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Gender, Race, and Travel Behavior: An Analysis of Household-Serving Travel and Commuting in the San Francisco Bay Area

Brian D. Taylor

University of California, Los Angeles

Michael Mauch

University of California, Berkeley

GENDER, RACE, AND TRAVEL BEHAVIOR: AN ANALYSIS OF HOUSEHOLD-SERVING TRAVEL AND COMMUTING IN THE SAN FRANCISCO BAY AREA

ABSTRACT

This paper examines how the division of household responsibilities shapes the travel behavior of men and women. In particular, we focus on the influence of socioeconomic factors—gender, race/ethnicity, income, and household structure—in shaping household-serving travel patterns. Using travel data from the San Francisco Bay Area we find that women are, on average, disproportionately responsible for child-serving and household maintenance travel, and that white, Hispanic, and low-income women tend to be, on average, especially burdened with household maintenance responsibilities. We find further that the women's household-serving travel patterns appear to be a function of both socialization and the sexual division of household responsibilities. We see evidence of socialization in the distinctly gendered grocery shopping patterns observed in single adult households with no children. And we find evidence of the sexual division of household labor in the increasing burden of household-serving travel at each stage in the life cycle and robustness of the gender variable in multivariate models of child-serving travel during the journey-to-work.

OVERVIEW

A number of studies have shown that women have significantly different travel patterns than men. Women, for example, tend to have shorter average trip lengths (Giuliano 1979; Gordon, *et.al.* 1989; Hanson and Johnston 1985; Hanson and Pratt 1990; Madden 1981; Michelson 1983; Hu and Young 1993; Pickup 1985, 1989; Rosenbloom 1988; Rutherford and Wekerle 1988), but tend to make more trips than men (Michelson 1983; Rosenbloom 1988, Rosenbloom and Burns 1993; Skinner and Borlaug 1980). Women have also tended to use public transportation more than men, though women's use of transit has been declining (Giuliano 1979; Koppelman, Tybout, and Skyskowski 1980; Michelson 1983, Pickup 1985).

The causes of gender differences in travel behavior have been the subject of a variety of interpretations. Hanson and Johnston (1985) argue that women's shorter commutes are due primarily to spatial and economic factors: lower average incomes, the location of female-dominated occupations in metropolitan areas, and women's greater dependence on public transit. Women account for roughly two-thirds of the new entrants into the labor force in the last twenty years, and rising female labor force participation rates account for a substantial portion of the overall growth in travel and automobile use (Rosenbloom and Burns 1994). According to the 1983 National Personal Transportation Survey (NPTS), the average male licensed driver drove 13,962 miles per year, while the average female driver drove only 6,381 miles per year. Since 1969, the number of female drivers has increased 84 percent, and there has been a 99 percent increase in the number of women in the work force (Hu and Young 1993). Miles driven by males only increased 46 percent between 1969 and 1990, while miles driven by all women increased by 76 percent. Miles driven by women in the 16 to 34 age group rose by more than 200 percent, reflecting those women who entered the work force during this time period (Hu and Young 1993; Rosenbloom and Burns 1994).

While economic and spatial factors clearly play a role in women's home and work location choices, commuting patterns, and employment outcomes, a number of scholars have argued that an unequal division of power and labor in the household is an important determinant of gender variation in travel behavior (Hanson and Pratt 1990; Madden 1981; Preston, McLafferty, and Hamilton 1993). Some argue that women tend to work closer to home to try to reduce commute time, which has likely been inflated due to increased trip chaining. Furthermore, the need to respond to child-related emergencies and child chauffeuring keep women closer to home, child care centers, and schools (Hanson and Pratt 1990). Depending upon the city under study, women's commute distance is typically half to two-thirds the length of the average man's journey to work (Wachs 1992). Even though women's commute distance is generally shorter than men's, their travel times are not proportionally reduced as would be expected (Rosenbloom and Burns 1993). The proportionally longer travel times relative to commute distance substantiates the findings that women must combine work and non-work travel to balance the dual demands of work and home, and these dual responsibilities make it extremely difficult for many women to commute by any mode other than by driving alone (Rosenbloom and Burns 1994). Women who must run errands during lunch to balance complex schedules are even more trapped into driving than coworkers with less complex schedules. As a result, significant differences between male and female travel patterns persist, even between otherwise comparable working men and women:

In summary, traditional travel variables—household income, license-holding, employment—do more to explain the differences among women and among men than they do to explain the differences *between* comparable men and women. The higher person trip rates of women persist through every traditional analysis, as generally does the shorter distances and fewer private vehicle trips. The one major exception: the travel patterns of people from households with low incomes (Federal Highway Administration 1992).

Research shows that married mothers' trip making patterns are very different from the travel patterns of comparable men, and that single working parents' travel patterns are quite different from their married counterparts (Johnston-Anumonwo 1989; Rosenbloom 1988, Rosenbloom and Burns 1993; Rutherford and Wekerle 1989). Several studies have found that women are far more likely than men to commute on public transit in one-car, two-worker households (Giuliano 1979; Koppelman, Tybout, and Skyskowski 1980; Michelson 1983; Pickup 1985). Others have shown that married women make twice as many shopping and errand trips as men (Rosenbloom and Burns 1993; Hanson and Pratt 1990; Skinner and Borlaug 1980). And studies have also found that working women are more likely than men to be responsible for chauffeuring dependents (Michelson 1983; Rosenbloom 1988; Rosenbloom and Burns 1993). The more and the younger their children, the less likely working women are to use alternate modes of transportation. The presence of children and their ages influence the travel patterns of women more than men in all types of households (Rosenbloom and Burns 1994).

Women trip chain more than men, due almost solely to their increased household responsibilities. Trip chaining is the combining of trips into a "chain" in order to get more done in a given time period. Picking the kids up from day care and then dropping the laundry off at the dry-cleaners on the way home from work is a typical example of trip chaining. Carpooling and trip chaining both increase journey-to-work travel times, due to circuitous routing and the addition of intermediate stops. Also, the need for trip chaining reduces the appeal of carpooling, as other riders may not tolerate the inconvenience of additional stops between home and work. Ultimately, the practicality of transit and other non-auto modes substantially decreases as the need for trip chaining increases.

Concludes Michelson (1983, xiii), "Women's commuting trips are a difficult transition between two demanding sets of responsibilities, compounded by a social and commercial structure that is insensitive to women's evolving needs."

With respect to race and ethnicity, most of the gender and travel research has focused on the journey-to-work (McLafferty and Preston 1991; McLafferty, *et.al.* 1992; Preston, McLafferty, and Hamilton 1993; Wilson and Johnston-Anumonwo 1995). In a study of commuting in Detroit, Kansas City, and Miami, Wilson and Johnston-Anumonwo (1995) find that both gender and race/ethnicity are associated with higher commute times and higher levels of transit use among nonwhite women. McLafferty and Preston (1991) argue that gender variations in commuting are substantially greater among whites than nonwhites; in a study of metropolitan New York, they find that, in contrast to whites, the commutes of black and Hispanic men and women to be quite similar. There has been little work, however, on whether the patterns of household serving travel vary by race/ethnicity, or on how gender, race/ethnicity, and other socioeconomic factors are related to household-serving trip-chaining on the journey-to-work. This work, therefore, seeks to link and extend recent gender research on race/ethnicity, passenger-serving travel, and trip chaining by examining travel behavior in the San Francisco Bay Area.

STUDY APPROACH AND METHODOLOGY

This study uses data from a recent household travel survey in the San Francisco Bay Area to examine the roles of race/ethnicity, income, and household structure in explaining gender differences in travel behavior.

Specifically, the study addresses three related questions:

- To what extent, and in what ways, do gender differences in travel patterns vary by race/ethnicity?
- To what extent are these observed travel differences explained by auto availability, education, income, mode of travel, household type, and the presence of children?
- How do household-serving travel responsibilities affect commuting, and how do these patterns vary by household demographics and structure?

The analysis has uses detailed trip diary data from a 1990 survey of San Francisco Bay Area residents to examine the effects of race/ethnicity, income, and household structure on the differences in commuting and household-serving travel among men and women. In 1990, the nine county San Francisco Bay Area was home to over six million people residing in roughly 2.2 million households. According to the Metropolitan Transportation Commission's (MTC's) 1990 Bay Area Household Travel Survey, the 6.6 million Bay Area residents made 17.2 million person trips on a daily basis (MTC, 1994). Of these 17.2 million person trips, 4.5 million (26.3%) of the trips were home-to-work trips, 4.3 million (24.9%) were home-based shopping trips, 1.9 million (11.1%) were home-based social/recreational trips, 1.7 million (9.7%) were home-based school trips, and the remaining 4.8 million (28.0%) were non-home-based trips. Sixty three percent of all trips were made by automobile drivers, with the next largest share (16.2%) being made by automobile passengers. Walk trips comprised 9.9% of all trips. Public bus trips were 4.1%, bicycle trips were 1.5%, and Bay Area Rapid Transit (BART) accounted for 1.5% of the trips.

In 1990, the San Francisco Bay Area Metropolitan Transportation Commission (MTC) collected single-weekday travel data from 21,280 persons living in 9,359 households within the nine county Bay Area. These 21,280 persons collectively made 70,774 trips during the survey period. Travel diary data in general, and the MTC data in particular, are especially useful for examining the activities of individuals and families. The MTC data contain quite detailed accounting of all travel, include trips with multiple purposes and mode. From the 1990 travel survey, we obtained and analyzed a set of six files for this study. These files consisted of a household demographic file, a person demographic file, and four person trip files.

GENDER, RACE/ETHNICITY, AND TRAVEL TIME

Consistent with the growing body of research on gender and travel behavior, the MTC data clearly indicate that there are significant differences between the sexes in average travel times for the work commute and for all travel. For both the work commute and for all travel, women's trips tend to be shorter than men's. Since these findings are not isolated to the work commute, we can speculate that this difference may be linked to factors that are independent of work status. Overall, the average trip made by a women is 21.8 minutes, and the average trip length for men is 24.8 minutes, a 12.9 percent difference. The largest modal difference in mean travel times was for women driving alone vs. men driving alone, with mean travel times of 19.3 minutes and 23.3 minutes, respectively.

As expected, women had shorter commutes than men, regardless of mode. The largest difference in work commute times was between men and women car-poolers. On average, men who commuted between home and work in carpools travel 6.6 minutes (17%) longer than women making the same trip via the same mode. Female workers who carpool tend to be 6 to 7 minutes closer to home than their male counterparts. The largest relative difference in journey-to-work commute times was walk/ bicycle trips; women's commute times were 28% shorter than men's, though such trips account for less than 4 percent of all commutes. Table 1 shows the men's and women's mean journey-to-work trip lengths (in minutes) for all Bay Area travel, while Table 2 summarizes mean travel times by gender and mode of travel for all trips.

Table 1
Mean Travel Times (in Minutes) For Journey-to-Work Trips
By Mode of Travel and Gender

Travel Mode	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/M Tr. Times
Drive Alone	24.2	28.7	-4.5 **	0.84
Shared Ride	31.5	38.1	-6.6 **	0.83
Transit [1]	53.9	60.1	-6.2 *	0.90
Bicycle/Walk	15.2	21.2	-6.0	0.72
All Modes	28.6	32.4	-3.8 **	0.88

1 Transit Mode includes School Bus Passengers
* Significant at the 0.05 level
** Significant at the 0.01 level

Table 2
Mean Travel Times (in Minutes), For All Trip Types by Mode and Gender

Travel Mode	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/M Tr. Times
Drive Alone	19.3	23.3	-4.0 **	0.83
Shared Ride	22.2	25.0	-2.8 **	0.89
Transit [1]	47.5	49.4	-1.9	0.96
Bicycle/Walk	14.0	16.4	-2.4 **	0.85
All Modes	21.8	24.8	-3.0 **	0.89

1 Transit Mode includes School Bus Passengers
* Significant at the 0.05 level
** Significant at the 0.01 level

When controlling for race/ethnicity, we observe that women in four major race/ethnicity categories tend to have shorter commutes than comparable men. The largest relative and absolute differences between men's and women's work commutes were found among whites and blacks. Overall, the commutes seen by Asian/Pacific Islanders and blacks were longer than those of Hispanics and whites. Likewise, these patterns hold for the journey-to-work trips. Table 3 shows mean journey-to-work travel times for all trips by race/ethnicity and gender, and Table 4 lists the same for all trips.

Table 3
Mean Travel Times (in Minutes) For Journey-to-Work Trips by Ethnicity and Gender

Race/ Ethnicity	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/M Tr. Times
ASPI	32.6	35.5	-2.9	0.92
Black	32.4	36.7	-4.3	0.88
Hispanic	28.6	30.4	-1.8	0.94
White	27.1	31.6	-4.5 **	0.86

* Significant at the 0.05 level
** Significant at the 0.01 level

Table 4
Mean Travel Times (in Minutes) For All Trip Types by Ethnicity and Gender

Race/ Ethnicity	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/M
ASPI	25.1	28.1	-3.0 **	0.89
Black	25.0	28.0	-3.0 *	0.89
Hispanic	21.4	24.9	-3.5 **	0.86
White	20.9	23.8	-1.9 ** 0.88	

* Significant at the 0.05 level
** Significant at the 0.01 level

When looking specifically at the journey-to-work, and cross-tabulating by gender, race/ethnicity, and mode of travel, the average commute time for women was still shorter than for men in all but two cases. Hispanic women carpooling or bicycling/walking to work were the sole exceptions to this generalization, having longer commutes than their male counterparts. The largest absolute differences in men's and women's commute times were for African American transit riders, where the mean female travel time was 17.8 minutes shorter than the mean male travel time. Next were Asian/Pacific Islanders who carpooled, where the observed mean travel time for women was 10.4 minutes less than for men in the same category (Figure 1). Whites had a larger split between male and female travel times than any other ethnic group, with the men traveling 4.5 minutes longer than women. On average, African-American men travel 4.3 minutes longer than African-American women to get to work, while the split was smaller among Asians/Pacific Islanders (2.9 minutes) and Hispanics (1.8 minutes).

When looking at all travel, the pattern of shorter women's commutes was repeated with one exception; white women riding transit tend to have slightly longer average trip lengths than white men traveling by the same mode (Figure 2).

As noted earlier, McLafferty and Preston (1991) argue that analyses of gender differences in journey-to-work length have largely ignored the intervening effects of race and ethnicity. Their study of service sector workers in metropolitan New York finds little gender difference in the commute times of black and Hispanic men and women. Table 3 would appear to support their findings; male/female commute time differentials are lower among non-whites and are not statistically significant, though the observed mean commute times for Asian/Pacific Islander, black, and Hispanic women are all less than those of comparable men. But the data are far from clear on this issue. In Figure 1, for example, black women have far shorter public transit commute times than black men. And in Table 4, we see that gender travel time differentials for all trips are greater for whites than nonwhites, indicating that non-commuting trips by Asian/Pacific Islander, black, and Hispanic women tend to be substantially shorter than their male counterparts.

Figure 1
Journey-To-Work Times by Gender, Ethnicity, and Mode of Travel

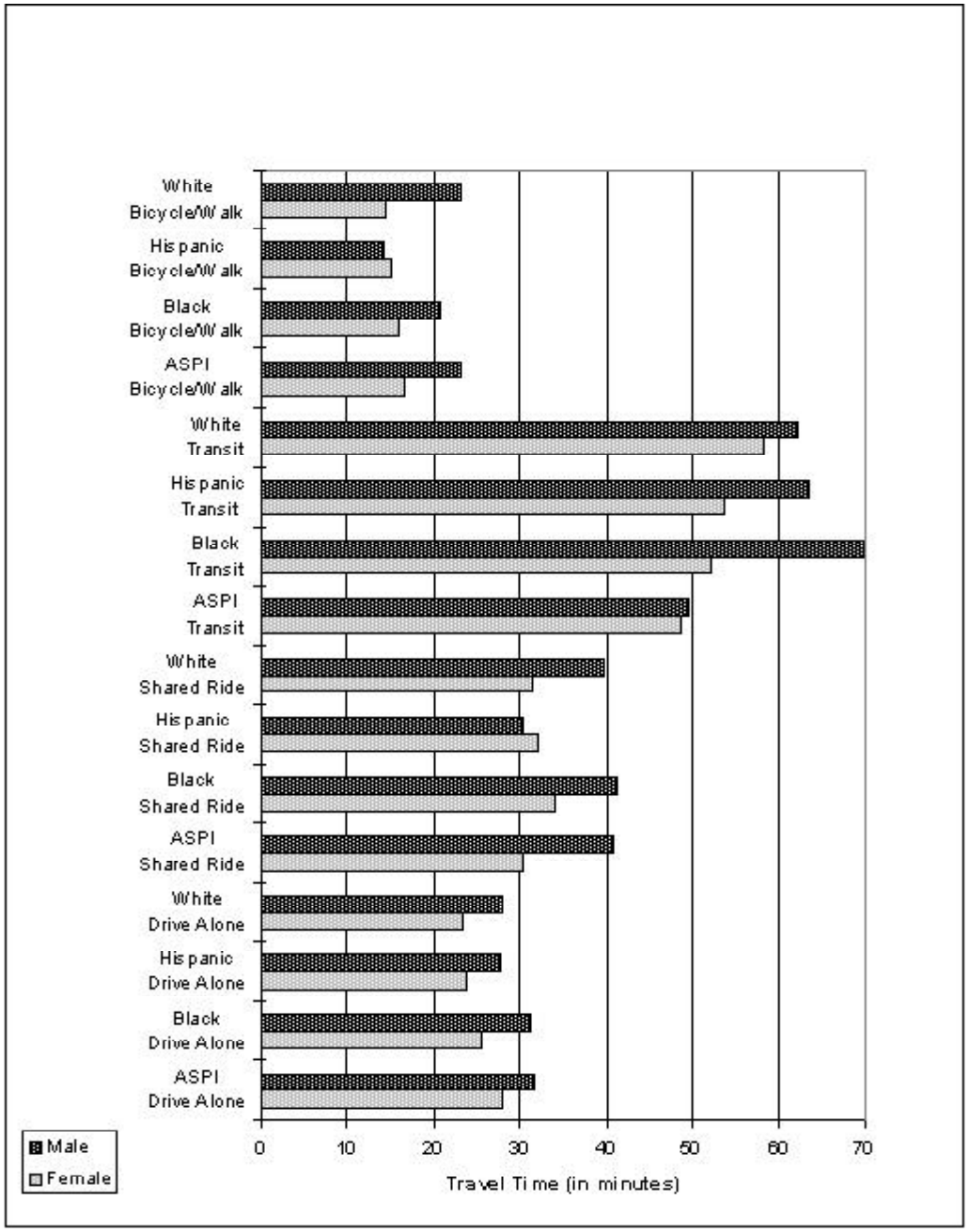
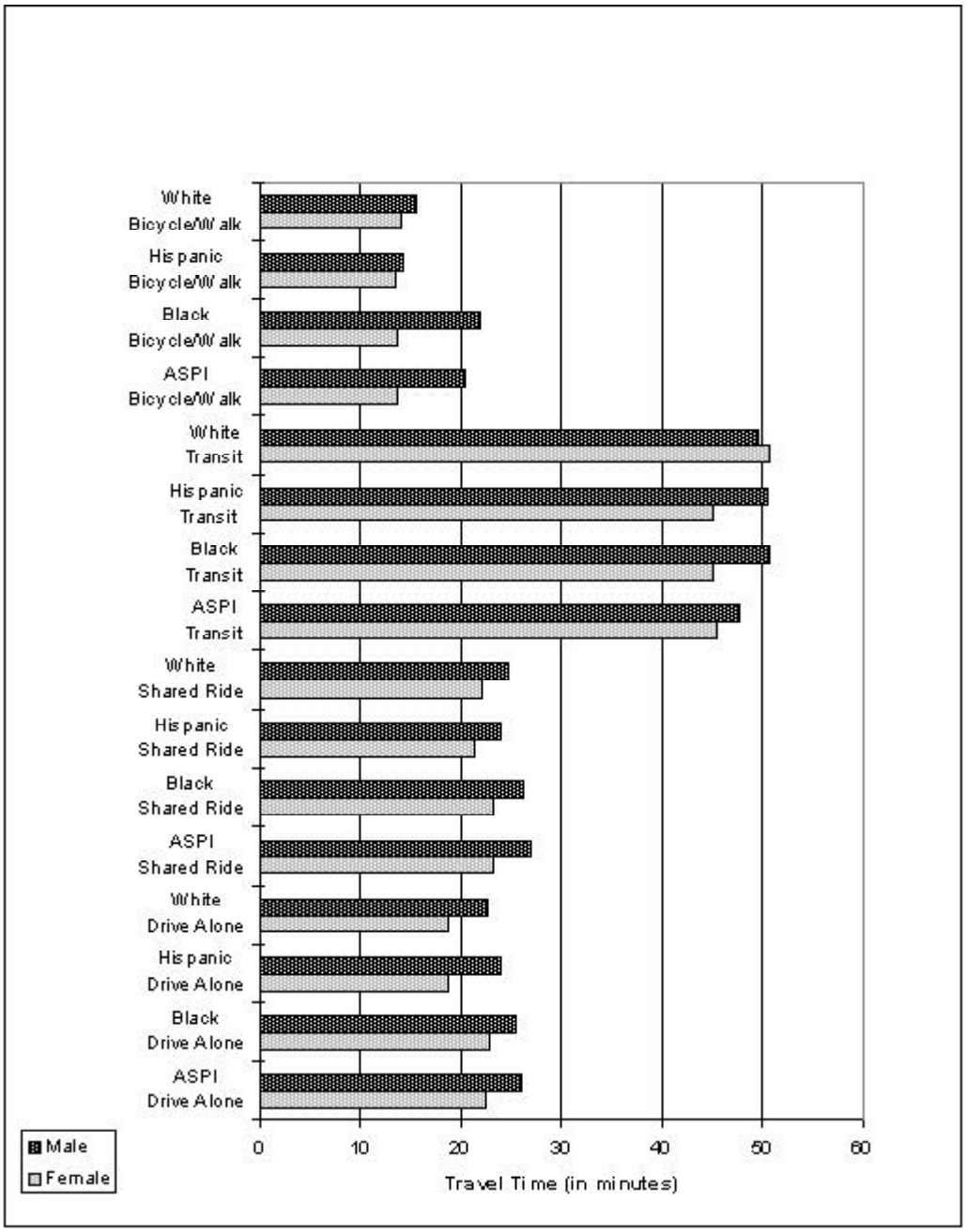


Figure 2
Travel Times For All Trip Types By Gender, Ethnicity, and Mode of Travel



THE EFFECT OF HOUSEHOLD STRUCTURE ON TRAVEL TIMES

Since it has been proposed that the differences in mean travel times are at least partially explained by the sexual division of labor within the household, mean travel times with respect to gender, race/ethnicity, and household type were examined next. For this portion of the analysis, households were categorized into one of four groups:

- Single Adult Households, Without Children,
- Single Adult Households, With Children
- Two-or-more Adult Households, Without Children, and
- Two-or-more Adult Households, With Children.

If differences in travel behavior are explained by the uneven division of labor within the home, then the differences in travel behavior between the sexes should be less pronounced for single adult households with no children, than for any other group. Women living alone and men living alone should have very similar household responsibilities and no child care responsibilities. Assuming that an adult male living alone assumes full responsibility for his own household duties and related travel, and assuming that an adult female living alone assumes full responsibility for her own household duties and related travel, the travel behavior differences between these two groups (single adult males and single adult females) should be smaller, or the travel patterns more similar than any other gender pairs studied. Likewise, travel patterns for single parent households (single female parent households and single male parent households) should be more similar than traditional family households (two-or-more adult households with children).

The findings from the commute time analyses for the journey-to-work, with respect to household types are quite consistent with the theory of uneven distribution of labor within the home. The difference in commute times between women who live alone and men who live alone barely existed when compared to two-or-more adult households and households with children. The difference between male and female single adult households without children was about 0.6 minutes, compared to a 3.8 to 4.5 minute difference for the other household types. In relative terms, the gender difference is about 6.3 to 7.5 times larger for two-or-more adult households and households with children than for adults who live alone (single adult households without children). However, the gender difference in travel times for single parent households was higher than expected (3.8 minutes). Women with children tend to work closer to home than men with children, even in single parent households.

The average travel time for single mothers was longer than the average travel time for single fathers. Otherwise, when combining all trip purposes, and controlling for household type, women's commutes (on average) were shorter than men's. Table 5 shows mean journey-to-work times controlling for gender and household type. Table 6 shows travel time (in minutes) for all trip types controlling for gender and household type.

Table 5
Mean Travel Times (in Minutes) For Journey-to-Work Trips,
By Household Type and Gender

Household Type	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/M Tr. Times
Single Adult, No Kids	29.0	29.6	-0.6	0.98
Two+ Adults, No Kids	28.3	32.8	-4.5 **	0.86
Single Adult, With Kids	28.0	32.4	-4.4	0.86
Two+ Adult, With Kids	29.0	32.8	-3.8 **	0.88

* Significant at the 0.05 level
** Significant at the 0.01 level

Table 6
Mean Travel Times (in Minutes) For All Trip Types By Household Type and Gender

Household Type	Female Tr. Time	Male Tr. Time	Difference (F-M)	Ratio: F/MTr. Times
Single Adult, No Kids	22.4	24.2	-1.8	0.93
Two+ Adults, No Kids	23.2	25.9	-2.7 **	0.90
Single Adult, With Kids	23.7	22.5	+1.2	1.05
Two+ Adult, With Kids	20.3	24.4	-4.1 **	0.83

* Significant at the 0.05 level
** Significant at the 0.01 level

For the journey-to-work, the difference between men's and women's mean travel times by household type varied significantly between the different race/ethnic groups. Figure 3 shows the details of the journey-to-work time analyses by gender, controlling for race/ethnicity and household type. The difference was the most pronounced for whites (4.5 minutes) and African-Americans (4.3 minutes). The difference was less dramatic for Asian/Pacific Islanders (2.9 minutes) and Hispanics (1.8 minutes). These observed variances in travel times between groups raises the question of the role of income in explaining racial/ethnic variation in travel behavior. Since travel times have long been shown to be positively correlated with income (Hu and Young, 1993), much of the observed differences in travel time may be income driven.

Figure 4 compares male and female travel times by race/ethnicity and household type for all trips. As we would expect, male and female travel times for single adult households were more similar than for the other household types. Among single parents, however, the average trip duration for single mothers is both higher than for women in any other group and is 1.2 minutes longer than the average trip duration for single fathers (female headed, single adult households vs. male headed, single adult households), indicating higher levels of non-work travel among single mothers than among single fathers.

Figure 3
Journey-To-Work Times By Gender, Ethnicity, and Household Type

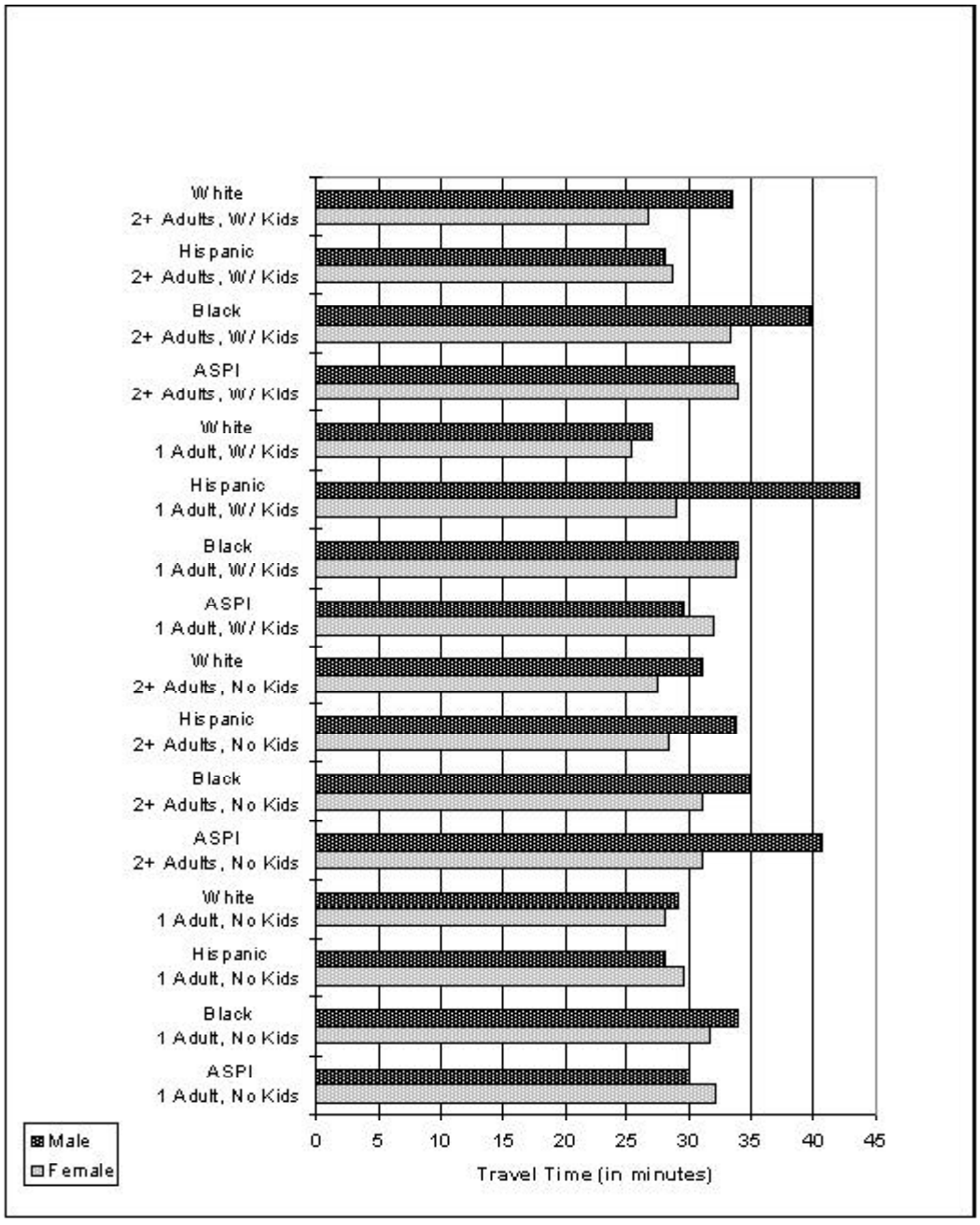
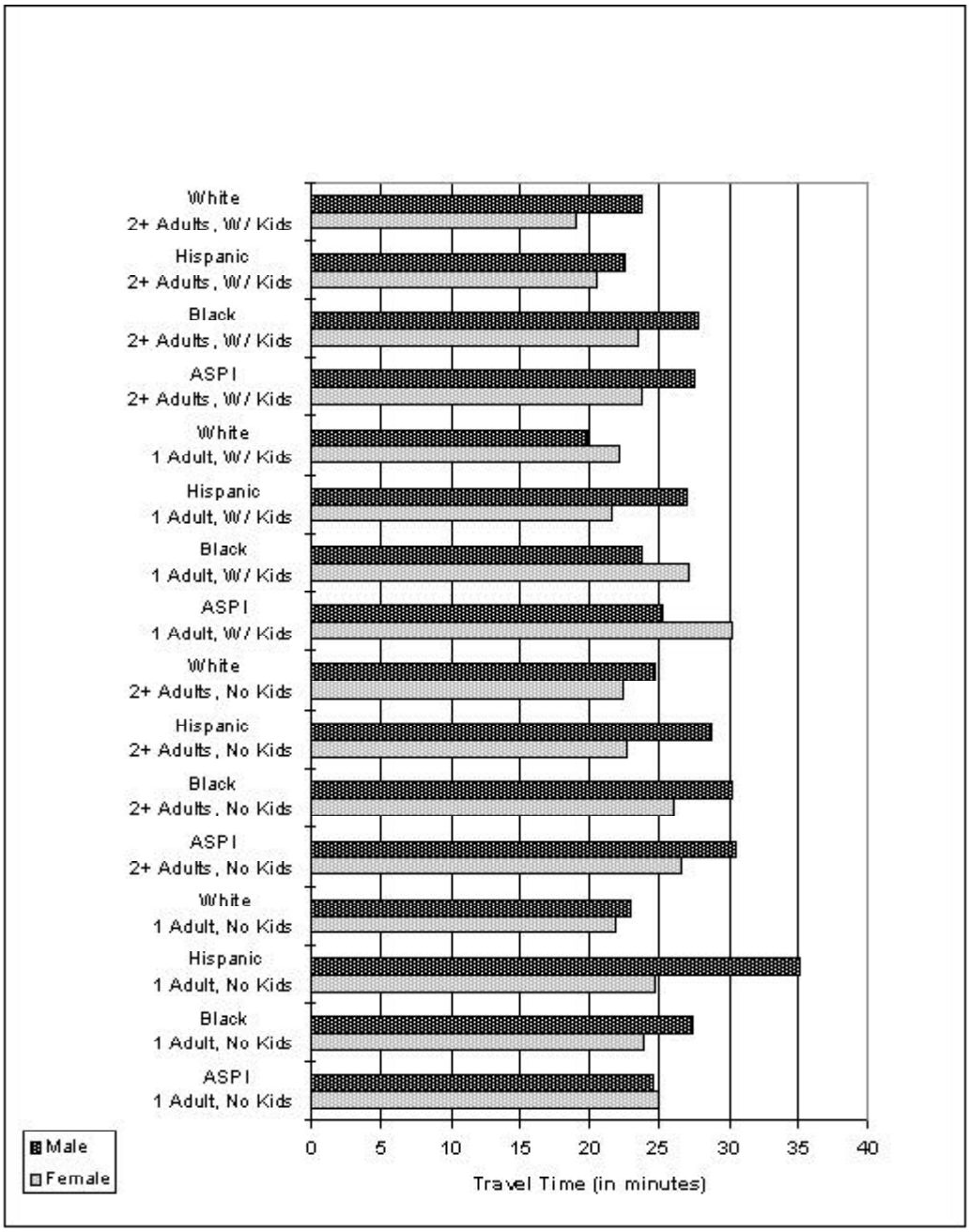


Figure 4
Travel Times For All Trip Types By Gender, Ethnicity, and Household Type



HOUSEHOLD-SERVING TRAVEL: THE EFFECT OF CHILDREN

While the gender variation in travel patterns is clear, the causes of this variation are less so. As noted earlier, a variety of explanations have been posited for why women tend to work closer to home and make shorter trips in general. And shorter commutes, in turn, have been used to explain the lower average wages of women relative to men. In the labor market, a number of studies have argued that lower average levels of human capital (education and work experience) and workplace discrimination combine to depress women's wages, while at home an unequal division of household responsibilities pushes women into lower paying jobs closer to home (Becker 1964, 1985; Mincer and Polachek 1974; Reskin and Hartmann 1986).

To examine this tension between household and workplace responsibilities, we compare the household-serving tripmaking of men and women in three separate analyses below: first with respect to overall child-serving travel; second, with child-serving travel as part of the journey-to-work; and finally with grocery shopping patterns in the household. As we would expect, in each case we find significant gender variation in household serving travel, that is, women do far more household serving travel than men on average. Though we do observe substantial variation in these patterns by household income and race/ethnicity. The gender variation in child-serving travel tends to be negatively correlated with income; women do a much higher proportion of child serving travel in the lowest income households. Further, gender variation in child serving travel tends to be lowest among Asian/Pacific Islanders and highest among Hispanics and whites. In simultaneously modeling the effects of a wide variety of factors on the propensity to make child serving stops, however, gender proves to be far more important in determining child serving travel than any other social, demographic, or economic factors. Finally, we observe higher grocery shopping trip rates for women in all household types, including in single households with no children present.

In this analysis we examine adults making child chauffeuring trips by gender, race/ethnicity of the traveler, household structure, and household income (in income quartiles). As we would expect, households without children tend to make very few trips with child serving destinations. However, even in households without children, women averaged over 1.7 times as many child serving trips as men.

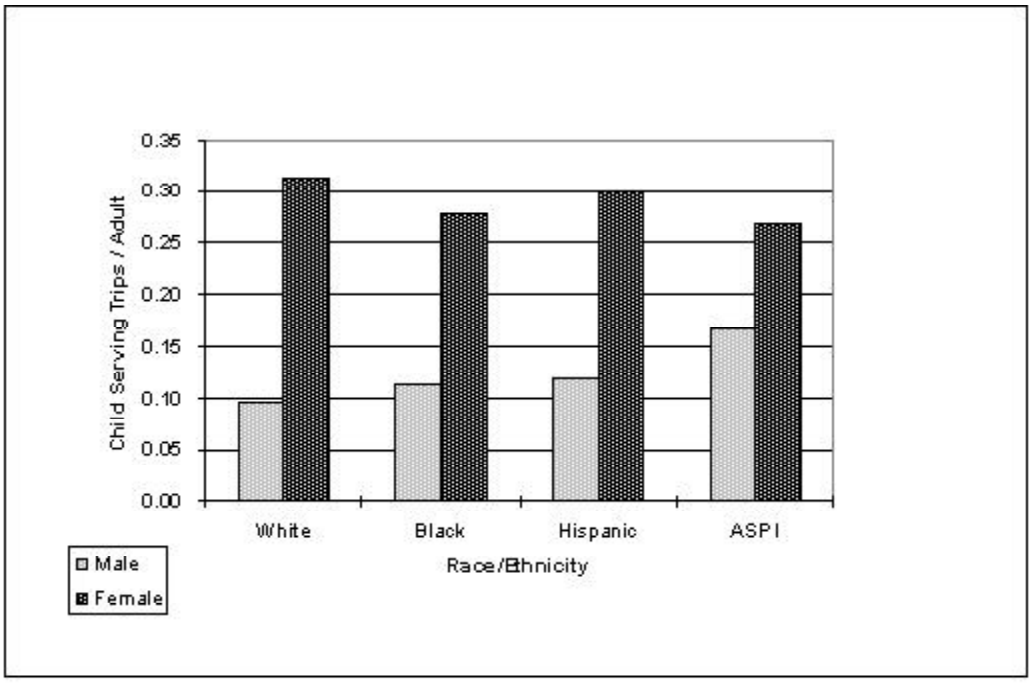
Table 7 shows who is making the child serving trips, by household structure and gender (in percent), and Figure 5 displays daily child serving trips by gender and household. While we would expect differences in child chauffeuring in dual parent households, we did not expect to find much difference between men and women in single parent households, as the single parent assumes full child chauffeuring responsibilities for their children regardless of gender.[1] Instead, we observed striking differences between male- and female-headed single parent households. Eighteen percent of all single mothers averaged two or more child chauffeuring trips per day. Only 8.2 percent of the single fathers averaged two or more child serving trips per day. Overall, single mothers made 2.33 child serving trips for every child chauffeuring trip made by single fathers. In two-or-more adult households with children (dual parent households) the differences were even greater, adult women made 2.9 child chauffeuring trips for every one made by an adult male. Overall, adult women made 2.8 times as many child chauffeuring trips as adult men. The gender difference in child-serving trips among male and female single parents may be explained in part by the higher average incomes in male-headed single-parent households; single fathers may be better able to "buy out" of many child-serving trips (with sitters, children's taxis, and the like) than single mothers.

Table 7

Household Type	Female 1 Trip		Male 1 Trip	Male 2+Trips	Trip Ratio
One+ Adults,	0.7 %	1.3 %		0.8 %	1.74 **
With Children	6.5 %		4.5 %	8.2 %	
Two+ Adults, With Children		18.8 %	6.2 %		2.90 **
Total		8.9 %	2.9 %		2.82 **

* Significant at the 0.05 level

Figure 5
Daily Child Serving Trips Per Adult By Race/Ethnicity



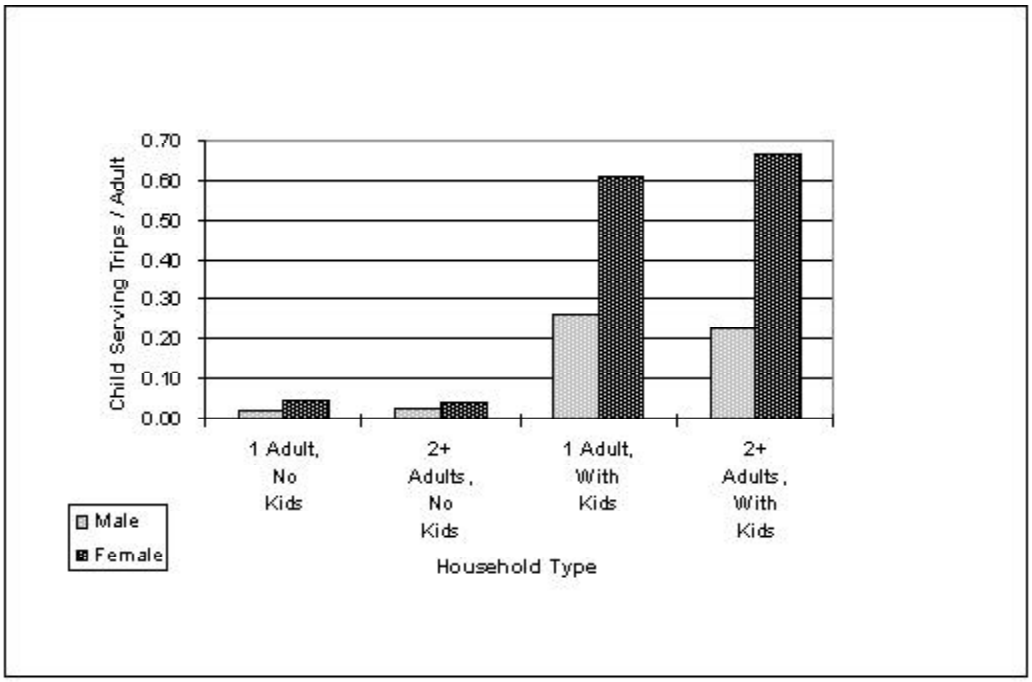
Pacific Islander men made the more child serving trips (0.17 trips/day) than any other group of men, both in absolute and relative terms. White men made fewer child serving trips than any other male

day), male or female. Table 8 lists who made child serving trips by gender and race/ethnicity, and Figure 6 displays the average number of child serving trips per day by the same categories.

Table 8
Adults Making Child Serving Trips By Race/Ethnicity and Gender (in Percent)

Race / Ethnicity	Female 1 Trip	Female 2+Trips	Male 1 Trip	Male 2+Trips	Female/Male Trip Ratio
ASPI	2.0 %	8.4 %	3.0 %	5.5 %	1.60 **
Black	4.1 %	7.5 %	3.4 %	3.2 %	2.46 **
Hispanic	4.0 %	9.3 %	3.3 %	3.3 %	2.53 **
White	3.5 %	9.2 %	2.7 %	2.8 %	3.23 **
Total	3.4 %	8.9 %	2.9 %	3.3 %	2.82 **

* Significant at the 0.05 level
** Significant at the 0.01 level



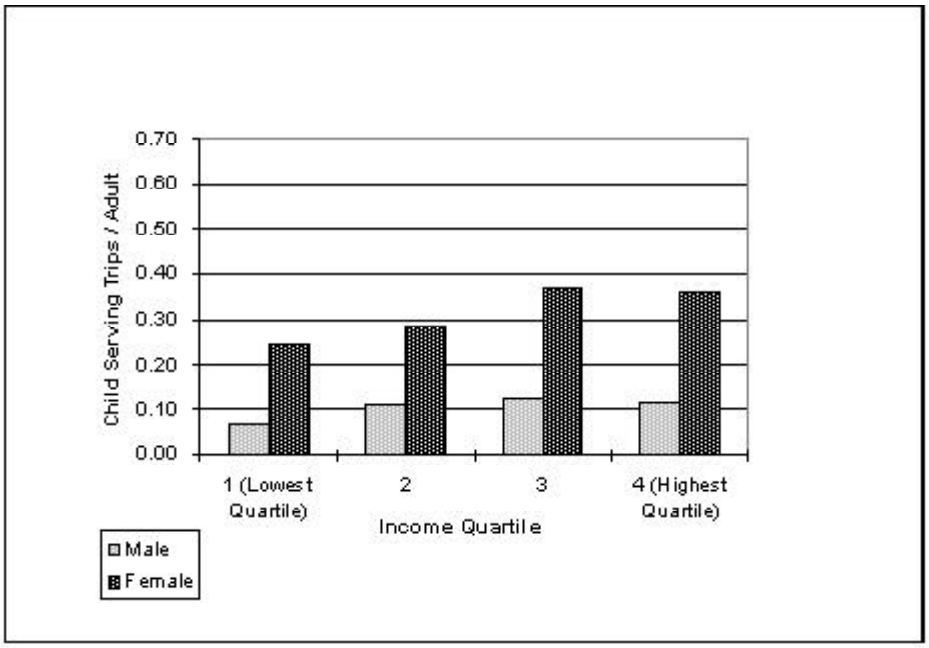
trips as men. In the highest income quartile, women averaged 3.2 times as many child serving trips as men. On average, women made about 2.8 times as many child chauffeuring trips as men. Table 9 lists the findings by gender and household income. Figure 7 displays the daily average child chauffeuring trip rates by gender and household income.

Table 9
Adults Making Child Serving Trips By Income Quartile and Gender (In Percent)

Income Quartile	Female 1 Trip	Female 2+Trips	Male 1 Trip	Male 2+Trips	Female/Male Trip Ratio
1 (Lowest quartile)	2.1 %	5.7 %	1.5 %	2.2 %	3.78 **
2	3.0 %	8.7 %	2.1 %	3.6 %	2.60 **
3	3.9 %	10.7 %	3.6 %	3.8 %	2.99 **
4 (Highest Quartile)	4.4 %	10.1 %	4.1 %	2.9 %	3.20 **
Total	3.4 %	8.9 %	2.9 %	3.3 %	2.82 **

* Significant at the 0.05 level
** Significant at the 0.01 level

Figure 7
Daily Child Serving Trips Per Adult By Household Income



CHILD-SERVING TRAVEL AND THE JOURNEY-TO-WORK

As noted earlier, a number of scholars have asserted that women assume a larger portion of household and child serving responsibilities and that this additional household responsibility constrains women's travels (Hanson and Pratt 1990; Rosenbloom and Burns 1993). The findings from our earlier analysis of mean travel times is quite consistent with this theory. To look at the interaction between travel behavior, work location choice, and the division of labor in the home, child care stops and child serving stops made as part of the work commute were analyzed. The MTC trip diary recorded information on both child care stops and child serving stops. For our purposes, the child care stop and child serving stop data were combined, and any child care stop or child serving stop is referred to as a child serving stop. The vast majority (over 96%) of the child care/serve stops were

made by persons who were commuting via the private auto and who reported having at least one passenger in their vehicle. Table 10 shows that the automobile is used in all but 1 percent of child serving commute trips, which helps to explain why increasing numbers of commuters, especially women, arrive at work in an automobile (Rosenbloom and Burns 1994).

Table 10
Journey-to-Work Trips With Child Serving Stops, By Mode of Travel

Travel Mode	H-W Trips No CS Stop	Percent	H-W Trips CS Stops	Percent
Drive Alone	23,876	99.9 %	32	0.1 %
Shared Ride	4,386	76.3 %	1,360	23.7 %
Transit [1]	3,305	99.7 %	11	0.3 %
Bicycle/Walk	1,319	99.3 %	10	0.7 %
All Modes	32,887	95.9 %	1,413	4.1 %

1 Transit Mode includes School Bus Passengers

With respect to child serving stops made during work commutes, gender differences were consistent with previous analyses. Women made over twice as many child serving stops per work trip as men. For women, 6.0% of all work commutes included a child serving stop, compared to only 2.7% for men. The largest variation was among Hispanics. On average, 6.3% of all work commutes made by Hispanic women included at least one child serving stop, compared to only 2.0% for Hispanic men. For Asians/Pacific Islanders, the difference was not statistically significant, and the lack of significance was not due to small sample size (Table 11).

Table 11
Journey-to-Work Trips With Child Serving Stops, By Race/Ethnicity and Gender
(Percent of Total H-W & W-H Trips)

Race / Ethnicity	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
ASPI	4.0 %	3.8 %	+0.2 %	1.05
Black	6.7 %	4.2 %	+2.5 % **	1.60
Hispanic	6.3 %	2.0 %	+4.3 % **	3.15
White	6.3 %	2.5 %	+3.8 % **	2.52
Total	6.0 %	2.7 %	+3.3 % **	2.22

* Significant at the 0.05 level
** Significant at the 0.01 level

As one would expect, household structure and child serving stop propensity are highly correlated. Three household type categories were used to define family structure: (1) all households without children, (2) single adult households with children, and (3) two plus adult households with children. The results show that, regardless of family structure, women tend to make over twice as many child serving stops per trip as men. Table 12 summarizes the results of the child serving stop analysis by gender for each of the three household categories.

Table 12
Journey-to-Work Trips With Child Serving Stops, By Family Unit and Gender
(percent of Total H-W & W-H Trips)

Household Type	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
Household, With No Children	0.6 %	0.5 %	+0.1 %	1.20
Single Adult, With Children	12.0 %	5.1 %	+6.9 % **	2.35
Two+ Adults, With Children	11.4 %	5.2 %	+6.2 % **	2.19

* Significant at the 0.05 level
** Significant at the 0.01 level

Analyzing gender differences in child serving travel while controlling for income revealed differences in child serving stops were more prominent for the lowest and the highest income groups. Women in low income households made over four times as many child serving stops (on their journey-to-work) as men in the same category. In this income group, women averaged 4.9 stops per 100 trips, whereas men averaged 1.1 stops per 100 trips (Table 13).

Table 13
Journey-to-Work Trips With Child Serving Stops, By Household Income and Gender
(Percent of Total H-W & W-H Trips)

Household Income Quartile	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
1 (Lowest Quartile)	4.9 %	1.1 %	+3.8 % **	4.45
2	5.6 %	3.0 %	+2.6 % **	2.15
3	6.3 %	2.9 %	+3.4 % **	2.17
4 (Highest Quartile)	6.6 %	2.9 %	+3.7 % **	2.28

* Significant at the 0.05 level
** Significant at the 0.01 level

The trends seen in earlier tables (that women combine child chauffeuring and their work commutes more often than men) were repeated when cross-tabulating child serving stops by gender, household income, and household structure. However, new trends were revealed: higher income two-or-more adult households tend to make more child serving stops than lower income two-or-more adult households. Like tripmaking in general, the overall number of child serving trips is positively correlated with income; children in higher income households are chauffeured to day care, piano lessons, the dentist, and soccer practice more frequently than lower income children.

It was initially hypothesized that the average number of child serving stops for male headed, single parent household would be similar to those of a female headed, single parent household. Except among the highest income single parent households, this is not the case. Overall, single mothers tended to make over twice as many child serving stops as single fathers. Twelve percent of single mothers (who made a journey-to-work trip) made child serving stops on their work commute, compared to 5.1 percent for single fathers. Table 14 also shows that low income single mothers are six times more likely to make a child serving stop on the journey to work than a low income single father. Interestingly, the male/female difference in child serving trips declines as income increases;

among the highest income quartile, there is almost no gender variation in child serving travel. This contrasts with the pattern in two-adult households, where higher female child serving trip rates hold across all income categories.

Table 14
Single Parent Households: Journey-to-Work Trips Child Serving Stops,
By Household Income and Gender (Percent of Total H-W & W-H Trips)

Household Income Quartile	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
1 (Lowest Quartile)	11.0 %	1.8 %	+9.2 % **	6.11
2	14.9 %	7.0 %	+7.9 % **	2.13
3	8.7 %	3.9 %	+4.8 % **	2.23
4 (Highest Quartile)	8.8 %	8.4 %	+0.4 %	1.05
All Sngl Prnt HH's	12.0 %	5.1 %	+6.9 % **	2.35

* Significant at the 0.05 level
** Significant at the 0.01 level

Table 15
Dual Parent Households: Journey-to-Work Trips With Child Serving Stops,
By Household Income and Gender (Percent of Total H-W & W-H Trips)

Household Income Quartile	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
1 (Lowest Quartile)	8.4 %	2.1 %	+6.3 % **	4.00
2	10.7 %	5.9 %	+4.8 % **	1.81
3	11.6 %	5.0 %	+6.6 % **	1.76
4 (Highest Quartile)	13.1 %	5.5 %	+7.6 % **	2.38
All Dble Prnt HH's	11.4 %	5.2 %	+6.2 % **	2.19

* Significant at the 0.05 level
** Significant at the 0.01 level

Turning to racial/ethnic patterns in child serving travel propensity, child serving stops on the journey-to-work are summarized in Table 16 for single parent households and Table 17 for dual parent households. Here we see pronounced gender differences in child serving travel during the journey-to-work in all but single parent Hispanic households (though the observed female to male tripmaking ratio is 1.72) and dual parent Asian/Pacific Islander households (where there is no observed difference between men and women).

Table 16
Single Parent Households: Journey-to-Work Trips With Child Serving Stops,
By Race/Ethnicity and Gender (Percent of Total H-W & W-H Trips)

Race / Ethnicity	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
ASPI	14.3 %	4.2 %	+10.1 % *	3.40
Black	9.8 %	2.8 %	+7.0 % *	3.50
Hispanic	8.6 %	5.0 %	+3.6 %	1.72
White	13.8 %	5.9 %	+7.9 % **	2.34
All Sngl Prnt HH's	12.0 %	5.1 %	+6.9 % **	2.35

* Significant at the 0.05 level
** Significant at the 0.01 level

Table 17
Dual Parent Households: Journey-to-Work Trips With Child Serving Stops,
By Race, Ethnicity and Gender (Percent of Total H-W & W-H Trips)

Race / Ethnicity	Female CS Stops	Male CS Stops	Difference (F-M)	Ratio: F/M CS Stops
ASPI	6.6 %	6.6 %	+0.0 %	0.00
Black	14.0 %	8.9 %	+5.1 % **	1.57
Hispanic	8.6 %	2.4 %	+6.2 % **	3.58
White	13.8 %	5.2 %	+8.6 % **	2.65
All Dble Prnt HH's	11.4 %	5.2 %	+6.2 % **	2.19

* Significant at the 0.05 level
** Significant at the 0.01 level

Regardless of how the work commute trips were subdivided, gender differences in child serving stop propensity remained significant, with few exceptions. This difference persists even when controlling for race/ethnicity, household type (family structure), income, and mode of travel. To simultaneously control for all of the household demographic and socioeconomic factors in the data, a set of binary logistic regression models were constructed to determine which socioeconomic factors have the most influence on a person's likelihood to make a child serving stop on their home-work commute. Since almost all, or more accurately, since 98.5% of all child serving stops are made by persons traveling by auto mode, the modeling analysis was limited to home-work trips via auto mode to eliminate the consideration of irrelevant alternatives in the model. Table 18 lists the twenty-seven independent variables tested for inclusion in the models.

Table 18
Independent Variables Analyzed in Model Formulation

Unit	Definition
Person	Age of respondent
Person	Age >= 21: (y=1, n=0)
Person	Ethnicity of respondent: (white? y=1, n=0)
Person	Valid drivers license: (y=1, n=0)
Person	Sex: (f=1, m=0)
Household	Total adults in household
Household	Female adults in household
Household	Male adults in household
Household	Workers in household
Household	Female workers in household
Household	Male workers in household
Household	Persons with valid drivers license in household
Household	Females with drivers license in household
Household	Males with drivers license in household
Household	Persons in household
Household	Kids, 0 to 15 age group in household
Household	Kids, 16 to 21 age group in household
Household	Income per household
Household	Income per household squared
Household	Income per household member
Household	Number of vehicles in household
Household	Vehicles per household
Census Tract	Area density code
Census Tract	Gross residential density
Census Tract	Gross employment density
Census Tract	Gross population density
H-W Trip	H-W travel time (in minutes)

sity of a commuter to make a child-serving stop; ten variables were retained in the model at a 0.05 significance level (Table 19). The stepwise process was then repeated at a higher significance level

Table 19

Modeling Event: Child Serving Stop Modeling Occurrence: Home-Work Trips via Auto Mode
tion Method: STEPWISE Significance Level For Model Selection: 0.05

Variable	Parameter Estimate	Chi Sq.	Prob. Chi Sq.	Odds Ratio
intercept	-1.3650	18.41	0.0001	
kid0_15	1.0363	116.54	0.0001	2.819
incvali	0.000042	100.22	0.0001	1.000
inc2pers	-0.00012	76.30	0.0001	1.000
hhsize	-0.8655	63.53	0.0001	0.421
sex	0.8749	54.59	0.0001	2.399
hwtime	0.00629	20.33	0.0001	1.006
fworker	0.4374	10.78	0.0010	1.549
vehicles	-0.1836	8.11	0.0044	0.832
fdriver	-0.3935	7.54	0.0060	0.675

Association of Predicted Probabilities and Observed Responses

Concordant	= 82.7%	Somers' D	= 0.662
Discordant	= 16.5%	Gamma	= 0.667
Tied	= 0.7%	Tau-a	= 0.066
		c	= 0.831

Table 20

Modeling Event: Child Serving Stop Modeling Occurrence: Home-Work Trips via Auto Mode
Selection Method: STEPWISE Significance Level For Model Selection: 0.00001

Variable	Parameter Estimate	Chi Sq.	Prob. Chi Sq.	Odds Ratio
intercept	-3.5754	440.36	0.0001 .	
kid0_15	1.0818	186.26	0.0001	2.950
sex	0.9839	87.00	0.0001	2.675
hhsize	-0.3224	25.38	0.0001	0.724
hwtime	0.00531	17.22	0.0001	1.005

Association of Predicted Probabilities and Observed Responses

Concordant	= 79.8%	Somers' D	= 0.606
Discordant	= 19.1%	Gamma	= 0.613
Tied	= 1.1%	Tau-a	= 0.061
		c	= 0.803

Table 20 shows that reducing the model to just four independent variables did little to reduce its explanatory power. The positive parameter estimate for KID0_15 indicates that the presence of children in the 0 to 15 age group residing in the household increase the likelihood of the adult worker making a child serving stop along their work commute. Furthermore, if the number of children in this age group in the household increases, then so does the likelihood of making child serving stops. The positive parameter estimate for the SEX variable (coded 0=male, 1=female) indicates that women are substantially more likely to make child serving stops on their journey-to-work than men. Thus, the model confirms that women are more likely to make child serving stops, even when simultaneously controlling for a number of other socioeconomic and demographic factors. The likelihood of making a child serving stop increases with journey-to-work travel time as indicated by the positive parameter estimate on HWTIME. The negative parameter estimate for HHSIZE indicates that as household size increases, so does the likelihood that other persons can help share the child chauffeuring responsibilities.

We also applied a second approach to modeling the propensity for child serving travel as part of the journey-to-work. This approach centered more on defining all persons in the household, except the person making the home-work trip in question. The household variables were re-coded as to not include the person making the home-to-work trip. For example, if an adult woman living alone reported making a home-work trip, then the number of adult females in the household were set to zero (and not set to one as was done in previous models) because there were zero adult females in the household in addition to the woman making the trip under study. This was done to measure the effects of any other people in the household on a given individual's probability of making a child serving stop. Using this concept of shared responsibility among cohabitors, and re-coding the number-of-person variables for the household as to not include the person making the trip in question, the models were rerun. Table 21 lists the parameter estimates and model statistics with recoded variables at the 0.05 significance level, and Table 22 lists the same for the 0.01 significance level.

Table 21

Modeling Event: Child Serving Stop Modeling Occurrence: Home-Work Trips via Auto Mode Selection Method: STEPWISE Significance Level For Model Selection: 0.05

Variable	Parameter Estimate	Chi Sq.	Prob. Chi Sq.	Odds Ratio
intercept	-4.4951	284.75	0.0001 .	
kid0_15	0.7901	345.89	0.0001	2.204
sex	0.9669	80.50	0.0001	2.630
hhadult	-0.4340	15.67	0.0001	0.648
vehicles	-0.2447	14.70	0.0001	0.783
hwtime	0.00520	11.58	0.0007	1.005
incvali	0.00023	10.20	0.0014	1.000
incvisqr	-111E-12	5.42	0.0200	1.000
gpopd	-0.0123	4.54	0.0332	0.988
hhworker	0.2254	4.46	0.0347	1.253

Association of Predicted Probabilities and Observed Responses

Concordant	= 80.7%	Somers' D	= 0.622
Discordant	= 18.4%	Gamma	= 0.628
Tied	= 0.9%	Tau-a	= 0.064
		c	= 0.811

Table 22
Modeling Event: Child Serving Stop Modeling Occurrence: Home-Work Trips via

Variable	Parameter Estimate		Prob. Chi Sq.	Odds Ratio
	-3.9224	914.71	.	
kid0_15		342.75	0.0001	
sex	0.9926		0.0001	2.698
	-0.3434	19.86		0.709
hwtime		16.38	0.0001	

Association of Predicted Probabilities and Observed Responses

Concordant		Somers' D	= 0.608
	= 19.0%	Gamma	
Tied	= 1.2%		= 0.062
		c	

As was seen in the original models, KID0_15 was the most significant variable, followed by SEX. With recoded variables, HHADULT was the third most significant factor, and its' negative parameter

given adult will make child serving stops along their work commute, as these duties can be distributed or shared among a larger group of adults. Again, HWTIME's positive parameter estimate shows that

Regardless of the modeling approach used, however, the model results are consistent and robust: other than the presence of children in the household, gender is by far the most important factor in

other social, spatial, and economic factors.

GROCERY SHOPPING AND HOUSEHOLD TRAVEL

to other forms of household serving travel. In this analysis we examine grocery shopping travel as a proxy for non-child-serving household travel. As was observed in child serving trips, gender differ-

dual parent households) and the least significant for single adult households without children (i.e. people living alone). But even though gender differences are less pronounced in single occupant

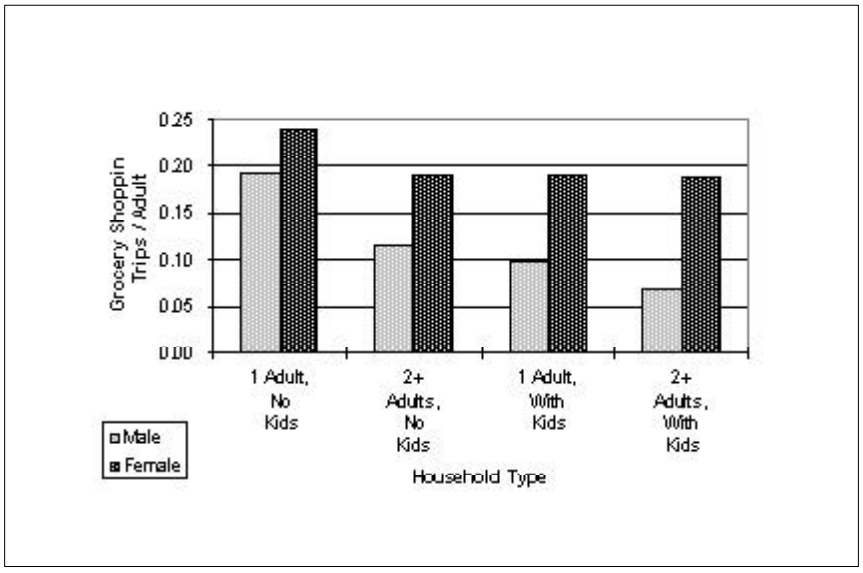
many grocery shopping trips as adult men living alone, revealing gendered travel patterns that cannot be accounted for entirely by the division of labor in the household (Table 23).

Table 23
Adults Making Grocery Shopping Trips By Household Type and Gender (in Percent)

Household Type	Female 1 Trip	Female 2+Trips	Male 1 Trip	Male 2+Trips	Female/Male Trip Ratio
Single Adult, No Children	19.6 %	1.8 %	14.7 %	1.9 %	1.27 **
Two+ Adults, No Children	14.9 %	1.7 %	9.3 %	0.9 %	1.66 **
Single Adult, With Children	16.5 %	1.0 %	9.3 %	0.0 %	1.96 **
Two+ Adults, With Children	14.3%	1.6 %	6.0 %	0.4 %	2.73 **
Total	15.4 %	1.6 %	8.7 %	0.8 %	1.83 **

* Significant at the 0.05 level
** Significant at the 0.01 level

Figure 8
Daily Grocery Shopping Trips Per Adult By Household Type



As individuals combine to create two-or-more adult households, the overall number of grocery shopping trips increases because the household size is increasing. The total number of grocery shopping trips per person, however, decreases because there are economies of scale for grocery shopping trips with respect to household size. These lower per person rates of grocery shopping trips in two-or-more person households, however, vary significantly by gender. Women who live alone make 1.27 times as many grocery shopping trips on average as comparable men, while women in two-or-more adult households without children make 1.66 times as many grocery shopping trips as comparable men. It would appear, therefore, that women assume a disproportionate share of household-serving travel responsibilities. This trend deepens when children are part of the household.

In two-or-more adult households with children, women averaged 2.73 times as many grocery shopping trips as men. Thus, even though gender differences in household-serving travel increase as people move through the life cycle and form families, the differences between men and women in shopping trip rates in single households indicate that there exist behavioral differences in travel before families are formed.

Analyzing household serving travel while controlling for race/ethnicity and gender, reveals trends similar to those found in the child serving travel analysis. For example, white women make more grocery shopping trips than any other group (0.22 trips/day), and the difference between the sexes was the most significant for whites, and the least significant for Asians/Pacific Islanders. While these patterns are similar to the earlier analysis, the observed gender differences were less dramatic for grocery shopping. White women made 1.86 times more grocery shopping trips than white men, whereas Asian/Pacific Islander women made 1.63 times as many grocery shopping trips as ASPI men.

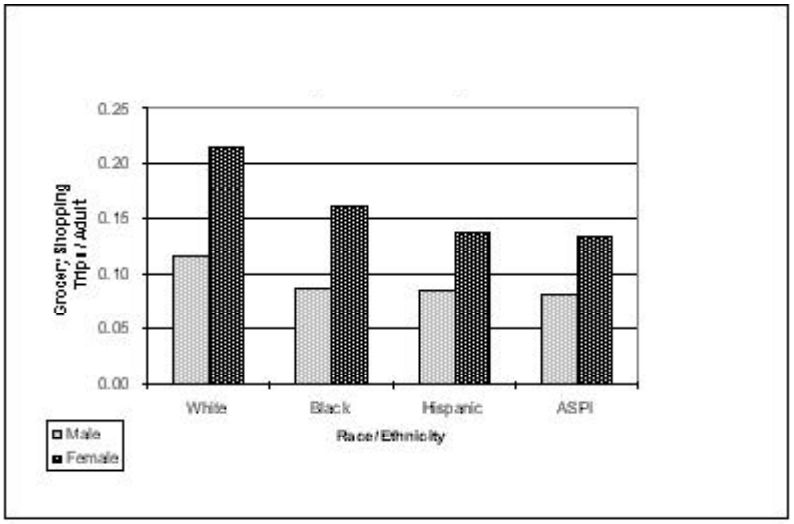
Other findings with respect to shopping are less patterned. For example, white men made fewer child serving trips than any other group, but Hispanic and black men made the least grocery shopping trips (averaging only 0.08 trips/day). Table 24 lists grocery shopping trips by gender and race/ethnicity, and Figure 9 shows the average number of daily grocery shopping trips for each of the race/ethnic groups by gender.

Table 24
Adults Making Grocery Shopping Trips By Race/Ethnicity and Gender (in Percent)

Race / Ethnicity	Female 1 Trip	Female 2+Trips	Male 1 Trip	Male 2+Trips	Female/Male Trip Ratio
ASPI	11.3 %	1.0 %	7.7 %	0.2 %	1.63 **
Black	13.1 %	1.4 %	7.5 %	0.6 %	1.85 **
Hispanic	11.9 %	0.9 %	6.9 %	0.7 %	1.63 **
White	17.4 %	1.9 %	9.5 %	1.0 %	1.86 **
Total	15.4 %	1.6 %	8.7 %	0.8 %	1.83 **

* Significant at the 0.05 level
** Significant at the 0.01 level

Figure 9
Daily Grocery Shopping Trips Per Adult By Race/Ethnicity



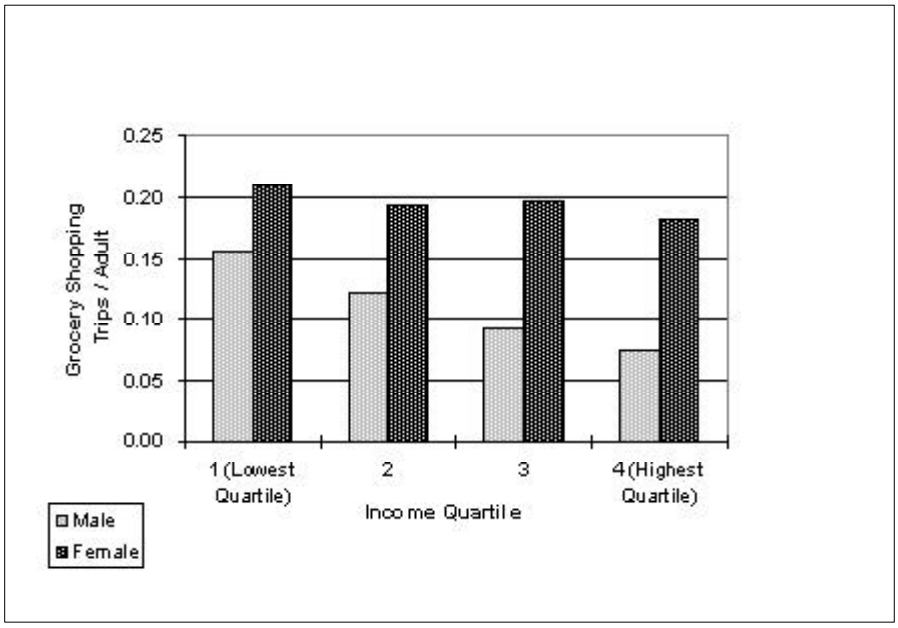
When controlling for income, gender differences increased with income for all income quartiles. In the lowest income quartile, women made 1.35 as many shopping trips as men. Women in the highest income quartile made 2.47 times as many shopping trips as men. Table 25 lists grocery shopping trips by gender and household income. Figure 10 shows average daily grocery shopping trip rates by the same categories.

Table 25
Adults Making Grocery Shopping Trips By Income Quartile and Gender (in Percent)

Income Quartile	Female 1 Trip	Female 2+Trips	Male 1 Trip	Male 2+Trips	Female/Male Trip Ratio
1 (Low Quartile)	16.6 %	1.6 %	11.3 %	1.7 %	1.35 **
2	14.9 %	1.7 %	10.0 %	0.8 %	1.60 **
3	15.3 %	1.7 %	7.7 %	0.7 %	2.13 **
4 (High Quartile)	15.0 %	1.4 %	6.5 %	0.3 %	2.47 **
Total	15.4 %	1.6 %	8.7 %	0.8 %	1.83 **

* Significant at the 0.05 level
** Significant at the 0.01 level

Figure 10
Daily Grocery Shopping Trips Per Adult By Household Income



The patterns revealed in this analysis of grocery shopping travel are important in a number of respects. First, the unequal division of household serving travel is not limited to travel related to child rearing, but appears to extend to all forms of household serving travel. Second, there appears to be less racial/ethnic variation in the gender division of grocery shopping travel than was observed for child serving travel. Third, and in contrast to the patterns observed for child serving travel, the gender division of shopping trips increases as income increases. Finally, and perhaps most interestingly, women appear to make more grocery shopping trips irrespective of household structure, though the variation between men and women appears to increase as couples move through the life cycle. Studies of occupational sex segregation have found that socialization and self-selection can contribute to persistence of lower-pay, lower-status, female-dominated occupations (Marini and Brinton 1984). The patterns of grocery shopping travel observed here suggest patterns of gender socialization may prefigure and steer subsequent decisions regarding the household division of labor.

CONCLUSION

The analysis uses detailed trip diary data from a 1990 survey of San Francisco Bay Area residents to examine the effects of race/ethnicity, income, and household structure on the differences in commuting and household-serving travel among men and women. With respect to travel behavioral differences between men and women, the findings here are largely consistent with previously published findings; namely, that women do more child chauffeuring and make more household serving trips than men. This analysis further reveals that these gender differences hold both in commuting behavior and household-serving travel and that they vary significantly by race and ethnicity in addition income and household structure. Specifically:

- Women tend to make shorter trips than men, regardless of trip purpose or travel mode;
- Almost all child serving travel (99 percent) is made via private vehicles;

- Controlling for an array of social, spatial, and economic factors, gender proved to be, by far, the most important factor in predicting the propensity to make child serving stops (other than the presence of children in the household).
- With respect to race and ethnicity:
- The difference in journey-to-work travel times is higher among whites (4.5 minutes) than non-whites, and lowest among Hispanics (1.8 minutes);
- In contrast, the gender differences in average travel time for all trips does not vary much by race or ethnicity;
- The gender variation in child serving trips was lowest among Asian/Pacific Islanders (women are 60 percent more likely to make such trips) and highest among whites (women are 223 percent more likely to make such trips);
- The gender variation in child serving trips during the journey-to-work is relatively low among Asian/Pacific Islanders (about 5 percent difference), higher among blacks (60 percent difference) and whites (152 percent difference), and highest among Hispanics (215 percent difference); and
- With respect to shopping, in contrast to child serving travel, women make about 75 percent more grocery trips than men regardless of race or ethnicity.
- With respect to household income:
- Gender variation in overall child-serving travel is greatest among the lowest (278 percent difference) and highest (220 percent difference) income quartiles, and least among the middle income quartiles (160 and 199 percent difference);
- Gender variation in child serving stops during the journey-to-work is by far the highest in the lowest income households (345 percent difference) and about the same for all other income groups (120 percent difference), and these patterns hold across household type;
- In contrast, the gender variation in grocery shopping tripmaking is least in low-income households (35 percent difference) and greatest in high-income households (147 percent difference).
- With respect to household structure:
- Journey-to-work travel times are about equal for men and women living alone, but are lower for women in households with two or more adults or when children are present;
- Regardless of household type, women make a substantially higher proportion of child serving stops, even among households with no children present;
- Women make more grocery shopping trips on average than men, even among adults living alone (27 percent more); and
- The gender variation in grocery shopping trips is greater in two plus adult households (66 percent difference) than in single households (27 percent), greater still in single parent households (96 percent), and greatest in two plus adult households with children (173 percent).

The findings here are consistent and robust suggesting that an array of social and economic factors work in concert to differentiate the travel behavior of men and women. Women living in low-income households, on average, assume a greater share of child chauffeuring responsibilities than women living in higher income households. White and Hispanic women, on average, make a higher proportion of child serving trips relative to men than blacks or, especially, Asian/Pacific Islanders. The difference in grocery shopping trips between men and women increases with the presence of other adults and/or children in the household. While women have joined the paid labor force in record numbers, travel in support of households—to chauffeur children and to shop—remains disproportionately burdened by women.

We conclude that women's household-serving travel patterns appear to be a function of both socialization and the sexual division of household responsibilities. We see evidence of socialization in the grocery shopping patterns observed in single adult households with no children, where women living alone make 1.27 grocery shopping trips for each grocery shopping trip made by a man living alone. And we find evidence of the sexual division of household labor in the increasing burden of household-serving travel at each stage in the life cycle and robustness of the gender variable in multivariate models of child-serving travel.

For journeys-to-work, the models presented here show that the probability of making child serving stop is proportional to travel time. That is, controlling for all other factors in the model, a person making a longer commute will have a higher likelihood of making a child serving stop than a person traveling a lesser distance. However, controlling for all other factors, women tend to make shorter trips than men. This includes the work commute. And yet on average, women make about twice as many child serving stops as men do. This paradox is likely explained by social and economic pressures that support women's continued, disproportionate role household maintenance. A role that translates into more trips to child care, more trips to soccer practice, more trips to the grocery store, more trip-chaining, and less separation between home and work for working women.

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NOTE

[1] While increasing in number and proportion, male-headed single-parent households remain relatively rare. The MTC travel survey oversampled single parent households and collected data on 568 male-headed single parent households and does permit a statistically valid comparison the travel behavior in female-headed single-parent households with that in (admittedly rare) male-headed single-parent households.