

## SUVs and CAFE standards

SUV stands for *Sport Utility Vehicle*. These are vehicles that weigh more than cars, and are higher off the road. Most have four-wheel drive. By 2000, SUVs, vans, and pickups constituted over half of all sales.<sup>(42,45)</sup> Fig. E15.3.1 shows the changing profile of vehicle sales.<sup>(42)</sup>

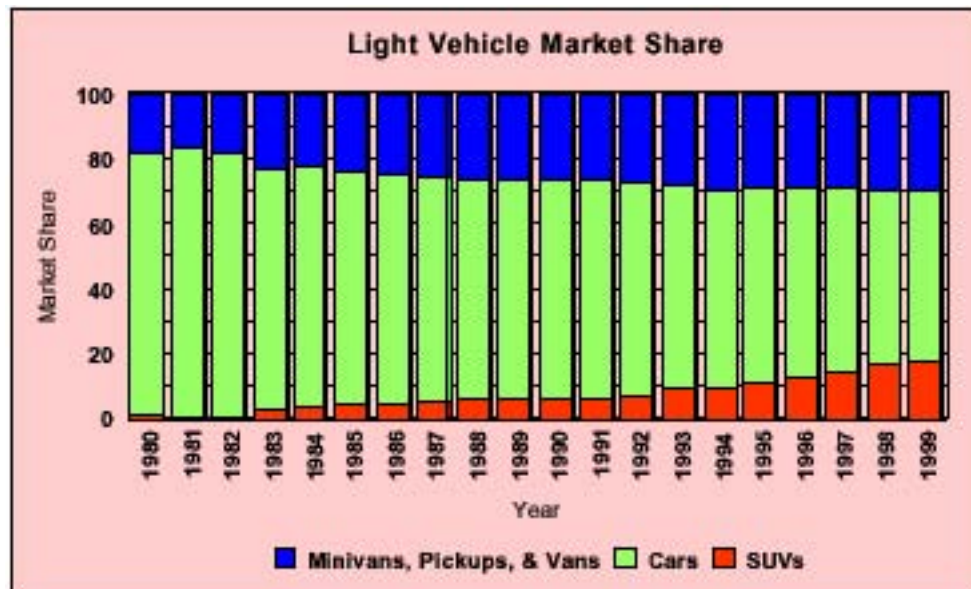


Figure E15.3.1 Market Shares of Sales of SUVs in Comparison with Sales of Other Light Vehicles, 1980-1999.

(Oak Ridge National Laboratory, Light Vehicle MPG and Market Shares System)

SUVs have become so popular among the public for reasons that are not entirely apparent. Designed for off-road performance, most are owned by city-dwellers. Some people apparently feel they are trendy, and so want to own them to be “in”; others say they feel more comfortable in case of accidents because being in a big car will afford additional protection; still others feel like they are “king of the road” in their SUVs. SUVs come in three classes—small (about 10% of the SUV market), medium (about 70% of the market), and large (about 20% of the market). According to Ref. 41: “The popularity of SUVs, ... is not based on vehicle price or fuel economy but on the sporty,

rugged image of the vehicle and a perception of safety when encased within its sturdy frame.”

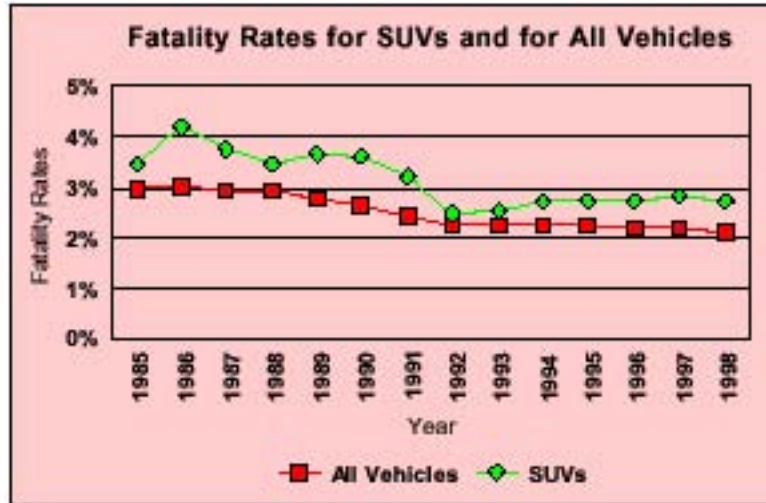


Fig. E15.3.2 Fatality rates for all vehicles and for SUVs, where “fatality rate” is defined as the number of fatalities per 100 registered vehicles.  
 (S. C. Davis and L. F. Truett, “An analysis of the impact of sport utility vehicles in the United States,” Oak Ridge report ORNL/TM-2000/147, August 2000)

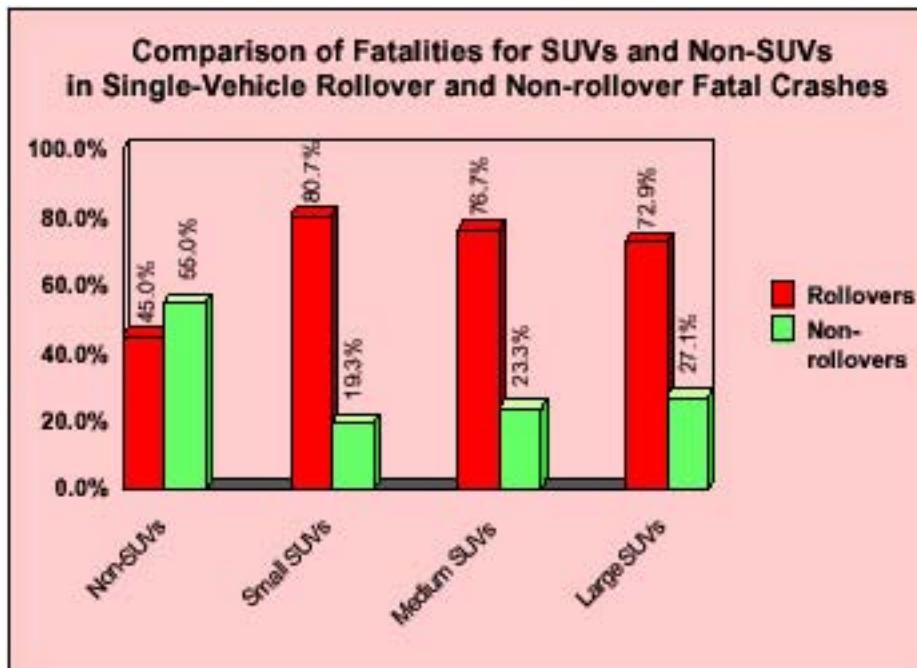


Fig. E15.3.3 Comparison of fatalities for SUVs and non-SUVs in single-vehicle rollover and non-rollover fatal crashes.  
 (S. C. Davis and L. F. Truett, “An analysis of the impact of sport utility vehicles in the United States,” Oak Ridge report ORNL/TM-2000/147, August 2000)

SUV drivers are definitely not safer, as Fig. E15.3.2, Fig. E15.3.3, and Fig. E15.3.4 show. Overall, SUV drivers die more often, year after year, especially in rollover crashes. SUVs are more likely to roll over because of their relatively high center of gravity (as may be seen in Fig. E15.4.4, SUV occupants are more than twice as likely to die in a rollover as occupants in an ordinary passenger car). Most people are aware that the Ford Explorer SUV had many accidents involving Firestone tires. SUVs are safer in non-rollover crashes. The other drivers in either of these crashes are not safe at all—SUVs turn out to be three times as likely to kill the people in the other vehicle as a conventional car.<sup>(46)</sup> Highway fatalities decreased by 7% between 1990 and 1998, but the total SUV-related fatalities increased by almost 100%.<sup>(42)</sup> Vans are also less safe than many naively believe.<sup>(47)</sup>

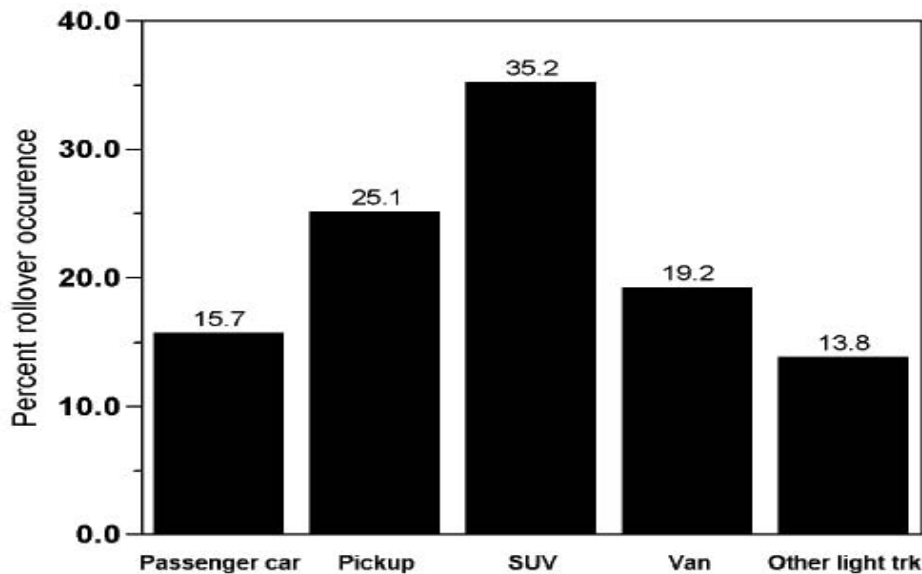


Fig. E15.3.4 Percent rollover occurrence in fatal crashes by vehicle type, 2001. (U.S. Department of Transportation, National Highway Traffic Safety Administration, *Traffic Safety Facts 2001* (Washington, DC: GPO, December 2002), p. 64)

The primary consequence of this surge in SUV popularity is the lowest fleet averaged mileage in years;<sup>(48)</sup> the SUV weighs more than conventional cars, and consequently gets

worse gas mileage. Figure 15.3.5 shows that the SUVs cluster at the low end of the mileage chart.

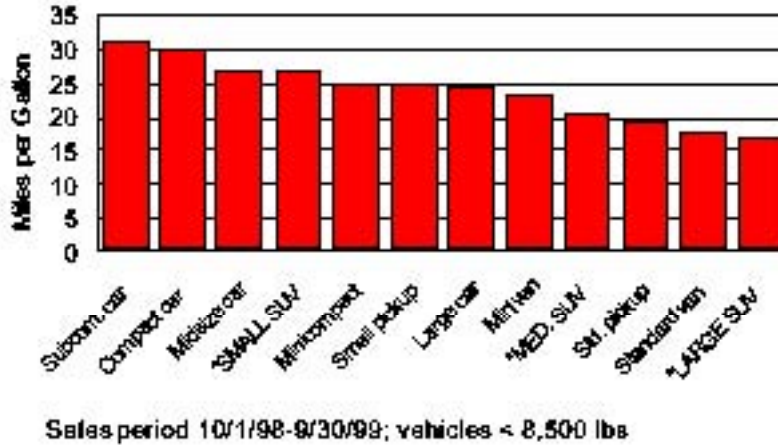


Fig. E15.3.5 Sales-weighted fuel economies by vehicle size class, for vehicles weighing 8,500 pounds or less; sales period covers 10/1/98 through 9/30/99. Source: Oak Ridge National Laboratory, Light Vehicle MPG and Market Shares System

According to Ref. 42, a 1998 survey found that, while 30% of all new car buyers considered fuel economy “extremely important,” only 18% of SUV buyers considered fuel economy as “extremely important.” The survey found “that SUV owners expected a fuel economy of only 19 mpg and that it would take a 70% increase in the price of fuel for them to change their vehicle type.”

The surge in gasoline prices that followed the Iraq War in 2003 lasted and prices in 2005 are considerably higher than before the War. There are many reasons for this—serious miscalculation of the aftereffects of the Iraq War by the Bush administration, the rapid increase in oil consumption by India and China as a result of economic gains, and the limitation in pumping capacity in the producing countries. One effect of this price increase (which seems at this writing to be a permanent fixture of the future) is a souring of the American romance with SUVs. One commentator wrote<sup>(a)</sup>

To the owner of the Ford Excursion who implores us to “Support Our Troops” I say this:

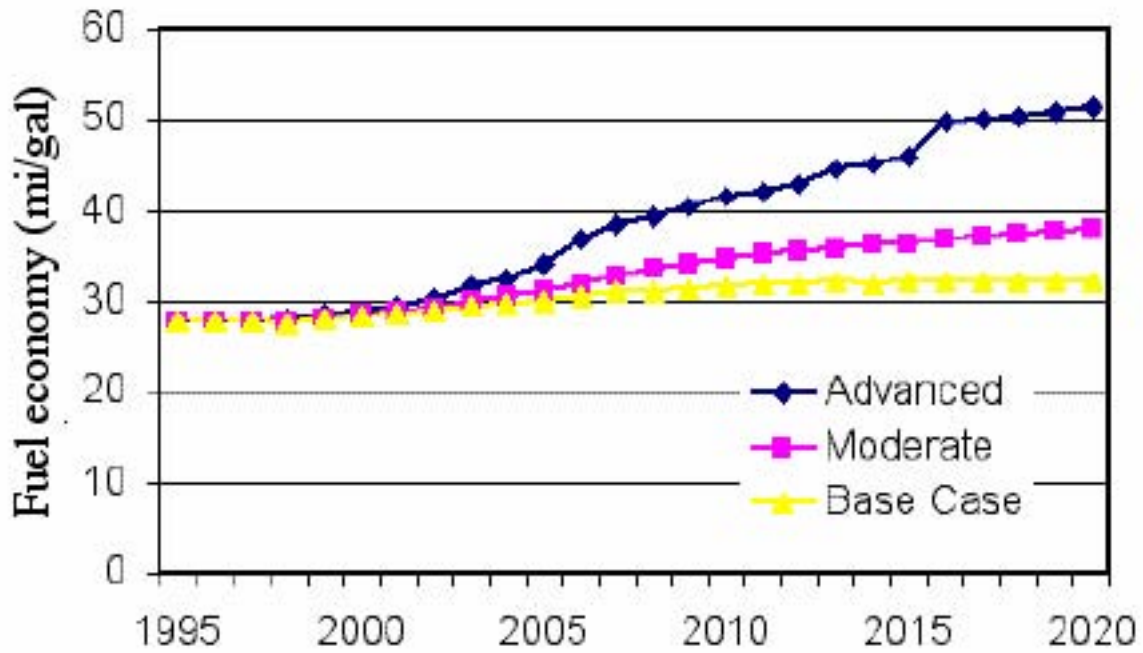
You, sir (or madam), are a monumental jackass. At this moment, American troops are risking their lives to protect your inalienable right to live your life in an impenetrable fog of selfishness and stupidity.

If not for the need to service this grotesque monstrosity on which you squander your money and that of the taxpayers who subsidize your comfortably numb life, those troops you support would not be getting killed and maimed in a country I doubt you could find on a map.

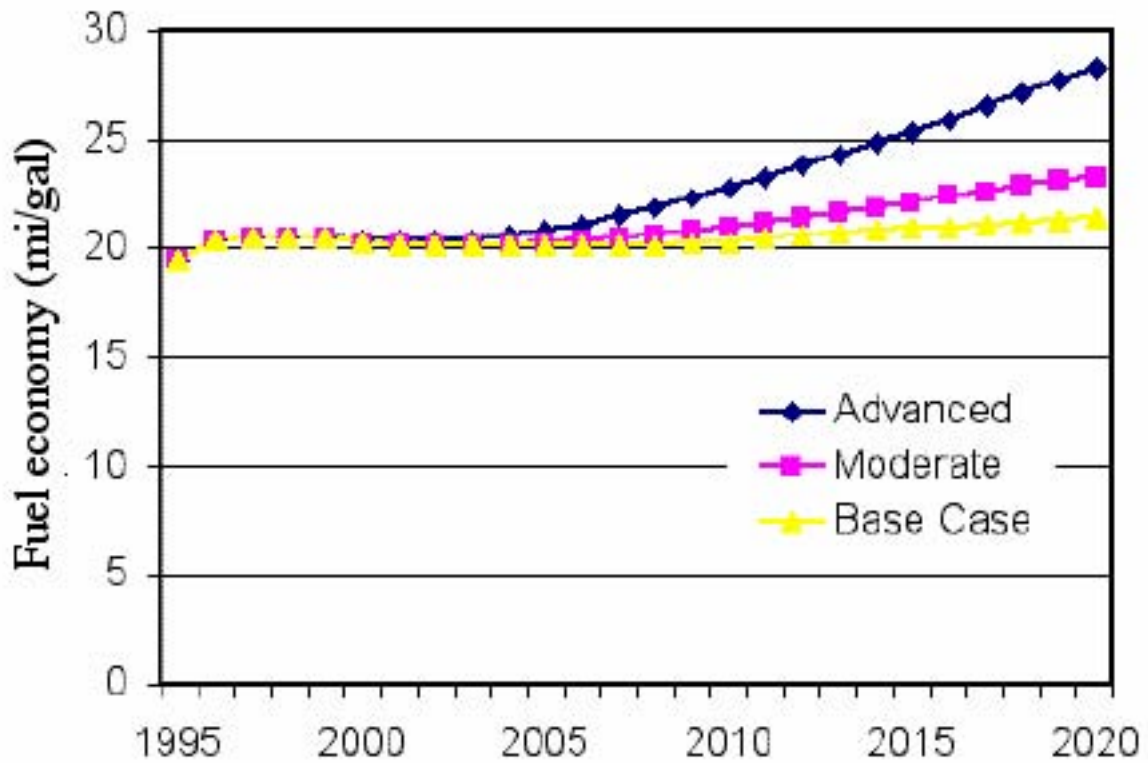
The *Los Angeles Times* editorialized the “top 10 suggestions” beginning with “10. Convert them into condos for Great Danes.” and ending with “1. Imagine: hot tubs with comfortable seating.”<sup>(b)</sup>

More recent articles in national papers suggest that there is a quantitative effect. The *San Francisco Chronicle* featured an article: “America’s passion for burly SUV fizzles,” which explained how SUV sales were down substantially in the Bay Area (San Francisco) in May, 2005, while hybrid sales were much higher than in previous times.<sup>(c)</sup>

A more staid New York Times article on the same phenomenon referred to recent statistics showing that passenger cars constituted a greater proportion of vehicle sales than SUVs, decreasing for the first time in fourteen years.<sup>(d)</sup> The article noted the clear connection between SUV sales increases and decreasing fleet mileage, saying that “[t]he fuel economy of the average new vehicle sold fell to 20.7 miles a gallon in 2003 models from 22.1 miles a gallon in 1988 models.”<sup>(d)</sup>



a.



b.

Fig. E15.3.6 a. Fuel economy for automobiles. b. Fuel economy for light trucks. Source: Ref. 49

Ford plans to make a hybrid Explorer available in 2005, and Lexus managed to be first on the market with a “green” hybrid SUV. The marketing for Lexus claims 34.9 mi/gal fuel economy. A Guardian columnist who drove one for a day found that his actual mileage was 26.6 mi/gal,<sup>(e)</sup> much more than a generic SUV, but much lower than advertised.

The Center for Transportation Analysis at Oak Ridge National Laboratory completed modeling the gains that might come from changes in technology.<sup>(49)</sup> Their results indicate their best estimate of the effects of these technological changes on the fleet average mileage. If the projections are reasonable, cars will experience an increase of 30 to 70% in mileage between now and 2020. Light trucks will experience an increase of 20 to 40% during the same time frame. The technological changes assumed for the vehicle transportation sector were: a Carbon Permit Program (a charge of \$50 per metric ton of carbon); a cellulosic ethanol commercialization program (tax credits for ethanol but in nominal dollars so that the value of the credits in constant dollars decreases gradually with time); a tax credit for high efficiency vehicles (credits are phased out except for hybrids); invigorated government fleet programs (the Federal government purchasing many alternate fuel vehicles); and an R&D spending increase (advancing dates for adoption of technologies, adding two advanced materials technologies each for light-duty vehicles and for heavy-duty vehicles, incremental cost reduction, and increasing the mpg performance of selected technologies). Not all technologies have been modeled, of course, and within those modeled, not all have experienced significant price reductions under the “Moderate” and “Advanced” scenarios.

In addition to getting worse gas mileage, SUVs and pickups are driven more than average, compounding the situation, as shown in Table E15.3.1. This has led to the aforementioned decline in the fuel economy of cars and trucks sold in the U.S. to the lowest level since 1980.<sup>(d,48)</sup>

TABLE E15.3.1

## Miles Driven by Type and Vehicle Age

| Vehicle Age<br>(Years) | Automobile<br>Miles | Van <sup>a</sup><br>Miles (Ratio) | SUV<br>Miles (Ratio) | Pickup<br>Miles (Ratio) | All <sup>b</sup> |
|------------------------|---------------------|-----------------------------------|----------------------|-------------------------|------------------|
| 0-5                    | 14,319              | 16,271 (1.14)                     | 15,350 (1.07)        | 16,107 (1.12)           | 14,901           |
| 6-10                   | 12,044              | 13,095 (1.09)                     | 13,979 (1.16)        | 12,305 (1.02)           | 12,280           |
| 11-15                  | 9,771               | 11,693 (1.20)                     | 10,985 (1.12)        | 9,516 (0.97)            | 9,701            |
| 16+                    | 6,407               | 8,392 (1.31)                      | 5,919 (0.92)         | 6,604 (1.03)            | 6,381            |
| Average<br>(all ages)  | 11,988              | 14,256 (1.19)                     | 13,853 (1.16)        | 12,064 (1.01)           | 12,226           |

Source: U.S. Department of Transportation, Federal Highway Administration, 1995 Nationwide Personal Transportation Survey, <http://www-cta.ornl.gov/npts>.

<sup>a</sup> Includes minivans.

<sup>b</sup> Includes automobiles, vans, SUVs, pickup trucks, other personal trucks, motorcycles, recreational vehicles, and any other personal vehicle reported in NPTS.

The industry has introduced car-based SUVs (called “crossover utilities”) and have succeeded in “placing” crossovers in many consumers’ minds in place of minivans.<sup>(50)</sup>

The Federal government classifies both minivans and SUVs as trucks despite their use as passenger vehicles (the mileage CAFE standard is 20.7 mpg for light trucks, while it is 27.5 mpg for cars). A few crossover buyers are former pickup or full-size SUV drivers. Another advantage for the carmakers is that, as trucks, the crossovers were subject to the less restrictive smog limits and safety requirements of pickups, while replacing cars that are subject to the much more stringent limits.<sup>(50,51)</sup>

In 2000, the Environmental Protection Agency issued a final rule that for the first time requires the more stringent automobile tailpipe emission standards for *all* new passenger vehicles, including SUVs, vans, minivans, and pickups. So the SUVs of the future may not totally resemble the SUVs of the past. The auto manufacturers are not deaf to concerns about the poor mileage of SUVs, and must listen to Federal regulations. Originally, only Ford committed itself to improve fuel economy of its SUVs by 25% by 2005, but afterwards, General Motors pledged to beat Ford’s promised reduction.<sup>(52,53)</sup>

DaimlerChrysler was eventually forced by public opinion to follow suit (though it did not commit itself to a similar timetable).<sup>(54)</sup> Ford countered by instituting a program that would reduce emissions from all Ford cars and improve fuel economy by 80% by 2030.<sup>(55)</sup>

### The CAFE standards

The mileage issue is important, because as we saw in Chapter 11, oil is being imported in large quantities (and the proportion of imported oil seems unlikely to go lower). The National Academy of Sciences commissioned a study of the CAFE (corporate average fuel economy) standards.<sup>(56)</sup> The charge was given by Congress, acting through the Department of Transportation, to concentrate on the impact and effectiveness of Corporate Average Fuel Economy (CAFE) standards originally mandated in the Energy Policy and Conservation Act of 1975. Subsequent to 1975, the mileage of the nation's fleet increased substantially for 13 years. After about 1988, the overall light vehicle fuel economy had fallen to about 7 percent lower than at its peak in 1987-88. The reasons are many, but the most important was the very low price of oil over a long period of years, which led to the change in the national vehicle composition shown in Fig. E15.3.2.

Concern about the nation's dependence on foreign oil and the impact of global climate change (see Chapters 14 and 15) has suggested to many observers that the CAFE standards should be raised. Transportation accounts for about one-third of the U.S.'s carbon dioxide emissions.<sup>(42,56)</sup> The auto industry has successfully lobbied Congress to freeze the CAFE standards, and they were stationary between 1994 and 2002.<sup>(53,54)</sup> Imported vehicles have generally been far above the standards, while the "domestic" auto industry was not until the early 2000s.<sup>(56)</sup> Figure E15.3.7 shows the changes in the fleet averages over this period. The narrowing of the fleet mileages occurred because the

average weight of the imported cars grew to be near that of the domestic cars. And, really, unless light trucks are covered by the standards, their sales growth will be a continuing part of the problem.<sup>(57)</sup> Canada is taking a tougher stance than the U.S. on SUVs, classifying them and minivans as cars. This means they will have to meet car mileage standards.<sup>(58)</sup>

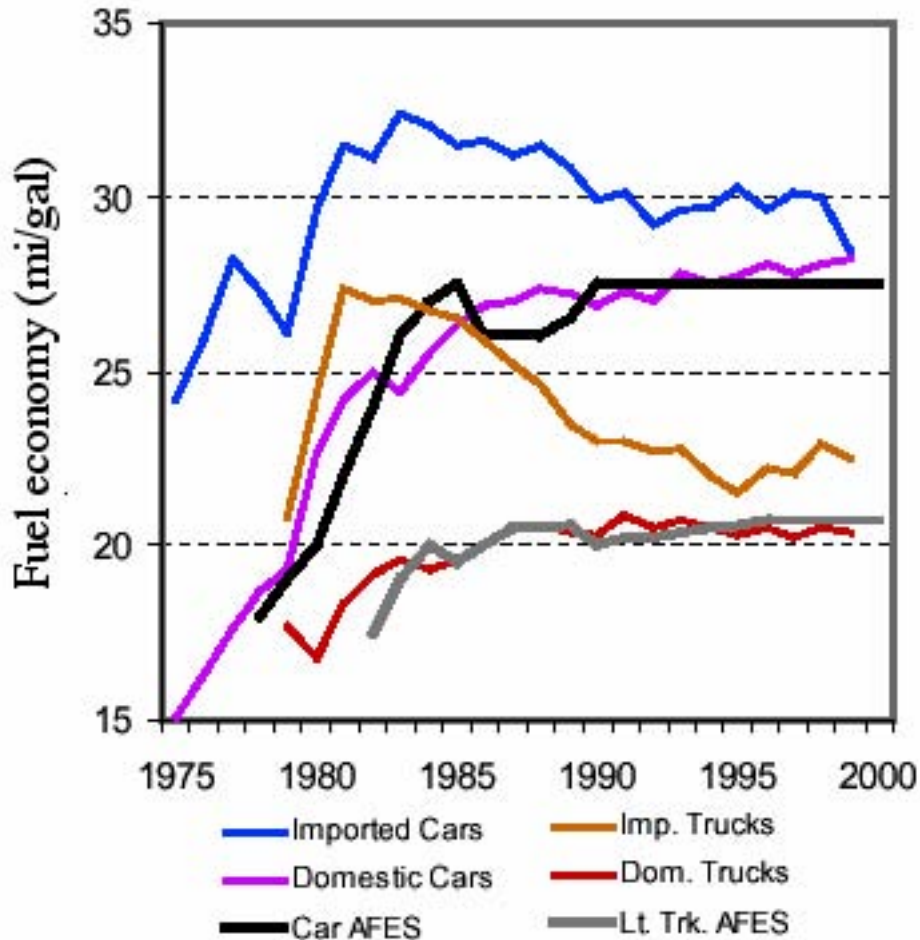


Fig. E15.3.7 Fuel economies of various categories of vehicle. AFES means Automotive Fuel Efficiency Standard.

(National Academy of Sciences, Ref. 56, Fig. 2-2)

The actual situation is worse than it appears from the CAFE standards because mileage is measured on a test bed, not under actual driving conditions. Real vehicles have substantially worse mileage than is suggested by the CAFE numbers.

The National Academy of Sciences study recommendations are basically four:<sup>(56)</sup>

- Retain the basic CAFE structure. These policies would keep CAFE basically intact but would modify some elements that are particularly troublesome.
- Restructure fuel economy regulations. These policies would restructure CAFE with alternative regulatory or incentive policies directed at fuel economy of new vehicles.
- Adopt energy demand reduction policies. These broader policies are designed to reduce either gasoline consumption or consumption of all fossil fuels. (The CAFE system, or any alternative regulatory system, should include broad trading of fuel economy “credits.”)
- Pursue cooperative government/industry technology strategies. These strategies would attempt to advance automotive technologies to greatly improve fuel economy.

The recommendations are intended to help end “gaming” of the CAFE system. One auto industry observer <sup>(59)</sup> noted among other instances, for example, that “[i]n the early 1990s, Ford Motor Co. intentionally reduced domestic content of the Crown Victoria and Grand Marquis because of CAFE.”

Meanwhile, China, where car ownership is skyrocketing, has introduced CAFE standards for the first time.<sup>(60)</sup> The standards differ from those in the U.S., though first phase standards are very similar to the U.S. CAFE standards now existing. The Chinese set a minimum mileage standard for each car model. In the U.S., the *fleet* of each manufacturer must meet the requirements, allowing sales of some cars (actually, many cars) that do not meet the CAFE standard. Chinese rules assert that each model must separately meet the standards.<sup>(60)</sup>

### Water pollution and cars

One thing not often considered when thinking about pollution from cars is what happens to the oil dripped on highways in normal operation. Trash, antifreeze, and other toxic materials find their way into the wastewater that flows from highways into streams, lakes, and oceans.

For years, state officials have argued that the solutions, such as filters and multiple catchments, are too expensive. Caltrans (the California Department of transportation) estimated that complying with clean water rules would run \$5 billion. Despite that claim, Caltrans reached an agreement with the Natural Resources Defense Council and Santa Monica BayKeeper to install pollution control equipment and end litigation.<sup>(61)</sup>

### More on highways, and safety

The George W. Bush administration has not welcomed changes in the CAFE standards, although there is some indication that that option is being considered.<sup>(62)</sup> The administration's main push has been in safety, and specifically increased safety in SUVs. This is welcome, since as was pointed out above, the SUV is much less safe than a car due to its propensity to roll over.<sup>(63,64)</sup> In 2003, riders in SUVs were 11% more likely to die than those in cars (even though generally the cars weigh much less).<sup>(65)</sup> The 2004 Ford Explorer Sport Trac achieved the worst rollover record of 2004 model cars, with a 35% chance of rollover in an accident.<sup>(66)</sup> Only one SUV, the Mazda RX-8, "passed" the rollover tests.<sup>(67)</sup>

Dr. Jeffrey Runge, who is administrator of the National Highway Traffic Safety Administration (NHTSA), has worked diligently to address the problem. As a practicing

emergency room doctor, Runge had seen firsthand the consequences of auto wrecks.<sup>(64)</sup> Runge was quoted as saying in a speech that he wouldn't let his children drive SUVs, which enraged the automakers. His words and actions had results: automakers "voluntarily" are taking actions that will make future SUVs safer.<sup>(68)</sup>

Side crashes in cars result in many deaths that could be prevented with an airbag. The NHTSA in 2004 mandated new safety standards that will probably cause installation of side air bags to protect against head injuries.<sup>(69)</sup> At the same time, the NHSTA relaxed the seat belt rules for SUVs.<sup>(70)</sup> The seat belts were no longer required to "remain on the pelvis under all conditions." This could mean that the SUV passengers are less protected during rollovers, which are already more dangerous accidents and much more likely to occur for SUV passengers than for passengers in ordinary cars.

One interesting development is Honda's embrace of safety as a sales point.<sup>(71)</sup> For years the received wisdom has been that safety does not sell, but the rise of seat belt compliance and the relentless news coverage of Firestone's tire problems has perhaps changed the public's perception of safety. Honda expects to use its typical approach, exacting engineering and intelligent design choices, while the American automakers and the NHTSA have always espoused the bigger-is-safer philosophy.<sup>(71,72)</sup>

Perhaps the only passenger vehicles less safe than an average SUV are the school bus and the fifteen passenger van. Passengers in the vans are twice as likely as others to die in rollovers, and the vans are three times as likely to roll over when they have 15 passengers instead of 10.<sup>(47)</sup> Insurers are raising rates for the vans.<sup>(73)</sup>

SUVs have caused controversy because they are sold as safer (as they are not, overall). Perhaps the salespersons conveniently think only of side or frontal collisions, where SUV

passengers are indeed safer than car passengers. In addition, some question the value of owning the gas-guzzler SUV in a world where oil is a *casus belli*.

Three strains of the opposition campaign against SUVs are very interesting to me. The first is the religious idea of stewardship in action. The Evangelical Environmental Network, backed by many ministers, sponsored a “What Would Jesus Drive?” campaign that originated in the ministry in Boston.<sup>(74)</sup> This could be extremely effective, it seems to me, in changing minds. (Gandhi pointed throughout his life to the effect that nonviolent protest—coupled with the consequent moral self-examination of conscience by those opposing the protesters—had on civilized minds. The British left the Indian Raj as a result of the Gandhi-led nonviolent protest movement. In the U.S., the nonviolent approach of Martin Luther King and others led through examination of many Americans’ consciences to more equal treatment of minorities.) The second strain is the the picket-the-SUV-drivers approach; this often seems counterproductive.<sup>(75)</sup> Few people seem to appreciate others telling them what to do. Finally, there are approaches followed by organizations such as the Earth Liberation Front (ELF). The ELF commits arson to drive home opposition to SUVs. In addition to being illegal, the violence of “eco-terrorists” seems to me an unlikely way to help change others’ minds.<sup>(76)</sup>

The Swedish National Road Administration’s “Vision Zero” movement shows the tradeoffs involved here. Vision Zero founder C. Tingvall states, according to Ref. 77, that “If a new road, new car design, new rule, etc., is judged as having the potential to save human life, then the opportunity must always be taken, provided that no other more cost-effective action would produce the same safety benefit.” This is based on the ethical principle that minimizing death and serious injury is always the right thing to do. For moral reasons, Tingvall would have us choose the best technical solution, even if it were to cost more.

However, as Elvik points out, such a choice has unintended consequences; TANSTAAFL works for safety, too. If unlimited money were poured in to attain Vision Zero, then that money would be spent in lieu of other spending priorities. Will those other priorities save more lives overall than spending on highway safety? Perhaps; perhaps not. Elvik uses data on income and mortality from nearby Norway to quantify the relationship between the two: loss of income that leads to one additional (statistical) death is between \$3.8 and \$47.5 million dollars. Assuming that this is causal, Elvik uses computer modeling and finds that implementation of Vision Zero would save 210 lives per year in Sweden, but indirectly lead to a minimum of 1355 extra preventable deaths.<sup>(77)</sup> Elvik then states that “the possibility cannot be ruled out that a massive effort to eliminate traffic deaths would be counterproductive in terms of overall mortality.” Vision Zero may be tunnel vision.

Economic studies indicate that increases in the gas tax alone do not lead to reduced highway deaths. However, if insurance were reformed to an added expense depending on the distance driven, *i.e.*, a per mile or per kilometer charge, and a so-called mileage tax, in which each driver or vehicle group is charged a tax equal to the external cost incurred for each kilometer driven, a study asserts that the gain in safety is much greater.<sup>(78)</sup> The reason given is that a gas tax causes costly changes in CAFE, while doing little to reduce external costs.

Injuries can be decreased by use of intelligent air bags.<sup>(79)</sup> Intelligent brakes can help; these are advances on ABS.<sup>(80,81)</sup> Daimler Chrysler has been offering GPS and voice recognition for years, but not that many install the option. Starting with the 2003 model year, Honda offers such an option on the Accord,<sup>(82)</sup> and Nissan and Toyota also offer the option.<sup>(83)</sup> This may be the start of increasing penetration of the “normal” car market (the Accord is the most popular car sold). One variation is a dial-up phone system by

startups such as TeleNav that connects the driver to a computer on a GPS and can help the driver locate his or her position.<sup>(84)</sup>

The next frontier in automobile safety is pedestrian safety. Over 7,000 pedestrians die every year in the European Union and over 5,000 pedestrians die every year in the United States. Siemens has a prototype system that can react within milliseconds to what appears to be a collision with a body. The car can lift the hood to “cushion” the collision while the collision is still under way.<sup>(85)</sup> Mercedes 2006 model cars will feature a deformable hood to lessen impacts with pedestrians. SUVs and trucks are more dangerous to pedestrians, and these systems are clearly needed for these vehicles.<sup>(85)</sup>

### The CrewZer

People who haul their RVs often buy a brawny truck known as the Ford CrewZer. The rig is a 7 meter long monster boasting a 300 horsepower diesel engine.<sup>(86)</sup> The Super CrewZer costs \$83,000. It is a favorite among retired executives who use it to haul those retirement homes from place to place, living here a while, there a while.

The total length of the CrewZer and its 10 to 12 m load approaches 20 m, as long as many commercial truck-and-trailer combinations. Truck drivers need special commercial vehicle licenses and must pass stringent tests to obtain them. Amazingly, the CrewZer drivers do not even need special drivers licenses in most states.<sup>(86)</sup>

### The Unimog

Daimler Chrysler upped the stakes on the SUV market in February, 2001. It announced plans to bring in the Unimog through its Freightliner division to sell to the SUV market.

At just shy of 3 meters high, 2.3 meters wide, and 6.1 meters long, having a mass of 6700 kilograms (9.58 ft high, 7.5 ft wide, 20.1 ft long, and weighing 12,500 lb),<sup>(87)</sup> Unimog is a rather large SUV priced at \$84,000 for the basic version. *New York Times* reporter Keith Bradsher<sup>(88)</sup> quotes from a page on Freightliner's website by the CEO, J. Hebe speaking at a trucking show (the page was later removed from its website by Freightliner):

The Unimog adds a new dimension to both the North American 4x4 truck and SUV markets. ... It's incredibly adaptable and can maneuver in the toughest conditions imaginable — in high water, over the roughest terrain and under wild weather conditions. Yet along with all its rugged ability, the sport recreational driver also gets an interior designed for comfort, style and easy access.

The Sierra Club immediately protested the decision. Freightliner responded by deciding to market the Unimog as a truck rather than an SUV. The press release<sup>(89)</sup> read in part “the Unimog is a highly specialized vehicle suited for plowing snow, fighting fires, agricultural applications or other tasks performed by commercial vehicles. The Unimog is not intended to compete in the mass sport-utility vehicle markets. It is a Class 6 commercial truck intended for service applications where terrain or weather require a high-mobility vehicle. Unimog will meet all U.S. laws for emissions, size, weight and other commercial vehicle requirements and is designed for safe performance and environmental compliance.”

Bradsher<sup>(88)</sup> points to language in Freightliner's Unimog brochures to tell a different story: “There are a lot of vehicles out there playing at being 4x4's. They're small. Usually they're cute. And sometimes, instead of going to the mall or the grocery store, they actually go off-road. But you want a real all-terrain vehicle. ... Aggressive and bold. That's you in the Unimog.” Freightliner CEO Hebe was fired by DaimlerChrysler in May, 2001. Freightliner still hopes to sell 1,000 Unimogs a year.

Unimog is not the only large vehicle on the market (though it is the largest). The Super CrewZer is larger.<sup>(86)</sup> However, the CrewZer is not being marketed to the upscale car owner, as the Unimog is.

### The Smart car

At the entire other end of the spectrum is the Smart car, also from DaimlerChrysler.<sup>(90)</sup> It is shorter in length than the Unimog is high!



Fig. E15.3.8 Two views of the Smart Car.

(Courtesy of Daimler-Chrysler)

While the Smart car is not sold in the United States, it has made a large splash in Europe. On my last trip there (Summer 2001), I saw these cars everywhere I looked. They are very convenient for parking in the restricted possibilities allowed in European cities. And, where fuel is expensive, the 55-58 mi/gal rating makes sense to consumers. In addition, most of the Smart car is recyclable.

References in addition to those listed for this chapter are shown in red in the text, and listed below:

- a. P. Campos, "Dying for consumption," Scripps Howard News Service dispatch, 9 December 2004.
- b. Editorial, "... and running down SUVs," *The Los Angeles Times*, 4 June 2005.
- c. M. Taylor, "America's passion for burly SUV fizzles," *The San Francisco Chronicle*, 8 May 2005.
- d. D. Hakim, "A love affair with SUVs begins to cool," *The New York Times*, 21 May 2005.
- e. L. Hickman, "A clean set of wheels," *The Guardian* (UK), 13 June 2005.