902</td>
<td>27%</td>
</tr>
<tr>
<td>9:00pm–3:29pm</td>
<td>5164</td>
<td>724</td>
<td>38%</td>
</tr>
<tr>
<td>3:30pm–6:29pm</td>
<td>3726</td>
<td>310</td>
<td>26%</td>
</tr>
<tr>
<td>6:30pm–2:59am</td>
<td>704</td>
<td>141</td>
<td>6%</td>
</tr>
<tr>
<td>Total</td>
<td>13,165</td>
<td>2,186</td>
<td>100%</td>
</tr>
</tbody>
</table>
4. Analysis and Findings

This section describes the analysis results of the onboard survey. Each subsection details specific findings related to passenger demographics, fare payments, work travel, auto availability, transfers, and modal access.

4.1. Demographic Characteristics of MUNI Passengers

**Bus Demographics**

The vast majority of bus passengers (93 percent) lives in San Francisco. Only one percent of MUNI bus riders are visitors to the Bay Area. Sixty percent of riders who live in San Francisco and 59 percent of those who live in the Bay area are 20 to 44 years of age.

Forty percent of bus passengers who live in San Francisco report their household income is less than $25,000; 38% of riders who live in the Bay area also report their household income is within this range. 37% of San Francisco residents and 42% of Bay Area residents identified that their household income was higher than $45,000 annually.

Female bus passengers were more likely to not have a vehicle available to use in their household than male passengers. Fifty-eight percent of female vs. 42 percent of male bus riders who live in San Francisco and the Bay area report that they do not have access to a car or other personal vehicle available for use.

One half of bus passengers who live in San Francisco reported that they have no car or other personal vehicle available to use in their household. This compares to 28 percent of bus passengers who live in the Bay area and also do not have a household vehicle available.

**Rail Demographics**

Although the majority of rail passengers live in San Francisco (86 percent), rail is a more attractive travel option for visitors than bus service, with 6 percent of rail passengers stating that they are visiting the Bay Area compared to one percent of bus passengers who identified themselves as visitors.

Over one-half (53 percent) of rail passengers who live in San Francisco are age 25 to 44. This compares to 30 percent of rail riders who live in the Bay area and are 25 to 44 years of age. An additional 35% of rail passengers who live in the Bay area stated they are between 45 and 54 years of age.

Rail passengers are more affluent than bus passengers. 53% of rail passengers who live in San Francisco and 54% of those who live in the Bay Area reported that their household income was over $45,000 annually.
A nearly equal percentage of male and female rail passengers live in San Francisco and the Bay area with 49 percent of males and 51 percent of females identifying themselves as San Francisco residents and 47 percent of males and 53 percent of females living in the Bay area.

Thirty-two percent of rail passengers who live in San Francisco and 18% who live in the Bay area report that they do not have a personal vehicle in their household available for use.

Gender

The majority of MUNI passengers were female (56 percent). Although women used bus transit to a greater extent than men, there was little difference in the percentage of males vs. females when gender was examined by age category. For example, of all female passengers, 70 percent were less than 45 years of age. Of all male passengers, 69 percent were also within this age range.

Low-income riders (annual household incomes of less than $15,000) were more likely to be female than male. For example, of all riders reporting annual household incomes of less than $15,000, 57 percent were female and 43 percent were male.

Men were less likely to be transit dependent than women. Fifty-three percent of female bus passengers said they did not have a vehicle available for their use, compared to 47 percent of male passengers who were also transit dependent.

As with bus passengers, the majority of rail passengers was female (52 percent). Although women used rail transit to a greater extent than men, the percentage of male and female riders by age category was nearly identical. Of all female passengers, 69 percent were less than 45 years of age. Of all male passengers, 72 percent were also 44 years of age or younger.

Low-income riders reporting annual household incomes of less than $15,000, tended to be female with 63 percent of women vs. 37 percent of men reporting their household income fell within this income classification.

Age

Bus passengers age 25 to 34 comprised the greatest percentage by age category (28 percent), followed closely by those ages 35-44 (18 percent). Passengers age 16 to 24 comprised 20 percent of total riders.

Woman significantly outnumbered men in several age categories:

- Age 19 and under (64 percent female vs. 36 percent male)
- Age 20-24 (58 percent female vs. 42 percent male)
- Age 45-54 (57 percent female vs. 43 percent male)
- Age 55-64 (55 percent female vs. 45 percent male)

Conversely, men outnumbered women in the following age categories:

- Age 35-44 (58 percent men vs. 42 percent women)
- Age 65+ (61 percent male vs. 39 percent female)
While the majority of passengers was transit dependent regardless of age, the category with the highest percentage of transit dependent passengers was age 20 to 44, with 60 percent of these riders reporting they did not have a car available for their use.

**Rail**

Twenty nine percent of rail passengers are age 25 to 34. An additional 22 percent of rail passengers are age 35 to 44. Passengers age 16 to 24 comprised 18 percent of riders.

Female rail passengers outnumbered men in all age categories:
- Age 19 and under (59 percent female vs. 41 percent male)
- Age 20-24 (60 percent female vs. 40 percent male)
- Age 25-34 (57 percent female vs. 43 percent male)
- Age 35-44 (52 percent female vs. 48 percent male)
- Age 45-54 (55 percent female vs. 45 percent male)
- Age 55-64 (52 percent female vs. 48 percent male)
- Age 65+ (54 percent female vs. 46 percent male)

Similar to the results seen for bus passengers, the majority of rail passengers were transit dependent regardless of age. Most transit dependent rail passengers were age 25 to 54 with 69 percent of these riders reporting they did not have a car available for their use.

**Ethnicity**

White passengers made up 44 percent of bus riders, with Asian Americans comprising the next most significant percentage of passengers (20 percent). Hispanic and African American/Black passengers were nearly equal at 13 and 12 percent, respectively.

Asian Americans comprised the largest percentage of riders under age 19 (32 percent) followed by African American/Blacks (22 percent). White passengers were the largest percentage of bus riders in all other age categories.

When the two most prevalent ethnicities (Whites and Asian Americans) were compared by annual household income, Whites were more likely to have an annual household income of more than $25,000 than Asian Americans (70 percent of Whites vs. 55 percent of Asians).

Regardless of ethnicity, women use bus services more than men.

White passengers were less likely to be transit dependent than Asian passengers. For example, of bus passengers with a vehicle available, 21 percent were Asian American and 52 percent were White.

**Rail**

White passengers comprise 57 percent of all train riders, with Asian Americans accounting for an additional 19 percent of rail riders. Hispanics and African American/Blacks comprised 9 and 5 percent of passengers, respectively.
Of African American passengers, about one fifth was between age 45 and 54. Another 20 percent was age 65 or older. A nearly equal amount of White and Asian rail passengers were between ages 25 and 44 (50 and 48 percent respectively). Most Hispanics riders also fall within this age category, with 66 percent reporting their age as 25 to 44.

When the two most prevalent ethnicities (Whites and Asian Americans) were compared by annual household income, no significant differences were noted.

In terms of ethnicity, African American, Hispanic and Native American men are more likely than women to ride the train. Whites are equally likely to be male or female. Asian Americans are much more likely to be female.

White passengers were less likely to be transit dependent than Asian passengers. For example, of rail passengers who had a vehicle available to use, 18 percent were Asian American Asian and 57 percent were White.

Household Income

Forty-one percent of all bus passengers had annual household earnings of less than $25,000. Nearly one quarter of passengers age 25 to 34 reported an annual household income of between $25,000 and $44,999. As older age is frequently correlated with higher income, it is not surprising that approximately 35 percent of passengers under age 25 have annual household incomes of less than $15,000. Of the 11 percent of passengers reporting an annual household income of $100,000 or more, almost 60 percent were between ages 25 and 44.

Of all bus passengers reporting annual household incomes of less than $25,000, females comprised the largest percentage (57 percent).

The higher the household income, the less likely passengers were to be transit dependent. Of transit dependent passengers, 22 percent reported annual household incomes of more than $44,999. This compared to 78 percent of transit dependent passengers who had annual household earnings of less than $45,000.

**Table 3. Household Income**

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Bus %</th>
<th>Rail %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $15,000</td>
<td>26.1%</td>
<td>17.0%</td>
</tr>
<tr>
<td>$15,000 - $24,999</td>
<td>14.8%</td>
<td>8.5%</td>
</tr>
<tr>
<td>$25,000 - $44,999</td>
<td>21.5%</td>
<td>18.0%</td>
</tr>
<tr>
<td>$45,000 - $74,999</td>
<td>17.6%</td>
<td>20.7%</td>
</tr>
<tr>
<td>$75,000 - $99,999</td>
<td>9.2%</td>
<td>14.1%</td>
</tr>
<tr>
<td>$100,000 and over</td>
<td>10.8%</td>
<td>21.7%</td>
</tr>
</tbody>
</table>

Both rail and bus have a sizable portion of very low and very high income riders. The rail system has a relatively higher income profile.

Rail

One-fourth of rail passengers reported their annual household income was less than $25,000.

One quarter of passengers age 25 to 34 reported an annual household income of between $25,000 and $44,999. Of those passengers age 24 or younger, 50 percent stated their annual household incomes was less than $15,000 with the remaining one-half of riders reporting household incomes of less than $25,000 age 25 or older. Of passengers the 22 percent of passengers reporting an annual household income of $100,000 or more, 35 percent were between ages 35-44 with another 24 percent in the 45 to 54 years age range.

Of all passengers reporting annual household incomes of less than $25,000, females comprised the largest percentage (54 percent).
Not surprisingly, passengers in higher income categories are less likely to be transit dependent than passengers who are less affluent. Of passengers who did not have a car available to use, only 33 percent reported annual household incomes of more than $44,999. This compared to 67 percent of transit dependent passengers who had annual household earnings of less than $45,000.

4.2. Fare Payment

The most common form of fare payment for bus trips was Fast Pass / Senior Pass / Youth Pass (47 percent). Full fare was the next most common type of bus fare paid, at 31 percent. Tokens accounted for 5 percent of bus fares.

Nearly 50 percent of passengers who paid the bus fare with Fast Pass / Senior Pass / Youth Pass were between the ages of 25 and 54, with 43 percent of those between ages 25 and 44.

Bus passengers paying full fare were in the lower income brackets. For example, of those who paid full fare, one quarter reported an annual household income of less than $15,000. Another 37 percent have an annual household income between $15,000 and $44,999. Though TransLink overall accounted for less than 1 percent of fare type paid, TransLink users tend to be in higher income brackets. For example, of passengers who used a TransLink card, 44 percent reported an annual household income between $25,000 and $44,999. The next highest group (27 percent) using TransLink had incomes of $45,000 to $74,999 annually. Less than one in five TransLink users reported annual incomes below $15,000.

Of those who paid the bus fare using Fast Pass / Senior Pass / Youth Pass, well over half (58 percent) were females. Of those who used tokens to pay the bus fare, nearly 70 percent were female.

Rail

As with bus, Fast Pass / Senior Pass / Youth Pass were the most common forms of fare paid for rail trips (54 percent) with full fares at 27 percent. Tokens accounted for 7 percent of rail fares – however of those who used tokens, 49 percent identified themselves as Asian Americans.

Rail passengers paying full fare tend to be in middle to higher income categories. Twenty-five percent of passengers paying full fare reported annual household incomes of $100,000 or more. Thirty percent have household incomes between $45,000 and $99,999. Of passengers who used a TransLink card, 56 percent reported an annual household income between $15,000 and $24,999. Nineteen percent of TransLink users reported annual household incomes below $15,000, while another 19 percent reported annual incomes of $100,000 or more.

With rail passengers, the split was nearly even between males and females for those who paid the fare using Fast Pass / Senior Pass / Youth Pass.

It is notable that the survey included the payment option “I did not pay.” Despite the form having full contact information including name, address, and telephone number, scores of people marked this box.

---

Table 4. Fare Payment Type

<table>
<thead>
<tr>
<th>Fare Type</th>
<th>Bus %</th>
<th>Rail %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fast Pass</td>
<td>47%</td>
<td>54%</td>
</tr>
<tr>
<td>Full Cash Fare</td>
<td>31%</td>
<td>27%</td>
</tr>
<tr>
<td>Discounted Fare (35 cents)</td>
<td>5.8%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Transfer</td>
<td>5.5%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Token</td>
<td>4.7%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other (TransLink, Did not pay, Other)</td>
<td>5.2%</td>
<td>6.4%</td>
</tr>
</tbody>
</table>
This constituted less than one percent of responses. The personally-identifiable nature of the survey design likely led to underreporting. Also, the practice of back-door boarding allows fare evasion.

4.3. Trips Including Travel to Work

Two thirds of bus passengers who are employed went to or were on their way from work, on their surveyed trip away from home. Seventy-two percent of bus passengers who went to work during their trip from home were between the ages of 25 to 54.

The most likely group of passengers, by household income category, to go to work during their trip away from home had household incomes of between $25,000 to $44,999 (25 percent) and $45,000 to $74,999 (21 percent).

Of those who traveled to work during their trip from home, 58 percent were female and 42 percent were male. Of those who did not go to work during their round trip from home, 56 percent were female and 44 percent were male.

Fifty-five percent of bus passengers who do not go to work during their trip away from home did not have a personal vehicle available to use in their household.

**Rail**

Eight of ten rail passengers who are employed went to or were on their way to work on their surveyed trip away from home.

Passengers age 25 to 34 are the most likely group of rail users, by age category, to identify that they would be going to work during their trip away from home (33 percent).

One quarter of passengers who indicated they would go to work during their trip away from home have household earnings of $45,000 to $74,999; an additional 25 percent earn $100,000 or more.

Males and females are nearly equally as likely to travel to work during their trip away from home with 51 percent of males and 49 percent of females stating that they would or did go to work.

Of passengers who work and will go to their job at some point during their trip away from home, 26 percent have no personal car or other vehicle available for use by their household.

4.4. Auto Availability

Half of all bus riders do not have a car in running condition and available to use in their household. Nearly one-third of passengers reported having one vehicle available for use by their household, while the remaining 18 percent of passengers reported having two or more vehicles available. Sixty-nine percent of the respondents reporting no vehicles available for use were between the ages of 25 and 64.

The likelihood of a household owning an operable vehicle increases as household income increases. For example, 57 percent of bus passengers who did not have a personal car reported an annual household
income of less than $24,999, with almost 40 percent earning below $15,000. Conversely, 74 percent of passengers with at least one working vehicle reported annual household incomes of more than $25,000.

Thirty percent of rail riders do not have a car in running condition and available to use in their household. Forty-two percent of passengers reported having one vehicle available for use by their household, while the remaining 28 percent of passengers reported having two or more vehicles available, indicating that rail passengers are primarily choice transit riders. Seventy-six percent of rail passengers who did not have a vehicle available for use in their household were between the ages of 25 and 64.

A higher household income typically parallels owning an operable vehicle. Eighty-four percent of rail passengers with one car in their household reported annual incomes of $25,000 or above. Of rail passengers earning less than $25,000 annually, 45 percent had no available operating vehicle.

4.5. Transfers

Bus

Approximately 80 percent of bus passengers could complete their trip riding only the bus they were currently riding. Slightly less than one fifth (19 percent) had to transfer to a second transit vehicle to complete their travel.

The data suggests that transit dependent riders are more likely to make trips requiring multiple transit vehicles than choice riders. For example, of passengers who completed their travel riding three or more transit vehicles, only 28 percent had a personal vehicle available for their use (compared to 33 percent of passengers who only needed one transit vehicle to complete their trip). Fifty-six percent of riders who transferred at least twice did not have a personal vehicle available (compared to less than half who rode only one transit vehicle).

Nearly half of riders who only rode one bus to complete their one-way trip were 25 to 44 years old (47 percent). Of passengers who rode two or more vehicles, 44 percent were age 25 to 44 and another 27 percent were age 45 to 64. Close to 40 percent of passengers that rode three or more buses or trains were between ages 25 and 44, while 30 percent were age 45 to 64.

Of passengers who could complete their travel riding one bus only, about 40 percent reported annual household earnings of less than $25,000. Of passengers who rode three or more transit vehicles to complete their trip, 60 percent also reported household earnings of less than $25,000 annually.

The gender breakdown of trips by the number of transfers is illuminating. Trips that require no transfer are comprised of 55 percent women; trips requiring one transfer are 59 percent women; and trips requiring two or more transfers are 60 percent women. Thus the more transfers a trip requires, the more likely it is that the person making that trip is female.

<table>
<thead>
<tr>
<th>Transfers between:</th>
<th>Bus %</th>
<th>Rail %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other MUNI lines</td>
<td>75%</td>
<td>73%</td>
</tr>
<tr>
<td>BART</td>
<td>18%</td>
<td>21%</td>
</tr>
<tr>
<td>Caltrain</td>
<td>3%</td>
<td>2%</td>
</tr>
<tr>
<td>AC Transit</td>
<td>2%</td>
<td>1%</td>
</tr>
<tr>
<td>SamTrans</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Golden Gate Transit</td>
<td>1%</td>
<td>1%</td>
</tr>
</tbody>
</table>

DRAFT: SFCTA Multimodal Transit Onboard Survey Final Report
Rail

Rail service provides direct transportation for most rail passengers. Close to 85 percent of rail passengers could complete their trip riding only the train they were riding when surveyed, with another 15 percent requiring one transfer to a bus or train to complete their travel.

More than half of riders who only rode one train to complete their one-way trip were 25 to 44 years old (52 percent). Of passengers who rode two or more vehicles, 45 percent were age 25 to 44 and another 29 percent were age 45 to 64. Forty-five percent of passengers that rode three or more trains or buses were between ages 35 and 54.

Of passengers who could complete their travel riding one train only, about 25 percent reported annual household earnings of less than $25,000. Thirty-six percent of passengers who rode only one transit vehicle reported an annual household income of between $25,000 and $74,999. Of passengers who rode three or more trains or buses to complete their trip, 36 percent also reported household earnings of less than $25,000 annually.

An equal percent of men and women could complete their trip riding one train only; but females were more likely to require at least one transfer to complete their trip, indicating that women are more transit dependent than men. For example, 56 percent of women rode two or more transit vehicles to complete their trip and 60 percent of women rode three or more.

Unlike bus passengers, the data indicate that transit-dependent rail riders are equally likely to make trips requiring multiple trains or buses as are choice riders. For example, of passengers who completed their travel riding three or more vehicles, 41 percent had a personal vehicle available for their use (compared to 43 percent of passengers who only rode one train to complete their trip). Thirty-three percent of riders who transferred at least twice did not have a personal vehicle available (compared to 29 percent who rode only one train).

4.6. Modal Access

Eighty-five percent of passengers walked to a bus stop to access transit service. Twelve percent of passengers transferred from another bus or train. Approximately one percent each were dropped off by a friend or family member, rode with someone else, or drove their personal vehicle to the bus stop. Of those who walked to the stop, 79 percent walked three blocks or less. One-half of all bus passengers were transit dependent – regardless of mode used to get to the bus stop, they had no personal vehicle available to make the trip.

The majority (62 percent) of bus passengers who walked to the transit stop were age 25 to 54. Nearly half (45 percent) of those who drove to a transit stop and parked their personal vehicle were between ages 25 and 34. About two-thirds (65 percent) of passengers who drove with someone to the bus stop were between ages 25 and 54.

<table>
<thead>
<tr>
<th>Number of Transfers</th>
<th>Percent of Trips Made by Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>45%</td>
</tr>
<tr>
<td>1</td>
<td>59%</td>
</tr>
<tr>
<td>2 or more</td>
<td>60%</td>
</tr>
</tbody>
</table>

The more transfers a bus trip requires, the more likely that the person making the trip is female.
Forty-one percent of bus passengers who rode with someone else to the bus stop reported a household income of less than $15,000 annually. Slightly more than one-third of passengers with household incomes of more than $100,000 annually reported driving a car to the bus stop. Another 29 percent with a household income of between $25,000 and $44,999 drove a car to get to the bus.

Thirty-five percent of passengers who were dropped off did not have a vehicle available. Half of passengers who walked to a bus stop had no vehicle, and of passengers who transferred from another transit vehicle, 50 percent did not have a personal car available. However, of those who rode with someone else, more than half had a personal vehicle available, indicating they are choice riders. Likewise, many of those who drove to the bus stop were choice riders, as 45 percent of those passengers had a personal vehicle available to make the trip.

### Rail

Eighty-four percent of passengers walked to a rail station to access transit. Nine percent transferred from another bus or train, and three percent drove and parked their car. The remaining 4 percent were dropped off (2 percent), riding with someone and parking (1 percent), or some other means of transportation (1 percent). Of those passengers who walked to a rail station, 76 percent said that the walked a maximum of three blocks.

The majority (69 percent) of rail passengers who walked to the transit stop were between ages 25 and 54. Ninety-three percent of passengers who rode with someone to the station were between ages 35 and 54.

Three quarters of rail passengers who rode with someone to get to the station reported a household income of more than $100,000 annually. Close to one-fifth of passengers who rode with someone earn between $75,000 and $99,999 annually. Of passengers who transferred from another bus or train, nearly half reported earning between $25,000 and $74,999 annually, and close to 15 percent have an annual household income of less than $15,000.

Most rail passengers are transit dependent, though many are choice riders. Just under two-thirds of passengers who walked to a transit stop had no vehicle. Of those who rode with someone else, more than 60 percent did not have a personal vehicle available. Nearly 43 percent of passengers who walked to the rail station reported having a vehicle.

<table>
<thead>
<tr>
<th>Access Mode</th>
<th>Bus %</th>
<th>Rail %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>85%</td>
<td>84%</td>
</tr>
<tr>
<td>Transfer</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>Drop off / Ride with someone</td>
<td>2%</td>
<td>4%</td>
</tr>
<tr>
<td>Drive to station</td>
<td>1%</td>
<td>3%</td>
</tr>
</tbody>
</table>
5. Next Steps

Most urban areas survey transit passengers about every ten years. San Francisco's MUNI passengers had not been surveyed since 1976; the availability of this new data will be critical to transit planning studies for years to come.

5.1. Model Calibration

The SF-CHAMP travel forecasting model developed and operated by the Authority predicts future transit ridership. The model is one of several analysis tools used by the Authority for planning studies, strategic analysis reports, and transportation impact reports.

SF-CHAMP was originally developed using existing data sources in 2000, but without a comprehensive transit onboard survey the transit components of the model could only be calibrated at a route level. For example, MUNI collects overall ridership by route, but did not have detailed origin/destination data of its travelers.

With this new onboard survey data, SF-CHAMP will be recalibrated to match the latest MUNI ridership, transfer, origin/destination profiles from 2004. Having a well-calibrated “base year” means the future forecasts from the model will be more accurate and reliable.

This model recalibration work is expected to commence this summer 2005.

5.2. Current planning studies

The Authority is leading or contributing to many current planning studies in San Francisco.

Van Ness Avenue and Geary Boulevard Bus Rapid Transit Studies

Two Bus Rapid Transit ("BRT") studies are currently underway for the Geary and Van Ness transit corridors. The corridors have some of the highest bus ridership on the MUNI system. BRT is comprised of a full set of service improvements that make bus travel faster, more reliable, and easier.

The onboard survey data allows detailed analysis of critical origins, destinations, and transfer points; and informs BRT stop locations and access mode choices (including walk, bike, and drop-off). The data can also be used to identify differences in passenger needs along different parts of the corridors, such as transit dependence, trip purpose, and type of fare payment.
New Central Subway

The project to extend MUNI’s Third Street LRT to Chinatown via the New Central Subway is being considered by the Federal Transit Administration for “New Starts” federal funding. The New Starts program requires yearly cost estimates and future travel demand forecasts in order to rank competing projects from other parts of the country.

The onboard survey will help inform the study as to the travel characteristics of current MUNI riders, and the upcoming model recalibration will make subsequent New Starts submittals more accurate.

Strategic Analysis Reports

The Authority writes several Strategic Analysis Reports every year, at the request of the Authority’s Board of Commissioners. Currently reports on 16th Street, Folsom Street, and the Northeast Waterfront are being prepared.

All of these reports, and future studies as well, will benefit from the fine-grained transit usage data now available. Aspects of transit travel such as major transfer points, mode of access to transit, and trips by time of day can now be included in the strategic analyses.

5.3. Medium and Long Term Planning

Comprehensive system planning for the MUNI transit system could redefine the transit experience in San Francisco. Using the data from this survey, new types of services can be designed. Current services can be evaluated for their ability to satisfy needs, such as logical route structures for work trips, nonwork trips, crosstown capabilities, lifeline services, and tourism.

Other Transit Operators and City Agencies

Many transit operators in the Bay Area have conducted their own passenger surveys. Combined with the results from this survey, a comprehensive transit landscape emerges. With proper collaboration, MUNI services can be compared and connected to other regional systems in a more efficient manner.

Many San Francisco city agencies may also have an interest in the findings from this survey. The wealth of data on access modes, demographics, and trip purposes is relevant for planning neighborhood and city services at all levels.
Systemwide Network Planning Studies

In the next five years, the Authority plans to undertake a transit network system planning study, in partnership with MUNI.

The full spectrum of long-term corridor studies and neighborhood improvement plans will all benefit from this data. Larger efforts such as system design reviews will rely even more heavily on this information, since the survey was citywide in scope and comprehensive in its nature.

6. Credits

The Authority is indebted to the staff members who made this study possible. The principal analyst and project manager was Billy Charlton, Principal Transportation Planner. Tilly Chang, Deputy Director of Planning, provided overall direction for the project and guidance in the preparation of the report. The study also benefitted from analysis and review by Ajay Martin, Planner.

Thanks also go out to MUNI staff including Peter Straus, Suany Chough, who were instrumental in coordinating the survey effort with MUNI operations, and in providing input throughout the study.

The Authority would like to thank the study consultant team, led by NuStats, and their project manager Deb Edrington. TSS Employment Services, and Joseph Castiglione and Joel Freedman with PB Consult, Inc., also provided valuable support to the study.
1. Where did you **BOARD THIS VEHICLE?**

   您从哪里上的车？

   ¿Dónde se **SUBLÍ S A ESTE VEHÍCULO?**

   Cross street 1/交叉街道1/Calle que cruza 1: 

   Cross street 2/交叉街道2/Calle que cruza 2: 

2. Where are you **COMING FROM?** / 您来自哪里？ / ¿De dónde usted **ESTÁ VINIENDO?**

   ○ My home/我家/Mi Hogar  ○ Work/工作单位/Trabajo  ○ Work-Related/与工作相关的活动/Relacionado con el Trabajo
   ○ School/学校/Escuela  ○ Shopping/购物/Compras  ○ Other/其他/Otro

   What is the **NAME** of that place/building? (Indicate home if coming from your home.)
   该地点或建筑楼房的名称是什么？（如果是从家里来，请注明。）

   ¿Qué es el **NOMBRE** de ese lugar/edificio? (Indique hogar si está viniendo de su hogar)

   Example/例如/ Ejemplo: 

   What is the **EXACT STREET ADDRESS** of that place?
   该地点的具体地址是什么？

   ¿Cuál es la **DIRECCIÓN EXACTA** de ese lugar?

   Street #/街道编号/# de la Calle: 

   Street name/街道名称/Calle: 

   City/城市/Ciudad: 

   Zip/邮政编码/CP: 

3. Where will you **GET OFF THIS VEHICLE?** / 您在哪里下车？ / ¿Dónde usted se **BAJARÁ DE ESTE VEHÍCULO?**

   Cross street 1/交叉街道1/Calle que cruza 1: 

   Cross street 2/交叉街道2/Calle que cruza 2: 

4. Where is your **DESTINATION?** / 您要到哪里去？ / ¿Cuál es su **DESTÍNIO?**

   ○ My home/我家/Mi Hogar  ○ Work/工作单位/Trabajo  ○ Work-Related/与工作相关的活动/Relacionado con el Trabajo
   ○ School/学校/Escuela  ○ Shopping/购物/Compras  ○ Other/其他/Otro

   What is the **NAME** of that place/building? (Indicate home if coming from your home.)
   该地点或建筑楼房的名称是什么？（如果是从家里来，请注明。）

   ¿Qué es el **NOMBRE** de ese lugar/edificio? (Indique hogar si está viniendo de su hogar)

   Example/例如/ Ejemplo: 

   What is the **EXACT STREET ADDRESS** of that place?
   该地点的具体地址是什么？

   ¿Cuál es la **DIRECCIÓN EXACTA** de ese lugar?

   Street #/街道编号/# de la Calle: 

   Street name/街道名称/Calle: 

   City/城市/Ciudad: 

   Zip/邮政编码/CP: 

   What are the **NEAREST CROSS STREETS** to that place?
   离该地点最近的交叉街道是什么？

   ¿Cuáles son **LAS CALLES MÁS CERCANAS** a ese lugar?
5. How did you GET TO the stop to board this vehicle? (mark only one)

- Walked/stepo/Caminó: blocks/路数/# of blocks/# of stories
- Bicycled/自行车: # of blocks/路数/# of stories
- Drive & parked my car
- Rode with someone who parked my car

¿Cómo LLEGÓ a la parada para subirse a este vehículo? (marque solo uno)

- Muni Line #: __________
- Bart
- Caltrain
- AC Transit
- Sam Trans
- Golden Gate

6. After you get off this vehicle, how will you GET TO YOUR FINAL DESTINATION? (mark only one)

¿Después de que se bajó de este vehículo, cómo LLEGARÁ A SU DESTINO FINAL? (marca solo uno)

- Walk/Caminó: # of blocks/路数/# of stories
- Bicycled/自行车: # of blocks/路数/# of stories
- Drive my car
- Rode with someone who will park my car

7. How many TRANSFERS will this trip require? / 您此次需要转乘多少次？/ ¿Cuántas TRANSFERENCIAS necesitará este viaje?

- None/无/Ninguna
- 1
- 2 or more / 2 个或以上 / 2 o más

8. How did you PAY your fare? / 您搭乘此车时, 如何付车费?/ ¿Cómo PAGÓ su tarifa?

- Fast Pass/Senior Pass/Youth Pass
- 35% Student/Student/Disabled Discount Fare
- 35%美分学生/老年/残疾人优惠车费
- Transfer: 专车
- Transferencia a: 其他
- Full Cash Fare
- Transferencia completa
- Tarifa total en efectivo
- Other Monthly Pass / Sticker
- Otro Pasaje Mensual / Sticker
- Other: __________

9. How many CARS (or other personal vehicles) are in RUNNING CONDITION and AVAILABLE to use in your household?

¿Cuántos CARROS (o otros vehículos personales) están en CONDICIONES DE USO Y DISPONIBLES para el uso en su hogar?

- None/无/Ninguno
- One / One / Uno
- Two / 2 / Dos
- Three or more / 3 个或以上 / Tres o más

10. Are you...? / 您是...？/ ¿Es usted...?

- Male / 男性 / Varón
- Female / 女性 / Hembra

11. How OLD are you? / 您的年龄是多少？/ ¿Cuál es la edad que tiene usted?

- Under 13 / 13岁以下
- 13 - 15 / 13 - 15
- 16 - 19 / 16 - 19
- 20 - 24 / 20 - 24
- 25 - 34 / 25 - 34
- 35 - 44 / 35 - 44
- 45 - 54 / 45 - 54
- 55 - 64 / 55 - 64
- 65+ / 65+

12. How many PEOPLE in your household (including yourself) hold a full or part time job? / 您的家庭成员有多少人（包括您自己）? / ¿Cuántas PERSONAS en su hogar (incluyéndose usted) tienen un trabajo de tiempo completo o medio tiempo?

- #

13. What is your ETHNICITY? / 请准确地描述您的种族？/ ¿Cuál es su ORIGEN ÉTNICO?

- Black/African Amer. / 黑人
- Latino / 西班牙人
- Native American / 本地出生的美国人
- White / 白人
- Asiam American / 亚裔美国人
- Other / 其他

14. What was your estimated HOUSEHOLD INCOME (in 2003) before taxes?

¿Cuál es el estimado de los INGRESOS DE SU HOGAR en el 2003 antes de los impuestos?

- Less than $15,000 / 低于$15,000
- $15,000 - $24,999 / $15,000 - $24,999
- $25,000 - $44,999 / $25,000 - $44,999
- $45,000 - $74,999 / $45,000 - $74,999

15. Are you...? (mark all that apply)

¿Es usted...? ( marque todas las que apliquen)

- Employed full time / 全日制雇员
- Student / 学生
- Unemployed/Homemaker/Retired / 无工作家庭主妇退休人员
16. If you are employed: / Si usted está empleado:
A. During this trip away from home, WILL YOU OR DID YOU GO TO WORK?
En este viaje lejos del hogar, ¿vamos a trabajar o ya trabajamos?
☐ Yes / Sí ☐ No / No
B. If you have already gone to work today, WILL YOU RETURN TO WORK before going home?
Si Ud. ya ha hecho un trabajo hoy, ¿volverás a trabajar antes de irse a su hogar?
☐ Yes / Sí ☐ No / No
C. WHERE do you work? / ¿En DÓNDE trabajas?

What is the NAME of that place/building?
El nombre de ese lugar/edificio es:
☐ Already given as origin in Question 2
☐ Already given as destination in Question 4

What is the EXACT STREET ADDRESS of that place?
La dirección exacta de ese lugar es:

What are the NEAREST CROSS STREETS to that place?
Las calles más cercanas a ese lugar son:

17. If you are a student: / Si usted es un estudiante:
A. During this trip away from home, WILL YOU OR DID YOU GO TO SCHOOL?
En este viaje lejos del hogar, ¿vamos a la escuela o ya la hemos ido a?
☐ Yes / Sí ☐ No / No
B. WHERE do you go to school? / ¿En qué lugar estudias?

What is the NAME of that place/building?
El nombre de ese lugar/edificio es:
☐ Already given as origin in Question 2
☐ Already given as destination in Question 4

What is the EXACT STREET ADDRESS of that place?
La dirección exacta de ese lugar es:

What are the NEAREST CROSS STREETS to that place?
Las calles más cercanas a ese lugar son:

18. How many total places HAVE YOU STOPPED AT, or will you stop at, from the time you left home this morning to when you will return home this evening?
¿Cuántos lugares ha parado o va a parar en total desde que salió de su casa esta mañana hasta el momento en que regrese a su casa esta noche?
(Examples: Home to work, to home would be two total stops. Home to work to gym to home would be three total stops. Do not include transfers.)
(Examples: De casa al trabajo y de allí a la casa sería un total de dos paradas. De la casa al trabajo, de allí a la gimnasio y de allí a la casa serían un total de tres paradas. No incluya transferencias.)
☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 or more/10以上/6 más

19. If you had driven to your final destination of this trip, would you have to PAY TO PARK?
¿Si hubiera conducido a su destino final de este viaje, habría tenido que pagar por estacionar?
☐ Yes / Sí ☐ No / No
☐ Not Sure / No sé / No está seguro
## Appendix B: Completed Surveys by Route

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