

Redefining Conventional Wisdom
*Exploration of Automobile Ownership and Travel Behavior in the
United States*

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INTRODUCTION

It is generally thought that primarily the poor have owned vehicles generating higher emissions (i.e., older vehicles) (Rosenbloom and Burns 1993a; 1993b). However, the recent popularity of sport utility vehicles and light-duty trucks (as evidenced by the increased in annual fleet sales from 10 to 15 percent of the fleet in 1975 to 63 percent in 1993) has dramatically changed the composition of the U.S. fleet. Recent trends show that sport utility vehicles, mini-vans, and light-duty trucks (SUV-VTs) are progressively replacing passenger vehicles in the fleet. SUV-VTs now represent over half of all new personal automobile purchases (Bradsher, 1999).

The change in vehicle fleet composition raises several interesting questions. For instance, who are the primary drivers of these vehicles and for what types of trips are they being used? Anecdotal evidence suggests that SUV-VTs are used primarily for suburban driving, by parents taking children to an assortment of recreation activities. There are questions of equity associated with use of SUV-VTs. These revolve around such issues as assigning vehicle emissions to those producing the emissions, increased energy consumption, and the appropriateness of the CAFÉ standards.

In this paper we use data from the 1995 Nationwide Personal Transportation Survey (NPTS) database to analyze the current fleet with respect to who are driving the vehicles, what types of trips are the vehicles being used for, and where the primary accumulation of vehicle miles of travel (VMT) is occurring. Specifically, we explore three hypotheses. In the first, we hypothesize that relatively wealthy Americans are potentially responsible for a greater share of mobile source emissions and that certain proportions of VMT accumulation are related to gender differences. This implies that we expect to find households with higher incomes owning a disproportionate share of vehicles with low fuel efficiencies and/or higher emissions.

In our second hypothesis, we propose that a disproportionate share of SUV-VT travel is occurring in the suburbs and 2nd cities as opposed to the urban areas. As part of this

examination, we explore how trip-making activities vary between the suburbs/2nd cities and urban areas, controlling for vehicle type and a variety of other factors, such as gender. An extensive body of research has identified gender as an important predictor of travel patterns. Among the major findings are that employed women tend to have shorter commute-to-work distances and times than employed men (e.g., Blumen, 1994; Hanson and Johnston, 1985; Hanson and Pratt, 1990); women tend to spend more time in household and family support activities (Hanson and Hanson, 1980) and make more household and family support trips (Hanson and Hanson, 1980; Hanson and Johnston, 1985; Rosenbloom, 1987); and women make fewer recreational trips (e.g., Hanson and Johnston, 1985). Little is known about the vehicles women use to conduct these activities.

Finally, for our third hypothesis we expect to find that SUV-VTs are used very similarly to passenger vehicles. For over 20 years, SUV-VT class vehicles have enjoyed exemption from the CAFÉ standards. The exclusion was justified on the basis that the vehicles were mainly used by small businesses for tasks such as transporting building materials on construction sites, which are directly related to livelihood. Since that time, clean air regulations have continuously allowed SUV-VT tailpipe emissions to be much higher on a per mile basis than those from passenger cars (Bradsher, 1999)

We have organized the paper around these three central hypotheses, exploring each in turn. At the conclusion of the paper, we offer a summary of our major findings as well as a brief commentary on the major policy issues.

WHO IS DRIVING WHAT VEHICLE WHERE?

In this section we examine each of our hypotheses. We begin the analysis by dividing vehicles into three categories:

1. Standard passenger vehicles;
2. SUVs, vans, and light duty trucks; and
3. Pre-1981 vehicles.

The categories were established to reflect the predominant categories associated with varying emissions contributions. We then analyzed travel patterns with respect to location, vehicle type, sex, and various other factors. We have organized annual household income into three major categories: under \$15,000, between \$15,000 and \$35,000, and over \$35,000. These categories were chosen in part because of previous work in poverty (Speare and Rendall, 1990) and the general agreement on definitions of “working poor” and “middle class.”

Income, Gender, and Vehicle Type

We begin our analysis by exploring our first hypothesis regarding the characteristics of those owning SUV-VTs relative to those individuals owning pre-1981 and standard passenger vehicles. These distinctions between passenger cars held to current CAFE standards and the unregulated emitters are important when considering which demographic groups will be most effected by any emissions reducing policies targeted at currently unregulated vehicles. For this analysis we consider “unregulated emitters” to

TABLE 1 Vehicle Ownership by Income

	Passenger Vehicle		SUV-VT		Pre-1981		Total %
	Row %	Col %	Row %	Col %	Row %	Col %	
<\$15,000	65.7	9.2	17.1	5.0	17.1	16.6	8.6
\$15,000–35,000	62.0	28.6	26.5	25.7	11.5	36.5	28.4
>\$35,000	61.1	62.2	32.2	69.2	6.7	47.0	63.0
Total %	61.8		29.3		8.9		

include both pre-1981 model year vehicles as well as the SUV-VTs. First we considered vehicle ownership by income and then by gender.

Table 1 illustrates the distribution of vehicle ownership between and within income groups. The column percents in Table 1 reflect the vehicle distribution between income groups, while the row percents reflect the distribution across vehicle types. Considering the between income distribution first, we can see that, not surprisingly, the highest income category owns the largest percent of vehicles within each vehicle category. The lowest income group owns the smallest percentage of all vehicles, varying between 5 percent and 16.6 percent.

From the row percents we can see the vehicle distribution within income group. Of the vehicles in the lowest income group, almost two-thirds (65.7 percent) are passenger vehicles, with the final third evenly divided between SUV-VT and pre-1981 vehicles (17.1 percent each). The lowest income group has the highest within-group percentages for both passenger vehicles and pre-1981 vehicles, indicating that these vehicles make up more of the fleet of the poorest group than any other income group. This seemingly supports the idea that the majority of the unregulated polluters on the road belong to the poor. However, Table 2 illustrates that this is not the case.

Table 2 begins to answer the question of who really owns these vehicles? Each cell in Table 2 represents an income group and vehicle category, illustrating the division of the total vehicle fleet between income group and vehicle type (the cells in Table 2 sum to 100 percent). We can see from the final column in Table 2 that pre-1981 vehicles, making up less than 10 percent of the total vehicle population and presumably contributing proportionally more vehicle emissions, are not owned primarily by the poor. Nor are the SUV-VTs (the other unregulated group), which are overwhelmingly owned by those making over \$35,000 a year.

Tables 1 and 2 suggests that while the poor own 8.6 percent of the total fleet, they own only 7.7 percent of the total sampled unregulated emitters. (The 7.7 percent reflects the ratio of the sum of the counts for SUV-VT and pre-1981 vehicles owned by those

TABLE 2 Percent of Total Sample Vehicle Fleet (by Cell)

	Passenger Vehicle	SUV-VT	Pre-1981
<\$15,000	5.7	1.5	1.5
\$15,000–35,000	17.6	7.5	3.3
>\$35,000	38.4	20.3	4.2

TABLE 3 Percent of Vehicle Ownership by Sex (by Cell)

	Passenger Vehicle		SUV-VT		Pre-1981		Total %	
	M	F	M	F	M	F	M	F
<\$15,000	1.9	3.8	1.0	0.5	0.9	0.6	3.9	4.9
\$15,000– 35,000	7.0	11.0	5.4	2.2	2.4	0.7	14.7	13.9
>\$35,000	17.0	21.7	13.2	7.0	3.0	0.7	33.3	29.4
Total	25.9	36.5	19.6	9.6	6.3	2.1	100	

households reporting less than \$15,000 to the total number of vehicles across income categories.) That is, if we consider only the unregulated emitters, the poor own 7.7 percent of these vehicles, which suggests that this groups owns fewer of these vehicles than might be expected.

In Table 3 we have added sex to illustrate the division of the total vehicle population between men and women in each income category (once again the cells add to 100 percent). As expected, the wealthiest income group owns the highest percentage of vehicles for both men and women. However, across income groups, women own a higher percentage of passenger vehicles than do men and a lower percentage of the SUV-VTs and pre-1981 vehicles. In fact, women consistently own less than half of the SUV-VTs and pre-1981 vehicles than men. Between income categories the total percents for men and women are more similar.

Tables 4 and 5 illustrate the patterns of vehicle ownership by vehicle category and income between men and women. Note that as before, each cell represents an income group and vehicle category, and cells sum to 100 percent. These tables reinforce anecdotal evidence of vehicle ownership by sex. Women tend to own a higher percentage of passenger vehicles (75.7 percent, as opposed to 50.1 percent for men) and conversely, a higher percentage of the vehicles owned by male respondents tended to be SUV-VTs and pre-1981 vehicles.

TABLE 4 Percent of Men's Vehicle Ownership by Income

	Passenger Vehicle	SUV-VT	Pre-1981	Total
<\$15,000	3.7	2.0	1.7	7.4
\$15,000– 35,000	13.5	10.4	4.6	28.5
>\$35,000	32.9	25.5	5.8	64.2
Total	50.1	37.9	12.1	100

TABLE 5 Percent of Women's Vehicle Ownership by Income

	Passenger Vehicle	SUV-VT	Pre-1981	Total
<\$15,000	7.9	1.0	1.2	10.1
\$15,000– 35,000	22.9	4.5	1.6	28.9
>\$35,000	45.0	14.5	1.5	61.1
Total	75.7	20.0	4.3	100

TABLE 6 Percent of Total Vehicle Ownership by Geographic Region (by Cell)

	Passenger Vehicle	SUV-VT	Pre-1981
Suburb/2nd City	59.6	26.2	7.3
Urban	8.8	2.1	1.0

In this section we have analyzed vehicle ownership along the dimensions of income and gender. As we divided the vehicle categories along income and gender lines several patterns emerged. Our highest income category owns the majority of the vehicles across all vehicle types. Women, regardless of income, tended to own a higher percent of passenger vehicles than did men, while men tend to own a higher percent of both SUV-VTs and pre-1981 vehicles.

Travel Patterns in Suburban/2nd City Versus Urban

In this section, we examine our hypothesis on the travel pattern differences between suburb/2nd city areas versus urban areas. From our sample, we know that the number of suburb/2nd city households is nearly four times that of urban households. Table 6 suggests that suburban/2nd city households own over seven times as many vehicles as their urban counterpart. This indicates that suburban/2nd city households tend to own the majority of the vehicles across all three categories of vehicle type even after accounting for sample size.

If we compare travel behavior in geographic areas in terms of trip purpose, Table 7 suggests that travel patterns by trip purpose are similar between suburbs/2nd cities and urban areas. If we further divide trips generated in suburbs/2nd cities and urban areas into sub-categories based on sex, the travel behavior remains consistent (Table 8a). That is, women in suburbs/2nd cities share similar travel patterns with women in urban areas.

It is also clear from Table 8a that in both locations women tend to make a higher percent of the combined shopping and family/household trips than do men. Nearly half of women's trips are shopping or household related (41.4 percent in suburb/2nd city and 41.9 percent in urban), while the number drops to one third for men (31.3 percent in suburb/2nd city, and 33.8 percent in urban). These numbers are consistent with the notion that women are still responsible for a larger share of the household-related activities than are men (Turner and Niemeier 1997; Wachs 1997; Jones 1989). On the other hand, the difference in work-related trips between men and women is less than 8 percentage points. This difference drops to less than 4 percentage points in the urban areas. If we look at the average trip length by trip purpose between men and women from both locations, we find that men tend to travel farther for work as well as social and recreational activities. Women tend to travel farther for shopping (Table 8b).

TABLE 7 Percent of Trips by Purpose and Geographic Region

	Trip Purpose (%)					
	Work-Related	Shopping	Family & Household	Social/Recreational	Return Home	Other
Suburb/2nd City	17.1	15.0	21.8	12.3	33.8	0.1
Urban	15.1	15.4	22.6	12.3	34.2	0.1

TABLE 8 Percent of Trips by Purpose, Length, Location, and Sex

a. Percent of Trips (%)										
	Trip Purpose									
	Work-Related		Shopping/ Family & Household		Social/ Recreational		Return Home		Other	
	F	M	F	M	F	M	F	M	F	M
Suburb/ 2nd City	13.6	21.2	41.4	31.3	11.7	12.9	33.1	34.6	0.1	0.1
Urban	13.6	17.4	41.9	33.8	11.2	13.4	33.2	21.9	0.1	0.1
b. Average Trip Length (miles)										
	Work-Related		Shopping		Family & Household		Social/ Recreation		Return Home	
	F	M	F	M	F	M	F	M	F	M
	Suburb/ 2nd City	9.0	12.3	7.7	5.3	6.3	7.2	9.0	14.6	7.4
Urban	8.0	11.1	7.1	4.6	5.3	6.3	8.9	15.1	6.6	11.9

Next, we look at how men and women utilize their vehicles depending on how their primary residence is defined in terms of geographic location. It is clear from Table 9 that, not surprisingly, both women and men in the suburbs/2nd cities tend to make use of SUV-VTs more often (20.8 percent for women and 36.4 percent for men than their urban counterparts (14.1 percent for women and 22.5 percent for men). If we compare the percentage of trips within vehicle type, a higher percentage of vehicle trips were made by suburban/2nd city trip makers than urban trip makers.

In Table 10, we further disaggregated the data to include the effects of income. Clear distribution patterns emerge between SUV-VT use in the suburbs/2nd cities versus urban areas. In the suburbs/2nd cities, SUV-VT use rises at a faster rate as income rises when compared to urban areas. For example, SUV-VT use quadruples for suburb/2nd city women between the lowest and highest income group, while it only doubles for urban women.

It is also helpful to contrast the findings by looking into the differences in absolute number of trips. In Figures 1a and 1b, it is clear that the number of trips made in the suburb/2nd city areas easily surpass the number of trips made in regions identified as urban. Although this is not surprising, it does indicate that overall vehicle emissions will be largely defined by suburban vehicle type use and travel patterns.

TABLE 9 Percent of Trips by Vehicle Type and Sex

	Suburb/2nd City				Urban			
	F		M		F		M	
	Row %	Col %	Row %	Col %	Col %	Row %	Col %	Row %
Passenger Vehicle	54.5	76.7	34.0	57.3	82.2	6.3	69.1	5.1
SUV-VT	37.8	20.8	55.2	36.4	14.1	2.8	22.5	4.2
Pre-1981	28.1	2.5	58.0	6.3	3.7	4.5	8.2	9.4

TABLE 10 Percent of Trips by Sex, Income, and Geographic Location

	Suburb/2nd City						Urban					
	<\$15K		\$15–34.9K		>\$35K		<\$15K		\$15–34.9K		>\$35K	
	F	M	F	M	F	M	F	M	F	M	F	M
Passenger Vehicle	84.3	60.6	82.7	56.7	72.2	56.6						
SUV-VT	6.4	23.2	13.8	33.8	26.5	39.1						
Pre-1981	9.3	16.2	3.5	9.5	1.3	4.4						

Use of SUV-VTs Relative to Standard Passenger Cars

After establishing patterns of vehicle ownership between income classes and geographic locations, we turn our attention to the travel behavior exhibited by vehicle owners. Here, we compare travel behavior associated with vehicle use by geographic location, sex, and income status. In particular, we focus on the types of trips for which the vehicles are used, and how this usage varies. We make these determinations through an examination of trip purpose and trip number.

As Table 11 suggests, the proportions of trips by type of vehicle don't vary appreciably by trip purpose. With the exception of a slightly higher percentage of SUV-VTs used for work-related trips, there are no major differences in usage across vehicle categories. Passenger vehicles, SUV-VTs and pre-1981 vehicles were used with approximately the same percentage for every trip purpose. This supports our hypothesis concerning the way in which SUV-VTs are currently used and provides little evidence to indicate that the current exemption from CAFÉ standards is warranted.

If we look at numbers of trips by trip purpose across sex (Figure 2), it becomes clear that women undertake far more shopping and family and household trips than do men.

To further this investigation, we examine which gender used each vehicle type for each purpose. Table 12 provides the relevant proportions. Ignoring the return home purpose, the table shows that not only are SUV-VTs primarily used for family and household purposes, but as suspected, a higher percentage of women's trips were made for family and household purposes (27 percent versus 17.5 percent undertaken by men). Alternatively, men tended to make a higher percent of their work-related trips by SUV-VTs. The same trend, but with slightly less dramatic differences between the sexes, also holds for passenger cars and pre-1981 vehicles.

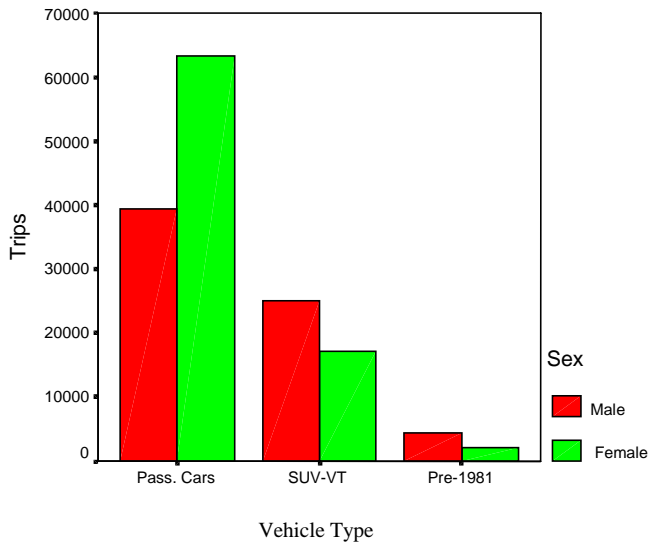


FIGURE 1(a) Suburban trips.

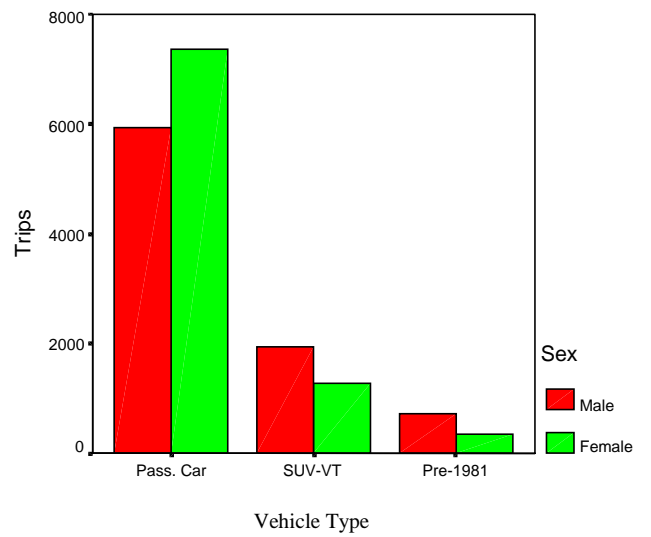


FIGURE 1(b) Urban trips.

TABLE 11 Percent of Trip Purposes by Vehicle Type

	Trip Purpose (%)					
	Work-Related Trips	Shop	Family & Household	Social/ Recreation	Return Home	Other
Pass Vehicle	16.0	15.5	22.3	12.5	33.6	0.1
SUV-VT	19.4	13.5	21.2	12.1	33.7	0.1
Pre-1981	16.8	14.8	21.6	11.0	35.7	0.1

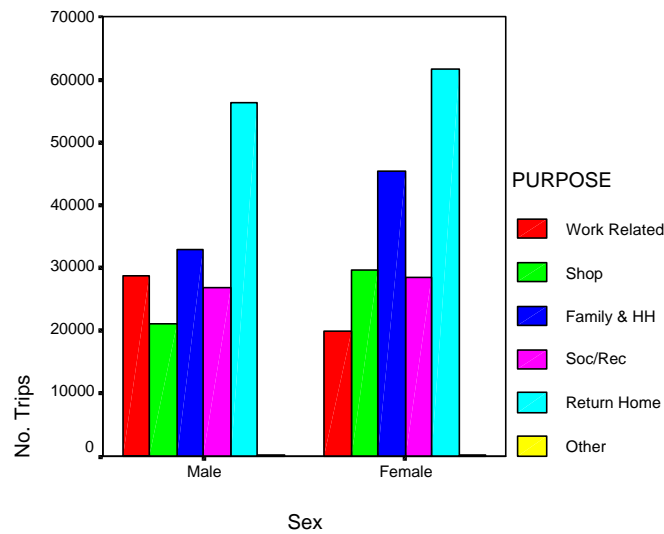


FIGURE 2 Number of trips by purpose.

TABLE 12 Percent of Trips by Purpose, Vehicle Type, and Sex

	Trip Purpose (%)											
	Work-Related Trips		Shopping		Family & Household		Social/ Recreation		Return Home		Other	
	F	M	F	M	F	M	F	M	F	M	F	M
Pass. Vehicles	14.1	19.2	16.6	13.7	24.2	19.0	11.9	13.4	33.0	34.6	0.1	0.1
SUV-VT	12.9	23.6	15.5	12.2	27.0	17.5	11.7	12.3	32.8	34.3	0.1	0.1
Pre-1981	10.2	19.8	18.9	12.8	26.2	19.5	10.0	11.5	34.7	36.2	0.1	0.1

We also examine the possibility of defining predictors for SUV-VT use versus other vehicle use in Tables 13 and 14. We now restrict our interest to trips made only by SUV-VTs, again ignoring the “return to home” trips. From Table 13 we can see that SUV-VT use by suburb/2nd city households is consistent in magnitude across trip purposes, regardless of income group. Furthermore, as income increases, the proportion of work trips taken by suburb/2nd city men also increases. This is not true for women. Instead, women tend to make a similar percentage of trips for any given trip purpose, regardless of income or geographic location. This suggests that suburb/2nd city and urban women and urban men tend to use SUV-VTs at a fairly stable rate for their trips, regardless of income, while an increasingly greater share of suburb/2nd city men’s work trips are made by SUV-VTs as income increases.

If we compare the same distribution across trip purpose for pre-1981 vehicles (Table 14), by far the greatest share of trips made by pre-1981 vehicles are for family and household activities. What is interesting is that men’s and women’s use of the pre-1981 vehicles for various trip purposes tends to be relatively similar, regardless of income or geographic location. That is, the proportion of trips undertaken by men and women tends to be similar within income groups for each geographic category. The one major exception to this is that high-income urban men tend to use older vehicles for work trips proportionally more than high-income, urban women do.

TABLE 13 Percent of SUV-VT Use by Location, Income, Sex, and Trip Purpose

	Suburb/2nd City						Urban					
	<\$15K		\$15–34.9K		>\$35K		<\$15K		\$15–34.9K		>\$35K	
	F	M	F	M	F	M	F	M	F	M	F	M
Work	9.5	15.3	14.3	21.6	12.1	25.1	10.5	17.2	11.8	18.2	13.8	22.6
Shopping	14.1	15.2	15.6	13.1	16.1	11.8	7.0	13.8	16.7	15.8	14.1	11.9
Family/ HH	26.2	18.4	25.9	17.6	27.1	17.0	36.8	16.1	30.6	22.9	27.0	17.9
Social/ Rec.	13.8	14.4	11.0	13.0	11.7	12.2	10.5	13.8	8.3	8.9	10.8	12.7
Return Home	36.5	36.3	33.1	34.6	32.9	33.8	35.1	39.1	32.6	34.2	34.2	34.8

Note that several cells have very low sample sizes and must be viewed cautiously.

TABLE 14 Percent of Pre-1981 Vehicle Use by Location, Income, Sex, and Trip Purpose

	Suburb/2nd City						Urban					
	<\$15k		\$15–34.9K		>\$35K		<\$15K		\$15–34.9K		>\$35K	
	F	M	F	M	F	M	F	M	F	M	F	M
Work	7.0	9.3	21.5	10.4	12.2	21.6	2.3	4.4	10.1	15.8	11.1	20.6
Shopping	21.3	14.7	20.4	13.6	17.2	12.3	18.6	22.2	20.2	13.7	16.7	15.3
Family/HH	26.1	24.7	26.4	17.9	25.9	18.7	36.0	24.4	26.1	26.1	15.6	16.6
Social/Rec.	10.9	13.5	8.0	10.1	10.9	12.4	11.6	11.1	9.2	7.3	18.9	13.8
Return Home	34.6	37.7	34.7	36.9	33.8	34.8	31.4	37.8	34.5	37.2	37.8	33.8

Note that several cells have very low sample sizes and must be viewed cautiously.

The difference in the percentage of trips generated by each sex introduces an interesting policy question. Are different incentives needed for men and for women to reduce the number of trips taken by the respective genders? An analysis by Georgiadou et al. (1996) suggests this approach may be supported. As others have noted (Rosenbloom and Burns, 1993), where the predominant household and family responsibilities fall to women, as evidenced in the data, more flexible transportation options may be more appealing. Guaranteed ride home programs offered by employers, for instance, could prove more attractive to women, while subsidized transit may provide a stronger incentive for men (who travel longer to work).

Although the preceding data has given us the percentage of trips made by gender and vehicle category, when examining questions concerning emissions, average trip length or VMT estimates are also desirable. In this vein, Table 15 shows that women drive SUV-VTs substantially longer distances than either pre-1981 or passenger vehicles for most trip purposes. It can also be seen in this table that, although both sexes use SUV-VTs for social or recreational outings, men, by far, travel longer distances. This is also true across vehicle categories, however, the most substantial difference is seen between men and women driving SUV-VTs.

Graphically, Figure 3 illustrates average travel times compared across vehicle types and trip purpose. The figure suggests that passenger vehicles continue to play an important role for longer trips, particularly those that are work-related. As might be expected, travel times are generally higher for social and recreational trip purposes and are roughly similar across vehicle types. This is consistent with much anecdotal evidence that suggests SUV-VTs serve an important function for family and social and recreational events. Interestingly, however, it appears they serve no more important function than do passenger cars or pre-1981 vehicles.

Table 16 illustrates the average daily person-trip miles across purposes for each gender within income group and across each geographic location. We see that on average SUV-VTs are used for longer trips with a few exceptions. SUV-VTs are driven further

than passenger vehicles in suburb/2nd city areas and are driven further by urban households with higher incomes. It appears from these tables, however, that a combination of gender, location, and income may be good predictors of SUV-VT trip length.

TABLE 15 Average Trip Length by Purpose

	Trip Purpose									
	Work-Related Trips		Shopping		Family & Household		Social/ Recreation		Returning Home	
	F	M	F	M	F	M	F	M	F	M
Pass. Car	9.30	12.88	7.79	5.36	6.61	7.12	9.02	14.46	7.91	13.54
SUV-VT	9.22	12.31	10.04	6.24	6.85	7.96	10.14	15.66	8.23	14.27
Pre-1981	7.98	10.01	7.12	4.91	5.19	6.65	7.67	12.81	6.35	11.69

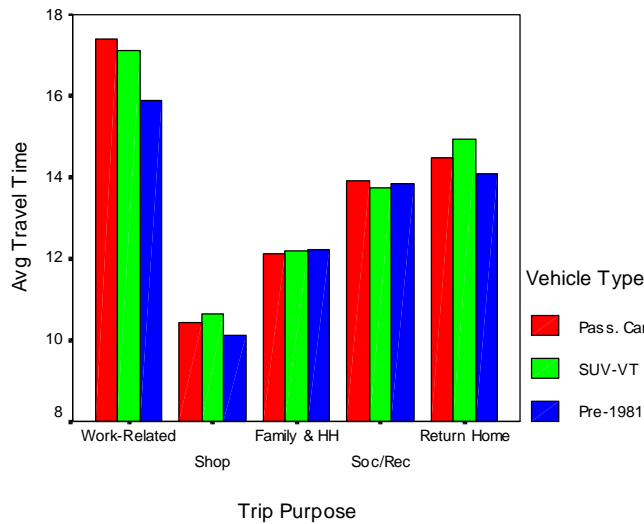


FIGURE 3 Average travel times by trip purpose and vehicle type.

TABLE 16 Average Daily Person-Miles

	Suburb/2nd City						Urban					
	<\$15K		\$15-34.9K		>\$35K		<\$15K		\$15-34.9K		>\$35K	
	F	M	F	M	F	M	F	M	F	M	F	M
Pass. Vehicle	6.4	6.9	6.7	7.6	7.7	9.7	4.8	6.9	6.3	7.4	6.9	8.1
SUV-VT	8.3	8.4	7.2	9.0	7.6	10.0	6.0	5.5	6.9	8.8	6.7	8.6
Pre-1981	5.0	5.9	5.0	7.0	6.3	8.2	5.6	6.0	5.2	7.7	5.6	7.4

CONCLUSIONS

Sport utility vehicles are the fastest growing segment of the auto industry. They are portrayed as filling a niche for individual drivers ranging from parents carting kids to soccer games to the beefy vehicle used for work and play. However, from our examination of the data, the argument that SUV-VTs are used almost exclusively for work-related trips (and should therefore be exempt from the CAFÉ standards) is not well founded. We realize that the data covers households versus company fleet vehicles and this should be taken into account. We found that SUV-VT drivers have remarkably similar driving patterns to those using passenger cars and older vehicles. Since SUV-VTs are not regulated under the same fuel efficiency standards, they may be responsible for a higher share of tailpipe emissions per mile than conventional wisdom would have us believe.

It is also worthy of note that women represent an important sector of the growing market for SUV-VTs. This is clear from marketing images such as the commercial by Kia, depicting two women battling for a parking space at a shopping center (the woman with the Kia SUV wins after an arduous trek). As Wachs (1996) points out, “the demand for travel is in part derived from social roles that are gender related.” From an historical perspective, different vehicles have been marketed to men and women based on these social roles. The SUV-VT category, however, has the best of both worlds: it can simultaneously be represented to men as a rugged and tough automobile while playing up the safety features thought to be more attractive to women.

In summary, suburb/2nd city households own the majority of the three types of vehicles: passenger cars, SUV-VTs, and pre-1981 vehicles. Even though the percentage distribution across various trip purposes does not display substantive differences between suburb/2nd city and urban, average trip lengths generated in suburb/2nd cities do appear to be longer than those generated in urban areas. This difference may not appear to be significant (within two miles), but keep in mind that suburb/2nd city households own the majority of vehicles. Therefore, the VMT generated by suburb/2nd city households would be much higher than that generated by urban households.

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