



Automobiles Are Getting Cleaner, But Could Be Better

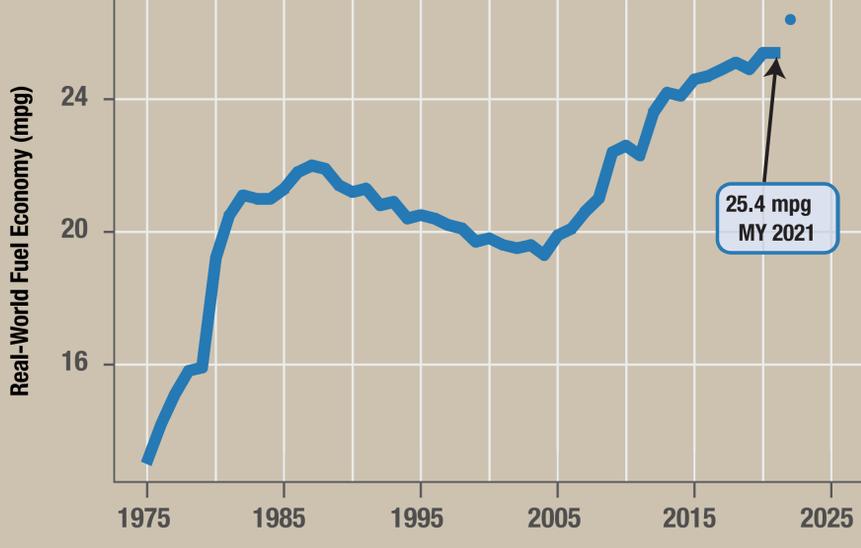
Over the past 50 years, U.S. vehicles have become heavier and more powerful, but technology still enables them to meet strict emissions standards.

BY JEFFREY WINTERS

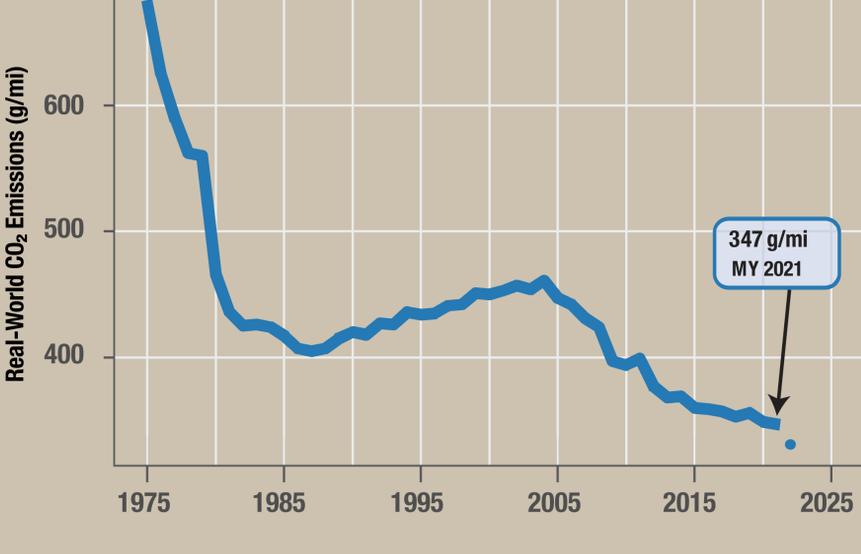
American cities in the 1960s and 1970s were choked with smog and other pollution from motor vehicles. Clean air legislation and spiking fuel prices led consumers to trade in their land yachts for smaller and more efficient cars. From 1975 to 1985, the average fuel economy for new cars rose from 13.1 miles per gallon to 21.3 mpg. Automotive engineers continued to improve the reliability and efficiency of internal combustion engines, but fuel economy declined until new laws in the mid-2000s spurred a greater emphasis on emissions.

The U.S. Environmental Protection Agency recently published its annual Automotive Trends Report, and its data reveals some of the reasons for the way fuel economy and emissions have fluctuated.

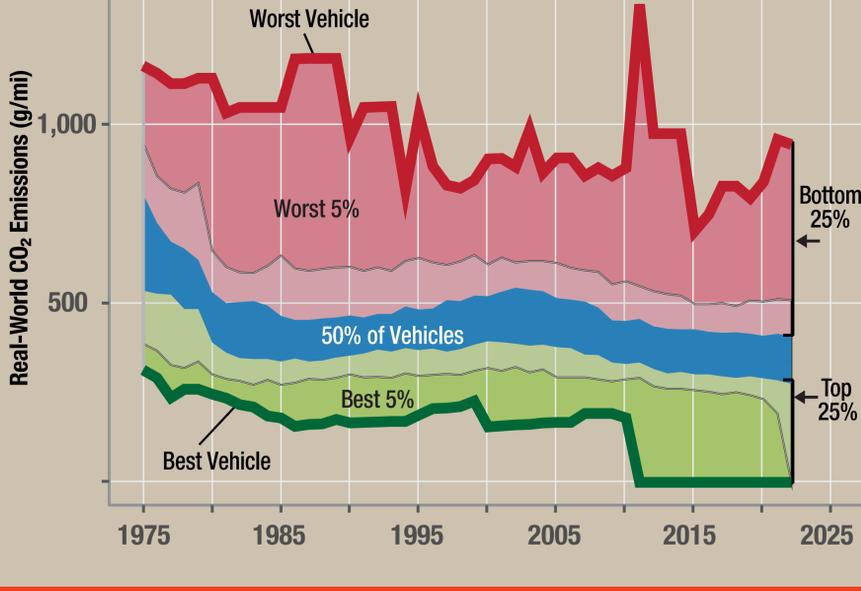
Estimated Real-World Fuel Economy, by Model Year



Estimated Real-World CO₂ Emissions, by Model Year



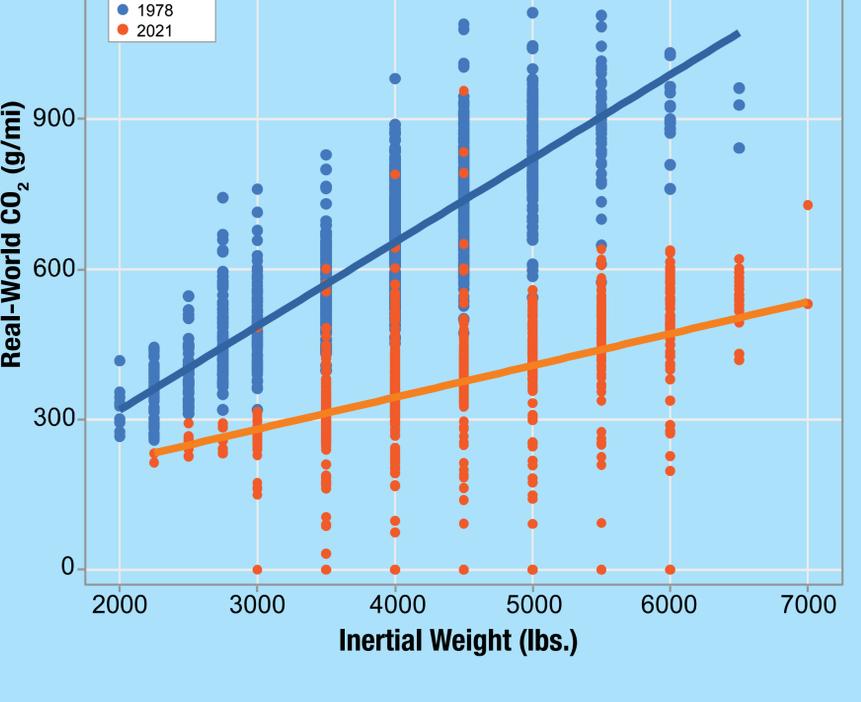
Distribution of Real-World CO₂ Emissions, by Model Year



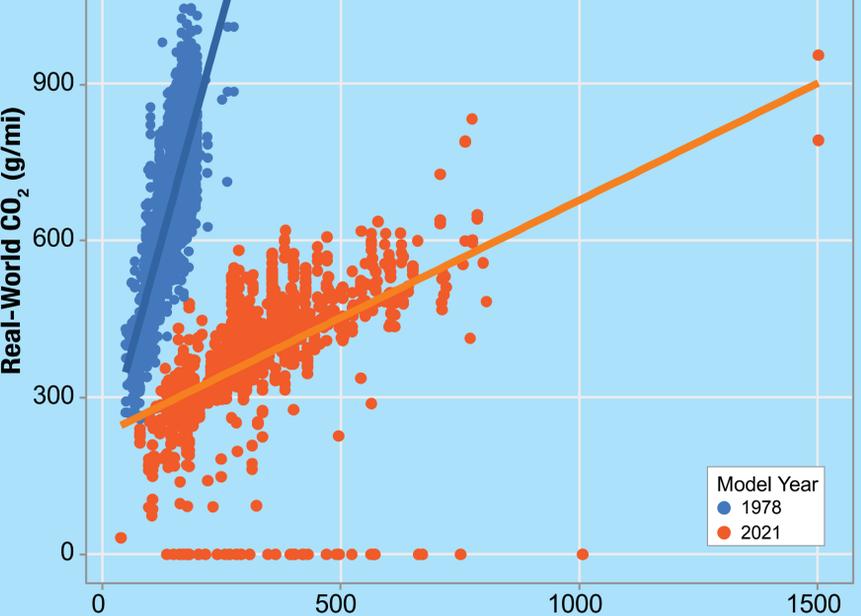
The trends for fuel economy and emissions are clear: Rapid improvement, followed by backsliding in the 1990s and early 2000s, then solid gains since 2005. While that is accurate—and emissions and fuel economy would be around 13 percent better if not for the two-decade reversal—much of the progress of the past 15 years is due to emissions dropping in the cleanest 25 percent of vehicles sold. A growing share of these are electric vehicles or hybrids, which have helped raise average fuel economy to 25.4 mpg and lower average carbon dioxide emissions to 347 g/mi.

At the same time, the least efficient and biggest emitting vehicles are as bad or worse than the decade before. The popularity of large truck SUVs and pickups, which now make up more than 60 percent of sales, have helped keep the fleet average from reaching even better efficiency and emissions levels.

Relationship of Inertial Weight and CO₂ Emissions



Relationship of Horsepower and CO₂ Emissions



Technology has improved considerably since the 1970s. The average vehicle sold in mid-1970s weighed 4,000 pounds and had a 137-hp engine; that vehicle would have produced around 700 g/mi of CO₂. Today, the average 4,000-lb car emits around 350 g/mi and a 137-hp car would emit even less. But as more vehicles are trucks and SUVs, those classes of vehicles are increasingly heavy and powerful. Technology improvements have reduced the emissions penalty for driving a larger vehicle, but not erased it. With fuel efficiency standards scheduled to reach an average of 40 mpg in the next few years, automakers will have their work cut out to bring the present mixture of vehicles to that level.