

MEMORANDUM

Date: May 28, 2015

To: Rachel Schuett, San Francisco Planning Department, and Carli Paine, San Francisco Municipal Transportation Agency

From: Chris Mitchell, Teresa Whinery

Subject: San Francisco TDM Quantification Data Collection Strategy

SF13-0666.02

INTRODUCTION

This memorandum outlines the data collection strategy for parking and trip generation data collected for residential and retail land uses as part of a study of urban travel behavior; intercept surveys and trip counts were performed for AM and PM peak periods during the summer of 2014, based on modified time periods established by the District of Columbia Department of Transportation (DDOT) multimodal trip generation methodology. Data for office land uses was not collected in this way, instead being taken from an annual survey conducted by the Transportation Management Association of San Francisco (TMA SF) for member-building tenants. The nature and use of office data is outlined in the related Data Results Memorandum.

This data collection effort was undertaken as part of the City of San Francisco's effort to develop a Transportation Demand Management (TDM) Program as part of the overall Transportation Sustainability Program (TSP). If implemented, this TDM Program would likely be applicable primarily to new development, but could also apply to major changes of use.

The TDM Program would consist of a citywide TDM Toolkit and an implementation strategy for applying components of the toolkit to various projects. The primary goal of the TDM Program would be to reduce citywide single occupancy vehicle (SOV) trips and vehicle miles traveled (VMT). This project, called the "TDM Framework for Growth," is an interagency effort between the San Francisco Planning Department and the San Francisco Municipal Transportation Agency (SFMTA) in partnership with the San Francisco Office of Economic and Workforce Development (OEWD) and the San Francisco County Transportation Authority (SFCTA).



The data is being collected to better understand how various TDM measures affect travel behavior in various contexts within San Francisco. The goal of the data collection strategy and this memorandum are as follows:

1. Document survey procedures and instruments
2. Provide a framework to maintain consistency in future data collection efforts
3. Establish clear steps and procedures based on lessons learned to make data collection easy for future users

The memorandum begins with a description of the DDOT multimodal trip generation survey methodology on which this data collection strategy was based. The DDOT Field Instruction Manual is included for reference in **Appendix A**.

Following this, the memorandum describes the methodology for collecting parking data. The memorandum concludes with a detailed description of the methodology for the remainder of the data collection, including both staff-related tasks and the survey instruments used.

REVIEW OF OTHER METHODOLOGIES

The TDM Toolkit data collection methodology was derived from the methodology created by DDOT, which was developed as a nationwide model for recording multimodal trip generation; efforts were made to maintain consistency with the DDOT methodology, but certain aspects of this methodology were altered in order to better suit the City of San Francisco's needs.

The DDOT survey methodology uses one form for all land use types (included in **Appendix A**), choosing to tally responses in 15 minute increments; in this regard, the TDM Toolkit methodology for retail sites is identical to DDOT's, save for the replacement of the 'SOV', 'Shared Vehicle', 'Metro' and 'Rail' mode choices with 'Drive Alone', 'Taxi/Carshare', 'Light Rail', and 'BART/Caltrain', respectively; these modes are similar enough, however, to allow for combined analysis.

Additionally, the DDOT methodology collects parking data concerning where drivers have parked, while the TDM Toolkit methodology surveys the possession of reserved parking for residential sites and the presence or absence of off-street parking for retail sites.



PARKING METHODOLOGY

The TDM Toolkit parking methodology sought to understand the relationship (if any) between the availability of car and bicycle parking and mode choice; this necessitated a modification to DDOT's approach.

Car Parking

Due to the differing nature of retail and residential parking, distinct questions were asked of survey respondents for each land use type:

1. *Retail* – Data collected at retail sites related visitors' mode choice to whether or not the retail site had dedicated, free off-street parking
2. *Residential* – Data collected at residential sites related mode choice to whether respondents had reserved parking on-site or nearby

For each of the three land use types, the survey was conducted in a variety of transportation contexts to not only examine the degree to which parking availability and supply affects mode choice, but also the extent to which the effect is different in different parts of the City. This is discussed further under 'Site Selection', below.

Bicycle Parking

Due to the City's interest in bike parking and the importance of the availability of bike parking in supporting people's choice to travel by bicycle, bike parking data was also collected. This entailed recording which type of facility a cyclist used to park their bike, as defined by the City of San Francisco's bicycle parking guidelines: secure parking (Type 1), unsecure facilities such as bike racks (Type 2), and a third category added for this data collection process representing informal bicycle parking such as parking meters or trees (Type 3).¹ This data may be used in future phases of the project to determine whether a relationship between the provision of bicycle parking and mode share exists, can be quantified, or both.

¹ http://www.sfmta.com/sites/default/files/pdfs/Bicycle_Parking_Guidelines.pdf



SITE SELECTION

This data collection effort included surveying at 30 sites. In order to maximize representative data collection across the city, site selection carefully considered both the land use type and the background conditions at the site location. Potential survey sites were classified into two land use types, retail and residential, and the City was divided into three 'place types' based on baseline traffic analysis zone auto mode share (TAZ AMS).² A discussion of these 'place types' based on baseline TAZ AMS is included below, followed by specific site selection criteria by land use type.

Place Types

This data collection effort was undertaken to better understand the factors that influence a person's decision to make a trip by a particular mode of travel. Factors understood to influence mode choice include trip length, the timing and purpose of the trip, the mode choices available, and the cost and convenience of the various modes. The SF-CHAMP model calculates the baseline auto mode share for each of the 981 TAZs across the city. The baseline TAZ AMS includes all trips from all land uses at all times throughout the day. The baseline TAZ AMS ranges from 27.6% to 100%, denoting that between 28 and 100 of each 100 trips are automobile trips.

There are eight interrelated variables that are commonly held to affect travel behavior, are referred to as the eight Ds (8 Ds)^{3, 4}:

- Density – Concentration of residents and employees
- Diversity – Diversity of land uses (jobs/housing and/or retail/housing mix)
- Design – Urban design and site design, particularly connectivity of transportation networks for pedestrian and bicycle trips
- Destination – Accessibility to regional activities⁵
- Distance to Transit – Proximity to high quality transit such as rail or bus service

² Office uses are also included in the TDM Toolkit analysis, but sites were not selected in this process. Instead, data collected by the Transportation Management Association of San Francisco (TMASF) for their member buildings was used.

³ California Smart-Growth Trip Generation Rates Study, Final Report. Appendix A. Institute of Transportation Studies, University of California Davis. November 2009. Accessed January 28, 2015:
http://downloads.ice.ucdavis.edu/ultrans/smartgrowthtripgen/Appendix_A_Definition.pdf

⁴ California Air Resources Board Transportation and Land-Use Related Policies. Accessed January 28, 2015.
<http://arb.ca.gov/cc/sb375/policies/policies.htm>

⁵ This factor is frequently measures as distance to a regional transit facility such as a BART station or ferry terminal.



- Development Scale – Measure of ‘critical mass’ of development⁶
- Demographics – Population features such as household size, annual income, age, etc.
- Demand Management – Aspects such as pricing and incentives for using non-auto modes.

Individual factors affecting mode choice are included in Table 1 below, along with the corresponding 8 D Criteria.

TABLE 1 VARIABLES AFFECTING MODE CHOICE

Variable	8 D Criteria
Percentage of units that are designated affordable on-site	Demographics
Number of vehicular parking spaces dedicated to the dwelling units on-site (excluding carshare and parking for other uses)	Demand Management
Number of vehicular carshare spaces on-site	Demand Management
Number of bicycle spaces on-site	Demand Management
Ratio of on-site parking dedicated to dwelling units to number of dwelling units	Demand Management
Other information about the site, including whether the site contains parking for other land uses	N/A
Number of dwelling units on-site	Development Scale
Number of jobs within a half-mile (straight-line radius from the center of the site)	Density
Number of residents within a half-mile (straight-line radius from the center of the site)	Density
Zoning district the site is located within	Diversity

⁶ An example of such a measurement would be grouping residential developments into the following categories: 10 to 50 units, 51 to 100 units, 101 to 200 units, and 201 or more units.



TABLE 1 VARIABLES AFFECTING MODE CHOICE

Variable	8 D Criteria
Occupancy percentage of the dwelling units on-site	N/A
Number of intersections within a quarter-mile (straight-line radius from the center of the site)	Design
Number of rapid transit stops within a quarter-mile (straight-line radius from the center of the site.) Rapid transit stops are defined as those on Muni's Rapid Transit Network	Distance to Transit
Number of units that with two bedrooms or more at the site	Demographics/Density
Straight-line distance from center of site to a Class I or Class II bicycle facility	Design
Number of above-ground floors in the building	Development Scale
Straight-line distance from center of site to the Central Business District (defined as the Montgomery Street BART and Muni Station)	Destination
Traffic Analysis Zones (special area delineated by state or local transportation officials for tabulating traffic-related data)	N/A
Superdistricts (created by the Metropolitan Transportation Commission for traffic analysis, modeling, and reporting)	N/A
Number of on-street parking spaces within a quarter-mile of the site	Demand Management
Number of on-street parking spaces within a quarter-mile of the site that are metered with a set price	Demand Management
Number of on-street parking spaces within a quarter-mile of the site that are metered with demand-responsive pricing	Demand Management
Number of on-street parking spaces within a quarter-mile of the site that are free	Demand Management



TABLE 1 VARIABLES AFFECTING MODE CHOICE

Variable	8 D Criteria
Number of off-street parking, publicly-available parking spaces within a quarter-mile of the site	Demand Management
Whether site is within a Residential Permit Parking zone	Demand Management
Whether site's parking is unbundled from the cost of the dwelling unit	Demand Management
San Francisco Planning Department Neighborhoods	N/A
Straight-line distance from the center of site to the a regional transit station (defined as a BART station, Caltrain station, or Ferry Terminal)	Distance to Transit

Source: SF Planning Department, 2015.

Based the nature of urban land patterns in San Francisco and the characteristics believed to influence mode choice within the city, the list of variables was consolidated to the following six:

1. Diversity of land uses
2. Proximity to the Central Business District (CBD)⁷
3. Daytime population
4. Density of land uses
5. Parking Supply⁸
6. Transit Accessibility⁹

In order to simplify the site selection effort, the City used the baseline TAZ AMS generated by SF-CHAMP as used as a proxy for the 8 Ds, expressed by the six variables identified above. The spatial distribution of baseline 2012 TAZ AMS was compared to the distribution of population density, transit service, and parking availability to determine whether these variables were correlated with the 2012 TAZ AMS values.

⁷ The Central Business District is considered to be centered at the Powell Street BART station.

⁸ Parking supply includes on on-street and off-street parking and considers other supply-side factors including residential permit requirements and presence of parking meters.

⁹ Transit accessibility includes distance to transit stops and peak headways.



Using GIS analysis, the following was observed:

- The presence of parking meters and Planning Code parking supply maximums are relatively well correlated with auto mode share¹⁰ in that sites with these features tend to have lower auto mode share
- Service population (i.e. the sum of residents and employees) correlates well with auto mode share in that locations with higher population densities tend to have lower auto mode share

Based on this spatial comparison, it was determined that the baseline 2012 TAZ AMS is not significantly different from, and is largely consistent with, the six variables identified above. The baseline 2012 TAZ AMS was consequently used to define three TAZ 'place types'.

Three place types were preliminarily defined as¹¹:

- *Place Type 1: Urban (High Density)* – 0% to 40% AMS at the TAZ level
- *Place Type 2: Urban (Medium Density)* – 41% to 65% AMS at the TAZ level
- *Place Type 3: Urban (Low Density)* – 66% to 100% AMS at the TAZ level

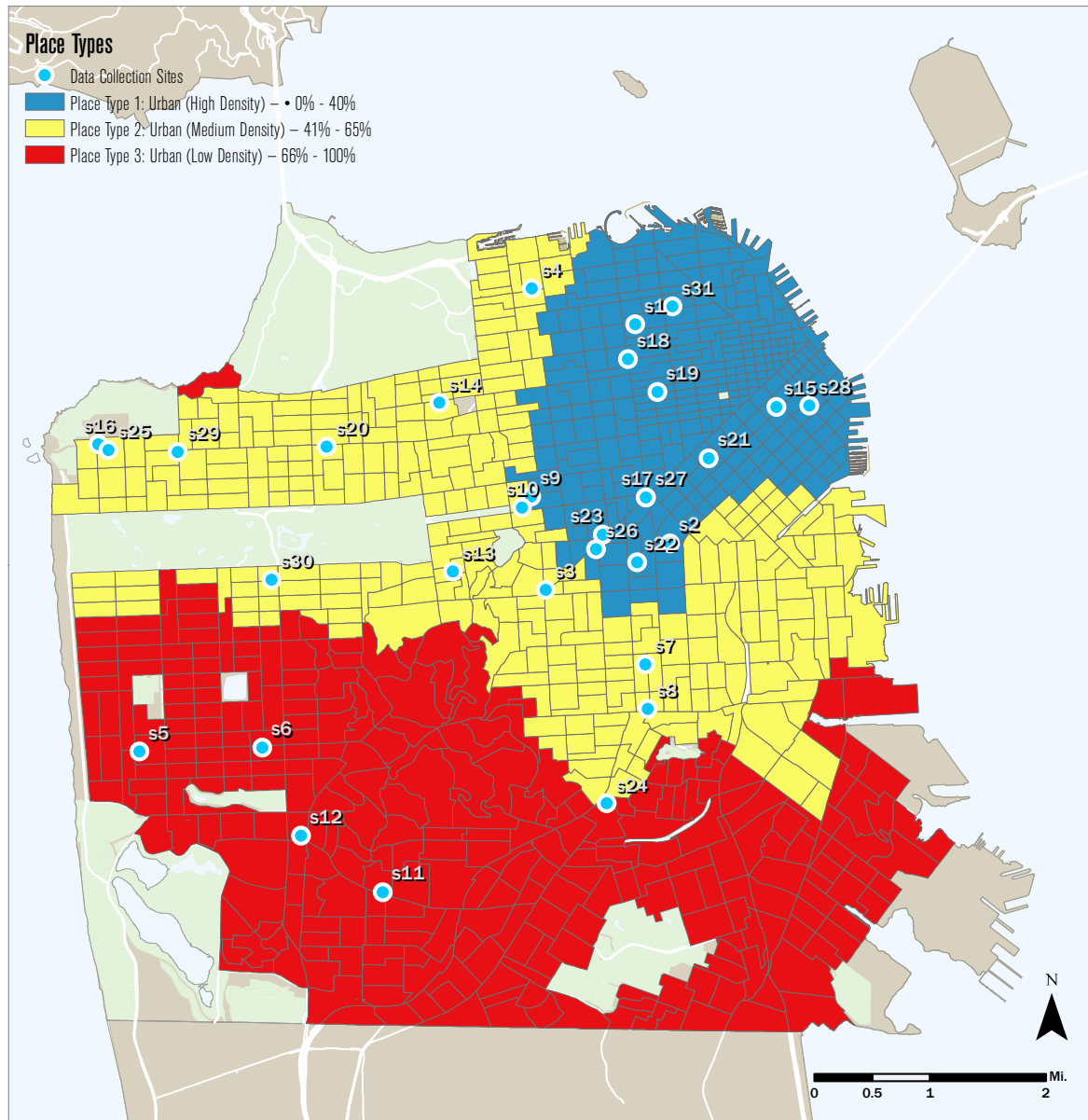
Based on this data, the initial place types also each contained an appropriate number of TAZs. However, upon examination of both the TAZ AMS values for 2040 and the areas of expected development, the three place types were revised to more accurately reflect expected future conditions and smooth any boundaries between types. **Figure 1** shows the final resulting place types as well as the locations of each survey site.

¹⁰The Central Waterfront, Parkmerced, Hunters Point Shipyard, and smaller neighborhood commercial districts represent exceptions to this observed trend.

¹¹ The individual TAZs that comprise each place type are not contiguous areas in San Francisco. However, taken together, they represent areas with the same range of background mode shares and supported selection of survey sites to reflect San Francisco's range of current driving rates.



FIGURE 1 – SURVEY SITE LOCATIONS AND PLACE TYPES



San Francisco Place Types

Using Automobile Mode Split

The values in this map for each traffic analysis zone (TAZ) represent the percentage of trips for an average day are taken by car for residential, office, and retail land use types combined. Each zone is averaged with neighboring zones to ensure smoothness and account for arbitrary zonal boundaries. Zones with less than 40% auto mode split are considered to be Place Type 1: Urban (High Density). Zones with between 41% and 65% are Place Type 2: Urban (Medium Density), and zones over 65% are Place Type 3: Urban (Low Density).



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Site Selection

Retail sites were selected in pairs. Site selection followed these guidelines:

- Both retail sites were either the same retail establishment (e.g. two Walgreens stores) or the same type of retail use with a similar type of clientele (e.g. two specialty grocery stores)
- Pairs were either located in the same TAZ or in a TAZ with similar auto mode share
- One member of each pair provided off-street parking and the other did not
- In order to maximize data collection opportunities, focused on grocery stores, pharmacies, hardware stores, and other high-traffic stores

Residential sites were selected using the following guidelines:

- Selected across the range of auto mode share zones
- Selected across the range of parking supply rates, typically between zero to one parking spaces per dwelling unit¹²
- Selected a range of building sizes, including buildings with under 50 dwelling units
- Initially attempted to include projects which were constructed post-1979 given that rent-controlled projects are not likely to be approved in the future¹³
- Selected housing that is likely to be occupied by people at a variety of income levels, including building with units of various sizes and price points
- Avoided sites with more than the average number of affordable units as defined by the Planning Code Section 415 requirement of approximately 12%¹⁴
- Rejected sites with shared parking garages¹⁵
- Required that buildings be at least 80% occupied

¹² As an exception, one site was selected with more than one parking space per dwelling unit.

¹³ Due to the fact that buildings constructed after 1979 tend to be concentrated in certain areas of the city, provide a smaller range of parking spaces, and are occupied by a more homogenous socioeconomic stratus, some pre-1979 buildings were included to develop a broader, more representative sample.

¹⁴ This selection criterion was included to avoid collecting data not easily compared to other sites. This is in light of the fact that below-market-rate units tend to generate fewer trips and more trips by non-auto modes than comparable market-rate units.

¹⁵ Such sites were rejected, because residential auto trips could not be distinguished from auto trips generated by other uses, such as ground floor retail.



SITE RECONNAISSANCE

As sites were initially selected, City staff contacted the property managers to inform them of the project and attempt to obtain permission to stand on private property to conduct counts and surveys.¹⁶ **Appendix B** shows the script used for contacting building managers, while **Appendix C** shows the letter from the City that building managers were asked to post in their buildings, if the sites were residential. Other relevant data was also initially collected, where possible:

1. Business hours
2. Availability of off-street parking and whether it was shared
3. Number of entrances and exits, particularly access points that would not be visible during site reconnaissance or using Google Street View

After this initial screening and prior to conducting counts and surveys, a site reconnaissance was conducted to confirm the viability of the sites. This was typically performed during the AM and/or PM peak period, consistent with when surveys would be conducted. The information collected during site reconnaissance included:

- General assessment of overall traffic volumes, to determine appropriate staffing levels¹⁷
- Identification/verification of access points
- Identification of recommended surveyor and counter 'standing locations'
- Observation of any other ambient circumstances or peculiarities of the site which would not be conducive to site surveying¹⁸

A sample of the data collected during site reconnaissance can be found in **Appendix D**.

¹⁶ It should be noted that permissions could not be obtained for all sites, in part due to the fact that not all owners could be reached. Where permissions could not be obtained, the site was either not surveyed or surveyed from the public right-of-way.

¹⁷ In particular, it was determined whether separate staff would due to a high volume of pedestrian activity.

¹⁸ In one case, a residential location was not selected for site surveying due to the fact that several construction projects in vicinity resulted in both altered vehicular traffic patterns and ambient noise levels that made speaking at a normal volume very difficult.



STAFFING PLAN

To manage the data collection, a spreadsheet was created that held key information related to surveying shifts as identified by the site reconnaissance, as well as identifying one supervisor for each shift. Two lines for each site, one for the AM peak period and one for the PM peak, were then created.

Roles/Staffing Levels

Generally speaking, surveyors were assigned to the following locations at each site:

1. Pedestrian entrances for retail sites
2. Pedestrian entrances for residential sites
3. Garage entrances for residential sites

Based on the site reconnaissance, one staff member was typically assigned to each door. Depending on the level of activity at each door, the staff member conducted intercept surveys and counted all ins and outs. In cases where traffic volumes were too high to be recorded by one staff person, two staff members were assigned: one who conducted surveys and another who counted ins and outs. In cases where activity was exceptionally low, staff members performed counts and surveys at multiple entrances. Video counts were also used for entrances that were in potentially unsafe or not-visible locations¹⁹ or that were extremely low-traffic entrances.

Supervisors

A supervisor was assigned for each site to monitor the process and act as a "relief" surveyor. The supervisor performed the following tasks:

- Checked in on each surveyor at least once during the surveying period to answer questions
- Carried out quality control and checked for proper surveying technique
- Provided breaks for surveyors if needed, with one mandatory break for the longer PM shifts

¹⁹ Potentially unsafe locations included doors that opened onto alleyways.



The staffing plan was documented as a quality assurance measure, an example of which is provided in **Appendix E**.

SCHEDULING

After selecting survey sites and identifying the number of staff required to conduct the surveys, the sites were entered into a schedule where staff members were assigned shifts; scheduling was required to adhere to certain conditions, described in the section below, to ensure data quality and consistency. Once chosen, survey dates were also finalized with building or property managers, where possible.

Surveys were conducted in the months of July, August and September of 2014²⁰. In recognition of the fact that many events can impact travel choices, this effort took care to:

1. Conduct counts only on Tuesdays, Wednesdays, and Thursdays. Mondays and Fridays were avoided because travel schedules on these days are more variable and less comparable to mid-week days
2. Avoid weeks with holidays
3. Avoid days with street fairs, sporting events, or parades that may affect the travel patterns on and around the site
4. Watch for anticipated severe weather and change data collection days accordingly

Data collection was planned for extended AM and PM peak periods. The peak periods were slightly modified from the DDOT methodology—the PM peak period was extended from 4PM to 3PM. The resulting extended peak periods for the purposes of this data collection effort were typically:

- *AM peak period* – 7AM to 10AM
- *PM peak period* – 3PM to 7PM

In addition, peak period data collection was modified for retail sites not open during part of the peak period. Modifications were made as follows:

²⁰ The Team acknowledged that the summer months are a suboptimal period for measuring representative trip generation, but that the mode share collected during this time will still be representative.



- A 2-hour minimum survey window was maintained, which meant that if a store did not open until 9AM, the survey window lasted until 11AM
- The AM peak period was omitted for sites opening after 10AM

TRAINING

Surveyor training took place in multiple stages to ensure that all participating staff members had a thorough understanding of any data collection role they were performing. Three principal types of training sessions were conducted:

1. An initial training with all City and Consultant staff initially identified as potential surveyors before the beginning of the data collection process
2. One-on-one training of subsequent staff members who volunteered to survey that had not participated in the initial training
3. A secondary training specific to residential site technique for all surveyors at the beginning of the residential site surveying phase

The agenda for the initial training session is provided for reference in **Appendix F**. The training sessions entailed the following:

- Ensuring surveyors have a proper understanding of the goal of the project – to determine total person counts and person counts by mode
- Training surveyors on how to approach and engage the survey subject
- Emphasizing that minor variations of the survey questions were acceptable to render them more natural for each surveyor
- Acting out the survey process to identify any uncertainties new surveyors had
- Ensuring that the surveyors read all pertinent information by reviewing each sheet in the survey packet carefully
- Stressing the importance of clear documentation

Periodic emails were also sent to surveyors and supervisors to update instructions to include observations, clarifications and tip and tricks learned from recent survey experiences, and minor clarifications or revisions to the methodology. An example email is included in **Appendix G**.



SURVEY PACKETS

Survey packets were created for each survey site the week before surveying occurred and were subsequently distributed to each surveyor by providing a link to a cloud-based storage system. The intention of the survey packets was to provide all surveyors with all instructions, information, and materials necessary to carry out their duties; an example survey packet is provided for reference in **Appendix H**. Each survey packet contained:

1. Cover sheet with information about:
 - a. Name and phone number of all surveyors and supervisors
 - b. Roles and timeslots for each surveyor and supervisor
 - c. Building contact and instructions for day-of check-in if necessary or requested
2. Key instructions and reminders
3. List of survey packet contents and supply checklist
4. Diagram of site with:
 - a. Numbered entrances/exits and garage doors
 - b. Suggested surveyor standing positions
5. Materials relevant to recording data:
 - a. Relevant data recording sheets
 - b. Flowcharts and tables of survey procedure for each type of role
 - c. Examples of completed sheets for each type of role
6. Post-survey instructions

DATA COLLECTION PROCEDURE

This section outlines the count and survey procedures; a modified version of this information can be found in the survey packet provided to each surveyor in **Appendix H**.

Count Instructions

Counts were collected at both pedestrian doors and garage doors.



Pedestrian Doors

For pedestrian doors at both retail and residential sites, individuals entering or exiting the door were counted in 15-minute increments. These counts included all individuals that crossed the threshold regardless of whether they were interviewed. However, building staff or employees circulating primarily on the premises were not counted, while individuals making deliveries that entered and exited multiple times were only counted once in each direction. An example count sheet is provided in **Appendix I** and the method for counting pedestrians on the retail and residential pedestrian door survey sheets can be found in **Appendix J** and **Appendix K**, respectively.

Garage Doors

At residential sites with garages that provide direct access to buildings, counts were also performed for garage doors to ensure that all trips were counted. The same principles for pedestrian doors were applied to garage doors, but counts were split into three modes: automobile, bike, and walk. This was done to accurately record trips for modes that could not be easily surveyed. This methodology can be applied to both retail and residential sites, but was only used for residential sites in this data collection effort because retail sites were selected based on the ability to survey all pedestrian entrances and exits, including those for drivers and cyclists. All garage counts were recorded on a garage door survey form, an example of which is available for reference in **Appendix L**.

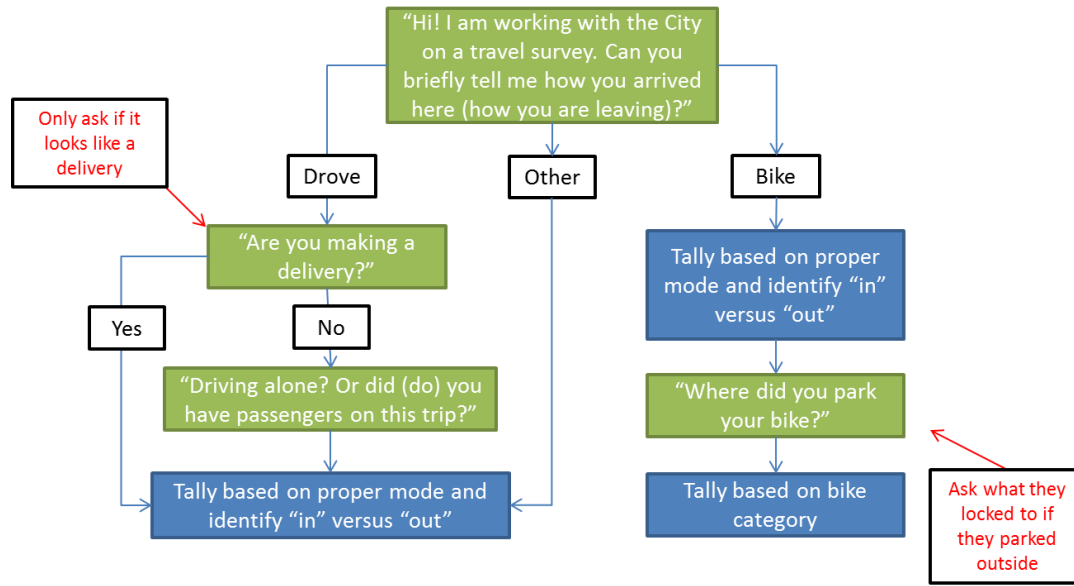
Intercept Survey Instructions

A sample of travelers to both residential and retail sites was elected for an intercept survey.



Retail

FIGURE 2 – RETAIL SURVEY INSTRUCTIONS



In the case of retail sites, the instructions for which are provided in **Figure 2**, the basic procedure involved intercepting as many individuals entering and exiting the store as possible, asking about their primary mode of travel to the site, and recording their responses or marking them as 'No Response'. When necessary, it was specified that the respondent should give their most recent mode of travel from their previous destination, excluding walking.²¹ These responses were recorded in 15-minute intervals. In some cases, further questions were asked based on the person's mode of travel:

1. Those who drove were asked if they were making a delivery; if they were not, or if it did not appear that they were, the respondent was asked if they had driven alone or if they had passengers; the former was recorded as 'Drive Alone' while the latter was recorded as 'HOV Driver'

²¹ The exception to this was if the entire trip was taken on foot. In such cases, 'Walk' was recorded as the mode of travel.

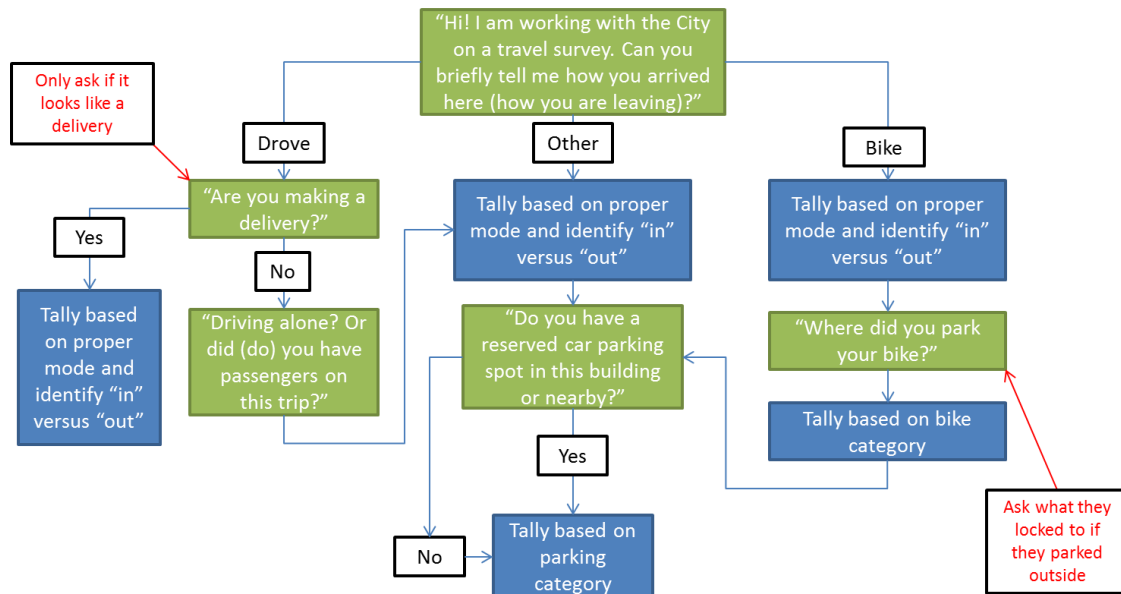


2. Those who biked were asked where they parked their bike and, in cases where they parked outside, to what they locked their bike²²
3. Other mode responses were not asked any additional questions

An example of the retail survey data recording sheet can be found in **Appendix J**.

Residential

FIGURE 3 – RESIDENTIAL SURVEY INSTRUCTIONS



The residential site survey methodology was identical for both pedestrian and garage doors, but differed from retail site surveys in two primary ways, shown in **Figure 3**:

1. A final question was added to the end of the survey; each individual, regardless of mode, was asked whether they had a reserved car parking space in the building or at a location nearby
2. Survey responses were recorded as individual line items rather than as tallies in 15-minute increments

²² The motivation and methodology for the bike parking question was documented in a memorandum provided to the City, which is provided for reference in **Appendix M**.



Horizontal lines were drawn every 15 minutes to split the counts and surveys into 15-minute increments; this allowed easy aggregation into time intervals that matched the retail data.

An example of a residential pedestrian door survey form is provided in **Appendix K** and an example of a residential garage door survey form is provided in **Appendix L**.

DATA ENTRY

Data was entered by Monday of the week following survey, which allowed the data to be checked, cleaned, and stored on a rolling basis.

The following data entry instructions were given to surveyors:

1. Open your site's data entry spreadsheet
2. Go to the 'Survey' tab labeled with the corresponding door numbers for pedestrian door survey data, the 'Garage' tab for garage door surveys, and either the 'Pedestrian Door Counts' or 'Garage Door Counts' for respective data types
3. Be sure to enter the data in the correct lines! (The lines are pre-filled for door, time, and name for all counts and retail site surveys; residential surveys require you to enter the 15-minute time interval for each line item)
4. Remember to note any comment you wrote down in the 'Comments/Uncertainties' cell, including abnormal modes (e.g. if you marked down a skateboarder as a walker or a scooter-rider as SOV)
5. Ensure that one and only one mode or 'No Response' was marked for each residential or garage survey response; if the reserved parking question was not answered, that response should be recorded as 'No Response'

A variety of data sheet types were created based on the specific staffing of each site. The structure and type of spreadsheets differed for retail and residential sites. An example of each data sheet type can be found in **Appendix N**.

Residential

For residential sites, separate pedestrian and garage door survey sheets for AM and PM peak periods were provided. All pedestrian door counts were stored on a single sheet, while all garage



door counts were stored on a separate sheet; in each case, the counts were kept separate by door. The types of data entry sheets used for residential sites were:

- Residential Pedestrian Door Surveys (AM)
- Residential Pedestrian Door Surveys (PM)
- Residential Counts
- Garage Door Surveys (AM)
- Garage Door Surveys (PM)
- Garage Counts

Retail

For retail sites, all surveys were stored on a single sheet, separated by door. All pedestrian door counts were stored on a single sheet, again kept separate by door. The types of data entry sheets used for retail sites were:

- Retail Pedestrian Door Surveys
- Retail Counts

ASSUMPTIONS, LIMITATIONS, AND FUTURE CONSIDERATIONS

Certain limitations of the TDM Toolkit data collection process were identified during the course of its development and implementation; below are some of the key assumptions and limitations of the process that can inform future similar data collection efforts:

- Dog walking, jogging, and trips of a similar nature require a judgment to be made concerning their status as 'trips'; while these activities have no definite trip end and are unlikely to be performed on other modes, the TDM Toolkit methodology treated these as walk trips, consistent with the DDOT methodology
- In places with frequent pedestrian trip-chaining²³, the location of parking relative to the survey site may bias the number of driving or walking responses received

²³ Trip chaining is a phenomenon wherein an individual links a series of short trips between two major anchor points, such as visiting a drug store or daycare on the way home from work.



- There is a strong tendency for people to claim walking as a mode at a pedestrian door unless pressed or led to think about their prior mode
- The quality of data collection at smaller sites is particularly important from the standpoint of data usability; this presents issues for analyzing these building types
- In areas with large non-English-speaking populations, lacking staff members who speak the predominant non-English language spoken there may significantly reduce the response rate and has the potential to bias the data
- Selecting sites with lower numbers of entrances and exits is very important in managing the number of staff and budget necessary to carry out the data collection process
- Limiting the number of survey questions renders administration of surveys markedly easier: each additional question reduces the likelihood of a full response and makes accurately and quickly communicating the brevity of the survey to potential respondents more difficult
- Alerting building or property managers to date, time, and purpose of surveying is more effective than requesting permission to perform surveys. This approach is the recommended approach for sites where surveyors do not need to stand on private property



APPENDICES

Appendix A – DDOT Survey Methodology

Appendix B – Script for Contacting Building Managers

Appendix C – Letter from City Posted in Buildings

Appendix D – Example of Site Reconnaissance Data

Appendix E – Example of Staffing Plan

Appendix F – Initial Survey Training Session Agenda

Appendix G – Email Concerning Proper Survey Technique

Appendix H – Example of Survey Packet

Appendix I – Pedestrian Door Count Form

Appendix J – Retail Survey Form

Appendix K – Residential Pedestrian Door Survey Form

Appendix L – Garage Door Survey Form

Appendix M – Bike Parking Survey Methodology Memorandum

Appendix N – Example of Survey/Count Data Spreadsheets

Ms. Rachel Schuett and Ms. Carli Paine
May 28, 2015
Appendices



APPENDIX A – DDOT SURVEY METHODOLOGY



APPENDIX B – SCRIPT FOR CONTACTING BUILDING MANAGERS

Please hit the following points when contacting building managers:

1. May I speak to the manager please?
2. My name is *(Insert Your Name)* and I'm with the San Francisco Planning Department
3. We're conducting citywide research on people get around the City (drive, transit, cycle) and we'd like to give customers entering and exiting your store a short survey
4. All survey questions will be on travel and no personal information will be collected
5. Anyone may opt out of the survey
6. We will be on-site for one day in July or August
7. We will be on-site for the morning and/or the afternoon
8. We may be on-site this week or next to collect site information for our surveyors
9. Can I ask you a couple of questions:
 - a. Can you confirm your opening & closing hours?
 - b. How many public entrances & exits do you have?
 - c. Can I have your full name?
 - d. Can I have your e-mail address to send you more information on the survey?
 - e. What's the best way to contact you in the future with the date of the survey?
 - f. Will you be our contact the day of the survey?
10. Thanks so much – I'll send you an e-mail with more information shortly



Appendix C – Letter from City Posted in Buildings



SAN FRANCISCO PLANNING DEPARTMENT

MEMO

July 10, 2014

To whom it may concern,

The San Francisco Planning Department and the San Francisco Municipal Transportation Agency (SFMTA), in partnership with the San Francisco Office of Economic and Workforce Development (OEWD) and the San Francisco County Transportation Authority (SFCTA), are conducting a study of urban travel behavior and the effects of various transportation demand management (TDM) strategies on the choice of transportation mode.

In support of this effort, the Planning Department and SFMTA are undertaking a data collection effort at various residential and retail sites throughout San Francisco. The data collection includes counting person trips, and conducting intercept surveys with residents, employees, and customers to identify the mode of transportation for trips and whether reserved parking was available. No personal or identifying information will be collected.

Our survey staff will be on site on
from 7AM-10PM and 4PM-7PM.

Please do not hesitate to contact Rachel Schuett (Rachel.Schuett@sfgov.org; 415-575-9030) or Carli Paine (carli.paine@sfmta.com; 415-701-4469) with questions or concerns.

Thank you for your support.

Sincerely,

Rachel Schuett
SF Planning Department

Carli Paine
SFMTA

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

Memo



APPENDIX D – EXAMPLE OF SITE RECONNAISSANCE DATA



APPENDIX E – EXAMPLE OF STAFFING PLAN

Site	Name	Address	Survey Date	Surveyor 1	Surveyor 1 Shift	Surveyor 2	Surveyor 2 Shift	Supervisor	Informed of Final Survey Date?
s14	Standard 5 & 10 Ace	3545 California St	7/22/2014	Staff	8:30am - 10:30am, Combined (Door 1)	Staff	8:30am - 10:30am, Combined (Door 2)	Staff	Yes
				Staff	3:00pm - 7:00pm, Combined (Door 1)	Staff	3:00pm - 7:00pm, Combined (Door 2)	Staff	
s15	199 New Montgomery	199 New Montgomery St	7/29/2014	Staff	7:00am - 10:00am, Garage Combined (Door 4)	Staff	7:00am - 10:00am, Counter (Door 1)	Staff	Y
				Staff	3:00pm - 7:00pm, Garage Combined (Door 4)	Staff	3:00pm - 7:00pm, Counter (Door 1)	Staff	
s7	Walgreens 3	2690 Mission St	7/30/2014	Staff	7:00am - 10:00am, Counter	Staff	7:00am - 10:00am, Interviewer	Staff	Yes (New Date)
				Staff	3:00pm - 7:00pm, Counter	Staff	3:00pm - 7:00pm, Interviewer	Staff	
s16	250 Point Lobos	250 Point Lobos Ave	7/31/2014	Staff	7:00am - 10:00am, Garage Combined and Combined (Door 2 & Garages 1 and 2)	-	-	Staff	Yes
				Staff	3:00pm - 7:00pm, Garage Combined and Combined (Door 2 & Garages 1 and 2)	-	-	Staff	
s19	Blanc	1080 Sutter St	8/6/2014	Staff	7:00am - 10:00am, Garage Combined (Door 4)	Staff	7:00am - 10:00am, Combined (Door 1-3)	Staff	Yes
				Staff	3:00pm - 7:00pm, Garage Combined (Door 4)	Staff	3:00pm - 7:00pm, Combined (Door 1-3)	Staff	
s18	Marlow	1800 Van Ness Ave	8/6/2014	Staff	7:00am - 10:00am, Garage Combined (Door 1)	Staff	7:00am - 10:00am, Combined (Door 2)	Staff	Yes
				Staff	3:00pm - 7:00pm, Garage Combined (Door 1)	Staff	3:00pm - 7:00pm, Combined (Door 2)	Staff	



APPENDIX F – INITIAL SURVEY TRAINING SESSION AGENDA

1. **Materials Hand-Out**
 - a. Survey packet
2. **Project Introduction (11:00 – 11:10AM)**
 - a. Motivation/goal – project background
 - b. Overall methodology/methodological approach – goal to obtain person trip counts and mode split; residential and retail sites for AM and PM peak periods
3. **Roles of Different Staff Types (11:10 – 11:12AM)**
 - a. What surveyors will do – count, interview, or both
 - b. Function of supervisors – will check in w/ you once during your shift and be “on-call” via their cell phones. Supervisor contact info will be in your survey packet.
4. **Discussion of Staffing Logistics (11:12 – 11:15AM)**
 - a. When you’ll receive your staffing assignment – staffing requests will be coordinated by Carli and Ted
 - b. Where you’ll get your materials – survey packets will be available on google drive. Vests and clipboards provided by Carli. Other items need to be self-supplied.
 - c. Where/how to turn your surveys in once completed – instructions in the survey packet.
5. **Site Survey Preparation (11:15 – 11:20AM)**
 - a. Review Survey Packet and checklist
 - b. Review site diagram
 - c. Print all relevant items – multiple copies of everything!
 - d. Ensure you have the phone number of your supervisor
6. **Arriving at the Site (11:20 – 11:25AM)**
 - a. Arrive early; take a bathroom break



- b. Who you should contact/approach – check-in with building contact if requested. Touch base with other surveyors if they are on site as well
- c. Locate yourself at a spot that does not block entrance but provides you with a view of entrance even if you are interviewing someone (if you are responsible for a dual task)

7. How to Collect Data (11:25 – 11:40AM)

- a. Etiquette – professional, friendly, smile!
- b. Count sheet methodology - where to stand, how to record, clear documentation!
- c. Survey sheet methodology (retail) - where to stand, how to approach people, how to record, clear documentation!
- d. Survey sheet methodology (residential) - similar
- e. Variations on wording - How did you get here today? Did you drive today?
- f. What to do if they ask questions
- g. What to do when you're done – see survey packet. Immediately note any troubleshooting/unforeseen issues
- h. Role play

8. Submitting and Entering Data (11:40 – 11:50AM)

- a. What to do with your survey packet
- b. Where and how to enter collected data into the database
- c. Finishing the process

9. Final Remarks (11:50 – noon)

- a. Questions?
- b. Last minute logistics for next week



APPENDIX G – EMAIL CONCERNING PROPER SURVEY TECHNIQUE

Hi everyone,

It's Friday! Thanks for all your hard work this week. I'm writing to provide a few tips/tricks that we've noticed and heard from this week's surveying:

- **Wear a smile!** It makes people much more likely to respond.
- An opening line that worked well was "Hi, I'm working with the City. Could I ask you how you got here this morning?"
- If you can't tell if they are going to enter the store, you can **ask anyway** and just don't record anything if you were wrong. Every second counts, and if someone is already passing through the door they're unlikely to turn around.
- If someone enters without stopping, still complete your opening line sentence – they may stop on the way out if they know the survey is that short.

Clarifications that came up:

- Count all non-responses on a trip basis, not person basis.
- Record one observation per group.
- If someone is driving and delivering something, mark only delivery – not delivery + drive alone.

Thanks again everyone for your work this week, next week, and into the future. Have a great weekend and feel free to ask any questions you might have!

Ms. Rachel Schuett and Ms. Carli Paine
May 28, 2015
Appendices



APPENDIX H – EXAMPLE OF SURVEY PACKET



APPENDIX I – PEDESTRIAN DOOR COUNT FORM

3. COUNT SHEET

Site #: 51
 Location: 1 Market St.
 Surveyor: John Doe
 Date: 8/2/2014
 Afternoon Shift Break Time: 5:00 - 5:15

Minutes after Hour	Direction	Count		Door: _____
		Door: <u>2</u>	Door: _____	
:00 to :15	In	≠	≠	
	Out	≠	=	
:15 to :30	In	≠	=	
	Out	≠	≠	
:30 to :45	In	≠	=	
	Out	≠	=	
:45 to :00	In	≠	=	
	Out	≠	≠	

5. RETAIL SURVEY FORM

[illegible]

Site #: S2
Location: 2 Market St.
Surveyor: Joe Q. Public
Date: 8/1/2014
Door: 1
Afternoon Shift Break Time: 5:00-5:15



APPENDIX L – GARAGE DOOR SURVEY FORM

5. GARAGE DOOR SURVEY FORM

Site #: 52
Location: 2 Market St.
Surveyor: Jane Doe
Date: 8/1/2014
Door: 2
Afternoon Shift Break Time: 5:00-5:15

[illegible]

Ms. Rachel Schuett and Ms. Carli Paine
May 28, 2015
Appendices



APPENDIX M – BIKE PARKING SURVEY METHODOLOGY MEMORANDUM

[illegible]

Residential Surveys

Survey Information					Time Period		Direction		Mode Question										Parking Question	Reserved Question								
Sta ID	Name	Location	Surveyor	Date	Door	(15 Min Increments)		In	Out	Delivery	Free Aloft	DVR	OV	Fas.	Walk	Zoo / TNG	Bike	Bus	Light Rail	BART	vars	Shu	No Trip	Reason	Doesn't Have	Bike Parking Question		
						Type 1	Type 2																			Type 1	Type 2	Other
s22	Vera	#600 5th St	Suneyor t	8/13/2014	Door t	7:00am - 7:15am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:00am - 7:15am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:00am - 7:15am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
s22	Vara	#600 5th St	Suneyor t	8/13/2014	Door t	7:15am - 7:30am	AM	-	t	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		



Retail/Residential Pedestrian Counts

Survey Information				Time Period		Direction	Count #
Site ID	Name	Location	Surveyor	Date	Door	(15 Min Increments)	
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:00am - 9:15am AM	In 16
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:00am - 9:15am AM	Out 14
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:15am - 9:30am AM	In 14
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:15am - 9:30am AM	Out 14
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:30am - 9:45am AM	In 17
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:30am - 9:45am AM	Out 13
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:45am - 10:00am AM	In 24
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	9:45am - 10:00am AM	Out 20
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:00am - 10:15am AM	In 24
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:00am - 10:15am AM	Out 29
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:15am - 10:30am AM	In 25
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:15am - 10:30am AM	Out 20
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:30am - 10:45am AM	In 22
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:30am - 10:45am AM	Out 22
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:45am - 11:00am AM	In 21
s0	Bi Rite	550 Divisadero	Surveyor 1	7/24/2014	Door 1	10:45am - 11:00am AM	Out 24
s0	Bi Rite	550 Divisadero	Surveyor 2	7/24/2014	Door 1	3:00pm - 3:15 pm PM	In 58
s0	Bi Rite	550 Divisadero	Surveyor 2	7/24/2014	Door 1	3:00pm - 3:15 pm PM	Out 71



Garage Door Counts

Survey Information				Time Period			Direction	LEAVE BLANK	Car Count	Bike Count	Walk Count
Site ID	Name	Location	Surveyor	Date	Door	(15 Min Increments)					
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:00am - 7:15am	In	LEAVE BLANK	Enter count for each 15 min period	Enter count for each 15 min period	Enter count for each 15 min period
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:00am - 7:15am	Out		2		5
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:15am - 7:30am	In				1
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:15am - 7:30am	Out		1		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:30am - 7:45am	In		1		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:30am - 7:45am	Out		2	1	2
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:45am - 8:00am	In				1
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	7:45am - 8:00am	Out		4		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:00am - 8:15am	In		2		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:00am - 8:15am	Out		6	1	1
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:15am - 8:30am	In				5
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:15am - 8:30am	Out		2		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:30am - 8:45am	In				
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:30am - 8:45am	Out		3		
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:45am - 9:00am	In				1
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	8:45am - 9:00am	Out		1	1	
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:00am - 9:15am	In				
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:00am - 9:15am	Out			1	
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:15am - 9:30am	In		1		1
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:15am - 9:30am	Out			1	
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:30am - 9:45am	In				
s22	Vara	1600 15th St	Surveyor 1	8/13/2014	Garage	9:30am - 9:45am	Out		1		