

# **Demographics Matter: Travel Demand, Options, and Characteristics among Minority Populations**

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## **Abstract**

The United States is in a significant period of change. Fuel prices are increasing, the economy is struggling, environmental issues are front and center, capacity in large urban areas has peaked, and the make-up of the US population is undergoing dramatic change. The significant growth in travel that the US has experienced since the 1960's is a product of demographic and economic changes including increases in vehicle ownership, baby boomers and women entering the workforce, and the dramatic growth in personal income.

More recently however, recent data such as the Highway Performance Monitoring System (HPMS), Traffic Volume Trends (TVT), and preliminary 2008 National Household Travel Survey (NHTS) results are painting a different picture. Some supporting evidence in recently published work is showing that there may be a slowing of growth in residential-based vehicle miles of travel (3). Whether or not this is a long-standing trend is yet to be determined, but factors such as vehicle saturation, fuel costs, new immigrant population growth, and an economic slowdown may be driving a leveling off of travel demand in the United States.

Race and ethnicity do matter in terms of travel choices, needs, and options. It is not that race and ethnicity in and of themselves are indicators of demand and the distribution of demand, but rather the demographic characteristics of minority households, such as income, vehicle ownership, and worker status translate into distinctive travel behavior among minority households. Using data from the US Census Bureau and the National Household Travel Survey Program, this paper examines the demographic characteristics of minority populations and the resulting differences in their travel behavior.

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## Introduction

People in the United States rely heavily on travel in their every day lives. Whether it's for work, shopping, visiting friends, personal business, or relaxing, the ability to get around is a fundamental part of American's well-being. How much people travel, how they get there, and when and why they travel is dependent upon various factors including household demographics, land use, resource availability (both household resources and transportation infrastructure), and cultural norms (10). While some factors may weigh in more heavily than others, the people's lifestyle's an important role in determining travel options, travel demand, and travel choices. Understanding the people behind travel behavior is critical in truly assessing current and future trends, program viability, and the impacts of projects and policy on different population groups.

The United States is in a significant period of change. Fuel prices are increasing, the economy is struggling, environmental issues are front and center, capacity in large urban areas has peaked, and the make-up of the US population is undergoing dramatic change. The past few generations of U.S. history have been characterized by significant changes in travel behavior which coincided with dramatic changes in the economy, culture, development pattern, and technology (1). The significant growth in travel that the US has experienced since the 1960's is a product of demographic and economic changes including increases in vehicle ownership, baby boomers and women entering the workforce, and the dramatic growth in personal income. More recently however, recent data such as the Highway Performance Monitoring System (HPMS), Traffic Volume Trends (TVT), and preliminary 2008 National Household Travel Survey (NHTS) results are painting a different picture. Some supporting evidence in recently published work is showing that there may be a slowing of growth in residential-based vehicle miles of travel (3). Whether or not this is a long-standing trend is yet to be determined, but factors such as vehicle saturation, fuel costs, new immigrant population growth, and an economic slowdown may be driving a leveling off of travel demand in the United States.

There are several methods for measuring and forecasting travel in the US. Most focus on counting cars through traffic recorders and other Intelligent Transportation Systems (ITS) and modeling and forecasting demand based on basic household demographics (such as vehicles and people per household) and home to work flows. Race and ethnicity, along with many other household, person, and trip characteristics rarely come into play as on an aggregate level they do not add much variation to the model outputs. An argument can be made for the absence of characteristics such as race and ethnicity in the forecast equation. This is because the other factors, such as household income, vehicle ownership, and worker status can account for demand by specific population groups. In addition, demographic forecasts, in general, are known to be subject to much uncertainty (5).

However, group specific analyses of travel behavior are essential for informed policy and planning. People travel, not cars, and the decision-making and circumstances that go into every day trip making are complex and based on numerous factors. While there is a great deal of uncertainty as to how the travel demand trend will continue, including how it will

be impacted by government investment and policy actions, fundamental socio-demographic trends and known travel behaviors provide insight into the distribution and magnitude of future travel demand (1).

Understanding the drivers behind current travel demand, forecasting future demand, and developing sound policies on critical issues is important. Highway finance, congestion, land use planning, air quality, fuel costs and oil dependency, and infrastructure investment are some of the current issues challenging the performance of the US transportation system. There are always several viable approaches to solving transportation issues, however understanding the people behind the demand, provides key information on how and to what extent specific population groups will respond to and be affected by various solutions.

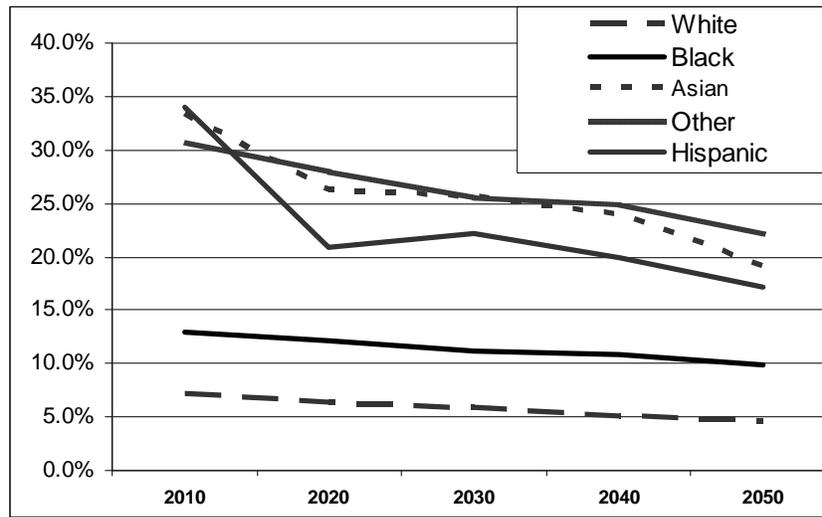
This paper provides an overview of the demographics of the population with an emphasis on racial and ethnic groups in the US and presents a comparison of key travel characteristics. Rather than attempting to statistically demonstrate the importance of race and ethnicity on travel forecasts (which would not be successful anyway), this paper provides insights into the people behind travel demand and the importance and ethics of thinking in terms of demographics when considering new policies, programs, and projects.

## **Demographics Matter**

Approximately 81 percent of vehicle miles of travel, excluding commercial trips, in the US is generated by the American public. Nine percent of trips are by other modes such as transit, walk, and bike. The amount and characteristics of that travel is highly related to the characteristics of persons and households. Factors such as income, household size, vehicle ownership, and worker status are strong indicators of trip rates, mode choice, and time of day travel, all of which have important impacts on transportation planning and policy (10).

There has been much discussion and speculation over the past few years on the potential impacts of the aging population on future travel demand. By 2050, the number of persons age 65 and older in the US is projected to rise from the current 12 percent to 21 percent of the population (4). The aging of the population, however, is more of a “White Phenomena” which could shift some of the travel demand to minority populations as the Country becomes more diverse, especially among younger cohorts. “In 1990, 24 percent of the U.S. population was composed of people of color: 12 percent African American, 9 percent Hispanic, and 3 percent Asian” (4). By 2050, 43 percent of the U.S. population is forecasted to be people of color (Hispanics, African Americans, and Asians); with more than one-quarter of the people in the U.S. of Hispanic origin (9).

**Figure 1 – Projected Population Growth by Race and Ethnicity**



Source: U.S. Census Bureau

While the White population in the US is projected to remain relatively stable over the next 40 years, different races and ethnic groups will be the main contributors to population growth (Figure 1). The number of Hispanics is expected to grow 188 percent; the Asian population to grow 213 percent and the Black population (both Hispanic and non-Hispanic) is expected to grow to 61.4 million in size (4).

**Table 1 – Age Distribution by Race and Ethnicity**

	<16	16-65	65+
<b>White, non-Hispanic</b>	20.6	64.9	14.5
<b>African American, non-Hispanic</b>	29.2	62.7	8.2
<b>Asian, non-Hispanic</b>	21.6	70.7	7.7
<b>Hispanic</b>	31.9	63.3	4.8
<b>All</b>	23.4	64.5	12

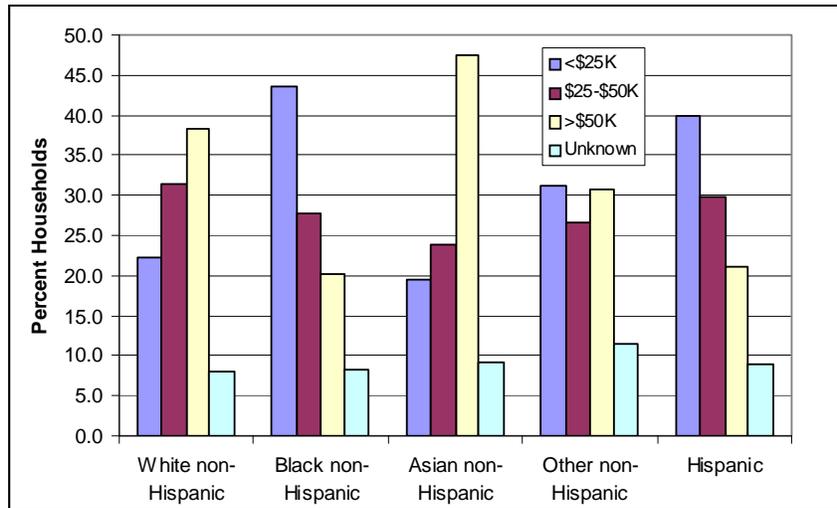
Source: Commuting in America III

As shown in Table 1, the travel demand of the future will be generated by the younger age cohorts. A significantly larger percentage of African Americans (29.2 percent) and Hispanics (31.9 percent) are under the age of 16 as compared to only 20.6 and 21.6 percent of Whites and Asians, respectively. This means that minority populations, while still lower in numbers, will have an increasing influence on travel needs, preferences, volumes, and behavior in future years as they enter the workforce and start families (3).

This potential greater influence, however, is dependent upon a number of factors. Race and ethnicity in and of themselves are not indicators of demand and travel choices. However, as certain racial and ethnic groups continue to exhibit differences in key demographic indicators of travel, the outcome is a different level of demand, transportation needs, options, and travel behavior as compared to the White population in the US.

Historically, characteristics such as income, licensure rates, and auto ownership correlate highly with the level of travel (12). At a minimum, two scenarios may occur. In the first, the drivers of demand such as worker status, licensure, income, and vehicle ownership will increase among minority populations, their travel behavior eventually mirroring the characteristics of the current high income, licensed, vehicle owning, and worker population. Alternatively, the growth in these key characteristics may be slow or negligible, creating a shift in demand in the geographic areas with high minority populations.

**Figure 2 – Household Income Distribution by Race and Ethnicity**  
(Percent Households)



Source: 2001 National Household Travel Survey, FHWA Office of Highway Policy Information

Understanding how travel might change as real income changes is perhaps the single most critical issue in predicting future travel (1). As shown in Figure 2, there are significant differences in household income levels across racial and ethnic groups. African Americans and Hispanics have the lowest average household incomes with approximately 40 percent of households making less than \$25,000 annually. In contrast, 38 and 48 percent of White and Asian households, respectively, have incomes in excess of \$50,000 per year.

Another important determinant of travel demand is vehicle availability. As shown in Table 2, African Americans and Hispanics have the lowest average number of vehicles per household. In addition, the average age of vehicles in these households is high in comparison with the White and Asian population. The age of the vehicle impacts safety, transportation emissions, and transportation costs as the adoption of new, efficient, safe vehicles is slower among minority populations.

**Table 2 – Household Vehicle Characteristics by Race and Ethnicity**

	<b>Vehicle per Household</b>	<b>Average vehicle age</b>	<b>Average Vehicle MPG</b>	<b>Average Annual Vehicle Miles</b>
<b>White non-Hispanic</b>	1.99	7.9	20.7 mpg	21,709
<b>Black non-Hispanic</b>	1.38	8.2	21.1 mpg	17,147
<b>Asian non-Hispanic</b>	1.74	6.7	22.9 mpg	19,198
<b>Other non-Hispanic</b>	1.90	9.1	20.5 mpg	20,420
<b>Hispanic</b>	1.69	8.5	21.3 mpg	22,778

Source: 2001 National Household Travel Survey, FHWA Office of Highway Policy Information

A lower average number of vehicles per households, combined with higher average household size among minority populations places restrictions on travel options, leaving many households more dependent on alternative modes such as transit, walking, biking, and carpooling (10). Vehicle ownership among minority households has increased since 1995, however. According to the 1995 NHTS, formally called the NPTS, the average number of vehicles per household for Blacks was 1.26 and for Hispanics 1.60.

However, average annual vehicle miles of travel for minority households vary considerably. In fact, Hispanic households have the highest amount of vehicle travel annually. This may be do to several factors including larger household size, car sharing, and greater travel distances for key travel such as work trips.

The lower average number of vehicles per household is a product of the number of zero vehicle households among African American and Hispanics (Table 3). While 10.3 percent of all households have no vehicle in the US, 23.8 percent of African American households and 17.2 percent of Hispanic households do not have a vehicle available for use. The availability of safe, alternative travel modes will become increasingly important in the transportation planning arena as the size of these populations grow.

**Table 3 – Percent Zero Vehicle Households**

	<b>Percent</b>
<b>White</b>	7.3
<b>Black</b>	23.8
<b>Hispanic</b>	17.2
<b>Asian</b>	12.7
<b>All</b>	10.3

Source: Commuting in America III

Licensure rates are consistent with trends found in income and vehicle ownership with African Americans having the lowest licensure rates. There is a gender difference as well. As shown in Table 4, both African American and Asian women experience very low licensure as compared to their male counterparts. Income constraints and cultural norms are often factors to consider when drawing conclusions about the current and future travel of minority populations (8).

**Table 4 – Licensure Rates by Race**

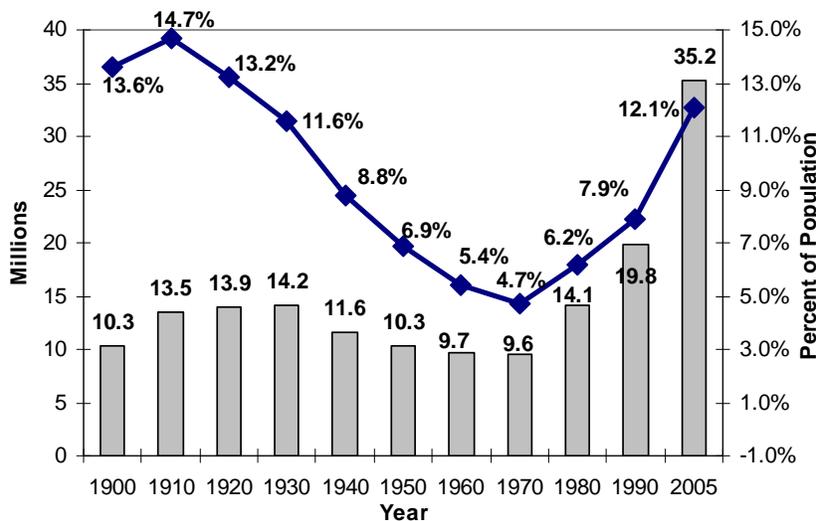
Gender	Race			
	White	Black	Asian	Other
Male	91.8	77.9	87.2	82.3
Female	88.8	72.0	76.6	70.3
Total	90.2	74.4	81.9	76.2

Source: Commuting in America III

## Intersection between Race, Ethnicity, and Immigration

In the US, it is difficult, if not foolish, to talk about race and ethnicity without some discussion on immigration. The level of immigration now and as projected for the US is at a level not seen since the early 1900's. This historic influx of new races, ethnicities, and cultures has an important impact on both the make up of the US and the distribution and characteristics of travel demand across the County. As shown in Figure 3, in 2005 the Census estimates 35.2 million total immigrants in the US, or 12.1 percent of the population, demonstrating a significant increase in the level of immigration over the past four decades.

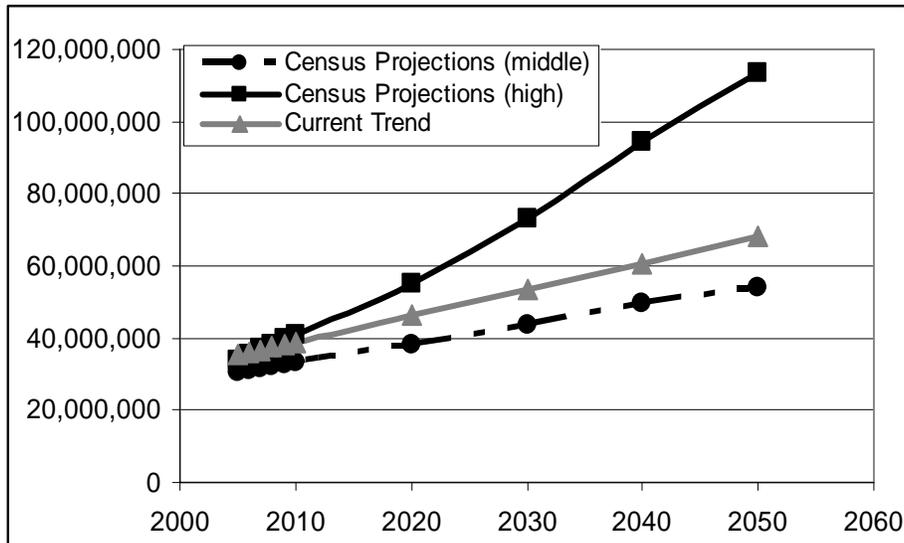
**Figure 3 – Immigrants in the U.S., Number and Percent of Population**



Source: Decennial Census for 1990 to 2000, Center for Immigration Studies and Analysis of March 2005 Current Population Survey Data

Current trends will take the immigrant population to 68 million, 16.2 percent of the U.S. population by 2050 (6). Census high series projections estimate total immigrants at 114 million in 2050 (Figure 4).

**Figure 4 – Projected Annual Immigration (2000 – 2050)**



Source: U.S. Census Bureau Projections, Middle and High Series. Current trends assume current average of 731,000 new immigrants per year continues out to 2050.

If the Big Six States continue to be immigrant magnet states, California, New York, Texas, Florida, Illinois, and New Jersey can expect between 22 million and 52 million<sup>1</sup> new immigrants by 2050 (Table 5). This phenomena does not only have the potential of shifting overall travel demand and behavior of the US population, but creates a significant concentration of demand shifts in select geographic areas.

**Table 5: Change in Foreign-Born Population – 2000 - 2005**

State	2000 population	2005 population	Change 2000-2005	% change 2000-2005
California	8,809,641	9,647,768	838,127	9.5
New York	3,819,028	3,962,767	143,739	3.8
Texas	2,878,503	3,550,140	671,637	23.3
Florida	2,634,349	3,220,141	585,792	22.2
Illinois	1,518,500	1,703,548	185,048	12.2
New Jersey	1,459,007	1,655,837	196,830	13.5
Georgia	573,161	791,706	218,545	38.1
North Carolina	425,246	559,343	134,097	31.5
Arizona	654,746	854,356	199,610	30.5
Virginia	561,332	721,843	160,511	28.6
Maryland	512,040	644,978	132,938	26.0
Pennsylvania	495,017	621,896	126,879	25.6
Washington	608,622	757,235	148,613	24.4
Massachusetts	752,899	907,054	154,155	20.5

Source: Population Studies Center, University of Michigan, PSC Research Report No. 02-520

Research carried out to support the development of DOT forecasting models as well as

<sup>1</sup> Estimate uses current trend and high series projections assuming that the Big Six States continue to draw 66 percent of the immigrant population.

other national research has shown a marked difference in travel behavior between the domestic population and immigrants. Thus, the pace of immigration will impact travel demand through its impact on the total population and the fact that research has shown that immigrants generally travel less and are more likely to use modes other than auto (1).

## Travel Behavior among Minority Populations

Historically, population changes, both in demographics and geographic location, have had significant impacts on the size and distribution of travel demand (4). Currently, the US is in the midst of significant demographic change. Historically, factors that influence growth in travel beyond population growth include the age and distribution of the population, auto ownership levels, licensure rates, household size, labor force participation, and real personal income per capita (4).

As discussed in the previous section, African-American, Hispanic, and to some extent Asian households vary considerably from White households on many key influencers. Common among minority groups is lower auto ownership, lower household income, greater household size, lower levels of labor force participation, lower licensure rates, and a population concentration in urban areas.

While race and ethnicity in and of itself is not an indicator of demand, the propensity of minority groups to differ in these key influencers is shown clearly in their travel differences. Understanding how and why these groups travel is critical in measuring the potential impacts of new programs, policies, and projects.

**Table 6 - Annual Trip Rates and Vehicle Ownership by Race and Ethnicity**

	<b>Trips per household</b>	<b>Trips per person</b>	<b>Vehicle per household</b>
<b>White non-Hispanic</b>	3693.9	1525.2	1.99
<b>Black non-Hispanic</b>	3609.5	1318.9	1.38
<b>Asian non-Hispanic</b>	3868.6	1342.5	1.74
<b>Other non-Hispanic</b>	3506.2	1461.4	1.90
<b>Hispanic</b>	4979.5	1327.9	1.69

Source: 2001 National Household Travel Survey, FHWA Office of Highway Policy Information

As shown in Table 6, overall trip making levels show disparity across households and persons. The important thing to consider in reviewing Table 6 is the difference between the household and person annual trip rates. For example, Hispanic households produce the greatest amount of travel annually (5.0 thousand trips), but have one of the lowest number of trips per person (1.3 thousand trips). Asian households demonstrate a similar situation with the second largest number of annual trips (3.9 thousand) annually and a much lower number of trips per person (1.3 thousand) as compared to the White population. Predominantly White households, in comparison, average 3.7 thousand households per year and 1.5 thousand trips per person, the highest level of person based trip making among all the demographic groups.

**Table 7 – Vehicle Occupancy by Race and Ethnicity**

	<b>1995</b>	<b>2001</b>
<b>White</b>	1.48	1.51
<b>African American</b>	1.53	1.55
<b>Asian</b>	1.50	1.58
<b>Hispanic</b>	1.62	1.80

Source: 2001 National Household Travel Survey, FHWA Office of Highway Policy Information

In examining vehicle occupancy rates, a significant difference in travel behavior is apparent. As shown in the previous section, Hispanic and Black households have the lowest number of vehicle ownership and higher average vehicle occupancy rates as compared to White households. While all households have shown a significant increase in vehicle occupancy since 1995, Hispanic households in 2001 had the highest at 1.8 persons per vehicle trip. With the huge influx of new immigrants, predominantly Hispanic, combined with lower levels of vehicle ownership, concentration in urban centers, larger household size, and lower incomes, the common car sharing among Hispanic households demonstrates real difference in travel behavior for this population.

**Table 8 – Person Miles of Travel by Mode**

	<b>MODE</b>	<b>AVG_MILE</b>
<b>WHITE_NONHISP</b>	Bike	63.79
<b>WHITE_NONHISP</b>	Public Transit	216.21
<b>WHITE_NONHISP</b>	Walk	207.96
<b>BLACK_NONHISP</b>	Bike	35.83
<b>BLACK_NONHISP</b>	Public Transit	1,217.58
<b>BLACK_NONHISP</b>	Walk	266.10
<b>ASIAN_NONHISP</b>	Bike	37.31
<b>ASIAN_NONHISP</b>	Public Transit	1,423.78
<b>ASIAN_NONHISP</b>	Walk	254.65
<b>HISPANIC</b>	Bike	54.45
<b>HISPANIC</b>	Public Transit	849.04
<b>HISPANIC</b>	Walk	373.87

Source: 2001 National Household Travel Survey, FHWA Office of Highway Policy Information

Utilization of alternative modes of transportation is another important example of how travel behavior differs across racial and ethnic populations. As shown in Table 8, Blacks, Asians, and Hispanics are heavy users of alternative modes of transportation as compared to White households. White households average only 64 miles on bike, 216 on public transit, and 208 walking miles annually. In contrast, Black households average 1.2 thousand transit miles and Hispanic households walk almost 400 miles per year.

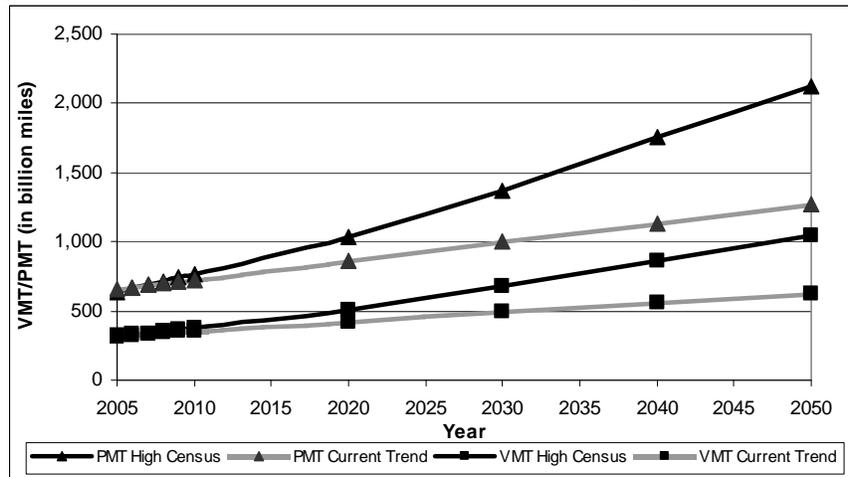
**Table 8 - Travel Time by Race and Ethnicity**

	< 20 minutes	More than 60 minutes
<b>White</b>	48.3	7.1
<b>African American</b>	39.0	10.6
<b>Asian</b>	38.6	10.3
<b>Hispanic</b>	44.0	9.1

Source: Commuting in America III

Average travel time is a function of both distance and mode of transportation. Time spent in travel is often considered to be one indicator of quality of life, meaning that more time spent in travel takes away from other home activities. Whites are the least likely of all races and ethnicities to spend more than 60 minutes in travel as compared to 10.6 percent of Blacks, 10.3 percent of Asians, and 9.1 percent of Hispanics.

**Figure 5 – Projected Travel Demand from Immigrants (2005 – 2050)**



Source: High Census is based on Census Bureau immigrant population projections using 1990 Decennial Census. Current trends assume current average of 731,000 new immigrants per year continues out to 2050. VMT and PMT estimates are based on the current travel of immigrants from the 2001 NHTS.

As much of recent and future population growth in the US will be from new immigrants, understanding the different travel experiences, options, and needs is important when considering various policy and programmatic plans for the future. As shown in Figure 5, even the more conservative estimate (current trends) projects adding 730,000 new immigrants each year, which would add more than a 100,000 new transit riders in each year for the period between 2010 and 2050 (6). As immigrants assimilate to the US tendency towards travel by car, the share of trips made by vehicle increase across all racial and ethnic groups. Asian immigrants make a faster transition to automobile use while Hispanic immigrants remain more likely to use transit than the US born population even after 20 years in the US (11).

## **Conclusions**

America has always been a melting pot and if current trends continue, minority populations will become an even larger portion of travelers on the Nation's transportation system. Since minorities on average are more transit dependent, have higher auto occupancies, and lower levels of vehicle ownership, initiatives focuses on tolling, infrastructure development, land use planning, and highway finance can benefit from understanding the travel behavior, options, and needs of this growing segment of the US population.

Understanding the differences in travel behavior and the possible explanations for these differences can help in modeling travel demand, finding policies best suited to meeting the travel needs of all population groups, and addressing environmental justice concerns (12). As the US society becomes more diverse over the next few decades, a significant portion of growth in travel demand will undoubtedly come from minority populations. Therefore, differences in travel behavior, such as those outlined in this paper, have wide-reaching consequences for short and long-term policy development, planning, and travel demand forecasting.

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