

VMT Inflection Point: Factors Affecting 21st Century Travel

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Introduction

For many decades, transportation planning has assumed continued increases in automobile use. Now, in a major reversal, the average American is driving considerably less. According to the most recent FHWA travel-volume report for July, total vehicle miles traveled showed no increase compared to the previous 12-month period (1), marking more than five years of no growth. No one can predict the future with certainty, but there are many reasons to think that VMT trends will not revert to the 20th century trend. This paper lists some of those reasons, with references to supporting literature.

The total number of VMT each year in the U.S. reached its highest point in 2007 and appears to have leveled off just below 3 trillion (Figure 1). The number of miles driven per capita has decreased by more than 7% (Figure 2).

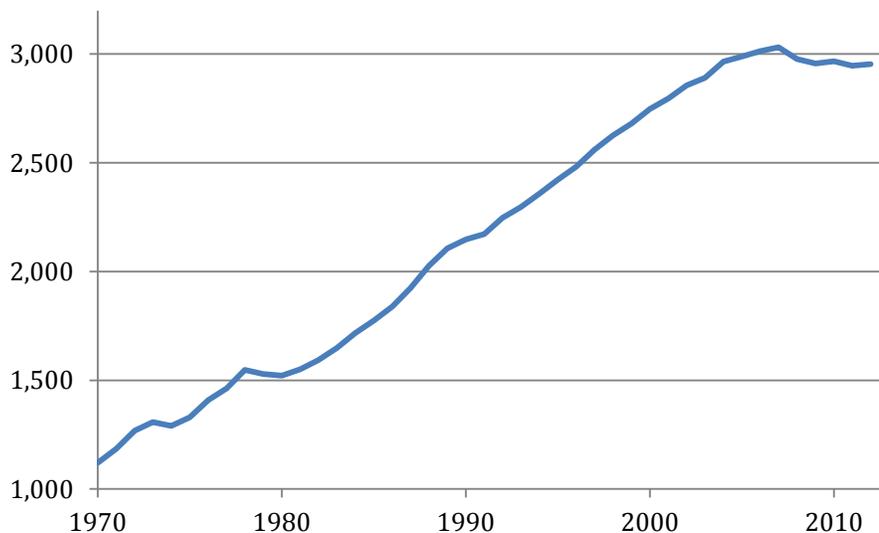


Figure 1. Total annual VMT in the United States (in billions). Source: FHWA.

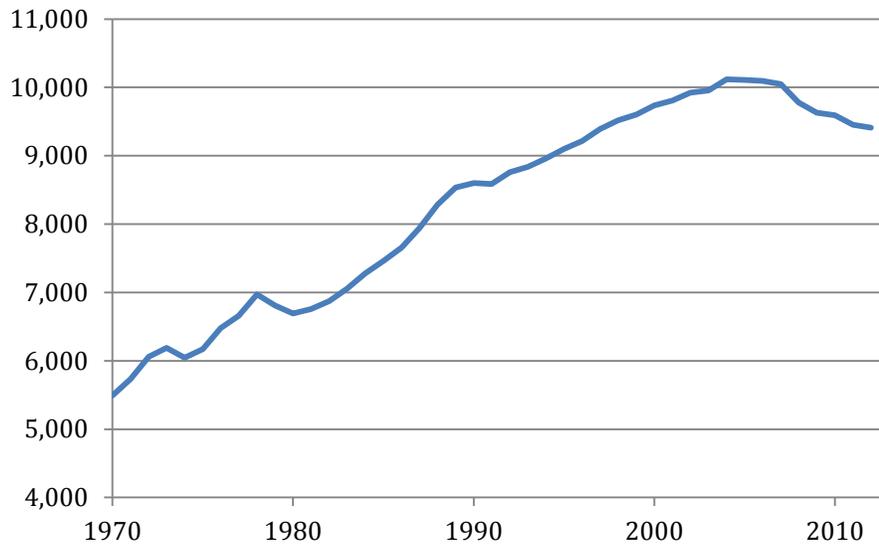


Figure 2. Annual VMT per capita in the United States. Source: FHWA and Census Bureau.

While this recent drop in VMT is sometimes dismissed as a temporary condition brought on by the economic downturn (2), this ongoing shift has been linked to a much wider range of factors – some permanent and others that will likely remain influential for a generation or more.

Driving and the Economy

Many view lower VMT rates as an outcome of higher unemployment rates and lower economic activity, stemming from the recent economic downturn (2). One reason for this perception is that VMT and GDP have been closely related throughout most of the twentieth century, including periods of fluctuation in the 1970s (2, 3).

Whatever factors might have contributed to this link in the past (this is still hotly debated), the recent trends and patterns in VMT appear to be occurring more-or-less independently of economic conditions. Volpe Center economists determined that, while economic conditions play some role, future VMT growth will be considerably smaller even as the economy recovers (3). Many of the same reasons they give are outlined below.

VMT growth stopped tracking GDP growth around the year 2000 (2, 3). VMT per capita reached its peak in 2004 – a few years before the economic downturn (4–6). Perhaps more importantly, VMT per capita continued to decrease even as the economy showed signs of improving. A state-by-state analysis by the U.S. Public Interest Research Group reveals no consistent link between employment and VMT during the most recent economic downturn (7).

Factors Driving Up VMT Have Peaked

The VMT growth that occurred during the 20th century was driven in large part by dramatic increases in income, automobile ownership, and licensing rates. As discussed below, these factors are not likely to contribute significantly to any further VMT increases.

Women in the Workforce

Since World War II, women have entered the workforce and obtained driver's licenses at increasing rates. This has led to rising household incomes, higher rates of automobile ownership and more miles driven. Since around 2000, however, the share of women in the workforce has leveled off at around 60 percent and the share of women with licenses has reached nearly 85 percent (2, 5, 8).

The Baby Boom

Up to the year 2000, the baby boom generation was in its peak travel age – between 35 and 50. In the next several decades, this cohort – which makes up a considerable portion of the nation's drivers – is expected to drive considerably less (3, 8–11). Younger Americans are also driving less, as discussed below.

Household Income

Historically, as household income rates increase, so do rates of automobile ownership. This was particularly true during the 1970s and 1980s as more households rose from lower to middle class. This trend is unlikely to continue in the U.S., where further increases in income will have considerably weaker influence and might even lead to somewhat lower rates of automobile use (3, 5, 8, 12).

Automobile Ownership

After a century of steady increases in automobile ownership rates, the automobile market is nearly saturated and the total number of vehicles nationwide is unlikely to grow considerably (4, 5). The number of vehicles available per person, per household, and per licensed driver reached their highest points between 2001 and 2006, then decreased (13, 14). The total number of vehicles reached its highest point in 2008 and will not likely rise above that point again for several decades, given population forecasts and trends in ownership rates (13).

High Costs of Driving

While per mile costs of driving have generally decreased over time, the combined costs of owning and operating a vehicle increased considerably in the 1980s and 1990s and continue to make marginal increases (3, 8). Higher fuel prices are worth taking into account, but actually play a small role compared to the combined costs of maintenance, parking, insurance, infrastructure, and non-monetary costs such as congestion (15–17).

Fuel Prices

There is no clear evidence that fuel prices have distinctly influenced driver behavior during the past decade, although their role might become more prominent in the next few decades if prices remain high or continue increasing as they have since 2005 (4, 6). Researchers have observed a clear relationship between fuel price and consumption at aggregate scales – such as in differences between nations (12, 18) – but the recent price spikes do not appear to have strongly affected individual consumption (19, 20).

A prior analysis by SSTI reveals no clear long-term response to gas prices between 1980 and 2011, noting that real gas prices are roughly equivalent to their highest values during the spike of the early 1980s (21). In fact, there is considerable evidence that consumers have become less responsive to changes in fuel price since 1980, although some questions remain as to whether this change is permanent (19, 22). Perhaps more importantly, VMT per capita began to drop

prior to fuel price shocks in 2008 (9), indicating that fuel price has not been a leading cause in this most recent case.

Congestion

In many regions, traffic volumes are pushing up against the limits of existing highway capacity, and transportation agencies often lack the resources to invest in further capacity enhancements. Very little new highway construction has taken place since the 1980s, and average travel speeds have stabilized following years of increases (3, 8). According to the Texas Transportation Institute's *Urban Mobility Report*, a typical automobile commuter spends more than twice as much time being delayed by congestion as she did two decades earlier (15).

Time Budgets

Throughout history, people have been willing to spend a little more than one hour per day traveling (8, 9, 23, 24). For years, automobiles offered opportunities to live and work in more spread-out patterns without exceeding this limit. More recently however, a combination of longer trip lengths and lower average speeds have pushed travel times above this threshold (8, 9). Up to 2001, this primarily affected the way commuters allotted time for different activities – such as spending less time at home – (8) but time spent traveling has since leveled off (25). Travel time budget constraints are expected to stabilize per capita VMT rates or push them down further (8, 9, 23, 24).

Lifestyle and Travel Choices

Many of the factors described above, along with other cultural shifts, have contributed to a resurgence in compact living – particularly among young people and aging retirees – after years of rapid suburban growth (3–5, 9). This style of living is associated with shorter trips, higher rates of walking, biking, and transit use, and considerably lower VMT per capita (26). A 2011 survey produced for the National Association of Realtors reveals a strong preference for neighborhoods that allow residents to meet their needs with relatively little driving (27, 28) and new construction of this type has been made less difficult (29–31).

Younger Generation

Two key reports by the Frontier Group and U.S. PIRG reveal that younger Americans (age 16 to 34) choose to live in compact, mixed-use neighborhoods at considerably higher rates than prior generations, obtain driver's licenses at lower rates, and rely more on non-automobile modes of travel (4, 25). These reports show that between 2001 and 2009, this age group represented the largest decrease in VMT per capita – a drop of 23%. While economic and cost concerns have played some role, so have environmental concerns and mobile technologies that make non-automobile travel more convenient. Employed young people alone drive 16 percent fewer miles per year, and non-automobile use has shot up in households making more than \$70,000. The authors of these reports expect this trend to continue.

Travel Mode Choices

The portion of trips made by walking, biking, and transit have stabilized after years of decline (8). The rising use of non-automobile modes (9, 14, 32, 33) and growing attention to bicycle and pedestrian design around the nation (34) mean that these modes may replace SOV trips or allow for more park-once-and-walk trips. Other factors such as telecommuting, online shopping, and

car-sharing can potentially reduce car trips, but the impact of these factors on VMT is not yet fully understood (3).

Future Development Patterns

As discussed above, compact, mixed-use neighborhoods are becoming increasingly popular among several demographic groups, including young adults. Although there was very little new construction in this style post World War II, some major regulatory and funding barriers are being reformed. Many jurisdictions have begun to relax zoning codes that limit the potential for dense, mixed-use development (30), and the Federal Housing Authority recently eased financing restrictions on mixed-use projects (29). Federal agencies and local authorities around the nation have identified new mixed-used and transit-oriented development as key components of future growth strategies (31).

Conclusions

Prior growth in VMT was driven in large part by the combined effects of large-scale highway construction, women entering the workforce, a large baby boom population, growing incomes, rising automobile ownership, and restrictions on compact, mixed-use development. The weakening influence of these factors, paired with limits on automobile travel and changing preferences for non-automobile modes mean that the U.S. is unlikely to experience overall VMT increases anywhere near the magnitude of previous decades. These factors will be difficult to account for fully, but these trends suggest a serious need for a new approach to travel demand forecasting and transportation system design in the 21st century.

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