## Section 3: 2000 Regional Household and Person Level Trip Rates

Average aggregate trip rates at both the household and person levels for intraregional travel in the Bay Area are presented in this section. Trip rates are reported by household characteristics including size, income, vehicle availability, housing structure type, county of residence, number of workers, household life cycle category, and area type of residence. Trip rates are also stratified by trip purpose and travel mode. The trip rates included in this report are based on the weighted and expanded number of households and persons represented by the BATS2000 survey.

### 3.1 Regional Trip Rates by Trip Purpose and Travel Mode

Weekday trip rates are discussed in this subsection and are reported by general travel mode and by the five aggregate trip purpose categories. Trips per household, trips per person age five and older, and trips per person for individuals of all ages are presented. Trip rates were calculated using the weighted and expanded results of the BATS2000 survey: 2,466,020 regional households, 6,113,940 individuals age five and over, and 6,641,061 persons of all ages.

### Weekday Trip Rates

Regional weekday trip rates by trip purpose and travel mode are shown in Table 3.1. The average trip rate for Bay Area households in 2000 is 8.4 trips per weekday. By trip purpose, Bay Area households average 1.9 home-based work trips and 2.2 home-based shop trips on the typical weekday. The lowest trip rate for regional households is for home-based school trips with only 1.0 produced per weekday. Households average 1.5 home-based social/recreational trips per weekday and 1.9 non-home-based trips. By mode, 6.8 household trips per weekday are made in private vehicles, and nearly one trip per day is a walk trip (0.87 per household).

Trip rates per person were calculated for all persons surveyed in BATS2000 and for persons age 5 years and older only. Individuals five and older average 3.2 trips per weekday for all trip purposes. Persons five and over average 0.75 home-based work trips, 0.80 home-based shop (other) trips, 0.54 home-based social/recreational trips, 0.38 home-based school trips, and 0.73 non-home-based trips on the average weekday. Of the 3.2 trips per person per weekday, 1.9 trips are made by vehicle drivers.

Trip rates for individuals of all ages are also provided in Table 3.1. Bay Area residents average 3.1 trips per weekday. The largest rate is for home-based shop (other) trips at 0.81 per person. Individuals average 0.70 non-home-based trips per weekday. The trip rate for home-based school trips increased slightly when trips made by children younger than five were included in the calculation (from 0.38 to 0.39). The average trip rate for home-based work trips is 0.69. For home-based social/recreational trips, the average is 0.55 trips per person per weekday.

Table 3.1 shows that person and household level trip rates are higher in 2000 than in 1990. However, it may not be appropriate to say that people are indeed traveling more. These higher trips rates may be due to the different survey methods used in 1990 and 2000. Recall that the 1990 survey was trip-based while the 2000 survey was an activity-based survey. Research suggests that intermediate stops (non-home-based trips) are better captured with activity-based

surveys than with traditional trip-based surveys (Stopher, 1992). Another difference between the 1990 and 2000 surveys is the way in which trip rates were calculated. Unlike the 1990 survey, BATS2000 collected travel information for individuals of all ages; though children younger than five were tallied in 1990, their travel information was not recorded. Thus, 1990 rates would actually be higher if travel information for children under 5 had been recorded. By the same token, 2000 rates would be lower if travel for children under 5 was not included in the trip rate calculations.

**Weekend Trip Rates**

Weekend trip rates at both the person and household levels stratified by trip purpose and travel mode are reported in this section for intraregional Bay Area travel in 2000. Tables pertaining to this discussion can be found in Appendices E and F.

Saturday trip rates for all purposes are slightly lower than weekday rates as outlined in Table 3.1E. Households average 8.2 trips per day on Saturday. As expected, home-based work and home-based school trip rates decrease on Saturday as compared to the weekday (0.58 home-based work trips per household and 0.19 home-based school trips per household on Saturday). Bay Area residents make nearly twice as many home-based social/recreational trips on Saturday than on the weekday (2.8 trips per household on Saturday versus 1.5 per weekday). Households average 2.7 home-based shop (other) trips and 2.0 non-home-based trips on Saturday. By mode, trip rates per household made by vehicle drivers slightly decrease from the weekday from 4.7 to 4.2 per day on Saturday while in-vehicle person trips (vehicle driver and vehicle passenger trips) increase from 6.8 to 7.2 on Saturday. This can be attributed to the propensity of individuals to engage in more group travel on Saturday. Persons age five and older average 3.1 trips on Saturday by all purposes. The average trip rate for persons of all ages in the household is 3.1 trips per day on Saturday.

Trip rates for Sunday travel are displayed in Table 3.1F. On Sunday, households average 7.7 trips per day, which is lower than the household trip rate for both weekdays and Saturdays. Similar to Saturday rates, home-based work and school trips per household are much lower on Sunday than during the week while home-based social/recreational and shop (other) trips dominate trips produced on Sunday. Persons age five and older make 2.9 trips per day on Sunday. The average trip rate for persons of all ages on Sunday is 2.9 per capita. Bicycle trip rates per household and per person are higher on Sunday than on Saturday. The average household makes 0.13 bicycle trips on Sunday compared to 0.08 on Saturday. Trip rates for all other modes on Sunday are lower than those for Saturday travel.

**Table 3.1**
**2000 Regional Weekday Trip Rates by Purpose and Mode**

| | Home-Based | | | | Non- | |
|---|---|---|---|---|---|---|
| Mode | Work | Shop | Soc/Rec | School | Home-Based | Total |
| *Trips per Household* | | | | | | |
| Vehicle Driver | 1.396 | 1.326 | 0.684 | 0.168 | 1.110 | 4.684 |
| In-Vehicle Person | 1.524 | 1.807 | 1.212 | 0.686 | 1.521 | 6.750 |
| Transit | 0.227 | 0.071 | 0.061 | 0.088 | 0.072 | 0.519 |
| Person | 1.750 | 1.878 | 1.273 | 0.774 | 1.593 | 7.269 |
| School Bus | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.065 |
| Bicycle | 0.033 | 0.031 | 0.023 | 0.017 | 0.020 | 0.123 |
| Walk | 0.064 | 0.233 | 0.156 | 0.176 | 0.242 | 0.870 |
| Other | 0.018 | 0.027 | 0.017 | 0.013 | 0.034 | 0.109 |
| Total | 1.865 | 2.168 | 1.469 | 1.046 | 1.889 | 8.436 |
| *Trips per Person 5 Years and Older* | | | | | | |
| Vehicle Driver | 0.559 | 0.531 | 0.274 | 0.068 | 0.445 | 1.876 |
| In-Vehicle Person | 0.610 | 0.661 | 0.442 | 0.242 | 0.583 | 2.537 |
| Transit | 0.091 | 0.028 | 0.024 | 0.034 | 0.029 | 0.205 |
| Person | 0.700 | 0.689 | 0.466 | 0.275 | 0.612 | 2.742 |
| School Bus | 0.000 | 0.000 | 0.000 | 0.025 | 0.000 | 0.025 |
| Bicycle | 0.013 | 0.012 | 0.009 | 0.007 | 0.008 | 0.049 |
| Walk | 0.026 | 0.084 | 0.055 | 0.067 | 0.095 | 0.327 |
| Other | 0.007 | 0.010 | 0.007 | 0.005 | 0.013 | 0.041 |
| Total | 0.746 | 0.795 | 0.537 | 0.379 | 0.727 | 3.184 |
| *Trips per Person in Household* | | | | | | |
| Vehicle Driver | 0.518 | 0.492 | 0.254 | 0.063 | 0.412 | 1.739 |
| In-Vehicle Person | 0.566 | 0.671 | 0.450 | 0.255 | 0.565 | 2.506 |
| Transit | 0.084 | 0.026 | 0.023 | 0.033 | 0.027 | 0.193 |
| Person | 0.650 | 0.697 | 0.473 | 0.288 | 0.592 | 2.699 |
| School Bus | 0.000 | 0.000 | 0.000 | 0.024 | 0.000 | 0.024 |
| Bicycle | 0.012 | 0.011 | 0.008 | 0.006 | 0.007 | 0.046 |
| Walk | 0.024 | 0.086 | 0.058 | 0.065 | 0.090 | 0.323 |
| Other | 0.007 | 0.010 | 0.006 | 0.005 | 0.013 | 0.040 |
| Total | 0.692 | 0.805 | 0.545 | 0.388 | 0.701 | 3.133 |

*Notes:*

1. *Trip rates are based on expanded survey households (2,466,020); population age 5+ (6,113,940); and total household population (6,641,061).*
2. *The 2000 trip rates are calculated slightly differently than those reported in the 1990 survey. The 1990 survey did not collect travel data from children four and under, though they were included in the household size tabulations. The 2000 survey collected travel information for all household members, regardless of age.*

## 3.2 Regional Trip Rates by Household Size

Aggregate trip rates stratified by the size of the household in the 2000 survey are discussed in this section. Trip rates are provided for both persons and households, and transit shares are also included. As in the previous section, rates were calculated using the weighted and expanded number of intraregional trips, households, and persons in the 2000 household travel survey. In this and following sections, trip rates per person are for individuals of all ages who participated in the survey. Regional household characteristics influencing trip rates are also discussed including household size, and the distribution of income, workers, children, and vehicles in the household.

To report trip rates by household size, five different size categories were used: one-person, two-person, three-person, four-person, and five-or-more-person households. The distribution of regional households by household size and the population represented by each category are detailed in the table below.

| Household Size | Households | Percent of Households | Household Population[1] | Percent of Household Population |
|---|---|---|---|---|
| One person | 623,387 | 25.3% | 630,771 | 9.5% |
| Two persons | 753,130 | 30.5% | 1,522,537 | 22.9% |
| Three persons | 398,876 | 16.2% | 1,216,150 | 18.3% |
| Four persons | 366,736 | 14.9% | 1,492,580 | 22.5% |
| Five or more persons | 323,891 | 13.1% | 1,779,022 | 26.8% |
| TOTAL | 2,466,020 | 100.0% | 6,641,061 | 100.0% |

[1.] *Different factors were used to expand the number of households and the number of persons in the 2000 survey. Thus, the household populations in the table are not equivalent to the household size multiplied by the number of households (see Purvis, 2003 for further explanation).*

The table above indicates that the majority of Bay Area households are two-person homes (30.5%). The largest portion of the population, however, is represented by five-or-more-person households (nearly 1.8 million residents, or 26.8% of the Bay Area's population).

### Weekday Trip Rates

Trips per household by household size and trip purpose are shown in Figure 3.2.1. Information in the figure is based on detailed information contained in Table 3.2.1C in Appendix C, which includes household trip rates by household size, trip purpose, and travel mode. Figure 3.2.1 shows that trips per household increases linearly with an increase in household size. The number of trips produced per weekday by five-or-more-person households is approximately five times

greater than the number of trips produced by one-person households (3.5 trips/household versus 16.0 trips/household). This figure also indicates that home-based work trips tend to max out at around 2.5 trips per weekday for households with three or more members; three-person households produce 2.4 weekday home-based work trips while five-or-more-person homes average 2.7 home-based work trips per weekday. Home-based school trips increase at the highest rate by household size, which is primarily a result of the number of school-age children present in larger homes. Home-based shop (other) trips, non-home-based trips, and home-based social/recreational trips increase in a linear fashion. Five-or-more-person households make over five times as many home-based shopping, social/recreational, and non-home-based trips than single-person households.

Weekday trips per person by household size are plotted in Figure 3.2.2 (see Appendix C, Table 3.2.2C for a detailed distribution of trips by purpose, mode, and household size). Figure 3.2.2 indicates that individuals in single-person households make slightly more trips than individuals who live with others. This is a common trend found in travel research. There are three possible explanations for why this occurs. First, it may be that people living alone have an increased need for social interactions and must therefore make more trips to satisfy this desire. The values in Figure 3.2.2 support this idea; they show that individuals in single-person homes make more non-home-based and home-based social/recreational trips than people in multiple-person homes. The second idea is that people living alone have no one to share the burden with for home maintenance type activities. Again, Figure 3.2.2 supports this idea since individuals in single-person homes make slightly more home-based work and shop (other) trips than multi-person homes (except for shop (other) trips made by persons in four-person households). The final thought about the increased number of trips per person made by single-person households is that individuals living alone have more freedom to make additional trips because they do not have obligations to family members or housemates living in the same home. For most individuals living alone, the higher trip rate is likely due to some combination of these three factors.

Trips per capita decreases with each additional individual in the household for one-, two-, and three-person homes from 3.4 trips per person to 3.0 trips per person. This decrease is followed by an increase in trips per person for those living in four-person households, who average 3.3 trips per weekday. Individuals in five-or-more-person homes make the fewest trips, averaging only 2.9 per weekday.

Information on weekday transit shares for home-based work trips by household size is provided in Table 3.2.1 and in Figure 3.2.3. Table 3.2.1 indicates that the highest home-based work transit share is for single-person households at 17.5%. The lowest transit share for weekday home-based work trips is for four-person households (8.5%). For all trip purposes, one-person households lead transit shares at 10.1%. The transit share for all trip purposes for all households is half the value of the transit share for home-based work trips (6.2% transit for all trip purposes versus 12.2% for home-based work trips).

Regional weekday transit shares for all household sizes are plotted in Figure 3.2.3. This graphic clearly shows that transit shares are inversely proportionate to household size for all trip purposes. Transit shares decrease as household size increases. There is a slight increase in transit shares for five-or-more-person households from 4% for four-person homes to 5.1% for

larger households. The increase is more pronounced for home-based work trips where transit shares increase from 8.5% for four-person homes to 10.5% for five-or-more-person homes.

Regional household characteristics by household size are outlined in Table 3.2.2 and may assist in further understanding trip rates displayed in the aforementioned tables and figures. These characteristics will also be useful in discussions for the following sections that stratify trip rates by household income, workers in the household, and vehicle availability.

The average household income for weighted and expanded BATS2000 households is $83,000 per year. As household size increases, income per household rises from $52K for single-person homes to $102K for four-person households. Five-or-more-person households average only $89K per year, which is less than the average income for two-person households. The income value calculated per person in Table 3.2.2 shows how household income is distributed across household members for the five household size groups. For all households, the average income per person is nearly $31K. Income per person ranges from a high of $52K for single-person homes to a low of $16K per person for the largest household group. Income per worker shows less of a disparity between one-person and five-or-more-person households. Single-person homes average $58,000 per worker while five-or-more-person homes average $44K per worker.

The average Bay Area home includes 1.4 workers and 0.77 children. One-, two-, and three-person households have significantly more workers than children while four-person and five-or-more-person homes nearly average one worker per child in the household.

Table 3.2.2 also shows the average number of vehicles per household by household size. The average regional household has 1.77 vehicles. One-person homes average 0.89 vehicles, which reflects the number of households with zero vehicles. Households with three or more members average more than two vehicles, with four-person and five-or-more-person homes averaging 2.36 vehicles per household. The average number of vehicles per household in 2000 (1.77) is just slightly less than the average found in 1990 (1.79). The largest difference is for one-person and two-person households, where the average number of vehicles was found to be lower in 2000 than in 1990 (0.89 in 2000 versus 0.95 in 1990 for one-person households and 1.75 in 2000 versus 1.82 in 1990 for two-person homes) (Purvis, 1994).

The average ages of the head of household and of all persons five years and older stratified by household size is provided in Table 3.2.2. In the case of BATS2000, the first person listed for each household in the survey file was considered the head of household. If person one was reported as a minor, the first adult listed in the household was designated as the householder. The average age of the household head for all households is 44.8 years. This is slightly higher than the 42.4 years calculated in the 1990 survey (Purvis, 1994). An interesting result in the 2000 survey is that the age of the householder decreases as the average number of children in the household increases. This may be due to the larger share of older individuals living in one- or two-person homes without children. The average age of persons five and over in the 2000 survey is 35.7 years. By household size, the average age ranges from a low of 26.3 for the largest households to a high of 48.8 for single-person homes.

## Weekend Trip Rates

Saturday trips per household by household size and trip purpose are displayed in Figure 3.2.1E in Appendix E. The information in this graphic is based on the detailed distribution shown in Table 3.2.1E. Like weekday trips, trips on Saturday increase in an approximate linear fashion as household size increases. Five-or-more-person households make nearly five times as many trips on Saturday than single-person households (14.6 trips/household versus 3.4 trips/household). The biggest jump in trips is between three- and four-person households. Four-person households make 4.5 additional trips per day than three-person households. The smallest difference between trips produced by household size is between four-person and five-or-more-person homes. Households with five or more individuals make only one more trip per day on Saturday than four-person homes. Figure 3.2.1E shows that the additional trip is a home-based social/recreational trip.

Figure 3.2.2E shows that there is greater variation in trips per person on Saturday than during the week (for a detailed distribution of trips by household size, purpose, and mode, see Table 3.2.2E). Trips per person ranges from a low of 2.7 for those in five-or-more-person households to a high of 3.3 for individuals who live alone. The distribution of trips per person for Saturday trips follows the same trend as weekday trips. There is a decrease in trips per person from one-person to three-person households followed by an increase in trips per person for four-person homes, with the largest households having the lowest per capita trip rate (2.7 per person).

Sunday trips by household size and purpose are highlighted in Figure 3.2.1F and in Table 3.2.1F in Appendix F. One-, two-, and three-person households have a distribution similar to that of Saturday trips by number and purpose. One-person households make 3.4 trips while two-person homes make 6.5 trips. Households with three members average 9.1 trips on Sunday. The most notable difference between trips on Sunday as compared to weekday and Saturday trips is that larger households (those with four or more individuals) tend to make fewer trips per day on Sunday. For all purposes, four-person and five-or-more-person homes make two fewer trips per day on Sunday than they do on Saturday. The largest difference is for five-or-more-person households, which make 3.5 fewer trips on Sunday than on an average weekday.

Trips per person on Sunday are displayed in Figure 3.2.2F. Trips made by individuals decrease with each additional household member. Persons living alone average 3.4 trips on Sunday while persons in five-or-more-person homes make roughly one less trip per day on Sunday (2.3 trips per person). The detailed distribution of per capita trip rates on Sunday by household size, mode, and trip purpose is included in Appendix F (Table 3.2.2F).

**Figure 3.2.1**
**2000 Weekday Trips per Household by Household Size and Trip Purpose**

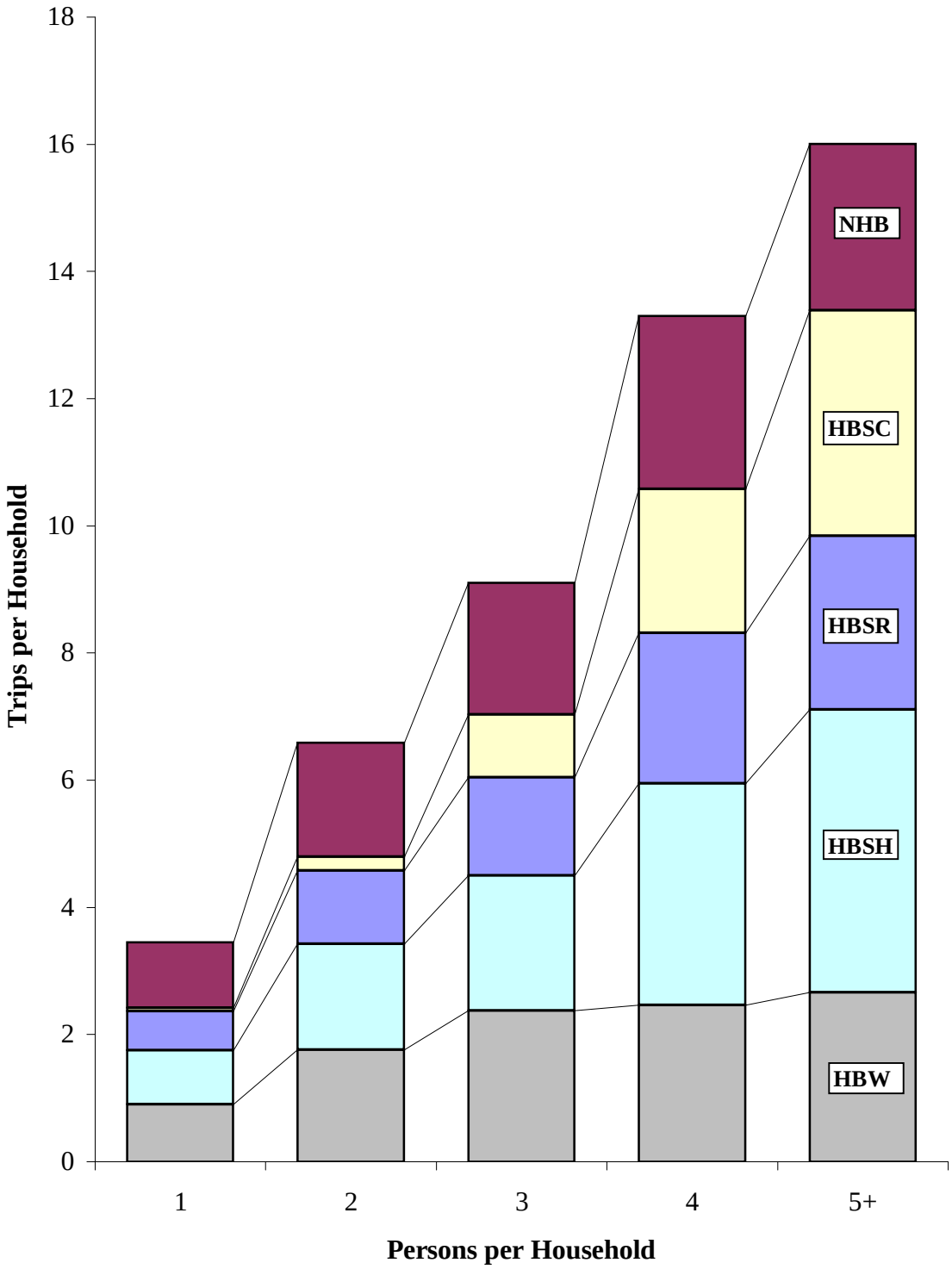


**Figure 3.2.2**
**2000 Weekday Trips per Person by Household Size and Trip Purpose**

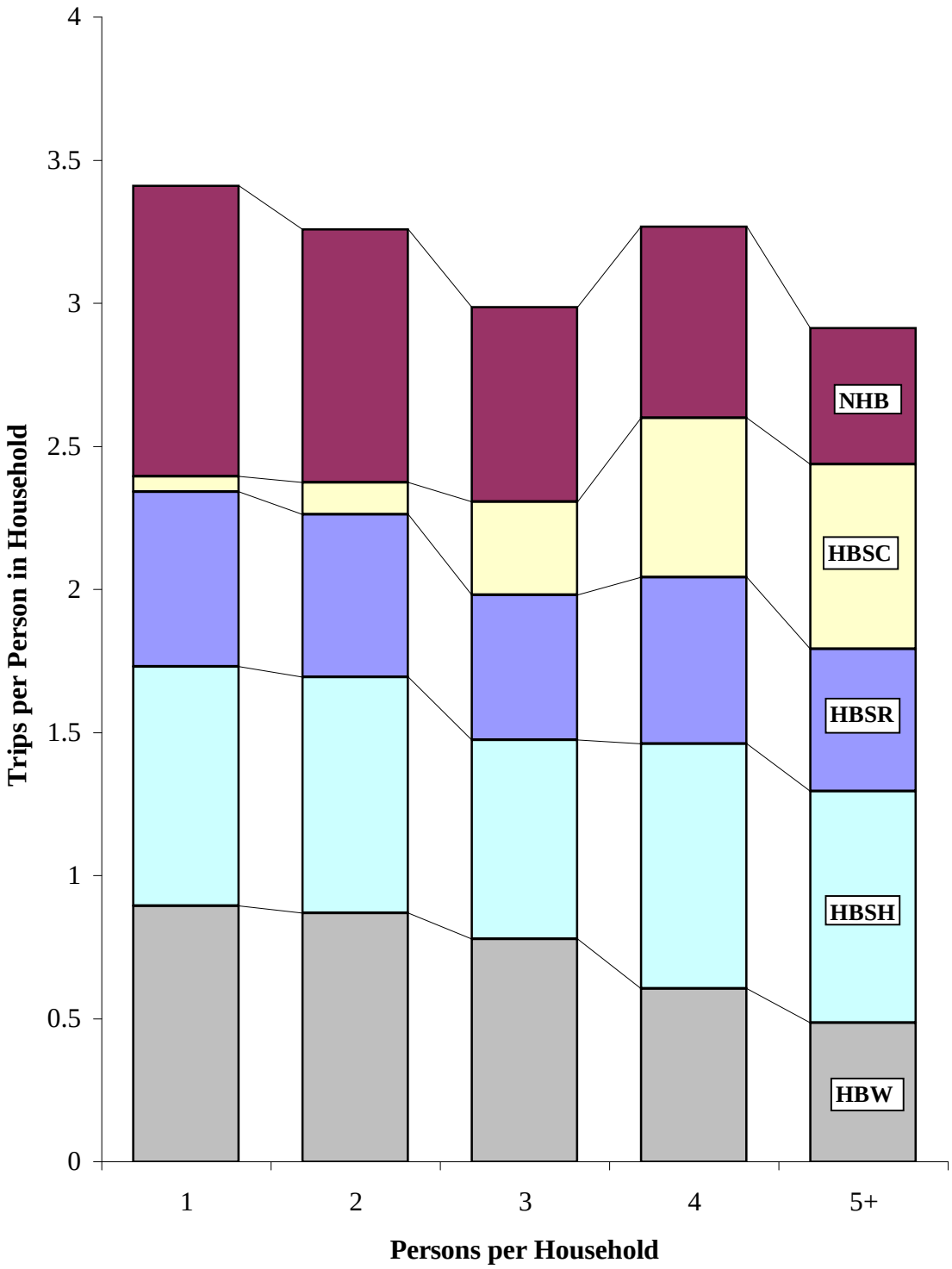


**Table 3.2.1**

**2000 Regional Weekday Transit Shares for Trips per Household by Household Size**

| Household Size | Home-Based Work Trips/HH | | | Total Trips/HH | | |
|---|---|---|---|---|---|---|
| | Transit | All Modes | % Transit | Transit | All Modes | % Transit |
| One Person | 0.158 | 0.904 | 17.5% | 0.350 | 3.452 | 10.1% |
| Two Persons | 0.240 | 1.757 | 13.7% | 0.501 | 6.586 | 7.6% |
| Three Persons | 0.281 | 2.374 | 11.8% | 0.562 | 9.104 | 6.2% |
| Four Persons | 0.208 | 2.460 | 8.5% | 0.531 | 13.300 | 4.0% |
| Five or More Persons | 0.280 | 2.664 | 10.5% | 0.819 | 16.004 | 5.1% |
| Total | 0.227 | 1.865 | 12.2% | 0.519 | 8.436 | 6.2% |

**Figure 3.2.3**
**2000 Regional Weekday Transit Share by Household Size**

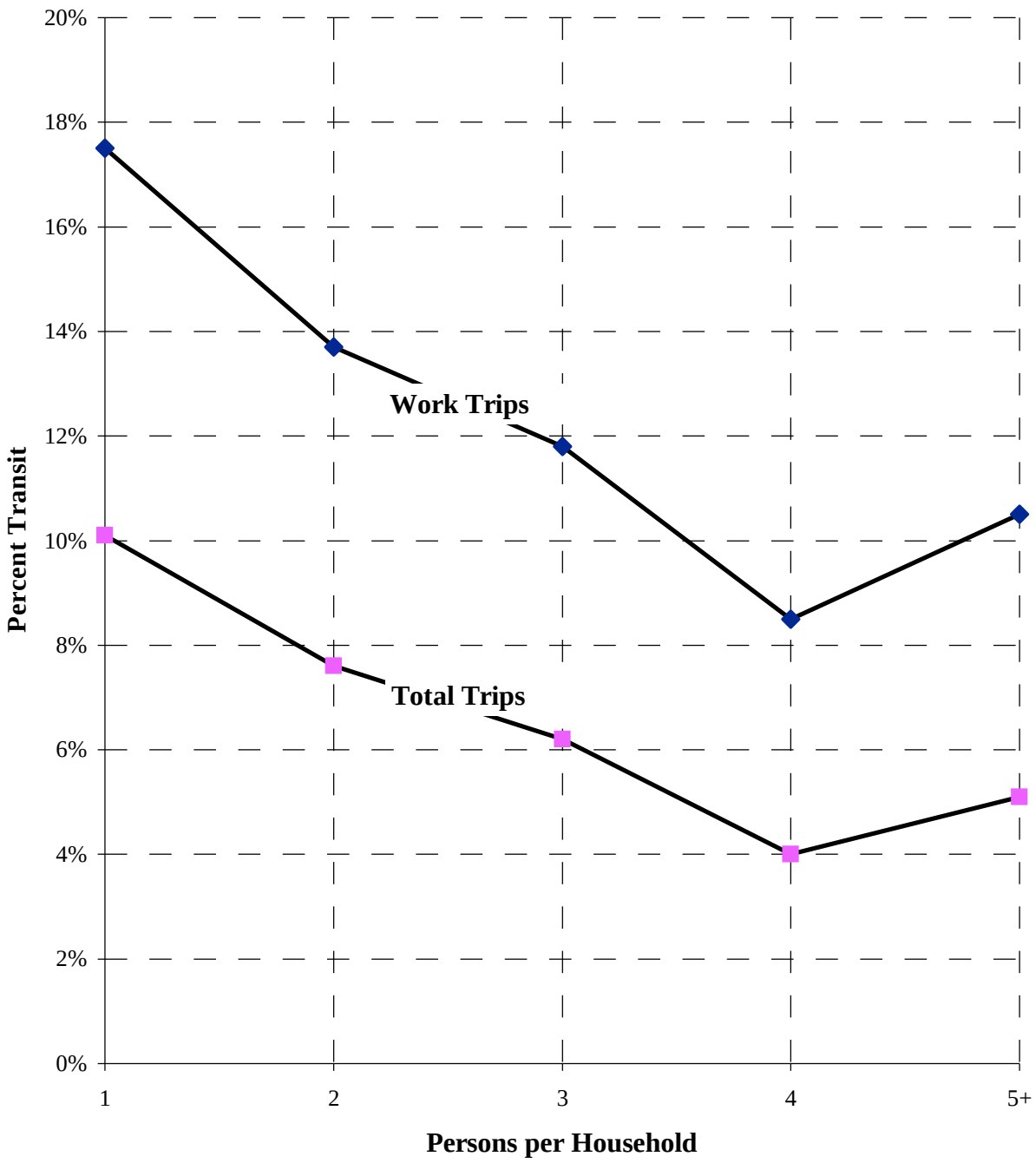


**Table 3.2.2**
**2000 Regional Household Characteristics by Household Size**

| Household Size | Income per Household | Income per Person | Income per Worker | Workers per HHld | Children per HHld | Vehicles per HHld | Vehicles per Person | Average Age of HHld Head | Average Age of Persons Five and Over in Households |
|---|---|---|---|---|---|---|---|---|---|
| One Person | $51,745 | $51,736 | $58,121 | 0.73 | 0.00 | 0.89 | 0.89 | 48.8 | 48.8 |
| Two Persons | $90,077 | $44,982 | $59,247 | 1.34 | 0.08 | 1.75 | 0.87 | 47.5 | 46.1 |
| Three Persons | $96,522 | $32,156 | $53,729 | 1.76 | 0.76 | 2.13 | 0.71 | 41.8 | 35.5 |
| Four Persons | $102,067 | $25,481 | $54,645 | 1.86 | 1.70 | 2.36 | 0.59 | 40.5 | 29.1 |
| Five or More Persons | $89,116 | $16,489 | $44,334 | 1.99 | 2.79 | 2.36 | 0.44 | 39.9 | 26.3 |
| Total | $83,201 | $30,907 | $54,200 | 1.42 | 0.77 | 1.77 | 0.66 | 44.8 | 35.7 |

## 3.3 Regional Trip Rates by Household Income

Trip rates are reported by household income in this section. The 2000 survey asked respondents to report their household income based on fifteen income categories. However, the tables in this section report income by quartiles: less than $30,000; $30,000 to $59,999; $60,000 to $99,999; and $100,000 or greater. These quartiles are based on best quartiles from Census 2000 income data for the San Francisco Bay Area. Detailed appendix tables showing trip rates by the fifteen income categories used in BATS2000 are located in Appendix C for weekday travel (Tables 3.3.1C and 3.3.2C) and in Appendices E and F for weekend travel (Tables 3.3.1E, 3.3.2E, 3.3.1F, and 3.3.2F).

The distribution of regional households by income quartile is provided in the table below. Nearly 11% of households surveyed did not report income. Roughly 14% reported household incomes less than $30,000 per year, while the largest share, 27.3%, reported incomes between $30,000 and $59,999 per year. Just over 26% of households have incomes between $60K and less than $100K, and only 21.2% reported incomes greater than $100K per year. The mean household size increases by income quartile from a low of 2.2 persons per household for the first quartile to 3.1 persons per household for the highest income quartile.

| Household Income Quartiles | Households | Percent of Households | Household Population | Mean Household Size |
|---|---|---|---|---|
| < $30,000 | 353,188 | 14.3% | 773,777 | 2.191 |
| $30,000 - $59,999 | 674,050 | 27.3% | 1,729,006 | 2.565 |
| $60,000 - $99,999 | 648,839 | 26.3% | 1,864,964 | 2.874 |
| $100,000 or greater | 523,041 | 21.2% | 1,634,004 | 3.124 |
| Refused/Unknown Income | 266,902 | 10.8% | 639,310 | 2.395 |
| Total | 2,466,020 | 100.0% | 6,641,061 | 2.693 |

### Weekday Trip Rates

Regional weekday household trip rates are listed by income quartile, mode, and trip purpose in Table 3.3.1. The share of transit trips is also provided in this table. The number of weekday trips per household increases with an increase in income. Low-income households average 6.2 trips per weekday. Low-medium-income households report 7.6 trips per weekday. High-medium-income homes average 9.1 trips per day, and households in the highest income quartile make 10.6 trips per weekday. Conversely, transit shares decrease with an increase in income. The low-income group has a 14.4% transit share for all trips while the high-income group has only a 4.3% transit share. The low-income share of transit is also significantly higher than the two medium-income groups, which have transit shares of 6.7% (low-medium) and 4.7% (high-medium).

For all income quartiles except low-income, transit shares are highest for home-based work trips. The highest portion of transit trips by trip purpose for low-income households is for home-based

school trips, where 30.9% are made by transit. Transit shares for home-based work trips range from 11.1% for high-income households to 15.8% for low-income households.

Table 3.3.3C in Appendix C displays the regional weekday transit shares for the fifteen detailed income categories included in BATS2000. This table shows that the highest transit shares for weekday home-based work trips are for households with incomes between $30,000 and $34,999 (22.7% transit). Households with income between $10,000 and $14,999 or $25,000 and $29,999 also have high transit shares at 19.7% and 18.5%, respectively. By all trip purposes, households with incomes between $10,000 and $14,999 have the largest transit share of 26.6%.

Household trip rates by mode for the different income quartiles reveal a few interesting trends. First, the number of vehicle driver trips increases by income category. Low-income households make 2.4 vehicle driver trips per weekday while low-medium-income homes make 4.1 vehicle driver trips. The high-medium group makes 5.3 vehicle driver trips, and the high-income group averages 6.3 vehicle driver trips per day. Walk trip rates follow the opposite trend and decrease from 1.1 trips per weekday for low-income homes to 0.78 trips per weekday for high-income households. Similar to transit shares, rates for trips made by school bus are highest for the low-income group.

The weekday per capita trip rates provided in Table 3.3.2 show the same general trends found in the household level trip rates. Trip rates per person increase as income increases, and vehicle driver trips per person increases with an increase in income. Individuals in low-income households make 2.8 trips per weekday while high-income persons make 3.4 trips per weekday. Low-income individuals average 1.1 vehicle driver trips per weekday compared to 2.0 vehicle driver trips per weekday for high-income persons.

Figures 3.3.1 and 3.3.2 show the distribution of weekday trip rates by purpose and income quartile at the household and person level. Figure 3.3.1 exaggerates the differences between trip rates for the four income groups because it does not take into account the number of individuals present in the household to make the trip. While household trip rates indicate that high-income households make almost one and a half times as many home-based shop (other) trips as low-income households, the person level trip rates show that home-based shop trips actually decrease slightly as income increases. This is due to the trips being distributed across more individuals (recall from the beginning of this section that mean household size increases with an increase in income). The per capita trip rates for weekday travel by income group show that the greatest difference in trip rates between low- and high-income persons is that high-income individuals make 56% more non-home based trips and 62% more home-based work trips than low-income individuals.

**Weekend Trip Rates**

Weekend trip rates stratified by household income are discussed in this subsection. Similar to weekday travel, household incomes are divided into four groups, or income quartiles. Tables 3.3.1E through 3.3.4E and Figures 3.3.1E and 3.3.2E in Appendix E detail trip rates at the household and person levels for trips on Saturday for the different income groups. Appendix F contains tables and figures for Sunday travel.

Saturday trips per household by the detailed income categories included in the survey are provided in Table 3.3.1E. Barring the lowest income category (less than $10,000 per year), household trip rates increase as household income increases. Similarly, the number of trips made by vehicle drivers also increases per household as income increases. This trend follows the same pattern as weekday trips. At the person level, Table 3.3.2E shows that this trend is not quite as pronounced, but in general, the pattern is the same. Except for the lowest income group, trips per capita by all modes and by the vehicle driver mode increase as income increases.

Tables 3.3.3E and 3.3.4E provide Saturday trip rates by trip purpose, travel mode, and income quartile. Transit shares are also provided in this table. Like weekday transit shares, low-income households have a significantly higher share of trips made by transit than the three higher-income categories. Low-income households make 7.7% of trips by transit. The next highest transit share is for low-medium-income households, which make 2.4% of trips by transit. Person level rates displayed in Table 3.3.4E show that individuals in low-income households make the largest number of walking trips (0.30 walking trips per person on Saturday), primarily for home-based social/recreational trips. Individuals living in high-medium-income households produce 0.05 bicycle trips on Saturday, the highest trip rate for this mode.

Graphical displays of Saturday trip rates by income quartile and trip purpose at the household and person levels are shown in Figures 3.3.1E and 3.3.2E. These figures indicate that the discrepancies in trip rates between those in the lowest income households and those living in the highest income homes is much more pronounced for travel on Saturday than for weekday travel. During the week, high-income households only make 4.4 more trips than low-income households (see Figure 3.3.1). However, Figure 3.3.1E shows that, on Saturday, high-income households produce nearly seven more trips per day than low-income homes. At the person level, high-income individuals traveling on Saturday make roughly twice as many non-home-based, home-based social/recreational, and home-based shop (other) trips than persons from low-income homes. For weekday travel, the person level trip rate differences are much smaller, and in fact, persons in high-income households make fewer home-based shop (other) trips than low-income individuals. Weekday rates for non-home-based and home-based social/recreational trips are only about one and a half times higher for high-income individuals than for low-income persons (see Figure 3.3.2).

Sunday trip rates by detailed income category and trip purpose are shown in Table 3.3.1F at the household level and in Table 3.3.2F at the person level. Similar to weekday and Saturday rates, the number of trips per household and per person by all modes and purposes increases as income increases. The same is true for trips made by vehicle drivers. Rates on Sunday seem to fluctuate a bit more than weekday or Saturday trips in the low- to mid-range of income categories (from $25K to less than $50K per year), and this is also true at the person level for Sunday rates.

A review of the transit shares provided in Table 3.3.3F for Sunday travel suggests that transit shares steadily decline for all income quartiles from the weekday to Saturday to Sunday (the exception is for high-medium-income households whose transit share is slightly lower on Saturday than on Sunday). For all three days of travel, the low-income group has the highest transit share, but trips made by transit decrease to 5.7% for low-income households on Sunday.

The other interesting finding when comparing weekday, Saturday, and Sunday trip rates is for the bicycle and walk modes. Walk and bicycle trip rates are highest for low-income individuals during the week and highest for high-income persons on Sunday. This may suggest that lower-income individuals are likely to choose non-motorized modes for the balance of weekday travel while higher income individuals are more likely to choose non-motorized modes for more leisurely pursuits on the weekend. For example, the majority of weekday bicycle trips for low-income persons are for home-based work and shop (other) trips (0.01 trips per person during the week for each purpose). Walking trips during the week for low-income individuals are primarily for home-based shop (other) and non-home-based trips (0.14 shop (other) trips per weekday and 0.12 non-home-based trips per weekday). On Sunday, walk and bike trips made by high-income persons are mainly for shop (other) and social/recreational trips to and from home (see Table 3.3.4F).

Sunday travel shows the same trend as travel on Saturday in terms of the differential between trip rates for the lowest and highest income groups. Figures 3.3.1F and 3.3.2F indicate that low-income households make 6.7 fewer trips than high-income households. On Sundays, individuals from low-income homes make 1.5 fewer trips than high-income persons. This difference is over two and a half times higher than the difference between income groups during the week, where low-income persons make only 0.58 less trips than high-income individuals (see Figure 3.3.2). Across the four income categories presented in Figures 3.3.1F and 3.3.2F, the smallest difference is between the low-medium-income and high-medium-income categories at both the household and person level.

## Table 3.3.1
## 2000 Regional Weekday Trips per Household by Household Income Quartile

| Household Income | Mode | Home-Based | | | | Non-Home-Based | Total |
|---|---|---|---|---|---|---|---|
| | | Work | Shop | Soc/Rec | School | | |
| | Vehicle Driver | 0.609 | 0.845 | 0.334 | 0.140 | 0.473 | 2.402 |
| | In-Vehicle Person | 0.722 | 1.222 | 0.632 | 0.448 | 0.727 | 3.752 |
| Low | Transit | 0.162 | 0.192 | 0.098 | 0.343 | 0.093 | 0.888 |
| Income | Person | 0.884 | 1.414 | 0.730 | 0.791 | 0.820 | 4.640 |
| (<$30,000) | School Bus | 0.000 | 0.000 | 0.000 | 0.115 | 0.000 | 0.115 |
| | Bicycle | 0.032 | 0.030 | 0.012 | 0.014 | 0.022 | 0.110 |
| | Walk | 0.072 | 0.313 | 0.247 | 0.181 | 0.252 | 1.064 |
| | Other | 0.039 | 0.083 | 0.022 | 0.010 | 0.075 | 0.229 |
| | Total | 1.026 | 1.841 | 1.011 | 1.112 | 1.169 | 6.157 |
| | Percent Transit | 15.8% | 10.4% | 9.7% | 30.9% | 7.9% | 14.4% |
| | Vehicle Driver | 1.235 | 1.245 | 0.564 | 0.152 | 0.907 | 4.102 |
| Low- | In-Vehicle Person | 1.351 | 1.732 | 1.009 | 0.601 | 1.235 | 5.927 |
| Medium | Transit | 0.219 | 0.070 | 0.064 | 0.073 | 0.084 | 0.510 |
| Income | Person | 1.569 | 1.802 | 1.073 | 0.674 | 1.319 | 6.437 |
| ($30,000 - | School Bus | 0.000 | 0.000 | 0.000 | 0.061 | 0.000 | 0.061 |
| $59,999) | Bicycle | 0.022 | 0.032 | 0.017 | 0.012 | 0.011 | 0.094 |
| | Walk | 0.092 | 0.246 | 0.144 | 0.240 | 0.218 | 0.939 |
| | Other | 0.018 | 0.019 | 0.020 | 0.030 | 0.026 | 0.113 |
| | Total | 1.701 | 2.099 | 1.253 | 1.017 | 1.574 | 7.644 |
| | Percent Transit | 12.9% | 3.3% | 5.1% | 7.2% | 5.4% | 6.7% |
| | Vehicle Driver | 1.694 | 1.425 | 0.751 | 0.162 | 1.270 | 5.302 |
| High- | In-Vehicle Person | 1.831 | 1.937 | 1.367 | 0.759 | 1.735 | 7.629 |
| Medium | Transit | 0.254 | 0.042 | 0.041 | 0.039 | 0.050 | 0.426 |
| Income | Person | 2.085 | 1.979 | 1.408 | 0.798 | 1.785 | 8.055 |
| ($60,000 - | School Bus | 0.000 | 0.000 | 0.000 | 0.060 | 0.000 | 0.060 |
| $99,999) | Bicycle | 0.040 | 0.029 | 0.032 | 0.016 | 0.023 | 0.139 |
| | Walk | 0.048 | 0.232 | 0.144 | 0.143 | 0.222 | 0.789 |
| | Other | 0.014 | 0.020 | 0.020 | 0.008 | 0.037 | 0.099 |
| | Total | 2.187 | 2.260 | 1.604 | 1.025 | 2.066 | 9.141 |
| | Percent Transit | 11.6% | 1.8% | 2.6% | 3.8% | 2.4% | 4.7% |
| | Vehicle Driver | 1.885 | 1.663 | 0.948 | 0.231 | 1.599 | 6.327 |
| | In-Vehicle Person | 2.007 | 2.238 | 1.699 | 0.984 | 2.193 | 9.120 |
| High | Transit | 0.262 | 0.033 | 0.058 | 0.028 | 0.071 | 0.452 |
| Income | Person | 2.269 | 2.271 | 1.757 | 1.011 | 2.264 | 9.572 |
| ($100,000+) | School Bus | 0.000 | 0.000 | 0.000 | 0.046 | 0.000 | 0.046 |
| | Bicycle | 0.029 | 0.030 | 0.022 | 0.016 | 0.020 | 0.117 |
| | Walk | 0.052 | 0.164 | 0.139 | 0.135 | 0.290 | 0.779 |
| | Other | 0.014 | 0.014 | 0.012 | 0.004 | 0.023 | 0.067 |
| | Total | 2.363 | 2.480 | 1.930 | 1.211 | 2.597 | 10.581 |
| | Percent Transit | 11.1% | 1.3% | 3.0% | 2.3% | 2.7% | 4.3% |
| | Vehicle Driver | 1.164 | 1.262 | 0.772 | 0.143 | 1.114 | 4.454 |
| | In-Vehicle Person | 1.325 | 1.607 | 1.160 | 0.456 | 1.463 | 6.011 |
| Refused/ | Transit | 0.198 | 0.058 | 0.059 | 0.028 | 0.067 | 0.411 |
| Unknown | Person | 1.524 | 1.665 | 1.219 | 0.484 | 1.530 | 6.422 |
| Income | School Bus | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.065 |
| | Bicycle | 0.052 | 0.032 | 0.029 | 0.039 | 0.033 | 0.187 |
| | Walk | 0.048 | 0.228 | 0.131 | 0.166 | 0.245 | 0.817 |
| | Other | 0.008 | 0.013 | 0.009 | 0.003 | 0.012 | 0.045 |
| | Total | 1.631 | 1.939 | 1.389 | 0.759 | 1.820 | 7.537 |
| | Percent Transit | 12.2% | 3.0% | 4.3% | 3.8% | 3.7% | 5.5% |
| | Vehicle Driver | 1.396 | 1.326 | 0.684 | 0.168 | 1.110 | 4.684 |
| | In-Vehicle Person | 1.524 | 1.807 | 1.212 | 0.686 | 1.521 | 6.750 |
| | Transit | 0.227 | 0.071 | 0.061 | 0.088 | 0.072 | 0.519 |
| Total | Person | 1.750 | 1.878 | 1.273 | 0.774 | 1.593 | 7.269 |
| HH | School Bus | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.065 |
| | Bicycle | 0.033 | 0.031 | 0.023 | 0.017 | 0.020 | 0.123 |
| | Walk | 0.064 | 0.233 | 0.156 | 0.176 | 0.242 | 0.870 |
| | Other | 0.018 | 0.027 | 0.017 | 0.013 | 0.034 | 0.109 |
| | Total | 1.865 | 2.168 | 1.469 | 1.046 | 1.889 | 8.436 |
| | Percent Transit | 12.2% | 3.3% | 4.1% | 8.4% | 3.8% | 6.2% |

## Table 3.3.2
## 2000 Regional Weekday Trips per Person by Household Income Quartile

| Household Income | Mode | Home-Based | | | | Non-Home-Based | Total |
|---|---|---|---|---|---|---|---|
| | | Work | Shop | Soc/Rec | School | | |
| | Vehicle Driver | 0.278 | 0.386 | 0.152 | 0.064 | 0.216 | 1.096 |
| | In-Vehicle Person | 0.330 | 0.558 | 0.289 | 0.205 | 0.332 | 1.713 |
| Low | Transit | 0.074 | 0.088 | 0.045 | 0.157 | 0.042 | 0.405 |
| Income | Person | 0.403 | 0.646 | 0.333 | 0.361 | 0.374 | 2.118 |
| (<$30,000) | School Bus | 0.000 | 0.000 | 0.000 | 0.052 | 0.000 | 0.052 |
| | Bicycle | 0.014 | 0.014 | 0.006 | 0.006 | 0.010 | 0.050 |
| | Walk | 0.033 | 0.143 | 0.113 | 0.083 | 0.115 | 0.486 |
| | Other | 0.018 | 0.038 | 0.010 | 0.005 | 0.034 | 0.104 |
| | Total | 0.468 | 0.840 | 0.461 | 0.507 | 0.533 | 2.811 |
| | Percent Transit | 15.8% | 10.4% | 9.7% | 30.9% | 7.9% | 14.4% |
| | Vehicle Driver | 0.481 | 0.485 | 0.220 | 0.059 | 0.354 | 1.599 |
| Low- | In-Vehicle Person | 0.527 | 0.675 | 0.393 | 0.234 | 0.481 | 2.311 |
| Medium | Transit | 0.085 | 0.027 | 0.025 | 0.028 | 0.033 | 0.199 |
| Income | Person | 0.612 | 0.703 | 0.418 | 0.263 | 0.514 | 2.509 |
| ($30,000 - | School Bus | 0.000 | 0.000 | 0.000 | 0.024 | 0.000 | 0.024 |
| $59,999) | Bicycle | 0.009 | 0.012 | 0.007 | 0.005 | 0.004 | 0.037 |
| | Walk | 0.036 | 0.096 | 0.056 | 0.094 | 0.085 | 0.366 |
| | Other | 0.007 | 0.007 | 0.008 | 0.012 | 0.010 | 0.044 |
| | Total | 0.663 | 0.818 | 0.489 | 0.397 | 0.614 | 2.980 |
| | Percent Transit | 12.9% | 3.3% | 5.1% | 7.2% | 5.4% | 6.7% |
| | Vehicle Driver | 0.589 | 0.496 | 0.261 | 0.056 | 0.442 | 1.844 |
| High- | In-Vehicle Person | 0.637 | 0.674 | 0.476 | 0.264 | 0.603 | 2.654 |
| Medium | Transit | 0.088 | 0.014 | 0.014 | 0.014 | 0.018 | 0.148 |
| Income | Person | 0.725 | 0.688 | 0.490 | 0.278 | 0.621 | 2.802 |
| ($60,000 - | School Bus | 0.000 | 0.000 | 0.000 | 0.021 | 0.000 | 0.021 |
| $99,999) | Bicycle | 0.014 | 0.010 | 0.011 | 0.006 | 0.008 | 0.048 |
| | Walk | 0.017 | 0.081 | 0.050 | 0.050 | 0.077 | 0.274 |
| | Other | 0.005 | 0.007 | 0.007 | 0.003 | 0.013 | 0.034 |
| | Total | 0.761 | 0.786 | 0.558 | 0.357 | 0.719 | 3.180 |
| | Percent Transit | 11.6% | 1.8% | 2.6% | 3.8% | 2.4% | 4.7% |
| | Vehicle Driver | 0.604 | 0.532 | 0.304 | 0.074 | 0.512 | 2.025 |
| | In-Vehicle Person | 0.642 | 0.716 | 0.544 | 0.315 | 0.702 | 2.919 |
| High | Transit | 0.084 | 0.011 | 0.019 | 0.009 | 0.023 | 0.145 |
| Income | Person | 0.726 | 0.727 | 0.562 | 0.324 | 0.725 | 3.064 |
| ($100,000+) | School Bus | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 | 0.015 |
| | Bicycle | 0.009 | 0.010 | 0.007 | 0.005 | 0.006 | 0.038 |
| | Walk | 0.017 | 0.053 | 0.044 | 0.043 | 0.093 | 0.250 |
| | Other | 0.005 | 0.005 | 0.004 | 0.001 | 0.007 | 0.021 |
| | Total | 0.756 | 0.794 | 0.618 | 0.388 | 0.831 | 3.387 |
| | Percent Transit | 11.1% | 1.3% | 3.0% | 2.3% | 2.7% | 4.3% |
| | Vehicle Driver | 0.486 | 0.527 | 0.322 | 0.060 | 0.465 | 1.859 |
| | In-Vehicle Person | 0.553 | 0.671 | 0.484 | 0.190 | 0.611 | 2.510 |
| Refused/ | Transit | 0.083 | 0.024 | 0.025 | 0.012 | 0.028 | 0.172 |
| Unknown | Person | 0.636 | 0.695 | 0.509 | 0.202 | 0.639 | 2.681 |
| Income | School Bus | 0.000 | 0.000 | 0.000 | 0.027 | 0.000 | 0.027 |
| | Bicycle | 0.022 | 0.013 | 0.012 | 0.016 | 0.014 | 0.078 |
| | Walk | 0.020 | 0.095 | 0.054 | 0.069 | 0.102 | 0.341 |
| | Other | 0.003 | 0.006 | 0.004 | 0.001 | 0.005 | 0.019 |
| | Total | 0.681 | 0.810 | 0.580 | 0.317 | 0.760 | 3.147 |
| | Percent Transit | 12.2% | 3.0% | 4.3% | 3.8% | 3.7% | 5.5% |
| | Vehicle Driver | 0.518 | 0.492 | 0.254 | 0.063 | 0.412 | 1.739 |
| | In-Vehicle Person | 0.566 | 0.671 | 0.450 | 0.255 | 0.565 | 2.506 |
| | Transit | 0.084 | 0.026 | 0.023 | 0.033 | 0.027 | 0.193 |
| Total | Person | 0.650 | 0.697 | 0.473 | 0.288 | 0.592 | 2.699 |
| HH | School Bus | 0.000 | 0.000 | 0.000 | 0.024 | 0.000 | 0.024 |
| | Bicycle | 0.012 | 0.011 | 0.008 | 0.006 | 0.007 | 0.046 |
| | Walk | 0.024 | 0.086 | 0.058 | 0.065 | 0.090 | 0.323 |
| | Other | 0.007 | 0.010 | 0.006 | 0.005 | 0.013 | 0.040 |
| | Total | 0.692 | 0.805 | 0.545 | 0.388 | 0.701 | 3.133 |
| | Percent Transit | 12.2% | 3.3% | 4.1% | 8.4% | 3.8% | 6.2% |

**Figure 3.3.1**
**2000 Weekday Trips per Household by Household Income Quartile by Trip Purpose**

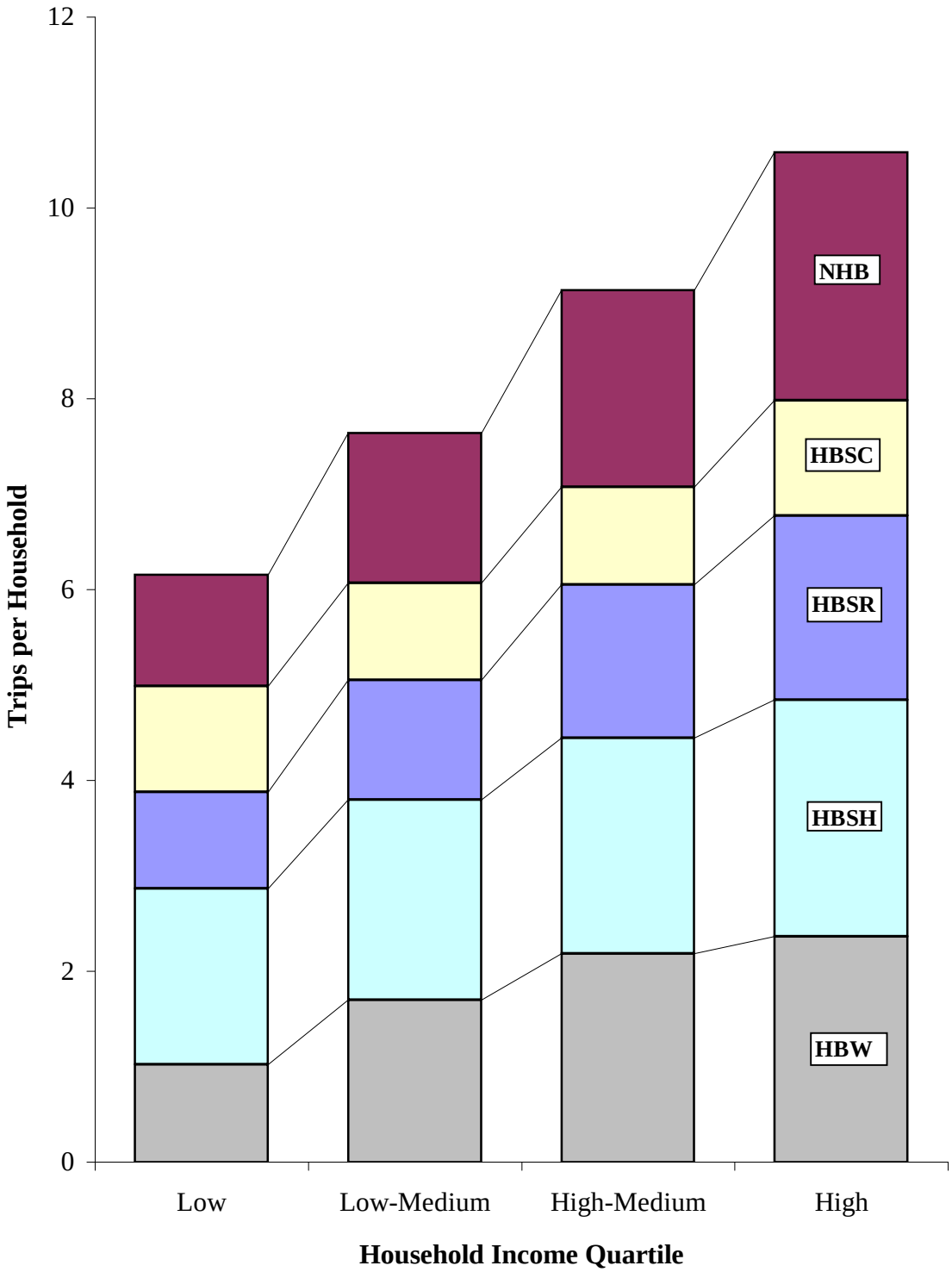
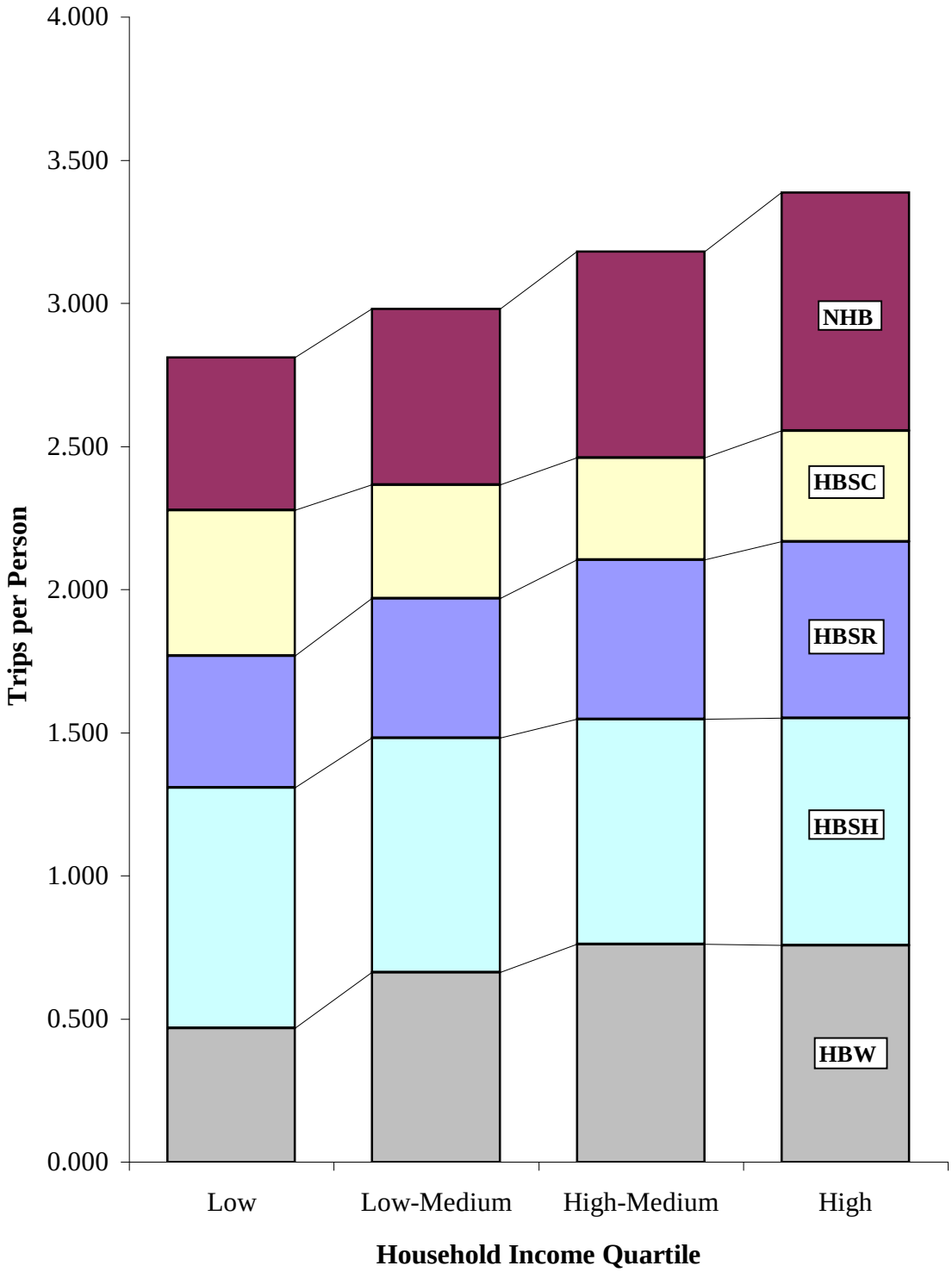


**Figure 3.3.2**
**2000 Weekday Trips per Person by Household Income Quartile by Trip Purpose**



## 3.4 Regional Trip Rates by Vehicle Availability

Weekday and weekend trip rates stratified by the number of vehicles available in the household are discussed in this section. Regional household characteristics by vehicle availability are also provided. As with previous sections, trip rates were calculated using the weighted and expanded count of intraregional weekday and weekend trips reported in the 2000 San Francisco Bay Area Travel Survey.

BATS2000 participants were asked to report the number of vehicles available for general travel; therefore, the number of vehicles reported does not necessarily reflect auto ownership in the Bay Area. To reflect this, the term vehicle availability is used in this section to indicate a household and individual's access to vehicles. The distribution of households and household population into the different vehicle availability categories is provided in the table below.

| Vehicles Available | Households | Percent of Households | Household Population | Mean Household Size |
|---|---|---|---|---|
| No Vehicles | 237,275 | 9.6% | 420,916 | 1.774 |
| One Vehicle | 794,210 | 32.2% | 1,489,505 | 1.875 |
| Two Vehicles | 934,468 | 37.9% | 2,911,373 | 3.116 |
| Three Vehicles | 358,573 | 14.5% | 1,264,523 | 3.527 |
| Four or More Vehicles | 141,494 | 5.7% | 554,744 | 3.921 |
| Total | 2,466,020 | 100.0% | 6,641,061 | 2.693 |

Nearly 10% of Bay Area households are zero-vehicle homes. The majority of households, 58.1%, have two or more vehicles available for use. Only 5.7% of Bay Area homes have access to four or more vehicles. Interestingly, households with one or no available vehicles have an average household size of less than two persons per home while households with access to two or more vehicles have a significantly higher mean household size of at least three or more individuals. At the person level, just over 70% of the regional population has access to more than one vehicle for general travel.

### Weekday Trip Rates

This section discusses weekday trip rates based on vehicle availability. A very intuitive result of accessibility to vehicles (or lack thereof) is that transit shares will likely be higher if an individual or household either does not have access to a vehicle or if s/he is competing for use of the household vehicle. This can be seen in Table 3.4.1, which shows household level regional weekday transit shares and trip rates by vehicle availability. Nearly 35% of trips made by households with no vehicle access are made by transit. One-vehicle households have the next highest transit share of 8.2%, which is higher than the 6.2% transit share for all households. Households with no accessibility to vehicles make over 3.5 times more transit trips per weekday than households with vehicle access (1.7 transit trips per household with no vehicles versus the next highest rate of 0.48 transit trips for one-vehicle households).

Transit shares and weekday trip rates are also provided for home-based work trips in Table 3.4.1. Zero- and one-vehicle households have the highest share of transit trips at 50.0% and 18.2%, respectively. Households with access to four or more vehicles only have a 4.0% transit share, which is one-third of the regional average of 12.2% for home-based work trips. These results imply that an individual is much more likely to use transit for travel to and from work if he or she does not have access to or is competing for usage of the available vehicle. It follows that vehicle availability would likely have a high predictive power for estimating home-based work trips made by transit.

Weekday transit shares by vehicle availability for work and total trips are plotted in Figure 3.4.1. This graphic shows the leveling off of transit usage for households with three or more vehicles available. It also shows the high propensity of households without vehicle access to select the transit mode for all types of trips.

Detailed tables are included in the appendix that show weekday trip rates by vehicle availability for all generalized travel modes in the 2000 survey. Table 3.4.1C provides household level trip rates while Table 3.4.2C outlines per capita trip rates. At the household level, trip rates by all purposes and travel modes increase as vehicle availability increases from a low of 5.0 trips for zero-vehicle households to a high of 12.4 trips per household for homes with access to four or more vehicles. However, when person level trip rates are reviewed, a variation of this trend is evident. Table 3.4.2C shows that weekday trip rates per person increase as the number of vehicles available increases from zero to two. Beyond two vehicles available per household, the addition of another vehicle does not significantly impact per capita trip rates, and in fact, trips per person decreases slightly as the number of vehicles increases beyond two per household.

Another interesting result in Table 3.4.2C is for bicycle and walk trips. Walk trip rates steadily decline as the number of vehicles available increases. Individuals without access to a vehicle make at least twice as many walk trips than those with vehicles available for travel. Persons without vehicle access make 7.5 times more walking trips than those with access to four or more vehicles (1.0 versus 0.13 walk trips per person per weekday). Bicycle trips follow a slightly different pattern. The highest person level bicycle trip rate is for those without vehicle access (0.11 trips per weekday); however, the rate does not decrease as vehicle availability increases. The second highest trip rate for weekday bicycle trips is for individuals with access to the most vehicles. Persons with access to four or more vehicles average 0.06 bike trips during the week. This result is likely due to the increased number of children present in these households (recall that the mean household size for this category of vehicle access was 3.9 persons).

The final table in this section, Table 3.4.2, outlines household characteristics by vehicle availability. What this table suggests is that the choice of an individual (or household) to not own a vehicle – which may not be a choice in many cases – is more a function of income than of an altruistic desire to contribute to the health of the environment. The average income per household and per person for households with zero vehicles available is significantly lower than the regional averages. Zero-vehicle households average $34K per year, with roughly $20K available per person in the household. These values are nearly 60% and 36% lower than the regional averages for household income and income per person. Annual income per worker for

households without access to vehicles is $35,748, which is 34% lower than the regional average ($54,200).

At the other end of the spectrum, Table 3.4.2 shows that households with access to four or more vehicles have an average value of 1.13 vehicles per person. This is likely a reflection of households who own multiple types of vehicles (for example, owning a car for daily use and a truck, SUV, or convertible for weekend trips). It could also be a reflection of households and individuals who collect automobiles as a hobby.

**Weekend Trip Rates**

Trip rates by vehicle availability on Saturday and Sunday are provided by travel mode and trip purpose in Appendices E and F. Table 3.4.1E provides household level trip rates for travel on Saturday while Table 3.4.1F provides similar information for Sunday trips. Per capita rates are shown in Tables 3.4.2E and 3.4.2F for Saturday and Sunday trips.

On Saturdays and Sundays, zero-vehicle households make about half of the trips they do on the average weekday. While these households produce 5.0 trips per weekday, they only make 2.7 trips on Saturday and even less, 2.1 trips, on Sunday. For the remaining vehicle availability categories, trip productions on the weekend are comparable to trip rates during the week. The exception is on Saturday for households with access to four or more vehicles, which only make 7.4 trips as compared to 12.4 trips on the average weekday and 10.1 trips on Sunday.

**Table 3.4.1**

**2000 Regional Weekday Transit Shares for Trips per Household by Vehicle Availability**

| Vehicles Available | Home-Based Work Trips/HH | | | Total Trips/HH | | |
|---|---|---|---|---|---|---|
| | Transit | All Modes | % Transit | Transit | All Modes | % Transit |
| No Vehicles | 0.518 | 1.037 | 50.0% | 1.729 | 4.952 | 34.9% |
| One Vehicle | 0.241 | 1.327 | 18.2% | 0.479 | 5.818 | 8.2% |
| Two Vehicles | 0.195 | 2.061 | 9.5% | 0.376 | 9.899 | 3.8% |
| Three Vehicles | 0.123 | 2.554 | 4.8% | 0.266 | 11.176 | 2.4% |
| Four or More Vehicles | 0.128 | 3.229 | 4.0% | 0.299 | 12.377 | 2.4% |
| Total | 0.227 | 1.865 | 12.2% | 0.519 | 8.436 | 6.2% |

**Figure 3.4.1**
**2000 Regional Weekday Transit Shares by Vehicle Availability**

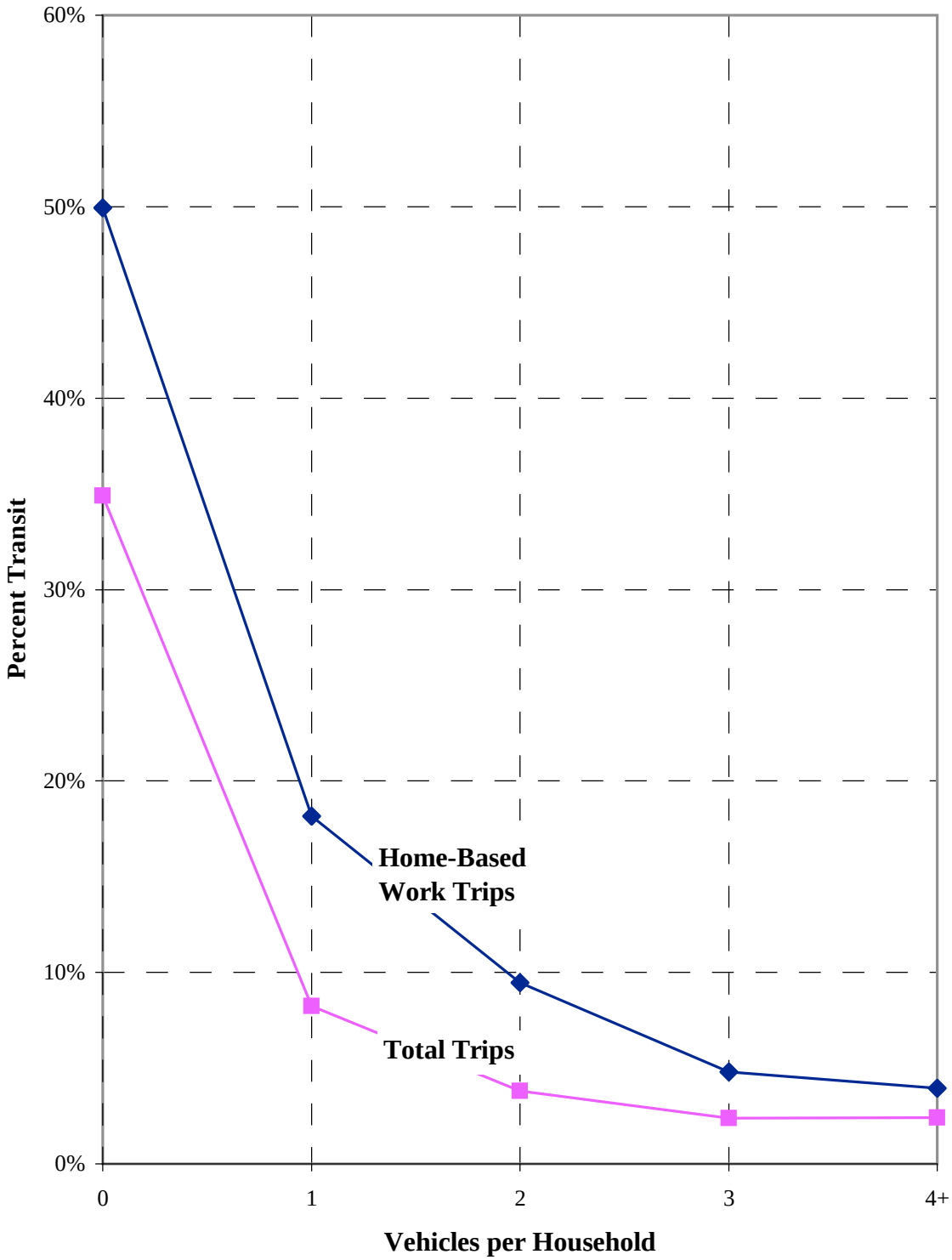


**Table 3.4.2**
**2000 Regional Household Characteristics by Vehicle Availability**

| Vehicles Available | Income per Household | Income per Person | Persons per HHld | Income per Worker | Workers per HHld | Vehicles per Person | Average age of HHld Head | Average Age of Persons Age 5+ in HHlds |
|---|---|---|---|---|---|---|---|---|
| Zero Vehicles | $34,035 | $19,816 | 1.77 | $35,748 | 0.79 | 0.00 | 45.7 | 37.8 |
| One Vehicle | $59,509 | $31,935 | 1.88 | $51,317 | 1.01 | 0.54 | 45.2 | 37.8 |
| Two Vehicles | $99,654 | $31,867 | 3.12 | $59,424 | 1.56 | 0.65 | 44.0 | 34.9 |
| Three Vehicles | $108,132 | $30,504 | 3.53 | $53,359 | 1.95 | 0.86 | 44.9 | 34.7 |
| Four or More Vehicles | $126,134 | $32,172 | 3.92 | $50,019 | 2.45 | 1.13 | 46.3 | 34.7 |
| Total | $83,201 | $30,907 | 2.69 | $54,200 | 1.42 | 0.66 | 44.8 | 35.7 |

## 3.5 Regional Trip Rates by Housing Structure Type

Weekday and weekend trip rates by housing structure type are presented in this section. There were thirty-one separate categories for type of home reported in the 2000 travel survey. For the purposes of this report, these categories were aggregated to seven groups: single family, duplex, apartment, condo/townhome, mobile home, hotel/motel, and other (for all other miscellaneous or unknown responses). The distribution of regional households is shown in the table below.

| Structure Type | Households | Percent of Households | Household Population | Mean Household Size |
|---|---|---|---|---|
| Single Family | 1,464,588 | 59.4% | 4,464,519 | 3.048 |
| Duplex | 113,721 | 4.6% | 314,923 | 2.769 |
| Apartment | 599,675 | 24.3% | 1,248,794 | 2.082 |
| Condo/Townhome | 209,650 | 8.5% | 448,882 | 2.141 |
| Mobile Home | 30,089 | 1.2% | 57,804 | 1.921 |
| Other | 48,297 | 2.0% | 106,139 | 2.198 |
| TOTAL | 2,466,020 | 100.0% | 6,641,061 | 2.693 |

The majority of Bay Area residents live in single-family structures (4.5 million individuals, or 67% of the population). Apartment dwellers comprise the next largest percentage of residents at 24.3% of households. The mean household size is highest, 3.0 persons, for single-family homes and lowest, 1.9 persons, for those living in mobile homes.

### Weekday Trip Rates

The impact of housing structure on weekday trip rates is displayed in Table 3.5, which shows trip rates and transit shares for home-based work and total trips stratified by housing type. Single-family households average the highest number of trips per weekday (9.7 trips). The second highest trip rate is for duplex households, which average 8.8 trips per weekday. Those living in mobile homes produce the fewest number of weekday trips (5.6 trips per household). For total trips, the transit share is highest for those who live in apartments. This is a positive attribute of apartment living of interest to transportation planners reviewing and promoting transit oriented development, which places high density residential areas within close proximity of transit stops and stations.

Table 3.5 indicates that transit shares for home-based work trips are highest for households living in closer quarters. Apartment dwellers have the highest home-based work transit share of 21.3%. Duplex dwellers have the next highest transit share for home-based work trips (16.9%), and those living in condos and/or townhomes follow with a transit share of 14.4%.

Detailed tables showing weekday trip rates stratified by housing structure type for the generalized travel modes and trip purposes are included in the appendix. Table 3.5.1C provides household level rates while Table 3.5.2C outlines person level trip rates. The per capita rates in

Table 3.5.2C suggest that individuals living in apartments or duplexes are more likely to make walk and bicycle trips than persons living in other household structures. This table also indicates that person level weekday trip rates by all trip purposes do not vary significantly by structure type. Persons living in single-family homes average 3.2 trips per weekday (the highest total trip rate) while the lowest trip rate is for those living in mobile homes (2.9 trips per weekday).

**Weekend Trip Rates**

Household and person level trip rates stratified by dwelling type are detailed in Tables 3.5.1E, 3.5.2E, 3.5.1F, and 3.5.2F in the appendices. Tables 3.5.1E and 3.5.1F indicate that single-family households produce 9.8 trips on Saturday and 9.0 trips on Sunday. For both weekend days, duplex dwelling households have the second highest trip rates (8.0 trips per day on Saturday and 8.9 trips per day on Sunday).

Person level trip rates for Saturday travel are shown in Table 3.5.2E. The largest number of trips per person on Saturday is made by mobile home dwellers who average 3.3 trips per day. Individuals from single-family homes average the second highest trip rate of 3.2 trips per person on Saturday. Excluding the "other" category, the highest trip rate on Sunday is made by those who live in duplexes (3.2 trips on Sunday). The lowest trip rate on Sunday is for persons living in apartments who make only 2.4 trips on Sunday (see Table 3.5.2F).

**Table 3.5**

**2000 Regional Weekday Transit Shares for Trips per Household by Housing Structure Type**

| Structure Type | Home-Based Work Trips/HH | | | Total Trips/HH | | |
|---|---|---|---|---|---|---|
| | Transit | All Modes | % Transit | Transit | All Modes | % Transit |
| Single Family | 0.166 | 1.979 | 8.4% | 0.356 | 9.695 | 3.7% |
| Duplex | 0.338 | 2.000 | 16.9% | 0.725 | 8.806 | 8.2% |
| Apartment | 0.361 | 1.696 | 21.3% | 0.922 | 6.179 | 14.9% |
| Condo/ Townhome | 0.238 | 1.655 | 14.4% | 0.468 | 6.729 | 7.0% |
| Mobile Home | 0.051 | 1.215 | 4.2% | 0.139 | 5.571 | 2.5% |
| Other | 0.189 | 1.488 | 12.7% | 0.436 | 6.618 | 6.6% |
| Total | 0.227 | 1.865 | 12.2% | 0.519 | 8.436 | 6.2% |

## 3.6 Regional Trip Rates by County of Residence

This section reports the impact of residence county on weekday and weekend trip rates. Detailed appendix tables highlight household and person level trip rates by county of residence, mode, and trip purpose for weekday, Saturday, and Sunday travel.

The distribution of households across the nine San Francisco Bay Area counties is shown in the table below.

| County of Residence | Households | Percent of Households | Household Population | Mean Household Size |
|---|---|---|---|---|
| San Francisco | 329,699 | 13.4% | 756,991 | 2.296 |
| San Mateo | 254,103 | 10.3% | 696,700 | 2.742 |
| Santa Clara | 565,865 | 22.9% | 1,652,898 | 2.921 |
| Alameda | 523,190 | 21.2% | 1,416,090 | 2.707 |
| Contra Costa | 344,304 | 14.0% | 937,439 | 2.723 |
| Solano | 130,290 | 5.3% | 378,628 | 2.906 |
| Napa | 45,516 | 1.8% | 119,036 | 2.615 |
| Sonoma | 172,305 | 7.0% | 447,492 | 2.597 |
| Marin | 100,748 | 4.1% | 235,787 | 2.340 |
| TOTAL | 2,466,020 | 100.0% | 6,641,061 | 2.693 |

The largest county is Santa Clara County where just over 1.65 million individuals reside (nearly 25% of the Bay Area's population). Alameda County, with a population of 1.4 million, accommodates 21.2% of Bay Area households. San Francisco and Contra Costa County make up another 27% of households (13.4% of households are in San Francisco, 14% are in Contra Costa County). The fewest number of residents live in Napa County (119,036 individuals). Santa Clara and Solano County have the highest average household size at 2.92 and 2.91 persons per household, respectively. The smallest average household size is for San Francisco County (2.3 persons per household).

### Weekday Trip Rates

Regional weekday transit shares and trip rates are provided in Table 3.6 by county of residence for home-based work and total trips. The table indicates that, by far, San Francisco County has the highest transit share for total trips (19.3%) and for home-based work trips (33.8%). The next highest weekday transit share is less than half that of San Francisco's – 8.1% of trips made in Alameda County are by the transit mode. The lowest transit share is for Napa County where 0.7% of trips are made by transit. For home-based work trips, Alameda and Contra Costa County have transit shares higher than the regional average. Alameda County's home-based work transit share is 15.0% while Contra Costa County's is 12.5% (the regional average transit

share is 12.2%). The lowest transit share for home-based work trips is again for Napa County with only 1.0% of weekday trips made by transit.

Weekday trip rates provided in Table 3.6 indicate that home-based work trips per household are highest for Santa Clara and San Mateo County (2.1 and 2.0 weekday home-based work trips) and lowest for Marin County (1.6 weekday home-based work trips). For all trip purposes, households in Santa Clara County produce the most trips per weekday (9.1) while households in San Francisco produce the lowest number of trips (7.3 per weekday).

The data in Table 3.6 is based on detailed information found in Table 3.6.1C, which outlines weekday household level trip rates by county of residence, travel mode, and trip purpose. A review of the trip rates per county by the various travel modes shows that San Francisco County – which has the highest transit share for total trips – also has the lowest trip rate for vehicle driver trips at the household level. Households in San Francisco average only 2.6 vehicle driver trips on the typical weekday while the highest vehicle driver trip rate is for households in Santa Clara County, which make 5.4 vehicle driver trips per day.

Walk trip rates are highest in San Francisco and Alameda County. Households in San Francisco make 1.6 walk trips per weekday while Alameda County homes produce roughly one walk trip per weekday (Table 3.6.1C). Bicycle trip rates are highest for households in Alameda County, which average 0.18 bike trips per weekday. San Mateo and San Francisco County produce almost as many bicycle trips (0.17 per weekday in San Mateo County and 0.16 per weekday in San Francisco).

Per capita weekday trip rates by county of residence, mode, and trip purpose are outlined in Table 3.6.2C. These per capita rates show less of a discrepancy between vehicle driver trips than household level rates. San Francisco still has the lowest average trip rate for vehicle driver trips at 1.1 per weekday. The highest rate is for individuals living in Sonoma County who average 2.1 vehicle driver trips per weekday. San Mateo and Santa Clara County follow with 1.9 weekday vehicle driver trips. Individuals living in San Francisco make the largest number of walk trips per weekday (0.69 trips per person) and have the highest bicycle trip rate, averaging 0.68 weekday bike trips. Alameda and San Mateo County residents follow with 0.07 and 0.06 bike trips per weekday.

## Weekend Trip Rates

Weekend trip rates at the household and person level are included by county of residence, mode, and purpose in Appendices E and F and are discussed in this section.

Household level trip rates by county of residence are provided in Table 3.6.1E for Saturday travel and in Table 3.6.1F for Sunday trips. Transit trip rates for both weekend days are relatively high in San Francisco County. San Francisco households average 0.73 transit trips on Saturday and 0.71 transit trips on Sunday. These trip rates are slightly more than half the number of transit trips produced during the week by households in San Francisco.

Table 3.6.1E indicates that Santa Clara County households average the highest number of Saturday trips (9.3 per household) while Solano County households have the lowest average Saturday trip rate (7.1 per household). Vehicle driver trip rates are highest for Sonoma County households, which average 4.9 vehicle driver trips on Saturday. The lowest rate of vehicle driver trips is for San Francisco households, which make only 2.6 vehicle driver trips on Saturday. Households in San Francisco produce the most walk trips on Saturday at an average of 1.4 per household. Alameda County households average 0.17 bicycle trips on Saturday, which is the highest Saturday trip rate for this mode.

By trip purpose, households in Marin County produce the highest number of home-based social/recreational trips averaging 3.2 per household on Saturday. Households in Santa Clara County have the highest home-based shop (other) trip rate on Saturday averaging 3.2 trips per household.

Table 3.6.2E provides person level trip rates on Saturday stratified by county of residence, mode, and purpose. The results show that Sonoma County residents average the most trips on Saturday (3.3 per person). Solano County residents produce only 2.4 trips on Saturday, the lowest Saturday trip rate. Vehicle driver trip rates per person on Saturday are highest for individuals living in Marin County (1.9 vehicle driver trips per day) and lowest for residents of San Francisco who average only 1.1 vehicle driver trips on Saturday. Per capita rates for walk and bicycle trips on Saturday show the same trends as household level rates. Individuals living in San Francisco make the most walk trips on Saturday (0.62 per person) while residents of Alameda County average the highest number of Saturday bicycle trips (0.06 per person).

Sunday trip rates in Table 3.6.1F show that for households located in all counties except Marin, the average trip rate for total trips is lower on Sunday than on the weekday. Households in Marin County average 8.7 trips on Sunday (compared to 8.0 trips per weekday). Total Sunday trip rates per household are also lower on Sundays than on Saturdays except for Marin and San Mateo County households, which average slightly less trips on Saturday than on Sunday. The lowest Sunday household trip rate is for Solano County homes, which average only 6.2 trips per household. Vehicle driver trips on Sunday are highest for Santa Clara County households, which average 4.7 vehicle driver trips per day. While San Francisco households lead walk and bicycle trip productions on Sunday, Marin County homes have the second highest walk and bicycle trip rates. San Francisco households make 1.4 walking trips on Sunday and 0.29 bicycle trips. Households in Marin County average 1.0 walk trips and 0.15 bicycle trips on Sunday.

Per capita trip rates for Sunday travel are provided in Table 3.6.2F by mode, purpose, and county of residence. The average Bay Area resident makes 2.9 trips on Sunday. This ranges from a low of 2.1 trips per person for those residing in Solano County to a high of 3.7 trips per person on Sunday for Marin County residents. For Sunday travel, trends in per capita rates are similar to household level rates in that residents of San Francisco produce the most walk trips (0.60 per person on Sunday) and the fewest vehicle driver trips (1.1 per person). The highest vehicle driver trip rates are for residents of Marin County who average 1.7 vehicle driver trips per day on Sunday (recall that at the household level, Santa Clara County led vehicle driver trip rates). Bicycle trip rates on Sunday are still highest for those living in San Francisco; however, Sonoma County residents have the next highest person level bicycle trip rate of 0.07 bike trips per person

on Sunday. Marin County residents produce nearly as many with an average of 0.06 bicycle trips on Sunday.

Table 3.6.2F shows that residents of Contra Costa County produce the most home-based social/recreational trips per person on Sunday while individuals living in Marin County produce the highest number of home-based shop (other) trips per capita on Sunday. Table 3.6.1F indicates that the same is true at the household level. Contra Costa County households average the highest number of home-based social/recreational trips (3.2 per household on Sunday), and households in Marin make the most home-based shop (other) trips (3.3 per household on Sunday).

**Table 3.6**

**2000 Regional Weekday Transit Shares for Trips per Household by County of Residence**

| County of Residence | Home-Based Work Trips/HH | | | Total Trips/HH | | |
|---|---|---|---|---|---|---|
| | Transit | All Modes | % Transit | Transit | All Modes | % Transit |
| San Francisco | 0.604 | 1.785 | 33.8% | 1.400 | 7.256 | 19.3% |
| San Mateo | 0.182 | 1.994 | 9.1% | 0.437 | 8.665 | 5.0% |
| Santa Clara | 0.109 | 2.109 | 5.2% | 0.221 | 9.133 | 2.4% |
| Alameda | 0.279 | 1.860 | 15.0% | 0.688 | 8.469 | 8.1% |
| Contra Costa | 0.209 | 1.673 | 12.5% | 0.423 | 8.568 | 4.9% |
| Solano | 0.067 | 1.711 | 3.9% | 0.154 | 8.043 | 1.9% |
| Napa | 0.016 | 1.620 | 1.0% | 0.058 | 8.005 | 0.7% |
| Sonoma | 0.043 | 1.788 | 2.4% | 0.115 | 8.375 | 1.4% |
| Marin | 0.168 | 1.551 | 10.8% | 0.333 | 8.001 | 4.2% |
| Total | 0.227 | 1.865 | 12.2% | 0.519 | 8.436 | 6.2% |

## 3.7 Regional Trip Rates by Workers in the Household

This section presents trip rates relative to the number of employed individuals in the household for Bay Area residents in 2000. In this analysis, employed individuals include both full-time and part-time workers.

The table below shows the distribution of weighted and expanded regional households by the number of workers in the household.

| Workers in Household | Households | Percent of Households | Household Population | Mean Household Size |
|---|---|---|---|---|
| No Workers | 325,873 | 13.2% | 561,435 | 1.723 |
| One Worker | 1,020,484 | 41.4% | 2,300,114 | 2.254 |
| Two Workers | 888,794 | 36.0% | 2,843,597 | 3.199 |
| Three or More Workers | 204,912 | 8.3% | 888,475 | 4.336 |
| Refused/Unknown | 25,957 | 1.1% | 47,440 | 1.828 |
| TOTAL | 2,466,020 | 100.0% | 6,641,061 | 2.693 |

The table above indicates that 41.4% of households (over 1 million) are single-worker homes. However, a higher percentage of the population lives in two-worker homes (nearly 43% or over 2.8 million residents). Roughly 13% of Bay Area households have zero workers, which includes both unemployed and retired adults and students. This percentage is lower than the 1990 level, where 18% of households did not have workers present (Purvis, 1994). Multi-worker homes account for 44% of Bay Area households. Mean household size is highest for households with three or more workers (4.34 persons per household) and lowest for homes with no workers (1.72 persons per household). As with the 1990 survey, there appears to be a high correlation between the number of workers present in a household and the mean household size.

### Weekday Trip Rates

Regional weekday trip rates by workers in the household are outlined in Tables 3.7.1 and 3.7.2. Trip rates are presented at the household and person level and are provided by travel mode and trip purpose. Transit shares are also included.

Household level trip rates are highest for households with three or more workers, which average 13.6 trips per household per weekday. The lowest household level trip rate is for zero-worker homes, which only average 5.0 trips per weekday. The number of work trips produced by a household during the week is roughly the same as the number of workers in the household. Households with no workers make 0.14 home-based work trips per weekday. Single-worker homes average 1.4 home-based weekday work trips, and two-worker homes make 2.6 weekday home-based work trips. Households with three or more employed persons average 4.1 home-based work trips per weekday.

Table 3.7.1 shows that as the number of workers increases, transit shares for households decrease. Households with no workers make nearly 10% of trips by transit. Transit share drops to 6.4% for single-worker homes and 5.5% for two-worker homes. The lowest transit share is 5.3% for three-or-more-worker households. For all categories of workers in the household, transit shares by trip purpose are highest for home-based work trips. The exception is for zero-worker homes. Households without workers have the highest transit share for home-based school trips (36.4%), which may indicate that a large percentage of households without workers are comprised of students using transit to get to and from school.

As transit shares decrease with the number of workers in the household, vehicle driver shares and trip rates increase. Table 3.7.1 provides the number of vehicle driver trips produced for each household type. Households with no workers make 2.5 vehicle driver trips per weekday, which represents just over 49% of all trips made by zero-worker households. One-worker homes average 3.9 vehicle driver trips per weekday (nearly 54% of all one-worker household trips). Households with two workers make 5.6 trips as vehicle drivers (56.2% share of trips), and homes with the highest number of workers produce 8.4 vehicle driver trips (61.6% of total trips made by homes with three or more workers). Interestingly, walk shares for households decrease as the number of workers increase from 17.2% for zero-worker homes to 7.8% for homes with three or more employed individuals. Conversely, bicycle shares slightly increase as workers increase in the home from 1.2% for zero-worker homes to 2.0% for homes with three or more workers.

Per capita trip rates are presented in Table 3.7.2 for regional weekday trips by number of workers in the household. Individuals living in non-working households average the fewest number of weekday trips (2.9 per person). Trip rates per person for working households are roughly the same, with persons in single-worker homes making slightly more trips per weekday. Individuals living in multi-worker homes average 3.1 trips per weekday while residents of single-worker homes make 3.2 trips per weekday.

Vehicle driver trip rates per person decrease as the number of workers increases, as with household level rates. Persons living in three-or-more-worker homes produce 1.9 vehicle driver trips per weekday. Two-worker households average 1.8 vehicle driver trips per person. Persons in single-worker homes make 1.7 vehicle driver trips, and only 1.5 weekday vehicle driver trips are made by individuals in non-working households.

Table 3.7.2 shows that weekday walk trip rates per capita are highest for those in non-working homes (0.50 walk trips per person per weekday). The number of walk trips produced by residents decreases as the number of workers in the household increases. The lowest walk trip rate per person is 0.24 trips, which is the average for persons living in three-or-more-worker households. Similar to household level rates, bicycle trips per capita increases as the number of employed persons in the home increases. Bicycle trip rates range from a low of 0.03 per person for zero-worker households to a high of 0.06 per person for households with three or more workers.

Weekday trip rates per person by trip purpose display interesting results. Table 3.7.2 shows that residents of non-working households average the highest number of home-based shop (other) trips (1.2 per person per weekday). Members of households with three or more workers make

the fewest number of home-based shop (other) trips averaging only 0.66 per person per weekday. Interestingly, two-worker homes have the lowest average trip rate per person for weekday home-based social/recreational trips (0.49 per person). Those in non-working households produce the highest number of home-based social/recreational trips per weekday (0.75 trips per person).

Figures 3.7.1 and 3.7.2 suggest that the discrepancy in the number of trips produced by households with different numbers of employed persons is influenced more by household size than by the number of workers in the home. Trip purpose shares, however, are greatly influenced by the number of employed persons, particularly when working and non-working households are compared. Non-working households have at least a 40% higher trip share for home-based shop (other) and home-based social/recreational trips than working households. This reduction in shop and social/recreation trips is countered by work trips for working households. The share of non-home-based trips is roughly the same per household regardless of the number of workers.

**Weekend Trip Rates**

Trip rates stratified by number of workers in the household for weekend travel are discussed in this portion of the report. Per capita and household level trip rates are provided by travel mode and trip purpose, and transit shares are also included. The tables describing these rates are located in Appendices E and F.

Household level trip rates for travel on Saturday are provided in Table 3.7.1E. Sunday rates for households is included in Table 3.7.2E. These tables show that household trip rates decrease across the weekend from Saturday to Sunday and that households produce fewer trips on weekend days than on an average weekday. Saturday trips per household increase steadily from 5.0 for zero-worker homes to a maximum of 11.1 trips per day for households with three or more workers. Sunday trip rates follow the same pattern.

Transit shares decrease on weekend days and level off between working and non-working households on the weekend. For travel on Saturday, households with three or more workers have the highest transit share at 3.7% of trips. On Sunday, non-working households share the lead for transit trip shares with homes having three or more workers with 4.1% and 3.9% of trips by transit, respectively. Vehicle driver shares also decrease during the weekend for working households; however, for non-working homes, the share of trips made by vehicle drivers increases. Weekday vehicle driver trips account for 49% of trips made by non-working households. For weekend travel, vehicle driver trips account for 51% of trips on Saturday and 56% of trips on Sunday for non-working households.

Another interesting finding in Table 3.7.1F for travel on Sunday is for bicycle trip rates. For three of the four worker categories, bicycle trip rates on Sunday are higher than bicycle trip rates on Saturday and on the average weekday. Non-working households average 0.07 bike trips on Sunday compared with 0.03 on Saturday and 0.06 on the average weekday. Single-worker households also produce more bicycle trips on Sunday (0.11 Sunday bike trips versus 0.07 on Saturday and 0.08 per weekday). Households with the greatest number of employed individuals

(three or more) produce 0.31 bicycle trips on Sunday and 0.05 bike trips on Saturday and on the average weekday.

By trip purpose, non-working and single-worker households produce more home-based shop trips on Saturday than home-based social/recreational trips. The reverse is true for multi-worker homes, which produce more home-based social/recreational trips on Saturday (see Table 3.7.1E). For Sunday travel, Table 3.7.1F shows that non-working, single-worker, and two-worker homes produce more home-based social/recreational trips than shopping trips. While home-based shop (other) trips on Sunday increase as the number of workers per household increases (from 1.4 trips per household to 3.0 trips per household), home-based social/recreational trips actually decrease for households with more than two workers (3.6 trips per household for two-worker homes versus 2.9 trips per household for homes with more than two workers).

Tables 3.7.2E and 3.7.2F show person level weekend trip rates by purpose and mode stratified by number of workers in the household. On Saturday, trip rates per capita range from 2.6 trips per person for homes with more than two workers to a high of 3.2 trips per person for single-worker homes. Trip rates on Sunday are highest for residents in two-worker households (3.0 trips per person) and lowest for those living in homes with three or more workers (2.3 trips per person). Trip rates for home-based shop (other) and social/recreational trips on Saturday are highest for individuals in single-worker households who average 1.1 shop and social/recreational trips on Saturday. On Sunday, individuals from single-worker households also make the most home-based shop (other) trips. However, individuals from non-working households average the most home-based social/recreational trips per person (1.2 trips on Sunday). Among working households, persons from two-worker homes produce the most home-based social/recreational trips on Sunday (1.1 per person).

Graphical versions of the four weekend tables described above are provided in Figures 3.7.1E, 3.7.2E, 3.7.1F, and 3.7.2F. At the household level, the largest difference between weekday and weekend trip rates by number of workers in the household is for multi-worker households. On weekend days, the differential between the number of trips produced by two-worker and three-or-more-worker homes is smaller than on the average weekday. Additionally, trip purpose shares for non-work and non-school related purposes for all household worker categories are much higher on the weekend than on the average weekday.

Person level trip rates on Saturday and Sunday show a significantly different trend than weekday rates when Figures 3.7.2E and 3.7.2F are compared to Figure 3.7.2. For travel on Saturday and Sunday, trip rates per person are lowest for households with three or more workers and highest for persons in one- and two-worker homes. Weekday trip rates show less variation at the person level than weekend rates. The other notable, and intuitive, difference between weekend and weekday per capita trip rates is that individuals favor home-based shop (other) and home-based social/recreational trips on the weekend.

## Table 3.7.1
## 2000 Regional Weekday Trips per Household by Workers in Household

| Workers in Household | Mode | Home-Based | | | | Non-Home-Based | Total |
|---|---|---|---|---|---|---|---|
| | | Work | Shop | Soc/Rec | School | | |
| | Vehicle Driver | 0.063 | 1.120 | 0.626 | 0.085 | 0.597 | 2.491 |
| | In-Vehicle Person | 0.076 | 1.413 | 0.926 | 0.161 | 0.812 | 3.389 |
| | Transit | 0.012 | 0.175 | 0.086 | 0.156 | 0.069 | 0.499 |
| No Workers | Person | 0.089 | 1.588 | 1.012 | 0.317 | 0.882 | 3.887 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.032 | 0.000 | 0.032 |
| | Bicycle | 0.003 | 0.025 | 0.008 | 0.014 | 0.007 | 0.058 |
| | Walk | 0.031 | 0.334 | 0.249 | 0.057 | 0.194 | 0.865 |
| | Other | 0.020 | 0.086 | 0.023 | 0.010 | 0.061 | 0.200 |
| | Total | 0.143 | 2.032 | 1.293 | 0.430 | 1.145 | 5.042 |
| | Percent Transit | 8.7% | 8.6% | 6.6% | 36.4% | 6.1% | 9.9% |
| | Vehicle Driver | 0.997 | 1.221 | 0.597 | 0.135 | 0.914 | 3.865 |
| | In-Vehicle Person | 1.056 | 1.740 | 1.066 | 0.566 | 1.280 | 5.708 |
| | Transit | 0.205 | 0.061 | 0.050 | 0.086 | 0.061 | 0.464 |
| One Worker | Person | 1.261 | 1.801 | 1.116 | 0.652 | 1.341 | 6.172 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.077 | 0.000 | 0.077 |
| | Bicycle | 0.026 | 0.033 | 0.014 | 0.012 | 0.015 | 0.100 |
| | Walk | 0.052 | 0.221 | 0.144 | 0.133 | 0.219 | 0.770 |
| | Other | 0.019 | 0.018 | 0.015 | 0.007 | 0.025 | 0.084 |
| | Total | 1.359 | 2.073 | 1.289 | 0.881 | 1.600 | 7.202 |
| | Percent Transit | 15.1% | 3.0% | 3.9% | 9.8% | 3.8% | 6.4% |
| | Vehicle Driver | 1.966 | 1.396 | 0.706 | 0.180 | 1.372 | 5.618 |
| | In-Vehicle Person | 2.148 | 1.877 | 1.337 | 0.943 | 1.887 | 8.191 |
| | Transit | 0.289 | 0.047 | 0.061 | 0.071 | 0.079 | 0.548 |
| Two Workers | Person | 2.437 | 1.923 | 1.399 | 1.014 | 1.966 | 8.739 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.069 | 0.000 | 0.069 |
| | Bicycle | 0.045 | 0.029 | 0.022 | 0.027 | 0.020 | 0.143 |
| | Walk | 0.084 | 0.219 | 0.127 | 0.251 | 0.280 | 0.959 |
| | Other | 0.011 | 0.013 | 0.016 | 0.017 | 0.030 | 0.088 |
| | Total | 2.577 | 2.183 | 1.563 | 1.379 | 2.296 | 9.998 |
| | Percent Transit | 11.2% | 2.1% | 3.9% | 5.2% | 3.4% | 5.5% |
| | Vehicle Driver | 3.089 | 1.894 | 1.138 | 0.430 | 1.810 | 8.361 |
| | In-Vehicle Person | 3.511 | 2.501 | 1.892 | 1.052 | 2.344 | 11.299 |
| | Transit | 0.407 | 0.064 | 0.078 | 0.071 | 0.102 | 0.721 |
| Three or More | Person | 3.918 | 2.565 | 1.970 | 1.123 | 2.445 | 12.020 |
| Workers | School Bus | 0.000 | 0.000 | 0.000 | 0.054 | 0.000 | 0.054 |
| | Bicycle | 0.061 | 0.040 | 0.095 | 0.010 | 0.066 | 0.271 |
| | Walk | 0.101 | 0.202 | 0.204 | 0.269 | 0.280 | 1.056 |
| | Other | 0.029 | 0.040 | 0.030 | 0.030 | 0.047 | 0.175 |
| | Total | 4.108 | 2.846 | 2.299 | 1.485 | 2.838 | 13.576 |
| | Percent Transit | 9.9% | 2.2% | 3.4% | 4.8% | 3.6% | 5.3% |
| | Vehicle Driver | 0.971 | 1.115 | 0.538 | 0.079 | 0.723 | 3.425 |
| | In-Vehicle Person | 1.009 | 1.505 | 0.866 | 0.334 | 0.931 | 4.645 |
| | Transit | 0.191 | 0.041 | 0.027 | 0.035 | 0.058 | 0.351 |
| Refused/ | Person | 1.200 | 1.546 | 0.892 | 0.369 | 0.990 | 4.997 |
| Unknown | School Bus | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | Bicycle | 0.033 | 0.005 | 0.004 | 0.000 | 0.000 | 0.042 |
| | Walk | 0.004 | 0.140 | 0.070 | 0.028 | 0.145 | 0.388 |
| | Other | 0.048 | 0.012 | 0.000 | 0.000 | 0.051 | 0.111 |
| | Total | 1.285 | 1.704 | 0.967 | 0.397 | 1.186 | 5.538 |
| | Percent Transit | 14.9% | 2.4% | 2.7% | 8.7% | 4.9% | 6.3% |
| | Vehicle Driver | 1.396 | 1.326 | 0.684 | 0.168 | 1.110 | 4.684 |
| | In-Vehicle Person | 1.524 | 1.807 | 1.212 | 0.686 | 1.521 | 6.750 |
| | Transit | 0.227 | 0.071 | 0.061 | 0.088 | 0.072 | 0.519 |
| Total | Person | 1.750 | 1.878 | 1.273 | 0.774 | 1.593 | 7.269 |
| HH | School Bus | 0.000 | 0.000 | 0.000 | 0.065 | 0.000 | 0.065 |
| | Bicycle | 0.033 | 0.031 | 0.023 | 0.017 | 0.020 | 0.123 |
| | Walk | 0.064 | 0.233 | 0.156 | 0.176 | 0.242 | 0.870 |
| | Other | 0.018 | 0.027 | 0.017 | 0.013 | 0.034 | 0.109 |
| | Total | 1.865 | 2.168 | 1.469 | 1.046 | 1.889 | 8.436 |
| | Percent Transit | 12.2% | 3.3% | 4.1% | 8.4% | 3.8% | 6.2% |

## Table 3.7.2
## 2000 Regional Weekday Trips per Person by Workers in Household

| Workers in Household | Mode | Home-Based | | | | Non-Home-Based | Total |
|---|---|---|---|---|---|---|---|
| | | Work | Shop | Soc/Rec | School | | |
| | Vehicle Driver | 0.037 | 0.650 | 0.363 | 0.049 | 0.346 | 1.446 |
| | In-Vehicle Person | 0.044 | 0.820 | 0.538 | 0.093 | 0.471 | 1.967 |
| | Transit | 0.007 | 0.101 | 0.050 | 0.091 | 0.040 | 0.289 |
| No Workers | Person | 0.052 | 0.922 | 0.587 | 0.184 | 0.512 | 2.256 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.019 | 0.000 | 0.019 |
| | Bicycle | 0.002 | 0.014 | 0.005 | 0.008 | 0.004 | 0.033 |
| | Walk | 0.018 | 0.194 | 0.145 | 0.033 | 0.113 | 0.502 |
| | Other | 0.012 | 0.050 | 0.013 | 0.006 | 0.036 | 0.116 |
| | Total | 0.083 | 1.180 | 0.750 | 0.249 | 0.664 | 2.927 |
| | Percent Transit | 8.7% | 8.6% | 6.6% | 36.4% | 6.1% | 9.9% |
| | Vehicle Driver | 0.442 | 0.542 | 0.265 | 0.060 | 0.406 | 1.715 |
| | In-Vehicle Person | 0.468 | 0.772 | 0.473 | 0.251 | 0.568 | 2.532 |
| | Transit | 0.091 | 0.027 | 0.022 | 0.038 | 0.027 | 0.206 |
| One Worker | Person | 0.559 | 0.799 | 0.495 | 0.289 | 0.595 | 2.738 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.034 | 0.000 | 0.034 |
| | Bicycle | 0.012 | 0.015 | 0.006 | 0.005 | 0.007 | 0.044 |
| | Walk | 0.023 | 0.098 | 0.064 | 0.059 | 0.097 | 0.341 |
| | Other | 0.009 | 0.008 | 0.007 | 0.003 | 0.011 | 0.037 |
| | Total | 0.603 | 0.920 | 0.572 | 0.391 | 0.710 | 3.195 |
| | Percent Transit | 15.1% | 3.0% | 3.9% | 9.8% | 3.8% | 6.4% |
| | Vehicle Driver | 0.614 | 0.436 | 0.221 | 0.056 | 0.429 | 1.756 |
| | In-Vehicle Person | 0.671 | 0.587 | 0.418 | 0.295 | 0.590 | 2.560 |
| | Transit | 0.090 | 0.015 | 0.019 | 0.022 | 0.025 | 0.171 |
| Two Workers | Person | 0.762 | 0.601 | 0.437 | 0.317 | 0.614 | 2.731 |
| | School Bus | 0.000 | 0.000 | 0.000 | 0.022 | 0.000 | 0.022 |
| | Bicycle | 0.014 | 0.009 | 0.007 | 0.008 | 0.006 | 0.045 |
| | Walk | 0.026 | 0.068 | 0.040 | 0.078 | 0.087 | 0.300 |
| | Other | 0.004 | 0.004 | 0.005 | 0.005 | 0.009 | 0.027 |
| | Total | 0.806 | 0.682 | 0.489 | 0.431 | 0.718 | 3.125 |
| | Percent Transit | 11.2% | 2.1% | 3.9% | 5.2% | 3.4% | 5.5% |
| | Vehicle Driver | 0.712 | 0.437 | 0.263 | 0.099 | 0.417 | 1.928 |
| | In-Vehicle Person | 0.810 | 0.577 | 0.436 | 0.243 | 0.541 | 2.606 |
| | Transit | 0.094 | 0.015 | 0.018 | 0.016 | 0.023 | 0.166 |
| Three or More | Person | 0.904 | 0.591 | 0.454 | 0.259 | 0.564 | 2.772 |
| Workers | School Bus | 0.000 | 0.000 | 0.000 | 0.012 | 0.000 | 0.012 |
| | Bicycle | 0.014 | 0.009 | 0.022 | 0.002 | 0.015 | 0.063 |
| | Walk | 0.023 | 0.047 | 0.047 | 0.062 | 0.065 | 0.244 |
| | Other | 0.007 | 0.009 | 0.007 | 0.007 | 0.011 | 0.040 |
| | Total | 0.947 | 0.656 | 0.530 | 0.343 | 0.655 | 3.131 |
| | Percent Transit | 9.9% | 2.2% | 3.4% | 4.8% | 3.6% | 5.3% |
| | Vehicle Driver | 0.531 | 0.610 | 0.294 | 0.043 | 0.395 | 1.874 |
| | In-Vehicle Person | 0.552 | 0.824 | 0.474 | 0.183 | 0.510 | 2.542 |
| | Transit | 0.105 | 0.022 | 0.015 | 0.019 | 0.032 | 0.192 |
| Refused/ | Person | 0.657 | 0.846 | 0.488 | 0.202 | 0.541 | 2.734 |
| Unknown | School Bus | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| | Bicycle | 0.018 | 0.003 | 0.002 | 0.000 | 0.000 | 0.023 |
| | Walk | 0.002 | 0.077 | 0.038 | 0.015 | 0.079 | 0.212 |
| | Other | 0.026 | 0.007 | 0.000 | 0.000 | 0.028 | 0.061 |
| | Total | 0.703 | 0.932 | 0.529 | 0.217 | 0.649 | 3.030 |
| | Percent Transit | 14.9% | 2.4% | 2.7% | 8.7% | 4.9% | 6.3% |
| | Vehicle Driver | 0.518 | 0.492 | 0.254 | 0.063 | 0.412 | 1.739 |
| | In-Vehicle Person | 0.566 | 0.671 | 0.450 | 0.255 | 0.565 | 2.506 |
| | Transit | 0.084 | 0.026 | 0.023 | 0.033 | 0.027 | 0.193 |
| Total | Person | 0.650 | 0.697 | 0.473 | 0.288 | 0.592 | 2.699 |
| HH | School Bus | 0.000 | 0.000 | 0.000 | 0.024 | 0.000 | 0.024 |
| | Bicycle | 0.012 | 0.011 | 0.008 | 0.006 | 0.007 | 0.046 |
| | Walk | 0.024 | 0.086 | 0.058 | 0.065 | 0.090 | 0.323 |
| | Other | 0.007 | 0.010 | 0.006 | 0.005 | 0.013 | 0.040 |
| | Total | 0.692 | 0.805 | 0.545 | 0.388 | 0.701 | 3.133 |
| | Percent Transit | 12.2% | 3.3% | 4.1% | 8.4% | 3.8% | 6.2% |

**Figure 3.7.1**
**2000 Weekday Trips per Household by Workers in Household by Trip Purpose**

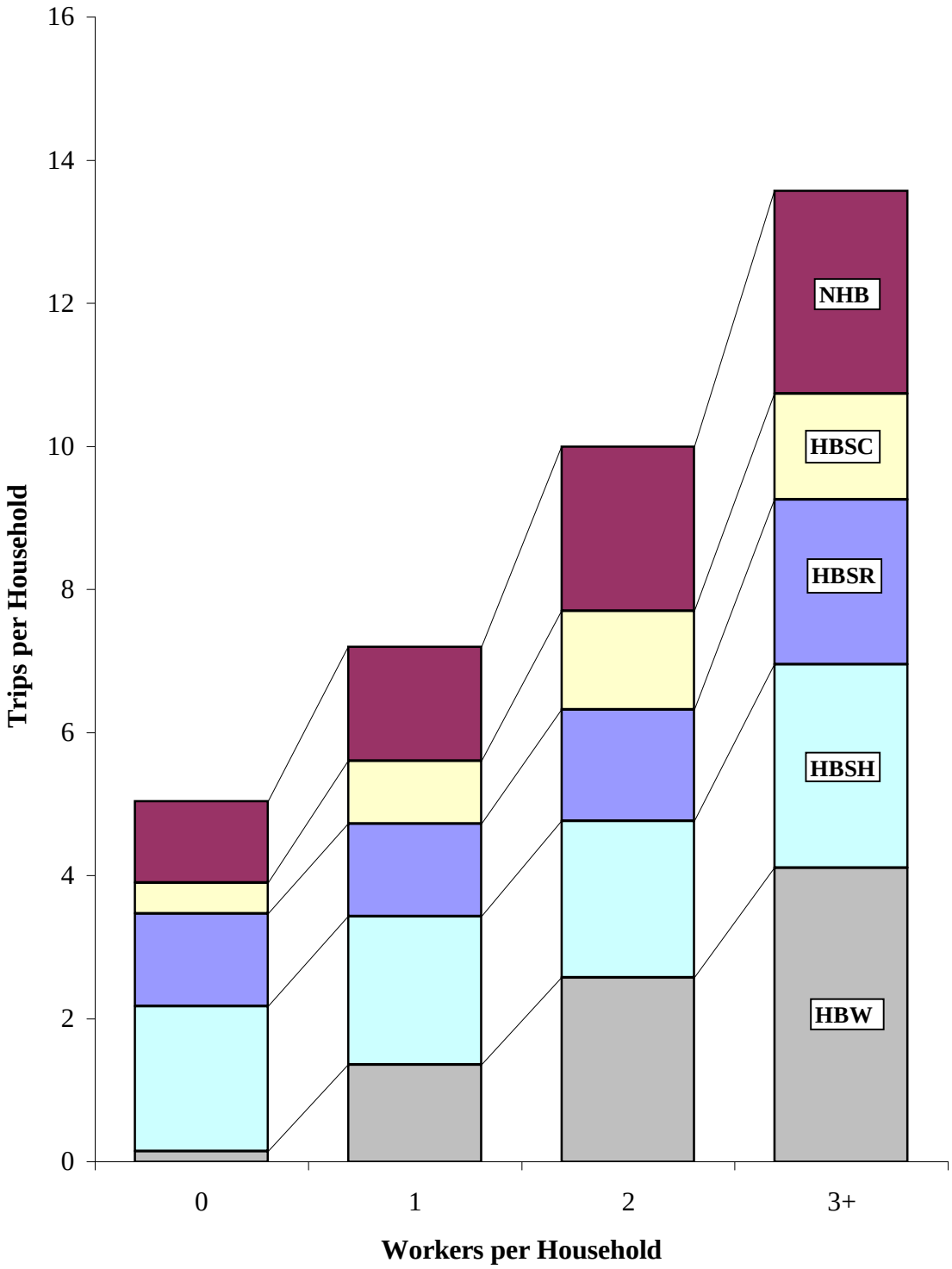
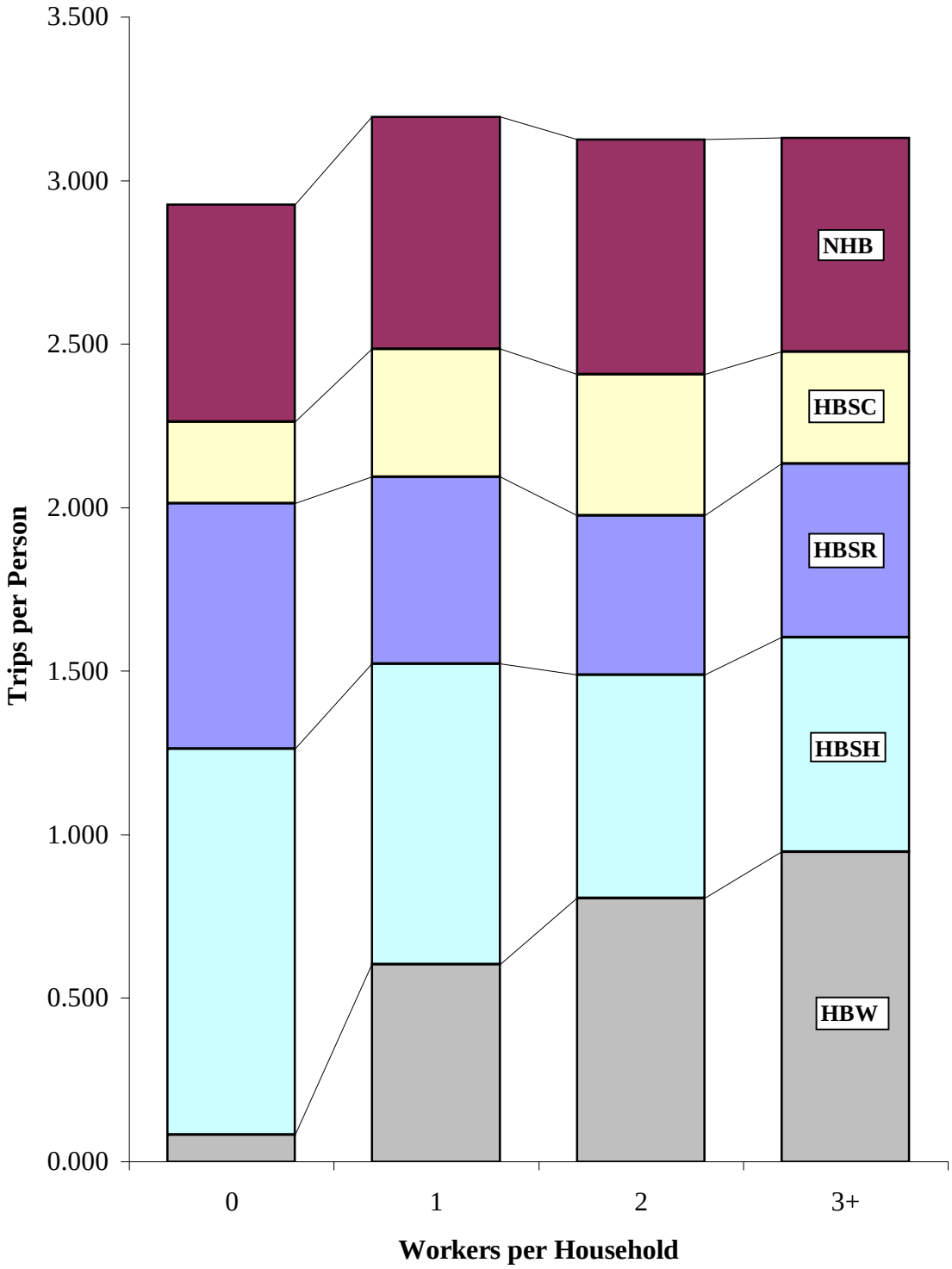


**Figure 3.7.2**
**2000 Weekday Trips per Person by Workers in Household by Trip Purpose**



## 3.8 Regional Trip Rates by Household Life Cycle

The distribution of trip rates by household life cycle category is reported in this section. Household life cycle categories are based on categories used in the 2001 National Household Travel Survey, which collected daily travel information for households across the United States for all trip purposes and travel modes (U.S. Department of Transportation, 2004). Use of the household life cycle categories is yet another way planners attempt to understand travel behavior of individuals and households (Purvis, 1994).

The distribution of households surveyed in both the 2001 National Household Travel Survey (NHTS) and in BATS2000 is provided in the table below.

| Life Cycle Category | 2001 NHTS Households | Percent of Total | BATS2000 Households | Percent of Total |
|---|---|---|---|---|
| One Adult, No Children | 16,332,000 | 15.2% | 496,779 | 20.1% |
| Two or More Adults, No Children | 22,458,000 | 20.9% | 563,135 | 22.8% |
| One Adult, Youngest Child 0-5 | 1,950,000 | 1.8% | 35,259 | 1.4% |
| Two or More Adults, Youngest Child 0-5 | 15,427,000 | 14.4% | 390,062 | 15.8% |
| One Adult, Youngest Child 6-15 | 3,058,000 | 2.8% | 81,759 | 3.3% |
| Two or More Adults, Youngest Child 6-15 | 15,016,000 | 14.0% | 388,345 | 15.7% |
| One Adult, Youngest Child 16-21 | 1,135,000 | 1.1% | 42,619 | 1.7% |
| Two or More Adults, Youngest Child 16-21 | 5,139,000 | 4.8% | 100,784 | 4.1% |
| One Adult, Retired, No Children | 11,513,000 | 10.7% | 126,608 | 5.1% |
| Two or More Adults, Retired, No Children | 15,308,000 | 14.3% | 240,670 | 9.8% |
| Unknown | 30,000 | 0.0% | 0 | 0.0% |
| TOTAL | 107,366,000 | 100.0% | 2,466,020 | 100.0% |

*NHTS Source: U.S. Department of Transportation, 2004.*

As in the 1990 nationwide and San Francisco Bay Area travel surveys, the highest share of households is in the life cycle category of "two or more adults, no children" – 22.8% of Bay Area households are in this category. The next highest share of households by life cycle category is for homes with only one adult and no children (20.1% of regional households). The next highest categories, with household shares of 15.8% and 15.7%, are "two or more adults, youngest child 0-5" and "two or more adults, youngest child 6-15". Overall, the life cycle distribution of households in BATS2000 is comparable to the 2001 NHTS data.

## Weekday Trip Rates

Regional weekday trip rates per household and per capita by household life cycle category are outlined in Table 3.8.1 along with average household size per category. Retired, single-adult households without children produce the fewest number of total weekday trips (2.9 per household). The highest weekday trip rate is for households with two or more adults and the youngest child between 6 and 15 years old, which average 13.8 trips per household per weekday. Households in the "two or more adults, youngest child under 6" category have the next highest trip rate averaging 13.0 trips per weekday. The third highest trip rate is for households in the "two or more adults, youngest child 16-21" group, which make 11.1 trips per weekday. Table 3.8.1 indicates that working households without children make more weekday trips than retired households without children.

The second portion of Table 3.8.1 shows trips per capita and average household size for the ten household life cycle categories. Single-adult households without children, both working and retired, have average household sizes of one person per household. The reader should note that the number of persons per household for these single-person homes is slightly larger than one due to the fact that different factors were used to weight households and individuals in the 2000 survey (Purvis, 2003). The largest mean household size is 4.37 persons for households with two or more adults and the youngest child between the ages of 6 and 15. The next largest households are those in the life cycle category of "two or more adults, youngest child under 6", which have an average of 4.35 persons.

Trips per capita are listed in the extreme lower right column of Table 3.8.l. Weekday trip rates per person are highest for working adults living alone and without children (3.5 trips per weekday) and lowest for retired individuals living with one or more adults and no children (2.8 trips per weekday). For households with children, trip rates are highest for persons in single-adult households with the youngest child between 16 and 21 years old (3.3 trips per weekday). The next highest trip rate for households with children is for individuals living in single-adult homes with the youngest child between 6 and 15 years old. Of households where more than two adults live with children, individuals in households with the youngest child between 6 and 15 have the highest trip rate (3.2 trips per weekday).

Weekday trip rates and shares by trip purpose for the ten life cycle categories are provided in Table 3.8.2. Home-based work trips are highest for households in the "two or more adults, youngest child 16-21" category, which make 3.3 weekday work trips per household. By trip purpose share, households comprised of two or more working adults without children have the highest share of weekday home-based work trips (34.3%) followed by single working adults without children (31.4% home-based work share). Of households with children present, the highest share of home-based work trips is 29.7% for households in the "two or more adults, youngest child 16-21 category". Single adults with the youngest child between 16 and 21 have the next highest home-based work share of 25.3%. Interestingly, retired households report 0.9% and 13.7% home-based work trip shares (the lower of which is for retirees who live alone). This is probably a result of miscoding either trip purpose or employment status.

During the week, households that make the most home-based shop (other) trips are those with two or more adults and a child (or children) under six years of age (Table 3.8.2). These types of households average 3.9 home-based shop (other) trips per weekday. The lowest trip rate for home-based shop trips is for single working adults living without children who make less than one (0.72) home-based shop trip per weekday. Of households with no children present, those with two or more retired adults make the most home-based shop (other) trips (2.4 per weekday). By trip purpose share, retired households have the highest shares of home-based shop (other) trips. Retirees who live alone have a 46.4% shop share while households with two or more retired adults have a 38.1% home-based shop trip share. When trip purpose shares are compared between households with children in similar age groups, Table 3.8.2 shows that single-adult homes with children under 6 years old have a significantly lower home-based shop (other) trip share than households with two or more adults. The same is true for households with the youngest child between 6 and 15 years of age; single-adult homes have a substantially lower share of home-based shop trips.

Home-based school trip rates and shares for households without children are quite low as Table 3.8.2 indicates. Rates range from 0.02 to 0.19 home-based school trips per household per weekday for homes without children. Households with children have significantly higher shares of home-based school trips. For homes with the youngest child less than 16, home-based school trip shares are highest for single-adult households (25.6% for "single adult, youngest child 6-15" households and 23.0% for "single adult, youngest child under 6" homes). For the remaining households with children present, home-based school trip shares range from 12.1% for single-adult homes with the youngest child between 16 and 21 to 21.0% for households with two or more adults and the youngest child between 6 and 15. The number of trips produced per household for home-based school trips is highest for homes in the "two or more adults, youngest child 6-15" category (2.9 trips per weekday) and lowest for single-adult households with the youngest child between 16 and 21 (0.92 trips per weekday).

The most mobile households for home-based social/recreational trips during the week are two-or-more-adult households with children under 6 or between 6 and 15, which average 2.4 and 2.2 home-based social/recreational trips per weekday, respectively. Though these households have the highest trip rate for social/recreational trips, retired households have the highest shares of home-based social/recreational trips. Single-retiree homes have a 28.4% share and multiple-retired-adult households have a 22.6% share of home-based social/recreational trips (see Table 3.8.2).

## Weekend Trip Rates

Regional trip rates per household and per person by household life cycle category for weekend travel are provided in Appendices E and F. Household life cycle categories are based on groupings found in the 2001 National Household Travel Survey (NHTS), and trip rates are based on the weighted and expanded count of intraregional trips reported in BATS2000.

Table 3.8.1E outlines trip rates per household and per capita for travel on Saturday. For some households, trip rates on Saturday are higher than during the week. For the most part, however, household level trip productions are slightly less on Saturday than on the typical weekday.

Retired, single-adult households without children have the lowest trip rate on Saturday averaging 2.5 trips per day. Households in the "two or more adults, youngest child 6-15" category have the highest Saturday trip rate of 15.4 trips per household. The Saturday rate for these households is 1.5 trips per day higher than the weekday rate of 13.8 trips per day. Two other life cycle categories have higher Saturday trip rates than weekday trip rates. "Single adult, youngest child under 6" households make nearly 30% more trips on Saturday than on the average weekday (11.8 trips per day versus 9.1 trips per day). The Saturday trip rate for households in the "single adult, youngest child 16-21" group is also slightly higher than the weekday rate for these households (8.3 trips on Saturday compared to 7.6 trips per weekday). Households with two or more adults and the youngest child between 16 and 21 make significantly less trips on Saturday than during the week. The Saturday rate for this group is 7.1 trips per household while the weekday rate is 11.1 trips per household. The most noticeable drop in Saturday rates is for single-adult households with the youngest child between 6 and 15, which make roughly half as many trips on Saturday than on the typical weekday (9.5 trips versus 4.9 trips).

Per capita trip rates for travel on Saturday are also displayed in Table 3.8.1E. Trip rates range from a low of 2.0 per person for homes with more than one adult and the youngest child between 16 and 21 (this rate is about 1 trip per person lower than the weekday rate for these types of households) to a high of 3.8 trips per person for single-adult households with children under 6. A noticeable difference in Saturday trips per capita exists for persons in households with one adult and the youngest child between 6 and 15, which average about 1.5 less trips on Saturday than on the average weekday.

Trip rates by trip purpose for the ten different life cycle categories are detailed in Table 3.8.2E for Saturday travel. This table also provides trip purpose shares by the different types of households. Trip rates and shares for home-based work and school trips decrease significantly on Saturday while home-based shop (other) and social/recreational trip rates and shares noticeably increase from weekday levels. Non-home based trip rates and shares on Saturday remain relatively the same as on the average weekday.

Home-based social/recreational trips are more than 2.5 times higher on Saturday than on the average weekday for two household life cycle groups: "single adult, youngest child under 6" and "two or more adults, youngest child 6-15". These same groups make about twice as many home-based shop (other) trips on Saturday. Single-adult homes with the youngest child between 16 and 21 also make nearly twice as many home-based shop (other) trips on Saturday. The most mobile households are those with more than one adult and the youngest child between 6 and 15, which average 5.3 home-based shop trips and 5.4 home-based social/recreational trips on Saturday.

For almost all life cycle categories, trip purpose shares on Saturday increase for shop and social/recreational trips to and from home as compared to weekday shares. The largest share increases, evident in the bottom half of Table 3.8.1E, are for multiple-adult homes with children under 6 and homes with the youngest child between 6 and 15 and any number of adults. These households have an average increase in home-based social/recreational trip shares of about 20%.

Rates per capita and per household for travel on Sunday are provided in Table 3.8.1F. Trips per household and trips per person on Sunday are lower than weekday rates across all life cycle categories. On Sunday, trips per household most noticeably decrease for households with the youngest child between 16 and 21. For homes with one adult, the rate decreases from 7.6 to 5.7 trips per day. Where more than one adult is present, rates decrease from 11.1 to 8.2 trips per household on Sunday. Rates also decrease for single-adult homes with children less than 6 years of age from 9.1 trips per weekday to 6.4 trips on Sunday. Trips per capita on Sunday ranges from a low of 2.0 per person for those living in single-adult homes with children younger than 6 to a high of 3.5 trips per person for working-single-adult households without children.

Trip rates by purpose for Sunday travel and trip purpose shares are included in Table 3.8.2F by household life cycle category. Like Saturday trips, rates and shares by purpose decrease substantially for home-based school and work trips, and non-home based trips are relatively the same as during the week. The largest differences between Sunday and weekday travel are for home-based shop (other) and social/recreational trips. The largest increase in trips per day and trip purpose shares is for homes with two or more adults with the youngest child between 6 and 15. These households make 3 more home-based social/recreational trips on Sunday than on the weekday, which translates to a share increase of 23.5% for these households. Retired households have the largest home-based social/recreational trip production rate on Sunday and the lowest home-based shop (other) trip rate (as compared to weekday and Saturday rates for retired homes).

**Table 3.8.1**
**2000 Regional Weekday Trips per Household and per Person by Household Life Cycle (National Household Travel Survey (NHTS) Categories)**

*Trips per Household*

| Household Life Cycle Category | Total Households | % of Total | Total Trips, All Modes | Trips/ HH |
|---|---|---|---|---|
| Single Adult, No Children | 496,779 | 20.1% | 1,782,309 | 3.588 |
| Two or More Adults, No Children | 563,135 | 22.8% | 4,135,112 | 7.343 |
| Single Adult, Youngest Child Under 6 | 35,259 | 1.4% | 321,014 | 9.104 |
| Two or More Adults, Youngest Child Under 6 | 390,062 | 15.8% | 5,070,269 | 12.999 |
| Single Adult, Youngest Child 6-15 | 81,759 | 3.3% | 773,388 | 9.459 |
| Two or More Adults, Youngest Child 6-15 | 388,345 | 15.7% | 5,371,978 | 13.833 |
| Single Adult, Youngest Child 16-21 | 42,619 | 1.7% | 323,859 | 7.599 |
| Two or more Adults, Youngest Child 16-21 | 100,784 | 4.1% | 1,121,325 | 11.126 |
| Single Adult, Retired, No Children | 126,608 | 5.1% | 369,372 | 2.917 |
| Two or More Adults, Retired, No Children | 240,670 | 9.8% | 1,535,802 | 6.381 |
| TOTAL | 2,466,020 | 100.0% | 20,804,429 | 8.436 |

*Trips per Person in Household*

| Household Life Cycle Category | Household Population | Pers/ HH | Total Trips, All Modes | Trips/ Pers |
|---|---|---|---|---|
| Single Adult, No Children | 503,929 | 1.014 | 1,782,309 | 3.537 |
| Two or More Adults, No Children | 1,256,081 | 2.231 | 4,135,112 | 3.292 |
| Single Adult, Youngest Child Under 6 | 110,742 | 3.141 | 321,014 | 2.899 |
| Two or More Adults, Youngest Child Under 6 | 1,696,535 | 4.349 | 5,070,269 | 2.989 |
| Single Adult, Youngest Child 6-15 | 241,939 | 2.959 | 773,388 | 3.197 |
| Two or More Adults, Youngest Child 6-15 | 1,695,045 | 4.365 | 5,371,978 | 3.169 |
| Single Adult, Youngest Child 16-21 | 98,797 | 2.318 | 323,859 | 3.278 |
| Two or more Adults, Youngest Child 16-21 | 360,569 | 3.578 | 1,121,325 | 3.110 |
| Single Adult, Retired, No Children | 126,842 | 1.002 | 369,372 | 2.912 |
| Two or More Adults, Retired, No Children | 550,581 | 2.288 | 1,535,802 | 2.789 |
| TOTAL | 6,641,060 | 2.693 | 20,804,429 | 3.133 |

*Note: The average household size for the life cycle categories of "single adult, no children" and "single adult, retired, no children" are slightly greater than one since different factors were used to weight households than were used to weight persons in the BATS2000 survey (see Purvis, 2003 for additional details).*

**Table 3.8.2**
**2000 Regional Weekday Trips per Household by Trip Purpose by Household Life Cycle (National Household Travel Survey (NHTS) Categories)**

*Trips per Household (Total Modes)*

| | Home-Based | | | | Non-Home | Total |
|---|---|---|---|---|---|---|
| Household Life Cycle Category | Work | Shop | Soc/Rec | School | Based | Trips |
| Single Adult, No Children | 1.128 | 0.716 | 0.565 | 0.062 | 1.117 | 3.588 |
| Two or More Adults, No Children | 2.522 | 1.473 | 1.134 | 0.187 | 2.027 | 7.343 |
| Single Adult, Youngest Child Under 6 | 1.267 | 2.005 | 1.410 | 2.097 | 2.324 | 9.104 |
| Two or More Adults, Youngest Child Under 6 | 2.203 | 3.925 | 2.391 | 2.147 | 2.333 | 12.999 |
| Single Adult, Youngest Child 6-15 | 1.207 | 1.744 | 1.985 | 2.420 | 2.103 | 9.459 |
| Two or More Adults, Youngest Child 6-15 | 2.542 | 3.463 | 2.247 | 2.907 | 2.674 | 13.833 |
| Single Adult, Youngest Child 16-21 | 1.921 | 1.895 | 1.249 | 0.922 | 1.613 | 7.599 |
| Two or more Adults, Youngest Child 16-21 | 3.302 | 2.316 | 1.799 | 1.356 | 2.353 | 11.126 |
| Single Adult, Retired, No Children | 0.027 | 1.355 | 0.828 | 0.022 | 0.685 | 2.917 |
| Two or More Adults, Retired, No Children | 0.874 | 2.432 | 1.440 | 0.110 | 1.525 | 6.381 |
| TOTAL | 1.865 | 2.168 | 1.469 | 1.046 | 1.889 | 8.436 |

*Share of Trips by Trip Purpose*

| | Home-Based | | | | Non-Home | Total |
|---|---|---|---|---|---|---|
| Household Life Cycle Category | Work | Shop | Soc/Rec | School | Based | Trips |
| Single Adult, No Children | 31.4% | 20.0% | 15.8% | 1.7% | 31.1% | 100.0% |
| Two or More Adults, No Children | 34.3% | 20.1% | 15.4% | 2.5% | 27.6% | 100.0% |
| Single Adult, Youngest Child Under 6 | 13.9% | 22.0% | 15.5% | 23.0% | 25.5% | 100.0% |
| Two or More Adults, Youngest Child Under 6 | 16.9% | 30.2% | 18.4% | 16.5% | 18.0% | 100.0% |
| Single Adult, Youngest Child 6-15 | 12.8% | 18.4% | 21.0% | 25.6% | 22.2% | 100.0% |
| Two or More Adults, Youngest Child 6-15 | 18.4% | 25.0% | 16.2% | 21.0% | 19.3% | 100.0% |
| Single Adult, Youngest Child 16-21 | 25.3% | 24.9% | 16.4% | 12.1% | 21.2% | 100.0% |
| Two or more Adults, Youngest Child 16-21 | 29.7% | 20.8% | 16.2% | 12.2% | 21.2% | 100.0% |
| Single Adult, Retired, No Children | 0.9% | 46.4% | 28.4% | 0.7% | 23.5% | 100.0% |
| Two or More Adults, Retired, No Children | 13.7% | 38.1% | 22.6% | 1.7% | 23.9% | 100.0% |
| TOTAL | 22.1% | 25.7% | 17.4% | 12.4% | 22.4% | 100.0% |

## 3.9 Regional Trip Rates by Household Size by Vehicle Availability

This section of the report discusses the combined effects of household size and vehicle availability on regional trip rates for households and persons by trip purpose. As in previous sections of this report, five household size categories and three vehicle availability categories are examined.

### Weekday Trip Rates

Weekday household level trip rates are displayed in Table 3.9.1 while per capita rates are shown in Table 3.9.2. Prior to discussing the results, it is important to note that not all rates provided in these tables are statistically significant. There was not a sufficient sample size (50 or more) for households with two or more members and zero vehicles available as displayed in Tables 3.9.1 and 3.9.2. Rates for these groups are provided for informational purposes only. Table 3.9.3 shows the distribution of households and population by household size and number of vehicles available. The largest number of regional households is in the one-person, one-vehicle group (420,590 households). The next largest group is two-person, two-vehicle homes with 385,981 households, or 15.7% of regional households. The group representing the largest percentage of the population is five-or-more-person households with access to two vehicles, which accounts for 13.0% of the Bay Area's population (857,083 individuals).

Table 3.9.1 shows that trip rates per household increase with the addition of each household member and as vehicle availability increases. Single-person homes without vehicles average 3.0 weekday trips while households with five or more persons and access to three or more vehicles average 16.7 trips per weekday. Household size has a larger impact on household trip rates than vehicle accessibility does. On average, an additional vehicle available to a household allows for a 0.55 increase in trip rates per household. An additional householder increases trip rates by 3.0 trips per day, on average. The largest impact is the move from one vehicle available to two vehicles available, particularly for larger households. Four-person homes with access to one vehicle average 11.8 trips per day. This increases to 13.5 trips per day (1.7 more trips) when two vehicles are available. The increase in trip rates is even larger for households with more than four members, which average 2.7 more trips per weekday when two vehicles are available (13.5 trips per weekday versus 16.2 trips per weekday).

The pattern for trip rates by trip purpose stratified by household size and vehicle availability is a little less clear. Table 3.9.1 shows that, barring a few exceptions, trip rates by trip purpose increase as household size increases across all vehicle availability categories. However, trip rates by trip purpose vary a bit more as the number of vehicles available increases. In some cases, rates increase, but in others, trip rates decrease as vehicle access increases.

Regional weekday trips per capita by household size and number of vehicles available are outlined in Table 3.9.2. Trips per person increase as the number of available vehicles increases and decrease as household size increases. There are exceptions to this pattern. Trips per capita for four-person households with two or more vehicles are slightly higher than both three-person and five-or-more-person households. Additionally, individuals in two-person households with no vehicles average more trips per weekday than individuals living alone and without a vehicle.

Trip rates are highest for individuals who live alone and have access to three or more vehicles (3.8 trips per weekday). The least mobile individuals are those living in five-or-more-person households; these individuals average only 2.6 trips per weekday.

**Weekend Trip Rates**

Weekend trip rates cross-classified by household size and vehicle availability are included in Tables 3.9.1E, 3.9.2E, 3.9.1F, and 3.9.2F in the appendices.

Household level trip rates on Saturday are provided in Table 3.9.1E. Different trends are evident for Saturday travel than for weekday travel. As vehicles increase from zero to two per household, trip rates increase. However, when more than two vehicles are available for household use, trip rates per household actually decrease for all household sizes. The one exception to this pattern is for three-person homes where trip rates decrease as the number of vehicles increases from one to two. The least mobile individuals for travel on Saturday are persons living alone without vehicle access who average only 1.8 trips on Saturday. The most mobile households are those with five or more members who have access to two vehicles; these households average 15.9 trips on Saturday.

Saturday trip rates by trip purpose show more variations across the different household size and vehicle availability categories than weekday trip rates. Generally, trip rates per household for all trip purposes increase as household size increases and as vehicle availability increases. Four-person households with access to one vehicle make the most home-based work and home-based shop (other) trips on Saturday, averaging 1.3 work trips and 5.7 shopping trips. The largest households (five or more members) with access to two vehicles average the most home-based social/recreational trips on Saturday (6.9 trips per household).

Person level rates for Saturday travel are shown in Table 3.9.2E. These rates also show patterns different from weekday travel. Unlike weekday rates, trips per capita do not steadily increase as household size increases and do not steadily decrease as the number of vehicles available increases. For all household sizes, per capita rates decrease as more than two vehicles become available. For households with one or two members, trip rates per capita increase as the number of vehicles increases from zero to two while rates decrease for households with three or more members as the number of vehicles increases from one to two. Rates per person by household size are more sporadic, increasing for some groups and decreasing for others. The most mobile individuals on Saturday are those who live alone and have access to two vehicles. These individuals average 4.9 trips per day on Saturday. Home-based shop (other) and social/recreational trips per capita are also highest for those living alone with access to two vehicles. The least mobile group of individuals are those who live with five or more people and have access to only one vehicle. These individuals average 1.8 trips per day.

Sunday rates at the household level are displayed in Table 3.9.1F. This table shows that trip rates increase as household size and vehicle availability increases for households with fewer than five members and two or fewer vehicles available. For household sizes ranging from one person to four, Sunday trip rates decrease as vehicle availability increases from two to three-or-more. Trip rates for homes with five or more members are lower than trip rates for four-person

households, except for those with access to three or more vehicles. Household trip rates are lowest for single-person, zero-vehicle homes (1.8 trips per day on Sunday) and highest for homes with more than four people and access to more than two vehicles (15.9 trips per household on Sunday).

Per capita trip rates on Sunday are outlined in Table 3.9.2F. As with travel on Saturday, trips per capita increase as vehicle availability increases from zero to two per household and decrease as more than two vehicles become available (the exception, again, is for those in five-or-more-person households who make more trips as three or more vehicles become available). For most vehicle categories, trip rates increase as household size increases. Home-based shop (other) trips are highest for one-person, one-vehicle households (1.2 trips per person on Sunday). Individuals living in two-person homes sharing two vehicles make the most home-based social/recreational trips on Sunday averaging 1.4 per person.

**Table 3.9.1**
**2000 Regional Weekday Trips per Household by Household Size**
**by Vehicles Available per Household - Total Modes**

| Household Size | Trip Purpose | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| One Person | HBW | 0.726 | 0.932 | 1.096 | 1.300 | 0.904 |
| | HBSH | 0.827 | 0.863 | 0.793 | 0.673 | 0.846 |
| | HBSR | 0.574 | 0.628 | 0.647 | 0.705 | 0.619 |
| | HBSC | 0.081 | 0.048 | 0.030 | 0.010 | 0.054 |
| | NHB | 0.758 | 1.112 | 1.102 | 1.086 | 1.029 |
| | Total | 2.964 | 3.584 | 3.668 | 3.774 | 3.452 |
| Two Persons | HBW | 1.507 | 1.567 | 1.829 | 1.997 | 1.757 |
| | HBSH | 1.539 | 1.648 | 1.697 | 1.651 | 1.665 |
| | HBSR | 1.165 | 1.070 | 1.223 | 1.041 | 1.152 |
| | HBSC | 0.389 | 0.403 | 0.141 | 0.096 | 0.225 |
| | NHB | 1.667 | 1.611 | 1.836 | 2.022 | 1.788 |
| | Total | 6.268 | 6.299 | 6.726 | 6.808 | 6.586 |
| Three Persons | HBW | 1.982 † | 1.891 | 2.312 | 2.812 | 2.374 |
| | HBSH | 1.698 † | 2.226 | 2.267 | 1.923 | 2.123 |
| | HBSR | 0.964 † | 1.732 | 1.515 | 1.512 | 1.544 |
| | HBSC | 1.338 † | 1.243 | 0.985 | 0.798 | 0.992 |
| | NHB | 1.679 † | 2.054 | 1.988 | 2.225 | 2.071 |
| | Total | 7.662 † | 9.146 | 9.068 | 9.271 | 9.104 |
| Four Persons | HBW | 0.468 † | 1.920 | 2.293 | 3.028 | 2.460 |
| | HBSH | 1.772 † | 3.578 | 3.696 | 3.318 | 3.485 |
| | HBSR | 2.189 † | 2.128 | 2.526 | 2.239 | 2.367 |
| | HBSC | 4.711 † | 2.269 | 2.335 | 1.963 | 2.269 |
| | NHB | 1.559 † | 1.904 | 2.651 | 3.161 | 2.719 |
| | Total | 10.699 † | 11.799 | 13.500 | 13.708 | 13.300 |
| Five or More Persons | HBW | 2.046 † | 2.426 | 2.390 | 3.177 | 2.664 |
| | HBSH | 3.666 † | 3.252 | 4.994 | 4.167 | 4.444 |
| | HBSR | 2.158 † | 1.767 | 2.829 | 2.986 | 2.734 |
| | HBSC | 3.602 † | 4.853 | 3.294 | 3.445 | 3.547 |
| | NHB | 3.168 † | 1.248 | 2.687 | 2.927 | 2.615 |
| | Total | 14.641 † | 13.545 | 16.194 | 16.702 | 16.004 |
| Total HHlds. | HBW | 1.037 | 1.327 | 2.061 | 2.745 | 1.865 |
| | HBSH | 1.226 | 1.475 | 2.698 | 2.725 | 2.168 |
| | HBSR | 0.891 | 0.999 | 1.770 | 1.927 | 1.469 |
| | HBSC | 0.617 | 0.624 | 1.242 | 1.554 | 1.046 |
| | NHB | 1.181 | 1.393 | 2.128 | 2.565 | 1.889 |
| | Total | 4.952 | 5.818 | 9.899 | 11.516 | 8.436 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.9.2**
**2000 Regional Weekday Trips per Person by Household Size**
**by Vehicles Available per Household - Total Modes**

| Household Size | Trip Purpose | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| One Person | HBW | 0.715 | 0.922 | 1.079 | 1.298 | 0.894 |
| | HBSH | 0.815 | 0.854 | 0.780 | 0.672 | 0.836 |
| | HBSR | 0.565 | 0.622 | 0.636 | 0.704 | 0.611 |
| | HBSC | 0.079 | 0.048 | 0.029 | 0.010 | 0.053 |
| | NHB | 0.746 | 1.100 | 1.085 | 1.085 | 1.017 |
| | Total | 2.921 | 3.546 | 3.610 | 3.768 | 3.411 |
| Two Persons | HBW | 0.740 | 0.770 | 0.908 | 0.993 | 0.869 |
| | HBSH | 0.755 | 0.810 | 0.842 | 0.821 | 0.824 |
| | HBSR | 0.572 | 0.526 | 0.607 | 0.517 | 0.570 |
| | HBSC | 0.191 | 0.198 | 0.070 | 0.048 | 0.111 |
| | NHB | 0.818 | 0.792 | 0.911 | 1.005 | 0.884 |
| | Total | 3.077 | 3.097 | 3.337 | 3.384 | 3.258 |
| Three Persons | HBW | 0.650 † | 0.610 | 0.759 | 0.932 | 0.779 |
| | HBSH | 0.557 † | 0.717 | 0.744 | 0.637 | 0.696 |
| | HBSR | 0.316 † | 0.558 | 0.498 | 0.501 | 0.506 |
| | HBSC | 0.439 † | 0.401 | 0.323 | 0.264 | 0.325 |
| | NHB | 0.551 † | 0.662 | 0.653 | 0.737 | 0.679 |
| | Total | 2.514 † | 2.948 | 2.977 | 3.073 | 2.986 |
| Four Persons | HBW | 0.116 † | 0.473 | 0.566 | 0.738 | 0.605 |
| | HBSH | 0.441 † | 0.881 | 0.913 | 0.808 | 0.856 |
| | HBSR | 0.544 † | 0.524 | 0.624 | 0.545 | 0.582 |
| | HBSC | 1.171 † | 0.559 | 0.577 | 0.478 | 0.557 |
| | NHB | 0.388 † | 0.469 | 0.655 | 0.770 | 0.668 |
| | Total | 2.660 † | 2.906 | 3.334 | 3.339 | 3.268 |
| Five or More Persons | HBW | 0.320 † | 0.459 | 0.441 | 0.569 | 0.485 |
| | HBSH | 0.574 † | 0.615 | 0.921 | 0.747 | 0.809 |
| | HBSR | 0.338 † | 0.334 | 0.522 | 0.535 | 0.498 |
| | HBSC | 0.564 † | 0.918 | 0.608 | 0.618 | 0.646 |
| | NHB | 0.496 † | 0.236 | 0.496 | 0.525 | 0.476 |
| | Total | 2.293 † | 2.563 | 2.987 | 2.994 | 2.914 |
| Total HHlds. | HBW | 0.584 | 0.708 | 0.662 | 0.755 | 0.692 |
| | HBSH | 0.691 | 0.786 | 0.866 | 0.749 | 0.805 |
| | HBSR | 0.502 | 0.532 | 0.568 | 0.530 | 0.545 |
| | HBSC | 0.348 | 0.333 | 0.399 | 0.427 | 0.388 |
| | NHB | 0.666 | 0.743 | 0.683 | 0.705 | 0.701 |
| | Total | 2.791 | 3.102 | 3.177 | 3.165 | 3.133 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.9.3**
**BATS 2000 Households and Household Population**
**by Household Size by Vehicles Available per Household**

| Household Size | | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| | Sample HH | 435 | 3,323 | 522 | 101 | 4,381 |
| One | Expanded HH | 143,310 | 420,590 | 46,822 | 12,665 | 623,387 |
| Person | Expanded HH Pop | 145,444 | 425,073 | 47,570 | 12,684 | 630,771 |
| | Sample HH | 134 | 1,132 | 3,614 | 983 | 5,863 |
| Two | Expanded HH | 57,562 | 204,785 | 385,981 | 104,803 | 753,130 |
| Persons | Expanded HH Pop | 117,266 | 416,557 | 777,882 | 210,832 | 1,522,537 |
| | Sample HH | 22 | 286 | 861 | 752 | 1,921 |
| Three | Expanded HH | 14,004 | 89,380 | 161,594 | 133,898 | 398,876 |
| Persons | Expanded HH Pop | 42,676 | 277,309 | 492,160 | 404,005 | 1,216,150 |
| | Sample HH | 11 | 131 | 1,120 | 744 | 2,006 |
| Four | Expanded HH | 11,641 | 40,277 | 181,954 | 132,865 | 366,736 |
| Persons | Expanded HH Pop | 46,828 | 163,549 | 736,678 | 545,525 | 1,492,580 |
| Five | Sample HH | 8 | 66 | 425 | 394 | 893 |
| or More | Expanded HH | 10,758 | 39,179 | 158,118 | 115,837 | 323,891 |
| Persons | Expanded HH Pop | 68,702 | 207,017 | 857,083 | 646,220 | 1,779,022 |
| | Sample HH | 610 | 4,938 | 6,542 | 2,974 | 15,064 |
| Total | Expanded HH | 237,275 | 794,210 | 934,468 | 500,067 | 2,466,020 |
| Households | Expanded HH Pop | 420,916 | 1,489,505 | 2,911,374 | 1,819,267 | 6,641,061 |

## 3.10 Regional Trip Rates by Household Size by Workers in the Household

The effects of number of workers in the household for various household sizes are explored in this portion of the report. Trip rates are provided for each trip purpose regardless of travel mode used and are based on the weighted and expanded count of regional households and persons in the 2000 Bay Area Travel Survey.

Five household size categories are reviewed along with four categories of workers in the household. An additional category for households not reporting the number of employed individuals is also included. Table 3.10.3 shows the distribution of sample and expanded households by workers in the household and household size. The expanded household population for each group is also included where applicable. Note that the fields with N/A entries are for those combinations of number of workers and household size that were not possible (for example, two workers in a one-person household). The largest number of households is in the single-person, single-worker group (446,263 households, or 18% of regional homes). Two-person, two-worker homes capture the second highest number of households (379,818, or 15.4% of Bay Area households). The two-person, two-worker group also has the largest share of the population; 768,861 individuals reside in these households, which represents almost 12% of the population. Another 11.5% of the population resides in five-or-more-person households with two workers.

### Weekday Trip Rates

Weekday trip rates per household stratified by household size, workers per household, and trip purpose for all modes of travel are provided in Table 3.10.1. For this cross-classification, weekday trip rates range from a low of 2.9 per household for non-working, single-person homes to a high of 17.2 trips per weekday for five-or-more-person homes with three or more workers. In general, weekday household trip rates increase as household size and the number of household workers increases. The exception is for large households. Four and five-or-more-person households with one worker average more weekday trips than the same households with two workers (13.5 versus 13.2 trips per weekday for four-person households, 16.8 versus 14.7 trips per weekday for five-or-more-person homes). Household size has a larger impact on trip rates than the number of workers does. An additional household member increases trip rates on average by 3.2 trips per day while an additional worker in the household only increases rates by an average of 0.29 trips per day.

Barring a few exceptions, Table 3.10.1 indicates that trip rates for all trip purposes increase as household size increases. Additionally, the table shows that the number of home-based work trips per household increases as workers increase. Non-home-based trips also increase with each additional worker in the household for the majority of household size and worker combinations. The other trend evident in Table 3.10.1 is that, for most cases, home-based shop (other), social/recreational, and school trip rates actually decrease as workers are added to the household.

The per capita trip rates provided in Table 3.10.2 show that the most mobile individuals during the week are those that work and live alone. These individuals average 3.6 trips per weekday. The least mobile individuals are those who live in five-or-more-person households with two

workers. The average trip rate per capita for this group is 2.7 trips per weekday. Two-person households with both individuals working average the most home-based work trips per weekday (1.3 per person). Two-person homes with zero workers average the most home-based shopping trips (1.3 per weekday) and home-based social/recreational trips per weekday (0.82 per person).

**Weekend Trip Rates**

This section discusses the weekend trip rates provided in Appendices E and F for households and persons cross-classified by household size and number of workers in the household.

Regional Saturday trip rates per household by household size and number of workers are provided in Table 3.10.1E. Saturday trip rates range from 2.6 per household for non-working, single-person homes to 17.9 trips per household for five-or-more-person homes with one worker. Four-person households with three or more working members make the highest number of home-based work trips on Saturday (1.9 per household). Households with five or more members and only one employed person have the highest trip rates for both home-based shop (other) trips and home-based social/recreational trips averaging 6.5 and 7.2 trips per day on Saturday, respectively. Except for large households (four or more persons) with two or more workers, trip rates increase as household size increases for all worker categories. However, trip rates across worker categories do not display a clear pattern. In some cases, rates increase as workers increase; in others, trip rates decrease with the addition of workers in the household.

The most mobile individuals on Saturday are employed persons living alone. Table 3.10.2E shows that these individuals average 3.6 trips per day on Saturday. The least mobile are those who live in the largest households and who have the largest number of workers. Five-or-more-person households with three or more workers only average 2.2 trips per capita on Saturday. Individuals living with five or more persons in one-worker homes make the most home-based social/recreational trips on Saturday (1.3 per day). Individuals in the largest households (five-or-more-person homes) with three or more workers make the fewest home-based social/recreational trips on Saturday (0.69 per person per day).

Sunday travel rates at the household level are provided in Table 3.10.1F by household size and workers per household. Non-working, single-person homes produce the fewest trips on Sunday (2.7 per household) while five-or-more-person homes with two workers produce the most Sunday trips (14.0 trips per household). Trip rates on Sunday increase with household size, except for the largest households with the most workers. Five-or-more-person households with one worker make the most home-based social/recreational trips on Sunday (5.6 trips per household), and five-or-more-person homes with two workers make the most home-based shop (other) trips on Sunday (3.9 per household).

Per capita rates for Sunday trips are included in Table 3.10.2F for the household size and worker combinations. Except for two groups (non-working, two-person households and four-person homes with one worker), trip rates decrease per person as household size increases. The pattern is less clear across worker categories. However, it can be said that trip rates tend to increase as the number of workers increases for smaller households (three persons or less) and tend to decrease for larger households as the number of workers increases.

**Table 3.10.1**
**2000 Regional Weekday Trips per Household by Household Size**
**by Workers per Household - Total Modes**

| Household Size | Trip Purpose | Workers per Household | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | Unknown | TOTAL |
| One Person | HBW | 0.048 | 1.227 | N/A | N/A | 0.707 | 0.904 |
| | HBSH | 1.277 | 0.687 | N/A | N/A | 0.794 | 0.846 |
| | HBSR | 0.789 | 0.557 | N/A | N/A | 0.535 | 0.619 |
| | HBSC | 0.070 | 0.048 | N/A | N/A | 0.045 | 0.054 |
| | NHB | 0.690 | 1.162 | N/A | N/A | 0.770 | 1.029 |
| | Total | 2.875 | 3.681 | N/A | N/A | 2.852 | 3.452 |
| Two Persons | HBW | 0.139 | 1.343 | 2.554 | N/A | 1.736 | 1.757 |
| | HBSH | 2.627 | 1.778 | 1.277 | N/A | 1.588 | 1.665 |
| | HBSR | 1.649 | 1.087 | 1.031 | N/A | 0.981 | 1.152 |
| | HBSC | 0.241 | 0.403 | 0.106 | N/A | 0.310 | 0.225 |
| | NHB | 1.477 | 1.523 | 2.073 | N/A | 1.198 | 1.788 |
| | Total | 6.133 | 6.133 | 7.041 | N/A | 5.813 | 6.586 |
| Three Persons | HBW | 0.717 | 1.585 | 2.616 | 3.662 | 2.040 † | 2.374 |
| | HBSH | 2.870 | 2.532 | 1.947 | 1.612 | 2.482 † | 2.123 |
| | HBSR | 1.712 | 1.712 | 1.492 | 1.341 | 0.218 † | 1.544 |
| | HBSC | 1.405 | 1.138 | 1.085 | 0.370 | 0.302 † | 0.992 |
| | NHB | 1.922 | 1.849 | 2.159 | 2.341 | 0.702 † | 2.071 |
| | Total | 8.627 | 8.815 | 9.299 | 9.327 | 5.744 † | 9.104 |
| Four Persons | HBW | 0.248 † | 1.451 | 2.562 | 4.381 | 1.434 † | 2.460 |
| | HBSH | 2.567 † | 4.418 | 3.218 | 2.732 | 5.125 † | 3.485 |
| | HBSR | 2.796 † | 2.689 | 2.228 | 2.102 | 3.616 † | 2.367 |
| | HBSC | 5.196 † | 2.249 | 2.429 | 1.303 | 2.341 † | 2.269 |
| | NHB | 0.918 † | 2.697 | 2.727 | 3.042 | 2.785 † | 2.719 |
| | Total | 11.725 † | 13.505 | 13.164 | 13.560 | 15.301 † | 13.300 |
| Five or More Persons | HBW | 0.980 † | 1.588 | 2.609 | 4.276 | 2.003 † | 2.664 |
| | HBSH | 5.893 † | 5.928 | 3.575 | 3.988 | 11.270 † | 4.444 |
| | HBSR | 3.277 † | 3.009 | 2.217 | 3.269 | 3.287 † | 2.734 |
| | HBSC | 2.785 † | 4.011 | 3.810 | 2.577 | 3.861 † | 3.547 |
| | NHB | 4.077 † | 2.235 | 2.506 | 3.104 | 6.724 † | 2.615 |
| | Total | 17.012 † | 16.771 | 14.716 | 17.214 | 27.145 † | 16.004 |
| Total HHlds. | HBW | 0.143 | 1.359 | 2.577 | 4.108 | 1.285 | 1.865 |
| | HBSH | 2.032 | 2.073 | 2.183 | 2.846 | 1.704 | 2.168 |
| | HBSR | 1.293 | 1.289 | 1.563 | 2.299 | 0.967 | 1.469 |
| | HBSC | 0.430 | 0.881 | 1.379 | 1.485 | 0.397 | 1.046 |
| | NHB | 1.145 | 1.600 | 2.296 | 2.838 | 1.186 | 1.889 |
| | Total | 5.042 | 7.202 | 9.998 | 13.576 | 5.538 | 8.436 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.10.2**
**2000 Regional Weekday Trips per Person by Household Size**
**by Workers per Household - Total Modes**

| Household Size | Trip Purpose | Workers per Household 0 | 1 | 2 | 3-or-more | Unknown | TOTAL |
|---|---|---|---|---|---|---|---|
| One Person | HBW | 0.048 | 1.209 | N/A | N/A | 0.709 | 0.894 |
| | HBSH | 1.272 | 0.677 | N/A | N/A | 0.796 | 0.836 |
| | HBSR | 0.786 | 0.549 | N/A | N/A | 0.536 | 0.611 |
| | HBSC | 0.069 | 0.047 | N/A | N/A | 0.045 | 0.053 |
| | NHB | 0.687 | 1.145 | N/A | N/A | 0.772 | 1.017 |
| | Total | 2.862 | 3.627 | N/A | N/A | 2.858 | 3.411 |
| Two Persons | HBW | 0.069 | 0.664 | 1.262 | N/A | 0.861 | 0.869 |
| | HBSH | 1.304 | 0.880 | 0.631 | N/A | 0.788 | 0.824 |
| | HBSR | 0.818 | 0.538 | 0.509 | N/A | 0.487 | 0.570 |
| | HBSC | 0.120 | 0.199 | 0.052 | N/A | 0.154 | 0.111 |
| | NHB | 0.733 | 0.753 | 1.024 | N/A | 0.594 | 0.884 |
| | Total | 3.044 | 3.034 | 3.478 | N/A | 2.884 | 3.258 |
| Three Persons | HBW | 0.234 | 0.517 | 0.858 | 1.215 | 0.680 † | 0.779 |
| | HBSH | 0.936 | 0.827 | 0.638 | 0.535 | 0.827 † | 0.696 |
| | HBSR | 0.558 | 0.559 | 0.489 | 0.445 | 0.073 † | 0.506 |
| | HBSC | 0.458 | 0.371 | 0.356 | 0.123 | 0.101 † | 0.325 |
| | NHB | 0.627 | 0.603 | 0.708 | 0.777 | 0.234 † | 0.679 |
| | Total | 2.814 | 2.877 | 3.049 | 3.095 | 1.913 † | 2.986 |
| Four Persons | HBW | 0.061 † | 0.355 | 0.631 | 1.075 | 0.354 † | 0.605 |
| | HBSH | 0.634 † | 1.081 | 0.793 | 0.670 | 1.267 † | 0.856 |
| | HBSR | 0.690 † | 0.658 | 0.549 | 0.516 | 0.894 † | 0.582 |
| | HBSC | 1.282 † | 0.550 | 0.598 | 0.320 | 0.579 † | 0.557 |
| | NHB | 0.227 † | 0.660 | 0.672 | 0.746 | 0.688 † | 0.668 |
| | Total | 2.894 † | 3.304 | 3.243 | 3.327 | 3.782 † | 3.268 |
| Five or More Persons | HBW | 0.154 † | 0.296 | 0.480 | 0.755 | 0.369 † | 0.485 |
| | HBSH | 0.928 † | 1.104 | 0.658 | 0.704 | 2.077 † | 0.809 |
| | HBSR | 0.516 † | 0.560 | 0.408 | 0.577 | 0.606 † | 0.498 |
| | HBSC | 0.439 † | 0.747 | 0.701 | 0.455 | 0.712 † | 0.646 |
| | NHB | 0.642 † | 0.416 | 0.461 | 0.548 | 1.239 † | 0.476 |
| | Total | 2.680 † | 3.123 | 2.709 | 3.038 | 5.003 † | 2.914 |
| Total HHlds. | HBW | 0.083 | 0.603 | 0.806 | 0.947 | 0.703 | 0.692 |
| | HBSH | 1.180 | 0.920 | 0.682 | 0.656 | 0.932 | 0.805 |
| | HBSR | 0.750 | 0.572 | 0.489 | 0.530 | 0.529 | 0.545 |
| | HBSC | 0.249 | 0.391 | 0.431 | 0.343 | 0.217 | 0.388 |
| | NHB | 0.664 | 0.710 | 0.718 | 0.655 | 0.649 | 0.701 |
| | Total | 2.927 | 3.195 | 3.125 | 3.131 | 3.030 | 3.133 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.10.3**
**BATS 2000 Households and Household Population**
**by Household Size by Workers per Household**

| Household Size | | Workers per Household | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | Unknown | TOTAL |
| | Sample HH | 1,164 | 3,130 | N/A | N/A | 87 | 4,381 |
| One | Expanded HH | 165,737 | 446,263 | N/A | N/A | 11,387 | 623,387 |
| Person | Expanded HH Pop | 166,479 | 452,930 | N/A | N/A | 11,363 | 630,772 |
| | Sample HH | 1,095 | 1,710 | 2,979 | N/A | 79 | 5,863 |
| Two | Expanded HH | 126,879 | 235,656 | 379,818 | N/A | 10,777 | 753,130 |
| Persons | Expanded HH Pop | 255,642 | 476,313 | 768,861 | N/A | 21,721 | 1,522,537 |
| | Sample HH | 61 | 599 | 932 | 322 | 7 | 1,921 |
| Three | Expanded HH | 14,538 | 133,405 | 182,931 | 66,488 | 1,514 | 398,876 |
| Persons | Expanded HH Pop | 44,570 | 408,692 | 557,954 | 200,389 | 4,545 | 1,216,150 |
| | Sample HH | 30 | 592 | 1,047 | 325 | 12 | 2,006 |
| Four | Expanded HH | 10,489 | 108,780 | 185,138 | 60,478 | 1,851 | 366,736 |
| Persons | Expanded HH Pop | 42,496 | 444,675 | 751,457 | 246,463 | 7,489 | 1,492,580 |
| Five | Sample HH | 11 | 273 | 376 | 231 | 2 | 893 |
| or More | Expanded HH | 8,231 | 96,379 | 140,907 | 77,946 | 428 | 323,891 |
| Persons | Expanded HH Pop | 52,248 | 517,505 | 765,325 | 441,622 | 2,322 | 1,779,022 |
| | Sample HH | 2,361 | 6,304 | 5,334 | 878 | 187 | 15,064 |
| Total | Expanded HH | 325,874 | 1,020,483 | 888,794 | 204,912 | 25,957 | 2,466,020 |
| Households | Expanded HH Pop | 561,435 | 2,300,115 | 2,843,597 | 888,474 | 47,440 | 6,641,061 |

## 3.11 Regional Trip Rates by Workers in the Household by Vehicles Available

The final cross tabulations included in section 3 of this report describe regional trip rates stratified by workers per household and vehicle availability. Five worker categories and four vehicle categories are reviewed.

Not all combinations of these two categories contained a statistically significant number of sample households. Trip rates for these combinations are provided for informational purposes only. The number of sample and expanded households and the expanded household population for each cross-classified group are provided in Table 3.11.3. The largest group is two-worker, two-vehicle households. This category accounts for nearly half a million Bay Area households, or 20% of all households, and 24% of the regional population (1.6 million individuals). The next largest groups are one-worker households with either one or two vehicles available for general travel.

### Weekday Trip Rates

Household level weekday trip rates by workers per household and vehicle availability are detailed in Table 3.11.1. Trip rates increase with an additional vehicle available in the household and with an additional worker in the household, except for an increase in workers or vehicles for non-working, zero-vehicle households. Non-working households with one vehicle available make the fewest weekday trips (4.0 per household). Households with three or more workers and three or more vehicles average the highest number of weekday trips at 13.9 per household. An additional worker in the household impacts weekday trip rates more than an additional vehicle in the household. An additional worker increases trip rates on average by 2.0 trips per day while an additional vehicle in the household increases weekday trip rates by 1.2 trips per household. For the most part, trip rates by trip purpose increase with an increase in both the number of workers and vehicles present in the household. However, there are exceptions to this trend. The most obvious is for non-working homes with zero vehicles. Trip rates by purpose decrease as a vehicle and worker are added to the household (except for home-based work trips, which increase).

Regional weekday trip rates per person across the worker and vehicle categories are displayed in Table 3.11.2. There is more variation in person level trip rates than in household level rates, making trends less pronounced. Barring one- and two-worker homes with access to three or more vehicles, weekday trip rates per person increase as vehicle availability increases. The effects of an additional worker in the household are less clear. In some cases an additional worker increases trip rates per person while in other cases, rates are decreased. Individuals in non-working homes with access to three or more vehicles average the highest number of trips per weekday at 3.3 per person. Individuals with the lowest weekday trip rate are those living in two-worker homes without vehicle access; these individuals average only 2.7 trips per person on the weekday.

## Weekend Trip Rates

Regional trip rates for travel on Saturday and Sunday cross-classified by workers in the household and vehicle availability are discussed in this section.

Household level trip rates are shown in Table 3.11.1E for travel on Saturday and range from a low of 2.3 trips per household for one-worker, zero-vehicle homes to a high of 12.2 trips per household for single-worker homes with access to three or more vehicles. Except for homes with two or more workers and three or more vehicles, rates tend to increase with an increase in vehicle availability. An additional worker also tends to increase trip rates per household, though exceptions exist. Non-working homes with access to three or more vehicles average the highest number of home-based social/recreational trips on Saturday (5.8 per household). Non-working homes without vehicle access average the fewest home-based social/recreational trips on Saturday (0.66 per household). One-worker homes average the highest home-based shop (other) trips (4.4 per household) when vehicle access is greatest (three or more vehicles) and have the lowest rate for shopping trips when vehicle access is lowest (0.73 trips per household).

Trip rates per person for travel on Saturday are included in Table 3.11.2E. The most notable trip rate differences are between individuals who live in working homes and those living in non-working homes. Non-working persons with access to three or more vehicles average 5.2 trips per person, and non-workers with access to two vehicles make 4.3 trips on Saturday. The highest person level trip rate for those in working households is for single workers with access to three or more vehicles who average 3.8 trips per person on Saturday. For both working and non-working homes, trip rates per person are lowest for those with zero vehicles (1.3 trips per person for non-workers, 1.6 for single workers, and 2.0 trips per day for persons in two-worker homes). Among those living in non-working households, persons with access to three or more vehicles make the most home-based shop (other) and social/recreational trips (1.7 and 2.6 trips per person on Saturday). Of those in working homes, single workers with access to three or more vehicles average 1.4 home-based shop (other) trips on Saturday (the highest rate for working homes). Home-based social/recreational trips are highest for those in single-person, working homes with two vehicles available (1.3 trips per person on Saturday).

Regional trip rates per household for Sunday trips are displayed in Table 3.11.1F. Rates tend to increase across both the worker and vehicle categories, with a few exceptions. Non-working households with zero vehicles make the fewest trips on Sunday (1.7 trips per household) while homes with three or more workers and two vehicles generate the most Sunday trips (13.5 per household). Households in the three-or-more-worker, two-vehicle category make the most home-based shop (other) trips at 4.4 per household on Sunday. Single-worker homes without a vehicle make the fewest shop trips averaging only 0.63 per household. Home-based social/recreational trips are dominated by single-worker, two-vehicle households, which generate 4.2 social/recreational trips on Sunday. The least mobile households in terms of home-based social/recreational trips are those without workers and vehicles. These households average 0.43 home-based social/recreational trips on Sunday.

For total trips, Table 3.11.2F indicates that Sunday per capita trip rates follow the same pattern as Sunday household rates. Non-workers with access to three or more vehicles are the most

mobile group averaging 3.9 trips per person. Non-workers without a vehicle are the least mobile generating less than one trip per day on Sunday (0.91). Among working households, persons living in two-worker homes with access to three or more vehicles are the most mobile (3.4 trips per person on Sunday) while the smallest trip rate for those in working homes is for persons in two-worker, zero-vehicle homes who average only 1.1 trips per day.

**Table 3.11.1**
**2000 Regional Weekday Trips per Household by Workers per Household by Vehicles Available per Household - Total Modes**

| Workers per Household | Trip Purpose | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| No Workers | HBW | 0.231 | 0.081 | 0.161 | 0.169 | 0.143 |
| | HBSH | 1.856 | 1.685 | 2.664 | 3.103 | 2.032 |
| | HBSR | 1.252 | 1.006 | 1.769 | 1.848 | 1.293 |
| | HBSC | 0.873 | 0.253 | 0.269 | 0.492 | 0.430 |
| | NHB | 1.080 | 0.971 | 1.411 | 1.790 | 1.145 |
| | Total | 5.292 | 3.996 | 6.274 | 7.404 | 5.042 |
| One Worker | HBW | 1.148 | 1.312 | 1.471 | 1.476 | 1.359 |
| | HBSH | 0.832 | 1.310 | 3.349 | 3.273 | 2.073 |
| | HBSR | 0.595 | 0.922 | 1.859 | 2.100 | 1.289 |
| | HBSC | 0.404 | 0.598 | 1.351 | 1.356 | 0.881 |
| | NHB | 1.064 | 1.386 | 1.918 | 2.252 | 1.600 |
| | Total | 4.043 | 5.528 | 9.948 | 10.457 | 7.202 |
| Two Workers | HBW | 2.687 | 2.614 | 2.552 | 2.597 | 2.577 |
| | HBSH | 0.991 | 1.767 | 2.261 | 2.419 | 2.183 |
| | HBSR | 1.029 | 1.238 | 1.659 | 1.615 | 1.563 |
| | HBSC | 0.697 | 1.183 | 1.318 | 1.720 | 1.379 |
| | NHB | 1.840 | 1.899 | 2.343 | 2.484 | 2.296 |
| | Total | 7.243 | 8.702 | 10.133 | 10.834 | 9.998 |
| Three or More Workers | HBW | 3.144 † | 3.625 † | 3.982 | 4.196 | 4.108 |
| | HBSH | 1.503 † | 2.907 † | 3.179 | 2.760 | 2.846 |
| | HBSR | 1.574 † | 1.657 † | 2.463 | 2.309 | 2.299 |
| | HBSC | 1.303 † | 0.568 † | 1.420 | 1.578 | 1.485 |
| | NHB | 3.000 † | 1.885 † | 2.468 | 3.021 | 2.838 |
| | Total | 10.524 † | 10.642 † | 13.512 | 13.864 | 13.576 |
| Unknown/ Refused | HBW | 0.718 † | 1.060 | 1.695 | 1.844 † | 1.285 |
| | HBSH | 1.029 † | 1.047 | 2.687 | 2.501 † | 1.704 |
| | HBSR | 0.334 † | 0.808 | 1.508 | 0.710 † | 0.967 |
| | HBSC | 0.369 † | 0.198 | 0.710 | 0.265 † | 0.397 |
| | NHB | 0.564 † | 0.891 | 1.819 | 1.294 † | 1.186 |
| | Total | 3.014 † | 4.004 | 8.419 | 6.612 † | 5.538 |
| Total HHlds. | HBW | 1.037 | 1.327 | 2.061 | 2.745 | 1.865 |
| | HBSH | 1.226 | 1.475 | 2.698 | 2.725 | 2.168 |
| | HBSR | 0.891 | 0.999 | 1.770 | 1.927 | 1.469 |
| | HBSC | 0.617 | 0.624 | 1.242 | 1.554 | 1.046 |
| | NHB | 1.181 | 1.393 | 2.128 | 2.565 | 1.889 |
| | Total | 4.952 | 5.818 | 9.899 | 11.516 | 8.436 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.11.2**
**2000 Regional Weekday Trips per Person by Workers per Household by Vehicles Available per Household - Total Modes**

| Workers per Household | Trip Purpose | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| No Workers | HBW | 0.122 | 0.058 | 0.080 | 0.076 | 0.083 |
| | HBSH | 0.976 | 1.194 | 1.321 | 1.394 | 1.180 |
| | HBSR | 0.658 | 0.713 | 0.877 | 0.830 | 0.750 |
| | HBSC | 0.459 | 0.179 | 0.133 | 0.221 | 0.249 |
| | NHB | 0.568 | 0.688 | 0.700 | 0.804 | 0.664 |
| | Total | 2.781 | 2.832 | 3.111 | 3.325 | 2.927 |
| One Worker | HBW | 0.801 | 0.764 | 0.478 | 0.455 | 0.603 |
| | HBSH | 0.580 | 0.763 | 1.088 | 1.009 | 0.920 |
| | HBSR | 0.415 | 0.536 | 0.604 | 0.647 | 0.572 |
| | HBSC | 0.282 | 0.348 | 0.439 | 0.418 | 0.391 |
| | NHB | 0.742 | 0.807 | 0.623 | 0.694 | 0.710 |
| | Total | 2.820 | 3.218 | 3.231 | 3.223 | 3.195 |
| Two Workers | HBW | 1.019 | 0.918 | 0.797 | 0.746 | 0.806 |
| | HBSH | 0.376 | 0.620 | 0.707 | 0.695 | 0.682 |
| | HBSR | 0.390 | 0.435 | 0.519 | 0.464 | 0.489 |
| | HBSC | 0.264 | 0.415 | 0.412 | 0.494 | 0.431 |
| | NHB | 0.698 | 0.667 | 0.732 | 0.714 | 0.718 |
| | Total | 2.746 | 3.055 | 3.167 | 3.114 | 3.125 |
| Three or More Workers | HBW | 0.954 † | 0.912 † | 0.893 | 0.966 | 0.947 |
| | HBSH | 0.456 † | 0.731 † | 0.713 | 0.636 | 0.656 |
| | HBSR | 0.477 † | 0.417 † | 0.553 | 0.532 | 0.530 |
| | HBSC | 0.395 † | 0.143 † | 0.318 | 0.364 | 0.343 |
| | NHB | 0.910 † | 0.474 † | 0.554 | 0.696 | 0.655 |
| | Total | 3.193 † | 2.676 † | 3.031 | 3.194 | 3.131 |
| Unknown/ Refused | HBW | 0.563 † | 0.760 | 0.685 | 0.722 † | 0.703 |
| | HBSH | 0.807 † | 0.751 | 1.087 | 0.979 † | 0.932 |
| | HBSR | 0.262 † | 0.579 | 0.610 | 0.278 † | 0.529 |
| | HBSC | 0.289 † | 0.142 | 0.287 | 0.104 † | 0.217 |
| | NHB | 0.443 † | 0.639 | 0.736 | 0.507 † | 0.649 |
| | Total | 2.364 † | 2.870 | 3.404 | 2.590 † | 3.030 |
| Total HHlds. | HBW | 0.584 | 0.708 | 0.662 | 0.755 | 0.692 |
| | HBSH | 0.691 | 0.786 | 0.866 | 0.749 | 0.805 |
| | HBSR | 0.502 | 0.532 | 0.568 | 0.530 | 0.545 |
| | HBSC | 0.348 | 0.333 | 0.399 | 0.427 | 0.388 |
| | NHB | 0.666 | 0.743 | 0.683 | 0.705 | 0.701 |
| | Total | 2.791 | 3.102 | 3.177 | 3.165 | 3.133 |

*† Trip rates based on less than 50 sample households and are not statistically significant. Reported for informational purposes only.*

**Table 3.11.3**
**BATS 2000 Households and Household Population**
**by Workers per Household by Vehicles Available per Household**

| Workers per Household | | Vehicles Available per Household | | | | |
|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3-or-more | TOTAL |
| | Sample HH | 193 | 1,149 | 849 | 170 | 2,361 |
| No | Expanded HH | 84,486 | 148,066 | 76,689 | 16,632 | 325,873 |
| Workers | Expanded HH Pop | 160,764 | 208,968 | 154,668 | 37,035 | 561,435 |
| | Sample HH | 339 | 3,113 | 2,175 | 677 | 6,304 |
| One | Expanded HH | 115,627 | 491,889 | 306,129 | 106,840 | 1,020,484 |
| Worker | Expanded HH Pop | 165,763 | 845,141 | 942,549 | 346,661 | 2,300,115 |
| | Sample HH | 65 | 558 | 3,281 | 1,430 | 5,334 |
| Two | Expanded HH | 31,622 | 131,077 | 499,030 | 227,065 | 888,794 |
| Workers | Expanded HH Pop | 83,401 | 373,410 | 1,596,690 | 790,095 | 2,843,597 |
| Three | Sample HH | 4 | 30 | 164 | 680 | 878 |
| or More | Expanded HH | 1,942 | 11,483 | 44,008 | 147,479 | 204,913 |
| Workers | Expanded HH Pop | 6,401 | 45,670 | 196,168 | 640,236 | 888,475 |
| | Sample HH | 9 | 88 | 73 | 17 | 187 |
| Unknown/ | Expanded HH | 3,598 | 11,695 | 8,612 | 2,052 | 25,957 |
| Refused | Expanded HH Pop | 4,587 | 16,315 | 21,299 | 5,239 | 47,440 |
| | Sample HH | 610 | 4,938 | 6,542 | 2,974 | 15,064 |
| Total | Expanded HH | 237,275 | 794,210 | 934,468 | 500,067 | 2,466,020 |
| Households | Expanded HH Pop | 420,916 | 1,489,505 | 2,911,374 | 1,819,267 | 6,641,061 |

## 3.12 Regional Trip Rates by Population Density Category

This final portion of section 3 highlights regional trip rates by population density categories. Five population density categories are used to describe the Bay Area: urban core, urban, suburban, rural-suburban, and rural. Area types are based on land area and population levels and are different from the density based area types used in the 1990 survey, which were based on population, land area, and employment. The five categories used in this report mirror those used by MTC staff to summarize Census 2000 results (Metropolitan Transportation Commission, 2001).

The population density categories along with the land area each comprises in the Bay Area are displayed below.

| Population Density Category | Population Density Range (persons per square mile) | Total Land Area (sq. mi.) | Share of Regional Land Area |
|---|---|---|---|
| Urban Core | >20,000 | 31.6 | 0.5% |
| Urban | 10,000 to 20,000 | 119.4 | 1.7% |
| Suburban | 1,000 to 10,000 | 897.0 | 13.0% |
| Rural-Suburban | 500 to 1,000 | 305.2 | 4.4% |
| Rural | <500 | 5,569.5 | 80.5% |
| TOTAL | | 6,922.6 | 100.0% |

*Source: Metropolitan Transportation Commission (2001).*

The urban core category described above is primarily composed of a large part of San Francisco and central Oakland. Less than 1% of the Bay Area's land falls in the urban core category. Areas classified as urban include a large portion of the East Bay, from Richmond to parts of Hayward, Fremont, and San Jose. Parts of San Francisco and most of Daly City and South San Francisco are considered urban areas as well as high-density parts of Millbrae, San Mateo, and Redwood City on the Peninsula. Suburban areas account for 13% of the region's land area and include many North Bay communities such as Santa Rosa, Petaluma, Fairfield, Napa, Sonoma, Novato, and Vallejo. The majority of communities along the peninsula are considered suburban, including most of San Jose. The outer fringes of most cities in the East Bay are also suburban (from Richmond to San Jose). Cities in the Walnut Creek area as well as San Ramon, Danville, and Pleasanton are also considered suburban. Rural-suburban areas account for nearly 4.5% of the land area in the Bay Area and include cities like Half Moon Bay. The final population density category, rural, accounts for over 80% of the Bay Area's geography.

The distribution of Bay Area households and population by population density category is provided in the table below.

| Population Density Category | Households | Percent of Total Households | Household Population | Percent of Total Population | Mean Household Size |
|---|---|---|---|---|---|
| Urban Core | 349,928 | 14.2% | 794,639 | 12.0% | 2.271 |
| Urban | 542,153 | 22.0% | 1,542,917 | 23.2% | 2.846 |
| Suburban | 1,348,930 | 54.7% | 3,660,291 | 55.1% | 2.713 |
| Rural-Suburban | 73,162 | 3.0% | 204,570 | 3.1% | 2.796 |
| Rural | 151,847 | 6.2% | 438,644 | 6.6% | 2.889 |
| TOTAL | 2,466,020 | 100.0% | 6,641,061 | 100.0% | 2.693 |

Over half of all Bay Area households are located in suburban areas (54.7%), and nearly 3.7 million individuals are included in these suburban households (55.1% of the population). The next highest share of households, 22.0%, lives in urban areas while 14.2% of households live in urban core areas. The smallest share of households (and of the population) lives in rural-suburban portions of the region, and while over 80% of the Bay Area is considered rural, only 6.2% of households are located in rural areas. There is not a clear relationship between mean household size and area type, but it is interesting to note that households in the urban core tend to be smaller, averaging 2.2 persons per household. The largest households are located in urban and rural areas.

**Weekday Trip Rates**

Regional weekday transit, walk, and bicycle shares by population density category are included in Tables 3.12.1 through 3.12.3. The information in these tables is based on detailed Tables 3.12.1C and 3.12.2C (in Appendix C), which display regional weekday trip rates by population density category, travel mode, and trip purpose.

Household trip rates for total trips by the five population density categories are shown in Table 3.12.1. In general, trip rates tend to decrease as population density increases. The highest weekday trip rate is for rural-suburban households (9.1 trips per household per weekday) while the lowest rate is for urban core households, which only average 7.0 trips per weekday. Home-based work trips stratified by population density are also provided in Table 3.12.1. Urban households produce the most work trips, averaging 2.0 per household. Households in urban core and rural areas make the fewest home-based work trips producing 1.8 and 1.7 trips per day, respectively. For work and total trips, transit shares decrease as population density decreases. Transit shares for total trips range from 17.6% for urban core households to 1.8% for rural households. When transit shares are reviewed for work trips only, the shares are even higher.

Urban core households have a 29.0% transit share for home-based work trips while the lowest work trip transit share is for rural households (4.4%).

Walk and bicycle shares follow a similar pattern in that they also decrease as population density decreases for total trips and for home-based work trips (see Table 3.12.2). Households in urban core areas make nearly twice as many walk trips as other households (1.6 walk trips per household); this accounts for 22.3% of all trips by urban core households. Rural households make the fewest walk trips (0.44 per day) and have a walk share of only 5.0%. Walk shares are significantly lower for home-based work trips and range from 1.1% to 2.6% for all population density categories except urban core. Households in the urban core have a 12.0% walk trip share for weekday home-based work trips.

Bicycle trip rates and shares for regional households are shown in Table 3.12.3. There are fewer differences between bicycle shares for home-based work and total trips than for transit and walk shares. Urban core households produce the most bicycle trips per weekday, averaging 0.19 per household, which accounts for 2.7% of all trips produced by these households. The lowest bicycle trip rates and shares are for rural-suburban and rural households who only average about 0.7% bike shares for all trips and 0.5% for work trips.

While transit, walk, and bicycle trips tend to decrease as population density decreases, the share of vehicle driver trips increases from 36.2% for urban core households to 63.3% for rural homes (see Table 3.12.1C). For home-based work trips, vehicle driver shares are even higher and range from 45.2% for urban core households to 88.3% of all work trips for rural households.

**Weekend Trip Rates**

Regional trip rates for travel on Saturday and Sunday stratified by population density category, travel mode, and trip purpose are discussed in this section. Detailed tables in Appendices E and F provide person and household level trip rates for weekend travel by the five population density categories.

Household level trip rates for Saturday trips are outlined in Table 3.12.1E. Except for rural households, rates generally increase as density decreases for all trip purposes. Saturday trip rates range from a low of 0.08 home-based school trips per day to a high of 4.0 home-based shop (other) trips per day, both produced by rural-suburban households. For all trip purposes except home-based school, rural-suburban households average the highest trip rates for Saturday travel (0.92 home-based work trips on Saturday, 4.0 home-based shop trips, 3.6 home-based social/recreational trips, and 2.8 non-home-based trips per day on Saturday). Urban core households produce the fewest home-based work, shop (other), and social/recreational trips on Saturday. As with weekday shares, vehicle driver shares on Saturday increase as density decreases, and walk shares tend to decrease as population density decreases. Saturday bicycle shares are highest (1.4%) for urban households and lowest (0.4%) for rural households.

Person level trip rates for travel on Saturday are provided in Table 3.12.2E. Individuals living in rural-suburban households average the highest Saturday trip rate of 1.4 trips per day for home-based shop (other) trips; these same individuals have the lowest trip rate of 0.03 trips on

Saturday for home-based school trips. Individuals who reside in rural-suburban neighborhoods also generate the highest trip rates for work, shop, and social/recreational trips. Individuals living in rural areas produce the fewest home-based work, shop, and social/recreational trips on Saturday.

Sunday travel for the five different population density categories is highlighted in Tables 3.12.1F for households and 3.12.2F for individuals. Characteristics of Sunday travel based on density are similar to trends found on Saturday. Vehicle driver shares increase as population density decreases. Walk shares are highest (21.9%) for urban core households and lowest for rural homes (3.2%). Bicycle shares also decrease with population density. Urban core homes have a 5.0% bicycle share while rural homes have only a 0.6% bicycle share. Household trip rates on Sunday range from a low of 0.05 home-based school trips made by urban core households to a high of 3.2 trips per day for home-based social/recreational trips pursued by suburban households. Rural-suburban households have the highest average trip rate for home-based shop (other) trips (3.0 per household on Sunday). Similar to Saturday travel, urban core households average the lowest number of home-based shop and social/recreational trips on Sunday making just 1.8 shop and social/recreational trips per day.

Trip rates per capita on Sunday show that urban individuals make the fewest home-based shopping trips averaging 0.70 per person (Table 3.12.2F). Residents of urban core areas average the fewest social/recreational trips (0.77 per person). The highest person level trip rate for Sunday travel is for persons living in suburban areas making home-based social/recreational trips (1.2 per person on Sunday).

**Table 3.12.1**
**2000 Regional Weekday Transit Shares for Trips per Household**
**by Population Density Category**

| Population Density Category | Home-Based Work Trips / HH | | | Total Trips / HH | | |
|---|---|---|---|---|---|---|
| | Transit | All Modes | % Transit | Transit | All Modes | % Transit |
| Urban Core | 0.513 | 1.772 | 29.0% | 1.235 | 7.036 | 17.6% |
| Urban | 0.273 | 1.967 | 13.9% | 0.721 | 8.432 | 8.6% |
| Suburban | 0.158 | 1.865 | 8.5% | 0.311 | 8.728 | 3.6% |
| Rural-Suburban | 0.086 | 1.841 | 4.7% | 0.182 | 9.087 | 2.0% |
| Rural | 0.076 | 1.722 | 4.4% | 0.157 | 8.779 | 1.8% |
| Total | 0.227 | 1.865 | 12.2% | 0.519 | 8.436 | 6.2% |

**Table 3.12.2**
**2000 Regional Weekday Walk Shares for Trips per Household**
**by Population Density Category**

| Population Density Category | Home-Based Work Trips / HH | | | Total Trips / HH | | |
|---|---|---|---|---|---|---|
| | Walk | All Modes | % Walk | Walk | All Modes | % Walk |
| Urban Core | 0.213 | 1.772 | 12.0% | 1.568 | 7.036 | 22.3% |
| Urban | 0.052 | 1.967 | 2.6% | 0.992 | 8.432 | 11.8% |
| Suburban | 0.038 | 1.865 | 2.0% | 0.713 | 8.728 | 8.2% |
| Rural-Suburban | 0.021 | 1.841 | 1.1% | 0.438 | 9.087 | 4.8% |
| Rural | 0.021 | 1.722 | 1.2% | 0.435 | 8.779 | 5.0% |
| Total | 0.064 | 1.865 | 3.4% | 0.870 | 8.436 | 10.3% |

**Table 3.12.3**
**2000 Regional Weekday Bicycle Shares for Trips per Household**
**by Population Density Category**

| Population Density Category | Home-Based Work Trips / HH | | | Total Trips / HH | | |
|---|---|---|---|---|---|---|
| | Bicycle | All Modes | % Bicycle | Bicycle | All Modes | % Bicycle |
| Urban Core | 0.060 | 1.772 | 3.4% | 0.192 | 7.036 | 2.7% |
| Urban | 0.031 | 1.967 | 1.6% | 0.115 | 8.432 | 1.4% |
| Suburban | 0.030 | 1.865 | 1.6% | 0.120 | 8.728 | 1.4% |
| Rural-Suburban | 0.009 | 1.841 | 0.5% | 0.067 | 9.087 | 0.7% |
| Rural | 0.009 | 1.722 | 0.5% | 0.049 | 8.779 | 0.6% |
| Total | 0.033 | 1.865 | 1.8% | 0.123 | 8.436 | 1.5% |