

WHITE PAPER

Long-Term Demographic Trends and Travel Demand

Summary

Demographic trends today will shape the traveling public of tomorrow. How many people, how old they are, their living arrangements, and their health all significantly contribute to transportation demand. This paper examines population projections and current trends in household size, birth rates, age distribution, immigration, and public health. Available data suggest that by 2050 in the United States:

- Our households will be smaller
- Fewer households will have children in them
- More of the population will be over-65 and driving
- The population will be more diverse and more people will be of Hispanic origin
- A majority of the population will be overweight, and many people in every state will be obese (defined as having a body mass index of 30 or higher).

What does this all mean for transportation demand? If today's trends and projections hold, the picture that emerges is of a nation very different from that in which the Interstate Highway System developed. Families with children are the exception, the population is much more diverse, people live longer, and they are less physically active. Most of these trends suggest higher VMT, both overall and per capita.

More People, Smaller Households

As of July 1, 2004, the Census Bureau estimated the nation's population at 293,655,404. Current estimates of the population in 2050 are 419,854,000 – an increase of 43%. Immigration trends, which are heavily influenced by public policy and difficult for demographers to project, will play a large part in determining the accuracy of the Census Bureau's estimates. Immigration will be discussed further below.

Households are getting smaller. Americans are marrying later in life, divorcing more, having fewer children, and living longer. The table below compares a range of indicators contributing to smaller household size in 1970 and 2003.

Indicator	1970	2003
Number of households	63,401,000	111,000,000
Average size	3.14	2.57
Total fertility rate	2.5	2.04
Median age at first marriage (men)	23.2	27.1
Median age at first marriage (women)	20.8	25.3
Never married	24.9%	28.6%
Separated or divorced	4.6%	11.7%

The most recent Census projections available, released in 1996, projected nearly 115 million households by the year 2010, with a drop in the average household size from 2.62 (in 1995) to 2.53 in 2010. The 2003 Current Population Survey indicates that we are well on our way: there were 111 million households in 2003, of an average size of 2.57.

Smaller households exhibit different travel behaviors than do larger households. While larger households tend to own more cars, the number of personal vehicles per capita is much lower¹. Smaller households own more cars per capita, an attribute which is associated with increased travel. Projections of more, smaller households suggest that the future will bring increased travel demand. Smaller household size also may spur the development of more housing, which is necessarily less dense overall than housing the same number of people in fewer households. There is a possibility that smaller households could spur the development of multi-family housing, but given “Americans’ overwhelming preference for a house with its own private yard²”, this is less likely.

Fewer households contain children. Nuclear families (married couples with their own children), declined from 40% of all households in 1970 to 23% in 2003. The majority of households today are one or two-person households. As Americans are waiting longer to have children, and living longer after their children have left home, there are more pre and post-child households.

Farnsworth Richie notes that, as fewer households contain children, basic assumptions about housing development [and implications for transportation] should be questioned. She argues that “housing needs and choices are very different for households with and without children” and that new flexibility in housing will be needed. Whether or not new housing patterns will emerge over the next 50 years remains to be seen.

The Aging Population

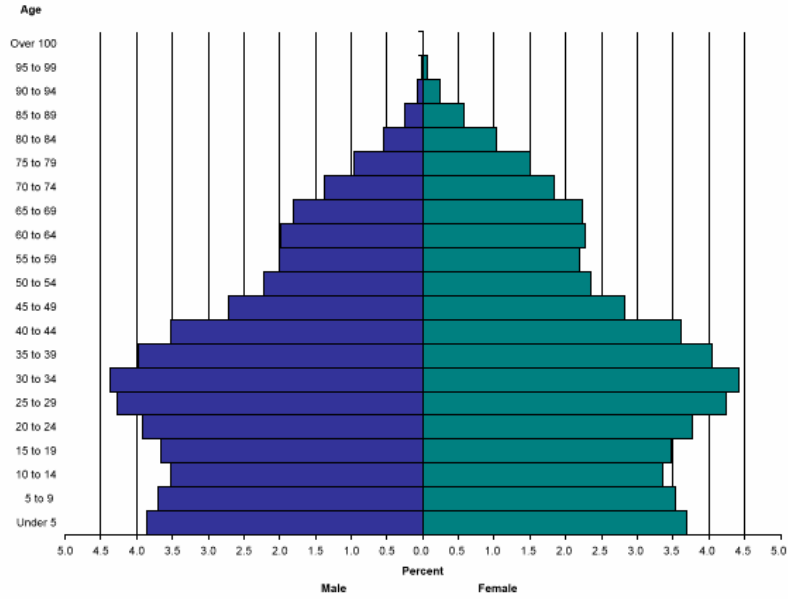
The population is aging. Longer life expectancy, the progress of the Baby Boomer generation into the 65+ category, and relatively low birth rates are creating a new age distribution across the population, one where the age cohorts are closer in size than ever. Historically, age distribution charts have been “pyramid-shaped”, with many more young people than older people and a fairly steady slope. Population projections for 21st century America, however, are “pillar-shaped”, with a strikingly equal distribution of ages across the population, until reaching the highest age cohorts. This reflects the longer lifespans and lower birth rates of the US today.

Over the next 25 years, the Baby Boomers will be aging into the 65+ category, **effectively doubling the number of senior citizens**. Not only will there be more senior citizens, but also, many argue that they will differ significantly in their travel behavior from seniors today. Seniors today prefer to travel by personal automobile (Schmöcker, Bush, Alsnih). However, the current generation of senior citizens travels less, and more often by transit, than their juniors.

¹ The 2001 National Household Travel Survey, household file, U.S. Department of Transportation.

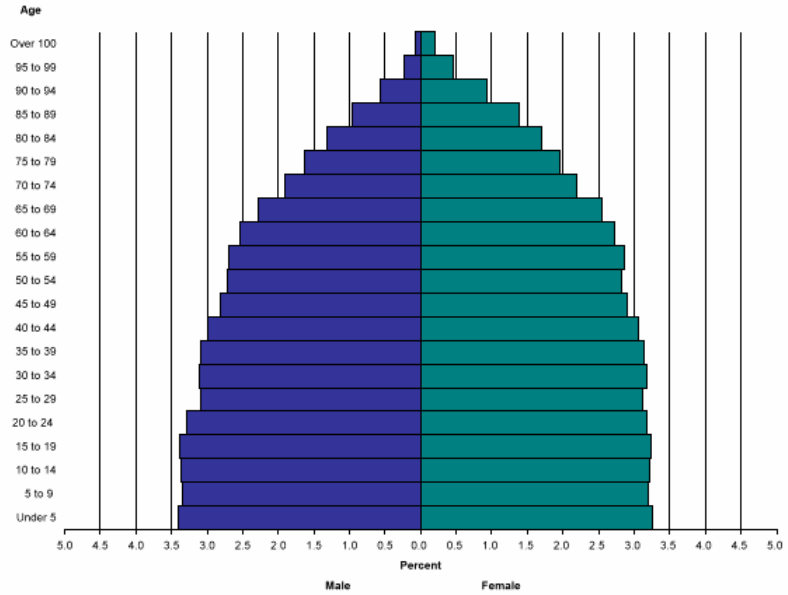
² Farnsworth Richie, Martha. “How Changes in the Nation’s Age and Household Structure Will Reshape Housing Demand in the 21st Century” in *Issue Papers on Demographic Trends Important to Housing*. U.S. Department of Housing and Urban Development, February 2003.

(NP-P1) Resident Population of the United States as of July 1, 1990, Middle Series.



Source: National Estimates Program, Population Division, U.S. Census Bureau, Washington, D.C. 20233

(NP-P4) Projected Resident Population of the United States as of July 1, 2050, Middle Series.



Source: National Projections Program, Population Division, U.S. Census Bureau, Washington, D.C. 20233

It is far from certain that the Baby Boomers will follow this pattern. “The Boomers are expected to carry with them into old age a higher propensity for auto ownership and use, increased female independence, as well as higher levels of education, increased economic stability, and improved health” (Bush 3). In 2050, Generation Y, defined as those born between 1979 and 1994 – the “Echo Boomers”, will be moving into the 65+ category. This generation is growing up in an America where 87% of daily travel is by personal automobile³; absent major changes to the transportation system in the next decades, they are likely to be even more dedicated to driving than their predecessors.

Current transportation systems will likely be insufficient to meet the needs of this large, demanding senior population. Seniors are reluctant to cease driving, which is associated with independence and quality-of-life. However, older drivers have higher fatality rates per vehicle mile traveled, per mile driven, and per licensed driver, than all groups except for the youngest drivers. New driving support systems and improved alternatives to driving are necessary for the safety of all travelers. One consideration is that retirement may actually increase VMT, at least in the short-run, as work trips, which may have been by transit, are replaced by nonwork trips, which are more likely to be made by personal automobile⁴.

Immigration Trends

In 2003, **foreign-born residents** represented 11.7% of the U.S. population. While immigration trends are important for understanding travel demand, they are heavily influenced by public policy and are difficult to project into the future. A recent study concluded that immigration trends are affected more by the quality of life differential between the US and the country of origin, than by absolute economic trends within the US itself.

Net immigration from July 1, 2003 - July 1, 2004 is estimated to have been 1,221,013. In the most recent Census Bureau population projections, net immigration is assumed to be 996,000 in 2025 and 1,097,000 in 2050. This assumes a decline in immigration through 2020, an increase from 2020 – 2030, and steady net immigration from 2030 through 2100. These assumptions are based on the idea that the impact of the Immigration Reform and Control Act of 1986 will have peaked in the early part of the first decade of the century and that the aging of the population will spur immigration of working-age people from 2020 – 2030.

Population trends among foreign-born residents differed from the larger population in several respects: key to the discussion of travel demand are geographic location and household size. Immigrants are more likely to live in a central city than the native born population – 44.4% to 26.9%, respectively and tend to have larger families; in 2003, foreign-born residents were more than twice as likely as native-born residents to live in households of five or more (25% compared to 12.5%).

³ BTS Pocket Guide to Transportation, 2005 (for 2001)

⁴ Alsnih, Rahaf and David A. Hensher. “The Mobility and Accessibility Expectations of Seniors in an Aging Population”. Transportation Research Part A: Policy and Practice 37 (10) December 2003: 903-916.

Recent immigrants have markedly different travel behaviors from the native-born population, although the distinctions fade over time. They are significantly more likely to use public transportation, to live in zero-vehicle households, and to take fewer trips than “settled” immigrants or native-born citizens.

The population of Hispanic origin is projected to increase by 188% between 2000 and 2050. Given that in 2003, 53.3% of all foreign born residents originated from Latin America, it is clear that population trends among this group will be crucial to understanding travel demand in the next fifty years.

With regard to birth rates, while the total fertility rate⁵ for the population as a whole, and most groups within the population, fell below the “replacement level” of 2.1, the rate at which a population can replace itself over time, Hispanic women had total fertility rates of 2.78. It is difficult to project the extent to which these differences will continue into the future, or if they will gradually erode as this population becomes better established in the United States.

Health and Physical Activity

According to the 1999-2000 National Health and Nutrition Examination Survey, **nearly 2/3 of American adults were overweight, and nearly 1/3 were obese**, up 14% from 1988-94 and up 36% from 1976-80. A 2004 study⁶ found lower prevalence of obesity among recent immigrants, although assimilation of US dietary and fitness habits over time appears to reduce this difference for long-term immigrants.

While the connection is still being investigated, a Rand Corporation study posits that rising prevalence of obesity may contribute to increasing disability rates among young people. Reported disabilities for those aged 30 to 39 increased by nearly 130% between 1984 and 1996. This trend could have implications for mode choice, as physical limitations may well discourage or prevent much of the population from making use of bicycle and pedestrian facilities, and further reinforce use of personal vehicles.

The initial public policy response, vis-à-vis transportation, has been to investigate the possibility of encouraging physical activity through community design and pedestrian and cyclist enhancements. This is founded in the assumption that the built environment and travel behavior are contributing factors to obesity, and that public policy intervention in these areas may help reverse the trend. Early research results are inconclusive, and little has been implemented to date. Will infrastructure investments made in response to public health issues shape transportation in the 21st century? Or will the transportation system adapt to better accommodate the obese?

⁵ The total fertility rate is a standardized measure of the average number of live births per 1,000 women experiencing specific age-specific fertility rates throughout their childbearing years without accounting for mortality (US Census Bureau definition).

⁶Goel MS, McCarthy EP, Phillips RS, Wee CC. Obesity Among US Immigrant Subgroups by Duration of Residence. *Journal of the American Medical Association*. 2004; 292: 2860-2867

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