Ms. Jacqueline Glassman
Acting Administrator
National Highway Traffic Safety Administration
400 Seventh Street, SW
Washington, DC 20590

Re: Public Citizen comments on NHTSA's Notice of Proposed Rulemaking (NPRM) "Average Fuel Economy Standards for Light Trucks, Model Years 2008-2011," NHTSA-2005-22223

Dear Ms. Glassman,

Public Citizen respectfully submits the following comments on NHTSA's proposed fuel economy standards for model years 2008 through 2011.[1]

We were very pleased that the agency has moved away from the approach suggested in the Advanced Notice of Proposed Rulemaking (ANPRM) for a system differentiating corporate average fuel economy (CAFE) standards for different weight classes of vehicles and is instead contemplating a system based on vehicle footprint. The reasons for doing so are sound, including the desirability of encouraging both materials substitution with advanced high-strength lightweight materials and weight reductions in the heaviest vehicles in the fleet, which would benefit safety.

[1] The comments are being filed approximately twelve working days after the close of the docket; a time period that would appear insufficient for the agency to have substantially progressed in the analytical process on this rulemaking given its complexity and the large number of comments. The Auto Safety Group at Public Citizen is small (merely 4 full-time staff, including administrative support staff) and is one of the few groups that works on both safety and fuel economy issues. In the future, we respectfully request that the agency not schedule docket closings for major rulemakings (particularly ones well known to be rife with controversy) one day apart, as it did with the instant rule and the rulemaking on roof crush resistance, Federal Motor Vehicle Safety Standard No. 216, which closed Nov. 21, 2005. Such scheduling decisions needlessly exacerbate resource and staffing inequalities between the major auto manufacturers and public interest groups.

We have several important concerns related to the proposal:

1. The proposed standard is woefully inadequate. If it is to address America's growing oil dependence, the National Highway Traffic Safety Administration (NHTSA) must make greater progress in increasing fuel economy. Increases of two to three times the NHTSA proposal are technically feasible and economically practicable and would improve the environment, save consumers money and reduce our national dependence on oil Setting a meaningful fuel economy standard is the best way to ensure that automakers are prepared for a future of fluctuations in oil prices and would help to maintain auto industry competitiveness.

2. The Energy Policy and Conservation Act (EPCA) requires NHTSA to set maximum feasible fuel economy standards. NHTSA must not ignore this obligation, which applies equally and independently to each option for compliance with the proposed standards. Yet, for the proposed "transition" period, NHTSA has set up unacceptably low expectations for the unreformed option, used these low expectations to place a cost cap on the "reformed" option, and then allowed each automaker to choose the lowest of the two, thereby ensuring that neither option nor their combination yields the maximum feasible benefits required by the law.

    A. NHTSA's methodology for determining the standard under the unreformed system is deeply flawed. The proposal gives far too much weight to the worst performers among the automakers rather than setting levels of fuel economy increases achievable for the industry as a whole. NHTSA should not let the laggards drive down the targets that apply to all automakers.

    B. NHTSA should revise the targets for the reformed system to reflect the maximum feasible standard starting in model year 2008.

    C. NHTSA should also eliminate the transition period and offer only a single system so that automakers cannot each cherry-pick the least stringent option, as they would undoubtedly do, creating the worst of both worlds from an oil savings perspective.

3. If NHTSA does move forward with structural changes, they must be accompanied by a mechanism to guarantee that the rule results in substantial oil savings, even in the face of fluctuations in the price of oil or the vehicle mix. The reform proposed by NHTSA could lower fuel economy by provoking shifts in production towards larger vehicles. NHTSA's overly deferential attitude towards manufacturers' product plans undervalues the need of the U.S. to conserve energy and does not ensure that a reformed CAFE system will provide oil savings over the longer term.

4. NHTSA's rule does not address the incorrect classification of millions of passenger vehicles as non-passenger vehicles. Not only are many sedans and station wagons incorrectly classified as non-passenger vehicles, but also SUVs and minivans are clearly passenger vehicles and should be reclassified out of the non-passenger or "light truck" category. Further, NHTSA's claim that the reformed system dramatically reduces the incentive for automakers to reclassify cars as "trucks" is incorrect and misleading. While the fuel economy target for the vehicles in the smallest truck category in 2011 is higher than today's car standard, this is only the case because neither NHTSA nor Congress has raised that standard in over a decade. Second, many of the vehicles in the smallest truck category need only make small changes to their footprint to move into a class with a fuel economy target lower than the current car standard along side many cars, such as the Dodge Magnum and the Volvo V70 station wagons, that already would be in classes with targets lower than the car standard.

5. NHTSA should not reject other positive changes in the fuel economy program, such as including vehicles that weigh from 8,500 to 10,000 lbs. Including these vehicles while maintaining existing performance is feasible, would have compelling energy conservation benefits, and would reduce fuel costs for users of such vehicles, including farmers and small businesses. NHTSA should issue standards for vehicles in this weight range beginning in model year 2009.

6. Given the difficulty of quantifying properly the full benefits of fuel economy improvements, NHTSA should set standards at the highest technologically feasible level for which benefits exceed costs, rather than at the level where marginal costs equal marginal benefits.

7. NHTSA's assumptions in its cost-benefit analysis are unrealistic. The agency assumes gas prices to be around $1.53 per gallon, and lets these cost assumptions determine the benefit of oil savings to consumers. NHTSA must revise its numbers to reflect the reality at the pump, which would justify far higher fuel economy targets for its standards. NHTSA also generally permits industry cost considerations to drive the standard while ignoring or undervaluing many benefits, such as enhanced oil security for the U.S. and reduced greenhouse gas emissions, that must be evaluated in rulemaking. Valuation of greenhouse gas emissions can be based on any number of publicly available sources, and should in no event be set at zero. Moreover, NHTSA should use a discount rate of, at most, 3 percent to account for the social rate of time preference, which is far more appropriate in the context of evaluating social, rather than private, costs. Adding these considerations to the analysis would increase the fuel economy level considered cost-effective.

8. NHTSA should not misuse the rulemaking process to suggest opinions concerning the legal outcome of pending cases. The agency's final rule should explicitly

disavow the proposal's statement on the preemption of state greenhouse gas regulations in California and elsewhere.

NHTSA Must Remedy the Numerous Legal Defects in the Proposal Prior to Issuing the Final Rule

Overall, it appears that NHTSA has spent a great deal of agency resources contemplating structural reform for CAFE standards. NHTSA is proposing to issue a reformed structure for fuel economy standards with which all manufacturers would be required to comply in 2011. For model years 2008 through 2011, automakers could choose to comply with the reformed system, which sets out different targets for different vehicle footprint bins but allows these targets to function as one standard by harmonically averaging the contribution of each bin by the distribution of those vehicles by footprint within a manufacturer's overall light truck fleet (shortcomings within one bin can be made up from savings in another). Automakers may also choose to remain in compliance with the unreformed, or traditional, system, which sets an overall light truck fleet target for vehicles up to 8,500 lbs. The standards for both the reformed and unreformed systems through and including 2011 are far below what is achievable and, therefore, what is compelled by the CAFE statute. *See* EPCA P.L. 94-163.

NHTSA used different methodologies to determine the targets for each system. In explaining how the agency set the standard for the unreformed system, NHTSA's assertions in the NPRM and Preliminary Regulatory Impact Assessment (PRIA) are self-contradictory and needlessly deferential to manufacturer's product plans. The agency claims that it has followed the guidance of the legislative history, which instructs the agency not to "key" the standard to the capacity of the "least capable" manufacturer. As NHTSA acknowledges, the Conference Report for EPCA states that "a determination of maximum feasible average fuel economy should not be keyed to the single manufacturer that might have the most difficulty achieving a given level of average fuel economy." *See* S. Rep. No 94-516, 94th Congress, 1st Sess. 154-55 (1975).

Instead, the agency is directed to examine the question of whether hardships for any one manufacturer with a large share of the domestic market will bankrupt or impose a similarly "severe strain" on the national economy. The concern, given the qualifier in the Conference Report, was that standards be set in "light of the small number of domestic manufacturers that currently exist and the possible implications for the national economy and for reduced competition." In other words, stretch goals should animate the agency's statutory standard-setting process, with the proviso that it should not reduce competition by imposing such a severe strain that a manufacturer will be forced out of business.

Such an interpretation is congruent with the extremely ambitious schedule set out in the same law for passenger vehicle standards, which doubled their fuel economy over the course of the program, and with the case law cited by the agency, *see* 70 FR 51414, at 51425, which clearly indicates that the statute was intended to be "technology forcing." Given the acknowledged proliferation in light trucks since passage of the law, and the

fact that they now perform substantially similar functions to those in the passenger vehicle category at the time of EPCA's passage, it seems clear that a far more robust fuel economy goal is warranted, and may even be compelled.

NHTSA was previously clear that standards are set with regard to industry-wide capacity, and not with undue deference to the least efficient automaker. In 2003, the agency set a MY 2007 CAFE standard that was set "at a level above the Stage analysis' projection for one of the primary companies in the light truck market," *see* 68 FR at 16873, and the agency observed that generally, "the CAFE statute does not contemplate that each standard automatically be set at the lowest projected level of the 'least capable manufacturer' with a significant share of the market." The Stage analysis used by the agency should produce results for the industry as a whole, rather than beginning (and perhaps ending) the inquiry with General Motors, the current least capable manufacturer.

NHTSA does, at several points, appear to frankly admit that its method for setting the standard incorporates a "particular regard" to the economic impacts of the standard upon the least capable manufacturer, (*see, e.g.,* 70 FR at 51447 ("While CAFE traditionally gave particular regard to the least capable of the largest three manufacturers in determining fuel economy standards…") *and* 70 FR at 51442 ("The agency has set unreformed CAFE standards with particular regard to the least capable manufacturer's own projections about its mix and vehicle designs in the years to the which the standards will apply")), and cites a change from this practice as one of the major advantages of a switch to the reformed system. *See* 70 FR at 51447. To the extent that the "Stage" analysis used by the agency is predicated on the economic burdens faced by a particular manufacturer rather than on the industry's obligations as a whole, the methodology is a violation of the statutory scheme. It is irrelevant if past NHTSA evaluations were conducted on a similar basis; the current rule must still comply with the law and Congressional intent.

The reformed system contains a different flaw. As proposed, it uses two different methods for setting out CAFE targets. Instead of a "Stage" approach which adds technologies to a particular "least capable" manufacturer and assesses technological feasibility and economic practicability in light of that manufacturer's capacity, the agency instead has developed a net benefits approach that will require new technologies up to the point where marginal benefits equal marginal costs. *See* 70 FR at 51432. This is problematic for two reasons: 1) in the transition period, the agency is artificially truncating the outcome of its analysis by capping the targets for the reformed system by equalizing the costs of compliance between the reformed and unreformed systems; and 2) from 2011 on, the agency is essentially importing a cost/benefit into the statute, which uses a fundamentally different set of analytics than that articulated by Congress.

EPCA clearly requires NHTSA to set out rules for the "maximum feasible" fuel economy standard according to the four statutory criteria: technological feasibility, economic practicability, the need for the U.S. to conserve energy, and the impact of other motor vehicle standards on fuel economy. We note that these are not, as NHTSA

suggests, a "balancing" test,[2] but are rather the constituent components for the agency's analysis. Each of them must be satisfied for the agency's action under the statute to be legal. Furthermore, to the extent that other policy objectives of the agency conflict with the enumerated criteria, it would be a violation of the statute for NHTSA to set aside the criteria in favor of its general policy inclinations, however sound it believes its intuition on those other matters might be.

Of the four criteria, none mention consumer choice, competitive equity, or "transitional" considerations. Indeed, the Congressional concern for the national welfare and the clear direction from Congress to set the "maximum feasible" standard would indicate that Congress was not concerned with individual choice nor "respect for the market," but with the national goal of reducing oil dependence. Indeed, as NHTSA points out:

> In adopting this interpretation [the industry-wide standard] in the final rule establishing MY 1981-1984 fuel economy standards for passenger cars [ ], the Department rejected several more restrictive interpretations. One was that the phrase means that the standards are statutorily required to be cost-beneficial. The Department pointed out that the Congress had rejected a manufacturer-sponsored amendment to the Act that would have required standards to be set at a level at which benefits were commensurate with costs. It also dismissed the idea that economic practicability should limit standards to free market levels that would be achieved with no regulation.

See 70 FR at 51425.

NHTSA nonetheless suggests that these alleged virtues of its reformed proposal are sufficient to overcome its obligation to issue a rule congruent with the enacted statutory duties. (*See, e.g.,* "CAFE standards should be set at a level that will achieve the greatest amount of fuel savings without leading to adverse economic *or other societal consequences*" 70 FR at 51425 (emphasis added); "Just as the law permits us to consider motor vehicle safety in addition to the express factors when setting CAFE standards, we believe the need for transition is a factor that we should take into account when moving toward the reformed CAFE systems." *See* 70 FR at 51447; *and* 70 FR at 51445 (citing "equitable factors" as the agency's motivation for the change).

In support of this proposition, the agency refers to cases that acknowledge that NHTSA has a duty to consider one factor extraneous to the fuel economy statute: safety. Unfortunately for the agency, however, the need to consider safety is a consequence of NHTSA's overall role in the federal regulatory scheme, and is not a general license to import other values into the consideration of fuel economy standards. The case law cited by the agency that incorporates safety as a concern for NHTSA in setting fuel economy

[2] As described by NHTSA at 70 FR 51418 ("When determining a "maximum feasible level of fuel economy," the Secretary is directed to *balance* factors including the…") (emphasis added); and at 70 FR 51429 ("We solicit comment on whether proposed levels of maximum feasible CAFE reflect an appropriate *balancing* of the statutory and other relevant factors) (emphasis added).

standards did so specifically in view of NHTSA's broad statutory mandate to improve highway and vehicle safety under the National Traffic and Motor Vehicle Safety Act of 1966 (codified at 49 U.S.C. 301 *et seq*.). The courts therefore correctly view all of NHTSA's actions as occurring in the context of the initial safety-related authorization, which brought the agency into being and set out the broad parameters of its jurisdiction.

There is no similar statutory authorization or contextual understanding with regard to NHTSA's impacts on consumer choice or market freedoms. Indeed, whether it pertains to safety or fuel economy, the point of NHTSA's rulemaking activity is most often to preserve a baseline and the net social good in the face of countervailing market messages or consumer choices. NHTSA's several attempts in this rulemaking to read a solicitude either for consumer choice or for a transition designed not to maximize fuel economy into the statute are therefore contrary to law, and cannot justify an extra-legal excursion into programs unsupported by the clear terms of the CAFE mandate.

Indeed, the transition period is unnecessary as the reformed system was judged feasible for the industry as a whole and would not even kick in until 2008, ample time for planning under the statute and in practical terms. Any short-term adjustments needed for industry can be handled under the carry-back/carry-forward credits mechanism of the statute. Moreover, in the practical sense there is no transition. Automakers will either comply with one system or with the other. For this reason, NHTSA's approach makes little sense.

We are deeply concerned that the NPRM's reform proposal describes a complicated floating system which fails to guarantee any level of energy conservation, much less in the amounts required to maintain oil consumption at the present day level or to significantly dampen it given future demand. Section VIII of the NPRM dramatically points out the urgency of reducing our dependence on oil and related national security concerns:

- "Increasingly, U.S. energy consumption has been outstripping U.S. energy production. This imbalance, if allowed to continue, will undermine our economy, our standard of living, and our national security."
- "The demand for petroleum is steadily growing in the U.S. and around the world."
- "Energy is an essential input to the U.S. economy and having a strong economy is essential to maintaining and strengthening our national security."
- "More specifically, reducing total petroleum use decreases our economy's vulnerability to oil price shocks. Reducing dependence on oil imports from regions with uncertain conditions enhances our energy security and can reduce the flow of oil profits to certain states now hostile to the U.S."

See 70 FR at 51454-5.

NHTSA also concedes that automakers have been influenced by the structure of the current two-division CAFE system to produce vehicles that would qualify for the "SUV loophole," in which vehicles used similarly to vehicles now classified as cars

("passenger vehicles") are grouped with "non-passenger vehicles" under the regulations. While NHTSA claims that its reformed system may avoid this particular "edge effect" by setting targets for the smallest SUVs close to the fuel economy standards for cars, it fails to view this phenomenon as a sign of the massive market shifts made possible by fuel economy incentives and manufacturer promotion of large vehicles. The past decade of experience provides ample evidence that automakers will respond to fuel economy requirements with, in some cases, major adjustments in vehicle design and will seek to maximize profit with the sale of ever-larger vehicles.

NHTSA fails to acknowledge that these "edge effects" could also be substantially reduced by a significant increase in the overall light truck standard, bringing it closer to the car standard and thereby decreasing the differentiation. Indeed, elimination of any incentive to change categories could be effectuated by the unreformed system, if the overall target fuel economy was increased such that most smaller SUVs would need to meet or exceed that target.

Given this history of automaker manipulation of categories, and as NHTSA does admit, the reformed program risks similar "edge effects" along each category line demarcated in the proposal, as vehicles may be upsized to qualify for a lower standard. NHTSA's consideration of any additional qualifiers according to vehicle attribute (*i.e.*, 2-wheel drive versus 4-wheel drive; towing capacity) would further undermine fuel savings by encouraging this kind of rampant gaming of the system, and should be resisted by the agency for this reason. Given the ability to transfer savings among bins, any further category specification is unnecessary.

Erosion in fuel savings is a serious risk of NHTSA's reformed program. Data from the Environmental Protection Agency's (EPA's) Trend Report, published annually, shows that trends in upsizing and upweighting have continued unabated for more than the past decade. Other commenters to this docket, including Environmental Defense and the Natural Resources Defense Council, will submit evidence describing the likely risks from footprint erosion of various kinds in the vehicle fleet. Such erosion is likely to severely undercut or even wipe out any fuel savings from the program. As the NPRM states: "The agency recognizes that size and/or weight creep are legitimate concerns about an attribute-based class system. There is the potential under such a system for manufacturers to design vehicles toward the larger or heavier categories that may have lower compliance obligations." *See* 70 FR at 15440.

The agency's responses to the repeated request that it include a backstop in the rule are unconvincing. First, the agency appears to understand only the simplest form of a backstop as "essentially [] the same as an unreformed CAFE standard." *See* 70 FR at 51441. Yet there are many possible designs, including one which functions as an automatic ratchet on fuel savings targets for the next model year should the amount of planned savings fail to materialize. NHTSA could easily monitor fleet distribution among the bins and adjust the targets to assure a given level of fuel savings.

NHTSA states that it is not proposing a backstop because market factors will hedge the automakers' ability to manipulate designs and because footprint, as a vehicle metric, is less manipulable than other possible metrics. Furthermore, NHTSA suggests that a backstop would not preclude future mix shifts or design changes. These answers are unresponsive, as well as in tension with each other. As shown in Appendix A, the upsizing of even the largest pickup trucks (and their marketing as a family vehicle) is a new and dangerous trend. As NHTSA states later in the rule with regard to safety, "[t]he agency believes that the manner in which fuel economy is regulated can have substantial effects on vehicle design and the composition of the light truck fleet." *See* 70 FR at 51443.

NHTSA's job is not to set a "market based" standard that "accommodates that [least capable] manufacturer's judgment" on consumer demand. *See* 70 FR at 51442. The agency's job is far simpler: to assure that the nation will save energy and will do so without crippling the auto industry. Indeed, to the extent that strong standards will assure the continued competitiveness of the U.S. auto industry and will allow the industry to better accommodate sudden gas price related shifts in the demand for significantly more fuel efficient vehicles, NHTSA's assignment is to move the market to a more efficient outcome regardless of the automakers' current and shifting views of the demand for certain vehicles.

NHTSA's woefully inadequate targets for fuel economy for both the reformed and unreformed systems mean that the agency's actions will not, as intended by Congress, "conserve energy" from the baseline at the date of issuance of this final rule and may instead merely reduce, by a much smaller margin than is feasible, anticipated consumption increases. Further complicating matters, no amount of energy conservation is assured under the design of the reformed system, as each manufacturer would comply with a fuel economy target set as a function of fleet distribution among the footprint bins.

The short but compelling policy discussion regarding energy conservation in the NPRM is clearly an insufficient treatment of this statutory prominence of Congressional concern for energy conservation, which barely figures into NHTSA's analysis. Yet, it can be read as a statutory bar on the "floating" aspect of the reformed system, a problem that could easily be averted by the addition of a ratchet or failsafe to ensure that the maximum feasible energy conservation will indeed result from the reformed system.

Other aspects of the proposal also fail to comport with NHTSA's clear statutory obligation to issue standards which are the "maximum feasible" under the statute. For example, NHTSA first pegs the unreformed target to the "least capable manufacturer," in violation of its own statements to the contrary and the legislative history relevant to the section, as explained above. *See* 70 FR at 51425. Then, NHTSA uses this "worst case" analysis as a cap on achievement during the transition for the reformed system by indexing the costs of the reformed system targets to the cost of compliance under the unreformed scenario.

Any way it is sliced, this methodology violates the statute. Because the unreformed system fails to achieve the fuel savings available under even this badly crippled formulation of the reformed system, by definition the unreformed system is not the "maximum feasible." *See* 70 FR 51416 (noting that the "Reformed standards for MYs 2008-2010 would save 650 million more gallons of fuel than the Unreformed standards for those years"). And because the reformed system's interim goals are capped with reference to unreformed costs derived with "particular regard" to the least capable manufacturer, it is also not the "maximum feasible" standard. This point is further buttressed by the significant increase in oil savings available after 2011 under the agency's reformed marginal benefits approach.

Moreover, due to NHTSA's decision to allow manufacturers to choose between the two compliance options, both of which are feasible for the industry as a whole, as the agency acknowledges, *see* 70 FR 51426, automakers doubtless will choose the less stringent of the two for the transition period from 2008-2011. And the 2011 standard is also too low because it incorporates years of insufficient progress, from the 2008-2010 period, as its baseline. Therefore, the program as a whole for all model years will fail to achieve the maximum feasible fuel economy required by statute.

This problem is further exacerbated by the proposed decision to allow manufacturers to accumulate credits to carry back or forward to and from either regime. The availability of credits towards a future maximum feasible increase beyond 2011 earned by manufacturers in, for example, an unreformed system in 2009, further undermines the program's efficacy and undermines Congressional intent to reward truly high achievers with credits and flexibility.

Furthermore, starting in 2011, it appears that NHTSA is attempting to replace the statutory commands with a cost-benefit test – one which, as cited above, was rejected by Congress in voting on amendments to EPCA. Indeed, the substitution of a maximum benefit approach for the statutory considerations is far beyond NHTSA's authority. As NHTSA observes, "EPCA neither requires nor prohibits the setting of standards at the level at which net benefits are maximized." *See* 70 FR at 51435. The reason this statement is true is that EPCA requires something else altogether, and that is an assessment under the statutory factors.

For the reasons above, based on its own record, NHTSA lacks the statutory authority to issue the proposed rule outlined in the NPRM. NHTSA can solve these legal defects by doing away with the transition period altogether and issuing a revised set of maximum feasible standards under a reformed system containing a backstop or ratchet mechanism to assure energy conservation. While NHTSA merely asserts that a transition period is within the agency's power, nothing in the statute permits the agency to temporarily or permanently set aside the clear statutory command to issue standards that are the "maximum feasible."

This is particularly true when the statute's goals of energy conservation may be utterly undermined by shifts in fleet mix or market factors. At a minimum, NHTSA

should require manufacturers to comply with the more stringent of the two options given their fleet, rather than letting automakers choose the less stringent option. NHTSA must also implement a ratchet to guard against the erosive effect of changes in the fleet mix that would countermand statutory goals for the program.

Other legal defects infect the agency's decision making. For example, NHTSA should include flex-fuel vehicle credits in its calculations on the cost of compliance for automakers that have historically used those credits to meet CAFE obligations. While the statute requires the agency to count dual fuel vehicles as operating on gasoline for purposes of determining manufacturer compliance with the standard, see 49 USC 32902(h)(2), Congress did not say, nor could it have intended, that NHTSA ignore the plain facts before it by setting aside all knowledge of the program when calculating costs and benefits for its fuel economy program.

It is utterly illogical for the agency to determine real-world costs and benefits, including employment and other effects, inside a fiction that the dual fuel program does not exist and will not be extensively and initially used by manufacturers to meet obligations under CAFE. The cost curves derived by the agency for measuring the economic impacts on the industry should include dual fuel technology as a low-cost technology available to automakers now, and should be adjusted to reflect this reality. The impact of this error substantially affects NHTSA's analysis, as it may in fact shift the agency's view of the "least capable manufacturer." An analysis last year by Bluewater Network suggests that Ford's high utilization of dual fuel credits for CAFE compliance means that Ford, and not General Motors, is the worst overall performer.

In addition, NHTSA fails to address why it evidently will maintain the current regulatory definitions of "passenger" and "non-passenger" vehicle despite their obvious obsolescence. The advantages the agency cites in reducing the incentive to exploit the "SUV loophole," which refers to the incentive to seek out classification of car-like vehicles as light trucks in order to qualify for lower fuel economy standards could be equally addressed by simply redefining SUVs and other vehicles under 6,000 lbs. gross vehicle weight (GVW), as passenger vehicles for purposes of the statute. This would far better comport with Congressional intent in delineating those two categories and would further the agency's stated goal of being able to raise the standard for cars by lowering the new combined standard below 27.5 mpg (without facing any possible objection under 49 U.S.C. § 32902(c)(2)).

Other problems in the agency's analysis must also be corrected, including the extremely high discount rate, the lack of an appropriate valuation of greenhouse gas emissions, the overly high and outdated rebound effect calculations (which should be, at most, below 10 percent) and the refusal to allow compliance calculations for weight reductions in vehicles weighing between 3,850 and 5,000 lbs, as discussed below.

NHTSA's Discussion of Safety Impacts is Incoherent and Misleading

In the NPRM, NHTSA states that:

> reformed CAFE will offer enhanced safety. The vehicle manufacturers constrained by unreformed CAFE standards are encouraged to pursue the following compliance strategies that entail safety risks: downsizing of vehicles, design of some vehicles to permit classification as "light trucks" for CAFE purposes, and offering smaller and lighter vehicles to offset sales of larger and heavier vehicles. The adverse safety effects of downsizing and downweighting have been documented for passenger cars. When a manufacturer designs a vehicle to permit its classification as a light truck, it may increase the vehicle's propensity to roll over.

See 70 FR at 51417.

Note that NHTSA here specifies that the adverse safety effects of downweighting have been documented for passenger cars only, and thus, we observe, may say little about the impacts of downweighting for the light truck fleet, which is the subject of this rulemaking. Furthermore, as NHTSA is well aware, the studies regarding the safety impacts of downweighting on passenger cars by Charles Kahane are hotly disputed. For a recitation of our objections to the study's validity, see Appendix B of these comments.

In summary, our concerns about the findings in Kahane's study are as follows:

1) The study confounds vehicle size and weight, making no attempt to model the influence of weight changes independent of size despite the fact that other research continues to demonstrate the feasibility of such modeling and its importance in making reasonable policy decisions.
2) The study looks at the wrong issue: size and design, not weight, actually matter most for safety. Moreover, new high-strength materials could change the relationship of size and weight in the future, altering both safety and fuel economy outcomes.
3) There is no connection between the hypothetical assumptions in the study of a100-lbs. reduction in the weight of vehicles across the fleet and the actual historical record of how manufacturers improved fuel economy. Eighty-five percent of those improvements were achieved through technology rather than weight reductions.
4) The study's conclusions steer us in the wrong direction: Weight can actually harm both safety and fuel economy. Lax fuel economy standards — which currently only apply to vehicles weighing under 8,500 lbs. — have allowed automakers to increase vehicle weight and acceleration over the past decade, with devastating effects for both safety and the environment, rather than devote efficiency gains to improving fuel economy.

We continue to highlight these objections because NHTSA has never, in any rulemaking document to date, responded to our and others' serious concerns with its methodology. These concerns have been submitted to the agency numerous times,

including in response to the NHTSA's Request for Comments on the 2002 National Research Council of the National Academy of Sciences (NAS) study, as comments on the 2003 Kahane study, and in our comments to the Advanced Notice of Proposed Rulemaking (ANPRM) on restructuring light truck CAFE.

Because of the lack of response, on the record, to our concerns, we take exception to the NPRM's recitation of flawed research from the National Academy of Sciences report (*See, e.g.*, 70 FR at 51420; *and* 70 FR at 51443 (stating that early fuel economy standards "contributed to many additional deaths and injuries" and citing NAS findings that were based entirely on NHTSA's study by Kahane)). We also deem it disingenuous in the extreme for the agency to state that in past research "weight was understood to encompass a constellation of size-related factors, not just weight." 70 FR at 51441. The confounding of weight and size impacts on safety was the source of our critique, and not a shared misunderstanding.

As the agency is well aware, the NAS report was accompanied by a robust disent by the minority of the panel members concerning the safety conclusions in the report. Moreover, the agency's use of the NAS study is utterly fraudulent in the context of this rulemaking. In fact, the 2002 NAS study found that increasing light truck fuel economy would *improve* — not harm — safety:

> **"Finding 13:** Any adverse safety impact [of fuel economy standards] could be minimized, or even reversed, if weight and size reductions were limited to heavier vehicles (≤ 4000 lbs.). Larger vehicles would be less damaging (aggressive) in crashes with all other vehicles and thus pose less risk to other drivers on the road."

Regardless of this clear indication of the limits of these findings for light trucks, NHTSA's NPRM intones:

> Without CAFE reform, history is likely to repeat itself. Significant increases in unreformed light truck CAFE standards, especially if accompanied by high fuel prices, would likely induce a similar wave of shifting production toward smaller light trucks and reducing the size and/or weight of light trucks.

See 70 FR at 51443.

Despite its nod to concerns about crash compatibility on the same page of Federal Register, NHTSA in this passage appears to view all downweighting as anti-safety, when in fact both the NAS and the Kahane studies were clear that downweighting in vehicles above 3,850 lbs. was beneficial for safety. The agency's own compatibility statistics (*see* 70 FR at 51443, noting 80 percent of the fatally injured people in crashes between light trucks and cars are car occupants) should be instructive in this regard. Moreover, the new possibilities for improved safety design with high-strength, lightweight materials, including information from Volvo appended to our comments as Appendix C, shows that the historical relationship of weight to safety is neither fixed nor immutable. Volvo is following the lead of the UltraLight Steel Auto Body (ULSAB) project, which showed

how advanced steel alloys and manufacturing techniques can produce a stronger, lighter, and safer cage-like steel structure for occupant protection — without higher costs.[3]

Indeed, the overall picture on safety is far more complex than is acknowledged by NHTSA. It is certainly true that some small traditional SUVs, such as the Ford Explorer Sport, have exceedingly high rollover propensity (and very low margins of rollover crashworthiness) and thus would pose additional risks to occupants if heavily marketed to consumers who might otherwise purchase cars. However, some small car-based "light trucks," such as the notorious scofflaw PT Cruiser, which is classified as a light truck for fuel economy purposes, are considerably safer than any traditional SUV, regardless of the impact of the ground clearance requirement on the vehicle's center of gravity. Moreover, other newer "crossover" SUVs, which are built on a car chassis, have been shown to have substantially greater safety for both occupants and others on the road. *See* Comments on Average Fuel Economy Standards for Light Trucks, Tom Wenzel and Marc Ross, Nov. 18, 2005, at Figure 2.

Because the NPRM adopts an overly simplistic view of the relationship of weight to safety, it fails to sufficiently recognize or take steps to ameliorate the risks of upweighting and upsizing in its proposal – which has both fuel savings and safety implications. Moreover, the proposal fails to prove that the benefits of its reformed program are not equally facilitate by a significant increase under the unreformed system. Structural redesign of vehicles is considerably more costly than technological improvements to increase fuel economy. Because any downweighting would, for economic reasons, be concentrated in the heaviest vehicles, where it achieves the largest payoff, a straight or unreformed increase in the standard would benefit safety by lowering the aggressiveness of the most aggressive vehicles in the fleet.

NHTSA also fails to recognize the complications in its summary analysis caused by the advent of crossover designs. To the extent that marketing dollars have been concentrated on this safer population of SUVs in order to offset the sale of larger, heavier vehicles under a uniform standard, reducing the incentive to promote crossover designs may denigrate overall safety. This trend has recently been reinforced by increased consumer demand for more fuel efficient (hence smaller) SUVs and trucks. If NHTSA's reformed system undermines automaker interest in crossovers by encouraging their substitution for a return to more profitable, but larger and heavier vehicles, it may undercut the burgeoning availability of these newer models despite keen consumer interest and their clear safety advantages.

Overall, NHTSA's position on the safety issues involved in the rulemaking is incoherent. The NPRM clearly acknowledges that: 1) heavier vehicles can impose aggravated risks on passenger car occupants in multiple-vehicle crashes, *see* 70 FR at51443; and 2) that NHTSA's own studies on risk and weight have been clarified by subsequent studies pointing out that the limited "protective" effects of larger, heavier vehicles are primarily a function of increased size and not weight, *see* 70 FR at 51441.

[3] *See UltraLight Steel Auto Body (ULSAB) Final Engineering Report*, March 1998, http://www.autosteel.org/ulsab/ulsab_eng_rpt_index.htm

Yet the agency incomprehensibly insists in several places that downweighting is harmful to all occupants, even those inside the heaviest vehicles.

In the most outrageous example of this myopia, the agency notes that "if downweighting were concentrated among the heaviest of the light trucks, any extra risk to the occupants of those might be more than offset be [sic] lessened risk in multi-vehicle crashes to occupants of smaller light trucks and cars." *See* 70 FR at 51444. As the agency's own research shows, there would be no "extra risk" to occupants of down-weighted light trucks that are initially among the heaviest vehicles on the road. All downweighting is not hostile to safety.

Because increases in weight raise the mass, and hence the crash energy which must be effectively managed by adequate structural and other safety design choices to protect occupants, "simple physics" tells us that downweighting in the heaviest vehicles is beneficial for both occupants and others, rather than problematic. In single-vehicle crashes, such as into fixed objects, the mass of the vehicle may play an aggravating role in occupant injury, as heavy mass is often correlated with stiffness and poor crash energy management. Because vehicles over 6,000 lbs. are currently exempt from federal roof crush safety standards, and a recent NHTSA analysis shows that they permit significantly more intrusion in a roof crush test than regulated vehicles, vehicle mass may pose an independent risk due to a lack of adequate rollover crashworthiness.

While the agency states that "historically, the size and weight of light-duty vehicles have been so highly correlated that it has not been technically feasible to fully disentangle their independent effects on safety," the record reflects no effort by the agency or Kahane to undertake this crucial task. On the other hand, research by Dynamic Research, Inc. (DRI), using data and logistic regression methods similar to those in Kahane's most recent study, shows that when vehicle weight is reduced while vehicle size is kept constant, *fatalities decline* — just the opposite of Kahane's conclusions about the effects of vehicle weight. DRI demonstrates that reductions in wheel-base and track-width — both metrics of vehicle *size* — have the overall effect of increasing fatalities. DRI concludes that while a fleet-wide, 100-lb., average reduction in vehicle weight would reduce annual fatalities by about 800, the track-width and wheel-base reductions that accompany these weight reductions (as in the Kahane study) cause an increase in fatalities of 839, meaning that the Kahane results are driven by the track-width and wheelbase changes, rather than by weight reductions.[4] More recent work has merely reinforced these findings.[5]

[4] Van Auken, R.M., and J.W. Zellner. *A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk in Model Year 1985-98 Passenger Cars and 1985-97 Light Trucks* (DRI-TR-03-01) Torrance: Dynamic Research, Inc., Jan. 2003, at 3.

[5] *See* Auken, R.M. and J.W. Zellner, *Supplemental Results on the Independent Effects of Curb Weight, Wheelbase and Track on Fatality Risk in 1985-1998 Year Passenger Cars and 1985-1997 Model Year LTVs*, May 20, 2005, at viii (finding that overall results "indicate that weight reduction tends to decrease fatalities, and that wheelbase and track reduction tends to increase fatalities).

Vehicle size, for which wheel-base and track-width are metrics, has historically been correlated with vehicle weight; in general, lighter vehicles have tended to also be shorter and narrower than heavier vehicles. But, as DRI proves, *this correlation is not inherent*. The advent of improved vehicle designs, including smaller engines; light, high strength steel and composites, and other innovations, is redefining the relationship between vehicle weight and size.

These findings by DRI add to a record of research going back thirty years or more that consistently demonstrates that weight and size, while closely associated in the data, actually have a divergent effect on safety. For example, two of the major themes of the 1974 Third International Congress on Automotive Safety were "Big Car/Small Car Interactions," and "Future Vehicle Mix and Automotive Safety." At the conference, several researchers — including the first Administrator of NHTSA, William Haddon Jr., M.D., and future Insurance Institute for Highway Safety President, Brian O'Neill — noted in the paper "Relationship Between Car Size, Car Weight, and Crash Injuries in Car-to-Car Crashes" that:

> For vehicles using the same roads these relationships suggest a crashworthiness design concept for intervehicular crashes that regards increases in vehicle *size* as *primarily protective*, and increases in vehicle *weight* as *primarily hostile*, indicating the desirability of relatively sizeable but not heavy vehicles (emphasis added).[6]

The observation that mass is primarily hostile to safety is buttressed by findings from Kahane's study, which indicates that reducing the weight of the largest light trucks would increase safety:

- In collisions with passenger cars, Kahane found that for light trucks weighing more than 3,870 lbs., each 100-lb. weight reduction led to a *0.68 fatality reduction.*
- In collisions with other light trucks, he found that for light trucks weighing more than 3,870 lbs., each 100-lb. weight reduction led to a *1.50 fatality reduction.*[7]

Kahane therefore found that weight decreases in the heaviest vehicles reduce the aggressiveness of the heavier crash partner and therefore improve vehicle compatibility. As above, the fatality reduction effect is larger in crashes involving two large and heavy vehicles, because reductions in the mass of those vehicles were safety beneficial for both occupants. Industry apologist and Competitive Enterprise Institute (CEI) consultant[8] Leonard Evans, a former GM engineer, also found that decreasing the weight of the *heaviest* light trucks does not increase fatalities, and that "pick-up trucks and SUVs, had,

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[6] Haddon, William, Brian O'Neill, Hans Joksch. *Relationship Between Car Size, Car Weight, and Crash Injuries in Car-to-Car Crashes*, Third International Congress on Automotive Safety, San Francisco, July 1974.

[7] Kahane, Charles, Vehicle Weight, Fatality Risk and Crash Compatibility of Model Year 1991-99 Passenger Cars and Light Trucks, Oct. 2003. DOT HS 809 662, at 143-144.

[8] Experts@CEI, CEI Expert Biography: Leonard Evans. <http://www.cei.org/dyn/view_bio.cfm/199>.

on the average, higher fatality rates than MY 1996-99 passenger cars or minivans of comparable weight."[9]

NHTSA disjointedly insists that it will allow downweighting strategies to be applied in its analysis for only those vehicles above 5,000 lbs. *See* 70 FR at 51426-27. This is an extreme distortion of the Kahane findings, as the agency has arbitrarily and without any real explanation decided to encourage 1,300 lbs. of demonstratedly safety-hostile upweighting. Kahane's study used increments of merely 100 lbs. to extrapolate conclusions about safety effects – NHTSA's confidence bound is, unaccountably, 13 times the increment studied.

Because this decision affects the implementation cost curves drawn up by NHTSA, it arbitrarily excludes low-cost options from the agency's planning and thereby unnecessarily lowers the target numbers for both the reformed and unreformed systems. NHTSA should correct this mistake in the final rule.

CAFE Should Include All Vehicles with a Gross Vehicle Weight Rating between 8,500 and 10,000 Pounds

Public Citizen strongly supports a modification of the CAFE program to include all vehicles with a gross vehicle weight rating between 8,500 and 10,000 lbs. Including these vehicles while maintaining existing performance is feasible and is compelling on the basis of energy conservation and reduced fuel costs for farmers and small businesses.

In limiting the fuel economy program to vehicles with GVWR less than 8,500 lbs., the agency has distorted good public policy and market preferences, giving manufacturers the perverse incentive to "super-size" their vehicle fleet even further. Researchers at the Environmental Protection Agency estimated in 2003 that light trucks of GVW between 8,500 and 10,000 lbs. reduce overall light truck fleet fuel economy by four percent.[10] A hike in the light truck CAFE standard to cover vehicles up to 10,000 lbs. would finally provide automakers with an incentive to concentrate any down-weighting in their heaviest vehicles, which would contribute to reducing light truck aggressivity and save lives.

Maintaining the total exception for vehicles above 8,500 lbs. would be contrary to all of the safety and other benefits analysis contained in the central rule because it would lock in manufacturers' incentives to up-weight vehicles above this threshold to escape compliance obligations. Some vehicles, such as the Ford Expedition at 8,600 lbs. already barely skate above this cut point, and, given the increase in the stringency of the standards, others would be certain to follow.

Moreover, the decision would be consistent with the statutory factors. NHTSA in the NPRM concludes that regulations for this category of vehicles would be "feasible"

[9] Comments by CEI to Docket No. NHTSA-2003-16318, Mar. 24, 2004, at 5-6.
[10] U.S. Environmental Protection Agency. *Light-Duty Automobile Technology and Fuel Economy Trends: 1975 Through 2003* (EPA 420 R03 006), Washington: General Printing Office, April 2003.

and not unduly "burdensome." *See* 70 FR at 51456. Despite the fact that NHTSA's reformed schematic lends itself to another footprint bin encompassing medium duty passenger vehicles (MDVPs), NHTSA indicates that it is disinclined to include these vehicles in any CAFE system due to their depressive effect on the unreformed full-fleet target. We urge the agency to impose a separate standard under the reformed system alone for this category of vehicles. Other commenters will provide ample data to show both that these vehicles are used for the same purpose as vehicles under 6,000 lbs. GVW and that their inclusion will result in significant energy conservation.

Note on Comments from the Competitive Enterprise Institute (CEI)

A recently published article indicates that oil giant Exxon Mobil has donated more than $1.3 million to CEI, which actively opposes international efforts to combat global warming and submits misleading and inaccurate comments to this docket.[11] Appendix D contains a response to comments submitted by CEI.

[11] Adam, David. "Oil Industry Targets EU Climate Policy," *The Guardian*, Dec. 8, 2005 (available on-line at http://www.guardian.co.uk/climatechange/story/0,,1661741,00.html

Appendix A

BUSINESS WEEK

You Call This the Family Car?
Pickups with Roomy Cabs Become a Status Accessory

April 26, 1999

Kathleen Kerwin

When families hit the road this summer for vacation, more of them will be piling into trucks. Not sport-utility vehicles, mind you. Pickup trucks.

The workhorse that farmers, ranchers, and construction workers have long made the top-selling vehicle in the U.S. is now a status accessory in the suburbs. The change in image has led to a surge in sales. In the past five years, pickups have gained two additional points of market share--a huge gain in Detroit terms--hitting 19% of total light vehicle sales in 1998, when nearly 3 million pickups were sold. Notes Toyota Motor Sales USA Senior Vice-President James Press: "The growth in the truck market isn't because of a sudden increase in the number of farmers."

To accommodate families, pickups now boast extended cabs that can transport your entire household. But Dad is still the prime buyer, says Dave Bostwick, DaimlerChrysler's director of corporate market research. He's the guy who yearns for a macho truck and can now rationalize that by getting a people-hauler, too. "If [a car] doesn't fit the family, it becomes a self-indulgence," Bostwick says. "But this lets you be a family person and a cowboy, too."

A truck can certainly be a practical choice. An extended cab pickup can carry six. There's plenty of room in the truck bed for cargo, from hockey equipment to an armoire from the antiques market. And you can get all this with such sedan-style amenities as heated leather seats, a top-of-the-line audio system, and even a console that holds a laptop and cell phone. Of course, many of these goodies are also available on SUVs, which remain a popular family choice. Because pickups and SUVs share the same truck chassis, their ride and handling are similar. SUVs hold the advantage for secure, enclosed storage. Until pickup cabins grew larger, SUVs also had roomier, more comfortable seating.

TRENDY.

But practicality isn't everything. Pickups, like SUVs, are selling because they're trendy. Witness the numbers of leather- and chrome-trimmed pickups lined up for valet parking from Beverly Hills to Boston. "It's cool to pull up in this massive vehicle, whether it's to a top-class restaurant or the loading dock," says Wesley Brown, an analyst for auto consultants Nextrend in Thousand Oaks, Calif.

The pickup is making inroads in the burbs at the expense of sedans and minivans. "It's amazing the number of moms with a couple of kids who end up taking home a supercab pickup," says Rob Kanaby, sales manager of Flemington Car & Truck Country in Flemington, N.J. "Cars have become obsolete, as far as families are concerned."

Price is also a draw. For around $20,000, the same as a prosaic Ford Taurus or Honda Accord, Brown notes "you get rear-wheel-drive, a V-8 engine, and a vehicle that's fun to drive--with better features, options, and quality." But if you want a four-wheel-drive model with maximum hauling power and all the trimmings, the price can climb past $36,000. Luxury sport-utilities can top $65,000, though loaded-up midsize SUVs run about $35,000.

Buyers are also drawn to pickups because they feel safer. Although high-riding trucks, like SUVs, are more prone to roll over in an accident or sudden turn, drivers sit higher for a clearer view of the road. In a crash, occupants are protected by more steel.

The pickups do have drawbacks. Their seating area is less generous than that of a minivan or jumbo SUVs like the Chevy Suburban or the Ford Expedition. And in urban areas, cargo stored in a pickup bed without pricey covers is a sitting duck for thieves. "In New York, if you put things in the back and stop at a light, it's not there any more," says Long Island City, N.Y., Chevy dealer Bruce Bendell. That's why his customers prefer SUVs with enclosed cargo spaces.

DUTCH DOORS.

It has taken a decade for the pickup to evolve into a family vehicle. First, carmakers began building enlarged cabs offering a back seat. Crude at first, with buckboard-hard bench seats that could only be reached by crawling in from the front, these extended cabs were nonetheless a hit. The big breakthrough came three years ago, when manufacturers added a passenger-side rear door, making back-seat access easier. Unlike the front door, the rear door has hinges at the back, so the two together open like Dutch doors. "The third door expanded the market to more buyers," especially to former car owners, says Ford Motor brand strategy manager Paul Morel.

But why stop there? Ford's (F) F-series and DaimlerChrysler's (DCX) Dodge Ram full-size pickups now offer four-door cabs--the better for carting around the kids or for the driver to toss a briefcase into the back. Wildly popular, the Ram's four-door Club Cab starts at $20,630--$795 more than the two-door Club Cab. In November, Dodge will launch a version of its midsize Dakota pickup with four doors, all front-hinged, that open sedan-style. Ford made the four doors standard on its SuperCab pickups, which start at $18,480 for the F-150--$2,685 more than the two-door standard cab.

Other manufacturers plan to capitalize on the four-door craze. When Toyota's (TOYOY) big Tundra pickup hits showrooms this summer, it, too, will sport a full complement of doors. Even GM (GM), whose new full-size Chevy Silverado and GMC

Sierra have just three doors, says a fourth is coming soon.

Once they could reach the back seat handily, customers began to look for more comfort there. The new Silverado and Sierra models boast rear seats with backs that recline slightly and more padding and leg support--a feature GM dealers say is proving popular. Overall, even the best rear legroom in a pickup is a couple of inches shorter than an SUV's, but that gap is narrowing fast.

If this array of "king cabs," "super cabs," "crew cabs," and "quad cabs" still isn't big enough for you, hold on. Detroit is gearing up to supersize them. Prepare for truck cabs that are essentially sport-utility bodies with pickup beds attached.

Where will the truck go next? Experts say the next trend will be pickups and SUVs based on car chassis. If that comes to pass, the family truck will again become the family car.

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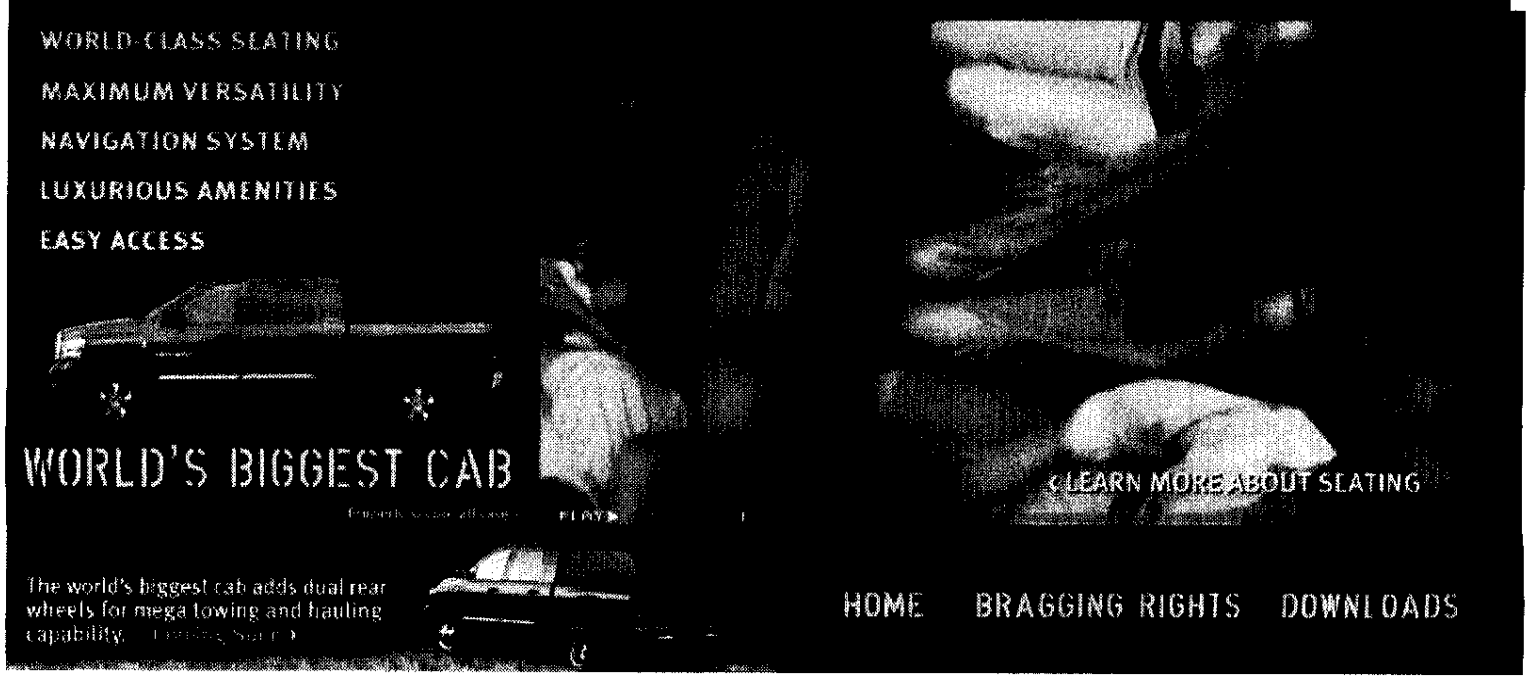

The world's biggest cab adds dual rear wheels for mega towing and hauling capability.

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Appendix B

Public Citizen welcomes an opportunity to comment for this record on the recent technical report by National Highway Traffic Safety Administration ("NHTSA") researcher Charles Kahane, *Vehicle Weight, Fatality Risk and Crash Compatibility of Model Year 1991-99 Passenger and Light Trucks*, a revision of an earlier 1997 NHTSA report, also authored by Kahane. The new study, like the former one, examines the effects of hypothetical changes in vehicle weight upon fatalities. While we applaud the agency's increased investigation of vehicle compatibility — not just in this report but in other NHTSA studies as well — we are very concerned about this study's methodological flaws, problematic assumptions, and unexplained, implausible results.

The key flaws in the new study:

1) Kahane's study confounds vehicle size and weight, making no attempt to model the influence of weight changes independent of size despite the fact that other researchers continue to demonstrate the feasibility of such modeling and its importance in making reasonable police decisions.
2) The study looks at the wrong issue: size and design, not weight, actually matter most for safety. Moreover, new high-strength materials could change the relationship of size and weight in the future, altering both safety and fuel economy outcomes.
3) There is no connection between the hypothetical assumptions in the study and the actual historical record on manufacturer decisions regarding how to improve fuel economy, which was achieved 85 percent through the use of technology.
4) The study's conclusions steer us in the wrong direction: Weight can actually harm both safety and fuel economy. Lax fuel economy standards — which currently only apply to vehicles weighing under 8,500 lbs. — have allowed automakers to increase vehicle weight and acceleration over the past decade, with devastating effects for both safety and the environment, rather than devote efficiency gains to improving fuel economy.

This latest study is of particular concern given that the original 1997 study was given political weight far outstripping its utility or value, and it appears from the agency's ANPRM that its successor will be at least a partial basis for new agency rulemaking. Kahane's 1997 study was heavily promoted by the auto industry and was badly misused in the National Academy of Sciences' (NAS) 2002 report on passenger vehicle fuel economy. The NAS Report was, in turn, often quoted by the auto industry and members of Congress as a reason to oppose improvements in fuel economy standards, even though the NAS specifically acknowledged that the Kahane study was not a good tool for predicting future outcomes.

The New Study and the 1997 Study Confuse Weight with Size

The most critical flaw of the new Kahane study is its confusion of size and weight, a confusion embedded in the study's design and methodology. Throughout, the report uses size terminology to describe vehicles of varying weights, and no attempt is

made to analyze the influence of weight changes *independent* of vehicle size. Yet, widely available recent research indicates that vehicle size, not weight, is a strong indicator of vehicle risk.

Research by Dynamic Research, Inc. (DRI), using data and logistic regression methods similar to those in Kahane's most recent study, shows that when vehicle weight is reduced while vehicle size is kept constant, *fatalities decline* — just the opposite of Kahane's conclusions about the effects of vehicle weight. DRI demonstrates that reductions in wheel-base and track-width — both metrics of vehicle *size* — have the overall effect of increasing fatalities. DRI concludes that while a fleet-wide, 100-lb. average reduction in vehicle weight would reduce annual fatalities by about 800, the corresponding track-width and wheel-base reductions that accompany weight reductions, in the Kahane study results in an increase in fatalities of 839.[1]

Vehicle size, for which wheel-base and track-width are metrics, has historically correlated with vehicle weight; in general, lighter vehicles have tended to also be shorter and narrower than heavier vehicles. But, as DRI proves, *this correlation is not inherent*. The advent of improved vehicle designs, including smaller engines; light, high strength steel and composites, and other innovations, is redefining the relationship between vehicle weight and size.

These findings by DRI add to a record of research going back thirty years or more that consistently demonstrates that weight and size, while closely associated in the data, actually have a divergent effect on safety. For example, two of the major themes of the 1974 Third International Congress on Automotive Safety were "Big Car/Small Car Interactions," and "Future Vehicle Mix and Automotive Safety." At the conference, several researchers — including first Administrator of NHTSA William Haddon Jr., M.D., and future Insurance Institute for Highway Safety president Brian O'Neill — noted in the paper "Relationship Between Car Size, Car Weight, and Crash Injuries in Car-to-Car Crashes" that:

> For vehicles using the same roads these relationships suggest a crashworthiness design concept for intervehicular crashes that regards increases in vehicle *size* as *primarily protective*, and increases in vehicle *weight* as *primarily hostile*, indicating the desirability of relatively sizeable but not heavy vehicles (emphasis added).[2]

Because Kahane does not distinguish between vehicle weight and size, Kahane's conclusions regarding vehicle weight reductions and increased highway fatalities show only correlation, and not causation, as the study claims in several places. Kahane's

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[1] Van Auken, R.M., and J.W. Zellner. *A Further Assessment of the Effects of Vehicle Weight and Size Parameters on Fatality Risk in Model Year 1985-98 Passenger Cars and 1985-97 Light Trucks* (DRI-TR-03-01) Torrance: Dynamic Research, Inc., Jan. 2003, at 3

[2] Haddon, William, Brian O'Neill, Hans Joksch. *Relationship Between Car Size, Car Weight, and Crash Injuries in Car-to-Car Crashes*, Third International Congress on Automotive Safety, San Francisco, July 1974.

continued failure to analyze vehicle weight independent of vehicle size makes this study's results dubious at best, and is scientifically irresponsible given the political impact of his similarly flawed 1997 study.

NHTSA itself demonstrated the compatibility of high fuel economy and superior vehicle safety in the Research Safety Vehicle (RSV) program of the 1970s. After investing many millions of dollars into the program, NHTSA successfully produced in 1977 vehicles that achieved the 1985 fuel economy standard of 27.5 mpg while also offering 50 mph crash protection[3] — better than any vehicle on the road today. The current NHTSA rhetoric and flawed research, like the Kahane studies, completely ignore the documented achievements of the RSV program.

The Kahane Study Ignores Highly Significant Differences in Vehicle Design

Auto industry defenders often argue that fuel economy standards' impact on safety is a matter of "simple physics."[4] The Kahane study echoes these misleading and simplistic characterizations. For example, Kahane exaggerates the role of the principle of conservation of momentum in determining occupant safety.[5] Momentum conservation requires that, in crashes with a more massive vehicle, a less massive vehicle experiences greater deceleration than the more massive vehicle. Employing simply momentum conservation to extrapolate occupant safety in crashes, however, ignores critical issues such as structural interaction between the vehicles including height differences, relative vehicle rigidity or "crushability," the maintenance of occupant safety space in respective vehicles, the performance of safety technology such as air bags, etc. Kahane claims that a heavier vehicle is "physically, intrinsically safer than the light vehicle."[6] Yet in fact, heavier vehicles are by no means "intrinsically" superior in safety to light vehicles. In addition to confusing weight and size, the study also fails to adequately consider highly significant differences in vehicle manufacturing quality and design.

For example, Kahane's study examines the influence of vehicle manufacturer ("nameplate") and new vehicle price on the fatality rates of pedestrians, bicyclists and motorcyclists. Kahane found many of the nameplate variables were statistically significant, "indicating large differences between nameplates in pedestrian fatality rates."[7] These variables, however, did not appear to be dependent on vehicle weight, at least for crashes with pedestrians, bicyclists, and motorcycles, because factoring in these variables did not change the coefficient on weight.[8]

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[3] Office of Technology Assessment. *Technology Assessment of Changes in the Future Use and Characteristics of the Automobile Transportation System — Volume II: Technical Report* (NTIS order #PB-293645), Washington, DC: Congress of United States, February 1979, at 211-214.
[4] Comments from the Alliance of Automobile Manufacturers, Docket No. NHTSA-2002-11419.
[5] Kahane, Charles. *Vehicle Weight, Fatality Risk and Crash Compatibility of Model Year 1991-99 Passenger Cars and Light Trucks* (DOT HS 809 662) Washington, DC: National Highway Traffic Safety Administration, Oct. 2003, at vii.
[6] *Id.* at 2.
[7] *Id.* at 98.
[8] *Id.* at 94-99.

However, Kahane inexplicably fails to analyze the influence of the vehicle nameplate on fatality rates in crashes with other vehicles, immobile objects, etc. Such an omission casts doubts on the credibility of the study's results. If Kahane found statistically significant nameplate variables for certain types of crashes, *why did he not include these variables in the analyses of all crash types?* Why did he not use these variables in the analyses of vehicle-to-vehicle crashes, vehicle-to-immobile object crashes, etc.? Perhaps the reason is that the influence of these variables, which do not appear to depend on vehicle weight, would seriously undermine the study's positive correlation between weight and safety.

Kahane claims that the differences between the pedestrian fatality rates of different nameplate vehicles "undoubtedly have much more to do with the 'image' of the nameplates than any intrinsic quality of the cars," that more prudent drivers purchase "brands with a reputation for prudent drivers."[9] However, a significant population of "prudent" drivers are the elderly, and they are more susceptible to injury. Moreover, many researchers like Marc Ross, of the University of Michigan, and Tom Wenzel, of Lawrence Berkeley National Laboratory, believe that differences in vehicle nameplate are not just the result of "self selection," but that vehicle manufacturing, and hence differences in vehicle "quality" or design, are essential factors that profoundly influence vehicle fatality rates. The key concept is that high "quality" vehicles also contain better crash prevention and crashworthiness design, meaning that nameplate is not a mere "self-selection" correlation, but is causal in that it influences crash likelihood and occupant survival.

Make-model specific studies of vehicle fatality trends have shown that, historically, similarly weighted vehicles have had highly disparate safety effects for both their own occupants and the occupants of other vehicles on the road.[10] For example, driver death rates in some smaller passenger cars are lower than driver death rates in some heavier SUVs and other light trucks.[11]

Ross and Wenzel recently found that, while some vehicle classes are, overall, more risky than others, there were also statistically significant differences in risk among vehicles in the same class. Their research strongly suggests that vehicle quality and safety design, which vary throughout each vehicle class, play a large role in overall risk. The range of risk within each vehicle type indicates that a vehicle's overall safety is not dictated by mere weight, and that manufacturers determine safety through sound or inadequate engineering choices. Moreover, Ross and Wenzel conclude that, in terms of Corporate Average Fuel Economy (CAFE)-related weight decreases, the "argument that the low weight of cars with high fuel economy has resulted in many excess deaths is unfounded."[12]

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[9] *Id.* at 98.
[10] Ross, Marc and Tom Wenzel, "An Analysis of Traffic Deaths by Vehicle Type and Model," U.S. Department of Energy (LBNL-49675) Washington, DC, Mar. 2002.
[11] Insurance Institute for Highway Safety *Status Report*, Vol. 35, No. 7, Oct 19, 2000.
[12] Ross and Wenzel at 5-6.

Kahane's approach of arbitrarily categorizing vehicles along a 100-lbs.-difference axis washes out the effect of safety design. For example, if the Honda Civic, an extremely popular and safe car, is part of the sample in the initial category, but the comparison group is comprised of another, inferior make/model that weighs 100 lbs. less, safety outcomes would be dramatically downgraded. Yet the change in outcomes is far more the result of better safety design in the Civic than the 100-lb. reduction in weight in the comparison class of vehicles.

Weight Kills

Although the myth that a heavy vehicle offers better occupant protection is rhetorically reinforced by the Kahane study, vehicle weight is actually a poor predictor of occupant safety. The recent DRI study, which isolates changes in vehicle size from changes in vehicle weight, indicates that as vehicle weight increases, so do fatalities, contradicting the Kahane study's conclusions. In the DRI analysis, each fleet-wide, 100-lb. increase in vehicle weight induces an increase of about 800 annual fatalities.[13]

These findings by DRI support decades of NHTSA research on aggressivity showing that weight can raise the level of violence in crashes between two large, heavy vehicles. Because heaviness is often correlated positively with stiffness and negatively with rollover propensity for light trucks, the overall effect is that large, heavy vehicles offer little or no safety advantage to their occupants and are far more dangerous to others on the highway. Kahane's assertion that "heavier vehicles tend to be more crashworthy and less crash-prone" is inaccurate.[14] For example, the subcompact Volkswagen Jetta has just as low a driver death rate as a massive Chevrolet Suburban, indicating that the Jetta makes up at least partially for its small size with superior agility and crash avoidance.[15]

Despite the risks associated with greater vehicle weight, the vehicle fleet continues to get heavier year after year. Detailed EPA data on vehicle trends and weight changes, covering more than a decade, show a considerable up-weighting in vehicles, particularly in the light truck fleet. This up-weighting is possible because annual fuel and engine economy gains from regular technological improvements to vehicles (a gain of approximately 1.9 mpg each year) have not been used, or required to be used, to meet federal fuel economy standards. Even without fancier technological advances, automakers experience a steady increase in their fuel economy, yet the absence of meaningful federal rules allows them to funnel such advances into bulking up weight, acceleration and horsepower, inflicting new harm on both safety and the environment.[16]

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[13] Van Auken at 82-88.
[14] Kahane at vii.
[15] Gladwell, Malcolm. "Big and Bad: How the S.U.V. ran over automotive safety" *New Yorker* (Jan. 12, 2003), 31.
[16] U.S. Environmental Protection Agency. *Light-Duty Automobile Technology and Fuel Economy Trends: 1975 Through 2003* (EPA 420 R03 006), Washington: General Printing Office, April 2003.

2003 Kahane Study's Compatibility Section Contradicts Conclusions on Vehicle Weight

The most striking section of Kahane's new study addresses vehicle compatibility. Its conclusions and methods significantly contradict the other findings in the report. Kahane finds a "statistically significant association between the driver's fatality risk in the struck car and the difference in the heights-of-force of the striking and struck vehicles."[17] The study's support for weight-independent metrics such as "height-of-force" and "frontal rigidity" is crucial because it completely undercuts Kahane's other contentions that vehicle weight is the predominant factor in vehicle safety. Moreover, these findings support the establishment of a federal regulation regarding a vehicle aggressivity metric.

In collisions between light trucks and passenger cars, Kahane finds that 80 percent of the fatalities are the car occupants.[18] In collisions between vehicles of *the same weight*, the study indicates that when a pickup strikes a passenger car on the left side, the fatality risk of the car driver is about 80 percent higher than if the striking vehicle were another car.[19] "In other words," Kahane writes, "it was almost twice as dangerous, on a per-mile basis, to be hit on the left side by a pickup truck as by a car of the same weight as that pickup truck."[20] Furthermore, if the striking vehicle is an SUV, the fatality risk rises *130 percent.*[21]

On average, in all two-vehicle crashes involving vehicles of equal weight, Kahane finds the pickup trucks are much more aggressive than passenger cars, increasing the fatality risk of the car occupant by about 40 percent, while SUVs are even more aggressive, increasing the fatality risk by almost 70 percent.[22]

These results are roughly consistent with other aggressivity and compatibility research by American and foreign researchers. Ross and Wenzel recently completed a study for the Department of Energy of driver death rates grouped by both vehicle type and model. They found that while the safest mid-size cars were as safe as the safest SUVs, "SUVs impose a greater risk on drivers of other vehicles than do all types of cars." Pickup trucks, a vehicle category that is on average larger, heavier and stiffer than passenger cars, have a *combined* risk to their drivers and the occupants of other vehicles that "is much higher than that for other vehicle types."

Research by European researchers points to factors other than mass as the keys to understanding vehicle compatibility. In reporting on a 2001 study of frontal impact compatibility, researchers from Britain's Transportation Research Laboratory wrote that "it is clear that although mass has an effect on stiffness, which affects intrusion, the most

[17] Kahane at xx.
[18] *Id.* at xviii.
[19] *Id.* at 261.
[20] *Id.* at xviii.
[21] *Id.* at 261.
[22] *Id.* at 261.

important factor is structural interaction."[23] Australian researchers recently reported that "good vehicle geometry is the key factor in developing a heavy vehicle that is crash compatible with the average car fleet."[24] And the International Harmonization Side Impact Working Group recently reported that "research data shows that mass has a lesser effect on injury measures than geometry."[25]

The Kahane study's compatibility findings — in agreement with a large body of compatibility research — suggest that the overwhelming influence on fatality risks are factors in vehicle design besides weight, and that the significance of these factors dwarfs the influence of weight, by itself, on the results. In fact, fatality risks associated with light trucks can be reduced significantly *without changing the weight of the light trucks*. Using Kahane's own regression coefficients to estimate the effect of replacing pickup trucks and SUVs with mid-sized or large cars and minivans of comparable weight shows that such a change would save approximately *3,400 lives*.[26]

It is worth noting that the compatibility section is the only part of the study which divides vehicles by design "class" rather than weight class — and does so with considerable overbreadth (*e.g.*, it does not distinguish between truck-based SUVs and car-based, or crossover SUVs).

With such an important discrepancy in his findings, it is incomprehensible why Kahane still gives vehicle weight such an excessive status in the report. His choice to do so suggests an unfortunate programmatic schizophrenia in the agency's positions on safety and weight.

Kahane's Study Fails to Reflect Historical Record on Impact of Fuel Economy Standards

Not only does the new Kahane study, like the first, falsely imply significant adverse safety impacts from vehicle weight reductions, but the study erroneously suggests that fuel economy standards have resulted in significant across-the-board vehicle weight reductions. The 100-lb. weight reductions that Kahane tries to study in his hypothetical formula are *completely arbitrary and in no way reflect real-world data about the impacts of CAFE. There are no data showing that fuel economy standards in fact caused across-the-board reductions of 100 lbs,. or any other amount.*

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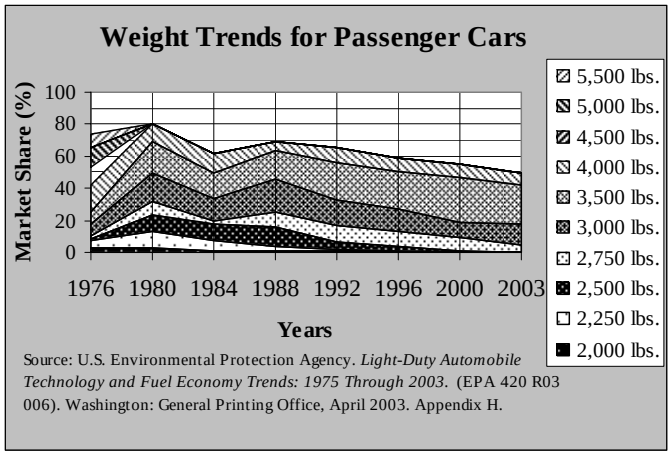
[23] Edwards, Mervyn *et al*. Transport Research Laboratory (UK), *The Essential Requirements for Compatible Cars in Frontal Collisions, Development of Criteria and Standards for Vehicle Compatibility*, 17th International Technical Conference on the Enhanced Safety of Vehicles, Amsterdam, June 2001.
[24] Grzebieta, Raphael *et al*. Monash University (Australia), *Geometric Compatibility in Near Side Impact Crashes*, 17th International Technical Conference on the Enhanced Safety of Vehicles, Amsterdam, June 2001.
[25] Sayer, Keith, Chair of Side Impact Working Group. International Harmonized Research Activities Side Impact Working Group Status Report, 17th International Technical Conference on the Enhanced Safety of Vehicles, Amsterdam, June 2001.
[26] Comments by Tom Wenzel and Marc Ross to Docket No. NHTSA-2003-16318, Mar. 24, 2003. at 11.

Citing the Kahane study as proof that CAFE standards hurt safety, as the NAS report did with the first Kahane study, is profoundly misleading: No link between Kahane's assumptions and the actual historical impacts of CAFE on vehicle weight was ever asserted or established by the studies. Kahane did not even try to make a connection — the original study used 1993 data and the updated study uses data from 1991 through 1999, years in which there was *no increase in federal fuel economy standards.* In fact, the 1985 standard of 27.5 mpg for cars was in effect throughout the period, and did not change from 1990 to 1999. In addition, the light truck standard of 20.7 mpg did not change during this same period.

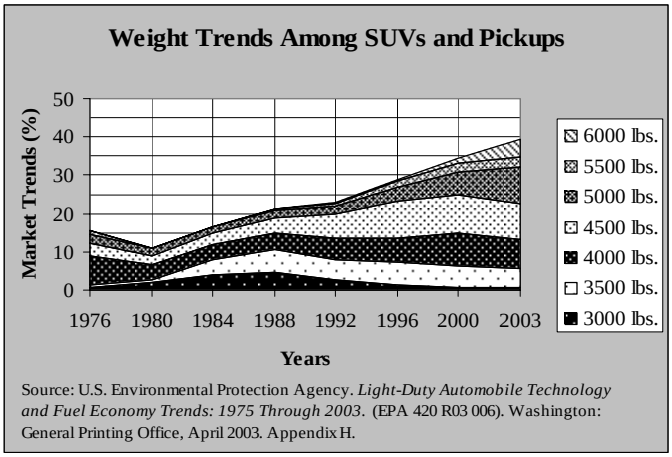
EPA data show that the weight of the car vehicle fleet has not uniformly shifted downward under CAFE. There has also been no "explosion" of tiny cars, as opponents of CAFE predicted that there would be. Instead, there has been consolidation in the weight of the car fleet, with the smallest vehicles — those generally below 2250 lbs. — discontinued, and the largest cars — those above 4500 lbs. — reduced in weight by 1000 lbs. or more. However, as the car fleet consolidated in weight, SUVs and pickups have increased both their market presence and average weight.

The Market Share of the Smallest New Passenger Cars Dwindled Away as Passenger Cars Consolidated around the 3,000-3,500 lbs. Weight



Source: U.S. Environmental Protection Agency. *Light-Duty Automobile Technology and Fuel Economy Trends: 1975 Through 2003.* (EPA 420 R03 006). Washington: General Printing Office, April 2003. Appendix H.

SUVs and Pickups, in Comparison, Have Become both More Numerous and Heavier[27]

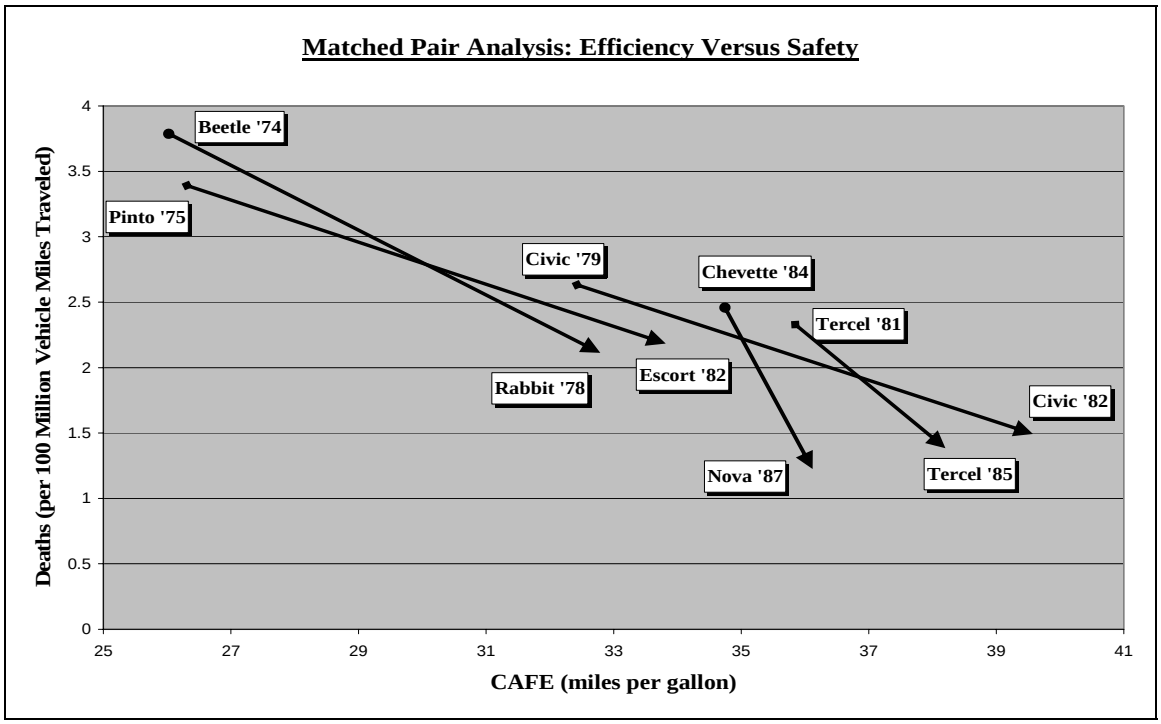


Source: U.S. Environmental Protection Agency. *Light-Duty Automobile Technology and Fuel Economy Trends: 1975 Through 2003*. (EPA 420 R03 006). Washington: General Printing Office, April 2003. Appendix H.

As the above graphs shows, since 1976, the market share for new cars weighing 3,000-3,500 lbs. nearly doubled, rising from a 15-percent to a 37-percent share of the total market in 2003. Meanwhile, at just over 10 percent in 2003, the market share of new cars weighing 2,000-2,750 lbs. is half of what it was in 1976.[28] However, the market share of new SUVs and pickup trucks has almost tripled since 1976, and the market share of the largest SUVs and pickups (5,000-6,000 lbs.) has increased by *552 percent*. The average light truck weight has increased from 4118 lbs. to 4511 lbs., and the average passenger car weight has increased from 3192 lbs. to 3433 lbs.[29]

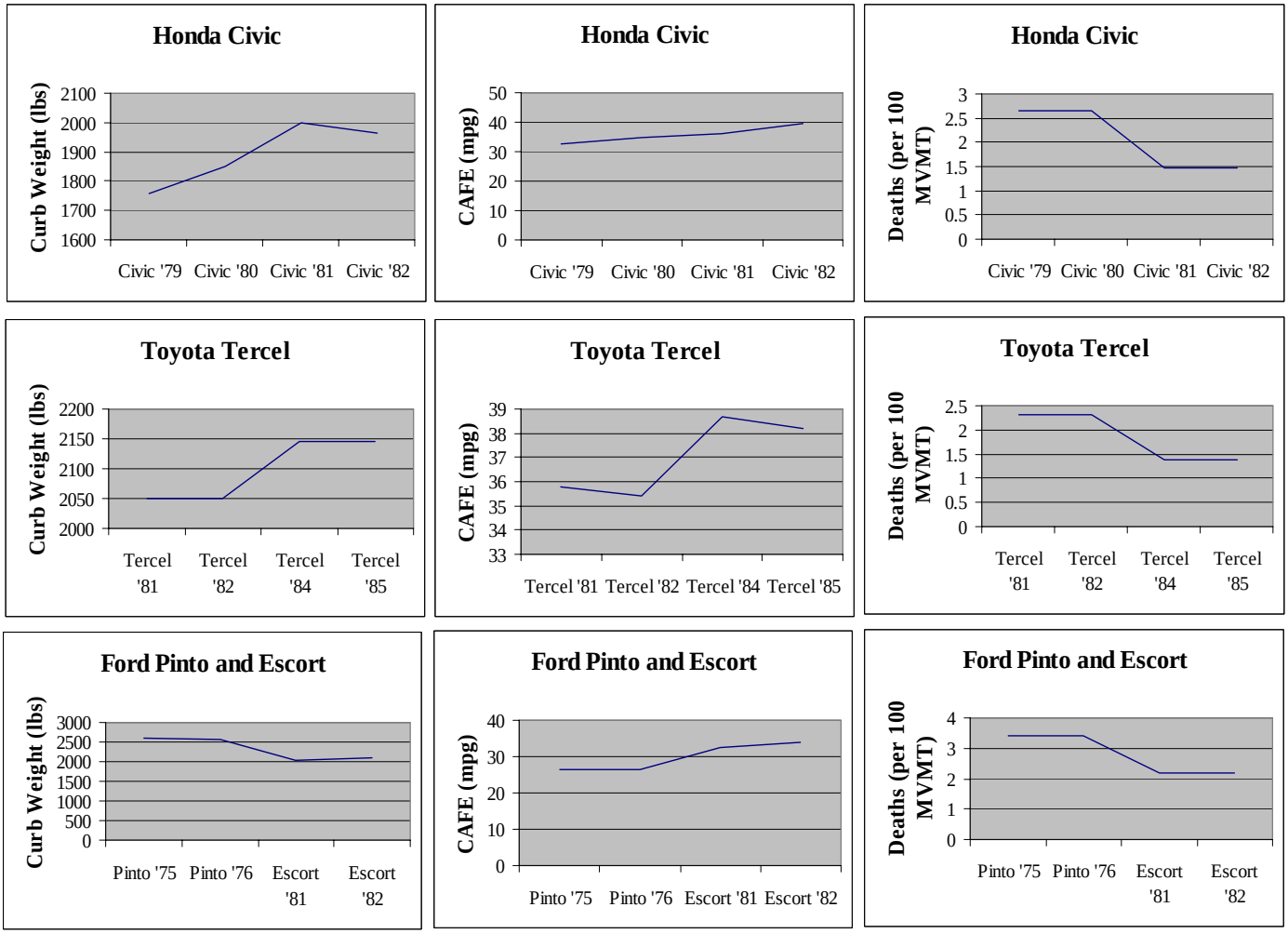
Scare tactics by CAFE-hostile groups like the Competitive Enterprise Institute (CEI) do not stand up to the facts: Examination of fleet weight trends demonstrate that there has been no long-term increase in small, light vehicles; in fact, quite the opposite has occurred. A Department of Energy study found that *85 percent of fuel economy improvements since the 1975 CAFE law was passed have been made through technology, not vehicle weight reductions*.[30] Moreover, overall fleet fuel economy is at a 20-year low.[31]

[27] EPA at Appendix H.
[28] EPA at Appendix H.
[29] Summers, Stephen M., William T. Hollowell, Aloke Prasad, Proceedings of the Eighteenth International Conference on Enhanced Safety of Vehicles, Paper No. 307, Nagoya, Japan. May 2003.
[30] Ann Mesnikoff, Testimony before the Senate Committee on Commerce, Science, and Transportation, December 6, 2002, Washington, DC.
[31] EPA at iii.



Despite the implications the Kahane study attempts to make, in reality improvements in vehicle safety have often come hand-in-hand with improvements in fuel economy. Data prepared by Clarence Ditlow of the Center for Auto Safety compares matched pairs of the same model, showing simultaneous improvements in both fuel economy and safety, when compared to the pre-CAFE vehicle, for a selection of popular smaller vehicles.

Real-world examples demonstrate that the interaction between vehicle weight and safety is far more complex than Kahane's study attempts to suggest. Many of the vehicles actually increased in weight in comparison to pre-CAFE levels, as in the three popular models depicted below. Under CAFE, vehicles such as the Honda Civic went from failing government crash tests to having best-in-class crash ratings *while improving fuel economy and gaining 800 lbs.*



It is profoundly fraudulent to treat the Kahane studies as the NAS did, as an annual, cumulative accounting of the lives lost from CAFE. The historical picture tells us that as technology for fuel economy advanced, there was no steady loss of weight or size among cars. The effect of CAFE on vehicle weight, is not, in fact, cumulative from year to year, but shifts along a technology horizon that controls the cost-effectiveness of technological versus weight-related options for improving fuel economy.

Because there are literally dozens of on-the-shelf, yet unused, technologies that have been developed to improve fuel economy today, it is very likely that any changes in weight would only be cost-effective in the heaviest vehicles in the fleet, where they would provide the most "bang for the buck"—which is precisely the case when auto manufacturers reduced the weight of their heaviest vehicles to meet the 1985 CAFE standard of 27.5 mpg. And weight reductions among the heaviest vehicles improves safety for all other vehicles on the highway. Safety improvements should also be an essential part of any re-design to improve fuel economy, producing a win-win for people and the environment.

The Kahane Study Supports Weight Reduction Among Heavy Light Trucks, Contradicting Its Assertions Regarding Weight

Even with its highly questionable methodology and inexplicable inconsistencies, Kahane's study does not support *reducing* CAFE standards. In fact, while critics of CAFE standards — like CEI — will most certainly seize upon and exaggerate Kahane's dubious correlation between vehicle weight and safety, even Kahane's study indicates that reducing the weight of the largest light trucks would increase safety:

- In collisions with passenger cars, Kahane found that for light trucks weighing more than 3,870 lbs., each 100-lb. weight reduction led to a *0.68 fatality reduction.*
- In collisions with other light trucks, he found that for light trucks weighing more than 3,870 lbs., each 100-lb. weight reduction led to a *1.50 fatality reduction.*[32]

Even industry apologist and CEI consultant [33] Leonard Evans, a former GM engineer, admits that decreasing the weight of the *heaviest* light trucks does not increase fatalities, and that "pick-up trucks and SUVs, had, on the average, higher fatality rates than MY 1996-99 passenger cars or minivans of comparable weight."[34]

Thus, there is a widespread agreement that weight reduction in heavier SUVs and pickups reduces highway fatalities. Also, weight reduction in the heaviest vehicles is the most cost-effective approach for manufacturers to reduce weight in their fleet if it is necessary for compliance with new fuel economy standards. While vehicle incompatibility and light truck aggressivity involve many vehicle design and size factors and is not simply a question of vehicle mass, reducing the mass differential between heavy light trucks and passenger cars would be a positive step towards mitigating the serious harm of vehicle incompatibility for the heaviest vehicles.[35] And when such vehicles are redesigned to reduce weight, other safety factors such as structural incompatibility and roof strength can be improved as well.

Although admitting that light trucks have higher fatality rates than passenger cars, Evans has tried to argue that light truck aggressivity is not a risk for passenger car occupants. Evans has recently asserted that SUVs do not pose an increased risk to passenger car occupants because if that were true, the ratio of car drivers killed in two-vehicle crashes (including both cars and light trucks) to the number killed in single-car crashes would have increased, and it has not:

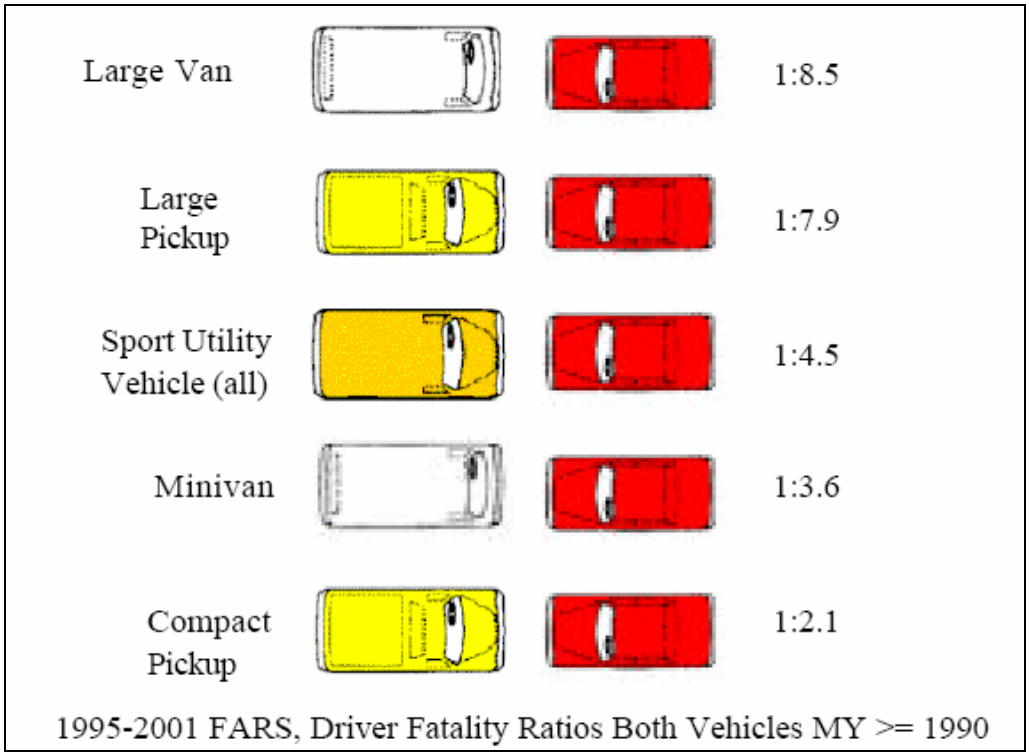
> if the growth in SUVs led to large increases in fatality risk to drivers from car-SUV crashes, the number of car drivers killed in two vehicle crashes

[32] Kahane at 143-144.
[33] Experts@CEI, CEI Expert Biography: Leonard Evans. <http://www.cei.org/dyn/view_bio.cfm/199>.
[34] Comments by CEI to Docket No. NHTSA-2003-16318, Mar. 24, 2004, at 5-6.
[35] Kahane at 11-12.

would increase relative to the number killed in single car crashes…No such trend has occurred.[36]

However, in such a proposal — after adjusting for the increasing number of light trucks on the road — if car-to-car crash fatalities declined but fatalities from light truck-to-car collisions increased, the increased fatalities from light trucks running into cars might be washed out by improvements in car-to-car crash safety. It is far more accurate when analyzing vehicle incompatibility to look at the driver fatality ratios for crashes between light truck-to-car crashes and car-to-car crashes.

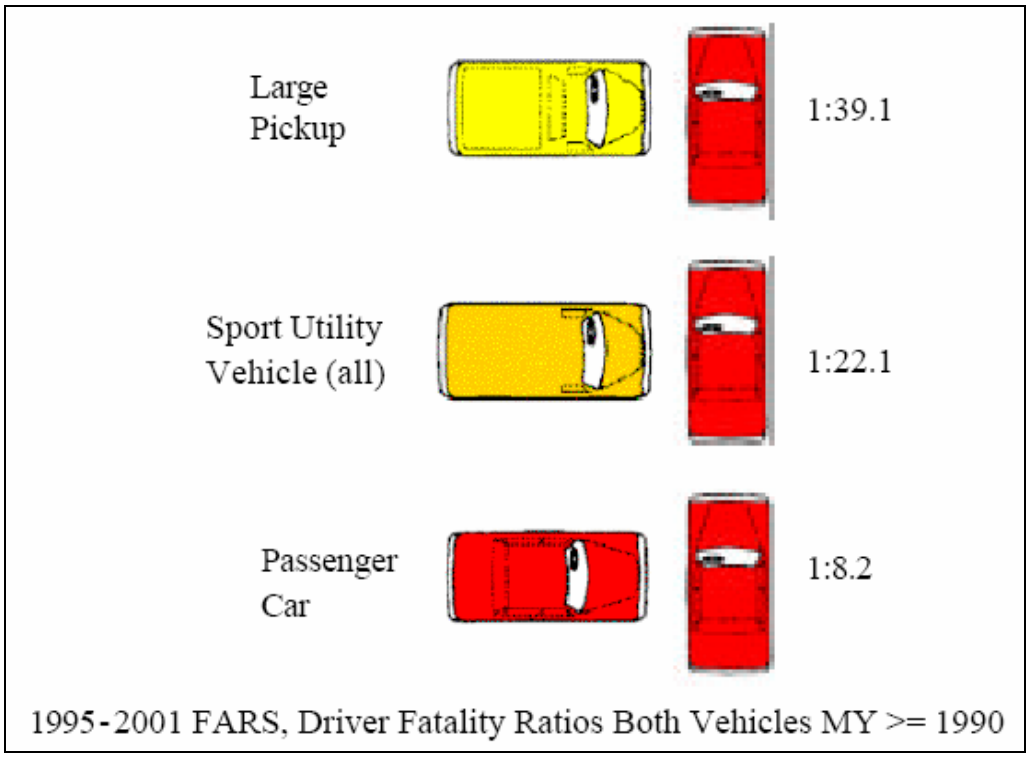
As the graphic below illustrates, drivers of passenger cars face increased fatality risks in frontal crashes with *any* type of light truck compared to if they crashed with another passenger car instead. In frontal collisions with compact pickups, for example, passenger car drivers die at twice the rate of the compact pickup drivers. In frontal collisions with a full-size pickup, the passenger car driver is *eight times* more likely to die than the pickup driver. Note that these crashes only include vehicles of model year 1990 or more recent and drivers between the ages of 26 and 55.



A passenger car driver also suffers acutely elevated fatality risks when being struck in the side by a light truck as compared to if they were struck instead by another passenger car. In side impact crashes between two passenger cars, the driver of the struck vehicle has eight times the fatality risk of the driver of the striking vehicle.

[36] CEI at 6.

However, when a passenger car is being struck in the side by an SUV, the car driver has a *22 times* greater fatality risk than the SUV driver. And when a passenger car is struck in the side by a large pickup truck, the car driver is almost *40 times* more likely to die than the pickup driver.[37] The aggressivity of light trucks is undeniable.



Although reducing the weight of heavy SUVs is supported by the problematic Kahane study and would save lives, it is unlikely that more stringent CAFE standards would result in significant weight reductions across the vehicle fleet — despite endless jeremiads from CAFE-hostile groups like CEI. Indeed, the most erroneous aspect of Kahane's analysis is the overall focus on vehicle weight as the über safety factor, strongly forwarding the implication that fuel economy standards result in general vehicle weight reductions, which is false. Rather, weight reduction, which is expensive, is limited to the heaviest vehicles from which the most weight can be taken most easily, and this improves safety overall in the vehicle fleet. [38]

Kahane's Study is Fraught with Omissions and Inconsistencies

Beyond the major confusions and contradictions of the Kahane study we have already addressed, there are numerous other problematic omissions and inconsistencies in the methodology and results.

[37] Summers at 3.
[38] *Id.* at 4.

Kahane omits from his study significant vehicle populations, perhaps because their inclusion could have undermined his findings. Heavy-duty, 200/300-series pickup trucks — as well as full-sized vans — are not included in the study, despite the fact that NHTSA research demonstrates that these vehicles are the most aggressive vehicles on the road.[39] Moreover, Kahane omits all two-door passenger cars, despite the fact that this means excluding *one quarter* of passenger cars. The vast majority of two-door cars are not sports or muscle cars. In addition, this leads to the exclusion of two-door SUVs, many of which, like the Ford Explorer Sport, are appallingly rollover-prone and cheaply made. With these kind of important omissions, it is unlikely that Kahane's study accurately reflects the passenger vehicle population.

Not only does the study omit important vehicle populations, but the way Kahane has calculated the amount that different vehicle types are driven may radically skew his safety results. In his 1997 study Kahane assumed that lighter cars are driven more than heavier cars, at least partially because younger drivers tend to buy lighter cars and younger drivers drive more than older drivers. In this new study, however, Kahane uses information from the National Automotive Sampling System (NASS) to calculate that vehicle miles traveled (VMT) by heavier vehicles is higher than for lighter vehicles.[40]

The notion that VMT increases by increased vehicle weight is not just unintuitive, but contradicts other large pools of odometer information, such as the California Smog Check. The California data indicate that, outside of import luxury cars, VMT increases with each successively *lighter* vehicle class — a conclusion similar to Kahane's 1997 study but opposite to the 2003 Kahane study.

While the California data may or may not be representative of national vehicle trends, they indicate a highly significant dissimilarity with Kahane's new study. Applying the 2003 Kahane study's assumptions regarding different vehicle classes' VMTs to the 1997 Kahane study — without applying any of the other revisions Kahane made in his new study — nearly doubles the car fatality rates of the 1997 study for most car crash types, making them approximately the same as the fatality rates found in the 2003 study.[41] If in the 2003 study Kahane is incorrectly assuming that heavier vehicles are driven more miles than lighter vehicles, the supposedly higher fatality risks of lighter vehicles compared to heavier vehicles would be artificially inflated.

Another idiosyncrasy in the Kahane study is the finding that weight reductions in passenger cars and light trucks result in increased pedestrian fatality rates. It is not only unintuitive but unconvincing that lighter vehicles could be significantly more deadly to pedestrians than heavier vehicles. While Kahane suggests that, in the case of lighter passenger cars, such an abnormality may be due to vehicle geometry or driving behavior, he calls the finding "surprising" and admits significant uncertainty concerning the cause.[42] In addition, Kahane does not even attempt to explain how weight reductions in

[39] *Id.* at 2.
[40] Kahane at 29.
[41] Wenzel at 4-5.
[42] Kahane at x.

light trucks would *increase* pedestrian fatalities. Such statistically significant aberrations suggest that there is a problem with Kahane's data set or methodology, or both.

In addition, there are many inconsistencies in the way vehicle fatality rates change from one crash situation to another. For example, the correlation between vehicle weight reductions and increasing fatality rates that Kahane asserts should mean that, as the weight differential increases between two vehicles, the fatality rate increases. But the fatality rates in the study are not consistent. According to the study, reducing by 100 lbs. the weight of a passenger car results in a higher fatality rate if it is involved with a light-duty truck than if it is involved with a heavy-duty truck.[43] This makes no sense, and it suggests that Kahane's results are not, as he states, "linear and additive."[44]

The Importance of a Balanced Approach to Questions Regarding Fuel Economy and Safety

The most recent Kahane study is so beset with flaws and unexplained inconsistencies that its conclusions are highly dubious at best. Instead of promoting the myth that vehicle weight is the most important determinant of vehicle safety, NHTSA should invest more resources in investigating vehicle size, design, and other crucial safety factors. Moreover, the agency should examine the actual historical effects of the diverging car/truck vehicle fleet and the proliferation of light trucks. The real story is that the last decade's lax CAFE standards have allowed manufacturers to ramp up sales of their most rollover-prone, aggressive vehicles, thus gravely degrading the overall safety of the American highway.

Instead of updating the Kahane study, NHTSA should have:

1) Used the available historical record on vehicle weight changes under the CAFE program;
2) Distinguished — as did DRI in both 2002 and 2003 — the divergent effects of weight and size within the research model;
3) Conducted a vehicle make/model specific analysis to identify factors that improve safety consistent with improvements in vehicle fuel economy and used "best in class" analysis to highlight its findings;
4) Developed expertise in new vehicle technologies and lightweight, high-strength metals capable of achieving major improvements in fuel economy without weight reduction;
5) Examined opportunities for "win-win" design when analyzing vehicle quality and safety to estimate the likely future impact of CAFE standards;
6) Responded to concerns about safety on the merits, with safety standards for rollover prevention and crashworthiness, as well as vehicle compatibility, that set out non-negotiable baselines for vehicle safety design; and
7) Set more meaningful fuel economy standards for both passenger cars and light trucks.

[43] *Id.* at xi.
[44] *Id.* at xii.

In the 1990 case *CEI v. NHTSA*, CEI challenged tougher fuel economy standards for passenger cars for model years 1987-89, claiming that the standards did not reflect safety considerations. The D.C. Circuit Court of Appeals held that NHTSA's standards were not arbitrary and capricious. The Court stated:

> Petitioners claim that NHTSA acted arbitrarily and capriciously in underestimating the significance of the effect of CAFE standards on vehicle size and safety. They claim that the size-safety relationship is so strong and direct that NHTSA should have lowered its standards to the levels manufacturers would have achieved without CAFE constraints. We disagree. The factual record before the agency on the size-safety CAFE question is sufficiently equivocal that it was not arbitrary or capricious for NHTSA to conclude that, on balance, the CAFE standards as set would not have adverse safety consequences.[2]

Another case was brought in August 1988 when, at the behest of the auto industry and CEI, NHTSA initiated a rulemaking proceeding on whether *to reduce* the CAFE standards for model years 1989 and 1990 (passenger car statute on fuel economy permits NHTSA to temporarily lower standards by 1.5 mpg for passenger cars as an emergency measure). The agency subsequently lowered the standard for 1989 to 26.5 mpg, but left the question open as to the standard for model year 1990. In May 1989, NHTSA closed proceedings on the 1990 standard, leaving the requirement at 27.5 mpg.

CEI, in a case decided in 1992, *CEI v. NHTSA*, challenged NHTSA's termination of reconsideration of the 1990 passenger car standard, arguing that NHTSA had failed to consider safety impacts of maintaining the standard of 27.5 mpg. On a record with limited NHTSA analysis on the safety question, a conservative court criticized the agency on the grounds that NHTSA needed to better address the safety impacts in its rulemaking record and remanded the rulemaking to the agency for further consideration.[3]

Following the remand, NHTSA reopened the rulemaking in October 1992 to request comments on whether it should lower the 1990 standard and about the potential safety effect of changing the rule. *Because there was no significant effect on safety that*

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[1] CEI 3.
[2] *CEI v. NHTSA*, 901 F.2d 107, 1990.
[3] *CEI v. NHTSA*, 956 F.2d 312, 1992.

*was demonstrated in the record submitted by auto manufacturers, the agency terminated the rulemaking without any further action***.** This led to the 1995 case *CEI v. NHTSA*, in which the Court of Appeals stated that "No manufacturer suggested that lowering the MY 1990 CAFE Standard would affect its production or sale of cars, and no other commenter provided evidence that a standard of 27.5 mpg would cause any manufacturer to increase the price of larger, safer cars."[4]

The Court held that, in terminating the rulemaking, NHTSA's decision was rooted in the agency's rulemaking record, it would not harm safety, and it was not arbitrary or capricious:

> The record adequately supports the NHTSA's conclusion that maintaining the 27.5 mpg CAFE standard for MY 1990 would not significantly affect the safety of the motoring public…. NHTSA reasonably concluded from the evidence before it that the MY 1990 CAFE standard did not cause automobile manufacturers either to downsize or to refrain from upsizing their cars.[5]

[4] *CEI v. NHTSA*, 45 F.3d 481, 1995.
[5] *Id.*