

Energy Use and Fuel Efficiency



Nancy McGuckin
www.travelbehavior.us

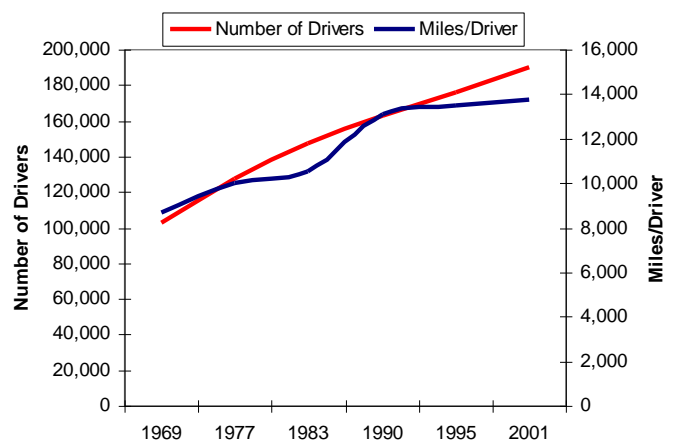
According to the Energy Information Agency (EIA) transportation accounts for 60 percent of U.S. oil demand.

A number of factors effect fuel consumption by passenger vehicles in the U.S., such as total driving population and the miles driven per driver. According the NHTS data series, both of these have nearly doubled since 1969 (see Exhibit 1).

But other factors, such as the fleet mix (varying proportion of cars, vans, and SUVs) and the intensity of use of these vehicles, effects fuel consumption too. Fuel efficiency standards are based on the fleet average of all the vehicles by type that are sold. But, although more cars are sold, on average they are driven fewer miles per year than pick-ups and SUVs (see Exhibit 2).

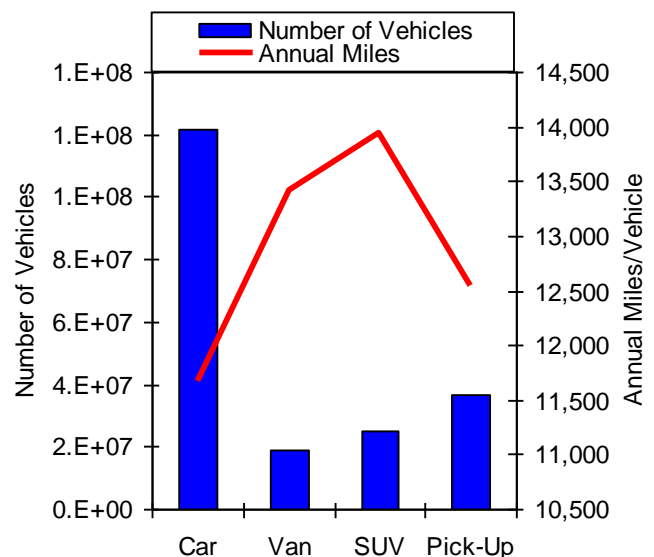
Fuel economy standards for passenger vehicles were first set in 1975 when Congress set a 1985 goal to double mpg for passenger cars to 27.5 mpg. Passenger car fuel economy peaked in 1987 at 26.2 mpg. The Energy Independence and Security Act of 2007 requires in part that automakers boost fleetwide gas mileage to 35 mpg by the year 2020. This requirement applies to all passenger automobiles, including "light trucks."

Exhibit 1 –Number of Drivers and Miles per Driver, 1969 to 2001



Source: NHTS Data Series

Exhibit 2 – Number of Vehicles and Average Annual Miles by Type of Vehicle



Overall fuel economy for both cars and light trucks in the U.S. market reached its highest level in 1987, when manufacturers managed 26.2 mpg. The average in 2004 was 24.6 mpg* (see Exhibit 3). In that time, vehicles increased in size from an average of 3,220 pounds to 4,066 lb, in part due to an increase in truck ownership during that time from 28% to 53%.

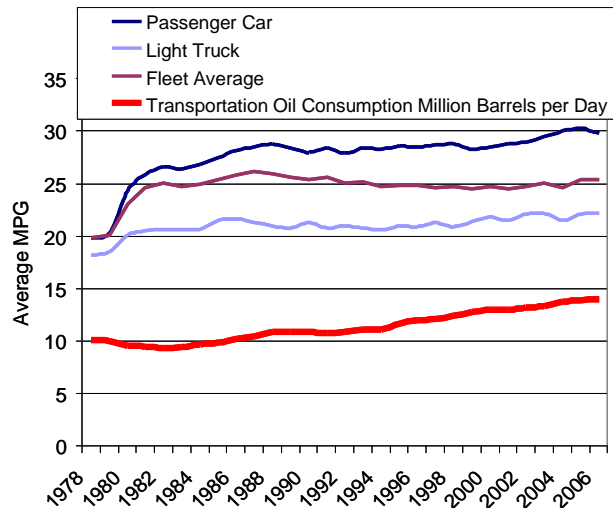
Beginning with 2008 models, fuel economy estimates will be based on new test methods, which EPA finalized in December 2006. The new methods account for actual driving conditions that can lower fuel economy, such as high speed, aggressive driving, use of air conditioning, and cold temperature operation.

Because of the new methods, the estimates for most 2008 models will be lower than their 2007 counterparts. However, fuel economy of the U.S. fleet will continue to be estimated based on sales.

But the fleet mix is changing, hybrid electric and electric vehicles are becoming a growing part of the fleet mix. How fast will these changes make and impact on fuel consumption for transportation? According to the NHTS data, people are keeping their vehicles longer, the average vehicle was almost nine years old in 2001 (see Exhibit 4).

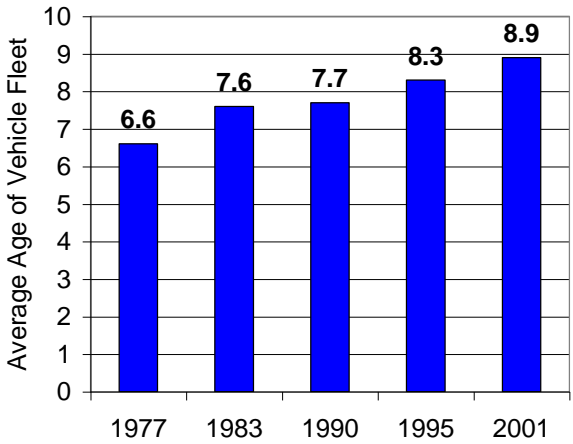
More current data on the mix of vehicles and their daily use is necessary in order to assess the impact of new fuel efficiency standard on household transportation fuel consumption.

Exhibit 3 – Fuel Efficiency and Oil Consumption



Source: Light-Duty Automotive Technology and Fuel Economy Trends:1995 through 2007, Compliance and Innovative Strategies Division and Transportation and Climate Division, Office of Transportation and Air Quality, U.S. Environmental Protection Agency,

Exhibit 4 – Average Age of the US Passenger Vehicle Fleet



Source: NHTS Data Series