

**AUTOMOBILITY
AND
FREEDOM PROJECT**

**THE DEADLY EFFECTS OF FUEL
ECONOMY STANDARDS:**

CAFE'S LETHAL IMPACT ON AUTO SAFETY

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The Competitive Enterprise Institute's *Automobility And Freedom Project*

The car is under increasing attack as a polluter, gas guzzler, creator of congestion and destroyer of civilized life. These critiques are flawed in many respects. To the extent that they are valid, however, they can be traced to the fact that the car is a privately produced, privately owned technology that operates in a political environment. With few exceptions, streets, roads, and highways are built and managed by government agencies. The resulting conflict of incentives makes cars an easy scapegoat for the consequences of political mismanagement.

In the private world, for example, congestion is viewed as opportunity rather than a problem. The owner of a newly crowded restaurant expands her facility, adjusts her pricing or creates “Early Bird” specials. Only in the political world is congestion viewed as an intractable problem.

Beneath the flawed critiques of motor vehicles is more fundamental claim — that automobility is destructive to society. Such views of mobility are not new. The Duke of Wellington, 150 years ago, opposed the growth of railroads because they would “only encourage the common people to move about needlessly.” Today, the car is attacked on similar grounds — as fragmenting our communities and making our cities unlivable.

We are in danger of forgetting that there is a basic moral dimension to mobility--to being able to go where we want, when we want.

CEI's *Automobility and Freedom* Project attempts to reestablish this moral dimension, and to examine the possibilities of a fully privatized automobile transportation system.

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EXECUTIVE SUMMARY

In 1997, over 21,000 car occupants died in traffic accidents in the United States. We know about the causes and contributing factors for many of these deaths, such as reckless driving, alcohol, and failing to use seatbelts, and we have many government programs aimed at reducing these factors. But there is one government program that actually increases traffic fatalities. This is the federal new-car fuel economy program, popularly known as CAFE (Corporate Average Fuel Economy). CAFE has resulted in a significant downsizing of the passenger car fleet. However, because small cars are less crashworthy than similarly equipped large cars, CAFE has increased car occupant deaths. As this study shows, in 1997 CAFE was responsible for between 2,600 and 4,500 traffic fatalities. If CAFE is made even more stringent, as some advocate, this toll will only increase.

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INTRODUCTION

The federal government's fuel economy standards for new cars, known as the CAFE (Corporate Average Fuel Economy) rules, were enacted in 1975. But two-and-a-half decades after their enactment, the CAFE rules have become more controversial than ever. President Clinton and Vice President Gore have both advocated making CAFE more stringent, and the program has become a central issue in the global warming debate. According to the Sierra Club, raising CAFE standards is "the biggest single step we can take to curb global warming."¹

But those who call for higher CAFE standards tend to ignore CAFE's effect on auto safety. CAFE reduces vehicle crashworthiness by forcing the production of smaller, lighter cars. As explained below, this basic aspect of CAFE has never been adequately addressed, either by the federal agency that administers CAFE or by advocates of more stringent CAFE standards. Without an assessment of CAFE's human cost, it is impossible to have an honest debate about this program.

BACKGROUND OF THE CAFE PROGRAM

CAFE was enacted in the mid-1970s as a way to save oil. CAFE works by requiring automakers to ensure that the average fuel economy of each year's fleet of new passenger cars meets the standard, which is currently 27.5 miles per gallon (mpg) for passenger cars (sport utility vehicles and minivans fall under a different standard).

The most dramatic effect of this law has been a downsizing of cars over the past 20 years. During that time, the average fuel economy of a new car has doubled; the average weight of a new car has dropped by about 1,000 pounds. About half of this downsizing is attributable to the choices of consumers, who, in the late 1970s and early 1980s, bought smaller, more fuel-efficient cars in response to the oil crisis.

We calculate that, of the more than 21,000 passenger car occupant deaths that occurred in 1997, 2600-4500 were attributable to CAFE's downsizing effect.

¹ Sierra Club Global Warming Campaign, <http://www.toowarm.org/CAFE/cafe.html> (June 14, 1999).

The other half of auto downsizing since the 1970s, however, is due to CAFE itself. After oil prices stabilized and then began to fall in the 1980s, the demand for small vehicles fell. The major domestic auto manufacturers were forced to subsidize their small car sales in order to remain in compliance with CAFE. At the same time, as lower gas prices once again spurred consumer demand for larger cars, CAFE forced the industry to restrict the availability of these models. Through its effect on both the industry's short-term marketing practices and on its long-term design changes, CAFE has led to a wholesale downsizing of the passenger car fleet.

This CAFE-imposed downsizing has had serious ramifications. Decades of auto research have demonstrated that, in every crash mode, smaller cars are less safe than similarly equipped larger cars. This is true notwithstanding new safety technologies; adding an air bag to a small car may make it safer, but a large car with an air bag is safer yet. A recent study from the National Highway Traffic Safety Administration (NHTSA), the agency that administers CAFE, found that increasing the average weight of each passenger car on the road by 100 pounds would save over 300 lives annually.²

By our estimates, raising CAFE to 40 mpg would result in 3,800-5,800 fatalities annually.

CAFE's impact on vehicle weight and safety, however, has been far more extensive than this. The most comprehensive analysis can be found in a 1989 joint study by Robert W. Crandall of the Brookings Institution and Professor John D. Graham of the Harvard School of Public Health, which concluded that CAFE has caused passenger car weight to be reduced by approximately 500 pounds per vehicle. Because of this downsizing, CAFE is responsible for 14-to-27 percent of this nation's annual car occupant traffic deaths.³

This CEI monograph applies the Brookings-Harvard findings to the 1997 traffic fatality figures. We calculate that, of the more than 21,000 passenger car occupant deaths that occurred in 1997, 2,600-4,500 were attributable to CAFE's downsizing effect.

Detailed traffic accident figures have not yet been released for 1998. However, based on the NHTSA's preliminary 1998 data, the CAFE-induced fatalities for last year fall in this same range.⁴

Unfortunately, few proponents of CAFE acknowledge this lethal effect. NHTSA has steadfastly refused to admit that CAFE has any significant safety impact at all. While NHTSA has at times acknowledged the general relationship between car size and safety, when it comes to specific yearly CAFE standards the agency insists that their effect on traffic safety is too indirect to be assessed.

² NHTSA, "Relationship of Vehicle Weight to Fatality and Injury Risk in Model Year 1985-93 Passenger Cars And Light Trucks," April, 1997 (available online at www.nhtsa.dot.gov).

³ R. Crandall and J. Graham. "The Effect of Fuel Economy on Auto Safety," *Journal of Law and Economics*, April 1989, p. 97, 111.

⁴ U.S. Dept. of Transportation, "Press Release: 1998 Traffic Fatalities Decline" (May 27, 1999), reporting a 1.3 percent decrease in overall highway fatalities.

In 1992, a federal appeals court rejected NHTSA's approach. The court found that, given the evidence before the agency, there was a clear "inference that the 27.5 mpg standard kills people." In the court's view, rather than candidly confront the issue of CAFE's safety effects, NHTSA had illegally resorted to "fudged analysis," "statistical legerdemain" and "bureaucratic mumbo-jumbo" in order to evade the issue.⁵ In a related case decided several years later, another federal appeals panel stated that it too found NHTSA's treatment of the CAFE safety issue to be "troubling."⁶

THE PROSPECT OF STRICTER CAFE STANDARDS

Despite the clear evidence that current CAFE standards have a major impact on traffic safety, CAFE threatens to become even more stringent in the future. The Sierra Club and other environmental advocates are calling for CAFE standards to be raised, over the next 10 years, to 45 mpg for cars and 34 mpg for light trucks.⁷ In their 1992 campaign book, *Putting People First*, Bill Clinton and Al Gore recommended raising the passenger car standard to an eventual level of 45 mpg.⁸ Gore's own book, *Earth in the Balance*, similarly supported a tighter fuel economy standard.⁹

What would happen if CAFE were increased? Prof. Graham estimates that an increase in CAFE to 40 mpg would result in an additional 5.5 percent increase in highway deaths.¹⁰ By our estimates, raising CAFE to 40mpg would result in 3,800 to 5,700 fatalities annually.

In short, if proposals to raise CAFE are adopted, this program will become even deadlier.

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THE SPORT UTILITY VEHICLE CONTROVERSY

In recent years, sport utility vehicles (SUVs) and other light trucks have grown tremendously in popularity; currently, nearly half of all new-vehicle sales in the United States fall into this category.¹¹

This has ignited a new controversy. SUV critics charge that these are dangerous vehicles, both for their own occupants and those of other cars.

⁵ *CEI and Consumer Alert v. NHTSA*, 956 F. 2d 321 (D.C. Cir. 1992).

⁶ *CEI and Consumer Alert v. NHTSA*, 45 F.3d 481 (D.C. Cir. 1995).

⁷ See note 1 above.

⁸ W. Clinton and A. Gore, *Putting People First* (1992), p. 90.

⁹ A. Gore, *Earth in the Balance* (1992), p. 325.

¹⁰ J. Graham, "The Safety Risks of Proposed Fuel Economy Legislation." *RISK – Issues in Health and Safety*, Spring, 1992, p. 125.

¹¹ Warren Brown, "The Gore Factor: The Author/Veep's environmental views scare many in the auto industry," *Ward's Auto World*, March 1997, p. 105.

The greatest improvement in vehicle safety would not come from restricting SUVs, but from allowing the “upsizing” of passenger cars by easing or eliminating CAFE.

It is true that the smallest SUVs may be riskier for their occupants in certain collision modes, as the attached chart from the Insurance Institute for Highway Safety shows. This is partly because of the slightly higher center of gravity on this handful of SUVs, which puts them at greater risk for rollovers than passenger vehicles. However, mid-size to large SUVs present a different picture – the largest SUVs are even safer than the largest passenger cars.

This profound increase in safety is part of the reason SUVs have become so popular. According to a national poll commissioned by CEI, the greater safety of SUVs is one of the three major reasons why people buy them; the other two reasons are their greater maneuverability in poor road conditions and their larger interior space.¹² Given its effect of reducing the size and safety of passenger cars, CAFE is, ironically, one of the factors behind the popularity of SUVs.

As for the notion that SUVs are an unreasonable hazard to passenger cars, this is belied by a number of sources. The above-mentioned NHTSA study found that reducing the average weight of SUVs and other light trucks by 100 pounds might save 40 lives, but tellingly the study admits that this figure is statistically insignificant; its overall conclusion is that such a downsizing of these vehicles “would have a negligible overall effect.”¹³ While certain SUV-car collisions may constitute a mismatch for the latter, the fact is that many existing road hazards have long involved even greater mismatches. In fact, crash data indicate that, in certain collision modes, there is a greater mismatch between large and small cars than there is between large cars and SUVs.¹⁴ For this reason, the greatest improvement in vehicle safety would not come from restricting SUVs, but from allowing the “upsizing” of passenger cars by easing or eliminating CAFE.

¹² *National Environmental Survey*, p. 27, prepared by the polling company for the Competitive Enterprise Institute (Jan. 1999).

¹³ NHTSA, note 2 above, p.6 (online version).

¹⁴ S. Kazman, “Large Vehicles Are the Solution, Not the Problem”, *Wall Street Journal*, Mar. 12, 1998, p. A18.

Traffic Deaths Currently Caused by the 27.5 mpg CAFE Standard
Deaths Due to CAFE

STATE	<u>1997 Occupant Fatalities</u>	<u>Low Estimate</u>	<u>High Estimate</u>
Alabama	608	74	129
Alaska	40	5	8
Arizona	495	61	105
Arkansas	340	42	72
California	1738	213	369
Colorado	266	33	56
Connecticut	174	21	37
Delaware	76	9	16
Florida	1466	180	312
Georgia	816	101	174
Hawaii	68	8	14
Idaho	134	17	29
Illinois	723	89	154
Indiana*	482	59	103
Iowa	241	29	51
Kansas	249	30	53
Kentucky	446	55	95
Lousiana	433	53	92
Maine	99	12	21
Maryland	314	39	67
Massachusetts	228	28	48
Michigan	745	92	159
Minnesota	308	38	65
Mississippi	444	55	95
Missouri	614	75	131
Montana	137	17	29
Nebraska	156	19	33
Nevada	179	22	38
New Hampshire	65	8	14
New Jersey*	399	49	85
New Mexico	250	31	53
New York	837	103	178
North Carolina	764	94	162
North Dakota	55	7	12
Ohio	741	91	157
Oklahoma	434	53	92
Oregon	269	33	57
Pennsylvania	804	98	171
Rhode Island	39	5	8
South Carolina	465	57	99
South Dakota	77	10	17
Tennessee	630	77	134
Texas	1789	219	380
Utah	189	23	40
Vermont	50	6	11
Virginia	505	62	107
Washington	340	42	72
West Virginia	192	24	41
Wisconsin	372	46	79
Wyoming	71	9	15
U.S. Total	21356	2623	4539

Note: Passenger car occupant deaths only.

Source: American Automobile Manufacturers Association, *Motor Vehicle Facts and Figures*, 1998, pp.89-90

*Indiana and New Jersey data obtained from the National Highway Traffic Safety Administration.

What Would Happen Under a 40 mpg Standard?

Predicted Deaths Under a Higher CAFE Standard

<u>STATE</u>	<u>Low Estimate</u>	<u>High Estimate</u>
Alabama	108	163
Alaska	8	11
Arizona	89	133
Arkansas	61	91
California	309	465
Colorado	48	71
Connecticut	31	47
Delaware	14	21
Florida	261	393
Georgia	146	219
Hawaii	12	18
Idaho	25	37
Illinois	129	194
Indiana	86	130
Iowa	43	65
Kansas	44	67
Kentucky	80	120
Louisiana	77	116
Maine	18	27
Maryland	57	85
Massachusetts	41	61
Michigan	133	200
Minnesota	55	82
Mississippi	80	120
Missouri	109	165
Montana	25	37
Nebraska	28	42
Nevada	32	48
New Hampshire	12	18
New Jersey	71	107
New Mexico	45	67
New York	150	225
North Carolina	137	205
North Dakota	11	16
Ohio	132	198
Oklahoma	77	116
Oregon	48	72
Pennsylvania	143	216
Rhode Island	8	11
South Carolina	83	125
South Dakota	15	22
Tennessee	112	169
Texas	318	479
Utah	34	51
Vermont	9	14
Virginia	90	135
Washington	61	91
West Virginia	35	52
Wisconsin	67	100
Wyoming	13	19
U.S. TOTAL	3820	5736

Note: Passenger car occupant deaths only.

Source: American Automobile Manufacturers Association, *Motor Vehicle Facts and Figures*, 1998, pp.89-90

*Indiana and New Jersey data obtained from the National Highway Traffic Safety Administration.

**Occupant Deaths Per Million Registered
Vehicles, 1 to 3 Years Old, 1994**

Small Cars	
<i>wheelbase less than 95'</i>	241
<i>wheelbase 95'-99'</i>	238
Medium Cars	
<i>wheelbase 100'-104'</i>	164
<i>wheelbase 105'-109'</i>	124
Large Cars	
<i>wheelbase 110'-114'</i>	109
<i>wheelbase more than 114'</i>	109
Small Pickups	
<i>weight less than 3,500 lbs</i>	225
Large Pickups	
<i>weight more than 3,500 lbs</i>	132
Small Utility Vehicles	
<i>wheelbase less than 100'</i>	298
Medium Utility Vehicles	
<i>wheelbase 100'-120'</i>	132
Large Utility Vehicles	
<i>wheelbase more than 120'</i>	85

Source: Insurance Institute for Highway Safety, *Shopping for a Safer Car*, 1996.

Methodology for Determining Highway Fatalities Attributable to CAFE

All state-by-state passenger car fatalities for 1997 were calculated using the fatality figures from the National Safety Council.¹

Traffic Deaths Currently Caused by the 27.5 mpg CAFE Standard

Column One is a state-by-state breakdown of passenger car traffic fatalities derived from National Safety Council data. The NSC presented state-by-state figures that represented all motor vehicle-related deaths. According to the National Highway Traffic Safety Administration, passenger car fatalities comprise 53 percent of the total. Thus, for example, the estimate of 608 passenger car fatalities for Alabama was calculated as follows:

$$\text{Column One} = (0.53) \times (1,181)^2$$

According to the 1989 Brookings-Harvard CAFE study, the downsizing induced by the 27.5 mpg fuel economy standard has resulted in a 14-to-27 percent increase in occupant fatalities.³ The range of CAFE's effects is shown on a state-by-state basis in Columns Two and Three. For example, the lower estimate of 74 deaths in Alabama (Column Two) was calculated as follows:

$$\text{Column Two} = (\text{Column One}) - (\text{Column One}/1.14)$$

The higher estimate of 129 deaths for Alabama (Column Three) was calculated similarly:

$$\text{Column Three} = (\text{Column One}) - (\text{Column One}/1.27)$$

What Would Happen Under a 40 mpg Standard?

There are a number of proposals to make CAFE even more stringent. This would result in still more passenger car occupant fatalities. According to a 1992 study by John Graham of Harvard University (one of the co-authors of the 1989 study), the likely result of a CAFE increase to 40 mpg would be an estimated 1,650 additional fatalities annually – about a 5.5 percent increase over current occupant fatalities.⁴ The total deaths due to a 40 mpg CAFE standard (that is, the previous estimates plus the 5.5 percent increase) are presented on this page. For example, the low estimate of 108 CAFE-induced deaths in Alabama under a 40 mpg standard was calculated as follows:

$$\text{Column One} = (608 \text{ passenger car fatalities}) \times (0.055) + (71 \text{ deaths due to } 27.5 \text{ mpg CAFE}).$$

The high estimate of 163 passenger car fatalities was calculated similarly:

$$\text{Column Two} = (608 \text{ passenger car fatalities}) \times (0.055) + (129 \text{ deaths due to } 27.5 \text{ mpg CAFE}).$$

The author wishes to thank Dr. Paul Godek of Economists, Inc. (Washington, D.C.) for his advice in compiling this data.

¹ The NSC numbers were tabulated in American Automobile Manufacturer's Association, *Motor Vehicle Facts and Figures*, 1998, p. 89-90. In the report, Indiana and New Jersey had not reported fatalities. NSC staff obtained the data from these two states from the National Highway Traffic Safety Administration.

² For the purpose of this study, all fatality fractions were rounded up to one.

³ R. Crandall and J. Graham. "The Effect of Fuel Economy on Auto Safety," *Journal of Law and Economics*, April 1989, p. 111.

⁴ J. Graham, "The Safety Risks of Proposed Fuel Economy Legislation." *RISK – Issues in Health and Safety*, Spring 1992, p. 125.

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