

the study) and including those that were heavier, would have actually reduced fatalities by a small amount if their weights were reduced. Therefore, as cars and trucks increased in size, the severity of the safety impacts due to weight reduction lessens and eventually disappears. For vehicles above a certain weight, weight reduction may produce safety benefits.<sup>5</sup>

The NHTSA study approach is retrospective, and not necessarily predictive of the future, since it examines a specific group of model year 1991–99 vehicles, often in relation to the other vehicles on the road, in calendar years 1995–2000. The study does not examine a reduction of 100 pounds in a specific vehicle, but rather the effect of a vehicle mix shift resulting in the average vehicle fleet being 100 pounds lighter. For light trucks, a change in the sales mix to certain vehicles (e.g., minivans) could reduce weight, improve fuel economy and be safer for society overall. Even within vehicle classes we already see the potential for overall safety improvements (e.g., crossover SUVs are lighter, more fuel efficient, and appear to be safer for society overall than larger SUVs).

It is important to note that the configuration of light vehicles, particularly the height of their center-of-gravity (CG), also has an impact on safety. In particular, vehicles with a higher CG are more likely to be involved in rollover crashes than vehicles with a lower CG. About one-third of all light vehicle occupant deaths involve rollover. More than half of all single vehicle crashes resulting in fatalities involve a rollover event. Fatalities in rollover crashes accounted for 82 percent of the total fatality increase in 2002. In 2002, 10,666 people died in rollover crashes, up 5 percent from

10,157 in 2001. The number of persons killed in SUVs that rolled over rose 14 percent. Sixty-one percent of all SUV fatalities involved rollovers.

The NAS found that “technologies exist that, if applied to passenger cars and light trucks, would significantly reduce fuel consumption within 15 years (NSA, pp. 3). NAS also noted that technology changes require very long lead times to be introduced into product lines. Under the current regulatory structure, rapid increases in the light truck CAFE standard could have substantial safety and economic consequences. An analysis performed by the Energy Information Administration (EIA), based on their National Energy Modeling System (NEMS), indicates that if the light truck CAFE standard were increased by 0.6 mpg annually under the current system starting with MY 2008 (0.6 mpg was the rate of increase for the last two MYs of the recently published MY 2005–2007 CAFE light truck rule), average light truck weight would be reduced by about 100 pounds annually over the MY 2010–2015 period, about 200 pounds annually over the MY 2016–2020 period, and more than 350 pounds annually by MY 2025. Moreover, the study suggests that most of the weight reduction would occur in the small and medium end of the weight range. The EIA analysis and NHTSA’s updated safety study together suggest that highway fatalities could increase significantly if such increases in CAFE standards for light trucks are implemented under the existing program.

A third reason for considering CAFE reform relates to the adverse economic impacts that may result from such future increases in the stringency of CAFE standards. The EIA analysis predicts that a sustained gradual increase in the light truck standard (0.6 mpg per year from 2007 to 2025) would increase the cost of light trucks, reduce real Gross Domestic Product (GDP), and reduce employment. The incremental cost of light duty trucks is predicted to rise steadily for the entire forecast period through 2025, ultimately reaching a price increase of \$720 (in constant 2001 dollars), although the rate

of increase slows over time. The loss in real GDP grows over time. By 2015, real GDP is predicted to be \$15 billion smaller, which represents a loss of 0.1 percent when compared to the reference case. By 2025, the loss in GDP is predicted to be \$19 billion (–0.10 percent). Viewed over the entire forecast period, the sum of the discounted changes (billions of dollars discounted at 7 percent from 2004 through 2025) in real GDP totals a loss of \$84 billion, which represents a loss of approximately 0.6 percent of the reference case value of real GDP over the 2004–2025 period. Non-agricultural employment, under such a scenario, would decline in 2015 by 86,000 jobs compared to no increase in light truck CAFE standards. This adverse effect would attenuate in the long run as fuel savings from tighter CAFE standards induce some employment gains and the economy adjusts to a new steady-state equilibrium. By 2025, the net employment loss in the non-agricultural sector is 16,000 jobs.

Although the NEMS model is useful as a long term forecasting tool, the model is a simplified representation of the macro-economy and its projections are subject to considerable uncertainty. NEMS is a generalized model that treats all manufacturers identically. Other approaches, such as the technology model used by NHTSA in its recent 2005–2007 light truck rulemaking, rely heavily on detailed manufacturer-specific data. Models of this type have advantages for analyzing the effects of short-term modest increases in CAFE standards, while the NEMS approach is more useful for analyzing longer-term increases in CAFE standards. When longer-term analysis of significant increases in CAFE standards is required, current differences in manufacturer capabilities become much less relevant. In addition, NEMS’ ability to estimate macroeconomic “feedbacks” from long run increases in CAFE standards is useful.

Table 1 provides data on light truck manufacturers in the U.S. market, their sales volumes, and market shares by vehicle type.

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<sup>5</sup> This new study explores the relationship between vehicle size, crash compatibility and vehicle weight for 1991 through 1999 light vehicles. The study finds that weight reductions in passenger cars and most light trucks increase the risk of fatalities significantly more than previously thought. However, the results are not uniform over the entire weight range of trucks and cars. Reducing the weight of lighter cars and trucks results in more fatalities than down-weighting heavier cars and trucks.