Evolution of Vehicle Miles Traveled in the U.S.

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Executive summary

How much people drive their vehicles—that is, passenger vehicle miles traveled (VMT)—will play a central role in determining future U.S. oil consumption and pollution. Recent developments have attracted media and public attention to VMT. As displayed in the figure below, after decades of growing at about 2 percent per year, VMT suddenly leveled off in the mid-2000s and by some estimates decreased. The popular media have offered a range of hypotheses, including household demographics (such as an aging population) and economic characteristics (such as declining household incomes and rising unemployment attributable to the recession). Another set of hypotheses involves changes in how much households drive, conditional on demographics and economic characteristics. For example, one hypothesis contends that current younger households (i.e., the millennials) drive less than younger households in previous generations did because of a stronger preference for public transit, virtual connectivity, or other reasons. We refer to these developments as changes in household driving habits. These two explanations have differing long-term implications for VMT, oil consumption, and emissions. For example, a persistent change in household driving habits would imply that VMT will grow more slowly in the future than it did before the 2000s. On the other hand, if the recession was the main factor, expected future economic growth would imply that VMT will rise roughly at historical rates.

In this paper, we distinguish between the contributions of demographics and economic characteristics and the contributions of household-level driving habits to changes in national VMT. We begin by estimating the relationships among household VMT, demographics, and economic characteristics in a base year before the VMT slowdown. Subsequently, we use the Oaxaca-Blinder methodology to decompose changes in total VMT between the base year and any subsequent year into two classes: (a) changes in demographics and economic characteristics; and (b) changes in household driving habits, conditional on demographics and economic characteristics.

Our first result is that changes in demographics and economic characteristics, rather than changes in household driving habits, largely explain changes in VMT between 1995 and 2015. Based on our first result, we predict future VMT assuming that demographics and economic characteristics continue to explain VMT and that driving habits of each household group remain persistent. Our second result is that we predict average annual VMT growth of about 0.9 percent between 2015 and 2025, which is lower than historical averages although higher than the growth observed during the 2000s.

These results have implications for policies attempting to reduce the greenhouse gas and local air quality problems that passenger vehicles cause. First, our analysis implies that VMT growth will increase the challenge of reducing greenhouse gas emissions. If VMT grows at the predicted rate rather than remaining constant, VMT growth will offset nearly half of the reductions in oil consumption and greenhouse gas emissions caused by fuel economy standards for passenger vehicles over the next decade. Second, VMT growth will increase the challenge of reducing local air pollution and traffic congestion. Federal regulations determine air quality standards for various forms of air

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pollution, such as carbon monoxide. States are responsible for meeting the federal standards, and passenger vehicles are major contributors to many of these problems, particularly for ozone and particulates. Federal standards set emissions rates for new vehicles, because of which state policy makers can target VMT and the emissions rates of older vehicles. Therefore, the conclusion that VMT will grow at nearly historical rates will make it harder to achieve local air quality standards.