



**Consumer Federation of America**

**Stuck in Neutral:  
America's Failure to Improve  
Motor Vehicle Fuel Efficiency  
1996-2005**

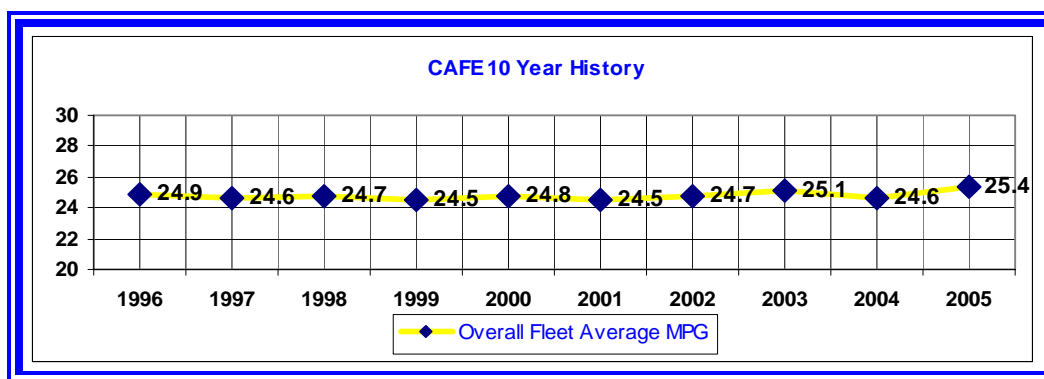
**Jack Gillis  
Director of Public Affairs  
Consumer Federation of America  
with  
David Iberkleid**

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# Stuck in Neutral: America's Failure to Improve Motor Vehicle Fuel Efficiency 1996—2005

## SUMMARY

The overall average fuel efficiency of America's automobiles and light trucks has been stuck in neutral for the past ten years at 25 miles per gallon. This report goes behind the stagnant national average and provides a new look at the fuel economy performance among the manufacturers and makes of vehicles, and examines the change in EPA ratings for specific models, exposing who's really improved and who hasn't.



**Ten Year Increase: 0.5 MPG**

## What's Happened in Ten Years?

- 9 of the 13 major manufacturers have lower CAFE mpg averages.
- 5 of the 13 major manufacturers have lower percentages of vehicles meeting CAFE.
- 68% of the top 40 selling vehicles in 1996 declined (16) or stagnated (10 improved by less than 1 mpg) in fuel efficiency.
- Two companies, Toyota and Honda, added SUVs while still making remarkable progress in improving fuel efficiency.
- Companies that improved their fuel efficiency appear to be in better financial health today than companies that have not improved fuel efficiency.

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## INTRODUCTION

The key reason why America's overall improvement in fuel efficiency has been stuck in neutral during the past 10 years is because of the significant shift to substantially less efficient SUVs (14% in 1996 to 29% in 2005).<sup>1</sup> However, significant improvements in other vehicle categories have kept the average fuel efficiency flat. There were even improvements in the SUV category due to the increased presence of smaller, more fuel efficient SUVs.

Changes in a manufacturer's overall fuel economy performance are the result of improved engineering, the types of vehicles offered, or some combination of both. Some manufacturers, who over the past ten years added SUVs, declined in fuel efficiency. Others were able to add SUVs to their vehicle mix and still make significant improvements in their fleet's performance.

As America begins to acknowledge its "oil addiction" and the U.S. automakers suffer the financial consequences of their decision ten years ago to focus on SUVs and pickups, the variability in fuel efficiency beneath the national average becomes very important. It not only explains why the national average is stuck in neutral, but may shed considerable light on how things can change in the future.

This report examines vehicle fuel efficiency performance at the manufacturer, make and model levels to expose better choices for the American consumer and to identify those companies that have made the greatest strides both forward and backward in addressing our addiction to oil and winning the battle for energy security. By providing a ten year overview, we are replicating the typical turn-over in the vehicle population.

## STUCK IN NEUTRAL: WHY WE HAVEN'T IMPROVED IN 10 YEARS

CAFE standards<sup>2</sup> were put in place years ago to set minimum standards for fuel efficiency. With the exception of minor changes in light truck requirements, these

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<sup>1</sup> NOTE: The the overall shift in all light trucks was from 40% to 52% of the vehicle fleet.

<sup>2</sup> NOTE: CAFE stands for Corporate Average Fuel Economy. As of 2005, each manufacturer must maintain a CAFE rating of 27.5 mpg for cars and 21.0 mpg for SUVs and pickups under 8500 lbs. The CAFE rating is sales-weighted in order to assess the performance of the manufacturer's entire fleet. Manufacturers are required to test all of their vehicles according to EPA protocols and report each vehicle's performance to the EPA. The EPA takes those mpg test results and adjusts them for the published EPA Mileage Ratings for each vehicle. Manufacturers also have to report associated sales for each of the tested vehicles. The combination of the sales figures and the mpg test results, for every vehicle in the manufacturer's fleet, become the Corporate Average Fuel Economy, or CAFE, rating for that manufacturer. For the purpose of this study, we have analyzed the sales-weighted "CAFE" ratings beyond the overall manufacturer totals and developed "CAFE" ratings for

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standards have not changed in the ten years covered by this report. During this time, manufacturers who have not met this standard have been fined \$246,285,791. The following table compares the CAFE requirements with the actual performance of the fleet from 1996 to 2005.

## 1. CAFE Standard versus Actual Performance 1996 – 2005

	1996 CAFE Std.	1996 MPG Actual	1996 Sales	2005 CAFE Std.	2005 MPG Actual	2005 Sales	% Sales Change	10 Yr. change	10 Yr. % change
CARS	27.5	28.5	7,920,216	27.5	30.3	7,668,313	-3%	1.5	6.32%
SUV/PU	20.7	20.8	5,224,201	21.0	22.1	8,248,772	58%	1.0	6.25%
TOTAL		24.9	13,144,417		25.4	15,917,085	21%	0.4	2.01%

Remarkably, even though there have been increases in the fuel efficiency performance in both car and SUV/pickup categories, the overall fleet performance has not improved. The dramatic increase in the number of less fuel efficient SUVs and pickups has prevented the overall fleet from improving. Less fuel efficient SUVs and pickups -- once less than half of annual sales -- are now over half the annual sales. The market is essentially replacing more fuel efficient vehicles with less fuel efficient vehicles. As a result, even significant improvements in the fuel efficiency of certain individual vehicles have been nullified by the overwhelming presence of a less fuel efficient vehicle category.

Consumer research by CFA and others clearly shows that consumers want more fuel efficient vehicles. Market behavior indicates that we also want large and more powerful vehicles. To date, most manufacturers appear to be juggling their vehicle fleets (between cars and SUVs) as a means to meet CAFE requirements. While perfectly acceptable as a CAFE compliance strategy, this is an inefficient and ineffective method of decreasing the amount of gasoline vehicles consume. On the other hand, technology provides effective and efficient solutions. With technology, the market can meet consumer needs for both large and more fuel efficient vehicles. The manufacturers who are able to satisfy this dual desire are currently the most financially viable.

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individual makes. To compare the ten year change in the most popular 1996 vehicles, we used the EPA combined fuel economy ratings. The US EPA does not make the sales information collected for CAFE public. For the purposes of this report we compared the 'projected sales numbers' for 1996 and 2005 that were available from NHTSA.

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### **HOW WELL DO MANUFACTURERS DO AT MEETING CAFE?**

CAFE regulations allow the manufacturers to offset poor performing vehicles with better performing vehicles because the standard is based on the average performance of all the vehicles in the fleet. To measure manufacturer commitment to fuel efficiency, we determined the percentage of each manufacturer's vehicles that actually meet the CAFE standard. In addition, we looked at how that percentage changed in ten years. The companies with the highest percentage of vehicles meeting CAFE standards were Honda, Toyota, Mitsubishi, Suzuki, and Subaru. The worst performers were BMW, Ford, GM, Nissan and DaimlerChrysler. One of the best performers, Toyota, also had the greatest improvement (from 1996-2005) in the percent of its vehicles that achieve the CAFE standard. Surprisingly, one of the worst performers, DaimlerChrysler, had the second greatest increase in the percent of vehicles passing CAFE from 1996 to 2005.

In analyzing the CAFE rates over time, we discovered that a number of companies actually had a lower percent of vehicles meeting CAFE in 2005 than they did in 1996. This includes Suzuki, Hyundai, Kia, Nissan and BMW. With the exception of Suzuki, all of these manufacturers substantially increased their SUV/pickup populations in 2005. In fact, BMW and Hyundai had no SUVs in their 1996 vehicle offerings.

However, adding SUVs to the vehicle mix does not have to result in poorer overall performance. While both Honda and Toyota added considerable numbers of SUVs (Honda had none in 1996 and over a half-million in 2005; Toyota tripled its numbers), each company significantly increased the percentage of their fleet that passed CAFE.

Finally, it is significant that Ford and GM showed only marginal increases in the percentage of vehicles meeting CAFE standards and have suffered severe financial setbacks.

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## 2. The Best and Worst Manufacturers at Meeting the CAFE Cutoff<sup>3</sup> Sorted by Percent Meeting CAFE Cutoff in 2005

Manufacturer <sup>4</sup>	Vehicles Meeting CAFE 1996	Vehicles Meeting CAFE 2005	% Point Diff.
Honda	86%	94%	8%
Toyota	61%	84%	23%
Mitsubishi	78%	83%	5%
Suzuki	100%	82%	-18%
Subaru	67%	82%	15%
Hyundai	98%	80%	-18%
Kia	100%	79%	-21%
Volkswagen	73%	75%	2%
DaimlerChrysler	46%	65%	19%
Nissan	68%	65%	-3%
General Motors	52%	56%	4%
Ford	45%	49%	4%
BMW	42%	40%	-2%

### WHICH MANUFACTURERS HAVE THE HIGHEST AND LOWEST CAFE AVERAGES?

We also examined which manufacturers had the best and worst manufacturer CAFE ratings and how those ratings changed in ten years. In Table 3 below, it is significant to note that the manufacturers with the best overall 2005 CAFE ratings, Honda, Toyota, and Hyundai, are all financially strong companies. Interestingly, Honda and Hyundai, two of the best performers in 2005 CAFE ratings, actually experienced declines in their overall CAFE mpg rating. Hyundai was a relatively new company in 1996 and added larger cars and SUVs to its original small car offerings. Honda added SUVs and pickups to its product mix.

As shown below, nine manufacturers actually had CAFE ratings that were lower in 2005 than in 1996; one stayed the same and only 3 improved.

<sup>3</sup> NOTE: Porsche (0% pass in '96, 4% pass in '05) not included due to low sales volume. Mazda (83% pass in '96), Mercedes-Benz (25% pass in '96), Isuzu (6% pass in '96), Ferrari (0% pass in '96), Rover (0% pass in '96) and Volvo (0% pass in '96). All merged into other companies in '05. Lotus (100% pass in '05) was not in EPA database in '96.

<sup>4</sup> NOTE: The following 1996 manufacturers were acquired by the following companies: Mazda, Rover, Volvo by Ford; Mercedes-Benz merged into DaimlerChrysler; Isuzu by GM

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### 3. The Change in Manufacturer MPG 1996-2005<sup>5</sup> Sorted by 2005 MPG

Manufacturer	1996 MPG	2005 MPG	Change in MPG	2005 Car MPG	2005 SUV/PU MPG
Honda	32.0	29.3	-2.8	33.2	24.9
Toyota	27.4	28.9	1.5	35.1	23.1
Hyundai	33.0	28.2	-4.8	30.3	24.7
Volkswagen	28.6	28.0	-0.6	29.1	20.1
Subaru	27.7	27.7	0.0	27.9	27.4
Suzuki	29.8	27.2	-2.6	29.6	22.8
Mitsubishi	29.0	27.2	-1.8	29.9	23.6
Nissan	27.9	25.6	-2.4	29.4	21.6
BMW	27.4	25.3	-2.1	27.2	21.3
GM	25.1	24.6	-0.5	29.3	21.8
Kia	27.4	24.5	-2.9	29.5	21.4
Ford	23.4	24.1	0.7	28.6	21.6
DaimlerChrysler	22.2	22.9	0.7	28.0	21.4
TOTAL	24.9	25.4	0.5	30.3	22.1

Table 3, above, also shows the car and SUV/pickup CAFE ratings for each of the manufacturers. GM, Ford and DaimlerChrysler all have greater numbers of SUV/pickups than cars and overall do quite poorly. On the other hand, Toyota and Honda, which have significant numbers SUV/pickups, still perform well overall. The clear message is that making the vehicles consumers want doesn't necessarily have to compromise overall fuel efficiency. Toyota and Honda are clearly meeting consumer demand with fuel efficient SUVs and pickups. They've also focused on technological responses to improving fuel economy (hybrids), which has enabled them to both meet consumer demand and the nation's need to use less oil. The manufacturers with the best SUV/pickup ratings are Subaru, Hyundai, and Honda. The worst are VW, DaimlerChrysler and BMW.

<sup>5</sup> NOTE: Does not include Porsche and Ferrari due to low sales. As reported by NHTSA October 2006 and based on CAFE compliance figures.

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## MARKET COMPETITION: HOW THE VEHICLE “MAKES” COMPARE

In addition to analyzing a manufacturer's overall fuel efficiency, it is also important to compare the performance of various 'makes' of vehicles. Vehicle makes have their own characteristics and provide manufacturers with the opportunity to improve (or fall backward) in a more focused vehicle category. "Makes" of cars provide direct market competition: Honda vs. Hyundai, Chevy vs. Ford, or Lincoln vs. Lexus. As Table 4 below shows, our analysis of the CAFE mpg data shows great differences in the performances of various makes, even makes that are produced by the same manufacturer. While GM tends to be an overall poor performer when it comes to CAFE, some of their makes – for example, Pontiac and Saturn -- are at the top of the list. While this is related to the types of cars within a make, it also points to the ability of manufacturers to have sub-fleets of good performing vehicles. The overall best makes in America, according to 2005 CAFE results, are Honda, VW, Toyota, Saturn and Pontiac. On the other hand, Rover, GMC, Jeep, Lincoln and Cadillac are the worst makes in terms of 2005 CAFE performance. Not surprisingly, Rover, Jeep and GMC have a preponderance of SUVs and pickups.

### 4. Best and Worst Makes Sorted by 2005 CAFE MPG<sup>6</sup>

Make	1996 Sales	1996 MPG	2005 Sales	2005 MPG	MPG Diff.
Honda	644,500	32.3	1,209,108	29.9	-2.4
Volkswagen	130,500	29.0	176,116	29.1	0.1
Toyota	1,000,100	27.7	1,861,775	28.8	1.2
Saturn	291,300	34.6	160,704	28.8	-5.8
Pontiac	551,600	27.6	426,623	28.7	1.1
Hyundai	84,400	32.7	420,028	28.0	-4.7
Mazda	235,000	29.1	264,545	27.7	-1.4
Subaru	96,900	27.4	213,139	27.7	0.3
Saab	26,100	25.6	37,285	26.9	1.4
Mitsubishi	190,800	27.8	277,578	26.8	-0.9
Suzuki	31,700	30.2	66,756	26.4	-3.8
Buick	386,300	26.4	323,526	26.1	-0.3
Audi	22,800	24.8	73,232	25.9	1.1
Nissan	614,600	27.9	1,008,963	25.9	-2.0
Acura	105,100	27.6	179,772	25.7	-1.8
Volvo	79,200	25.8	128,847	25.4	-0.4

<sup>6</sup> NOTE: Porsche, Ferrari and Isuzu not included due to low 2005 sales. Calculations based on NHTSA supplied mid-year data for 1996 and 2005. Government adjustments for ethanol were maintained.



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Make	1996 Sales	1996 MPG	2005 Sales	2005 MPG	MPG Diff.
Mercedes-Benz	62,100	25.1	196,655	24.9	-0.2
Chrysler	212,900	25.6	777,607	24.9	-0.7
Mercury	379,500	25.4	206,148	24.8	-0.5
Chevrolet	1,938,400	23.0	2,336,426	24.6	1.6
Kia	41,700	26.8	289,299	24.4	-2.4
Lexus	76,600	24.6	259,509	24.2	-0.3
Jaguar	16,600	22.4	35,377	24.1	1.7
BMW	58,200	27.1	193,150	23.6	-3.5
Ford	2,387,600	23.1	2,116,824	23.6	0.5
Infiniti	60,700	26.9	113,107	22.5	-4.4
Dodge	1,582,300	22.8	1,189,852	22.4	-0.4
Cadillac	175,700	23.3	238,375	21.5	-1.8
Lincoln	131,900	23.3	98,580	21.4	-1.9
Jeep	469,900	19.4	465,769	20.5	1.1
GMC	288,300	20.5	419,273	20.4	-0.0
Rover	25,800	17.2	26,782	17.6	0.4

### CONSUMER FAVORITES: A SPECIFIC LOOK AT HOW THE MOST POPULAR MODELS CHANGED OVER TIME

While manufacturer and make comparisons provide a market level view of performance, looking at the individual models provides a consumer view. Consumers in the market compare and make choices among specific models. They compare a Camry to an Accord, a Cavalier to a Corolla, and a Tacoma to a Ranger. Looking at mpg changes in specific models provides direct insight into the choices being offered consumers. It is also an indicator of a manufacturer's willingness to address fuel efficiency at the level where consumers make choices.

In order to track model by model changes, we analyzed the top 40 selling models in 1996<sup>7</sup> to see how that same group performed ten years later. Ideally, in ten years, the fuel efficiency of all of these models would have improved. However, that didn't

<sup>7</sup> NOTE: The top 40 selling models represented 64% (8,404,900) of the 1996 vehicle sales. The remaining 36% (4,760,400) is made up of approximately 148 models. The top 40 selling vehicles of 1996 make up 64% of the top selling 2005 vehicles.

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happen; the fuel efficiency of a significant number of vehicles actually declined during the ten years.

The most improved models (in terms of percentage of improvement in mpg), were the Toyota Camry, Toyota Corolla, Chevy Lumina/Monte Carlo, Dodge Ram, and Jeep Cherokee. The models whose CAFE rating declined by the greatest percentages were the Chevy Tahoe, Chevy S10, Ford Ranger, Saturn SL, and Nissan Sentra. It is important to note that there were both trucks and cars in both the most and least improved lists.

While comparing the percentage of improvement over time is a typical method of measuring change, in the case of fuel efficiency, it may discriminate against vehicles with better fuel efficiency because improvements at higher levels of performance are harder to achieve than improvements at lower levels. Interestingly, that doesn't need to be the case. As the table below indicates, the top two 1996 top 40 models with the greatest percentage of improvement in their mpg rating (Toyota Corolla and Camry), also ranked second and ninth for overall best in 2005.

Of the top 40 selling vehicles, 16 actually had a worse CAFE rating in 2005 than they had in 1996. One stayed the same and, of the 21 that improved, 10 improved by less than 1 mpg. (Two models had no corresponding 2005 model.) In spite of new technologies and improved engine efficiencies, car makers have let 68 percent of their most popular vehicles in 1996 decline or remain stagnant in fuel efficiency as of 2006.

### 5. How the EPA Rating of the Most Popular 1996 Models Changed Ten Years Later<sup>8</sup> (Sorted by Change in MPG)

Model <sup>9</sup>	1996 EPA Combined	2005 EPA Combined	Change in MPG*	2005 % Change*	1996 Rank	2005 Rank <sup>10</sup>
Toyota Camry	23.1	26.8	3.7	16.0%	17	9
Toyota Corolla	29.3	32.7	3.4	11.7%	5	2
Chev. Lumina/Monte Carlo	22.2	24.4	2.3	10.4%	23	13

<sup>8</sup> NOTE: Combined EPA Ratings, sales weighted for all the variations within the model. In addition, in the case of dual fuel vehicles we assumed that 10% of the users would be using ethanol E85 and the remainder gasoline. When EPA Combined numbers were missing, the mileage of a similar size and trim vehicle of the same model was used.

<sup>9</sup> NOTE: In some cases the model was replaced by a model of similar characteristics with a different name. Nissan Stanza Altima was replaced by the Altima; Chevrolet Lumina by Impala; Corsica by Malibu/Malibu Maxx; S10 by Colorado; Buick Regal by Lacrosse/Allure; Saturn SL by Ion/L300; Ford Windstar by Freestar; Escort by Focus; Jeep Cherokee by Liberty; Dodge Intrepid by 300; Chrysler Minivan (all) (Chrysler Town and Country, Dodge Caravan, Plymouth Voyager) by Minivan (all) (Chrysler Town and Country, Dodge Caravan).

<sup>10</sup> NOTE: This is how the top 40 1996 ranked against each other in 2005, not an overall ranking of 2005 models.

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Model <sup>9</sup>	1996 EPA Combined	2005 EPA Combined	Change in MPG*	2005 % Change*	1996 Rank	2005 Rank <sup>10</sup>
Jeep Cherokee	17.6	19.2	1.6	8.9%	30	29
Dodge Ram	14.2	15.5	1.4	9.8%	38	37
Honda Civic	32.8	34.2	1.4	4.3%	1	1
Chevrolet C/K Pickup	16.4	17.7	1.3	8.0%	33	30
Jeep Grand Cherokee	16.3	17.4	1.2	7.3%	35	32
Nissan Stanza Altima	24.4	25.6	1.2	5.0%	13	12
Pontiac Sunfire	27.0	28.2	1.2	4.4%	8	4
Mercury Grand Marquis	20.0	21.0	1.0	6.0%	28	21
Chevrolet Cavalier	27.2	28.2	1.0	3.6%	7	5
Dodge Dakota	17.1	17.7	0.6	3.3%	31	31
Buick Regal	22.3	22.8	0.6	2.6%	21	17
Honda Accord	25.5	26.1	0.6	2.5%	10	10
Chevrolet Corsica	25.2	25.9	0.6	2.4%	11	11
GMC Sierra	16.4	16.8	0.4	5.0%	34	34
Ford F Series	15.6	16.0	0.4	2.9%	36	35
Chrysler Minivan (all)	20.4	20.5	0.1	0.6%	27	23
Dodge Intrepid	21.4	21.5	0.1	0.5%	25	20
Dodge Stratus	24.1	24.1	0.0	0.1%	14	14
Cadillac Deville	20.0	20.0	0.0	0.0%	28	24
Mercury Sable	22.9	22.8	-0.1	-0.6%	18	18
Nissan Maxima	23.2	23.0	-0.2	-0.9%	16	16
Ford Windstar	20.0	19.7	-0.3	-1.7%	28	27
Ford Taurus	22.8	22.3	-0.5	-2.3%	19	19
Dodge Neon (all)	28.7	28.1	-0.6	-2.2%	6	6
Chevrolet Blazer	18.2	17.3	-0.9	-5.1%	29	33
Ford Explorer	17.0	16.0	-1.0	-5.7%	32	36
Toyota Tacoma	21.1	19.9	-1.2	-5.8%	26	26
Ford Mustang	22.2	20.7	-1.5	-6.8%	22	20
Pontiac Grand Am	25.0	23.5	-1.6	-6.3%	12	15
Ford Escort	29.6	27.9	-1.7	-5.9%	4	7
Chevrolet Tahoe	15.0	13.1	-1.9	-12.4%	37	38
Ford Ranger	21.7	19.6	-2.1	-9.7%	24	28
Nissan Sentra	31.4	29.1	-2.3	-7.3%	2	3
Chevrolet S10	22.4	20.0	-2.5	-11.0%	20	25
Saturn SL	29.8	27.1	-2.8	-9.3%	3	8
Ford Contour	25.9	No match			9	
Oldsmobile Ciera SL	23.3	No match			15	

\*Numbers are based on multi-decimal mileage figures, not the rounded numbers in previous two columns.

<b>MRS Rating</b>	<b>Excellent &gt;40</b>	<b>Good 30-99</b>	<b>Fair 20-29</b>	<b>Poor &lt; 20</b>
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Table 6, below, provides another look at change over time by comparing the most fuel efficient models of the top 40 sellers 10 years ago with the most fuel efficient among that same group today. As the table below indicates, both Japanese and U.S. manufacturers have the capacity to build fuel efficient vehicles. However, when looking at how the group of top sellers from 1996 performed in 2005, three of the top five mpg performers in 2005 are worse than the top five mpg performers in 1996 (Nissan Sentra, Pontiac Sunfire, and Chevy Cavalier). Furthermore, as Table 5 above indicates, one of the best performers in 2005, the Nissan Sentra, actually declined in fuel efficiency since 1996.

## 6. 1996 Top 40 Models: The Best 5 in 1996 vs. the Best 5 in 2005

Best 1996 MPG among Top Selling 1996 Models	1996 EPA	Best 2005 MPG among Top Selling 1996 Models <sup>11</sup>	2005 EPA
Honda Civic	32.8	Honda Civic	34.2
Nissan Sentra	31.4	Toyota Corolla	32.7
Saturn SL	29.8	Nissan Sentra	29.1
Ford Escort	29.6	Pontiac Sunfire	28.2
Toyota Corolla	29.3	Chevrolet Cavalier	28.2

This surprising decline in the performance of the top selling 1996 models in ten years is a contributing factor in America's fuel economy ratings being stuck in neutral.

## HOW DID THE FACTORS AFFECTING FUEL ECONOMY CHANGE IN TEN YEARS?

The following table shows that the items typically associated with declining fuel efficiency—weight, horsepower and engine size—have experienced significant increases. The good news is that in spite of the increases in fuel guzzling features, technology improvements have kept fuel economy from declining. The bad news is that these are the likely culprits for America being stuck in neutral when it comes to improving the efficiency of the annual new vehicle fleet.

<sup>11</sup> NOTE: The best performing of the 1996 Top 40 models in 2005.

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## 7. How Factors Influencing MPG Performance Changed: 1996—2005

	MPG	Weight	HP	Engine Size	Sales
1996	24.9	3300	151	2.8	13,165,300
2005	25.4	3672	192	3.0	16,048,054
Diff.	0.5	372	41	0.2	2,882,754
% Diff.	2.01%	11.3%	27.1%	7.1%	21.9%

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