

Fuel efficiency of vehicles on the road: Little progress since the 1920s

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(PhysOrg.com) -- Vehicles on America's roads today get only about three miles more per gallon than vehicles back in 1923, University of Michigan researchers say.

A new study in the journal [Energy Policy](#) by Michael Sivak and Omer Tsimhoni of the U-M Transportation Research Institute shows that overall fuel efficiency for vehicles in the United States was 14 miles per gallon in 1923 and 17.2 mpg in 2006.

The researchers documented and analyzed the annual changes in actual fuel efficiency of vehicles on U.S. roads from 1923 to 2006 by using information about distances driven and fuel consumed to calculate fuel efficiency of the overall fleet and of different classes of vehicles.

They found that overall fleet fuel efficiency actually decreased from 14 mpg in 1923 to a low of 11.9 mpg in 1973, but then rapidly increased to 16.9 mpg by 1991.

"After the 1973 oil embargo, [vehicle manufacturers](#) achieved major improvements in the on-road [fuel economy](#) of vehicles," said Sivak, research professor and head of UMTRI's Human Factors Division. "However, the slope of the improvement has decreased substantially since 1991."

From 1991 to 2006, fuel efficiency increased by less than 2 percent, compared with a 42 percent increase in mpg between 1973 and 1991.

According to the study, fuel efficiency for cars improved from 13.4 mpg in 1973 to 21.2 mpg in 1991, but reached only 22.4 mpg by 2006. For light trucks, the numbers were 9.7 mpg in 1966, 17 mpg in 1991 and 18 mpg in 2006. Medium and heavy trucks showed modest improvement from 5.6 mpg in 1966 to 5.9 mpg in 2006.

"Future improvements in fuel economy of vehicles are needed across the board, for both passenger and commercial vehicles," Sivak said. "Some of the improvements in effective fuel efficiency will come from the ongoing partial shift from using light trucks to cars for personal transportation.

"Given the differences in the fuel efficiency of light trucks and cars, a 25 percent shift would result in about a 2 percent reduction in the total consumption of fuel for all vehicles."

But the researchers say the focus should not necessarily be on classes of vehicles with the lowest [fuel efficiency](#), such as heavy trucks and buses, which have alternative societal measures that are relevant (e.g., miles per pound of freight or passenger miles per gallon).

Instead, the focus should be on the least-efficient vehicles within each class. For example, an improvement from 40 mpg to 41 mpg for a vehicle driven 12,000 miles per year saves 7 gallons of fuel a year. However, an improvement from 15 mpg to 16 mpg for a [vehicle](#) driven the same amount of miles saves 50 gallons of fuel a year.

"In other words, society has much more to gain from improving vehicles that get lower gas mileage," Sivak said. "Such improvements could be fostered by tax policies that assist the development and introduction of new relevant technologies and encourage scrapping older vehicles."

Provided by University of Michigan ([news](#) : [web](#))

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