Review of Consumer Product Safety Commission
Preliminary Regulatory Impact Analysis
for its November 19, 2014 Proposed Mandatory Rule on
Recreational Off-Highway Vehicles

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I have reviewed the Consumer Product Safety Commission's (CPSC's) proposed mandatory regulation of recreational off-highway vehicles (ROVs) published in the *Federal Register* on November 19, 2014.

In brief, I find that the PRIA does not establish a need for the proposal, does not follow OMB recommended "best practices" in estimating benefits and costs, and does not fully analyze either the proposed requirements or the alternatives to the proposed rule. Only the benefits and costs of the occupant protection provisions are analyzed in the PRIA, and in any case the analysis is incomplete. My analysis, which relies on more reasonable assumptions and best practices methodology, finds that the passenger-side seatbelt speed-limiting interlock provision has costs that significantly exceed its benefits. Moreover, the PRIA acknowledges that there is the potential for consumer disabling of the seatbelt interlock system caused by dissatisfaction with the passenger-side interlock requirement, which could reduce the safety benefits of the proposed requirement. My review finds that before proceeding to a final rule, the CPSC should provide more comprehensive regulatory

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analysis based on the best practices recommended in OMB guidance on regulatory analysis.

In conducting my analysis, I used the standards and principles of Executive Order (E.O.) 12866 "Regulatory Planning and Review" issued by President Clinton on September 30, 1993 and supplemented and reaffirmed by E.O. 13563 "Improving Regulation and Regulatory Review" issued by President Obama on January 18, 2011 and my 40 years of experience reviewing regulations and regulatory impact analyses as guidance in informing my review of this proposal. Although the CPSC, as an independent commission, is not formally required to follow E.O. 12866 and 13563, President Obama issued E.O. 13579 "Regulatory Review and Independent Agencies" on July 11, 2011 asking, to the extent permitted by law, that independent regulatory agencies comply with these provisions as well. Moreover the Consumer Product Safety Act (CPSA) appears to permit and perhaps require such regulatory analysis. Section 9(c) of the CPSA, 15 U.S.C. 2058 (c), requires that the Federal Register notice include, in addition to the text of the proposed rule:

> (1) a preliminary description of the potential benefits and potential costs of the proposed rule, including any benefits or costs that cannot be quantified in monetary terms, and an identification of those likely to receive the benefits and bear the costs;
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> ...
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> (4) a description of any reasonable alternatives to the proposed rule, together with a summary description of their potential

costs and benefits, and a brief explanation of why such alternatives should not be published as a proposed rule.

The Office of Management and Budget (OMB) issued Circular A-4, "Regulatory Analysis" on September 17, 2003 to provide "best practice" guidance on what constitutes good regulatory analysis and to standardize the way benefits and costs of regulatory actions are measured and reported in accordance with E.O. 12866.[2] The first step in a regulatory analysis is to determine the need for the regulatory action under consideration, including whether the action is intended to address a significant market failure. The second step is to determine the alternative approaches. The third and final step is "to perform an evaluation of the benefits and costs—quantitative and qualitative—of the proposed action and the main alternatives identified by the analysis."[3]

CPSC Has Not Demonstrated A Need for Regulatory Action

The Preliminary Regulatory Impact Analysis (PRIA) does not address whether a significant market failure exists and if it does exist, explain why this specific proposal is needed to correct that market failure.[4] A principal problem with

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[2]https://www.whitehouse.gov/sites/default/files/omb/assets/regulatory_matters_pdf/a-4.pdf.

[3] Ibid. p. 2.

[4] Section 1(a) EO 12866 states:

"Federal agencies should promulgate only such regulations as are required by law, are necessary to interpret the law, or are made necessary by compelling public need, such as material failures of private markets to protect or improve the health and safety of the public, the environment, or the well-being of the American people."

addressing a non-existent market failure is that it could lead to more harm than good.[5]

The closest the PRIA comes to considering the existence of a significant market failure is in its regulatory flexibility analysis conducted under the Regulatory Flexibility Act. The PRIA's complete statement in Section A. Reason for Agency Action simply states:

> "ROVs were first introduced in the late 1990s. Sales of ROVs increased substantially over the next 15 years. The number of deaths associated with ROVs has substantially increased over the same period, from no reported deaths in 2003, to at least 76 reported deaths in 2012. As explained in this preamble, some ROVs on the market have hazardous characteristics that could be addressed through a mandatory safety standard." (79 FR 69015).

The fact that fatalities may have increased from zero in the late 1990s to 76 in 2012 is not sufficient to justify regulating an important and fast growing consumer product and industry under Circular A-4 or under the Regulatory Flexibility Act.[6]

The PRIA does purport to show that under certain driving conditions and with certain ROV models in existence in 2010, if certain ROV occupants wore seatbelts the safety benefits would significantly exceed installation costs. However,

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[5] See Circular A-4, p. 4-7

[6] See section 603 of the Regulatory Flexibility Act (5 U.S.C. §§ 601-612).

even if true, it would not prove that a market failure would likely exist in 2017 or afterwards when the proposed full mandatory standard would first likely be effective. Indeed, I have learned from the ROV industry that approximately 60% of the ROVs sold in Model Year 2015 already include a driver-side seatbelt speed-limiting interlock. Further, I have learned that CPSC staff and the ROV industry have recently met and discussed making the driver-side seatbelt speed-limiting interlock a requirement under a revised voluntary standard. If so, then obviously there can be no market failure under this analysis. An important principle of good regulatory analysis is to think forward not in the distant past.

The PRIA also contends that the benefits of the non-occupant protection requirements will exceed the costs. The PRIA acknowledges that the agency does not have the data to estimate the benefits of the other provisions but because it believes the cost of these provisions would be minimal, it asserts that the benefits likely would exceed the costs. However, the PRIA does not estimate the possible disutility costs to consumers of the mandated product modifications to steering, handling, stability, and entry and exit characteristics.

Alternatives Were Not Adequately Considered

The PRIA does provide brief discussions of several more intrusive and less intrusive alternative provisions, but dismisses them based on staff opinions and beliefs rather than analyses. For example, the alternative of relying on the two recently developed voluntary standards is dismissed as follows: "ES staff does not believe that the tests procedures in either standard have been validated properly to

be deemed capable of providing useful information about the dynamic stability of the vehicle." (79 FR 69012.) However, the Commission supports its proposed dynamic stability provisions without any benefits analysis.

The PRIA also dismisses an option of requiring one or the other of stability provisions or handling requirements and states its belief that both are better than either one as follows: "According to ES staff, a vehicle that meets both the dynamic stability requirement and the understeer requirement should be safer than a vehicle that meets only one of the requirements." (79 FR 69012.) But again the Commission does not provide any benefit estimates of its proposed handling and stability provisions.

I find that the brief descriptions of these alternatives provided in the PRIA do not meet OMB best practices. They do not provide an adequate or reasonable record of costs and benefits to enable a fact based choice among them.

Overestimation of Benefits and Underestimation of Costs

My analysis of the assumptions and data used in the PRIA of the benefits and costs of the proposed ROV regulation identified a significant number of concerns that appear to lead to an overestimation of benefits and underestimation of costs.

Baseline year 2010 does not account for declining risk rates prior to likely effective date of regulation

The first concern is that the PRIA uses static data from one year, 2010, as the baseline against which to project benefits from the proposal forward to 2017 to

2035 and possibly beyond.[7] This is clearly misleading on several grounds and violates OMB's best practices guidance. That guidance advises agencies to use a baseline that is "the best assessment of the way the world would look absent the proposed action" and recommends that, in particular, agencies consider such factors as:

- "evolution of the market,
- changes in external factors affecting expected benefits and costs,
- changes in regulations promulgated by the agency or other government entities, and
- the degree of compliance by regulated entities with other regulations."[8]

The CPSC did not consider any of these factors. Positive trends in statistical safety records, state laws, voluntary standards, industry pro-safety innovations , and consumer behavior challenge the assumption of a world frozen five years ago in 2010. Moreover, the PRIA estimates of aggregate benefits are based on injury data that took place in 2010 but involve ROVs manufactured in or prior to 2010. It is well known in the vehicle transportation literature that later model years of vehicles have been safer than earlier model years.[9] The CPSC reports that there has been dramatic growth and important changes in the ROV industry both before 2010 and after. A clear look at these changes points in the direction of safer vehicles and an improving ROV safety record per vehicle in use. Finally, I understand that others are reviewing the injury data underlying the rulemaking, which likely will contain additional relevant information regarding the CPSC's estimation of benefits.

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[7] The PRIA assumes that benefits last the life of a ROV, assumed to be about 18 years, but the mandate also presumably is expected to last more than one year.

[8] OMB (2003) p. 15.

[9] See Insurance Institute for Highway Safety studies such as "The Effects of Vehicle Redesign on the Risk of Driver Death" Farmer and Lund (2014).

ROV NEISS Data is Blurred with ATV NEISS Data

Both the CPSC's National Electronic Injury Surveillance System (NEISS) and the International Classification of Diseases (ICD) used as the bases of CPSC's statistical analyses have historically coded ROVs as ATVs and/or Utility Task Vehicles (UTVs). Indeed, the CPSC statistical analysis for ATVs states that the ATV estimates would likely be overstated if (as is occurring) ROVs become a greater percentage of the total off-highway vehicles in use fleet.[10] The fact that data on ROVs are not separately and systematically estimated may explain why the CPSC's PRIA relies only on a special limited sample of data to estimate costs and benefits for the year 2010.[11] Although not part of the PRIA or preamble to the Notice of Proposed Rulemaking (NPRM), the CPSC did provide some trend data in response to

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[10] See Appendix A: "In cases where the specific type of off-road vehicle cannot be ascertained, CPSC staff counts the death report as an ATV-related fatality. This assumption may result in an overestimation of ATV-related deaths."

"For example, if the increase in the number of ROVs in use is impacting the injury estimates, specifically if records coded in the NEISS as ATVs are increasingly actually related to ROVs, then ATV-related injuries are being overestimated. Again, it is unknown if this is occurring in the data; however, this is a possibility with using an adjustment factor that cannot be updated yearly, but only periodically." (p. 25).

Note that the 2013 Annual Report stops reporting exposure and risk estimates because it no longer thought lifespan estimate for ATV s were reasonable. However, the CPSC continues to use the ATV estimates for ROV benefit estimates. (p. 12, 2013 Report).

[11] To the extent that CPSC uses trend data, it is used to illustrate the increase in incidents over the last ten years or so but that is explained by the rapid growth of the number of ROVs in use not an increase in accident rates. Another problem with the data which is collected from news reports is the heightened attention such incidents receive when the CPSC is engaged in rulemaking. The Advanced Notice of Proposed Rulemaking was issued in 2009. The CPSC makes this point with respect to ATVs in its recent report (discussed in the next footnote).

questions from Commissioner Buerkle in the memo dated October 20, 2014 from staff to the Commission. Staff emphasized that data analysis and gathering for the years 2010 to 2012 was still ongoing. However the data showed that the fatality rate from 2005 to 2010 had declined from 1.429 to .858 per 10,000 ROVs or about 9% per year over the five years.[12] Because of the uncertainties with this data, I assume a conservative decline rate of 6% rather than 9%. This assumption of course results in a more favorable (to the CPSC) benefit estimate since benefits would be lower if a 9% trend in fatality reduction were used instead.

The PRIA also uses old and limited data to estimate the societal costs of injuries associated with ROVs. This approach tends to increase the uncertainty and possibly bias upwards the value estimates. A total of 688 surveys were completed, resulting in a 33 percent response rate for this survey. Of the 688 completed surveys, 16 were identified as involving an ROV based on the make and model of the vehicle involved. It is possible that more cases involved an ROV, but it was not possible to identify them due to lack of information on the vehicle make and model. The PRIA relies on a sample of only 16 interviews out of 2,018 NEISS cases involving

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[12] See page 13 of CPSC staff Memo of October 20, 2014. Using the last five years of data from 2007 to 2012 also show an average 9% per year decline. These estimates are admittedly uncertain because the estimates of fatalities and fleet usage are incomplete and subject to reporting bias from heighted media exposure. CPSC makes this point with respect to ATV reporting. It states in the 2013 ATV Annual Report: "Consequently, any effect of heightened media exposure on data collection began to be a factor in this period. This effect could have started in 2002, with a petition submitted to the CPSC, which requested the Commission to issue a rule banning the sale of adult-size four-wheel ATVs sold for the use of children under the age of 16 years. This effect could have continued throughout this time period due to the exposure resulting from the issuance of an advance notice of proposed rulemaking in 2005, and a notice of proposed rulemaking in 2006, by the CPSC." (p. 20).

an ATV or UTV (and ROVs) conducted over an eight-month period from Jan 1, 2010 to August 31, 2010. These 16 interviews were then used to project that there were 11,100 medically treated injuries from ROVs in 2010 at a societal cost of $326.2 million in 2012 dollars or about $572 per ROV. These numbers seem implausibly high on their face when compared to ATVs.

Extrapolated sample risk rates are not consistent with other injury data

First, the 11,100 medically treated injuries estimate indicates that for 2010 with about 570,000 ROVs, the medically treated injury rate would be 194 per 10,000 ROVs. The CPSC Annual Report for 2010 estimates the ATV injury rate at 105.3 per 10,000 in the same period (111,190 injuries with 10.6 million four wheeled ATVs). Thus the PRIA implausibly implies that ROVs are about 84% more likely to generate medical treatment than ATVs.[13]

In addition, CPSC data discussed above indicate that relative fatality rates in 2010 were significantly lower than the 84% higher injury estimate, at about a 23% differential.[14] This casts significant doubt on the reliability of the CPSC projection. Perhaps this is due to its small sample size. As discussed above, only 16 (or 2.4%) of the 668 completed interviews involved ROVs. This estimate is additionally highly uncertain because 668 interviews is only 33% of the 2,018 cases in the original sample. This is a response rate that OMB rejects as being too low. OMB

[13] (194/105.3)=1.84.

[14] (0.858/0.7) = 1.23.

recommends a minimum response rate of 80% under Paperwork Reduction Act guidance.

The projection that the PRIA makes from treatment in emergency rooms to all medical treatments is also based on the injury case model developed in 2000 applied to the characteristics of the 16 ROV completed interview cases. This is a highly questionable projection from a statistical viewpoint. The CPSC, recognizing this uncertainly, also reports in a footnote an alternative projection based on all ATV cases. This projection provides an estimate of 8,600 cases (or 77% of the 11,100 estimate above). Therefore, I use an adjusted factor of 0.77 to reduce this uncertainty.

Impact of above two adjustments for overall injury and fatality risk rates

Compared to 2010 and combining that with the seasonality and the PRIA estimate using the broader sample methodology produces an injury estimate per 10,000 vehicles in 2017 that is about 50% of the risk rate used in the PRIA (0.94^7) x 0.77 =0.50.

Overestimate of injury costs based on discredited model

The PRIA multiples the risk rate times the estimate of the societal costs of injuries estimated at $29,383 per medically treated injury to estimate the societal costs of injury per vehicle with about 75% due to pain and suffering estimates based on jury awards, 7% due to medical treatment costs, 16% related to work productivity losses of "the victim, caregivers, visitors and employers" and 1% due to

administrative costs of the legal system. The projections to ROVs are again based on the 16 interviews sample and the CPSC revised injury cost model (ICM) published in 2000 but originally developed in the 1970s. The ICM methodology is not consistent with OMB Regulatory Analysis guidance and is not used by the executive branch agencies.[15] The ICM adds up all the possible costs associated with an injury whether it is a net cost to society or not. For example, jury awards are *ex post* transfers from manufacturers to users of the product and are not true societal costs. The correct methodology is to estimate *ex ante* willingness-to-pay by consumers to reduce the risk of injury, rather than an often arbitrary *ex post* award. Third party payments for direct medical care, 9% of the ICM estimate, however, are properly added to willingness-to-pay benefit estimates.

The ICM model used in the PRIA also uses a lower discount rate, 2.5%, than the 3% and 7% range recommended by OMB to obtain the present value of future impacts. The ICM also uses medical expenditures per capita to estimate future medical costs from 1995 to 2013 rather than the CPI-medical index. This ICM approach overstates medical cost inflation because it does not take into account improvements in the quality of medical care. The Council of Economic Advisors estimates that real per capita national health expenditure grew at 3.9% from 2000 to 2007 compared to 1.8% for the CPI for medical care relative to general inflation

[15] OMB Circular A-4, Regulatory Analysis, requires the willingness-to-pay methodology to estimate health and safety benefits rather than the cost of illness or lifetime earnings approach. Net changes in financial externalities to third parties may also be included. See pp. 28-29.

for the same period - - a difference of 2.1 percentage points per year. [16] It is beyond the scope of this paper to present an alternative estimate of the injury costs per vehicle incident since that would involve estimating the willingness-to-pay of ROV users to reduce the risk of injury. However, the above directional biases and uncertainties suggest that the CPSC develop more robust data collections and more up to date estimation methodologies before issuing a final regulation for mandating significant ROV modifications. In summary, because I do not provide an alternative injury cost estimate, I am using the $29, 383 PRIA estimate, notwithstanding my conclusion that this value is overstated.

Using a more appropriate discount rate to obtain the present value of future benefits and costs

The final step in the PRIA's injury estimation procedure is to find the present value of its 2010 injury estimate per ROV for a lifetime of usage, which the PRIA assumes to be the same as found in a 2001 study for ATVs.[17] Using a 3% discount rate, CPSC estimates that the lifetime injury costs per ROV would be $7,825.

However, OMB guidance states that a real discount rate of 7% should be used as a base case for Regulatory Analysis.[18] OMB Circular A-4 explains that rates of 3%

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[16] See Table 1 and Table 2 of the CEA report "Trends on Health Care Cost Growth and the Role of the Affordable Care Act" (November 2013).

[17] P. 138. The estimated lifespan appears to average about 18 years based on the data. Note that in the 2013 Annual ATV Report, the CSPC states that its estimates for ATV useful life are no longer reasonable because of the number of years that have passed since the ATV study was done. It thus declines to use them for ATV risk rate reporting.

[18] See OMB CircularA-94 and A-4 at p 33.

and 7% may be used depending on whether capital or direct consumption dollars are being replaced. The 3% is based on the time preference for consumer savings for the future and 7% based on the opportunity cost of capital estimated by the long run pre-tax return to private capital in the US economy.[19]

The CPSC states that its choice of 3% is consistent with the rates often used for choosing between alternative medical and public health interventions to determine the most cost-effective use of public resources. However, the CPSC is not reallocating a fixed public health budget. It is allocating private sector capital toward public purposes. The CPSC is asking manufacturers to reallocate capital to change the products they produce in ways it thinks will improve the product. Thus the 7% discount rate should be used. Using 7% rather than 3% to estimate present values over 18 years reduces the present value by an adjustment factor of 0.74. Combining the 0.74 present value adjustment factor with the 0.50 per vehicle injury adjustment factor provides a net adjustment of 0.37 for injury prevention estimates.

Fatality estimate adjustments

The PRIA adopts EPA's $8.4 million value (for 2010 in 2012 dollars) of statistical life (VSL) estimate based on of willingness-to-pay methodology for a small reduction in risk.[20] However it also cites Circular A-4 guidance that recommends a range of from $1.3 million to $13 million VSL depending on specific risk reduction circumstances such as whether the risk is sudden, from cancer and the extent to

[19] See pp. 33-35 of Circular A-4 for a discussion of the derivation of these estimates and when to use each one.

[20] See 79 FR 69001.

which the risk is voluntarily incurred. [21] Using EPA's estimate, which deals with very low risk from cancer involuntarily incurred, suggests a higher rate would be appropriate for most EPA regulations than for ROV regulation. In any case, OMB often uses its midpoint estimate when standardizing agency methodologies, which is $7.15 million. Reducing both estimates for the $350,000 value the PRIA uses to adjust for the fact that a fatality prevention is still likely to result in a significant injury, a fatality prevention valuation factor of 0.84 is calculated. [22] Combining the risk trend factor (0.65), discount rate adjustment (0.74) and the fatality VSL adjustment (0.84) produces a combined adjustment factor of 0.4.[23]

CPSC per vehicle estimates

Because of the lack of data, the PRIA estimates only benefits of the occupant retention requirement. It does not estimate benefits for the other requirements. Based on accident characteristics for ROV fatalities from a study covering 2003 thru 2011, the PRIA estimates that the driver occupant protection system would have addressed about 15 fatalities in 2010 and prevented 45% of them (or 7 fatalities) if its proposed driver interlock standard had been in effect. The 45% seatbelt effectiveness assumption is based on the seatbelt effectiveness rate used by the NHTSA for passenger cars. [24] This results in a $99 per vehicle benefit in 2010 according to the PRIA. Using a similar analysis for injuries, CPSC estimates an

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[21] See page 30.

[22] (7.15-0.35)/(8.4-0.35)=0.84.

[23] (0.65x0.74x0.84)=0.4.

[24] 79 FR 69007.

additional benefit from a reduction in the cost and number of injuries of about $10 per vehicle for a total of $109 per vehicle or $1,498 per vehicle over its lifetime of use.

The CPSC estimates that the equipment cost of the driver occupant protection system is between $33 and $58 per vehicle, significantly less than the CPSC's lifetime benefit estimate and as well as my revised lifetime estimate of about $600 based on the 0.4 average adjustment factor for fatality risks and injury risks discussed above.,

The CPSC is also mandating that passenger seatbelts be buckled up for the ROV to attain a speed of 15 miles per hour. CPSC estimates that this requirement would address about six fatalities in 2010 and prevent about three, assuming a 45% effectiveness rate for seatbelt use. This amounts to about $42 per ROV. A similar analysis for injuries finds that injuries reduced would add about $9 per vehicle or about $51 in total for a present value of $701 at 3%.

Impact of Correlation in Seatbelt Use Between Driver and Passengers

The PRIA points out that the data show a strong association (0.82) between driver seatbelt use and passenger seatbelt use. CPSC states: "the implication that a correlation between seatbelt use by drivers and by passengers has for this analysis is that it indicates that the benefit of requiring the driver's seatbelt to be fastened were underestimated and the benefits of extending the requirement to include the right front passenger are over estimated." [25]

[25] See 79 FR 69010.

The CPSC estimates that only 20% or $140 of the benefits would be attributable to the front seat passenger requirement ($25 from injury reduction and $115 to fatality reductions).

The PRIA points out but does not calculate that 80% of these benefits would be attributed to the driver-side interlock requirement. This would bring the present value of the driver-side interlock requirement to $2,060 per vehicle over its lifetime using the PRIA estimates.[26] Since this estimate is significant, below I focus on the requirement for the passenger-side interlock system.[27] And as I noted above, I have learned that approximately 60% of the ROVs sold in Model Year 2015 already include a driver-side seatbelt speed-limiting interlock. Further, I have learned that CPSC staff and the ROV industry have recently met and discussed making the driver-side seatbelt speed-limiting interlock a requirement under a revised voluntary standard.

Adjusting PRIA estimates to be consistent with OMB guidance and best practices.

Applying the adjustment factors to the $140 results in $55 in lifetime benefits per vehicle in 2017. [28] The PRIA estimates that the quantifiable costs of extending the driver seatbelt interlock requirement to front seat passengers would be $26 per

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[26] The PRIA does not explain why it did not make this adjustment for the driver-side benefit estimates but it does point out that driver-side benefits are already high without it.

[27] Applying my estimation adjustment factors for injuries and fatalities described in detail below to the $2060 estimate produces a benefit estimate of $808.

[28] Composed of 0.37x $25=$9 of injury reduction benefits plus 0.4x115=$46 of fatality benefits.

vehicle made up of $7 for a seatbelt sensor, $13 for a seat weight switch and $4 for labor to install them per seat and adjusted for the 9% of vehicles that have more than one seat per front seat passengers. However, the PRIA assumes that there would be no additional research, design and development costs for adding the passenger interlock system compared to the driver-side system, which is estimated at $12 per vehicle.[29] The assumption that there would be no additional research, development and design costs appears to be unrealistic since a multiple seat interlock system is considerably more complicated than a drivers only seat system. Moreover, to make the system effective, one needs a seat weight sensor so that the system can distinguish when passengers are or are not occupying the seats, which adds research design and development costs. Thus an equipment cost estimate for front passengers of $26 plus $12 = $38 seems like a more reasonable estimate than one without development validation costs.

This equipment estimate is very close to the lifetime benefit estimate of $55 per vehicle, but the PRIA itself identifies various types of ongoing costs it did not quantify.

Costs Not Quantified by CPSC

Disutility of seatbelt use

The CPSC points out that its cost estimates do not include all costs to users. It states:

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[29] See 79 FR 69007.

> The requirement could impose some unquantifiable costs on certain users who would prefer not to use seatbelts. The cost to these users would be the time required to buckle and unbuckle their seatbelts and any disutility cost, such as discomfort caused by wearing the seatbelt. We cannot quantify these costs because we do not know how many ROV users choose not to wear their seatbelts. Nor do we have the ability to quantify any discomfort or disutility that ROV users would experience from wearing seatbelts.[30]

However, there is a robust literature, some authored by scholars cited elsewhere in the PRIA, which have estimated the disutility of belting up and wearing seatbelts for on-road vehicles.[31] Although these estimates were not calculated for off-highway vehicles, they can be adapted to ROVs to provide a range of estimates. These costs are important because they occur each year over the assumed average life span used by the CPSC for the ROV benefit calculations. Since the CPSC only quantifies costs for the first year when comparing their estimates to 18 years of benefits, it is important to estimate ongoing costs. Hakes and Viscusi (2007) survey the literature and use estimates of the disutility of seatbelt use from the top economic scholars in the transportation safety field to investigate the rationality of seatbelt use and to compare various estimation techniques for the statistical value of life.[32]

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[30] 79 FR 69006.

[31] One of the authors, Miller, is a key developer of the Injury Cost Model. .

[32] John K. Hakes and W. Kip Viscusi, (2007) "Automobile Seatbelt Usage and the Value of Statistical Life," Southern Economic Journal, 73(3) pp. 659-674. They cite

These studies find a range of annual disutility for seatbelt use of $371 to $1417 in 2012 dollars for on-road vehicles and 4 seconds per trip for the time needed to buckle up.[33] Assuming ROVs are used only about 10% of the time compared to on- road vehicles, the ROV disutility index ranges from $45 to $150 per year per driver. However, further adjustment is needed to account just for front seat passengers who do not buckle. Front seat passengers are about 42% of the occupants of ROVS and I have assumed (following CPSC) that 80% would buckle up if the driver did and 20% would not. Thus, I calculate that the additional disutility to passengers for the passenger interlocks ranges from $3.78 to $12.60 per year.[34] Using a 7% discount rate, the present value of $3.78 over 18 years is $38.02 for the $45 disutility estimate and $126.74 for the $150 estimate.[35]

Cost of system failures

CPSC discusses but does not estimate the ongoing costs for system failures for front passenger seatbelt interlocks, which increase with more complex systems.

An additional cost that is unquantifiable but should be considered nevertheless, is the impact that the failure of a component of the system could have on consumers. The more components that a

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articles by Bloomquist (1974); Bloomquist, Miller and Levy (1996) and Winston (1987) for their estimates.

[33] See Ibid, Table A page 675.

[34] These are calculated by the following equations: $45x0.42x0.2=$3.78 and $150x0.42x0.2=$12.60, respectively.

[35] Using a 3% discount rate, the disutility and time added in buckling up estimates add $60 and $173 respectively to the present value.

system has, or the more complicated that a system is, the more likely it is that there will be a failure of a component somewhere in the system. A system that limits the speed of an ROV if a front passenger's seatbelt is unbuckled would consist of more components and the system would be more complicated than a system that only limited the speed of the vehicle if the driver's seatbelt is unfastened. Failure in one or more of the components would impose some costs on the consumer, and this failure could possibly affect consumer acceptance of the requirement. For example, if the sensor in a passenger's seatbelt failed to detect that the seatbelt was latched, the speed of the vehicle could be limited, even though the seatbelts were fastened. The consumer would incur the costs of repairing the vehicle and the loss in utility because the speed was limited until the repairs were made.[36]

The PRIA makes similar points when rejecting an extension to rear seat passengers:

> A failure in only one of the parts could result in significant cost to the users for repairs, lost time and utility of the vehicle while it is being repaired, or the inability of the vehicle to reach its potential speed. These failures could occur because a faulty seatbelt latch sensor does not detect or signal that a seatbelt is latched or because a faulty seat switch incorrectly registers the presence of a passenger

[36] See 79 FR 69007.

when a passenger is not present. This cost cannot be quantified. A failure in only one of these parts could result in significant costs to the users for repairs, time lost and utility of the vehicle (while) it is being repaired, or the inability of the vehicle to reach its potential speed.[37]

These concerns also apply to the front seat passenger interlock requirements. A simple calculation again illustrates the importance of estimating such costs. If the probability of system failure increases by 1% per year because of the increased complexity over the 18 year period at a cost of $200 per incident, the present value of these ongoing costs add $20.12 at 7% discount rate (and $27.51 at 3%).

Summary of Costs and Benefits of the passenger Interlock requirement

When these previously unquantified ongoing cost estimates are added to equipment costs, total costs range from about $100 to $190.[38] The $55 lifetime benefit estimate falls far short of the lifetime cost estimates. Note that I have not adjusted for any reduction in the benefit estimate because of disabling of the system. These calculations indicate that it is clearly important that the final regulatory analysis take into account ongoing costs as well as adjust benefits realistically for the way the world will likely look in 2017 and beyond.

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[37] See 79 FR 69013.

[38] These lifetime cost calculations use my preferred 7% discount rate thus producing lower cost estimates. They are for the $42 equipment estimate, the $20.12 break down cost estimate and the range of $38.02 to $126.74 seatbelt disutility estimate.

The PRIA explicitly recognizes that there is a possibility that some drivers might disable the interlock system if it becomes annoying or breaks down, thereby further reducing the safety benefits. Some of the concerns mentioned by the PRIA discussed above as well as comments to this docket involve having to buckle up packages on the passenger seat because their weight might trigger the interlock, passengers unbuckling and thus abruptly slowing the vehicle and the possibility of a greater number of malfunctions for multi-seat devices. The PRIA recognizes this possibility: "Some of these users could be motivated to defeat the requirement (and this could be done easily), which could reduce the benefits of the proposed rule."[39] Recently NHTSA denied a petition by a leading automobile manufacture to allow an interlock system in exchange for increased flexibility in design because there was little evidence of consumer acceptance of mandated interlock systems and thus a strong possibility that consumers might disable them.[40] NHTSA called for more study of the issue. To the extent these concerns cause drivers to disable the interlock system, it would reduce the safety benefits of the proposed passenger-side interlock requirement.

A risk-risk concern, not quantified here, is if the costs, disutility, and performance characteristics of ROVs are compromised or/and ROVs are made more expensive by regulation, less safe products such as various other off-highway

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[39] 79 FR 69013.

[40] NHTSA explained: "This lack of acceptance among the types of occupants that an interlock is intended to target leads to the reasonable assumption that such occupants may attempt to disable the interlocks. This is supported by the research findings and the real world historical evidence of consumer backlash in the 1970s, which resulted in motorists finding ways to disconnect or circumvent their interlock system." (78 FR 53389)

vehicles that do not have rollover protection structures may gain in relative sales resulting in countervailing risks. The other provisions of the proposed regulation such as mandatory handling, lateral stability, and restrictions on entry and exit from the vehicle may also play a role in reducing sales of ROVs relative to products that are inherently less safe.

Conclusion

The CPSC's PRIA for ROVs does not establish a need for the proposal, does not follow OMB recommended "best practices" in estimating benefits and costs, and does not fully analyze alternatives to the proposal. Benefits and costs for only the occupant protection provisions are estimated in the PRIA, and in any case the analysis is incomplete. The other provisions seem to be piggybacked onto the estimated benefits for the driver-side interlock requirement. My analysis using more reasonable assumptions and OMB's "best practices" methodology finds that the passenger-side seatbelt interlock provision has costs that significantly exceed its benefits and, perhaps more importantly, could under plausible conditions actually increase overall injuries and fatalities. My review suggests that before proceeding to a final rule the CPSC should provide more comprehensive regulatory analysis based on the best practices recommended in OMB guidance on regulatory analysis.

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