More attention should be given to improving the driver.

Do Auto Recalls Benefit the Public?

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Do the safety benefits of the federal government's automobile recall program justify its costs? You might be surprised to learn that nobody really knows, not even the National Highway Traffic Safety Administration (NHTSA), which oversees recalls, or Congress, which uses taxpayer money to fund NHTSA.

Aside from irresponsible governance, this state of ignorance is all the more troubling when one considers the risks of crash and injury, not to mention the costs of fuel consumption and pollutant emissions, posed by otherwise unnecessary trips to car dealerships to repair "safety defects." When considered in this light, we should worry that NHTSA's recall program may be exposing motorists to more hazards than it is correcting.

This concern is exacerbated by NHTSA's consistent refusal to even study the issue. Upon examining the recall program, NHTSA's own advisory council concluded:

> The question naturally arises — do the safety benefits of the program justify its cost? Curiously, no one knows. Indeed, the scarcity of hard facts and the

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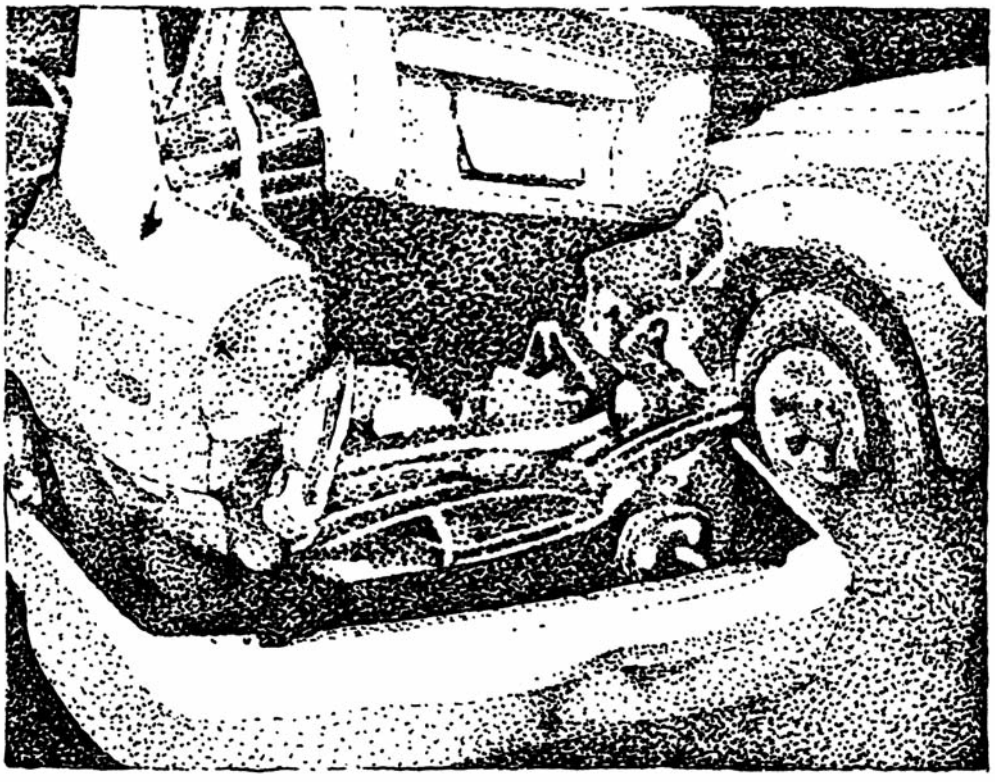
The views expressed in this article are his own.



abundance of unknown factors make any definitive evaluation of the defect-recall program very difficult.

That was in 1976. Over 32 years later, nothing has changed.

NHTSA's lack of knowledge concerning the costs of its recall program contrasts starkly with its plethora of knowledge concerning the costs of its mandated safety standards, known as the Federal Motor Vehicle Safety Standards (FMVSS). These standards govern the performance levels for those parts of a vehicle that either affect safe operation (e.g., brakes, tires, lighting) or protect drivers and passengers in the event of a crash (e.g., safety belts, air bags).

NHTSA began in 1975 to study the costs imposed by the FMVSS on automakers and consumers. (The agency considers the cost of a safety standard as "the incremental cost over the equipment that was there before the standard and likely would have remained there without the standard.") So, for example, NHTSA has determined through a process called "reverse engineering" that the FMVSS added an average of $839 (in 2002 dollars) and 125 pounds to the average passenger car in model year 2001. That represents about 4 percent of the cost and 4 percent of the weight of a new passenger car.

Yet no such estimates exist for the costs of executing safety recalls. Nevertheless, NHTSA has charged forward each year with its recall program. Driven by fear of negative publicity, auto companies have all too often acquiesced. And so the vicious circle is complete: vehicles must constantly be recalled to fix the most inane "safety" risks, such as the infamous General Motors chime recall. In that case, GM bowed to NHTSA's demands to recall model year 1996–99 Chevrolet and GMC vans to "fix" the audible seat belt warning signal, which failed by only a fraction of a second to chime for the mandated 4 to 8 seconds when the seat belt wasn't properly buckled, even though the vehicles displayed a continuous warning light for the first 20 seconds and then a flashing light for almost a complete minute (and thus exceeding the visual indication requirement that totals 60 seconds) if the driver failed to buckle properly.

Although the benefits of NHTSA's recall program remain dubious and largely unproven, its costs are not. NHTSA estimates (rather conservatively) that safety recalls cost automakers about $100 per vehicle per recall. Not including the indirect costs caused by recalls (e.g., brand damage), that would mean that automakers spend around $3 billion annually to fix safety defects or non-compliances with the FMVSS. That number does not take into account the numerous other field actions manufacturers undertake to correct "non-safety" defects such as emissions-related recalls, non-safety or non-emissions service actions, customer satisfaction campaigns, or extended warranties. (For example, GM alone added $1.5 billion to reserves in 2004 to cover recall and warranty work; it spent over $9 billion in warranty costs that year.)

If one considers total warranty costs that fund all these actions, automakers spend well over $12 billion a year in the United States to correct recalled vehicles, which can reduce revenues by 1–3 percent.

IT'S NOT THE CAR

Ever since Ralph Nader's high-profile assault on the Chevrolet Corvair, which ultimately convinced Congress in 1966 to pass the nation's auto safety law, the National Traffic and Motor Vehicle Safety Act, public policy in the United States has obsessed with regulating the vehicle. This single-minded focus often comes at the expense of addressing the real root cause of nearly all crashes: human error.

Contrary to the impression left by the often alarmist media

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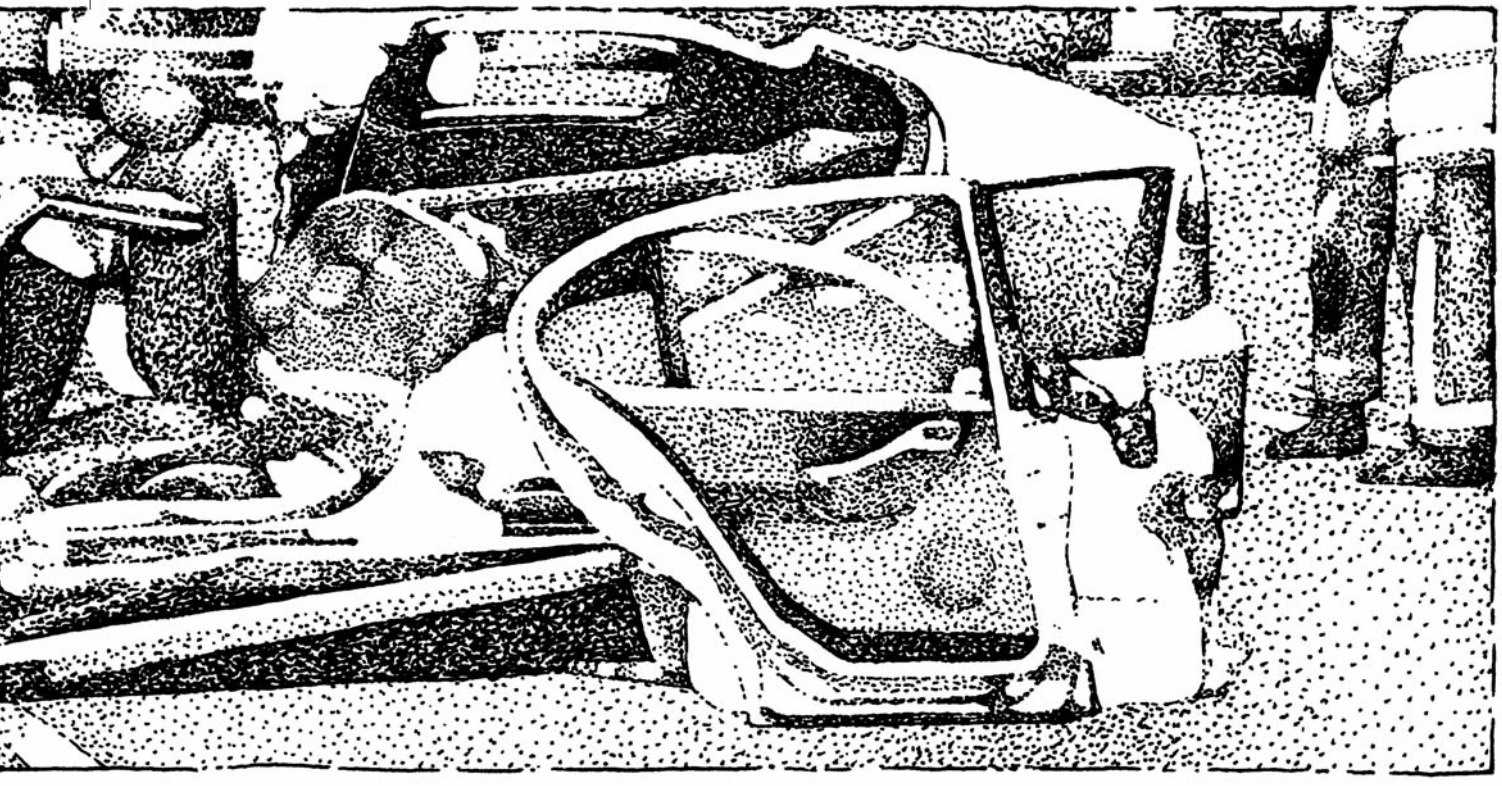

coverage of product recalls, the empirical evidence consistently shows that vehicle factors are neither the cause nor even a contributing factor in the overwhelming majority of crashes. In fact, vehicle crash causation studies demonstrably prove that, when compared to human (e.g., drunk driving, variant speeding, etc.) and environmental factors (e.g., weather, roadway conditions, etc.), vehicle factors are the least common contributory factor in crashes. Yet, some trial lawyers, some politicians (funded by trial lawyers), some self-proclaimed safety "advocates" (also funded by trial lawyers), and too many members of the media (sympathetic to sensationalism) continue to perpetuate the myth of the "out-of-control car" made popular during the 1960s Nader-led *auto-da-fé* of car companies.

In the context of transportation policy — often misleadingly labeled "auto safety," which erroneously implies only the "auto" is involved in traffic safety — technocrats speak on the one hand of "crashworthiness" standards. Those standards refer to engineering features (e.g., airbags, safety belts, collapsible steering columns) aimed at reducing injuries in the event of a crash. This area has been a traditional favorite of government regulators and a coterminous bugaboo of automakers. Since passage of the Safety Act in 1966, which empowers NHTSA to develop FMVSS governing the performance levels for those parts of the vehicle that either most affect safe operation (e.g., brakes, tires, lighting) or protect drivers and passengers in the event of a crash (e.g., safety belts), NHTSA has focused disproportionately on standards intended to protect drivers from their own inability to care for themselves, i.e., standards governing passive safety measures such as the airbag.

Crash prevention measures, on the other hand, focus precisely on those areas directly affecting the driver and thus attempt to prevent the crash from occurring in the first place (e.g., improved braking, better driver training, stricter traffic laws, etc.). By ignoring the benefits of these measures and focusing disproportionate attention on "crashworthiness" measures, U.S. transportation safety policy has held back the United States from attaining the gains in safety seen in other motorized countries, such as Australia, Canada, and the United Kingdom, where safety policy has not emphasized crashworthiness but rather driver responsibility (belt usage laws, strict drunk driver laws, motorcycle helmet mandates, etc.).

For example, according to one of the nation's leading safety experts, Leonard Evans, while other countries during the 1970s and 1980s were following the lead of Canada and Australia by passing mandatory safety belt usage laws, thus reducing fatality rates, NHTSA focused its energy and resources on crashworthiness standards, chief among them the airbag, even though the technical literature documented that airbags could not come close to the effectiveness of safety belts. (Safety belts reduce driver fatality risk by 42 percent and airbags reduce that risk by only 8 percent.) Australia, which even today does not mandate airbags, proudly boasts a 95 percent belt usage rate, which is the highest in the world, along with some of the lowest fatality rates. The first safety belt usage law passed in the United States was in 1984 (New York), long after other countries discovered the importance of driver responsibility.

The results of overemphasizing crashworthiness can be seen in the fatality numbers. According to Evans, from 1979 to 2002, over 200,000 more Americans were killed in crashes than would have been killed if the United States had focused its safety priorities on crash prevention measures found in countries with lower fatality rates.

"Crashworthiness," while continuing to retain its status within the trial bar as one of the key aspects of design defectiveness in products liability law, is actually waning in the NHTSA environment as the government appears to reluctantly acknowledge it has reached the boundary of overregulation. In a speech to the Automotive News World Congress in January 2005, Jeffrey Runge, then-administrator of NHTSA, declared: "We are reaching the point of diminishing returns from efforts on crashworthiness.... We can make big gains by focusing on crash avoidance."

COSTS OF RECALLS

Although the emphasis on crashworthiness is gradually ebbing, one area of regulatory authority remains en vogue: recalls. Paradoxically, legislators and regulators refuse to study the cost-benefit of recalls. Here is a suggested approach for doing so:

The Office of Management and Budget's Circular A-4, released in September 2003, describes "best practices" for "good regulatory analysis." To properly evaluate the benefits and costs of a proposed regulation (in this case, a recall), the analysis must answer the following questions:

- How is the proposed recall expected to provide the anticipated benefits and costs?
- What are the monetized values of the potential real incremental benefits and costs to society?

To answer those questions, the analysis must in turn:

- Explain how the recall is "linked" to the expected benefits (e.g., show how the recall of defective parts will reduce safety risks).
- Identify a baseline, i.e., describe what the world would be like if the recall is not adopted.
- Identify any undesirable side effects and ancillary benefits of the proposed recall; those should be added to the direct benefits and costs as appropriate.

Concerning the second element, the baseline should be the "best assessment of the way the world would look absent the proposed action." An appropriate baseline might require considering the following factors:

- evolution of the market;
- changes in external factors affecting expected benefits and costs;
- changes in regulations promulgated by the agency; and
- the degree of compliance by regulated entities with other regulations.

DIRECT COSTS With those goals in mind, let's get specific. Recall costs are both direct and indirect. Let's consider the direct costs first.

Direct costs can be divided into three areas: pre-recall, recall, and post-recall. Pre-recall costs include legal counsel and management costs to cover in-house attorneys and company management who deal with outside counsel, insurance companies, and NHTSA as part of the recall. Management costs include the time of the recall management person (or group) and of those executives at various levels who are involved in deciding how to frame and execute the recall. Other costs incurred during this period include quality assurance investigations and analyses, warranty reviews, and expert opinions. Note that many of these costs (e.g., legal counsel) continue throughout the recall and post-recall periods.

Recall costs are those costs central to the recall. Conceptually, the recall can be thought of in two ways: notification and remedy. The notification costs are the costs of notifying consumers, either directly through letters or through other means such as media notices or announcements in retail stores. These costs also include notifying NHTSA, distributors, and dealers. The remedy costs are the cost of designing, tooling, manufacturing, and distributing replacement parts as well as all accompanying labor costs. Parts costs should include the price of the replacement part, shipment, and storage of the part. Note that suppliers or contractors may need to work overtime on short notice, which could potentially raise recall costs significantly. Labor costs include both the cost of workers to produce the replacement part for the recall as well as the cost of dealership personnel to perform the repair.

Post-recall costs include the ongoing costs involved in monitoring the effectiveness of the recall. Those costs include monitoring the response rates and providing quarterly reports on response rates to NHTSA. Other such costs include retaining all official documents, including warranty claims, mailing lists, drawings, owner's manuals, labels, suppliers' documents (purchase orders, invoices, etc.), shipping documents, press releases, and correspondences. NHTSA's record-retention period is five years.

NHTSA estimates (rather conservatively) that the direct costs average $100 per vehicle per recall. Not including the indirect costs, that would mean that automakers spent around $3 billion in 2004 to fix safety defects or non-compliances.

At best, NHTSA's estimates are crude and too low. They fail to consider any indirect costs (described below), which often exceed direct costs. And they fail to consider the costs placed on consumers.

For example, here's a way to calculate the costs to consumers of safety recalls. Using 2004 recall data, let's assume that 30 million vehicles are recalled in a given year. On average, let's say that consumers drive 10 miles each way to their dealership. Assuming customers make a separate trip to their dealership to have their vehicles repaired, that means that consumers drive 600 million miles to repair safety-related defects.

Using the 2004 fatality rate of 1.44 per 100 million vehicle-miles traveled, just complying with all the recalls can be expected to kill 4.32 people. Considering the number of recalls conducted to fix questionable "safety" defects — think of the GM recall to fix the audible safety belt warning chime — it is certainly worth asking whether, in the aggregate, more lives are put at risk by recalls than are saved by recalls.

Taking the analysis further, let's assume that the recalled class of vehicles, which includes trucks and cars, averages 22 miles per gallon. At that rate, it would take more than 27 million gallons of fuel just to bring the vehicles to and from the dealership. If gas costs an average of $2.75 per gallon, the cost to consumers for fuel alone exceeds $75 million. Ironically, NHTSA is also charged under the Corporate Average Fuel Economy statute to help reduce the country's dependence on foreign oil by encouraging — through regulation — fuel-efficient vehicles. By insisting on so many unneeded recalls, however, NHTSA is undermining this very purpose of reducing fuel consumption.

Other costs include the cumulative effect of depreciation affecting the recalled class of vehicles. Vehicles with more mileage are by and large worth less than vehicles with less mileage.

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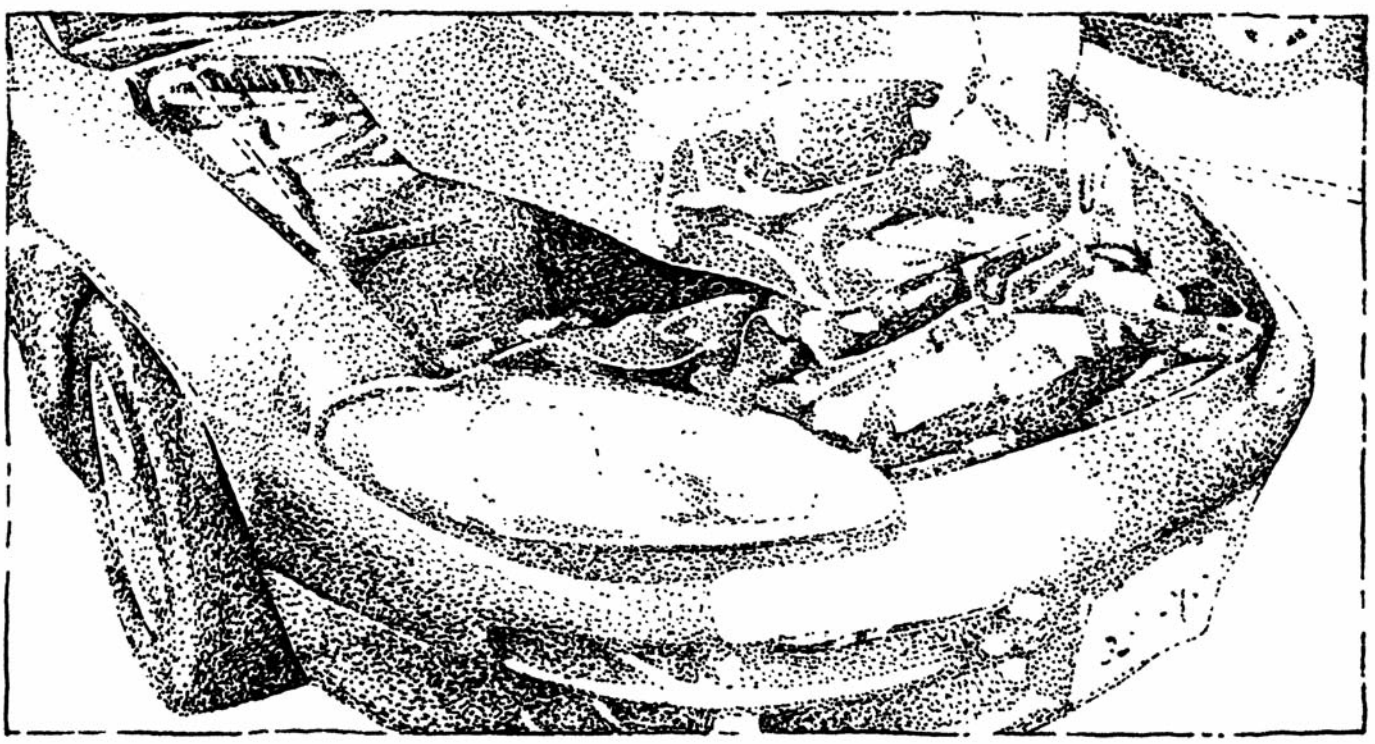
INDIRECT COSTS Indirect costs of a recall include the automaker's loss in goodwill or reputation, also known as brand damage. Nicholas Rupp, an economist at East Carolina University, attempted to quantify those costs in a 2004 *Review of Industrial Organization* paper. Using safety recall data from 1973 to 1998, Rupp attempted to isolate what particular aspects of safety recalls can cause "significant" shareholder losses. He explains his approach thus: "After constructing an equally-weighted automotive market index to control for industry effects and adjusting abnormal returns for the degree of surprise in the *Wall Street Journal* announcements, the study estimate[d] the effect of recalls on both percentage and real dollar abnormal returns." In plain English, he compared the stock prices of domestic automakers and American Depository Receipts prices for Japanese companies on the day before and the day after a safety recall was announced in the *Wall Street*



Journal. (No European automakers were studied.)

Rupp found that one of the factors having the most influence on shareholder losses was which defective component needed repair. Recalls affecting airbags, exhaust systems, and steering were shown to be "significantly more costly" for automakers, whereas recalls affecting defective heaters, for example, are "significantly less costly." He explains the difference is due to the hazard, i.e., the typical heater defect poses less of a hazard to safety than a defect affecting airbags or exhaust systems.

Another factor found to negatively influence share price was the age of the affected vehicles. Recalls affecting current- and one-year-old model-year vehicles have triggered smaller (albeit "marginally" smaller) shareholder losses than vehicles that are more than one model-year old. Rupp points out that older model-year vehicles pose a greater liability threat for automakers "because these defects have had a longer time to cause consumer injuries." That may be true, but it is worth noting that 90 percent of safety recalls are issued within the first three model-years of vehicle introduction, so the overwhelming majority of recalls will fall into the "marginally smaller" shareholder loss category.

Yet another factor found to have a negative effect on shareholder value is whether the recall is the first for the affected vehicles (initial recalls cost more). If so, then share prices can be expected to drop more than if the recall is the second, third, etc., for the model.

A last factor found to have a negative effect on shareholder value is whether the recalls affect companies with high financial stability. Companies with the "highest financial stability" — as measured by Moody's Bond Record for corporate bond ratings (e.g., AAA-, AAA, or AAA+) — suffer the greatest shareholder losses from auto recalls. Rupp found that "companies in excellent financial shape (AAA bond rating) experience a loss of between -0.26 and -0.28% after a *Wall Street Journal* recall announcement, which is similar in magnitude to an initial recall." In terms of real adjusted abnormal dollar returns, companies with the highest bond ratings experienced a $42.8 million average loss in shareholder value following a recall announcement.

Rupp's study assumes, of course, that the market hasn't processed auto safety recall information until publication in the *Wall Street Journal*. Considering the speed and channels (e.g., Internet) at which information is transmitted, however, this assumption is a little shaky. That being said, his findings are a first of their kind.

An interesting observation in his research is that there's "no evidence" that recalls that were conducted in response to a NHTSA investigation are more damaging to shareholders than recalls voluntarily undertaken by manufacturers, even those undertaken without any preliminary evaluation. (Note to automakers: public relations aspects aside, perhaps it *is* worth fighting NHTSA over possible recalls, at least at the administrative stages.)

In calculating costs, Rupp found that "the indirect costs of automotive recalls are likely larger than the direct costs." That sentence bears repeating: the indirect costs of recalls exceed the direct costs. Using the conservative NHTSA estimate would place the indirect costs at more than $3 billion in 2004 alone, not including the costs to consumers. So total recall costs in 2004 alone exceeded $6 billion, not including the costs to consumers.

BENEFITS OF RECALLS

The cost side is only half of the analysis. The other side is benefits. As with cost, the OMB "best practices" circular is highly instructive on how to measure benefits. "In constructing measures of "effectiveness," says the OMB, "final outcomes, such as

lives saved or life-years saved, are preferred to measures of intermediate outputs, such as crashes avoided." Besides "lives saved," other, more comprehensive, "integrated" measures of effectiveness are the number of "equivalent lives" saved and the number of "quality-adjusted life years" saved.

According to the OMB, a chief advantage of the integrated measures of effectiveness "is that they account for a rule's impact on morbidity (nonfatal illness, injury, impairment, and quality of life) as well as premature death." Including morbidity effects is necessary for a number of reasons, including:

- Some illnesses (e.g., asthma) cause more instances of pain and suffering than they do premature death.
- Population groups are known to experience elevated rates of morbidity (e.g., the elderly and the poor) and thus have a strong interest in morbidity measures.
- Some regulatory alternatives may be more effective at preventing morbidity than premature death (e.g., some advanced airbag designs may diminish the nonfatal injuries caused by airbag inflation without changing the frequency of fatal injury prevented by airbags).

Unfortunately, when it comes to auto recalls, very little research has been conducted on the quantitative effect of recalls on traffic safety. Yong-Kyun Bae and Hugo Benítez-Silva, both economists at the State University of New York, Stony Brook, undertook such analysis in a 2005 paper. I am skeptical of their findings, as I explain below, but their research merits consideration.

Using a statistical method that groups individual drivers by types in order to produce synthetic panel data, the authors analyze the effect of recalls on accidental harm, which is measured by the number of crashes. Their results indicate that safety recalls reduce the number of crashes by a stunning 20 percent for vehicles that undergo the recall repair. The drop differs by vehicle make. For non-U.S. makes, the reduction is estimated at 16.5 percent; for U.S. makes, the reduction is estimated at 21.1 percent. Further, recalls for defects that the authors deem "hazardous" are purportedly even "more effective" in reducing crashes, reducing them by 25 percent for the vehicles that undergo the recall repair. Again, the drop in reduction differs by make, but this time the foreign cars experience the larger drop — nearly 40 percent — while domestics drop about 19.3 percent. Finally, the authors claim that recalled vehicles with higher correction response rates have fewer crashes three years after the recall than vehicles with lower correction response rates. They find that higher correction rates of a recall are correlated with lower numbers of crashes of the recalled model in the three years following the recall. They conclude that "recalls reduce accidents, and that correction rates do matter."

One weakness of the study, acknowledged by the authors, is that they can't rule out that the drop in crash rate isn't due either to changes in driver habits or in the vehicle miles traveled as a vehicle ages. Perhaps motorists drive differently, or for fewer miles, after having their vehicles repaired to correct a safety defect, and perhaps the change in driving behavior is what could explain the drop in the number of observed crashes. Heeding a recall notice may also be indicative of personal behavior that is more safety conscious. Conversely, ignoring a recall notice may mean that the vehicle owner is more prone to risky behavior, including bad driving behavior.

Another problem with this study is that, if recalls reduce vehicle crashes by 20 percent, we'd expect some sort of drop in deaths or injuries for years in which a larger number of cars are recalled. Yet the fatality numbers stay fairly constant — exceeding 40,000 every year. Moreover, if recalls were so successful in dropping fatality rates, the United States should have the safest roads in the world; after all, more auto recalls are conducted in the United States than any other country. Yet the United States still lags far behind every major motorized country in terms of fatality rates. Hence my skepticism of the Bae and Benítez-Silva findings and my continued concern about the cost-benefit of U.S. vehicle recalls, as well as the relative inattention that the United States gives to improving driver safety.

CONCLUSION

Despite the enormous costs to society, the benefits of rapid and flexible transportation are almost unquantifiable. Every type of transportation entails some risk of harm. Motor vehicle travel is the primary means of transportation in the United States, providing an unprecedented degree of mobility. The primary goal of transportation, which is the effective movement of goods and people, is better served by ever-increasing speeds. The value added to the U.S. gross domestic product by the truck transportation industry alone exceeds $104 billion. That number coincides with the fact that trucks are the only means of freight delivery to nearly 80 percent of communities within the United States.

Yet those benefits come at enormous costs to society. Reducing the costs, both in terms of lives and economics, should be the primary mission of transportation safety policy. In rare cases, recalls can save lives and reduce injuries. In many cases, recalls just generate additional costs with little or no benefit. It's time for NHTSA to understand the costs and benefits associated with auto recalls. R

Readings

- "Cost Per Life Saved by the Federal Motor Vehicle Safety Standards," by Charles J. Kahane. NHTSA Technical Report # DOT HS 809 835, December 2004.
- "Do Vehicle Recalls Reduce the Number of Accidents? The Case of the U.S. Car Market," by Yong-Kyun Bae and Hugo Benítez-Silva. SUNY-Stony Brook working paper, 2005.
- *Shifting Out of Park: Moving Auto Safety from Recalls to Reason*, by Kevin M. McDonald. Lawyers & Judges Publishing Co., 2006.
- "The Attributes of a Costly Recall: Evidence from the Automotive Industry," by Nicholas G. Rupp. *Review of Industrial Organization*, Vol. 25 (2004).
- *The Struggle for Auto Safety*, by Jerry L. Mashaw and David L. Harfst. Harvard University Press, 1990.
- *Traffic Safety*, by Leonard Evans. Science Serving Society, 2004.