that they are under observation. The FHWA would decide whether to conduct the road test after analyzing the results obtained in the simulation and closed-course tests.

13. Standard Development. The results of the preceding task would be analyzed for validity, reliability, and practicality. If the results of the validation testing justify specification of a new standard, a decision framework for that standard would be constructed.

Specific Questions

The FHWA is specifically interested in comments addressing the following issues:

1. Are there any methodological shortcomings in the research plan outlined above that need to be addressed?
2. Is the plan likely to meet the objective of leading to an improved, performance-based vision standard?
3. Does the plan reflect an understanding of the current literature and consider its implications?
4. Is the plan capable of adequately addressing practical matters, such as the cost of any new testing machinery developed, the level of training required to conduct new tests, and the time needed to take tests?
5. Has this type of research been conducted in other professions? What were the results?
6. Should the FHWA proceed with the short-term plan, the long-term plan, both, or neither?
7. Should the FHWA proceed with an alternative plan? If so, describe that plan.

Current Status of the Research Program

The FHWA is currently in the midst of step 2 of the research plan, which consists of inventorying existing tests and evaluating them against a number of criteria, including their cost, which visual functions they measure, overlap between different tests, and the amount of training required to conduct the tests.

Format of Public Hearing

The FHWA announced in the November 17th notice (59 FR 59386) its intention to hold a public hearing to discuss the research plan. The public hearing will be held on August 9, 1996, at the Chicago O'Hare Marriot, 8535 West Higgins Road, Chicago, IL 60631, (312) 693–4444. The hearing will begin at 8:30 a.m. and conclude at 4:30 p.m.

Individuals wishing to speak at the hearing should contact the FHWA at the address or phone number listed above under the heading ''For Further Information Contact.'' Individuals may submit written comments in addition to, or in place of, oral testimony. All commentors will be limited to ten minutes of oral remarks.

The hearing will commence with an explanation of the proposed research plan, including a brief description of the background to this effort, the goals of the proposed research, and the steps of the proposed plan. The FHWA will then accept questions from audience members, with individuals who have contacted the FHWA given the first opportunity to speak.

(49 U.S.C. 31136(a)(3), 31502)

Issued on: May 20, 1996.

Rodney E. Slater,

Federal Highway Administrator.

[FR Doc. 96–14041 Filed 6–4–96; 8:45 am]

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National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. 91–68; Notice 5]

RIN 2127–AC64

Federal Motor Vehicle Safety Standards; Rollover Prevention

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Denial of petitions for reconsideration.

SUMMARY: This notice announces the denial of petitions for reconsideration of the agency's decision to terminate rulemaking to develop a vehicle rollover stability standard.

FOR FURTHER INFORMATION CONTACT: The following persons at the National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590:

For non-legal issues: Gayle Dalrymple, Office of Crash Avoidance Standards, telephone (202) 366–5559, facsimile (202) 366–4329.

For legal issues: Steve Wood, Office of the Chief Counsel, NCC–20, telephone (202) 366–2992, facsimile (202) 366–3820.

SUPPLEMENTARY INFORMATION:

I. 1994 Notice Terminating Rulemaking on a Vehicle Rollover Stability Standard

On June 28, 1994, NHTSA published a notice in the Federal Register announcing two agency actions: (1) the termination of rulemaking to develop a Federal Motor Vehicle Safety Standard on vehicle rollover stability; and (2) the proposal of a consumer regulation for labeling vehicles with rollover stability information. (59 FR 33254)

In the portion of the 1994 notice terminating rulemaking, the agency examined the suitability of using a variety of vehicle stability metrics [1] as a basis for a rollover standard. NHTSA concluded that two such metrics, tilt table angle (TTA) [2] and critical sliding velocity (CSV),[3] can each separately account for approximately half of the variability in rollover risk in single vehicle accidents remaining after considering driver, roadway, and environmental factors. NHTSA stated:

> The suitability of a vehicle safety standard based on rollover stability depends on the importance of rollover stability, as represented by a vehicle metric, relative to other rollover influences, such as vehicle handling properties, vehicle condition, the nature of the roadway and shoulder terrain, and driver behavior. The agency sought to determine whether vehicle stability metrics are significant variables in a statistical model of the risk of rollover. If they are, then a standard regulating stability might be justified, depending on the results of a comparison of benefits and costs for such a standard.
>
> After analyzing a number of static and dynamic rollover metrics, the agency concluded that two vehicle metrics, tilt table angle and critical sliding velocity, can account for about 50 percent of the variability in rollover risk in single vehicle accidents, after considering driver, roadway, and environmental factors. (Rollover risk is the number of single vehicle rollovers involving a particular make/model divided by the number of single vehicle crashes of all types involving the same make/model.) This statistical analysis was conducted on all light duty vehicles treated as a group. However, analysis of accident data indicated that certain subgroups of light duty vehicles are more likely to roll over than other subgroups. For example, sport utility vehicles and compact pickup trucks tend to be the most likely vehicles to roll over. Large passenger cars tend to be the least likely to roll over.

59 FR 33254, at 33258.

While NHTSA concluded that the two vehicle stability metrics were of some value in estimating the likelihood that a single vehicle accident involving a particular model of vehicle would result

[1] A vehicle stability metric is a measured vehicle characteristic that is analyzed to determine whether it is related to a vehicle's likelihood of rollover involvement.

[2] The tilt table test involves placing the vehicle on a platform which is then tilted about an axis parallel to the vehicle's longitudinal axis. TTA is the angle at which the last tire on the upper side of the platform loses contact with the platform and the vehicle begins to fall off the platform. This metric is influenced by changes in a vehicle's mass, center of gravity height, track width, and suspension movement, all of which are physically related to rollover stability.

[3] Critical sliding velocity includes the roll moment of inertia as well as the various static factors included in tilt table angle. CSV is calculated from an equation which can be found in the June 28, 1994 notice, as corrected on July 26, 1994 (59 FR 38038).

in a rollover, the agency emphasized that analyses also ''show that other factors in addition to those analyzed are affecting rollover risk.'' (*Id.*, at 33260) As the agency noted, ''[t]he suitability of a vehicle safety standard based on rollover stability depends on the importance of rollover stability, as represented by a vehicle metric, relative to other rollover influences, such as vehicle handling properties, vehicle condition, the nature of the roadway and shoulder terrain, and driver behavior.'' (*Id.*, at 33258) In other words, the issue was not simply whether there is a statistical relationship, but also whether that relationship is strong enough, considering other influences, so that improvements in the stability metrics, especially relatively small improvements, would generate benefits commensurate with the costs. If the relationship is not sufficiently strong, even significant changes in the stability metrics may be overwhelmed by the other influences and thus fail to cause a significant change in rollover experience.

The agency concluded that while each of the stability metrics has some causal relationship to the potential for rollover and a statistical relationship to real-world rollover frequency, a standard based on either of the metrics would yield measurable benefits only if it required that the metrics be increased to an extent that would impose excessive costs and necessitate radically redesigning one or more types of light trucks.[4] The agency reached this conclusion after examining the merits of establishing a single rollover standard for all light duty vehicles (i.e., passenger cars and light trucks).

With respect to a single standard, the agency stated:

> The agency also determined that, considering the costs and benefits involved, proposing a safety standard specifying a single minimum stability value for both cars and light trucks could not be justified. While light trucks have lower stability measurements than cars do, the greatest number of rollover-related deaths and injuries occur in passenger cars because of their larger population size. Therefore, if the agency wished to set a stability minimum high enough to realize significant reductions in the number of fatalities in all light duty vehicles, it would have to set the minimum above the stability number of most light trucks. The costs of such a standard, in terms of the cost of vehicle redesign and the loss of consumer-desired attributes, were determined to be very high, as entire classes of light trucks would probably need to be substantially redesigned to meet such a standard. This redesign could result in the elimination of some vehicle types, e.g., sport utility vehicles, as they are known today.

Id., at 33258.

To avoid such drastic consequences for light trucks, the agency considered whether it would be appropriate to set one standard for cars and separate standards for various classes of light trucks.[5] NHTSA concluded that it was not appropriate. Since its analysis of the ability of the two vehicle stability metrics to account for the variability in rollover risk in single vehicle accidents was conducted on all light duty vehicles as a group, the agency examined the ability of the metrics to account for variability within individual subgroups of those vehicles. Regarding the results of that examination, NHTSA stated:

> [I]t was necessary to determine whether either of the stability metrics exhibited sufficiently high levels of correlation to assure the agency that a requirement applying to only one class of vehicle would be expected to reduce the incidence of rollovers for vehicles in that class. * * * [T]he agency found that the statistical correlations of the metrics with rollover accident data within a class of vehicles was not so consistent as for all vehicles grouped together. This weakening of the predictive ability of the metric is, to some extent, the result of the smaller range of the metric within any class of vehicles together with the inherent variability in the data. Based on this analysis, and the general analysis of costs and benefits discussed later, the agency determined that proposing a standard specifying one minimum stability value for cars and others for various classes of light trucks could not be justified.

Id., at 33528.

II. Petitions for Reconsideration of Decision To Terminate Rulemaking

In July 1994, the agency received two petitions for reconsideration of its decision to terminate rulemaking on a rollover stability standard. One petition was submitted by Advocates for Highway and Auto Safety and the Insurance Institute for Highway Safety (Advocates/IIHS) and the other by Randall and Sandy Vance, Doug White, and Robert and Glenda Cammack (Vance, *et al.*). Both petitions asked NHTSA to reconsider its decision to terminate rulemaking to establish a minimum standard for vehicle rollover stability. The Vance *et al.* petition expressed general disagreement with that decision, while the Advocates/IIHS petition identified detailed points of disagreement. For this reason, unless otherwise specified, references below to ''the petition'' or ''the petitioners'' are references to the Advocates/IIHS petition.

While the petitioners made numerous contentions, they focused on four general areas: the character of a reasonable rollover standard, the agency's statistical analysis of how a standard could be selected, the agency's benefit calculations, and the agency's statements concerning cost burden to the manufacturing industry. The following is a summary of the more important contentions addressed in this notice and the appendix to this notice:

- NHTSA should have more thoroughly considered establishing separate standards for separate classes of vehicles.
- To achieve a better relationship between costs and benefits, NHTSA should have considered the alternative of setting a standard for the most rollover-prone vehicles within one or more of the following groups: sport utility vehicles (SUVs), vans, and pickup trucks.
- Compact SUVs[6] are the most rollover prone group of light duty vehicles.
- Minor vehicle changes (e.g., suspension changes) could be used to achieve stability improvements at reasonable cost.
- NHTSA did not provide any factual support for its assertion that there are serious safety problems associated with improving vehicle stability metrics through suspension changes.
- NHTSA did not explain the nature and extent of the major design changes that it said were necessary to meet any stability metric, nor how much such changes would cost.
- The level of projected benefits of a rollover standard was understated by the agency because it:
- used average class values in lieu of model specific rollover accident data for the rollover experience of some vehicle models;
- used inappropriate statistical measures; and
- viewed rollover prevention as accident mitigation instead of accident prevention.
- Although Congress did not mandate the issuance of a rollover stability standard, it expected that such a standard would be issued.
- Contrary to NHTSA's position, the statute governing the agency's vehicle

[4] The term ''light trucks'' includes sport utility vehicles, vans, and pickup trucks with a gross vehicle weight rating of 4,536 kilograms (10,000 pounds) or less.

[5] *Id.*, at 33258.

[6] The vehicles considered compact SUVs in NHTSA's analysis were: Ford Explorer, Chevy S10 Blazer, Jeep Cherokee, Jeep Wrangler, Toyota 4–Runner, Nissan Pathfinder, Geo Tracker, GMC S–15 Jimmy (essentially a twin of the Blazer), Isuzu Trooper, Isuzu Rodeo, Suzuki Sidekick (essentially a twin of the Tracker), Mazda Navaho (essentially a twin of the 4WD Explorer), Mitsubishi Montero, Isuzu Amigo, and Suzuki Samurai.

safety rulemaking readily permits the elimination of a class of vehicles widely accepted in the marketplace.

- The agency may not consider the policy concerns underlying the Regulatory Flexibility Act without preparing a regulatory flexibility analysis.

III. Response To Petitions for Reconsideration

In response to the petitions, the agency has reconsidered its decision to terminate rulemaking on a rollover stability standard. As explained below, the agency is, on reconsideration, reaffirming that decision.

The petitions raise several points that are not disputed by NHTSA; however, they do not compel the conclusion that NHTSA should establish a rollover standard based on vehicle stability metrics. For example, the agency agrees that single vehicle rollover is a significant safety problem. NHTSA also agrees that the two vehicle stability metrics are useful in estimating the likelihood that a single vehicle accident involving a particular model of vehicle will result in a rollover.

Finally, the agency agrees that it is appropriate in determining the desirability of a rollover standard to consider a rollover standard regulating vehicles in the most rollover-prone groups. While the 1994 notice focused primarily on the approach of a single standard for all light duty vehicles, the agency did analyze separate standards for separate classes of vehicles. The notice explained that the predictive ability of the vehicle stability metrics decreased as the vehicle population was divided into smaller groups. As noted above, the agency concluded that ''a standard specifying one minimum stability value for cars and others for various classes of light trucks could not be justified.'' (*Id.*, at 33257). Since the petitioners suggest issuing a rollover standard regulating the most rollover-prone vehicles, NHTSA has focused on such an approach in responding to the petitions for reconsideration. The agency agrees with the petitioners that, in theory, the comparatively high rollover rate of compact SUVs makes a standard regulating that group of vehicles appear more likely to generate benefits commensurate with its costs than would a standard regulating any other group of vehicles.

These areas of agreement are insufficient, however, to lead the agency to the conclusion reached by petitioners. To the contrary, the agency's detailed analysis below of a rollover stability standard based on TTA or CSV demonstrates that the costs and other impacts of such a standard manifestly outweigh the estimated but uncertain benefits.

A general response to the petitioners' arguments appears below. Certain issues are covered in greater detail in the Appendix to this notice.

IV. Rationale for Reaffirming Decision To Terminate

A. Summary

Following its examination of the arguments raised by the petitioners, the agency has revisited and, in some respects expanded, its rationale for terminating rulemaking on a vehicle stability standard. The agency again concludes that it is not appropriate to establish a vehicle rollover stability standard based on a vehicle stability metric.

If a stability standard were set at a level that would require only minor vehicle changes in order for the affected models to achieve compliance, the standard would not produce any safety benefits. Minor vehicle changes, which consist predominately of suspension changes, would not produce significant improvements in the vehicle stability metrics and would not be likely to result in any reductions in fatalities and injuries.[7] Moreover, there is reason to conclude that such suspension changes would, in fact, produce negative safety side effects.

If a stability standard were set high enough to require significant improvements in the vehicle stability metrics, it would necessitate full vehicle redesigns and major vehicle changes. However, the safety benefits of such changes would nevertheless be relatively modest. Moreover, the overall costs and loss of consumer choice resulting from full vehicle redesigns involving major vehicle changes would be substantial and excessive. On balance, the potential for improved vehicle safety associated with such improvements in the vehicle stability metrics is not sufficiently large to justify such redesigns.

B. Vehicle Changes To Increase Vehicle Stability Metrics

There are two general categories of vehicle changes that would increase the vehicle stability metrics (TTA and CSV). One consists of relatively minor vehicle changes (i.e., suspension changes); the other, of major vehicle changes (i.e., widening the vehicle track and lowering the center of gravity) that could only be achieved through full redesign of the vehicle. The petitioners appear to believe that a vehicle can be redesigned so it will be significantly less likely to roll over, that the means for accomplishing this will be ''invisible'' to the consumer, and that the vehicle will look and function as it did before the redesign. As discussed below, redesigning a vehicle to significantly reduce its likelihood of rolling over necessarily involves making fundamental changes in the vehicle's dimensions (making it wider, longer, lower, heavier) and compromising its utility to consumers (e.g., by reducing its fuel efficiency, ground clearance, load-carrying capacity, off-road capability, or driveability on snowy roads).

1. Minor Vehicle Changes To Increase Vehicle Stability Metrics

Minor vehicle changes have very little effect on the vehicle stability metrics. Moreover, they do not result in net safety improvements.

As the petitioners correctly point out, the Preliminary Regulatory Evaluation (PRE) for the 1992 Advance Notice of Proposed Rulemaking (ANPRM) suggested that there were grounds for optimism about the ability of minor vehicle changes, such as suspension tuning, to affect stability metrics and improve rollover stability. (57 FR 242; January 3, 1992) However, after reviewing the comments on the 1992 ANPRM, the agency concluded in the 1994 notice that minor vehicle changes could not, in fact, significantly affect the vehicle stability metrics. Comments from Advocates itself,[8] as well as Ford and General Motors, on the ANPRM indicate that suspension changes result in very little improvement in rollover stability.

Moreover, vehicle rollover stability is not the same as vehicle handling and control. Some measures that improve

[7] As noted above, the agency stated in the 1994 notice that a standard limited in its application to a vehicle subgroup (e.g., sport utility vehicles) is particularly unlikely to reduce fatalities and injuries given the weaker statistical relationships between the stability metrics and the rollover involvement for vehicle subgroups. (*Id.*, at 33528)

[8] In commenting on the ANPRM, Advocates indicated that it did not share the agency's optimism at that time about the desirability of relying on suspension changes to improve rollover stability metrics. Advocates commented that the selection of TTR as the parameter to be regulated would ''permit a manufacturer to attempt manipulation of other stability-related elements of the vehicle's design, such as its suspension, in order to secure a barely passing tilt- table score.'' It also expressed concern that the agency ''may be already tending towards selection of TTRs [see footnote 12] that will not move the industry towards safer overall vehicle designs, particularly with regard to wheelbase, width, length, and center of gravity height, but rather will encourage the perpetuation of the *status quo* designs especially with regard to very small cars, small pickups, and SUVs that will continue to show high rollover propensities.''

TTA or CSV do not necessarily result in improved directional control and stability. Available information suggests that directional control and stability would be adversely affected as a result of relying upon suspension changes to make small increases in the vehicle stability metrics. This information was supplied in comments from Advocates, Ford, and General Motors on the ANPRM expressing concern with the side effects of suspension changes to improve TTA.

For example, Ford used a computer simulation of a compact pickup truck to evaluate the effect of a series of suspension changes on directional stability and side-to-side load transfer in cornering. (Docket 91–68–N01–21) Ford evaluated substantial suspension changes, including a 30 percent increase in spring rates, removal of stabilizer bars, and a change in the front suspension roll center by 1.5 inches. It also examined a ride height change that would lower the center of gravity by 0.5 inch. Ford noted that, in general, tuning a suspension system such that both the front and rear tires lift from the tilt table simultaneously would maximize the TTA. However, this optimization requires either decreasing the front roll stiffness (by removing the front stabilizer bar), or increasing the rear roll stiffness (by using a 30 percent greater rear spring rate). The simulation showed that, among the suspension changes examined by Ford, these two changes made the greatest improvements in TTA (an increase of 0.62 and 0.55 degrees, respectively). However, these changes were also shown to alter directional stability toward oversteer (i.e., these changes tend to make a vehicle turn more sharply than a driver intends). Ford's simulation showed that other suspension changes, such as an increase in front spring rate or a decrease in front roll center height, could increase TTA (to a lesser degree than those mentioned above), while altering directional stability toward understeer (i.e., these changes tend to make a vehicle turn less sharply that a driver intends). The only minor change mentioned by Ford in its comment which improved TTA without influencing directional stability was lowering the vehicle c.g. height by 0.5 inch, resulting in only a 0.17 degree increase in TTA.

Based on its consideration of such comments, the agency concludes that suspension changes would not produce significant improvements in rollover stability and would have the potential to cause undesirable changes in directional stability and handling, which in turn could lead to an increase in crashes. In view of this conclusion, the agency has not examined whether those changes could be made at a reasonable cost, since they are unlikely to yield net safety benefits.

2. Major Vehicle Changes To Increase Vehicle Stability Metrics

Thus, significant improvements to the vehicle stability metrics could be achieved only through making major changes to the vehicle chassis and body to increase the track width and/or lower the center of gravity. These major changes would require full vehicle redesigns that substantially change the parameters affecting vehicle stability metrics. The necessary extent of such redesigns is illustrated in the following example. Given that the center of gravity height for a typical compact SUV [9] is 27 inches, to raise its TTA (42.9 degrees) to that of the typical full- size SUV (46.4 degrees), it would be necessary to increase the track width (i.e., the distance between the left and right tires on an axle) more than 6 inches. Further, such a track width increase would require a corresponding wheelbase (i.e., the distance between the front and rear axles) lengthening of 10 inches to retain the braking stability of the smaller SUV. As noted later in the sections regarding cost and impact on consumer choice, such modifications would eliminate most of the compact SUVs as they currently exist, converting the typical compact SUV into a full-size SUV.

Citing the example of the GMC Jimmy, which was redesigned for 1995, petitioners argued that vehicle manufacturers can gradually redesign their compact SUVs so as to increase their vehicle stability. The petitioners presented an article from Automotive News stating that the new Jimmy is longer, lower, and wider than its predecessor.[10] The petitioners further attributed to the new Jimmy ''a chassis modification that can result in better stability metrics and in lower rollover crash rates.'' [11]

NHTSA draws a very different lesson than do petitioners from the example of the Jimmy. In the agency's view, the petitioners underestimate the extent to which the parameters affecting a vehicle's stability metrics must be changed to significantly improve those metrics. As explained below, the overall lessons of the new Jimmy are that even a significant partial redesign of a vehicle will change its vehicle stability metrics little in the absence of major changes to the vehicle's c.g. height and track width, and that even minor changes in those parameters may come at the cost of adversely affecting other attributes desired by consumers. For example, the new Jimmy is heavier and more costly than the prior model.

The agency agrees that the vehicle stability metrics of the new Jimmy are likely to be somewhat better than those of the old Jimmy. Although the agency has no TTA or CSV data on the new design, its lower body height and wider track suggest that it has a slightly better TTA than its predecessor and its longer, wider, and heavier body suggests that it may have a greater roll moment of inertia and, therefore, a slightly greater CSV.

However, the increases in the Jimmy's vehicle stability metrics are likely to be very small. The reason is that the changes made to the parameters affecting those metrics were relatively minor. Although the changes increased the size and weight of the Jimmy, the magnitude of those changes fell short of the levels needed to make a significant improvement in its TTA or CSV. The body height of the 2WD model was reduced by 1.6 inches, but the associated reduction in center of gravity height is likely to be much less, since the location of the engine, drive train, suspension, and passenger accommodation component masses remained unchanged. The height reduction of the 4WD model was only 0.8 inches. Likewise, the body width was increased by 2.4 inches, but the front and rear track widths of the 4WD model were increased less: 1.6 and 1.0 inches, respectively. The 2WD model track width increases were even less: 0.9 inch at the front and 0.5 inch at the rear.

Taken together, these changes to the Jimmy's parameters affecting the rollover stability metrics are very minor compared to the ones described above as being necessary for a typical compact SUV to achieve a TTA of 46.4 degrees. Thus, these changes predict at best a very small improvement in TTA or CSV.

The impact of such small improvements in vehicle stability metrics on rollover risk is unknown. Since this is a new model for 1995, neither NHTSA nor the petitioners have data on the rollover experience of the new Jimmy. There is no way to know at this time if the changes will actually lead to a reduced risk of rollover.

C. Benefits of Improvements in Vehicle Stability Metrics

NHTSA's 1994 notice estimated that the benefits of a rollover standard requiring a TTA of 46.4 degrees for all light duty vehicles included a modest

[9] A ''typical compact SUV'' and a ''typical full-size SUV'' are hypothetical vehicles with the average TTA and dimensions of all the vehicles in their class.

[10] Advocates/IIHS petition, attachment 2.

[11] Advocates/IIHS petition, page 18.

amount of benefits for compact SUVs. The agency's estimate that 63 fatalities and 61 serious injuries might be prevented for all light duty vehicles included the prevention of 31 fatalities and 22 serious injuries for compact SUVs. The potential compact SUV benefits were predominately attributable to those particular compact SUV models that would require significant changes in track width and/or center of gravity height to achieve the required TTA.

As part of its review of the petitions, the agency recomputed its estimate of the benefits of making significant design changes in order to raise the TTR [12] of compact SUVs to 1.05,[13] using data that were not available for some makes and models when the analysis was done for the 1994 notice.[14] The agency estimates that, using the more current data and certain optimistic assumptions (discussed below), 22 serious injuries and 32 fatalities might be prevented annually if all new compact SUVs were redesigned to the extent necessary so that each vehicle in that class had a TTR of 1.05 and if all existing compact SUVs with a lower TTR were retired from the vehicles-in-use fleet. The potential benefits for a rollover stability standard are computed by considering:

(1) The reduction of rollovers per single vehicle accident (RO/SVA) predicted for increases in TTR;

(2) The number of single vehicle accidents experienced by vehicles that would need to be altered in order to comply with the standard; and

(3) The degree of harm mitigation (in the number of fatalities and serious injuries) as a result of rollover prevention given that a single vehicle accident has occurred.

The following table, corresponding to Table 1 of the document ''Potential Reductions in Fatalities and Injuries in Single Vehicle Rollover Crashes as a Result of a Minimum Rollover Stability Standard,'' contains the results of this latest computation. For an explanation of the headings and entries in the table, see that document.

Compact SUV make model	Drive	MY 1991 production	TTR	1986–88 5 state SVA/RV	1986–90 Michigan RO/SVA	Est % of compact SUV ROs	Est AIS3 + injuries	Est fatalities	Projected RO/SVA @ min TTR 1.05	AIS3 + reduction @ min TTR 1.05	Fatality reduction @ min TTR 1.05
Vehicle A	2 WD*[15]	65,515	0.88	**[16]0.0068	**0.359	6	39	28	0.270	9.6	6.9
	4 WD	184,554	0.88	**0.0068	**0.359	16	110	79	0.270	27.2	19.5
Vehicle B	2 WD	29,480	0.95	0.0103	0.342	4	25	18	0.280	4.6	3.3
	4 WD	93,866	0.99	**0.0102	0.27	9	63	45	0.244	6.1	4.4
Vehicle C	2 WD*	19,920	1.08	0.0091	0.317	2	14	10			
	4 WD	101,541	1.08	0.0091	0.317	11	71	51			
Vehicle D	2 WD	0									
	4 WD	46,478	1.03	0.0163	0.273	8	50	36	0.263	1.8	1.3
Vehicle E	2 WD*	4,892	1.01	0.0211	0.362	1	9	7	0.338	0.6	0.4
	4 WD	39,989	1.01	0.0211	0.362	11	74	53	0.338	4.9	3.5
Vehicle F	2 WD*	3,555	0.93	**0.0215	**0.315	1	6	4	0.258	1.1	0.8
	4 WD	35,945	0.93	**0.0215	**0.315	9	59	42	0.258	10.8	7.7
Vehicle G	2 WD	0									
	4 WD	30,702	0.978		0.394	5	31	22	0.348	3.6	2.6
Vehicle H	2 WD	6,479	0.95	0.0114	0.259	1	5	3	0.219	0.7	0.5
	4 WD	23,515	0.99	**0.0123	0.252	3	18	13	0.228	1.7	1.2
Vehicle I	2 WD	0									
	4 WD	26,776	0.98		**0.481	5	33	24	0.427	3.7	2.7
Vehicle J	2 WD*	740	0.947			0	1	0	0.281	0.1	0.1
	4 WD	23,870	0.947			3	20	15	0.281	3.3	2.1
Vehicle K	2 WD*	1,257	0.978		0.407	0	2	1	0.360	0.2	0.1
	4 WD	10,492	0.978		0.407	2	13	10	0.360	1.6	1.1
Vehicle L	2 WD	0									
	4 WD	11,404	0.88	**0.0068	**0.359	1	7	5	0.270	1.7	1.2
Vehicle M	2 WD	0									
	4 WD	10,616	0.93			1	9	7	0.274	1.7	1.2
Vehicle N	2 WD*	5,011	1.016			1	4	3	0.315	0.2	0.2
	4 WD	2,818	1.016			0	2	2	0.315	0.1	0.1
Vehicle O	2 WD*	832	1.04			0	1	1	0.329	0.0	0.0
	4 WD	3,546	1.04			0	3	2	0.329	0.1	0.0

[12] TTR is the tangent of TTA. In its analysis prior to the 1994 notice, the agency used TTR. Because TTA is an easier concept to depict on labels for the general public, the agency proposed the use of TTA rather than TTR for the vehicle label under a consumer information regulation that was proposed in the 1994 notice. NHTSA used TTA throughout the 1994 notice for that reason. However, NHTSA has not converted the TTR values to TTA values when discussing its statistical and benefits analyses in this document.

[13] A TTR of 1.05 is the equivalent of a TTA of 46.4 degrees. On page 33261 of the 1994 notice, the agency explained that, if the agency were to adopt a rollover stability standard applicable to all vehicles, a TTA of 46.4 degrees was the highest practicable standard. The agency explained that a TTA of 46.4 degrees is representative of the average full-size SUV. Since the design changes to increase TTA to that level would cause a compact SUV to approach the size of full-size SUVs, establishing any higher standard, whether for all vehicles or for compact SUVs alone, would lead to the virtual elimination of compact SUVs as that class currently exists.

[14] The recomputation was performed using the same procedures used for the 1994 estimates and explained in detail in the document ''Potential Reductions in Fatalities and Injuries in Single Vehicle Rollover Crashes as a Result of a Minimum Rollover Stability Standard.'' That document is in Docket 91–68; Notice 3. However, while the procedures were the same, an expanded set of data (the number of rollover accidents and single vehicle accidents) were used in the recomputation to increase its accuracy. The use of the new data adequately addresses the petitioners' concerns about the agency's use in the 1994 notice of weighted averages for models for which there was insufficient data to determine the actual rollover rate.

Compact SUV make model	Drive	MY 1991 production	TTR	1986–88 5 state SVA/RV	1986–90 Michigan RO/SVA	Est % of compact SUV ROs	Est AIS3 + injuries	Est fatalities	Projected RO/SVA @ min TTR 1.05	AIS3 + reduction @ min TTR 1.05	Fatality reduction @ min TTR 1.05
Weighted Averge		.....	.....	0.01049	0.335	.....	.....	.....	.....	.....	.....
Total [17]		783,783	.....	.....	.....	100	669	480	.....	85.0	61.0
Total [18]		.....	.....	.....	.....	.....	.....	.....	.....	22.0	32

[15] An ''*'' in this column indicates that the agency lacked sufficient data for the 2WD version of the model. For these models, the agency assumed that the 2WD version had the same TTR and the same rollover rate as the 4WD version.

[16] An ''**'' in this column and in the next one indicates that 1988–91 Michigan accident data were used instead of the data indicated by the column heading.

[17] The serious injury and fatality reduction figures in this row are the benefits that might result if the standard prevented not only a rollover, but also an accident of any type.

[18] The serious injury and fatality reduction figures in this row are the benefits that might result if the standard prevented a rollover, but still allowed an injury-causing accident of some type to occur after the vehicle left the road. The injury and fatality figures in this row were derived by multiplying the figures in the row immediately above by a mitigation factor of 26 percent for injuries and 52 percent for fatalities. For further details on these factors, see section 3 of the Appendix to this notice.

There are two optimistic assumptions incorporated in the computation process for both the original and new estimates: [19]

- The number of rollover injuries and fatalities prevented will be proportional to the number of rollovers prevented; and
- The fatality and injury rates of the late 1980's will be representative of future rates.

The effect of these optimistic assumptions is that these new estimates, like the 1994 estimates based on the same assumptions, may in fact overstate the actual benefits, i.e., the number of fatalities and injuries likely to be prevented by improving the TTR of compact SUVs to 1.05.

The first assumption assumes that the rollover accidents that would be prevented as a result of requiring an increase in TTR would have the same fatality and injury rates as rollover accidents in general. There is reason to believe that this would not be the case. The likelihood of fatalities and serious injuries in rollover accidents is heavily skewed toward crashes involving more than one quarter turn. Data show that light truck rollover crashes involving only a single quarter turn have about one-third the fatality rate of the average rollover. This difference in likelihood of harm is significant if moderately improving TTR would not be equally likely to prevent a multiple quarter-turn rollover as a single quarter-turn rollover. NHTSA believes that it is more likely that the prevented rollovers would tend to be the lowest energy rollovers, i.e., the single quarter-turn rollovers. At best, improving TTR would only slightly mitigate the more severe rollovers. Thus, by assuming that rollovers prevented by an improvement in TTR would be average rollovers instead of the least severe rollovers, the agency is overstating the benefits obtainable from such an improvement. Had the agency based its benefit estimates on the fatality rate of rollovers involving a single quarter turn, the estimated number of prevented fatalities would have been about 11 instead of 32.

The second assumption, that the fatality and injury rate in rollovers will remain constant, is likely to overstate the benefits of a vehicle stability standard since, if recent trends continue, future increases in safety belt use, as a result of Federal, state, and local efforts, can reasonably be expected to reduce the overall harm from rollover accidents. As belt use increases, rollover casualties decrease, even if the number of rollover crashes remains constant.

Consequently, even with liberal assumptions and using the most current and complete database available, NHTSA estimates that a rollover stability standard requiring compact SUVs to achieve the same TTR (1.05) as the typical full-size SUV would prevent 22 serious injuries and 32 fatalities annually. While precise quantification is impossible, the agency believes, for the reasons stated above, that the actual level of safety benefits would be significantly lower.

D. Costs of Improvements in Vehicle Stability Metrics

The substantial vehicle redesigns necessary to enable many existing compact SUVs to achieve a TTR of 1.05 and produce the estimated reductions in fatalities and injuries discussed above would have substantial negative impacts, both in terms of reduced consumer choice and unmet preferences and in terms of increases in manufacturer and consumer costs.[20] As noted above, the only way to achieve significant increases in TTR is to increase the track width and/or lower the center of gravity. Increasing track width or lowering the center of gravity, using conventional, commonly used designs and production methods, would necessarily, and significantly, increase vehicle size and weight. For NHTSA, in effect, to require compact SUVs to approach the size and weight of full-size SUVs would run counter to consumer preferences that have led to the existing fleet of compact SUVs. The strength of those preferences is demonstrated by the fact that compact SUVs outsold full-size SUVs by a margin of six to one in 1994, the latest year for which the agency has sales data.[21] The Ford Explorer, the compact SUV model with the lowest TTR and therefore the compact SUV which would be most affected by any minimum standard, is the best-selling SUV and is the ninth most popular make/model of all car and truck models combined.

Upsizing compact SUVs so as to eliminate much of the size and weight difference between those vehicles and full-size SUVs also might have a significant adverse affect on the

[19] The agency made these assumptions because limitations in available data made it impossible to use more precise values. When making these assumptions, the agency took an optimistic approach so as to present the prospects of a vehicle stability standard in the best possible light.

[20] As explained in the Appendix, NHTSA made two cost estimates. The first was based on the assumption that compact SUVs needing a TTR increase of more than 0.06 would require a full vehicle redesign. The second was based on the assumption that only compact SUVs needing a TTR increase of more than 0.04 would require such a redesign.

[21] Model year 1994 sales data from *Automotive News 1995 Market Data Book*, Crain Communications, Detroit, Michigan, May 24, 1995.

All light trucks—6,097,787 vehicles.

Compact SUVs—21.9% of light trucks, or 1,335,415 vehicles.

Full-size SUVs—3.6% of light trucks, or 219,520 vehicles.

production and sales of SUVs. The body of the average full-size SUV is currently about 10 inches wider than that of the average compact SUV, and the track width is about 9 inches greater. The 6-inch increase in track width necessary to bring the TTR of compact SUVs up to that of full-size SUVs (assuming no increase in c.g. height) would remove much of those differences between compact SUVs and full-size SUVs. Given the admonition in the legislative history of the National Traffic and Motor Vehicle Safety Act against eliminating vehicle types (see the discussion in section D of the Appendix to this notice), such a dramatic potential impact on the design of compact SUVs and on the market for those vehicles must be carefully weighed.

In addition to impacts on consumer choice and sales, there are substantial monetary costs associated with redesigning those compact SUVs that would need significant increases in TTR to meet a standard of 1.05.[22] The agency estimated those costs using confidential cost data submitted by domestic automobile manufacturers during the course of several agency rulemaking proceedings to establish light truck Corporate Average Fuel Economy (CAFE) standards. The estimated consumer cost of bringing all such new compact SUVs into compliance with such a standard is between $310 million and $335 million, depending on which of two assumptions is made about the vehicles that would require a full vehicle redesign. A detailed discussion of the method used to estimate these costs is included in the Appendix to this notice.

The agency believes that the foregoing estimate of the costs of a rollover standard requiring compact SUVs to achieve a minimum TTR of 1.05 is understated. Those estimates do not include the incremental costs of material and labor involved in the manufacture of a larger vehicle. In addition, the estimates do not include any costs for vehicles that would only need minor changes, instead of a full vehicle redesign, to comply with the standard. NHTSA has not attempted to calculate those costs because the benefits of the standard are already outweighed by the initial cost estimate.

The agency recognizes that providing a lengthy leadtime period would reduce the costs of compliance to the extent that manufacturers were able to make their compliance efforts coincide with their normal model changeover timetable. However, providing additional leadtime would do nothing to reduce the adverse impacts on consumer preferences. Further, an extended lead time would not affect the costs of additional labor or materials.

VI. Conclusion

The discussion above and in the Appendix demonstrates that even a standard applicable only to compact SUVs, the vehicle type that the petitioners characterize as one of the two ''most rollover-prone vehicle types,'' [23] would generate substantial adverse impacts on manufacturers and consumers, both in terms of monetary costs and in loss of consumer choice, that would outweigh the benefits of such a standard. There is no reason to believe that a standard that would mandate significant increases in TTR/TTA or CSV for any other vehicle type or group of vehicle types would be any more cost beneficial.

Accordingly, NHTSA reaffirms its decision to terminate this rulemaking without proposing a rollover stability performance standard.

Issued on May 31, 1996.

Barry Felrice,

Associate Administrator for Safety Performance Standards.

Appendix

The Advocates/IIHS petition contained many detailed technical arguments. Responses to the more significant ones are provided in this appendix.

A. The Benefits Estimate

1. Replacing Weighted Averages With Actual Rollover Data Now Available Makes No Appreciable Change in the Estimate

The petitioners criticized the benefit estimates made by the agency in connection with the 1994 notice because, for those vehicle models for which the agency lacked sufficient rollover accident data, it used the average of the rollover per single vehicle accident rate (RO/SVA) of the class of vehicles to which that make and model belonged, weighted by the 1991 production of each make and model for which the agency had RO/SVA. The benefits were calculated using the TTRs of 1991 makes and models and the accident records of 1991 makes and models (and identical vehicles from prior model years) to represent a hypothetical future fleet.[1]

The petitioners pointed out that the average TTR for vehicles for which the agency did not have adequate RO/SVA data was lower than the average TTR of vehicles for which it had RO/SVA data, and therefore claimed that use of weighted averages was inappropriate. The petitioners' criticism concerning the use of weighted averages as substitutes for missing data was focused particularly on the use of those averages for the large number of vehicles in the hypothetical future fleet that were represented by the Ford Explorer. The agency had no RO/SVA or single vehicle accident involvement rate (SVA/RV) data for the Ford Explorer and certain other vehicles at the time of the notice because they were either recently introduced or comparatively low production volume models. The petitioners argued that a higher rollover rate should have been used for vehicles like the Explorer which have a lower TTA than the vehicles from which the weighted average was derived.

It is not appropriate to assume that a higher than average rollover rate is appropriate for the Explorer or the other vehicles simply based on their having a lower than average TTA. The data demonstrate that the order of vehicle models ranked according to TTA is not the same as the order of models ranked according to rollover rate. See Table 1 in the accompanying notice of denial of petitions for reconsideration. Thus, although two different vehicle models may have the same TTA, they may not necessarily have the same rollover rate. Likewise, a vehicle model with a TTA lower than that of another model may nevertheless have a lower rollover rate, and vice versa.

Accordingly, the agency has not assumed a higher rollover rate for those models for which sufficient rollover data are lacking. However, the agency has responded to the petitioners' concern about the use of weighted averages in connection with the 1994 notice by replacing those averages, where possible, with rates based on actual rollover accident data that became available after that notice was prepared.

Where sufficient, the 1988—1991 Michigan accident data were used to calculate the rollover rate figures for models for which data were previously missing. Following the practice of previous analyses, the agency used the accident data to calculate rollover rates only for makes and models which had at least 25 single vehicle accidents. Actual rollover rates (RO/SVA) from Michigan were added for the 4WD Ford Explorer, Nissan Pathfinder, and Isuzu Trooper, and actual single vehicle accident rates (SVA/RV) were added for the 4WD Ford Explorer, the 4WD S10 Blazer, the Nissan Pathfinder, and the 4WD GMC S15 Jimmy. The 4WD Explorer data were used for the nearly identical, but low production volume, Mazda Navajo.

There were still some models for which the agency lacked sufficient actual make and model accident data. For most of these models, while the agency lacked sufficient data for the 2WD versions of those models, it had sufficient data for the more numerous 4WD versions. In these instances, the agency assumed that the rates for the 2WD versions were identical to the rates for the 4WD versions of the same make and model, instead of calculating rates based on weighted averages. New weighted averages

[22] As demonstrated by Table 1, the vast majority of the measurable benefits from such a standard would come from improvements to these fully redesigned vehicles, instead of those vehicles that would need only lesser changes to comply with the standard.

[23] Advocates/IIHS petition, page 12.

[1] A detailed discussion of the method can be found in ''Potential Reductions in Fatalities and Injuries in Single Vehicle Rollover Crashes as a Result of a Minimum Rollover Stability Standard'' in Docket 91–68, Notice 3.

were computed on the basis of the expanded data and were used only where sufficient specific data remained unavailable for a particular model. The instances in which the agency computed new weighted averages were limited. Weighted averages of RO/SVA and SVA/RV were used for less than 10 percent and 19 percent, respectively, of the example population of compact SUVs. See Table 1.

Using actual rollover data wherever available, the agency recomputed the benefit estimates for compact SUVs. Substitution of the new rollover rates produced very little change in the estimate of the numbers of fatalities and serious injuries that might be prevented if a rollover stability standard were adopted for compact SUVs. Replacing the weighted averages used in the 1994 notice with rates based on accident data for particular makes and models changed the result of the analysis very little, i.e., by less than four percent. This may be seen by comparing the estimates of the benefits that would be obtained if preventing a rollover meant preventing an accident altogether. Those benefits were estimated to be 83 serious injuries and 59 fatalities in the 1994 notice. They have been recomputed to be 85 serious injuries and 61 fatalities, based on the new accident data and less reliance on weighted averages. See Table 1.

2. Accident Mitigation, Not Accident Prevention, Is the Proper Measure of Benefits

Since an accident would still occur in the vast majority of instances in which a rollover is prevented, the agency reduced those figures accordingly using an accident mitigation factor. The resulting new benefit estimate is 22 serious injuries and 32 fatalities.

The petitioners criticized the agency for making the same adjustment to the benefits in the 1994 notice. Then, as now, NHTSA assumed that the benefits would come from accident mitigation instead of accident prevention. It was appropriate for the agency to assume that the benefits would be in terms of accident mitigation since over 90 percent of all single vehicle rollovers are off-road, tripped rollovers, i.e., rollovers that occur when a vehicle leaves the roadway sideways, encounters a tripping mechanism, and rolls. Since a vehicle is running off the road in a tripped rollover situation, such a vehicle will still likely crash into some off-road object even if the vehicle is prevented from rolling over after it leaves the road. If a rollover can be prevented in that situation, then the resulting accident will most likely be one of lower severity than if a rollover had occurred because rollovers tend to be more severe than non-rollover accidents. The primary benefits from a rollover stability standard would result from preventing the more severe form of off-road accident.

3. A Single Accident Mitigation Factor, Not Separate Factors for Individual Vehicle Types, Is the Proper Basis for Measuring Benefits

The petitioners also criticized the agency for using a single accident mitigation factor (52 percent) for fatalities across the board instead of computing separate factors for different types of vehicles. In support of their argument for the use of different factors, they noted that rollover accidents account for 80 percent of the fatalities of the occupants of compact SUVs in single vehicle accidents. Based on this, the petitioners concluded that rollovers in compact SUVs are four times as deadly as non-rollover accidents, and therefore the agency should have used a mitigation factor of 75 percent for compact SUVs.

The agency rejects the petitioners' argument. A mitigation factor based on ratios of absolute numbers of fatalities, instead of on fatality rates, is incorrect unless the same number of occupants were exposed to rollover accidents and non-rollover accidents. If the exposure is not the same, then it is impossible to determine the extent to which the ratio reflects the difference in accident exposure versus a difference in accident severity. Further, the issue of a difference in accident severity is not just a matter of the difference in severity of a rollover accident and a non-rollover accident at the same speed. It is also a matter of possible differences in speed. For example, it is necessary to determine whether the consequences of 60 mph rollovers are being compared to those of 30 mph non-rollover accidents. Finally, it is also necessary to examine whether apparent differences between vehicle groups are a result of differences in crashworthiness, or just a consequence of smaller sample sizes.

The agency's use of a single mitigation factor for fatalities takes these considerations into account. NHTSA considered the number of occupants exposed to rollover and non-rollover single vehicle accidents as well as the number of fatalities for each accident type. It also considered the speed limit of the road as a rough indication of the severity of the accident.

As a first step in determining the mitigation factor, NHTSA compared the overall fatality rate of rollover accidents to the overall fatality rate of non-rollover accidents, based on single vehicle accidents of all cars and light trucks without consideration of accident severity. The fatality rate of rollover accidents was slightly more than twice that of non-rollovers, suggesting a 52 percent mitigation factor.

Next, the agency computed a series of relative fatality rates (with and without rollover), comparing only accidents occurring on roads with the same range of posted speed limits (25 mph or less; 30–35 mph; 40–50 mph; 55–65 mph). While the accident data do not indicate the actual accident speed, grouping by speed limit acts as a rough control on accident severity, because it restricts accident groups to the same kinds of roads, even though the actual range of crash speeds may significantly exceed the range of posted speed limits for a particular group of accidents. The relative fatality rate for each road speed limit group were added and then averaged. The result was the same 52 percent mitigation factor for fatalities. Using the same process led to a mitigation factor of 26 percent for serious injuries.

In addition, even if the agency were to use different mitigation factors for different vehicle types, their use would not result in dramatic changes in benefit estimates. For compact SUVs, the 75 percent mitigation factor suggested by the petitioners would result in a fatality reduction of 46 rather than the 32 calculated by the agency. This difference is 0.15 percent of the 9,000 annual rollover fatalities. Using the estimates prepared for the 1994 notice, for the entire light duty vehicle fleet, the use of different mitigation factors resulted in predicting 71, instead of the agency's 63, lives saved from requiring a TTR of 1.05. This is a difference of 0.089 percent.

B. The Cost Estimate

The petitioners criticized the agency for failing to provide any costs for the vehicle changes that would be necessary to meet a minimum rollover stability standard. The agency concluded in the 1994 notice that a large number of vehicles would require fundamental full redesigns to meet a minimum stability standard. Because the agency was aware of the magnitude of costs involved in vehicle redesigns, it was apparent that the costs and other impacts would substantially exceed the benefits. NHTSA did not, however, provide a quantification of those costs and other impacts.

To demonstrate the validity of its conclusion about the costs and other impacts, the agency has conducted a rough cost analysis for this notice as set forth below.[2] To estimate the compliance costs for those vehicles which would have to be fully redesigned to make the substantial changes necessary to comply with a minimum stability standard, the agency used confidential cost data submitted by domestic automobile manufacturers during the course of several agency rulemaking proceedings for light truck Corporate Average Fuel Economy (CAFE) standards. These data are manufacturer estimates of the costs of full redesigns of compact SUVs that would have been necessary if the CAFE standards had been set at certain levels. These submissions include estimates of investment costs for a redesigned vehicle model, but do not include material and labor costs for the manufacture of the vehicle. NHTSA believes a full vehicle redesign for rollover stability purposes would necessitate similar investment costs. Accordingly, it is appropriate to use the investment cost figures from the CAFE program to estimate the investment costs for vehicles which would require a full redesign to comply with a rollover stability standard.

The CAFE submissions include investment cost data for five models of compact SUVs. Since the specific raw data are confidential, they cannot be set forth here or otherwise publicly released. To convert those data into a form in which the original data can not be determined, the agency divided the per model data by the applicable manufacturer's estimated average annual production capacity and then divided by the number of

[2] As explained below, the agency did not calculate all costs of a standard because it determined that one category of those costs, the investment costs for vehicles requiring major changes, would by itself exceed the benefits of a standard.

years of the vehicle's design cycle life.[3] The per-vehicle cost estimates for these five vehicle design cycle lives were then averaged to arrive at the estimate used in this analysis. The individual per-vehicle cost estimates range from $317.37 to $532.37 and the average is $416.77. Since these costs are costs to the manufacturer, they were adjusted to represent costs to the consumer by dividing them by 0.75, a standard factor used by the agency in its vehicle rulemaking in estimating consumer costs from manufacturer's wholesale costs. The resulting estimated average consumer cost per vehicle resulting from the redesign of a compact SUV is $555.69.

The agency then determined the number of vehicles that would need vehicle redesigns to comply with a vehicle rollover stability standard requiring a minimum TTR of 1.05. Based on available data, the agency believes at least some models would have to be fully redesigned to achieve TTR increases of more than 0.04, and that almost all models would have to be fully redesigned to achieve at TTR increase of 0.06. The agency determined next that 558,756 vehicles would need to be fully redesigned if the threshold for having to make a full redesign were 0.06 and 603,637 vehicles would need to be fully redesigned if the threshold were 0.04. Multiplying these numbers of vehicles by the $555.69 per vehicle investment cost estimate, the agency estimated that the total investment costs of a standard requiring a TTR of 1.05 would be $310,495,121 to $335,435,044.

The agency believes that this range of estimated costs of a rollover standard requiring compact SUVs to achieve a minimum TTR of 1.05 is understated. As noted earlier, these cost estimates do not include estimates of the incremental costs of material and labor involved in the manufacture of the vehicle. Since vehicles would need significant increases in track width, and attendant increases in wheelbase, they would be generally larger and heavier. As a result, the agency concludes that there would be significant increases in the costs of material and labor involved in the manufacture of such vehicles. In addition, these cost estimates do not include any costs for vehicles which could comply with the standard by changes that are less than a full vehicle redesign.

C. Objections to the Statistical Tools Used by the Agency in Reaching Its Decision

The petitioners asserted that the agency did not use the ''typical'' statistical measure, the deviance statistic, to judge the adequacy of the logistic regression models used by the agency in its analyses of the relationship of TTA to RO/SVA, and the importance of the vehicle stability metrics. The petitioners also objected to the agency's use of two statistical measures, R^2 and the C-statistic. Finally, the petitioners questioned the agency's reliance on data from the State of Michigan.

Although the agency did not use the deviance statistic to judge the adequacy of the logistic regression models, the agency did use a mathematically equivalent measure, the likelihood statistic (-2*ln(likelihood)). Using that measure permitted the agency to compare the effect of adding variables (specifically the vehicle stability metrics) to the hypothesized models. Detailed discussions of the agency's analyses are found in the Technical Assessment Paper (TAP) (Docket 91–68–N01–03) and the Addendum to the Technical Assessment Paper (Docket 91–68–N03–02) which were placed in NHTSA's docket. The TAP and the Addendum present analyses using five measures: the C-statistic, R^2, the percentage change in R^2, the likelihood statistic, and the variables' chi-square. It is true that the deviance statistic was not reported because the computer software the agency used to conduct this analysis, SAS Institute's PROC LOGIST, does not include the deviance statistic as one of the model diagnostics. However, the agency does not believe that this affects the general conclusions regarding the importance of the vehicle stability metrics.

NHTSA believes that it may help to explain this issue in non-statistical terms. The petitioners' argument amounts to a complaint that the agency described various glasses of water in terms of how much water is in the glass, instead of in terms of how much water could be added to the glass. In either case, the capacity of the glass is the same. If the capacity is known, and if either the amount of water or the amount of unused capacity is known, the other amount can be derived.

Similarly, the deviance statistic preferred by the petitioners describes how much of the variability[4] in the regression model is left to be explained. The likelihood statistic, which the agency used, describes how much of the variability in the model is explained. In either case, the total variability to be explained is the same. If, as the agency's analysis showed, the addition of TTR to the model decreased the value of the likelihood statistic, the deviance statistic would have increased by the same amount. Using either measure would lead to the same conclusion about the value of TTR.

The petitioners also assert that the use of R^2 was inappropriate because it is not weighted, i.e., it does not reflect the number of single vehicle accidents for each vehicle make and model. The petitioners also state that R^2 is sensitive to extreme values. The agency's use of R^2 was described fully on page 5–66 of the TAP. The agency agrees, as explained in the TAP, that there are limitations to the use of R^2. As also explained in the TAP, R^2 was used as an approach to providing the types of descriptive statistics of model fit with which more people are familiar, and not to provide a mathematically rigorous assessment of model fit. The agency's use of R^2 was an attempt to make the explanation of the analysis understandable to a wider audience, and was not the sole basis of the agency's decision.

The petitioners' assertions of problems with the use of the C-statistic are not applicable to the C-statistic as used by the agency. In an attempt to support their assertions, the petitioners pointed to an example of how the C-statistic can ''misbehave'' presented on page 146 of Hosmer and Lemeshow.[5] The agency's use of the C-statistic is not the same as that in Hosmer and Lemeshow's example. That example simply uses a classification table with an arbitrary cut point to determine, e.g., whether an actual rollover was predicted to be a rollover. The C-statistic employed by NHTSA measured the concordance between all possible pairs of observations, taking one from the actual rollover population and one from the actual non-rollover population. The C-statistic represents the percentage of those pairs (which number literally in the millions) for which the actual rollover had a higher predicted probability than the actual non-rollover's predicted probability (of rolling over), minus one-half the number of ties. There is no arbitrary cutoff point. In addition, the agency's decision was not based on a single statistical measure. The agency analyzed the data with a number of statistical measures, all of which pointed to the same conclusions. Accordingly, the agency remains confident in its results.

Finally, the petitioners' objection to the agency's reliance on Michigan data for performing the statistical regressions instead of using the data from the other four states was based on their concern that the agency did not examine the extent to which the state is anomalous because of its generally flat topography. The petitioners stated that this could lead to a lower proportion of rollovers per single vehicle accident than the other states in the data base. The agency relied on Michigan data because they included a large number of available observations, and were based on a low reporting threshold and more refined accident reporting variables. The agency did examine whether the rollover rate in this state was anomalous, and as stated on page 13 of the Addendum, discovered that ''(t)he rollover rate in Michigan is near the midpoint of the range for all five states studied.'' The examination of the relative rollover rates of the five different states was fully explained in the TAP on pages 59–65.

D. Legal Arguments

The petitioners also addressed the implications of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) (P.L. 102–240), the National Traffic and Motor Vehicle Safety Act of 1966 (the Safety Act) (P.L. 89–563),[6] and the Regulatory Flexibility Act (P.L. 96–354) for rulemaking concerning a vehicle stability standard. The petitioners also argue that the decision not to issue a rollover standard is judicially reviewable.[7]

[3] Since the submissions were made in 1986, 1989, 1993, and 1994, submissions for years prior to 1994 were adjusted to 1994 dollars using the implicit gross domestic product deflator as calculated by the Bureau of Economic Analysis.

[4] Variability is the difference between what the statistical model predicts and actual accident records.

[5] D.W. Hosmer and S. Lemeshow, *Applied Logistic Regression*, Wiley Interscience, New York, 1989.

[6] After the publication of the termination notice, the Safety Act was codified in volume 49 of the United States Code. Any cites to provisions of the Safety Act have been updated to reflect the codification.

[7] The agency agrees with the petitioners that this termination is ''final agency action'' for the purposes of judicial review.

The petitioners begin by citing the provision in ISTEA that required NHTSA to initiate rulemaking concerning a rollover standard. The petitioners acknowledge that Congress did not mandate the issuance of a final rule in this area.

Although the petitioners make this concession, it bears emphasizing how clearly ISTEA and its legislative history demonstrate that in each instance in which Congress mandated that the agency initiate vehicle safety rulemaking, it clearly specified whether the agency had the discretion to decide not to issue a final rule. In sections 2502–3 of ISTEA, Congress specified that the agency was to initiate rulemaking regarding five different areas of vehicle safety performance. With respect to one area, upper interior head impact protection, Congress specified that rulemaking would be considered completed only when a final rule was issued. However, with respect to the other four areas, including rollover, Congress did not mandate the issuance of a final rule. It expressly provided that rulemaking on rollover and the other three areas would be considered completed either when the agency issued a final rule or when the agency decided, after considering public comments, not to issue a final rule. The Conference Report on ISTEA emphasized the discretion which it had reserved to the agency. The conferees said, with reference to the mandated rulemaking on rollover, ''the conferees do not predetermine the outcome of [this rulemaking]. The [NHTSA] is free to conclude the rulemaking in any manner consistent with the APA and the 1966 Act'' (H. Conf. Rep. 404, 102d Cong., 1st Sess., at 397 (1991)). Thus, Congress made no judgment in ISTEA about the ultimate merits of issuing a final rule on rollover. Instead, Congress provided NHTSA with the latitude to decide that a rollover standard should not be issued if, in the agency's judgment, the facts did not warrant such issuance. The agency's conclusion that such a regulation would not have sufficient benefits to justify its cost is an ample and proper basis for a decision not to issue a final rule.

Although the petitioners concede that Congress did not require the agency to issue a final rule on rollover, they assert that Congress ''expected the agency to set some form of stability-enhancing regulation.'' [8] As authority for that assertion, they cite the legislative history of the Department of Transportation and Related Agencies Appropriations Act of 1995. (P.L. 104–59) The Senate committee report on that Act contended that NHTSA had ''effectively abandoned efforts at developing a performance standard for improved rollover protection.''

The 1995 Appropriation Act legislative history is inapposite here and lacks any possible binding effect. Since that history pertains to a different statute, it carries no weight in the interpretation of NHTSA's duties under ISTEA. NHTSA notes further that the language cited by the petitioners is part of a discussion expressing concern about the agency's delay in publishing some of the ISTEA rulemakings. The discussion does not express any expectation about the substantive outcome of agency rulemaking on rollover, but does express an expectation that NHTSA will complete the remaining ISTEA rulemakings expeditiously. Finally, even if the Senate committee had specifically expressed an expectation concerning the outcome of the rollover rulemaking, that expectation would not impose a binding obligation on NHTSA unless Congress coupled that expectation with a mandate to issue a final rule on rollover and enacted that mandate into law. See *Center for Auto Safety* v. *Peck,* 751 F.2d 1336, at 1351 (D.C. Cir. 1985). Congress did not do so. Instead, it expressly decided not to mandate the issuance of a final rule on that subject.

The petitioners argued that neither the Safety Act nor the Regulatory Flexibility Act provide any legal grounds for terminating rulemaking on a vehicle stability standard. The petitioners quoted statements in the 1994 notice that 49 U.S.C. § 30111(b)(3) would preclude NHTSA from mandating any stability requirement that is ''incompatible with certain types of vehicles,'' and that a stability requirement ''could raise concerns'' under the Regulatory Flexibility Act. (59 FR 33254, 33263) They interpreted these statements as implying that the agency believed it was prohibited from issuing any standard that might require ''the radical redesign of the characteristics [of] many, and in some cases all, vehicles of certain classes * * * and possibly even the elimination of certain classes of vehicles as they are known today.'' The petitioners countered with alternative propositions, arguing that NHTSA has authority to eliminate whole classes of vehicles, and that, even if NHTSA does not have such authority, it failed to consider a less demanding regulatory approach such as setting different standards for separate vehicle types which would not require all vehicles in a class to be altered. The petitioners argued also that NHTSA cannot rely on the Regulatory Flexibility Act when the agency did not prepare any analysis of the impacts of a standard on small entities.

The primary bases for the agency's decision to terminate rulemaking on a vehicle stability standard are the limited safety benefits, and the excessive costs and market disruption of such a standard, regardless of whether that standard applies to all light duty vehicles or to particular class such as compact SUVs. The 1994 notice discussed the high costs of a standard that specifies a single performance level which was applicable to all light duty vehicles and was high enough to require the full redesign of at least some passenger cars. As explained previously, the agency concluded that such a standard would have costs and other impacts which outweighed its benefits. NHTSA similarly concludes that the costs and other impacts of a standard applicable to compact SUVs would far outweigh its benefits. Logically, if a standard for the most rollover-prone light duty vehicles would fail this basis test, it follows that a standard for other groups of light duty vehicles would not be justified.

It should be noted that neither 49 U.S.C. 30111(b)(3) nor the Regulatory Flexibility Act impose an absolute legal bar to a minimum stability standard. The agency is not foreclosing any possibility of further rulemaking. As stated above, NHTSA might reinitiate rulemaking in this area if information becomes available demonstrating the cost effectiveness of a minimum stability standard.

However, the Safety Act does place limits on the agency's rulemaking authority. The agency lacks authority to eliminate entire classes of vehicles. This interpretation reflects the language of 49 U.S.C. 30111(b)(3) and its legislative history. 49 U.S.C. 30111(b)(3) states:

When prescribing a motor vehicle safety standard under this chapter, the Secretary shall * * * consider whether a proposed standard is reasonable, practicable, and appropriate for the particular type of motor vehicle or item of motor vehicle equipment for which it is prescribed.

The Senate Report accompanying the 1966 Safety Act explained this provision as follows:

In determining whether any proposed standard is ''appropriate'' for the particular type of motor vehicle or item of motor vehicle equipment for which it is prescribed, the committee intends that the [NHTSA] will consider the desirability of affording consumers continued wide range of choices in the selection of motor vehicles. Thus it is not intended that standards will be set which will eliminate or necessarily be the same for small cars or such widely accepted models as convertibles and sports cars, so long as all motor vehicles meet basic minimum standards.

(S. Rep. 1301, 89th Cong., 2d Sess., at 6 (1966))

Given this legislative history, NHTSA cannot mandate a stability requirement so incompatible with the most fundamental characteristics which define a class of vehicles that implementing the requirement would cause the elimination of that class. As an example, the agency noted in the 1994 notice that sport utility vehicles have features (high ground clearance and narrow track width) to facilitate off-road use and use on snowy roads. The agency would not have the authority to set a performance level so stringent that no vehicles could have these features. This is neither a radical, nor a new interpretation of the agency's authority. NHTSA is not suggesting, as the petitioners suggest, that the agency lacks any authority to issue a standard that requires significant change to all vehicles in a class. In fact, there are many examples of the agency using its authority to require changes to all vehicles in a particular class. Those changes did not, however, eliminate as a practical matter any recognized classes of vehicles.

Petitioners incorrectly suggested that the agency had a duty under the Regulatory Flexibility Act to prepare a regulatory flexibility analysis in connection with either the 1994 notice or the ANPRM which preceded it. NHTSA did not ''fail'' to prepare any required report. That Act mandates the preparation of analyses in connection with notices of proposed rulemaking and final rules only.

NHTSA believes that the Regulatory Flexibility Act was a relevant concern in

[8] Advocates/IIHS petition, page 41.

considering the possibility of proposing a stability standard applicable to all light duty vehicles because multistage manufacturers, especially van converters, which are often small business entities, could be affected by such a standard. NHTSA is not suggesting that that Act would prevent the issuance of such a standard or that the concerns about impacts on small manufacturers were insurmountable regardless of what approach is taken by the agency in setting the standard. In fact, a standard limited to compact SUVs would essentially eliminate those impacts because few, if any, of those vehicles are produced by multistage or other small manufacturers.

F. NHTSA's Alleged Lack of a Comprehensive Rollover Program

The petitioners characterized NHTSA's identification of seven separate measures as part of a comprehensive agency plan to address rollovers as simply ''a chronicle of ongoing or prospective crash reduction programs that are not aimed uniquely at mitigating rollover losses.'' The petition went on to complain that some of the measures ''may never come to fruition,'' and that others have not been specifically tailored by the agency to address the rollover problem. The petitioners concluded by stating their belief that NHTSA's comprehensive program for rollover is really an attempt to try to persuade the public that the agency is taking action on rollover safety, notwithstanding the termination of the vehicle stability rulemaking.

The agency believes that the question of whether the activities comprising its comprehensive rollover program uniquely address rollover safety is irrelevant if those activities effectively address that issue. If NHTSA can take actions, such as issuing a standard, that significantly reduces the deaths and injuries that occur in rollover crashes, it should make no difference whether that reduction is achieved by means that also reduce deaths and injuries in other types of crashes. The agency agrees that there is a possibility that some of the regulatory initiatives announced by the agency as part of its rollover program involve proposals that may never become final rules. However, this possibility exists with any regulatory initiative. The agency cannot foretell the nature of the public comments that it will receive or prejudge the outcome of its analyses of comments and other information obtained during the rulemaking process. NHTSA included those initiatives in its rollover program because preliminary evaluations of those initiatives indicate that they are promising avenues for addressing rollovers. The agency will pursue these initiatives expeditiously and conscientiously. For example, since the 1994 notice was published, NHTSA has published a final rule to extend the current requirements for side door latches to rear door latches. (60 FR 50124) This rule is an attempt to reduce the number of ejections from the rear door of vehicles, thus reducing injuries and fatalities. Based on data for years 1988–1992, NHTSA estimates that 147 occupants were fatally ejected from the rear door of vehicles. Forty two percent of those fatalities occurred in rollover accidents.

One of the specific initiatives singled out for criticism by petitioners was the upgrade of Standard 201 to reduce head impact injuries. The petitioners objected to its inclusion in NHTSA's comprehensive rollover plan because the proposed compliance impact speeds ''are often less than those [speeds] responsible for the very high rate of severe head trauma that is suffered by occupants in rollover crashes.'' The final rule upgrading Standard No. 201 was published on August 16, 1995. (60 FR 43031) Even if the petitioners were correct, the essential fact remains that the final rule will make substantial reductions in rollover fatalities and injuries. The agency estimated that 244–334 fatalities and 189–273 serious injuries would be averted in rollovers as a result of that rule.

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.50 and 501.8.

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National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. 91–68; Notice 06]

RIN 2127–AC54

Consumer Information Regulations; Vehicle Rollover Stability Label

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Notice of proposed rulemaking; reopening of comment period.

SUMMARY: This notice reopens the comment period for a notice of proposed rulemaking published June 28, 1994, regarding a rollover stability label for light vehicles. The comment period for this proposed rulemaking action closed on October 21, 1994. Since that time, the National Academy of Sciences (NAS) has published a study of consumer needs for automotive safety information. NHTSA would like public comments on the NAS study and how that study should be reflected in NHTSA's rulemaking decisions on requirements for rollover stability labeling. Accordingly, the agency is reopening the comment period for an additional 60 days.

DATES: Comments must be received by August 5, 1996.

ADDRESSES: Comments should refer to Docket No. 91–68; Notice 5 and be submitted to: Docket Section, Room 5109, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590. (Docket hours are 9:30 a.m. to 4 p.m., Monday through Friday.)

FOR FURTHER INFORMATION CONTACT: *For labeling issues:* Stephen R. Kratzke, Office of Safety Performance Standards, NPS–31, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. Mr. Kratzke can be reached by telephone at (202) 366–5203 or by fax at (202) 366–4329.

For general rollover issues: Gayle Dalrymple, Office of Safety Performance Standards, NPS–20, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. Ms. Dalrymple can be reached by telephone at (202) 366–5559 or by fax at (202) 366–4329.

For legal issues: Stephen P. Wood, Assistant Chief Counsel for Rulemaking, NCC–20, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. Mr. Wood can be reached by telephone at (202) 366–2992 or by fax at (202) 366–3820.

SUPPLEMENTARY INFORMATION: NHTSA currently requires that sport utility vehicles with a wheelbase of 110 inches or less have a prominent label advising drivers that these vehicles are less stable than passenger cars and more likely to roll over during abrupt maneuvers. 49 CFR 575.105. On June 28, 1994 (59 FR 33254), NHTSA published a notice proposing to supplement the existing requirement for a rollover label with another label. This proposed additional rollover stability label would be required on all passenger cars, trucks, and multipurpose passenger vehicles with a Gross Vehicle Weight Rating of 10,000 pounds or less. The comment period for this proposal was scheduled to close on August 29, 1994. However, NHTSA extended the comment period so that it closed October 21, 1994; 59 FR 44121, August 26, 1994. NHTSA received 70 comments to its docket for the proposed additional labeling requirements.

During this comment period, Congress enacted the Department of Transportation and Related Agencies Appropriations Act, 1995 (P.L. 103–331; September 30, 1994). In that Act, Congress gave NHTSA funds ''for a study to be conducted by the National Academy of Sciences (NAS) of motor vehicle safety consumer information needs and the most cost effective methods of communicating this information.'' The Act directed NAS to complete its study by March 31, 1996. The Act also included the following language: ''In order to ensure that the results of the study are considered in the rulemaking process, the conferees agree that NHTSA shall not issue a final regulation concerning motor vehicle safety labeling requirements until after the NAS study is completed.'' As a result of this language, NHTSA deferred