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Killer Airbags

Federal law requires that new cars be equipped with devices that kill drivers and passengers. If this sounds odd, the story gets stranger when you realize these devices are supposed to—and sometimes do—*save* lives. The devices in question are airbags, and their saga illustrates almost all of the important principles you should know to understand the economics of public issues.

The airbag story begins in 1969, when the Nixon Administration first proposed requiring “passive” restraints that would protect motorists during collisions even if they took no actions to protect themselves. The ideal system was thought to be airbags that would automatically inflate in the event of a collision. But a special government study commission found the airbags then available were not only extremely costly and unreliable but were in fact dangerous to the occupants of cars, especially to young children.¹ So, instead of airbags, the government tried requiring seat belts that prevented cars from being started unless the belts were fastened. Inconvenienced consumers who disliked seat belts quickly rejected these, and the idea of airbags was revived and eventually mandated by the federal government. In anticipation of the requirements that 1998 cars have them on both the driver and

¹*Cumulative Regulatory Effects on the Cost of Automobile Transportation (RECAT): Final Report of the Ad Hoc Committee, Office of Science and Technology, Washington, D.C., 1972.*

passenger sides, carmakers began installing airbags on selected models in 1989. By 1997, more than 65 million cars had driver-side bags, and about 35 million had them on the passenger side, too.

At first it seemed as though the earlier problems with airbags had been solved. The installed cost of about \$400 apiece was far less than it would have been when the bags were initially proposed, and their reliability was dramatically increased. News reports soon began appearing with stories of seemingly miraculous survival by occupants of airbag-equipped cars in collisions. By the end of 1995, it was estimated that airbags had saved more than 1500 lives since 1989.

As the population of cars with airbags grew, however, another set of stories began to appear: Airbags deploy at speeds up to 200 mph and are designed to be most effective when used in conjunction with seat belts. It soon became apparent that people who failed to use belts, people who sat closer than the normal distance from the steering wheel or dashboard, and—most ominously—children anywhere in the front seat were at increased risk of serious injury or death due to airbag deployment. By late 1997 it was estimated that although a total (since 1989) of perhaps 2600 people owed their lives to airbags, there were more than 80 people, most of them children, who had been killed by the force of normally deploying airbags.

The outcry over the deaths of children killed in low-speed crashes by the very devices that were supposed to protect them generated action by both the private sector and the federal government. Auto manufacturers and their suppliers began developing “smart” airbags that will sense the severity of a collision, the size of the person in the front seat, and whether the person is properly belted. Then, depending on the results of those measurements, the bag will decide whether to deploy and at what speed it will do so. As an interim solution, in November 1997 (four and a half years after the first documented airbag fatality) the Department of Transportation announced that consumers would be allowed to apply for permission to have airbag cutoff switches installed in their vehicles. The estimated cost to consumers who have the switches installed is \$150 to \$200 per car.

What can we learn from the airbag episode that will guide us in thinking about other public issues of our times? There are several general principles:

1. *There is no free lunch.* Every choice, and thus every policy, entails a **cost**—something must be given up. In a world of scarcity, we cannot have more of everything, so to get more of some things, we must give up other things. Simply put, we face trade-offs. In this case, although airbags increase the safety of most adults, there is both a monetary cost of \$800 per car and a reduced level of safety for children riding in the front seat.

2. *The cost of an action is the alternative that is sacrificed.* Economists often express costs (and benefits) in terms of dollars, because this is a simple means of accounting for and measuring them. But that doesn't mean costs have to be monetary, nor does it mean economics is incapable of analyzing costs and benefits that are very human. In the case of airbags, the cost that induced action by consumers, manufacturers, and government officials was the lost lives of dozens of children.

3. *The relevant costs and benefits are the marginal (or incremental) ones.* The relevant question is not whether safety is good or bad; it is instead how much safety we want—which can only be answered by looking at the added (or marginal) benefits of more safety compared to the added (marginal) costs. One possible response to the child fatalities would have been to outlaw airbags on new cars and mandate that all installed airbags be deactivated. That would have guaranteed that no more children would have been killed by airbags. But for many people (such as those without young children), this solution to airbag fatalities would not be sensible, because the marginal cost would exceed the marginal benefit.

4. *People respond to incentives.* A rise in the apparent costs of using airbags (due to airbag fatalities among children) reduced consumers' desire to utilize airbags and induced them to put pressure on the federal government—pressure that convinced the Department of Transportation to change the regulations. Moreover, the simultaneous rise in the rewards to developing alternatives to today's airbags sent suppliers scurrying to find those alternatives, including "smart" airbags.

5. *Policies always have unintended consequences, and as a result, their net benefits are almost always less than anticipated.* Information, like all goods, is costly to obtain, and sometimes the cheapest way to learn more about something is simply to try it. When it is tried, new things will be learned, not all of them pleasant. More importantly, in the case of government regulations,

Principle 3 (above) fails to make good headlines. Instead, what gets politicians reelected and regulators promoted are fundamental, *absolute* notions, such as "safety" (and motherhood and apple pie). Thus, if a little safety is good, more must be better, so why not simply mandate that all front-seat passengers in all cars be protected by airbags that are all the same? Eventually, the reality of Principle 3 sinks in, but in this case not before dozens of children had lost their lives.

Although these basic principles of public issues are readily apparent when looking at the children who have been killed by airbags, they are just as present in two other features of airbags—neither of which has received much attention. First, most airbag deployments occur in relatively low-speed accidents (under 30 miles per hour), when the added safety benefits to properly belted occupants is low. But once the bags are deployed, they must be replaced, and often so must the windshield (blown out by the passenger-side bag) and sometimes even the dashboard (damaged as the airbag deploys). The added repair cost per car is currently estimated to be between \$2000 and \$2500. Thus, not only are automobile repair costs soaring due to airbags, many cars that routinely would have been repaired are now being written off completely because it is too costly to fix them.

Second, and more significantly, cars that are airbag-equipped tend to be driven more aggressively, apparently because their occupants feel more secure. The result is more accidents by such cars, more serious accidents (such as rollovers) that kill occupants despite the airbags, and a higher risk of pedestrian fatalities—none of which are accounted for in the 2600 lives-saved figure that we quoted earlier.² In addition, when seat belts are worn, they are almost as good as airbags in preventing fatalities among automobile occupants. Belts reduce the fatality rate by 45%; adding an airbag increases this only to 50%. The net effect is that even though airbags are both better and less costly than they were when first proposed, it is still not clear they yield benefits that exceed their costs.

²Steven Peterson, George Hoffer, and Edward Millner, "Are Drivers of Air-Bag-Equipped Cars More Aggressive? A Test of the Offsetting Behavior Hypothesis," *The Journal of Law & Economics*, October, 1995, pp. 251–264.

QUESTIONS

1. Under what circumstances is it appropriate to trade off human lives against dollars when making decisions about safety?
2. Do you think government action allowing airbag deactivation would have been as swift or as likely if all the fatalities had been among adults rather than chiefly among small children? (Some of the airbag-induced fatalities were petite women who were sitting closer to the steering wheel than allowed for in the design calculations done on the basis of the seating behavior of the average male.)
3. Given estimates that 2600 lives had been saved by airbags, why did it take only 80 airbag-induced fatalities (rather than, say, 2600) to get the government to change the regulations?
4. Most people—and without any government regulation requiring it—have locks on their doors to protect them from intruders. If airbags are so good at protecting people from injuries and death, why were government regulations required to get them installed on automobiles?

2

Terrible Trade-off

How would you rather die? Due to a lethal reaction to a drug prescribed by your doctor? Or because your doctor failed to prescribe a drug that would have saved your life? If this choice is one you would rather not make, consider this: Employees of the United States Food and Drug Administration (FDA) make that decision on behalf of millions of Americans many times each year. More precisely, the FDA decides whether new medicines (prescription drugs) should be allowed to go on sale in the United States. If the FDA decides to allow a drug to be sold, doctors may prescribe it, in the expectation that the beneficial effects of the drug will outweigh whatever adverse side effects the drug may have. But if the FDA prohibits the drug from being sold in the United States, doctors here may not legally prescribe it, even if thousands of lives are saved by the drug each year in other countries.

The FDA's authority to make such decisions dates back to the passage of the Food and Drug Safety Act of 1906. That law required, among other things, that medicines be correctly labeled as to their contents and that they not contain any substances poisonous or harmful to the health of consumers. Because of this legislation, Dr. Hostatter's celebrated Stomach Bitters and Kickapoo Indian Sagwa, along with numerous rum-laden concoctions, cocaine-based potions, and supposed anticancer remedies, disappeared from druggists' shelves. The law was expanded in 1938 with the passage of the federal Food, Drug, and Cosmetic Act, which forced manufacturers to demonstrate the safety of new drugs before being allowed to offer them for sale. (This legislation was driven by the deaths of 107 individuals who had taken an elixir of sulfanilamide, which happened to contain diethylene glycol, a poisonous substance usually contained in antifreeze.)