

Section 1: Introduction

In 2000, the Metropolitan Transportation Commission (MTC) launched its fifth travel survey effort in the nine-county Bay Area. The result is the Bay Area Travel Survey 2000, or BATS2000. This report summarizes the data collected in the 2000 survey and is the fourth working paper documenting the analysis and results from BATS2000. Previous reports reviewed sample weighting and expansion, trip linking procedures, and imputation procedures for missing variables.

BATS2000 collected travel information from residents of the nine-county Bay Area for weekday and weekend travel both inside and outside of the region. However, the focus of this work is intraregional travel only (travel within the nine Bay Area counties). Interregional and external travel – travel with the origin and/or destination outside the region – are not included. Similar to previous travel characteristics reports for the San Francisco Bay Area, the results discussed are for the weighted and expanded count of households, persons, and trips in the 2000 household travel survey (see Purvis, 2003 for additional information regarding sample weighting and expansion). What sets the 2000 report apart from previous MTC regional travel characteristics reports is that detailed information on weekend travel is included.

The format of this report, including table numbering and sequence, is quite similar to the reports for the 1981 and 1990 household travel surveys. Though each of the five surveys sponsored by MTC was conducted in a slightly different manner, the results are still comparable, and the reader is encouraged to evaluate results from previous surveys with those outlined herein. A brief description of each of the household travel surveys conducted in the Bay Area, including BATS2000, is provided in the following section.

1.1 Household Travel Surveys Conducted in the Bay Area

Over the past 40 years, MTC has sponsored five household travel surveys. The surveys were conducted in 1965, 1981, 1990, 1996, and 2000. The largest effort took place in 1965 when more than thirty thousand households were interviewed. As Table 1.1 shows, the only other survey to begin to approach the 1965 level of involvement is the 2000 survey, and it had just over fifteen thousand households participating. Not only have surveys subsequent to 1965 had fewer participants, survey response rates have decreased steadily over time. Table 1.1 shows the decline in survey response rates from a high of 64.5% in 1981 to a low of 13.7% in 2000. This trend is common and has been observed with surveys from a variety of fields.

The decline of survey response rates is attributed to several factors: the overwhelming number of mail and phone solicitations, the increasing distrust of government agencies, and the lack of faith people have in surveys. This decline in response rates combined with the increasing difficulty of conducting surveys due to insufficient resources has made travel surveys especially challenging for transportation planning agencies (Cambridge Systematics, 1996). Despite the increasing difficulty associated with administering surveys, the wealth of information provided through these efforts has been worth the labor, which is why the Metropolitan Transportation Commission has continued sponsorship of surveys over the past four decades and will likely

continue to in the future. The five surveys conducted by MTC to date are described briefly in the following sections beginning with the 1965 effort.

The 1965 survey was the first major survey in the Bay Area and was conducted in-house by the Bay Area Transportation Study Commission, or BATSC (the precursor to MTC). Over thirty thousand households were visited for a traditional face-to-face home interview. To date, the 1965 survey contacted the largest number of Bay Area households and had the highest sampling rate of 2.21% (the next largest survey was in 2000 where just over fifteen thousand households participated with a sampling rate of 0.61%). The 1965 survey collected information on weekday and weekend travel, and BATSC also used the opportunity to administer supplemental surveys in an effort to develop a comprehensive regional transportation planning database (Purvis, 1994).

The second major household travel survey – and the first to retrieve travel information over the phone – was the 1981 survey. As in the 1965 survey, weekday and weekend travel data was collected, and more than 7000 Bay Area households were involved. Travel diary cards were mailed to participants after initial contact was made over the phone. Follow-up phone calls were then used to retrieve travel information. This method of data collection has been used in all subsequent MTC sponsored household travel surveys.

In 1990, the third household travel survey took place. Similar to the 1981 survey, the 1990 survey corresponded with participants and collected travel information by phone. However, unlike the previous two surveys, the 1990 effort only collected weekday travel information. For the majority of 1990 respondents, only single-day data was collected, but the survey also amassed multiple-weekday data from a small portion of the respondent households (approximately 14%). The 1990 survey was also unique in that it included a separate sub-project to collect information from 1,000 BART-using households (BART is the Bay Area Rapid Transit District). BART funded the effort and provided respondent household contact information (Purvis, 1994).

The next survey effort occurred in 1996, and more than 3,500 households participated. As in the 1981 and 1990 surveys, respondents were initially contacted by phone, mailed travel diaries, and contacted again by phone to retrieve travel information. The 1996 survey collected both weekday and weekend multi-day data and was the first activity-based survey conducted in the Bay Area. Respondents were asked to record all activities, including trips, over a two-day period. The 1996 survey also included separate sub-projects. A stated preference congestion pricing survey was administered to 150 of the respondents with a follow-up survey conducted on 110 participants. A follow-up survey was also performed on over half of the 3,678 respondent households to update contact and demographic information. These participants were then used as a panel sample for the BATS2000 survey (NuStats Research and Consulting, 1999).

The most recent MTC household travel survey is the 2000 Bay Area Travel Survey, or BATS2000. More than 15,000 households participated. BATS2000 is an activity-based travel survey that collected information on all in-home and out-of-home activities over a two-day period, including weekday and weekend pursuits. Like the 1990 survey, BATS2000 also included an additional sample of 3,000 BART-using households.

In this report, the focus is the data gathered in the 2000 survey for the set of 15,000 participating households (BART households are not included in this report). The survey results have been weighted and expanded based on Census 2000 data, and trips have been linked to produce the results contained in this report (see Purvis, June 2003 for a detailed explanation of sample weighting, expansion, and trip linking procedures). Additionally, interregional and external trips have been removed from the analysis. The following section provides an outline of the information contained in the remainder of this report.

Table 1.1**Characteristics of Household Travel Surveys Conducted in the San Francisco Bay Area**

Characteristic	1965 Home Interview Survey	1981 Telephone Travel Survey	1990 Telephone Travel Survey	1996 Telephone Travel Survey	2000 Telephone Travel Survey
# of HHs, Weekday	20,486	6,209	9,359	0	0
# of HHS, Weekend	10,200	882	0	0	0
# of HHs, MultiDay	0	0	1,479	3,678	15,064
# of HHs, Total	30,686	7,091	10,838	3,678	15,064
TOTAL HOUSEHOLDS	1,387,000	1,970,500	2,246,200	2,367,800	2,466,000
Average Sampling Rate	2.21%	0.36%	0.48%	0.16%	0.61%
Survey Cost (survey year \$)	\$1,533,500	\$337,000	\$1,000,000	\$512,000	\$1,462,000
Survey Cost (2000 \$) ¹	\$8,969,500	\$669,000	\$1,364,000	\$588,000	\$1,462,000
Cost per Interview (2000 \$)	\$292	\$94	\$126	\$160	\$97
Type of Survey Methodology	Trip-Based Home-Interview (Face-to-Face)	Trip-Based Phone retrieval of trip diaries	Trip-Based Phone retrieval of trip diaries	Activity-Based Phone retrieval of activity diaries	Activity-Based Phone retrieval of activity diaries
Households Contacted	N/A	11,000	23,600	12,029	109,636
Survey Response Rate	N/A	64.5%	45.9%	30.6%	13.7%
Survey Conducted by. . . .	In-House (Bay Area Transportation Study Commission)	Consultants: Crain & Assoc. Opinion Research	Consultants: E.H. White & Co. Nelson/Nygaard Phase III Market	Consultants: NuStats Research & Consulting	Consultants: MORPACE International, Inc.

¹. Survey Cost inflated to year 2000 dollars using the consumer price index (Purvis, 2002; U.S. Department of Labor, 2004):

1.2 Report Structure

This report is divided into two volumes. Volume I includes a summary of average weekday and weekend travel in the nine-county Bay Area derived from the 2000 household travel survey. For each subsection of the report, weekday trips are described first under a weekday heading (i.e. “Weekday Trips”) while a discussion of weekend trips follows under a weekend heading. Though weekend travel is discussed in Volume I, the majority of tables for travel on Saturday and Sunday are contained in Volume II of the report. Volume I is comprised of six sections and four appendices, and Volume II contains two appendices. The information presented in Volume I and Volume II follows the outline detailed below.

The next section of this paper, Section 2, reports the average weekday and weekend components of travel including the aggregate, weighted number of intraregional, interregional, and external trips. Trips are reported by purpose (home-based work, home-based shop (other), home-based social/recreational, home-based school, and non-home-based) and by detailed and generalized mode. Vehicle occupancies, time at trip origin and destination, and reported trip duration are also included in Section 2.

Regional trip rates are reported in Section 3 by trip purpose and by mode at both the household and person level. Trip rates are also provided by household size, household income, vehicle availability, housing structure type, county of residence, number of workers in the household, household life cycle category, area type, and by different combinations of these variables.

Section 4 of this report discusses trip rates based on various socio-demographic attributes of the trip maker including age, gender, employment status, and driver’s license status.

County-to-county level trip rates by trip purpose and by mode are summarized in Section 5 of the report. The effects of household demographics such as income, structure type, tenure, and vehicle availability on weekday vehicle driver trips are also reviewed in Section 5.

Finally, a brief summary of planned projects and future research with the BATS2000 data is outlined in Section 6.

Appendices A, B, C, and D are included in Volume I of the report and highlight weekday travel. Appendix A includes a sample of the activity diary used in the 2000 household travel survey. Appendix B includes a wealth of detailed weekday tables to augment the main text tables in Section 2. Appendix B tables include unweighted sample trips by purpose and mode, a distribution of weighted and expanded trips by purpose and all reported modes, trips by purpose at origin and destination, a detailed distribution of trips by time of day (time at trip origin and destination), and the results of the trips-in-motion analysis.

Appendix C contains weekday tables to supplement Section 3 of the report. In this section of the appendix, trip rates are provided by trip purpose and various demographic categories (household size, vehicle availability, etc.). Detailed weekday county-to-county travel tables are included in Appendix D to support Section 5 of the report. These tables provide a detailed breakdown of county-to-county trips by trip purpose and mode.

Appendices E and F in Volume II of the report include tables that highlight weekend travel. Appendix E reports on Saturday travel, and Appendix F includes Sunday travel. The tables in these two sections are similar to those found in the main text for weekday trips. Additionally, Appendices E and F include detailed tables similar to those found in Appendices B, C, and D for weekday travel.