PAPER

# Mobility and Mode Choice of People of Color for Non-Work Travel

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This paper takes a comprehensive look at mobility and mode choice behavior of people of color for their non-work travel. Travel by people of color is of strong policy interest because it is a growing and changing share of the total travel market and is expected to continue to grow much faster than overall travel well into the next century. The Nationwide Personal Transportation Survey (NPTS) provides a valuable data source for exploring travel behavior.

Understanding non-work travel is becoming increasingly important due to its growing influence in people's lives and on the transportation system. Non-work travel includes travel for personal and family business, school activities, religious activities, health care, and social and recreational activities. Work trip travel has declined to about 20 percent of all local travel. Even during traditional commuting rush periods, non-work travel comprises more than 70 percent of all trips. The resultant changes in temporal and spatial distributions of travel in our metropolitan areas influence the types of transportation investments, services, and policies that can be used to address travel needs.

This paper compares mobility trends by group using information from the 1983, 1990, and 1995 NPTS databases. Mode choice differences across groups are analyzed by examining how patterns of difference in mode choice vary with personal, household, geographic, and trip characteristics as reported in the 1995 NPTS. The exhaustive analysis examined a variety of distributions and tabulations and uses logistic regression to further explore mode choice differences between racial/ethnic groups.

The analysis indicates that the differences in non-work travel behavior for the various racial/ethnic groups has changed dramatically over time with minority travel behavior more closely matching majority behaviors. Mobility for minority travelers has increased and mode choice behavior, while still different, more closely resembles that of the aggregate population. Variations in aggregate group behavior can almost always be explained by socioeconomic and geographic conditions. The most significant race- or ethnicity-based difference appears to be a greater use of public transit by the African-American population, even when the socioeconomic characteristics of travelers are taken into account.

## STUDY FOCUS AND METHODOLOGY

The transportation planning community is best prepared to help in meeting the needs of travelers when they have an extensive knowledge base on travel behavior. Transportation

investments in facilities and services can be most wisely planned, and issues such as future transportation demand, impacts, and equity can be best addressed in the context of a rich understanding of travel behavior. This paper endeavors to contribute to the body of knowledge on travel behavior through a comprehensive look at mobility and the mode choice behavior of people of color for their non-work travel.

A broad understanding of travel behavior involves knowledge of many aspects, including why, when, where, and how people travel, and how these aspects vary with time, geography, and the demographic characteristics of the population. The NPTS provides a valuable data source for exploring these issues. The analysis reported on in this paper presents a focused review of a particularly interesting component of travel behavior: mobility and mode choice of people of color for non-work travel.

Travel by people of color is of strong policy interest because it is a growing and changing share of the total travel market and is expected to continue to grow much faster than overall travel well into the next century. This growth has been driven both by the growth in minority population and by the significant increases in travel rates by minority individuals. The travel behavior of this population segment is also changing rapidly with significant changes in mode choice. Another reason for the high interest in the travel behavior of minority populations is the fact that mobility is essential to the quality of life and economic well-being of all people and minority populations historically have not had the same high level of mobility enjoyed by Whites in this country. Thus, understanding travel behavior for minorities also enables policymakers to explore the role that transportation may be playing in influencing the economic opportunity and quality of life of the minority population.

Non-work travel includes travel for personal and family business, school activities, religious activities, health care, social and recreational activities, and any other activities not related to commuting or work. From 1969 to 1995, work travel's share continued its declined from more than 26 percent to about 20 percent of all local travel (*1*). Although work travel was growing substantially during this period, non-work travel was growing even more dramatically. Even during traditional commuting rush periods, non-work travel comprises more than 70 percent of all trips. The large share and fast growth of non-work travel have important implications for transportation planning. Non-work travel has traits, including group size, temporal and spatial distribution, travel time flexibility, package/luggage requirements, and other features, that influence the types of investments, services, and policies that can be most effective in addressing travel needs.

Mode choice determines how people travel. This analysis considers six mode choice options: driving privately operated vehicles, riding in privately operated vehicles as passengers, public transit, bicycle, walking, and others (*2*). Modal differences across groups are compared by examining how patterns of difference in mode choice vary with personal, household, geographic, and trip characteristics. For each age cohort selected, for example, the analysis examines whether the pattern of modal differences among these racial and ethnic groups differs, both qualitatively and quantitatively. The paper also explores which of these characteristics may be largely responsible for the modal differences observed at the aggregate level across racial and ethnic groups. Finally, the paper reports on an investigation of the role of racial and ethnic background in whether public transit is used for non-work travel by simultaneously controlling for many of the

personal, household, geographic, and trip characteristics examined earlier.

Historically, many conditions have limited people of color from having the high level of mobility provided by the automobile. A larger proportion of people of color live in households with low levels of income. Hispanic and African-American household incomes are only 74 and 70 percent of the national average in 1995, respectively. Reasons for such income disparities include: people of color are younger on average, have lower levels of educational attainment, and are more likely to live in single-adult households with children. People of color also spend fewer dollars but larger shares of their income on transportation. Additionally, fewer people of color age 16 or older are licensed drivers and people of color live in households with fewer vehicles; for example, about 20 percent of African Americans live in households without vehicles while only 3 percent of Whites live in zero-vehicle households.

People may use transit and non-motorized modes to satisfy their travel demands in the absence of automobile availability. If auto travel is too costly or unavailable, people may use other means even if the quality is lower. As a result, some people may spend more time to achieve a given level of mobility at lower levels of comfort, reliability, security, and safety than the rest of the population. Such substitution is made easier in large metropolitan areas or areas with high densities, locations where people of color are more concentrated. Transit services are better in terms of spatial and temporal coverage and destinations are more accessible by non-motorize modes in these areas.

## BACKGROUND

To set the context for analysis of mode choice for non-work travel, the growth and composition of the population of people of color and their mobility levels was reviewed. The review of mobility levels looked at differences among racial and ethnic groups in the level of mobility for non-work activities from 1983 to 1995. The purpose was to examine the extent of disparities in mobility across racial/ethnic groups and how disparities may have changed during the period, recognizing that differences across the groups in overall mobility may or may not be similar to differences in mode choice behavior. The review also looked at major determinants of mobility and characteristics of people of color that may limit them from achieving high levels of mobility.

The literature offers little on non-work travel and mode choice by people of color. However, several branches of the literature offer some items relevant to the subject discussed herein. The literature on non-work travel, in general, discusses how non-work travel may be modeled (*3*). Other research focuses on the effect of land use patterns, especially neighborhood design, on mode choice and trip generation of non-work travel (*4*). Another area is the literature on the analysis of non-work travel using household surveys (*5*). None of the research based on household surveys focuses specifically on people of color. Some of it, however, does include racial and ethnic background in the analysis (*6*). Other research focuses on the importance of non-work travel or the relationship between work and non-work travel (*7*).

## Data

The primary data source for this work is the 1995 NPTS database for the mode choice analysis and the 1983, 1990, and 1995 NPTS databases for the mobility trend analysis (*8*). These three are the latest in a series of five surveys conducted since 1969 for the U.S. Department of Transportation. These surveys contain the most comprehensive data available on person travel throughout the nation. However, as when using any sample survey, the reader is encouraged to understand characteristics of the data that may influence the interpretation or degree of confidence in the findings. The nature of the data, changes between the surveys, and adaptations to minimize the impacts are discussed in detail in a technical report on which this paper is based (*9*).

## People of Color

The concepts of race and ethnicity used in this paper are based on self-identification of persons into one of several predetermined racial and/or ethnic groups in their response to the NPTS or decennial census questions. Respondents do not have the option to indicate a multi-racial or multi-ethnic background. Racial groups are typically defined as White, African American, Asian (including Pacific Islanders), and a residual category identified as "Other Races." Ethnic groups are based on Hispanic origin: Hispanic and non-Hispanic. A joint definition of race/ethnicity is used with analysis centering on Hispanics, non-Hispanic Whites, non-Hispanic African Americans, non-Hispanic Asians, and non-Hispanic Others (subsequently referred to as Hispanic, White, African American, Asian, and Other, respectively).

The various racial and ethnic groups are projected to continue to follow different growth patterns with a resultant considerable change in the composition of the U.S. population in the next half century. The 1990 U.S. population was composed of about 9.0 percent Hispanic, 75.9 percent White, 11.8 percent African American, 2.8 percent Asian, and 0.7 percent Other. By 2050, the Hispanic share is expected to increase to 26.2 percent, the Asian share to 5.4 percent, and the residual group to 1.0 percent of the total population. White and African-American shares in the total population are expected to decline to 56.5 and 10.9 percent, respectively.

## Mobility

Americans were highly mobile in 1995, making on average 1,250 person trips annually per capita for non-work activities—almost three and a half trips per day (Figure 1). Whites exhibited higher mobility, about 2 percent over the national average, while mobility for people of color was lower. Among people of color, Hispanic mobility was the highest (about 2 percent below the national average) and Asian mobility was the lowest (about 15 percent below the national average).

Differences in average mobility for non-work travel among the racial and ethnic groups change little with personal, household, and geographic characteristics. Table 1 shows relative mobility between each of the racial and ethnic groups and the national average number of person trips per capita for selected characteristics. For example,

Hispanic female mobility is 97 percent of the national female average. Mobility for Whites, African Americans, Asians, and Others is 103, 91, 79, and 95 percent, respectively, of the national female average.

Another way of comparing mobility across the racial and ethnic groups is to look at the proportion of persons within each group who do not make any non-work trips on a given day. About 22 percent of the population nationwide did not make any non-work trips on a given day in 1995. The rates for Whites (21.4 percent) is below the nationwide rate, but the rates for Hispanics (22.9 percent), African Americans (24.5 percent), and Asians (24.3 percent) are higher.

Annual mobility per capita for non-work activities grew substantially from 1983 to 1995 for all racial/ethnic groups. This is true for all five measures of mobility used in this analysis: person trips, person miles, vehicle trips, vehicle miles, and person hours. Figure 2 shows annual mobility per capita for 1983, 1990, and 1995 by racial/ethnic background for three of the measures of mobility (*10*).

Mobility grew at a much faster rate for people of color than for the White population during the period from 1983 to 1995. This is true for all five measures of mobility. Consider, for example, person trips per capita. The data from Figure 2, when analyzed in terms of rates of change for mobility, indicate that Hispanic mobility grew at a rate that is almost twice as high as that at which the national average grew, while White mobility grew at a rate that is lower than that at which the national average grew. Among people of color, Hispanic mobility grew at the highest rate, followed by African Americans and Other groups. Mobility for people of color not only grew at higher rates than mobility for the White population, but also increased more in absolute terms when mobility is measured with the number of person trips per capita. In looking at the changes in per capita mobility by trip purpose and mode, most of the trip increases occur in the personal and family business categories and in the privately operated automobile category.

Mobility for the White population was higher than the national average throughout the period from 1983 to 1995, while mobility for people of color was lower than the national average. However, the faster growth in mobility for people of color reduced disparities in mobility among the groups during the period from 1983 to 1995. This is true for all five measures of mobility (Figure 3). Mobility for the White population declined slightly relative to the national average, while mobility for people of color increased dramatically relative to the national average in most cases.

A number of factors that changed differently across the racial and ethnic groups may help explain the observed differences in the mobility trends across these groups. Several were considered including various trip, personal, household, and geographic characteristics. The following were determined to be significant

### *Trip Characteristics*

Average trip distance increased over 20 percent for people of color, while it decreased slightly for Whites. On the other hand, average trip duration decreased for Whites, African Americans, and Others, while it increased for Hispanics. Average speed increased more for people of color than for Whites. These differences in the changes in trip characteristics help explain the differences in the growth patterns across the different measures of mobility.

### *Vehicle Ownership*

The proportion of people living in households without vehicles declined for every racial and ethnic group during the period from 1983 to 1995 (Figure 4, top graph). However, the absolute number of people living in households without vehicles declined for Whites and African Americans, but slightly increased for Hispanics and Others (Figure 4, second graph).

## MODE CHOICE FOR NON-WORK TRAVEL

This section examines how modal differences across racial and ethnic groups may vary with personal, household, geographic, and trip characteristics. For all racial and ethnic groups combined, privately operated vehicles have a dominant role in non-work travel (Table 2). Driving privately operated vehicles accounts for 57.3 percent and riding in privately operated vehicles as passengers accounts for 31.2 percent of all person trips for non-work travel. Modes other than privately operated vehicles have minimal roles in non-work travel, with walking accounting for 6.4 percent, public transit for 1.4 percent, bicycling for 1.0 percent, and other means for 2.7 percent.

Across the racial and ethnic groups, several patterns of modal difference emerge. The largest differences in relative modal shares between people of color and Whites occur with trips made by public transit and walking. People of color are several times as likely as Whites to use public transit for non-work travel and about twice as likely as Whites to walk for non-work travel. African Americans stand out among people of color in their use of public transit and other means. African Americans are over 9 times as likely as Whites to use public transit for non-work travel, while other people of color are about 2 to 4 times as likely as Whites to use public transit for non-work travel. African Americans are 1.6 times as likely as Whites to use the residual modes for non-work travel, while other people of color are about as likely as Whites to use those other modes. While all people of color are less likely to drive for non-work travel than Whites, the extent of difference is larger for Hispanics and African Americans than for other people of color. All people of color are more likely than Whites to walk for non-work travel, with the extent of difference being larger for African Americans and Asians than for other people of color. Overall, African Americans differ the most from Whites in mode choice for non-work travel, followed by Hispanics, Asians, and Others.

In looking at temporal trends, every racial and ethnic group experienced decreases in shares of non-work person trips made as passengers of privately operated vehicles, by transit, by walking, and by other means (Figure 5). Decreases in shares of non-work person trips made as passengers of privately operated vehicles and by walking are similar across the racial and ethnic groups. Shares of person trips made by transit decreased almost by half for Hispanics, 32 percent for Whites, 24 percent for African Americans, and 59 percent for Others. Shares of person trips by walking, however, decreased less for Hispanics than for other groups. Based on the trend of the NPTS data, then, it is apparent that the differences in mode choice behavior have declined over time across the racial/ethnic groups.

## License Status and Vehicle Ownership

Modal differences across racial and ethnic groups are minimal among several segments of the population, including people with at least two household vehicles, licensed drivers, workers, and people living in households with high incomes. For licensed drivers, modal differences are small for a variety of characteristics besides vehicle ownership, employment status, and household income. The one exception to this result seems to be among people who live in zero-vehicle households. Regardless of license status, the modal difference among people without household vehicles is high, indicating significant differences in modal distributions across the racial/ethnic groups. Modal differences are also significant for non-licensed drivers among people living in households with at least two vehicles, workers, or people living in households with an annual income at least $50,000. This evidence supports the hypothesis that modal distributions differ across racial/ethnic groups mainly because of modal differences among non-licensed drivers and people without household vehicles.

Table 3 shows population distribution by license status and vehicle ownership for each of the racial and ethnic groups. For all racial and ethnic groups combined, non-licensed drivers and people without any household vehicles account for 13 percent of the population age 16 or older. These shares differ among the racial/ethnic groups. This particular population segment accounts for 9 percent of people age 16 or older among Whites and 32 percent of people age 16 or older among African Americans.

## Modal Distributions

Table 4 shows non-work person-trip modal distributions for each racial/ethnic group by person age, driver's license status, and vehicle ownership. The non-work travel needs of non-licensed drivers or people without household vehicles are frequently met by public transit (11.7 percent of trips) and walking (23.5 percent of trips). In contrast, these two modes account for 0.4 and 3.6 percent of trips for drivers with vehicles. However, privately operated vehicles still account for more than half of the non-work travel for non-licensed drivers or people without household vehicles. Among drivers with household vehicles, modal distributions are remarkably similar across racial groups. The two notable differences are that African Americans still make more trips proportionally by public transit (1.3 versus 0.3 to 0.6 percent) and that Asians walk proportionally more for their non-work travel (7.6 versus 3.4 to 5.4 percent).

Among non-licensed drivers or people without household vehicles, the differences in modal distributions are large. However, most differences are qualitatively similar to the general pattern of difference observed at the aggregate level. One notable exception is that Asians and Others travel proportionally less frequently than other groups as drivers of privately operated vehicles. Also, Whites have the highest share of non-work trips made as passengers of privately operated vehicles.

## Role of Racial and Ethnic Background in Transit Use

One powerful tool to delineate the role of racial and ethnic background on mode choice is regression analysis. Regression analysis is a set of statistical methods that allows one to measure the effects of racial and ethnic background on mode choice, while controlling many other variables that may also affect mode choice. In contrast, cross tabulations become intractable when there are more than two controlling variables. This section uses logistic regression to examine the role of racial and ethnic background on whether public transit was used by respondents on their travel day. Logistic regression is used because the variable to be explained (i.e., whether public transit was used) takes only two values: one (1) if a respondent used public transit on the travel day and zero (0) otherwise.

Hypotheses tested whether each racial/ethnic group differs from Whites in the use of public transit for non-work travel for each of the following population segments: the mobile, the immobile, and the young. The mobile population includes all people who are at least 16 years old, are licensed to drive, and live in households with at least one vehicle. The immobile population includes all people who are at least 16 years old and are not licensed to drive, or people who are at least 16 years old and live in households without vehicles. The young population includes all people who are under 16 years old.

The model variable structure is outlined in Table 5. The regression analysis uses a sample of persons from the 1995 NPTS who satisfy three conditions:

1. They made at least one person-trip on their travel day;
2. They indicated that public transit was available in the city or town in which they resided; and
3. They had valid values for all variables included in the analysis.

A total of nine models were estimated for each mobility group. These models for a given mobility group vary in terms of what particular categories of independent variables in Table 5 are included. Only the full model for each mobility level is shown in this paper. Table 6 shows model results.

For the mobile population, both Hispanics and African Americans are statistically different from Whites in whether they use public transit for non-work travel when they can be different in their geographical characteristics (not shown). However, only African Americans are statistically different from Whites when they are identical in geographic characteristics (shown).

The results for the immobile population are the same as those for the mobile population when the racial/ethnic groups are controlled to be identical in geographical characteristics. That is, only African Americans are statistically different from Whites. The overall results for the young population are also identical to those for the mobile population. That is, both Hispanics and African Americans are statistically different from Whites in whether they use public transit for non-work travel when they can be different in their geographical characteristics. However, only African Americans are statistically different from Whites when they are identical in geographic characteristics.

Thus, when characteristics other than racial and ethnic background are appropriately controlled, only African Americans differ from Whites in whether public transit is used for non-work travel.

## Mode Choice for Work and Non-Work Travel: A Comparison

One might reasonably question whether or not observations about mode choice for non-work travel for different racial/ethnic groups carry over to behaviors for work travel. Table 7 provides a brief overview of work versus non-work travel for each of the racial and ethnic groups and all groups combined by trip purpose (work versus non-work) and by year (1983 versus 1995). Only people age 16 or older are included in the tabulation.

Driving and public transit play a larger role in work travel than in non-work travel, while the other modes play a larger role in non-work travel. The role of driving increased for both work and non-work travel from 1983 to 1995, while the roles of riding in privately operated vehicles as passengers, public transit, and walking decreased for both work and non-work travel during the same period. The increase in the role of driving is larger for non-work travel than for work travel, while the decreases in the roles of riding privately operated vehicles as passengers, public transit, and walking are smaller for non-work travel than for work travel.

Modal differences between work and non-work travel vary across racial/ethnic groups for several modes. While driving plays a larger role in work travel than in non-work travel for all racial/ethnic groups, that role is relatively smaller for African Americans than for the other groups. In addition, the differences for public transit are largest among Whites and smallest among Hispanics. Whites are almost four times as likely to use public transit for work travel as for non-work travel, while Hispanics are about twice as likely to use public transit for work travel as for non-work travel. Also, walking plays a relatively larger role in work travel for Whites than for any other group.

Changes in modal shares from 1983 to 1995 generally are in the same direction for work and non-work travel for each of the racial/ethnic groups. The magnitude of changes, however, differs somewhat between work and non-work travel. For the modes whose share increased during the period, including driving alone, the increase is larger for non-work travel than for work travel for all groups. For the modes whose share decreased during the period, including riding in privately operated vehicles as passengers, public transit, and walking, the decrease is typically smaller for non-work travel than for work travel. While public transit plays a larger role in both work and non-work travel for people of color than for Whites, the relative role of public transit between people of color and Whites is even bigger in non-work travel than in work travel.

## FINDINGS AND OBSERVATIONS

The NPTS provides a rich data source that sheds a great deal of light on both current travel behavior and changes in behavior over time. While limited sample sizes for some of the sub-segments of the population, questions about the accuracy of representation of low-income and minority households, the national as opposed to local focus of the data, and changes in survey methodology over time require one to exercise caution in

interpreting or generalizing the results, nonetheless, one can draw several well-supported conclusions from the data that are important to transportation planning.

## Mobility

The share of the population comprised of people of color is expected to reach 43.5 percent of the U.S. population by 2050. Historically, this segment of the population has had lower mobility, at least partially explained by the fact that this population exhibits several traits that impact their level of mobility, such as lower household income, lower average age, lower auto ownership, lower licensure levels, and being more highly concentrated in urbanized areas. While people of color continue to have a lower level of per capita mobility than Whites and make a smaller share of non-work trips as drivers of privately operated vehicles, they have experienced larger increases than Whites in per capita mobility and in the share of non-work trips as drivers of privately operated vehicles. These relatively larger changes in per capita mobility and mode choice by people of color are coincident with large declines in the proportion of minority persons who are not licensed to drive, who live in households without a licensed driver, or who live in zero-vehicle households.

Thus, mobility for racial/ethnic population segments has improved dramatically over the past few decades to the point where it is nearly the same as for the White population. Not surprisingly, the changes in mobility have been accompanied by, or enabled by, changes in the population characteristics that have long been acknowledged as key contributors to mobility. As the income levels, auto ownership levels, and licensure levels move to more closely match those of the White population, so too have the indicators of mobility and mode choice more closely compared with that of the national means and the White population. What is most surprising is the magnitude of the changes that have occurred.

## Mode Choice

There are several distinctive patterns of difference in mode choice among the racial and ethnic groups. The largest differences in relative modal shares between people of color and Whites occur for trips by public transit and walking. People of color are several times as likely as Whites to use public transit for non-work travel and about twice as likely as Whites to walk for non-work travel. African Americans stand out among people of color in their use of public transit. African Americans are over nine times as likely as Whites to use public transit for non-work travel, while other people of color are about two to four times as likely as Whites to use public transit for non-work travel.

While all people of color are less likely to drive for non-work travel than Whites, the extent of difference is larger for Hispanics and African Americans than for other people of color. In addition, while all people of color are more likely than Whites to walk for non-work travel, the extent of difference is larger for African Americans and Asians than other people of color. Other people of color are about equally as likely as Whites to travel as passengers of privately operated vehicles for non-work travel; Hispanics are more likely than Whites to travel as passengers.

Differences in mode choice across the racial/ethnic groups vary little with certain market segments but dramatically with others. Metropolitan area size, area density, and trip purpose do not seem to have systematic effects on modal differences across the racial/ethnic groups. Modal differences across the groups are slightly smaller among people age 16 to 64 than for other age cohorts, among males than for females, among people living in households with at least two adults than for people living in one-adult households, among trips 1 to 20 mi long than for other trips, and among night trips than for other trips. Also, modal differences across the racial/ethnic groups are much smaller among people with at least two household vehicles than for people with fewer vehicles, among workers than for non-workers, among people with high incomes than for people with lower incomes, and among people who are licensed to drive than for people not licensed to drive.

Mode choice across the racial/ethnic groups is remarkably similar among people who are licensed to drive and live in households with vehicles. Alternatively, modal differences are significant among people who are not licensed to drive or live in households without vehicles, especially those who are 16 years or older.

Racial/ethnic background appears to play a role in whether public transit is used on a typical day for non-work travel. When the racial/ethnic groups are controlled to be identical in a number of personal, household, geographic, and trip characteristics, only African Americans are found to be different from Whites in whether public transit was used for non-work travel on the travel day. This is true among people who are licensed to drive and live in households with vehicles, among people 16 years or older who are not licensed to drive or live in households without vehicles, and among people under 16 years of age.

## Implications

The data indicate that, to the extent that the economic and household characteristics of racial/ethnic group populations are moving to more closely approximate those of the White population, so too is travel behavior moving to more closely match that of the White population. Racial/ethnic group traits critical to travel behavior are moving quite rapidly to match those of the White population. Perhaps with the exception of some cultural characteristics such as an apparent greater willingness to use transit by African Americans, there is overwhelming evidence of a trend toward more comparable mobility levels across population segments. While there remain some differences in behavior that are not explained by looking at other available variables, it is not clear that even these differences will be retained over the long term. Most obviously, the willingness of African Americans to use public transportation even when other characteristics of the population are held constant may be explained by African Americans having a greater awareness of transit options, living in areas with better service availability, and/or a lack of stigma associated with transit use—conditions that may or may not remain over time.

Auto-mobility is clearly spreading to more and more segments of the population. The young, the old, the unemployed, the low income, and various minority racial/ethnic groups are all evidencing greater availability of auto travel options and lessened dependency on transit and other modes. As single-occupancy vehicle (SOV) options

become available there is a strong trend towards greater auto use. This trend is certainly not unique to the minority populations; however, it may be more evident in those population segments as the rates of change in those population groups have been faster than for the overall population.

One is tempted to speculate on the implications of these trends and on how they might play out in the future. Logical questions include speculation as to whether the equalization of mobility among groups will continue and, perhaps, result in the mobility levels of some ethnic/racial groups actually exceeding mobility for Whites. One might, for example, argue that the job/housing imbalance could create greater overall travel demand for minorities highly concentrated in central cities if job growth continued in outlying areas and if resources did not constrain their ability to make longer trips to jobs, shopping, or other purposes concentrated in distant suburbs. Similarly, one wonders whether overall mobility levels are near saturation, where most latent demand has been satisfied, and future growth in demand will be limited to more modest increases as economic conditions slowly decrease the relatively small share of the population that has constraints on its mobility. Is growth in overall mobility now limited by time rather than income constraints as the vast majority of the population has moved into the auto-available household categories? Might an economic downturn reverse some of the trends apparent in the data? Could roadway congestion dampen the longer term growth in overall travel demand and perhaps create differential mobility levels among population groups driven by modal levels of service in particular geographies rather than by household characteristics?

One might also speculate as to whether or not investment plans or other policies might influence the travel choices of the racial/ethnic groups disproportionately in the future. Will the recent increases in federal transportation funding and the relatively strong growth of funding for non-SOV modes result in greater equalization of travel behavior or perhaps widen the gap as the relative performance of travel options changes differently for different groups? For example, will increased funding for transit result in better transit service in the more urban areas that are the location of the vast majority of minorities, thus perhaps reversing or slowing the shift to auto use relative to White persons, or will transit investment targeted to choice riders and suburban populations make stronger inroads in shifting White travelers toward higher transit mode shares while growing economic strength moves more minorities out of transit captivity?

While there remain unknowns, there are some clear and important implications of the observed trends and information provided by the NPTS data regarding mobility and mode choice for different racial/ethnic groups. Travel behavior differences among racial/ethnic groups are modest and narrowing. It is also apparent that household characteristics rather than racial/ethnic traits are now the more powerful and more logically causal determinants in understanding travel choice for non-work trip making.

## NOTES

1. The 1969 number is derived from Patricia S. Hu and Jennifer Young. *1990 NPTS Databook*, FHWA, U.S. Department of Transportation, 1993. The numbers for 1995 were computed from the 1995 NPTS by the authors.

2. Privately operated vehicles mean motor vehicles that are privately owned and operated, including automobiles, vans, sports utility vehicles, pickup trucks, other trucks, recreational vehicles, motorcycles, and others. Public transit includes bus, commuter train, streetcar/trolley, and subway/elevated rail. School bus is included in the "others" category.

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8. Data files from the 1983 and 1990 surveys are contained in a CD-ROM available from *Nationwide Personal Transportation Survey: 1983 and 1990*, BTS-CD-09. Bureau of Transportation Statistics, U.S. Department of Transportation. Data files from the 1995 survey are available at www-cta-ornl.gov/npts. Documentation for the 1983 survey is *User's Guide for the Public Use Tapes: 1983–1984 Nationwide Personal Transportation Study*, U.S. Department of Transportation, 1985. Documentation for the 1990 survey is in *User's Guide for the Public Use Tapes: 1990 Nationwide Personal Transportation Survey* (1991). Documentation for the 1995 survey is at www-cta-ornl.gov/npts.

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10. Asians are not separately identified as a group in trend discussions because the 1990 NPTS did not identify "Asian" as a separate race. The group "Others" includes Asians.

**TABLE 1 Ratio of Average Mobility for Non-Work Travel between Racial and Ethnic Groups and All Groups Combined, 1995 (Source: Travel Day File, 1995 NPTS)**

| | | Non-Hispanic | | | |
|---|---|---|---|---|---|
| **Selected Population Segments** | **Hispanic** | **White** | **African American** | **Asian** | **Others** |
| Age 65 or older | 0.80 | 1.05 | 0.71 | 0.83 | 1.00 |
| Female | 0.97 | 1.03 | 0.91 | 0.79 | 0.95 |
| Less than high school graduate | 0.97 | 1.05 | 0.88 | 0.71 | 0.93 |
| Non-driver | 1.05 | 0.99 | 0.98 | 0.88 | 1.03 |
| Living in three-person households | 0.98 | 1.02 | 0.95 | 0.85 | 1.02 |
| Single adults with children under 5 | 0.99 | 1.03 | 0.97 | 0.88 | 1.02 |
| Household income $10,000–$14,999 | 0.96 | 1.01 | 1.00 | 1.07 | 1.08 |
| Renter | 0.95 | 1.04 | 0.94 | 0.92 | 0.99 |
| Living in zero-vehicle households | 1.00 | 1.04 | 0.97 | 0.91 | 0.80 |
| Urban areas | 0.95 | 1.08 | 0.93 | 0.91 | 0.91 |
| MSA 3,000,000+ | 0.94 | 1.05 | 0.91 | 0.83 | 0.89 |
| Nationwide | 0.98 | 1.02 | 0.92 | 0.85 | 0.95 |

**TABLE 2 Modal Distribution of Person Trips for Non-Work Travel, 1995**
**(Source: Travel Day File, 1995 NPTS)**

| Mode | Hispanic | Non-Hispanic | | | | All |
|---|---|---|---|---|---|---|
| | | White | African American | Asian | Others | |
| POV Driver | 49.8 | 59.6 | 48.9 | 55.0 | 55.2 | 57.3% |
| POV Passenger | 34.1 | 31.1 | 29.6 | 28.8 | 30.8 | 31.2% |
| Public Transit | 2.6 | 0.6 | 5.8 | 2.4 | 1.5 | 1.4% |
| Bicycle | 1.0 | 1.1 | 1.0 | 0.7 | 1.3 | 1.0% |
| Walk | 9.8 | 5.1 | 10.6 | 10.8 | 8.9 | 6.4% |
| Others | 2.7 | 2.5 | 4.1 | 2.2 | 2.4 | 2.7% |
| Total | 100% | 100% | 100% | 100% | 100% | 100% |
| Group Size | 10 | 75 | 11 | 2 | 2 | 100 |

**TABLE 3 Population Distribution by License Status and Vehicle Ownership, 1995**
**(Source: Person File, 1995 NPTS)**

| Racial/Ethnic Groups | Population Age 16 or Older | |
|---|---|---|
| | Drivers in Households with Vehicles | Non-Drivers or Drivers in Households Without Vehicles |
| Hispanic | 77% | 23% |
| White | 91% | 9% |
| African American | 68% | 32% |
| Asian | 83% | 17% |
| Others | 85% | 15% |
| All | 87% | 13% |

**TABLE 4 Modal Distribution of Person Trips for Non-Work Travel by Person Age, License Status, and Vehicle Ownership, 1995 (Source: Travel Day File, 1995 NPTS)**

| Age | License Status and Vehicle Ownership | Mode | Hispanic | Non-Hispanic | | | | Total (%) |
|---|---|---|---|---|---|---|---|---|
| | | | | White | African American | Asian | Others | |
| 16 or Older | Drivers in Households with Vehicles | POV Driver | 75.9 | 76.7 | 77.7 | 75.2 | 74.7 | 76.6 |
| | | POV Passenger | 18.5 | 18.9 | 16.8 | 16.1 | 19.1 | 18.6 |
| | | Public Transit | 0.5 | 0.3 | 1.3 | 0.6 | 0.4 | 0.4 |
| | | Bicycle | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.3 |
| | | Walk | 4.3 | 3.4 | 3.6 | 7.6 | 5.4 | 3.6 |
| | | Others | 0.5 | 0.5 | 0.5 | 0.3 | 0.3 | 0.5 |
| | | Total | 100% | 100% | 100% | 100% | 100% | 100 |
| | | Segment Size | 63 | 77 | 60 | 72 | 73 | 73 |
| | Non-Drivers or Drivers in Households without Vehicles | POV Driver | 8.5 | 8.7 | 8.2 | 2.8 | 3.6 | 8.2 |
| | | POV Passenger | 45.5 | 58.5 | 37.6 | 49.7 | 55.6 | 50.7 |
| | | Public Transit | 14.1 | 6.0 | 20.8 | 16.4 | 11.6 | 11.7 |
| | | Bicycle | 0.9 | 2.6 | 1.9 | 0.9 | 1.4 | 2.0 |
| | | Walk | 28.1 | 20.2 | 27.1 | 27.6 | 24.2 | 23.5 |
| | | Others | 2.8 | 4.0 | 4.4 | 2.5 | 3.6 | 3.8 |
| | | Total | 100% | 100% | 100% | 100% | 100% | 100 |
| | | Segment Size | 13 | 5 | 19 | 10 | 9 | 8 |
| Under 16 | | POV Driver | 1.3 | 3.6 | 1.1 | 0.5 | 1.1 | 3.0 |
| | | POV Passenger | 70.7 | 73.5 | 59.4 | 70.2 | 66.7 | 71.2 |
| | | Public Transit | 2.1 | 0.7 | 5.8 | 2.0 | 1.0 | 1.5 |
| | | Bicycle | 2.7 | 3.7 | 3.0 | 3.0 | 5.5 | 3.5 |
| | | Walk | 14.6 | 8.4 | 16.8 | 14.4 | 15.1 | 10.4 |
| | | Others | 8.6 | 10.1 | 13.9 | 9.9 | 10.5 | 10.4 |
| | | Total | 100% | 100% | 100% | 100% | 100% | 100 |
| | | Segment Size | 24 | 18 | 21 | 18 | 18 | 19 |
| Group Size | | | 10 | 75 | 11 | 2 | 2 | 100 |

**TABLE 5 Logistics Regression Model Variables**

| Category | Name | Definition |
|---|---|---|
| Dependent | Transit | 1 for people who used transit at least once on travel day for non-work purpose; 0 otherwise |
| Racial and Ethnic Background | Hispanic | 1 for Hispanics; 0 otherwise |
| | White | 1 for non-Hispanic Whites; 0 otherwise |
| | African American | 1 for non-Hispanic Blacks; 0 otherwise |
| | Asian | 1 for non-Hispanic Asians; 0 otherwise |
| | Others | 1 for non-Hispanic Others; 0 otherwise |
| Age, Driver's License, and Vehicle Ownership | Mobile | 1 for people 16 years or older who are licensed drivers and live in households with vehicles; 0 otherwise |
| | Immobile | 1 for people 16 years or older who are not licensed drivers or without vehicles; 0 otherwise |
| | Young | 1 for people under 16 years old; 0 otherwise |
| Geographic | Large MSA | 1 for people living in MSAs with at least 3 million; 0 otherwise |
| | Urban | 1 for people living in urban areas; 0 otherwise |
| | 0.25 mi to stop | 1 for people living within 0.25 miles of a transit stop; 0 otherwise |
| | New York MSA | 1 for people living in New York MSA; 0 otherwise |
| Personal and Household Features | College + | 1 for people with college education or more; 0 otherwise |
| | Non-Worker | 1 for non-workers; 0 otherwise |
| | Single-Adult Households | 1 for people living in single-adult households; 0 otherwise |
| | Low Income | 1 for people with household income under $15,000; 0 otherwise |
| Travel Day Features | Weekday | 1 if travel day was a weekday; 0 otherwise |
| | Winter | 1 if travel day was in December, January, or February; 0 otherwise |

Source: Authors

**TABLE 6 Summary of Model Results (Source: SPSS Logistic Regression, using the 1995 NPTS. Coefficients with * are not significant at the 5 percent level.)**

| Independent Variables | Mobile | | Immobile | | Young | |
|---|---|---|---|---|---|---|
| | Coeff. | Odds Ratio | Coeff. | Odds Ratio | Coeff. | Odds Ratio |
| Hispanic Mobile | 0.00* | 1.00 | | | | |
| African American Mobile | 1.26 | 3.51 | | | | |
| Asian Mobile | –0.01* | 0.99 | | | | |
| Others Mobile | –0.17* | 0.84 | | | | |
| Hispanic Immobile | | | –0.08* | 0.92 | | |
| Black Immobile | | | 0.73 | 2.07 | | |
| Asian Immobile | | | 0.31* | 1.37 | | |
| Others Immobile | | | 0.17* | 1.19 | | |
| Hispanic Young | | | | | –0.23* | 0.80 |
| African American Young | | | | | 0.81 | 2.26 |
| Asian Young | | | | | 0.28* | 1.32 |
| Others Young | | | | | 0.11* | 1.12 |
| Mobile | | | –1.96 | 0.14 | –0.72 | 0.49 |
| Immobile | 2.53 | 12.58 | | | 1.52 | 4.58 |
| Young | 1.27 | 3.55 | –0.98 | 0.37 | | |
| Large MSA | 0.46 | 1.59 | 0.46 | 1.58 | 0.47 | 1.60 |
| Urban | 0.81 | 2.24 | 0.81 | 2.24 | 0.81 | 2.25 |
| 0.25 mi from stop | 0.58 | 1.79 | 0.60 | 1.81 | 0.59 | 1.81 |
| New York MSA | 1.05 | 2.86 | 1.09 | 2.96 | 1.02 | 2.79 |
| College or Graduate | 0.25 | 1.29 | 0.23 | 1.26 | 0.22 | 1.24 |
| Non-Worker | 0.58 | 1.79 | 0.55 | 1.73 | 0.56 | 1.74 |
| Single-Adult Households | 0.30 | 1.35 | 0.30 | 1.35 | 0.29 | 1.33 |
| Low Income | 0.73 | 2.07 | 0.71 | 2.03 | 0.71 | 2.04 |
| Weekday | 0.19 | 1.21 | 0.21 | 1.24 | 0.19 | 1.21 |
| Winter | –0.26 | 0.77 | –0.25 | 0.78 | –0.23 | 0.79 |
| Constant | –6.20 | | –3.95 | | –5.16 | |
| Observations | 43,996 | | 44,149 | | 44,136 | |
| —2 Log Likelihood | | | | | | |
| Initial | 13,151 | | 13,132 | | 13,149 | |
| Final | 9,105 | | 9,309 | | 9,163 | |

**TABLE 7a Mode Choice by People Age 16 or Older by Purpose, 1983**
**(Source: 1983 NPTS)**

| Purpose | Mode | 1983 | | | | |
|---|---|---|---|---|---|---|
| | | Hispanic | White | African American | Others | All |
| Non-Work | POV Drivers | 41.2 | 51.1 | 38.5 | 44.6 | 49.5% |
| | POV Passengers | 38.7 | 37.5 | 34.2 | 37.7 | 37.5% |
| | Transit | 4.3 | 0.8 | 6.8 | 3.9 | 1.4% |
| | Bicycle | 0.6 | 0.7 | 0.4 | 1.3 | 0.7% |
| | Walking | 14.4 | 8.7 | 18.1 | 12.3 | 9.6% |
| | Others | 0.8 | 1.2 | 2.0 | 0.2 | 1.2% |
| | Total | 100% | 100% | 100% | 100% | 100% |
| Work | POV Drivers | 60.5 | 75.2 | 51.5 | 64.8 | 72.5% |
| | POV Passengers | 24.7 | 15.8 | 21.5 | 19.7 | 16.9% |
| | Transit | 8.3 | 2.8 | 17.9 | 11.1 | 4.5% |
| | Bicycle | 0.4 | 0.4 | 0.2 | 0.0 | 0.4% |
| | Walking | 5.7 | 5.1 | 7.6 | 4.4 | 5.2% |
| | Others | 0.4 | 0.6 | 1.3 | 0.0 | 0.6% |
| | Total | 100% | 100% | 100% | 100% | 100% |

**TABLE 7b Mode Choice by People Age 16 or Older by Purpose, 1995**
**(Source: 1995 NPTS)**

| Purpose | Mode | 1995 | | | | |
|---|---|---|---|---|---|---|
| | | Hispanic | White | African American | Others | All |
| Non-Work | POV Drivers | 64.4 | 72.6 | 61.7 | 66.8 | 70.4% |
| | POV Passengers | 23.1 | 21.3 | 21.6 | 21.7 | 21.5% |
| | Transit | 2.8 | 0.6 | 5.8 | 2.0 | 1.4% |
| | Bicycle | 0.4 | 0.4 | 0.5 | 0.2 | 0.4% |
| | Walking | 8.4 | 4.4 | 9.0 | 8.6 | 5.4% |
| | Others | 0.9 | 0.7 | 1.4 | 0.6 | 0.8% |
| | Total | 100% | 100% | 100% | 100% | 100% |
| Work | POV Drivers | 77.4 | 86.8 | 72.5 | 79.5 | 84.1% |
| | POV Passengers | 10.9 | 7.9 | 11.4 | 10.9 | 8.7% |
| | Transit | 5.5 | 1.8 | 11.6 | 5.2 | 3.3% |
| | Bicycle | 0.3 | 0.4 | 0.2 | 0.7 | 0.4% |
| | Walking | 3.8 | 1.9 | 3.0 | 3.2 | 2.3% |
| | Others | 2.1 | 1.3 | 1.5 | 0.5 | 1.3% |
| | Total | 100% | 100% | 100% | 100% | 100% |

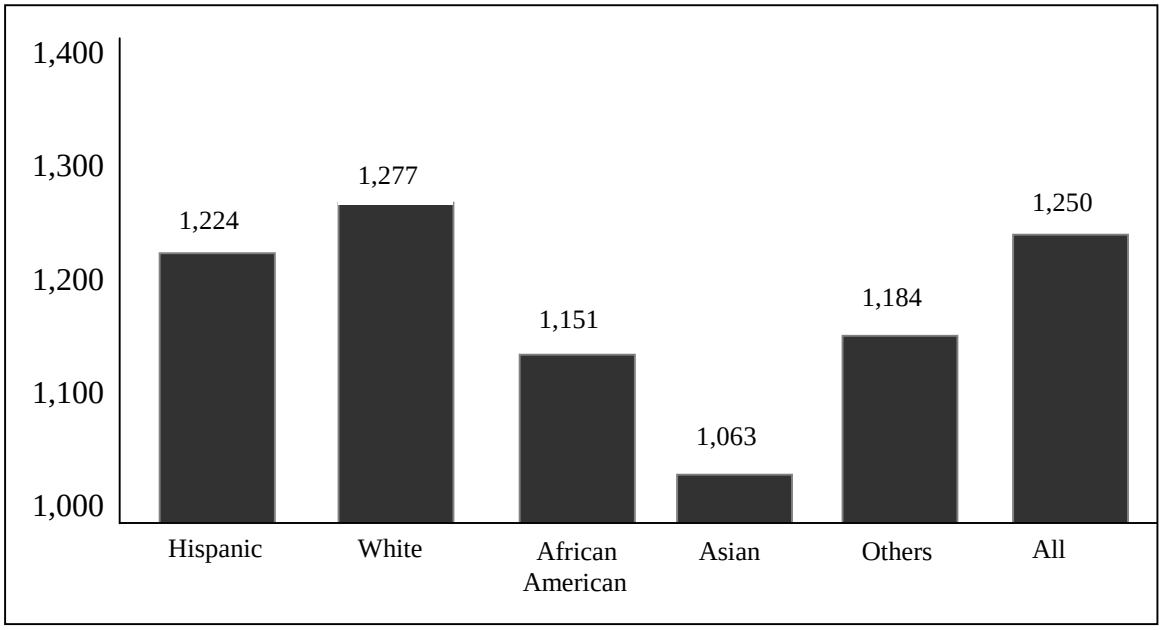


**FIGURE 1 Average annual person trips per capita for non-work travel, 1995. (Source: Travel Day File, 1995 NPTS.)**

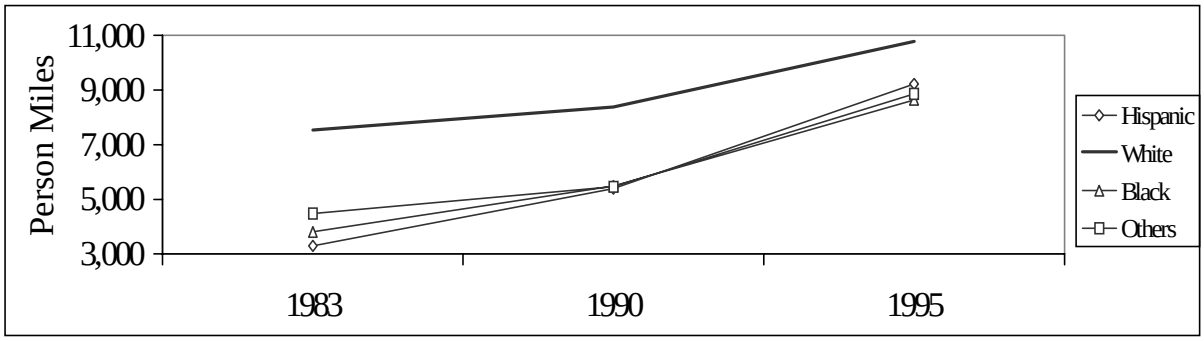


**FIGURE 2a Trends in annual mobility per capita for non-work activities, 1983–1995. (Source: 1983, 1990, and 1995 NPTS.)**

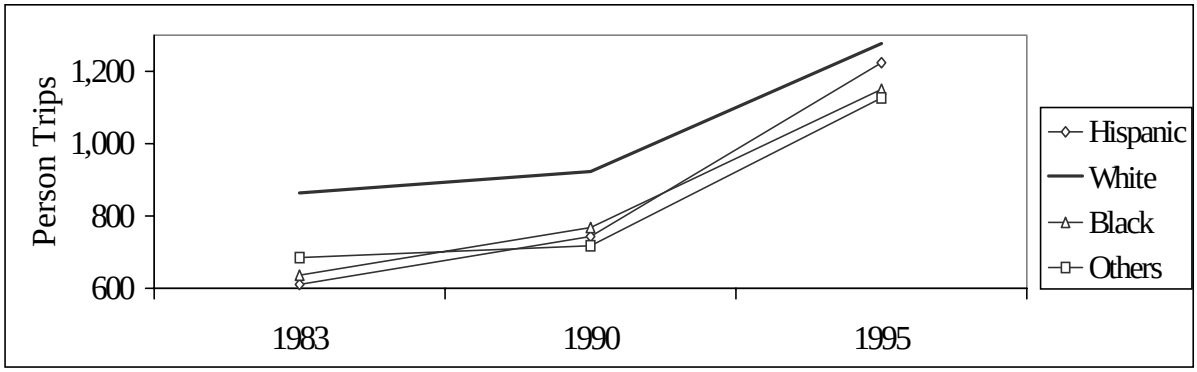


**FIGURE 2b Trends in annual mobility per capita for non-work activities, 1983–1995. (Source: 1983, 1990, and 1995 NPTS.)**

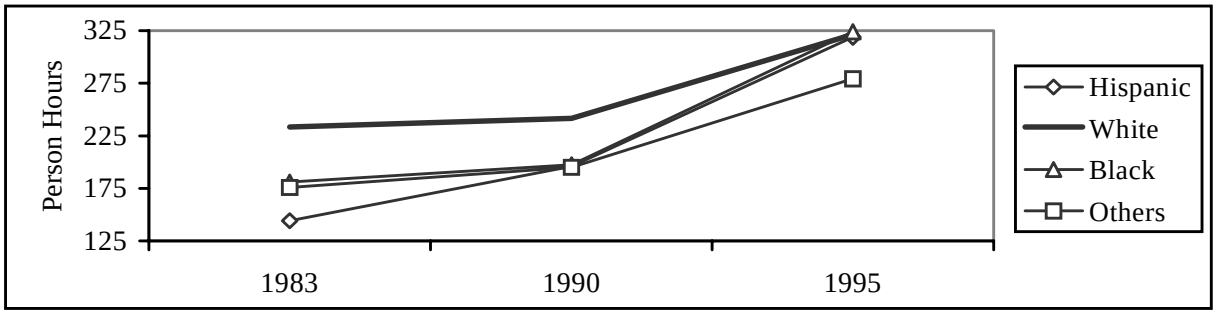


**FIGURE 2c Trends in annual mobility per capita for non-work activities, 1983–1995. (Source: 1983, 1990, and 1995 NPTS.)**

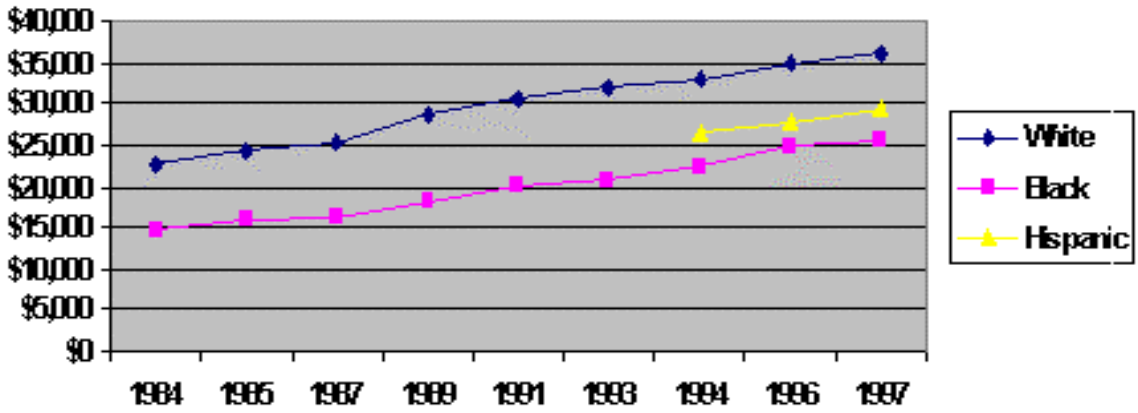


**FIGURE 3 Ratio of per capita mobility for non-work activities between racial/ethnic groups and all groups combined, 1983–1995.**
**(Source: 1983, 1990, and 1995 NPTS.)**

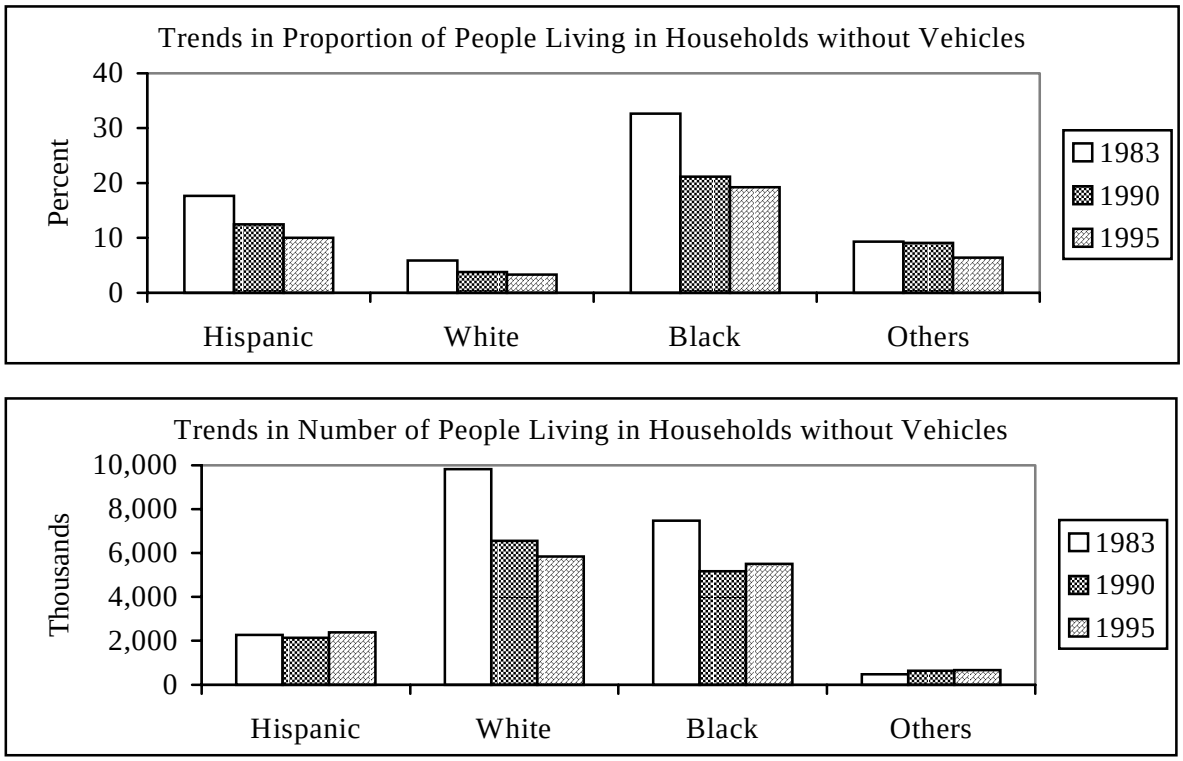


**FIGURE 4 People living in households without vehicles, 1983–1995. (Source: 1983, 1990, and 1995 NPTS.)**

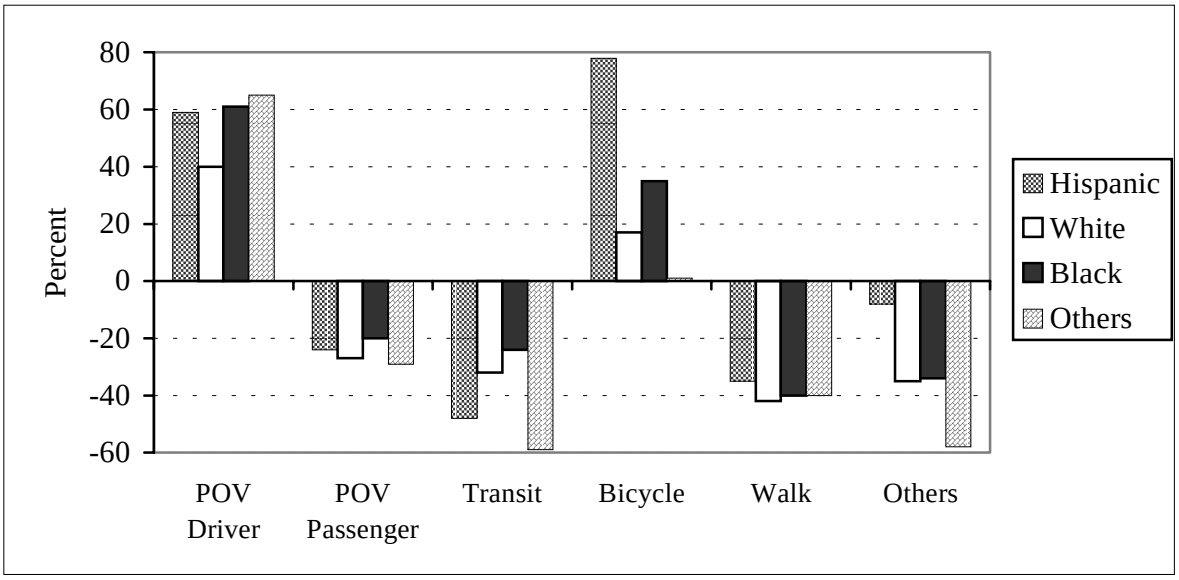


**FIGURE 5 Change in modal shares between 1983 and 1995 for non-work travel. (Source: 1983 and 1995 NPTS.)**