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3 **Do Race and Ethnicity Make a Difference in Travel and Commuting Behavior?**
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5 **Corresponding Author: Nancy McGuckin**

6 NPTS Team FHWA, HPP-30, Room 3300J
7 400 7th Street SW,
8 WASHINGTON, D.C. 20590
9 Phone: (202) 366-8750
10 Fax: (202) 366-7742
11 E-mail: Nancy.McGuckin@fhwa.dot.gov

12 **Nanda Srinivasan**

13 Associate, Cambridge Systematics
14 NPTS Team, FHWA HPP-30, Room 3300J
15 400 7th Street SW,
16 WASHINGTON, D.C. 20590
17 Phone: (202) 366-5021
18 Fax: (202) 366-7742
19 E-mail: Nanda.Srinivasan@fhwa.dot.gov

20 **Elaine Murakami,**

21 Community Planner, Federal Highway Administration
22 FHWA, HEP, Room 3301
23 400 7th Street SW,
24 WASHINGTON, D.C. 20590
25 Phone: (206) 220-4460
26 Fax: (206) 220-7959
27 E-Mail: Elaine.Murakami@fhwa.dot.gov

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ABSTRACT

This paper is a descriptive analysis of daily travel and commuting by race, ethnicity, time since immigration, and gender, using the most recent National Household Travel Survey (NHTS), conducted in 2001. This paper does not directly address the spatial mismatch hypothesis of residential choice and accessibility to jobs. It describes differences in driver's licensing, private vehicle availability, and modes used in commuting. Where sample size is sufficient, tabulations for new immigrants (people who were in the US three years or less at the time of the 2001 NHTS) are included.

The difference in travel between men and women is well documented and varies to a greater or lesser extent within race and ethnic origin. Many of the differences between people of different races and ethnic origins can be explained by socio-economics and residential segregation, but differences exist between people of the same socio-economic status but of different races. For example, even when work and home are close to a bus line, whites take transit far less than African-Americans or Hispanics.

Using the characteristics of the white majority as a surrogate for all travel behavior, especially when forecasting travel, may be less reliable as the U.S. society becomes more diverse. Growth in travel demand will undoubtedly come from the groups that currently have less mobility, such as women of color and newer immigrants.

INTRODUCTION

Historically, travel has been known to differ by gender and race/ethnicity. This has been most apparent in driver's licensing, vehicle availability, and mode choice. For example, women have historically been licensed to drive at a lower rate than men, and African-Americans have historically had a higher proportion of households with no vehicles. Many studies have shown that gender may have the largest impact on travel behavior, and especially work travel—women work closer to home even within the same occupational categories, and more trips and miles of women's travel are not related to work (1,2,6,7). Women with children are more likely to adopt flextime, work closer to home, or work part-time. (8). Women provide the taxi service for children in the household, and make more trips to sustain household activities, such as for shopping and errands. Pucher (18) has already described transit mode choice using the 2001 NHTS, but examined race and ethnicity independently from gender, and did not include immigration in his analysis. Previous research has found that the degree of difference between the sexes varies within race/ethnicity (3,4,5,9, 15, 16, 17) .

In 1990, 24 percent of the U.S. Population was composed of people of color, 12 percent was African American, 9 percent was Hispanic, and 3 percent was Asian. In 2000, the Hispanic population had grown to 12.5 percent, for the first time a greater percent of the total population than African-Americans' 12.3 percent. By 2050, 43 percent of the U.S. population is forecasted to be people of color (Hispanics, African Americans, and Asians). Hispanics, alone, will constitute 26 percent of the total population. As the diversity in the traveling public increases, depending on the characteristics of the white majority to reflect the overall pattern of travel will no longer suffice.

Census data indicate that nearly half (49.8 percent) of the immigrants who migrated between 1997 and 2000 were Hispanic, compared to 45 percent of those who immigrated earlier. Research conducted by Arce (10) indicates that about one-third of the U.S. Hispanic population consists of newer immigrants. It is rare in the examination of daily travel behavior to include race, ethnicity, length of time in the U.S, combined with gender. Myers (19, 20,21,22) has been instrumental in examining immigrant population effects using cohort analysis on transit use in the Los Angeles region, using 1980, 1990 and 2000 Census data. In comparing 1980 and 1990, he found that recent immigrants who often lived in households without vehicles were a critical market for transit service. In particular, immigrant Latinas were very likely to use public transportation to get to work (26 percent), and were also more likely to carpool to work. As time passes, immigrants acquire vehicles, and dramatically reduce their use of public transit within 10 years of immigration. He has continued his work using 2000 census data, and found that race and ethnicity, with immigrant status and residence in dense multi-family neighborhoods are critical variables in mode choice models.

This paper takes advantage of the NHTS dataset, that includes all daily travel, rather than just the journey to work, as captured by the decennial census. It uses the question on year immigrated from the NHTS. New immigrants (people in the U.S. three years or less) are young, live in larger households, with more workers and fewer vehicles. Newer immigrant workers work closer to home, and have a higher proportion of part-time workers than other population groups analyzed.

The characteristics and trends described in this paper support the differences in travel characteristics, with the greatest effect by gender, and variation to greater or lesser degrees within race and ethnic origin. The research presented here shows that:

- Whites enter the paid workforce and drive at younger ages than African-Americans or Hispanics. However, these measures of mobility (both workforce participation and driving) have increased for people of color in the last decades.
- Half of the current group of elderly Hispanic and Asian women don't drive and some of the expected growth in older drivers will come from African Americans and Hispanic women with licenses.
- More African-American households have vehicles available than in the past, and as a group African-Americans have gained in miles and speed of travel since 1995.

- In 2000, 75 percent of Whites drove alone to work compared to 63 percent of African Americans, and 60 percent of Hispanics. Since 1990, the highest increase in mode share for drove alones was for African Americans (59 percent in 1990 to 63 percent in 2000).
- A higher proportion of African-Americans and Hispanics live closer to transit. 12.6 percent of African American women and 8.2 percent of Hispanic women used public transit as a mode to work in 2001 compared to 2.5 percent of White women. But even for workers whose home and work locations are close to transit, African Americans and Hispanic workers are more likely to take transit to work.
- Thirty-five percent of Hispanic women traveled in carpools to work on the sample day, which may reflect lower auto ownership and lower driver's licensing. The percent of work trips by carpool for African-American and White women are about the same, 22 and 23 percent respectively. Women of any race carpool more than men of the same race, and the overwhelming majority of carpools to work are made up of members of the same household (68 percent are fam-pools).
- African-American and Hispanic men travel about 14,500 miles a year compared to 18,900 for White men, however they all spend about the same amount of time in travel—560 hours/year. The same is true for African-American and Hispanic women who travel 12,100 and 12,800 miles a year, respectively, compared to White women's 15,600 but all spend about 530 hours a year in travel.
- New immigrants are more likely to live in households with fewer vehicles per adults, and consequently carpool more.

DEMOGRAPHIC DIFFERENCES IN CHARACTERISTICS RELATED TO TRAVEL

Household Size

Nationwide, between 1990 and 2000, the average household size showed a slight decline from 2.63 to 2.59 persons per household. (12) This average obscures the differences by race and Hispanic origin. Young immigrant households (which were mostly Hispanic) have more people, on average, and the presence of these households is one reason that this number did not decline much nationwide. White households, continued to decline in average household size, reflecting the aging of the white population in the U.S. today. (13)

Similarly, the proportion of households without vehicles declined slightly from 11.5 percent of households in 1990, to 10.3 percent of households in 2000 (12). Census data continue to show large differences in vehicle ownership by race and Hispanic origin, although these differences have reduced over the last thirty years (12).

Demographic differences between households by race and ethnicity are shown in Table 1, which includes new immigrants (in the US three years or less) of any race. Hispanic households on average have 3.4 persons, compared to 2.4 person in white households. Hispanic households also have the highest number of workers per households, but have fewer vehicles than White households, and are much more likely to rent.

African American households have just a bit larger average number of persons per household (2.7 persons, compared to White households (2.4 persons), and have nearly the same average number of workers per household. However, among the three groups, they have the lowest average number of vehicles per household, with 21 percent of households reporting that they have no vehicle.

New immigrants are much more likely to rent (82.8 percent), have larger households (3.6 persons), and have more workers in the household (2.0), but are more likely to work part-time (22.7). Nearly 19 percent of new immigrants live in zero-vehicle households, and only 61 percent of new immigrants are drivers (the 2001 NHTS simply asked if the respondent was a driver, not the licensed status).

INSERT TABLE 1 HERE

Vehicle availability in Households

Vehicle ownership is highest for white households, although the trends in ownership from 1970 shows that all other population groups are catching up. Figure 1 shows that the percent of black and Hispanic households without vehicles has declined since 1970. Although more African American, Hispanic, and New Immigrant households own vehicles now at a rate higher than ever before, the ratio of vehicles to adults is lowest for Hispanics (.8 vehicles per adult) and new immigrants (.5 vehicles per adult)). The low auto availability per adult may partially explain the higher rate of carpooling (at least for work) by Hispanics and New immigrants.

INSERT FIGURE 1 HERE

Driving and Working

Driving and working are key factors in travel behavior. Figure 2 shows the percent of workers and drivers by race and within age group. In terms of workforce participation, about 70 percent of whites are in the workforce by age 18, compared to about 45 percent of African-Americans and Hispanics. Whites drive at younger ages than African-Americans and Hispanics, reaching nearly 90 percent driving by age 18, compared to about 50 percent of 18-year old African-Americans and Hispanics.

INSERT FIGURE 2 HERE

Overall, one-third of all non-drivers in the NHTS 2001 are 65 and older, but half of elderly Hispanic and Asian women don't drive (see Figure 3). Expected growth in the population of older drivers will be especially pronounced for women of color.

INSERT FIGURE 3 HERE

DIFFERENCES IN TRAVEL TO WORK

PMT and VMT

While many people consider the average commute to be a simple direct trip between home and work, in reality people often make complex tours, including incidental stops, during the commute. In addition, people leave the workplace and return (for lunch, meetings, service calls, and other work-related) in what's called work-to-work tours or travel. Other work-based travel includes trips that originate or end at the workplace, but share substantive destinations besides home, such as going out with colleagues for dinner.

African Americans (13,000 miles), and Hispanics (12,000 miles) have significantly lower PMT than Whites (16,900 miles). In terms of VMT Hispanics and African Americans average around 8,800 miles compared to Whites who average 11,500 miles. Hispanics have the greatest share of daily miles devoted to commuting and work-based travel—32.1 percent of PMT and 33.5 percent of VMT. When the overall trips, person miles and vehicle miles of travel are measured for the population 16 years and older, work-based travel accounts for 26.2 percent of all trips, and 28.4 percent of all VMT (see Table 2).

The commute tours alone (defined as home to work or work to home), including incidental trips with stops of 30 minutes or less, account for 19.7 percent of trips, 20.0 percent of person miles of travel and 21.6 percent of vehicle miles of travel. The table also shows the percent of travel in work-to-work tours, and tours that stop on the way to or from work for more than 30 minutes.

INSERT TABLE 2 HERE

Range of Accessibility

The mean daily person miles of travel by workers is shown in Figure 4. High income workers and drivers travel more miles per day than low-income non-workers, and within all groups men travel more miles than women. Working, higher-income, Hispanic men travel the most miles in an average day, followed by working, higher-income, African-American men.

INSERT FIGURE 4 HERE

The range of access to potential employers, for instance, is vastly different between people at the top-end of the travel spectrum and people at the bottom, as shown in Figure 5. This example uses the national average range of travel (shown in Figure 4) and mapped it on Atlanta, GA as an illustration. The smaller circle represents the range of daily travel (2.5 miles in diameter for 5 miles of daily travel) for the lower-income non-working African-American man while the larger circle (32 miles in diameter), which covers areas in 13 counties, represents the daily miles traveled by a high-income, working African American man.

INSERT FIGURE 5 HERE

This very limited range of access by low-income people of color, especially, effects much more than employment opportunities. It restricts access to health services, education, shopping at discount stores, and a vast array of social and recreational activities.

MODE OF TRAVEL TO WORK

Driving Alone

Driving alone to work in a private vehicle is the mode of choice for most Americans. Driving alone increased in numbers and in share dramatically from 1960; 70 percent of workers used a private vehicle in 1960 and this group grew to 88 percent by 2000. (12) However, transit and carpooling are much more important modes for African Americans and Hispanic workers, and in particular, for women in these groups. In the 2001 NHTS shows the mode used to travel to work varies considerably by race and sex as shown in Table 3.

INSERT TABLE 3 HERE

Transit

A worker's decision on how to get to work obviously depends on availability, cost and convenience of the various choices. To use transit the worker must have transit service available at both the home and work end of the trip. There is persistent residential segregation in the U.S. that leads to African-Americans and Hispanics living in more urban neighborhoods. Residential segregation of African Americans declined, albeit slowly, in the period from 1980-2000. These denser neighborhoods may be better served by transit. (14)

Using available data on the location of bus lines across the U.S. (17), the distance to a bus line for residences and workplaces have been coded for the NHTS sample. The coded information does not include any information on level of service, merely the straight-line distance to the nearest bus line (not a stop). Even with those limitations, these new data are interesting.

Table 4 shows the percent of the population and workers who lived and worked within ¼ mile of a bus line, and the percent that took transit to work on the sample day. About one in five African-Americans who have transit close to home take transit to work, compared to one in eight Hispanics and one in 15 whites.

INSERT TABLE 4 HERE

Travel in a private vehicle (POV), whether as a driver or passenger, is a faster mode of travel, as shown in Figure 6. For all race/ethnic categories, POV travel speed exceeds 28 mph. For transit, the average speeds range from less than 5 mph for Hispanic workers, 6 mph for African American workers, and nearly 14 mph for White workers. (these figures are really terrible and incriminating about transit service—we should say something here like: With low travel speeds for workers using transit, it is no surprise that people prefer to acquire vehicles and shift to faster travel modes to accomplish their journey to work. While the transit travel speed for White workers is still only one-third the speed of POV travel (14 mph compared to 34 mph), this is far faster than the one-fifth travel speed for African American (6 mph compared to 30 mph) and Hispanic workers (5 mph compared to 28 mph). These figures reflect the fact that White workers using transit are more likely to be using subway and express bus services. (23, 24)

INSERT FIGURE 6 HERE

Carpools and Fam-pools

Thirty-five percent of Hispanic women traveled in carpools to work on the sample day, which may reflect lower auto ownership and lower driver's licensing. Over 20 percent of African-Americans and 15 percent of Hispanics took transit to work, compared to just 4 percent of whites. While white women are more likely to carpool than white men, the differences in travel mode to work between men and women among white workers is not as great as for other groups.

One of the ongoing questions about carpools is whether they are 'formal', such as rideshares arranged through local programs and consisting of workers from different households traveling to a central location, or consist of people from the same household or family (this latter category is sometimes called 'fam-pools'). The NHTS has data on household characteristics and interactions among household members on the travel day, including who the main driver of each household vehicle is, which household member drove for any particular trip, and whether other household or non-household occupants were in the vehicle. These data can enlighten us about the dynamics of vehicle use, and be especially interesting in studying carpools.

Of all multi-occupant or carpool trips to and from work, 68 percent are made up of two or more members of the same family or household. Just examining the fam-pools by sex of the traveler doesn't indicate much difference in men and women's behavior (65 percent of trips by men are fam-pools and 70 percent by women), possibly because of the high percent of couples traveling together.

However, looking by Race/Ethnicity shows marked differences, as shown in Figure 7. White women have the largest percent of commutes that are with members of the same household, 83.3 percent, followed by Hispanic women with 77.7 percent. Hispanic men are nearly equally likely to ride with household members as non-members.

INSERT FIGURE 7 HERE

CONCLUSIONS

Great mobility is part of the fabric of the U.S. society, but there is still much to be done to assure that all of our citizens have full access to this mobility. We continue to have groups that do not have equal access to social and economic benefits of the society. The NHTS and related data sources show that less mobile groups--low-income, elderly, recent immigrants and, to some degree, people of color--do not have the same access to the range of goods and services which are available to groups with greater travel choices.

As we move to the future, more diversity in residential and work choices can be expected. We must understand which differences in travel patterns are linked to cultural norms, socio-economics, and/or the impact of the built environment. Using the characteristics of the white majority as a surrogate for all travel

behavior, especially when forecasting travel, may be less reliable as the U.S. society becomes more diverse. Growth in travel demand will undoubtedly come from the groups that currently have less mobility, such as women of color and newer immigrants.

DATA SOURCE

The 2001 National Household Travel Survey includes a national sample of 26,083 households, and regional add-on samples, bringing the total sample to 69,817 households. The NHTS was conducted between [April 2001 and June 2002](#). Respondents were asked to complete a travel diary, and a telephone interview was conducted to retrieve the information about all places to which people traveled on an assigned travel day. The survey included all days of the week, and all months of the year.

A question on year immigrated to the United States was added in the 2001 NHTS, as the work by Myers using the 1990 and 1980 decennial census data showed its importance to mode choice for workers. (citation #).

Because of the telephone methodology, the race and ethnicity of the household respondent served as a surrogate for each household member's race. The Census 2000 estimates that 2.4 percent of U.S. households are multi-racial (not including Asian/White).

Telephone surveys were conducted in Spanish for less than 2 percent of all respondents (2,548 in Spanish; 158,210 conducted in English). More often, an English-speaking person in the household served as the translator for Spanish-speaking respondents. Similar to other surveys, response rates to the 2001 NHTS were lower from non-White populations ([11, 25](#))

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TABLES

TABLE 1	Demographic Characteristics Related to Travel
TABLE 2	Percent of Work-Based Travel by Race for Population 16 and Older
TABLE 3	Mode of Travel to Work by Sex and Race, 2001 NHTS
TABLE 4	Percent Residing and Working Near Transit and Percent Taking Transit to Work
TABLE 5	Unweighted Number of Sampled PERSONS by Race and Hispanic Origin and Immigration Status

FIGURES

FIGURE 1	Percent of Households with no Vehicles by Race and Hispanic Origin, 1970-2000.
FIGURE 2	Percent of Workers and Drivers by Race/Ethnicity within Age Groups.
FIGURE 3	Percent of Women Drivers by Age.
FIGURE 4	Mean Daily Person Miles of Travel for Workers in Low and High-Income Households by Race/Ethnicity and Sex.
FIGURE 5	Daily Range of Activity for Low-Income African-American Men and High Income African-American Men, using Atlanta GA as an example.
FIGURE 6	Average Speed of Travel for POV, and Transit Commuters.
FIGURE 7	Percent of Multi-Occupant Trips in Work Tours that are "Fam-Pools" by Race/Ethnicity.

TABLE 1 Demographic Characteristics Related to Travel

	African-American	Hispanic	White	New Immigrants (3 years or less)
Average HH Size	2.7	3.4	2.4	3.6
Number of Workers	1.2	1.6	1.3	2.0
Average Vehicles per Household	1.4	1.7	2.0	1.3
Percent Zero-Vehicle Households	21.5	13.8	5.2	18.9
Ratio of Vehicles to Adults	0.8	0.8	1.1	0.5
Ratio of Adults to Workers	1.1	1.3	1.0	1.4
Percent of 16+ who Drive	77.7	78.9	93.3	60.6
Percent of 16+ in Paid Labor Force	66.2	71.2	68.6	65.2
Percent Part-time Workers	16.8	17.4	19.3	22.7
Usual Distance to Work	12.4	13.6	13.2	9.5
Usual Time to Work	26.1	25.2	22.7	24.6
Percent Home Owned	49.1	43.2	72.3	16.1
Percent Rent	55.8	50.5	27.2	82.8
Average Trips per Household	8.0	10.1	9.3	10.2

TABLE 2 Percent of Work-Based Travel by Race for Population 16 and Older

Tours have stops of 30 minutes or less				
Trips by Persons 16+	Afr-Am	Hisp	White	All
Percent of Trips in All Work-Based Travel	27.7	28.7	26.3	26.8
Percent of Trips within Home-Work Tours	10.5	11.5	9.8	10.1
Percent of Trips within Work-Home Tours	9.8	11.0	9.3	9.6
Percent of Trips within Work-Work Tours	2.3	1.7	2.4	2.2
Percent of Trips in Other Work-Based	5.2	4.5	4.8	4.3
All Other Trips	72.3	71.3	73.7	73.2
Person Miles of Travel by 16+	13,100	13,400	16,900	16,000
Percent PMT in All Work-Based	29.8	32.1	26.4	27.2
Percent PMT in Home-Work Tours	10.9	11.7	10.2	10.4
Percent PMT in Work-Home Tours	9.5	12.2	9.4	9.6
Percent PMT in Work-Work Tours	1.4	0.7	1.5	1.4
Percent of PMT in Other Work-Based	8.0	7.5	5.4	5.9
All Other PMT	70.2	67.9	73.6	72.8
Vehicle Miles of Travel by 16+	8,700	8,800	11,500	10,900
Percent VMT in All Work-Based	28.9	33.5	27.8	28.4
Percent VMT in Home-Work Tours	11.3	13.0	11.0	11.2
Percent VMT in Work-Home Tours	9.7	13.4	10.1	10.4
Percent VMT in Work-Work Tours	1.5	0.8	1.2	1.2
Percent of VMT in Other Work-Based	6.4	6.3	5.4	5.7
All Other VMT	71.1	66.5	72.3	71.6

TABLE 3 Mode of Travel to Work by Sex and Race, 2001 NHTS

		Drove Alone	Carpool	Transit	Walk
Women	African-American	60.6	22.1	12.6	2.7
	Hispanic	51.8	35.0	8.1	3.7
	White	71.1	23.1	2.5	2.8
Men	African-American	66.9	18.3	8.4	4.4
	Hispanic	65.0	21.7	7.0	4.1
	White	78.7	16.3	1.6	2.6

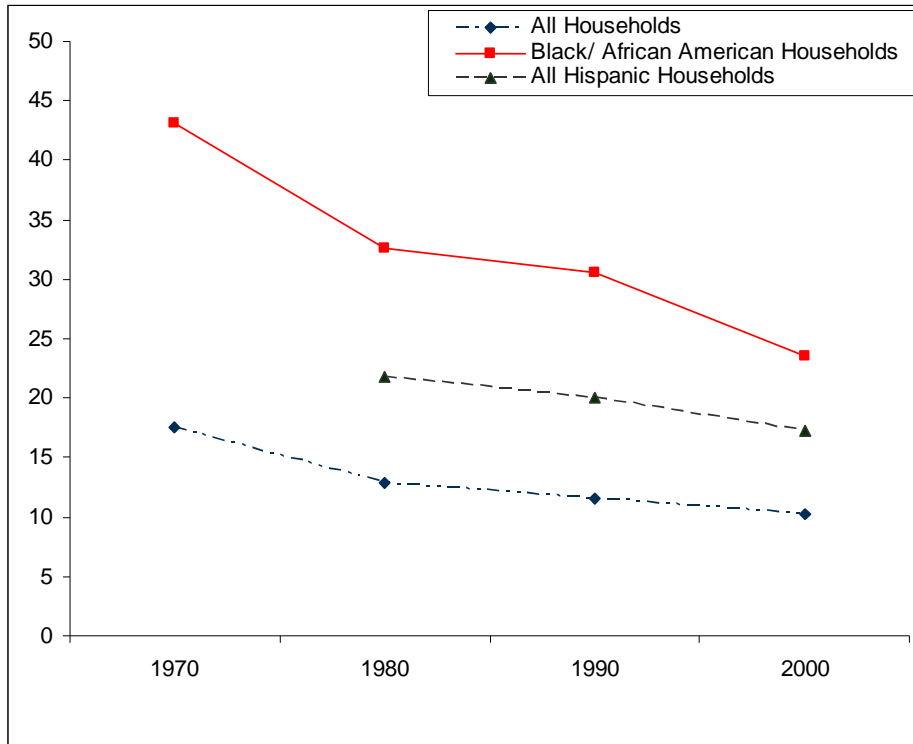
TABLE 4 Percent Residing and Working Near Transit and Percent Taking Transit to Work

	African-American	Hispanic	White
Percent of Population Residing within 1/4 mile of Bus Line	55.0	54.4	30.5
Percent of Workers with Households AND Workplaces within 1/4 mile of a Bus Line	42.6	43.8	24.9
Percent of Workers who Took Transit to Work	10.7	7.5	2.0

TABLE 5 Unweighted Number of Sampled PERSONS by Race and Hispanic Origin and Immigration Status

	Total	Male	Female
White, non-Hispanic	133,084	63,682	69,402
African American	8,026	3,324	4,702
Hispanic	8,100	3,864	4,236
No Answer/Refused	1,159	576	583
Immigration			
1998 – 2001	1056	482	574
1991- 1997	1642	730	912
Before 1991			
Native Born	150,867	71,981	78,865
Don't Know/ No Answer/Refused	599	261	338

FIGURE 1 Percent of Households with no Vehicles by Race and Hispanic Origin, 1970-2000.



Source: Decennial Census Data, Summary File 3. Data for Hispanic Households not available for 1970.

FIGURE 2 Percent of Workers and Drivers by Race/Ethnicity within Age Groups.

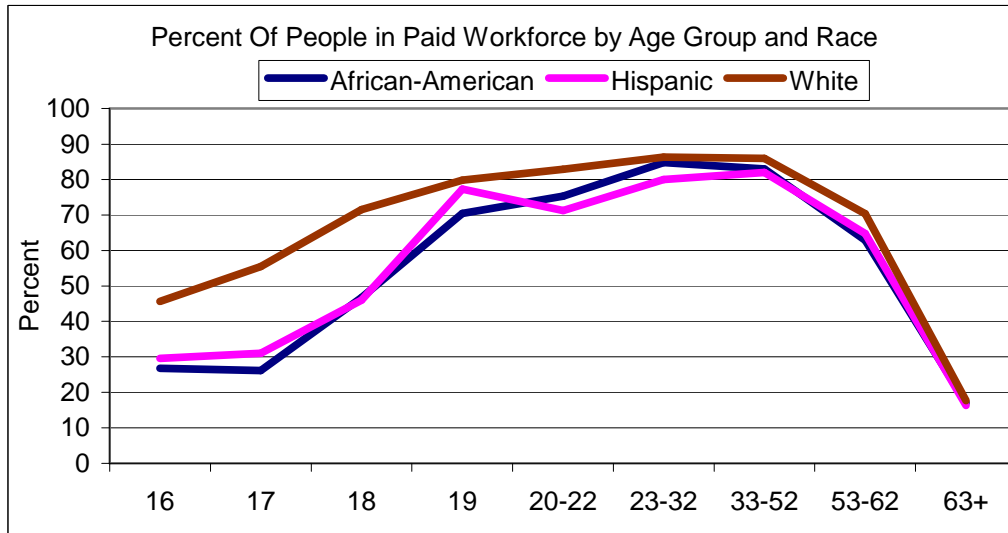
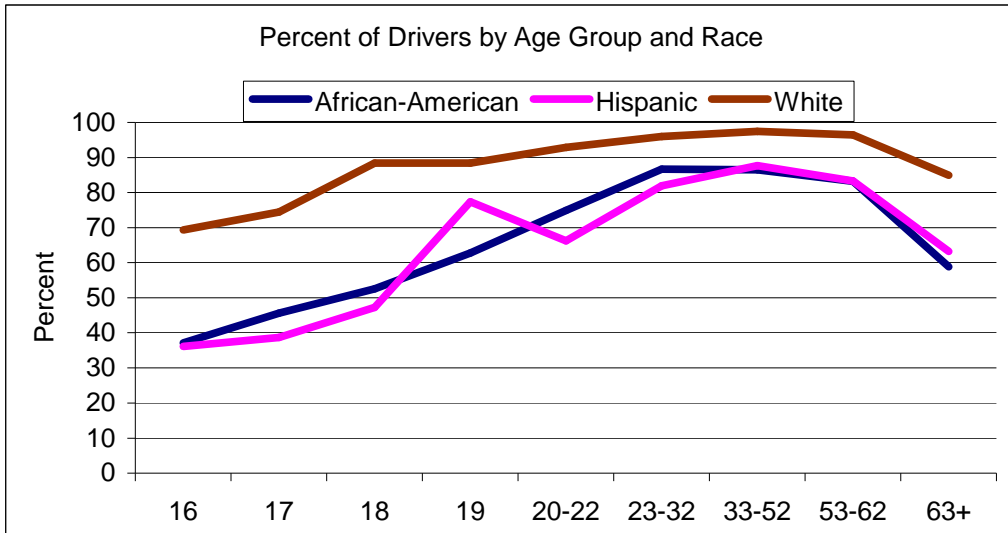


FIGURE 3 Percent of Women Drivers by Age.

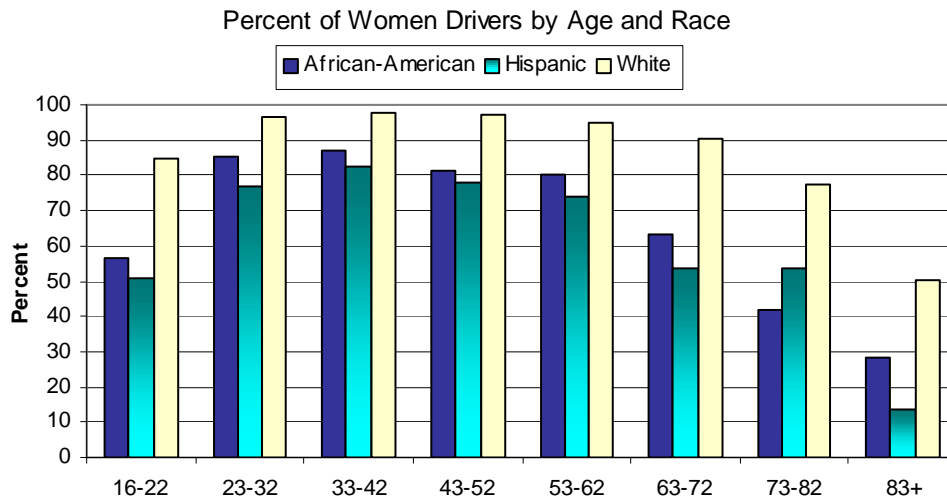


FIGURE 4 Mean Daily Person Miles of Travel for Workers in Low and High-Income Households by Race/Ethnicity and Sex.

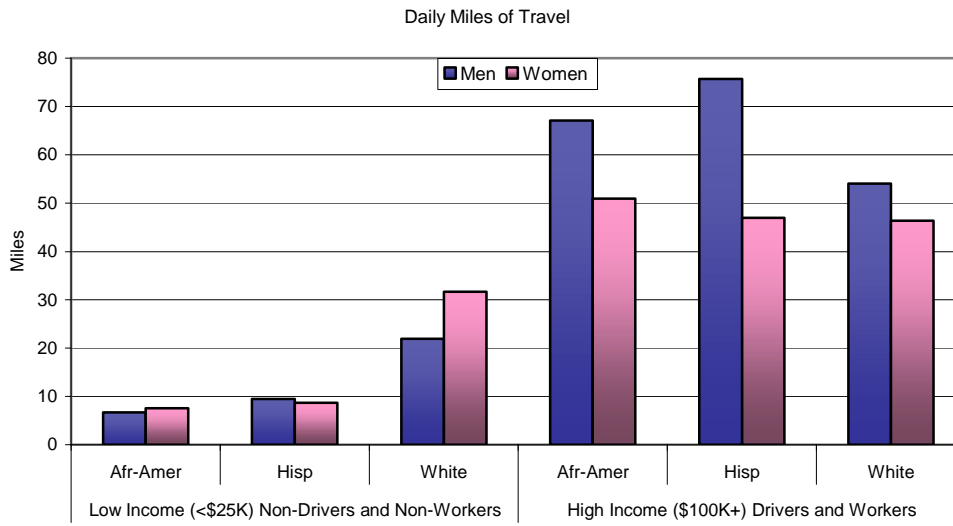
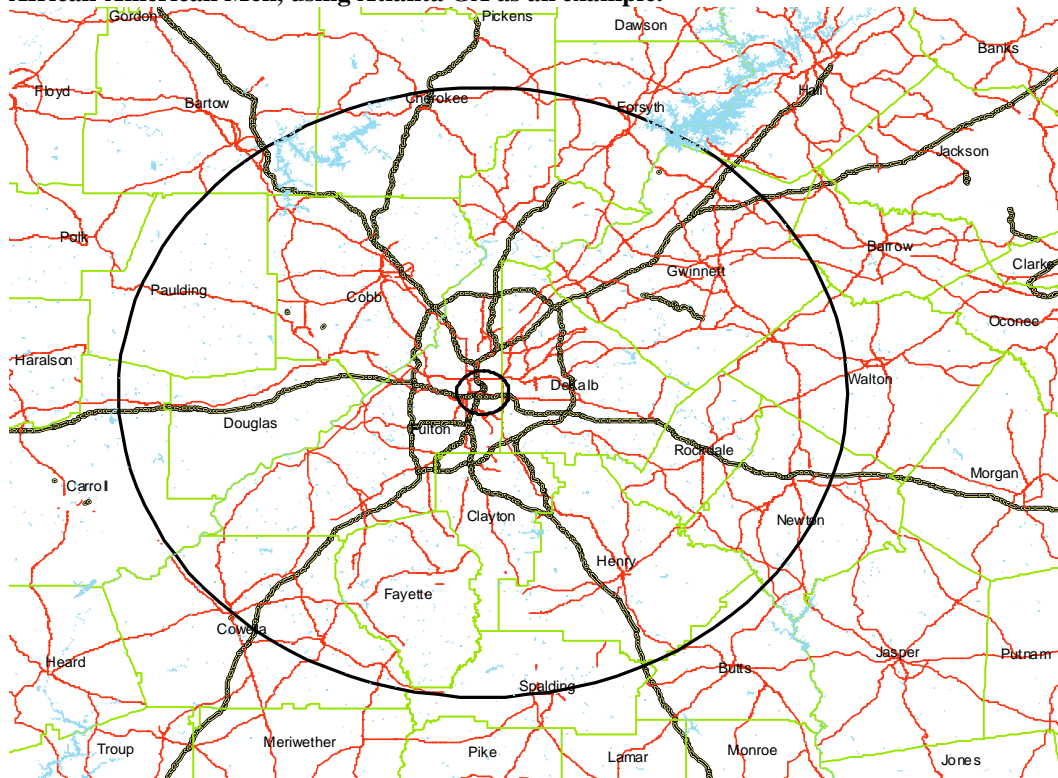


FIGURE 5 Daily Range of Activity for Low-Income African-American Men and High Income African-American Men, using Atlanta GA as an example.



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FIGURE 6 Average Speed of Travel for POV, and Transit Commuters.

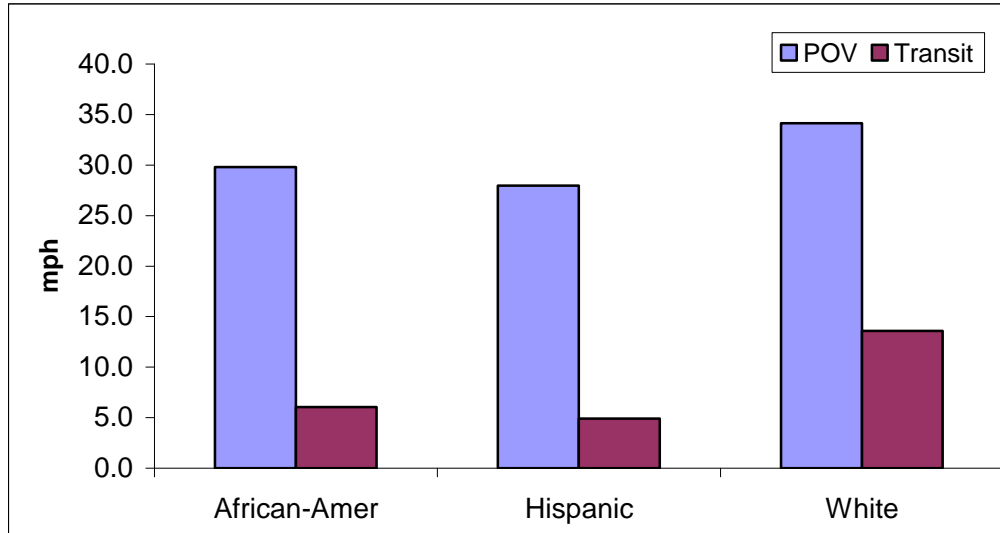
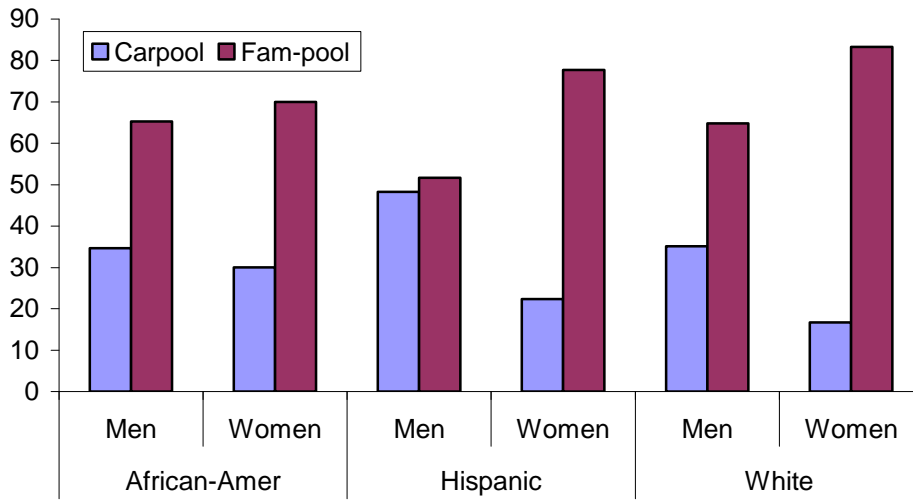


FIGURE 7 Percent of Multi-Occupant Trips in Work Tours that are “Fam-Pools” by Race/Ethnicity.



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