



# **NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION FEDERAL MOTOR VEHICLE SAFETY STANDARDS; Minimum Sound Requirements for Hybrid and Electric Vehicles RIN #2127-AK93**

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## **INTRODUCTION**

The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge about the effects of regulation on society. As part of its mission, RSP conducts careful and independent analyses that employ contemporary economic scholarship to assess rulemaking proposals and their effects on the economic opportunities and social well-being available to all members of American society.

This comment addresses the efficiency and efficacy of this proposed rule from an economic point of view. Specifically, it examines how the proposed rule may be improved by more closely examining the societal goals the rule intends to achieve and whether this proposed regulation will successfully achieve those goals. In many instances, regulations can be substantially improved by, for example, choosing more effective regulatory options or more carefully assessing the actual societal problem.

## **THE PROPOSED REGULATION**

The proposed regulation reflects a concern that blind, visually impaired, and perhaps other pedestrians and pedalcyclists are more likely to have collisions with hybrid vehicles when noise from a running internal combustion engine is absent. The Pedestrian Safety Enhancement Act of 2010 requires the National Highway Traffic Safety Administration (NHTSA) to establish minimum noise requirements for hybrid and electric motor vehicles.<sup>1</sup> The required “alert sound” must be sufficient for blind and other pedestrians to discern the “presence, direction, location, and operation of the vehicle.”<sup>2</sup> The regulation requires that hybrid vehicles produce noise meeting certain standards in scenarios when the internal combustion engine is often not running, such as when the vehicle is turned on but standing still, backing up, or operating at speeds of 18 miles per hour or less.<sup>3</sup>

1. Public Law 111–373, 124 Stat. 4086 (January 4, 2011).
2. Department of Transportation, National Highway Traffic Safety Administration, “Federal Motor Vehicle Safety Standards; Minimum Sound Requirements for Hybrid and Electric Vehicles; Draft Environmental Assessment for Rulemaking To Establish Minimum Sound Requirements for Hybrid and Electric Vehicles; Proposed Rules,” *Federal Register* 78 no. 9 (January 14, 2013): 2803. (Hereafter referred to as “NPRM.”)
3. NPRM: 2823-2826.

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The Regulatory Impact Analysis (RIA) calculates monetized benefits of \$106.6 million for avoided pedestrian injuries and \$115.1 million for avoided pedalcyclist injuries, for total monetized benefits of \$221.1 million (plus unquantified benefits resulting from the fact that the sound will aid navigation of visually impaired pedestrians not involved in accidents).<sup>4</sup> Since the total cost is estimated at approximately \$25 million, the RIA concludes that the benefits exceed the costs at either a 3 percent or 7 percent discount rate.<sup>5</sup> Unfortunately, the calculations substantially overstate the prospective benefits of this regulation, for several reasons:

- The RIA estimates a reduction in accidents for all pedestrians and pedalcyclists, even though the primary purpose of the regulation is to protect the blind and vision-impaired. Approximately 3.3 percent of the US population is blind or vision-impaired.<sup>6</sup> Unless these individuals are a much higher percentage of the population involved in accidents than they are of the general population, the RIA substantially overestimates the number of beneficiaries.
- The RIA further overstates benefits for the blind and vision-impaired by including a figure for pedalcyclist injuries. While it is plausible that some pedestrians involved in accidents are blind or vision-impaired, it is unlikely that any appreciable number of pedalcyclists are blind or vision-impaired.
- The RIA calculates a reduction in crash rates with pedalcyclists even though it acknowledges that the difference in crash rates with pedalcyclists at the slow speeds covered by the regulation is not statistically significant.
- Even if the regulation's purpose is to protect all pedestrians and pedalcyclists, the RIA assumes without justification that all of the difference in accident rates involving pedestrians and pedalcyclists who are not vision-impaired is caused by the fact that hybrid vehicles are quieter than conventional vehicles.

It is quite possible that the costs of this regulation outweigh the benefits once these factors are taken into account. The Pedestrian Safety Enhancement Act requires NHTSA to establish minimum noise standards, but the accompanying RIA gives Congress and the public a misleading impression of the regulation's likely effects. NHTSA should correct the RIA to provide more accurate benefit estimates and explore more cost-effective ways of protecting the blind and visually impaired from the danger posed by hybrid vehicles.

#### HOW THE RIA OVERSTATES BENEFITS

According to NHTSA's research, hybrid vehicles covered by the rule are 1.19 times as likely to collide with pedestrians and 1.44 times as likely to collide with pedalcyclists compared to conventional internal combustion engine vehicles.<sup>7</sup> The RIA assumes that the minimum noise standards will reduce hybrids' collision rates with pedestrians and pedalcyclists to the same level as that associated with conventional vehicles. This reduction is estimated to produce 1,223 fewer pedestrian injuries and 1,567 fewer pedalcyclist injuries over the 25-year life cycle of hybrid cars and the 36-year life cycle of hybrid light trucks sold in model year 2016, when the regulation will be fully implemented.<sup>8</sup>

The RIA calculates monetized benefits of \$106.6 million for avoided pedestrian injuries and \$115.1 million for avoided pedalcyclist injuries, for total monetized benefits of \$221.1 million.<sup>9</sup> Since the benefits occur over the life

4. Department of Transportation, National Highway Traffic Safety Administration, "Minimum Sound Requirements for Hybrid and Electric Vehicles," Preliminary Regulatory Impact Analysis (January 2013): 64, 66. (Hereafter referred to as "RIA.")

5. RIA: 71.

6. Census Bureau, 2011 American Community Survey, [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_11\\_1YR\\_S1810&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_1YR_S1810&prodType=table).

7. RIA: 42.

8. RIA: 62.

9. RIA: 64, 66.

of the model year, the RIA also provides discounted figures of \$178 million at a 3 percent discount rate and \$145.8 million at a 7 percent discount rate.<sup>10</sup> Either way, the benefits handily exceed the calculated (mostly up front) cost of approximately \$25 million. The RIA also performs a break-even analysis, which concludes that the proposed regulation will be cost-effective as long as it eliminates at least 13-15 percent of the discrepancy in crash rates.<sup>11</sup>

The RIA explicitly invites comments on the assumptions that the difference in sound produces the difference in crash rates and that the required sound will be as effective in preventing crashes as the noise of an internal combustion engine. These “are the crux of the benefits methodology,” the RIA notes.<sup>12</sup>

The assumptions underlying the benefits methodology overstate the number of individuals who will benefit, for several reasons. First, the RIA calculates the number of beneficiaries based on estimates of all crashes involving pedestrians and pedalcyclists, rather than just crashes involving blind and vision-impaired pedestrians and pedalcyclists. Second, it assumes that the regulation will prevent crashes with pedalcyclists, even though there are probably no blind pedalcyclists and there is no statistical difference in crash rates with pedalcyclists at speeds covered by the regulation. Finally, it assumes without justification that the absence of internal-combustion engine noise causes the differential crash rates involving pedestrians and pedalcyclists with good vision.

### INFLATED LIST OF BENEFICIARIES

The language of the NPRM and the extensive list of stakeholder groups consulted suggest that this regulation is primarily intended to protect blind and vision-impaired individuals.<sup>13</sup> The RIA reports NHTSA’s research that documents how a vehicle’s sounds help blind people gauge the presence, location, and motion of the vehicle.<sup>14</sup> Based on this research, it seems reasonable to conclude that minimum noise requirements would help blind and vision-impaired people avoid collisions with hybrid vehicles.

The benefit calculations, however, employ estimates of crashes involving all pedestrians and pedalcyclists, not just blind or vision-impaired individuals. Using the figures for all crashes significantly overstates the benefits to blind and vision-impaired individuals. According to the most recent American Community Survey, only 3.3 percent of Americans have a vision difficulty.<sup>15</sup> If 3.3 percent of individuals involved in crashes with hybrid vehicles are blind or vision-impaired, the benefit calculations overstate the benefits to blind and vision-impaired people by a factor of 29. Perhaps blind and vision-impaired individuals account for more than 3.3 percent of hybrid vehicle collisions with pedestrians, but it strains credulity to assume that all or most pedestrians hit by hybrids are blind or vision-impaired.

The NPRM acknowledges that the accident data contain no information about the vision status of the people involved.<sup>16</sup> But if the primary purpose of the regulation is to protect blind and vision-impaired people, it is critical that NHTSA ascertain what percentage of hybrid collisions involve blind or vision-impaired individuals to accurately determine the scope of the problem and the size of the regulation’s potential benefits.

### DOUBTFUL BENEFITS TO PEDALCYCLISTS

More than half of the projected benefits in the RIA stem from avoided crashes with pedalcyclists. This is problematic for two reasons.

10. RIA: 71.

11. RIA: 74.

12. RIA: 63.

13. NPRM: 2801-2806.

14. RIA: 5.

15. Census Bureau, 2011 American Community Survey, [http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_11\\_1YR\\_S1810&prodType=table](http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_1YR_S1810&prodType=table).

16. NPRM: 2806.

First, if the intended beneficiaries are blind and vision-impaired people, it seems unlikely that they would be riding bicycles, unicycles, tricycles, or other pedal-powered vehicles.<sup>17</sup> In the absence of evidence to the contrary, benefits to pedalcyclists should not be counted as benefits to blind or vision-impaired individuals.

Second, if the intended beneficiaries are all pedalcyclists, there is absolutely no justification for assuming that the regulation will reduce crashes involving pedalcyclists. The data cited in the RIA appear to show that hybrids are more likely to collide with pedalcyclists. But the RIA acknowledges that at speeds slower than 35 miles per hour, the difference in crash rates with pedalcyclists for hybrid and conventional vehicles is not statistically significant.<sup>18</sup> The regulation sets minimum noise standards only at speeds of 18 miles per hour or less. In other words, there is no difference in crash rates involving pedalcyclists at the speeds covered by the regulation. For this reason, the benefits of the regulation for pedalcyclists are quite likely zero.

### INSUFFICIENT EVIDENCE OF CAUSATION

Perhaps the regulation is also intended to benefit pedestrians and pedalcyclists who are not blind or vision-impaired. Any injuries avoided for these individuals could at least count as co-benefits of the regulation.

Unfortunately, the RIA does not report any research identifying the causes of hybrid vehicle collisions with pedestrians or pedalcyclists with normal vision. It also fails to identify any research that might explain the difference in crash rates between hybrid and conventional vehicles with pedestrians or pedalcyclists with good eyesight. Therefore, the RIA offers no basis for concluding that the regulation would reduce accidents between hybrid vehicles and pedestrians or pedalcyclists who are not blind or vision-impaired.

For individuals with normal vision, factors other than sound might explain a great deal of the difference in crash rates. For example, it is plausible that the same environmental values that prompt people to buy hybrid vehicles would also make them more likely to choose walking or bicycling as a preferred form of transportation. But people who share these environmental values may be more prevalent in some localities than others. Hybrid vehicles may have greater accident rates with pedestrians and pedalcyclists, therefore, if there are more pedestrians and pedalcyclists in places where there are also more hybrid vehicles. In other words, drivers of hybrids may be more likely than drivers of conventional vehicles to hit pedestrians or pedalcyclists if more hybrid owners live in places where people are more likely to walk or bicycle.

If there are systematic behavioral differences between hybrid drivers and drivers of conventional vehicles, those could also help explain the difference in accident rates. For example, if hybrid drivers are also more likely to own smartphones and text while driving, then they may be more likely to collide with pedestrians or pedalcyclists for reasons totally unrelated to the vehicle's sound.

These are just two of several hypotheses that might plausibly explain the difference in crash rates between hybrid and conventional vehicles. Until NHTSA has conducted or identified research that controls for other factors that might explain the difference in crash rates involving people with normal vision, there is no justification for assuming that the regulation will equalize the crash rates for hybrid and conventional vehicles.

17. There is an organization in the United States that promotes blind bicycling, but its focus is pairing blind individuals with sighted individuals on tandem bikes. See <http://bicyclingblind.org/>.

18. RIA: 43.

## CONCLUSION

For the reasons described above, the RIA likely overstates the benefits of this proposed regulation substantially. Correctly calculated, the benefits may not even exceed the costs. Therefore, it would behoove NHTSA to investigate alternative means of protecting blind and vision-impaired individuals from hybrid vehicles.

The Pedestrian Safety Enhancement Act requires NHTSA to establish a noise standard, so NHTSA could not adopt an alternative approach without a change in the law. Office of Management and Budget Circular A-4, however, instructs executive branch agencies that they should analyze alternatives outside the scope of current law if a better alternative would require a change in the law:

If legal constraints prevent the selection of a regulatory action that best satisfies the philosophy and principles of Executive Order 12866, you should identify these constraints and estimate their opportunity cost. Such information may be useful to Congress under the Regulatory Right-to-Know Act.<sup>19</sup>

Even if NHTSA does not develop a more cost-effective alternative, Congress and the public deserve an accurate assessment of the likely benefits and costs of the proposed rule. An accurate assessment of benefits would (1) acknowledge that benefits to blind and vision-impaired individuals are just a fraction of the figure in the preliminary RIA, (2) recognize that there are no benefits to pedalcyclists at the speeds covered by the regulation, and (3) base any benefit estimates for people with normal vision on research that identifies the causes of hybrid vehicle collisions with such individuals.

19. Office of Management and Budget, Circular A-4 (Sept. 17, 2003): 17.