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Flying the Friendly Skies?

Most of us hop into our cars with little thought for our personal safety beyond, perhaps, the act of putting on seat belts. Yet even though travel on scheduled, commercial airlines is far safer than driving to work or to the grocery store, many people approach air travel with a sense of foreboding, if not downright fear.

If we were to think carefully about the wisdom of traveling 600 miles per hour in an aluminum tube 7 miles above the earth, several questions might come to mind: How safe is this? How safe should it be? Since the people who operate airlines are not in it for fun, does their interest in making a buck ignore our interest in making it home in one piece? Is government regulation the only way to ensure safety in the skies?

The science of economics begins with one simple principle: We live in a world of scarcity. As a result, to get more of any good, we must make some sacrifice of other goods. This is just as true of safety as it is of pizzas or haircuts or works of art. Safety confers benefits (we live longer and more enjoyably), but achieving it also entails costs (we must give up something to obtain that safety).

As the degree of safety rises, the total benefits of safety rise but the marginal (or incremental) benefits of additional safety decline. Consider a simple example: Having four exit doors on an airplane instead of three increases the number of people who can escape in the event of an emergency evacuation. Similarly, having five doors rather than four would enable still more people to evacuate safely. In both cases, more doors mean more people evacuated without injury, so the total benefits from safety rise with the number of doors. Nevertheless, the fifth door adds less in safety benefits than does the fourth door; if the fourth enables, say, an extra ten people to escape, the fifth may enable only an extra six to escape. (If this sounds

implausible, gine having a door for each person; the last door added will e e at most one more person to escape.) So we say that the mar l (or incremental) benefit of safety declines as the amount of sa increases.

Let's loo w at the other side of the equation: As the amount of safety incr s, both the total and the marginal (or incremental) costs of prov g safety rise. Having a fuel gauge on the plane's instrument pa clearly enhances safety, because it reduces the chance that t lane will run out of fuel while in flight.[1] It is always possible that iel gauge will malfunction, so having a backup fuel gauge also a o safety. Because having two gauges is more costly than having j one, the total costs of safety rise as safety increases. It is also clea owever, that although the cost of the second gauge is (at least) a eat as the cost of the first, the second gauge has a smaller posit impact on safety. Thus, the cost per unit of additional (or in ental) safety is higher for the second fuel gauge than for the f

How mu afety should we have? For an economist, the answer to such uestion is generally expressed in terms of marginal benefits and rginal costs. The economically efficient level of safety occurs en the marginal costs of increasing safety would just exceed t narginal benefits of that increased safety. Consider the example loors on an airplane. Suppose that having a fourth door confers million in benefits, whereas the cost of adding the door amount only $300,000. The net benefit of having the door is $700,000, an om an economic standpoint, it is efficient to have the fourth d Contrast this with the prospect of having thirteen doors on an lane. Suppose that the thirteenth door confers efits of $150, but that the cost of adding the thirteenth door is $900,000. In case, the additional benefits of the door are less than the ad nal costs. Adding the door costs more than it is worth, so the r should not be added.

In gener e efficient level of safety will not be perfect safety, because perf on is simply too costly to achieve. For example, to

[1] Notice that we reduces" rather than "eliminates." In 1978 a United Airlines pilot preoccupied wit alfunctioning landing gear evidently failed to pay sufficient attention to his cockp ges. Eight people were killed when the plane was forced to crash land after runnin of fuel.

be absolutely *certain* that no one is ever killed or injured in an airplane crash, we would have to prevent all travel in airplanes. This does not mean that it is efficient to have airplanes dropping out of the sky like autumn leaves. It does mean that it is efficient for there to be *some* risk associated with air travel. The unavoidable conclusion is that if we wish to enjoy the advantages of flying, we must be willing to accept some risk—a conclusion that each of us implicitly accepts every time we step aboard an airplane.

Changes in circumstances can alter the efficient level of safety. For example, if a technological change reduces the costs of manufacturing and installing airplane doors, the marginal costs of providing a safe means of exit will be lower. Hence, it will be efficient to have more doors installed, implying that air travel will become safer. Similarly, if the marginal benefits of safety rise for some reason—perhaps because the president of the United States is on board—it could be efficient to take more precautions, resulting in safer air travel. Given the factors that determine the benefits and costs of safety, the result of a change in circumstances will be some determinate level of safety that generally will imply some risk of death or injury.

Do airlines in fact provide the efficient level of safety? If information were free, the answer to this question would have to be "yes." Consumers would simply observe the levels of safety provided by different airlines and the prices they charge, and select the degrees of safety that best suited their preferences and budgets—just as with other goods. But, of course, information is not free; it is a **scarce good,** costly to obtain. As a result, it is possible that passengers are unaware of the safety records of various airlines, just as they may be unaware of the competency of pilots and the maintenance procedures of an airline's mechanics. The fact that information about safety is not free has been used to argue that it is appropriate for the federal government to mandate certain minimum levels of safety, as it does today through the operation of the Federal Aviation Administration (FAA).

The argument in favor of government safety standards rests on the presumption that, left to their own devices, airlines would provide less safety than passengers actually want to have. This might happen, for example, if customers could not tell (at a reasonable cost) whether the equipment, training, procedures, and so

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y an airline are safe. For example, how many airline
experts in metal fatigue or are knowledgeable about
training required to pilot a 747? If passengers cannot
the level of safety, they will not be willing or able
nes for being safe or punish them for being unsafe.
ple analogy: How much would you pay for a new set
clothes were invisible? Not much, we would guess,
e an egotistical emperor. Hence, the reasoning goes,
to provide and consumers are unwilling to pay for it
nnot accurately measure it; thus airlines provide too
conclusion, at least as reached by some, is that we
ody of government experts—such as the FAA—set
s for the industry.

usion seems plausible, but it ignores two simple
w is the government to know what the efficient level
sume for the moment that the FAA employs persons
s in metal fatigue, pilot training, maintenance proce-
. Assume also that the FAA knows (1) the impact of
n the likelihood of deaths and injuries due to plane
) exactly how much it costs to implement various
nents.[2] The FAA still does not have enough informa-
ient safety standards because it does not know the
ple place on safety. Without such information, the
y of assessing the benefits of additional safety and
f knowing whether those benefits are greater or less

point is perhaps more fundamental. It is likely that
y interested in reaching their destinations safely and
hey got there because of a good plane, a good pilot,
anic. Even if they cannot observe if an airline hires
bad pilots, they can observe whether that airline's
ly or crash—if for no other reason than because air-

[2] Many people w
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I argue that these assumptions presume that the FAA knows more
y know; we make the assumptions only to present the case for gov-
lations in the best light.

[3] Even if FAA e
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rts know how much *they* benefit from additional safety, how are
uch *you* benefit?

plane crashes are the subject of intense media scrutiny. If
that is important to consumers—and not the obscure,
measure set of reasons for that safety—the fact that
cannot easily measure metal fatigue in jet engines may b
relevant to the process of achieving the efficient level o
you know that an airline's planes have a nasty habit
mountains, do you really care whether it is because t
have bad eyesight or because their planes have no altim
rs?

Interestingly, evidence shows that consumers *are* co
the safety performance of airlines, and that they puni
that perform in an unsafe manner. Researchers have
when an airline is at fault in a fatal plane crash, consum
to downgrade their safety rating of the airline (i.e., revi
their estimates of the likelihood of future fatal crashes)
result, the offending airline suffers substantial, adverse fin
sequences, over and above the costs of losing the plane
sued on behalf of the victims. Although these research
not guarantee that airlines provide the efficient level of
do reveal that the market punishes unsafe performance
ing a striking degree of safety awareness on the part of
ignorant consumers. If consumers (who are, after all, th
judges of the value of their own safety) can accurately a
judge the outcomes of the safety procedures followed
ignorance about the nature of those procedures may be
to the provision of the efficient level of safety.

We began this chapter by observing that, all things
air travel is considerably safer than automobile travel, a f
had a peculiar consequence in recent years. Air travel h
much less expensive over the past twenty years. As a
sumers have been driving less and flying more; in fact,
twice as many people are flying now as in the late 197
traveling on scheduled, commercial airlines is safer than
automobile, this switch in travel modes is estimated to h
cantly reduced annual highway accidents, injuries, a
Sometimes, fact really is stranger than fiction.

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[4] Mark L. Mitchell and Michael T. Maloney, "Crisis in the Cockpit? The F
Forces in Promoting Air Travel Safety," *Journal of Law & Economics*,

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