

SEPTEMBER 10, 2014 | NUMBER 755

Responsible Counterterrorism Policy

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EXECUTIVE SUMMARY

Terrorism is a hazard to human life, and it should be dealt with in a manner similar to that applied to other hazards—albeit with an appreciation for the fact that terrorism often evokes extraordinary fear and anxiety. Although allowing emotion to overwhelm sensible analysis is both understandable and common among ordinary people, it is inappropriate for officials charged with keeping them safe. To do so is irresponsible, and it costs lives.

Risk analysis is an aid to responsible decisionmaking that has been developed, codified, and applied over the past few decades—or in some respects centuries. We deal with four issues central to that approach and apply them to the hazard presented by terrorism: the cost per saved life, acceptable risk, cost–benefit analysis, and risk communication.

We also assess the (very limited) degree to which risk analysis has been coherently applied to counterterrorism efforts by the U.S. government in making or evaluating decisions that have cost taxpayers hundreds of billions of dollars.

At present, the process encourages decisionmaking that is exceptionally risk averse. In addition, decisionmakers appear to be overly fearful about negative reactions to any relaxations of security measures that fail to be cost-effective and also about the consequences of failing to overreact.

If other uses of the funds available would more effectively save lives, a government obliged to allocate money in a manner that best benefits public safety must explain why spending billions of dollars on security measures with very little proven benefit is something other than a reckless waste of resources.

“Officials serving the public are tasked at the most fundamental level to spend funds in a manner that most effectively and efficiently keeps people safe.”

INTRODUCTION

As declared in the first sentence of the American Constitution and throughout the work of Thomas Hobbes, a key reason for founding governments is to “insure domestic Tranquility.” Accordingly, officials serving the public are tasked at the most fundamental level to spend funds in a manner that most effectively and efficiently keeps people safe.

Doing so is neither easy nor precise, and the funds available for that purpose are, of course, limited. Moreover, distortions inevitably stem from public and personal emotion and from political pressures. But, to the degree possible, the task should be carried out systematically and professionally. To do otherwise is irresponsible and costs lives.

Terrorism is a hazard to human life, and it should be dealt with in a manner similar to that applied to other hazards—albeit with an appreciation for the fact that terrorism often evokes extraordinary fear and anxiety. However, although allowing emotion to overwhelm sensible analysis is both understandable and common among ordinary people, it is not appropriate for officials charged with—and responsible for—keeping them safe. As Cass Sunstein puts it, “If people’s values lead them to show special concern with certain risks, government should take that concern into account.” But “any official response should be based on a realistic understanding of the facts,” not on “factual mistakes.”¹

Risk analysis is an aid to responsible decisionmaking that has been developed, codified, and applied over the past few decades—or in some respects centuries.² In this paper, we deal with four issues central to that approach and apply them to the hazard presented by terrorism: the cost per saved life, acceptable risk, cost–benefit analysis, and risk communication. We also assess the (very limited) degree to which risk analysis has been coherently applied to counterterrorism efforts by the government—particularly by the U.S. government—in making or evaluating decisions that have cost taxpayers hundreds of billions of dollars over the past dozen years. We find that the process encourages decisionmaking on counterterrorism that is exceptionally risk averse. Decisionmakers also appear to be overly fearful of negative reactions to any relaxations of security measures that fail to be cost-effective, as well as of the consequences of failing to overreact.

COST PER SAVED LIFE

When regulators propose a new rule or regulation to enhance safety, they are routinely required to estimate how much it will cost to save a single life under their proposal. Table 1 supplies information about how that calculation comes out for dozens of government rules and regulations in the United States.

The results are anything but tidy, and they often reflect psychological and political as-

Table 1
Regulatory Expenditure per Life Saved

Regulation	Year	Agency	Cost per Life Saved (in 2010 dollars)
Steering column protection standards	1967	NHTSA	140,000
Unvented space heater ban	1980	CPSC	140,000
Seatbelts and air bags	1984	NHTSA	140,000
Aircraft cabin fire protection standard	1985	FAA	140,000
Underground construction standards	1989	OSHA	140,000
Auto fuel system integrity	1975	NHTSA	710,000

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Table 1 *Continued*

Regulation	Year	Agency	Cost per Life Saved (in 2010 dollars)
Trihalomethane in drinking water	1979	EPA	850,000
Aircraft seat cushion flammability	1984	FAA	850,000
Alcohol and drug controls	1985	FRA	850,000
Aircraft floor emergency lighting	1984	FAA	990,000
Concrete and masonry construction	1988	OSHA	990,000
Passive restraints for trucks and buses	1989	NHTSA	1,100,000
Children's sleepwear flammability ban	1973	CPSC	1,400,000
Auto side-impact standards	1990	NHTSA	1,400,000
Metal mine electrical equipment standards	1970	MSHA	2,400,000
Trenching and evacuation standards	1989	OSHA	2,600,000
Hazard communication standard	1983	OSHA	2,700,000
Trucks, buses, and multipurpose vehicle side impact	1989	NHTSA	3,700,000
Grain dust explosion prevention	1987	OSHA	4,700,000
Rear lap and shoulder belts for autos	1989	NHTSA	5,400,000
Standards for radionuclides in uranium mines	1984	EPA	5,800,000
Ethylene dibromide in drinking water	1991	EPA	9,700,000
Asbestos occupational exposure limit	1972	OSHA	14,000,000
Benzene occupational exposure limit	1987	OSHA	15,000,000
Electrical equipment in coal mines	1970	MSHA	15,800,000
Arsenic emission standards for glass plants	1986	EPA	22,900,000
Covering or moving of uranium mill tailings	1983	EPA	76,100,000
Acrylonitrile occupational exposure limit	1978	OSHA	87,000,000
Coke ovens occupational exposure limit	1976	OSHA	107,400,000
Arsenic occupational exposure limit	1978	OSHA	180,800,000
Asbestos ban	1989	EPA	187,200,000
1,2-dichloropropane in drinking water	1991	EPA	1,103,900,000
Hazardous waste land disposal ban	1988	EPA	7,084,000,000
Municipal solid waste landfills	1988	EPA	32,300,000,000
Formaldehyde occupational exposure limit	1987	OSHA	145,723,000,000
Atrazine/alachlor in drinking water	1991	EPA	155,640,000,000

Source: Adapted by Mark Stewart from W. Kip Viscusi, "The Value of Life in Legal Contexts: Survey and Critique," *American Law and Economics Review* 2, no. 1 (2000): 195–222.

Note: CPSC = Consumer Product Safety Commission; EPA = Environmental Protection Agency; FAA = Federal Aviation Administration; FRA = Federal Railroad Administration; MSHA = Mine Safety and Health Administration; NHTSA = National Highway Traffic Safety Administration; OSHA = Occupational Safety and Health Administration.

“In general, regulators and administrators tend to be unwilling to spend more than \$1 million to save a life, and they are very reluctant to spend more than \$10 million, preferring instead to expend funds on measures that save lives at a lower cost.”

pects of risk perception or electoral and lobbyist pressure. However, some general tendencies and limits have been established over time. Thus, looking over such data, Elisabeth Paté-Cornell suggests that a ceiling of \$3 million per life saved (inflation adjusted to 2010 dollars) seems roughly appropriate—though a number of entries in the table are substantially, even spectacularly, higher.³ But in general, she finds that regulators and administrators tend to be unwilling to spend more than \$1 million to save a life, and they are very reluctant to spend more than \$10 million, preferring instead to expend funds on measures that save lives at a lower cost.

That approach can be, and more recently has been, expanded to embrace deaths by terrorism. In a study for the Department of Homeland Security (DHS), Lisa Robinson and her colleagues conclude that the best estimate of a value of a saved human life for homeland security analysis would be about \$7 million in 2013 dollars.⁴ Most studies focus on relatively common risks, such as workplace or motor vehicle accidents, and the Robinson study goes on to suggest that “more involuntary, uncontrollable, and dread risks may be assigned a value that is perhaps twice that of more familiar risks” or some \$14 million. That approach essentially adds into the analysis much of the substantial indirect and ancillary costs, including emotional ones, associated with a terrorist event.

As will be discussed more fully later, the United States spends about \$100 billion per year seeking to deter, disrupt, or protect against domestic terrorism. If each saved life is valued at \$14 million, it would be necessary for the counterterrorism measures to prevent or protect against between 6,000 and 7,000 terrorism deaths in the country each year, or twice that if the lower figure of \$7 million for a saved life is applied.

Those figures seem to be very high. The total number of people killed by terrorists within the United States is very small, and the number killed by Islamist extremist terrorists since 9/11 is 19, or fewer than 2 per year. That is a far cry, of course, from 6,000 to 7,000 per

year. A defender of the spending might argue that the number is that low primarily because of the counterterrorism efforts. Others might find that to be a very considerable stretch.

An instructive comparison might be made with the Los Angeles Police Department, which operates with a yearly budget of \$1.3 billion.⁵ Considering only lives saved following the discussion above, that expenditure would be justified if the police saved some 185 lives every year when each saved life is valued at \$7 million. (It makes sense to use the lower figure for the value of a saved life here, because police work is likely to have few indirect and ancillary costs: for example, a fatal car crash does not cause others to avoid driving.) At present, some 300 homicides occur each year in the city and about the same number of deaths from automobile accidents.⁶ It is certainly plausible to suggest that both of those numbers would be substantially higher without police efforts, and accordingly that local taxpayers are getting pretty good value for their money. Moreover, the police provide a great many other services (or “cobenefits”) to the community for the same expenditure, from directing traffic to arresting burglars and shoplifters.

ACCEPTABLE RISK

Another way to approach the issue is to compare the annual fatality rates caused by terrorism with those caused by other hazards. Table 2 provides relevant information. It leads to a consideration of the central analytic issue of acceptable risk. Is the likelihood of being killed by the hazard unacceptably high, or is it low enough to be acceptable? That is, just how safe is safe enough?

We often say that nothing is more important than the value of human life. Yet, obviously, we don’t really believe that. Americans are clearly willing to sacrifice tens of thousands of lives per year to have the automobile, even though it is quite possible to move people without killing them: passengers killed on railroads in a year can often be numbered on the fingers of one hand. Many other social policies

Table 2
Comparison of Annual Fatality Risks

Hazard	Territory	Period	Total Fatalities for Period	Annual Fatality Risk
World War II	Worldwide	1939–1945	61,000,000	1 in 221
Cancers	United States	2009	560,000	1 in 540
War (civilians)	Iraq	2003–2008	113,616	1 in 1,150
All accidents	United States	2007	119,000	1 in 2,500
Traffic accidents	United States	2008	37,261	1 in 8,200
Traffic accidents	Canada	2008	2,431	1 in 13,500
Traffic accidents	Australia	2008	1,466	1 in 15,000
Homicide	United States	2006	14,180	1 in 22,000
Traffic accidents	United Kingdom	2008	2,538	1 in 23,000
Terrorism	Northern Ireland	1970–2012	1,758	1 in 49,000
Industrial accidents	United States	2007	5,657	1 in 53,000
Homicide	Canada	2008	611	1 in 55,000
Intifada	Israel	2000–2006	553	1 in 72,000
Homicide	Great Britain	2008	887	1 in 67,000
Homicide	Australia	2008	290	1 in 76,000
Terrorism	United States	2001	2,982	1 in 101,000
Natural disasters	United States	1999–2008	6,294	1 in 480,000
Drowning in bathtub	United States	2003	320	1 in 950,000
Terrorism	United Kingdom	1970–2012	2,196	1 in 1,200,000
Home appliances	United States	Yearly average	200	1 in 1,500,000
Deer accidents	United States	2006	150	1 in 2,000,000
Commercial aviation	United States	Yearly average	130	1 in 2,300,000
Terrorism	United States	1970–2012	3,292	1 in 4,000,000
Terrorism	Canada	1970–2012	336	1 in 4,300,000
Terrorism	Great Britain	1970–2012	438	1 in 5,900,000
Peanut allergies	United States	Yearly average	50–100	1 in 6,000,000
Lightning	United States	1999–2008	424	1 in 7,000,000
Terrorism	Australia, including Bali	1970–2012	117	1 in 8,000,000
Transnational terrorism	World outside war zones	1975–2003	13,971	1 in 12,500,000

Source: Terrorism fatalities from the Global Terrorism Database developed by the U.S. National Consortium for the Study of Terrorism and Responses to Terrorism (START). It contains country-by-country information for more than 80,000 terrorist incidents that took place throughout the world between 1970 and 2012. See <http://www.start.umd.edu/gtd/>.

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involve the same sort of consideration. To take an extreme example, every year, a few thousand people in the United States die in falls from buildings that are more than one story high. Those lives could be saved by closing off all buildings at the ground floor. To reject such a policy is to say tall buildings are worth that cost in lives. As a society, then, we regularly and inescapably adopt policies in which human lives are part of the price.

A review of 132 U.S. federal government regulatory decisions associated with public exposure to environmental carcinogens found that regulatory action never occurred if the individual annual fatality risk was lower than 1 in 700,000.⁷ Established regulatory practices in several developed countries are similar. In general, risks are deemed unacceptable if the annual fatality risk is higher than 1 in 10,000 or perhaps higher than 1 in 100,000. They are deemed acceptable if the annual fatality risk is lower than 1 in 700,000 or perhaps 1 in 1 million or 1 in 2 million.

Those considerations—substantially accepted for years, even decades, by public regulatory agencies after extensive evaluation and considerable debate and public discussion—are designed to provide a viable, if somewhat rough, guideline for public policy. Clearly, hazards that fall in the unacceptable range (traffic accidents, for example) should generally command the most attention and the most resources. Those hazards in the acceptable range (drowning in bathtubs, for example) would generally be deemed of little or even negligible concern—they are risks we can live with—and further precautions would scarcely be worth pursuing unless they are remarkably inexpensive.

Overall, then, it is clear that governments have been able to set out, and agree on, risk acceptance criteria for use in decisionmaking for a wide variety of hazards, including ones that are highly controversial and emotive, such as pollution, nuclear and chemical power plant accidents, and public exposure to nuclear radiation and environmental carcinogens.

Yet only once, as far as we can see, has DHS

actually, if accidentally, engaged in a public assessment of acceptable risk. It involves the risk that body scanners using x-ray technology will cause cancer. Asked about it, the DHS official in charge, John Pistole, essentially said that, although the cancer risk was not zero, it was acceptable. A set of studies, he pointed out, “have all come back to say that the exposure is very, very minimal” and “well, well within all the safety standards that have been set.”⁸

Since the radiation exposure delivered to each passenger is known, one can calculate the risk of getting cancer from a single exposure using a standard approach that, although controversial, is officially accepted by nuclear regulators in the United States and elsewhere. On the basis of a 2012 review of scanner safety, that cancer risk per scan is about 1 in 60 million.⁹ As it happens, the chance that an individual airline passenger will be killed by terrorists on an individual flight is much lower—1 in 90 million.¹⁰ Therefore, unless one believes that terrorists will in the near future become far more capable of downing airliners with body-borne bombs than they have been in the past, the risk of being killed by a terrorist on an airliner is already fully acceptable by the standards applied to the cancer risk from body scanners using x-ray technology. But no official has drawn that comparison.

Things are no better in the media. For example, on the *PBS NewsHour* on December 28, 2009, Gwen Ifill, introducing a discussion of the then-recent underwear bomber’s attempt to down an airliner, happened to note that the number of terrorist incidents on American airliners over the previous decade was 1 for every 16.5 million flights. That interesting bit of information, however, was never brought up again, either by Ifill or by the three terrorism experts she was interviewing. Nor, of course, did anyone think of considering that, at that rate, maybe the airlines were safe enough—that the risk was acceptable.

Table 2 provides a listing of fatality rates for a wide variety of hazards, both natural ones and human-made ones like war and homicide. As can be seen, almost all the annual terrorism

fatality risks are less than 1 in a million—for the United States (as well as for Great Britain, Canada, and Australia), they are less than 1 in 4 million per year. Therefore, they generally lie within the range deemed by regulators internationally to be safe or acceptable and do not require further regulation.¹¹ Applying conventional standards, then, terrorism under current conditions of threat and security spending presents a hazard to human life in the Western world that is, in general, acceptable, and efforts, particularly expensive ones, to further reduce its likelihood or consequences are scarcely justified.

Indeed, a legitimate policy consideration might be to wonder whether expenditures designed to keep the terrorism risk that low have been excessive and whether some of them might be better focused on hazards with a higher risk, even if doing so increases the terrorism risk somewhat. One should keep in mind in such a consideration that for the terrorism risk to border on becoming unacceptable by established risk conventions—that is, to reach an annual fatality rate of 1 in 100,000—the number of fatalities from all forms of terrorism in the United States and Canada would have to increase 40-fold, in Britain (excluding Northern Ireland) more than 55-fold, and in Australia more than 80-fold.

We have been using historical data on terrorism here, and there is, of course, no guarantee that the frequencies of the past will necessarily persist into the future. However, there seems to be little evidence that terrorists are becoming any more destructive, particularly in the West. In fact, the level of terrorist activity and destruction seems to be diminishing, not expanding, at least outside of war zones—indeed, no major terrorist attack has occurred in the West since 2005. Moreover, we include the 9/11 attacks in this count. No terrorist attack before or since, even in war zones, has inflicted even as much as one-tenth as much damage. That tragedy thus seems to stand out as an aberration, not as a harbinger.¹² Those who wish to discount such arguments and projections need to demonstrate why they think

terrorists will suddenly get their act together and inflict massively increased violence, visiting savage discontinuities on the historical data series.

COST-BENEFIT ANALYSIS

Cost-benefit analysis brings the issues of acceptable risk and the value of a saved life together and puts them into a broader and fuller framework.

The conventional approach compares the costs of a security measure with its benefit as tallied in lives saved and damages averted. The benefit of a security measure is a multiplicative composite of three considerations: (1) the probability of a successful attack absent the security measure, (2) the losses sustained in a successful attack, and (3) the degree to which the security measure reduces the risk by lowering the probability and/or the consequences of a successful attack.

The interaction of those variables can perhaps be seen in an example. Suppose a dangerous curve on a road results in an accident from time to time. To evaluate measures designed to deal with that problem, the analyst would need to estimate (1) the probability of an accident each year under present conditions; (2) the consequences of the accident (death, injury, property damage); and (3) the degree to which a specific proposed safety measure lowers the probability of an accident (erecting warning signs) or the losses sustained in the accident (erecting a crash barrier). If the benefit of the risk-reduction measure—those three items multiplied together—outweighs its cost, the measure would be deemed to be cost-effective.

Those considerations can be usefully adapted in a procedure known as “break-even analysis.” In break-even analysis, we seek to determine what the probability of a successful terrorist attack would have to be for a security measure to begin to justify its cost.

We have applied that approach to the overall increase in domestic homeland security spending in the United States by the federal government (including for national intel-

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ligence) and by state and local governments. That is, we assume that homeland security measures in place before the 9/11 attacks continue, and we evaluate the cost-effectiveness of the additional funds that have been allocated to homeland security. By 2009 that increase totaled some \$75 billion per year. That is a very conservative measure of the degree to which homeland security expenditures have risen since 9/11, because it excludes such items as private-sector expenditures, hidden and indirect costs of implementing security-related regulations, and costs of the terror-related (or terror-impelled) wars in Iraq and Afghanistan.¹³

To evaluate the reduction in risk provided by that array of security measures, we need to consider their effectiveness in deterring, disrupting, or protecting against a terrorist attack.

In assessing how much the risk has been reduced, it is important, first, to assess the risk-reduction effectiveness of homeland security measures that were in place before 9/11 and that continue. In addition, one should keep in mind that the tragic events of 9/11 massively heightened the awareness of the public to the threat of terrorism, resulting in extra vigilance that has often resulted in the arrest of terrorists or the foiling of terrorist attempts at little or no cost to the government. In our analysis, we assume that risk reduction caused by the security measures in place before 9/11 and by the extra vigilance of the public after that event together reduced risk by 50 percent. That estimate is exceedingly conservative, because security measures that are at once effective and relatively inexpensive are generally the first to be implemented—for example, one erects warning signs on a potentially dangerous curve in the road before rebuilding the highway.

Furthermore, most terrorists (or would-be terrorists) do not show much intelligence, cleverness, resourcefulness, or initiative.¹⁴ A 2009 DHS report describes terrorists as relentless, patient, opportunistic, and flexible.¹⁵ Although some of those words may apply to some terrorists somewhere—including at least a few of those involved in the 9/11 attacks—they hardly

apply to the vast majority of those individuals picked up on terrorism charges in the United States since those attacks. The authors of case studies of those terrorists or would-be terrorists mostly use descriptors such as incompetent, ineffective, unintelligent, idiotic, ignorant, inadequate, unorganized, misguided, muddled, amateurish, dopey, unrealistic, moronic, irrational, foolish, and gullible.¹⁶ Measures to deal with such people are relatively inexpensive and are likely to be instituted first. Dealing with the smarter and more capable terrorists is more difficult and expensive, but those people represent, it certainly appears, a decided minority among terrorists.

For our analysis, we assume that the increase in U.S. expenditures on homeland security since 2001 has been dramatically effective, reducing the remaining risk by an additional 45 percent. Total risk reduction is generously assumed, then, to be 95 percent, with the preexisting measures and the extra public vigilance responsible for 50 percent of the risk reduction and the added expenditures responsible for the remaining 45 percent.

Putting it all together, we find that, for added homeland security expenditures of \$75 billion per year to be deemed cost-effective under our approach—which substantially biases the consideration toward finding them effective—1,667 successful attacks comparable to the one attempted on Times Square in 2010 would have to happen each year without any security measures in place—that is, more than 4 per day.¹⁷ If the added measures managed to deter, disrupt, or protect against 45 percent of them (two a day), they would begin to become cost-effective. That hardly seems plausible.

Some homeland security spending is devoted to ventures other than counterterrorism, of course: to patrol and secure the border, for example. However, one should keep in mind that we are assessing only the *increase* in homeland security spending that has taken place since 9/11, and that has overwhelmingly been motivated by concerns about terrorism. Moreover, our estimate that this increase has been \$75 billion per year is decidedly on the low side.

And finally, even if one wishes to maintain, say, that only half of the increase has been spent on counterterrorism measures, those expenditures would still need to deter, disrupt, or protect against one Times Square–like attack per day, or the equivalent. As has been suggested, terrorists scarcely seem to be numerous, competent, and dedicated enough to carry out such a task.

There are extreme scenarios that can be taken to suggest that enhanced U.S. security expenditures could be cost-effective—if they routinely prevented a nuclear attack in a crowded city, for example. However, for those who find that outcome dangerously likely, the policy response would logically be to spend on reducing the risk of nuclear terrorism by putting together international agreements to keep track of stocks of nuclear material and to institute stings to undercut the illegal transfer of such material.¹⁸ The response would not be, for example, to spend tens of billions of dollars each year on protection measures that are scarcely likely to be effective against an atomic explosion.

In an important sense, the most cost-effective counterterrorism measure is to refrain from overreacting. Thus, 9/11 not only led to considerable indirect costs as people avoided flying and traveling for a time, but the attacks were also used to propel the United States and its allies into costly overseas wars.¹⁹ Few terrorist events trigger such extreme reactions, which can be considered as contributors either to the costs of the terrorist attack or to the costs of counterterrorism. To the extent that extreme reactions like multitrillion dollar wars are considered to be a (self-inflicted) part of the cost of the terrorist attack, they do far more damage to the attacked than the effort of the terrorists. To the extent that such reactions are considered to increase the costs of counterterrorism, they are likely to render almost any counterterrorism security measures cost-ineffective: if an increase in counterterrorism spending of \$75 billion per year fails to be cost-effective as we have suggested, an increase of several times that amount will be even less cost-effective.

RISK COMMUNICATION

Officials who seek to expend limited funds in a manner that best enhances public safety should be risk neutral: insofar as that can be determined, they should deal with the objective likelihood that the hazard will occur and should rely on that in their decisionmaking. Although we understand that people are often risk averse when considering issues like terrorism, we follow the Office of Management and Budget requirement that governments expending tax money in a responsible manner need to be neutral when assessing risks, something that entails focusing primarily on mean estimates in risk and cost–benefit calculations, not primarily on worst-case or pessimistic ones.²⁰

The willingness to accept risk, however, is influenced not only by its objective likelihood but also by a considerable variety of psychological, social, cultural, and institutional factors. These factors include the uncontrollability of the risks, the dread (or fear) they inspire, and their involuntary nature or catastrophic potential. Also taken into account is whether the risks are increasing or not observable; whether they are unknown to those exposed, are new or unfamiliar, or are unknown to science; whether they have immediate effect or affect a large number of people; and whether they can be preventively controlled, are certain to be fatal, can easily be reduced, would result in an inequitable distribution of risk, would threaten future generations, or would affect one personally.²¹

It is important, then, for officials to communicate risk objectively. If they can convince their constituents to adopt a risk-neutral perspective, they will be in a far better position to expend public funds in ways that most enhance public safety. Yet although there is a fundamental responsibility to inform the public honestly and accurately of the risk that terrorism presents, the emphasis has been on exacerbating fears.²²

In fact, just about the *only* official in the United States who has ever openly put the

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threat presented by terrorism in some sort of context is New York’s former mayor, Michael Bloomberg, who in 2007 pointed out that people should “get a life” and that they have a greater chance of being hit by lightning than of being struck by terrorism.²³ It might be noted that his unconventional outburst did not have negative consequences for him. Although he had some difficulties in his reelection two years later, his blunt, and essentially accurate, comments about terrorism were not the cause.

It is true that few voters spend a great amount of time following the ins and outs of policy issues, and even fewer are certifiable policy wonks. But they *are* grownups, and it is just possible they would respond reasonably to an adult conversation about terrorism.²⁴

CAN SECURITY EXPENDITURES BE REDUCED?

Because people often evaluate risk differently from what an objective analysis would dictate, politicians and bureaucrats face, or believe they face, considerable political pressure on the terrorism issue. Their dilemma is nicely parsed by James Fallows. He points out that “the political incentives here work only one way.” A politician who supports more extravagant counterterrorism measures “can never be proven ‘wrong,’” because an absence of attacks shows that the “measures have ‘worked,’” whereas a new attack shows that we “must go further still.” Conversely, a politician seeking to limit expenditure “can never be proven ‘right,’” while “any future attack will always and forever be that politician’s ‘fault.’”²⁵

However, despite that problem, there have already been some modest relaxations in some airline security measures—the security measures that are most visible to the public and therefore the ones most likely to stir comment and controversy. For the most part, those reductions seem to have been sensible and to have reduced costs. Moreover, they have proved to be acceptable: they have been essentially accepted by the flying public, have not led to a decline in airline passenger traffic,

and have not generated focused cries of alarm from politicians and interested groups. The following are among those measures:

- Passengers in the United States are no longer routinely required to undergo the time-consuming process of answering questions about whether they packed their luggage themselves and have had their bags with them at all times.
- Beginning in late 2005, passengers in the United States were allowed to take short scissors and knives with them on planes, as these items were deemed too insignificant to pose much of a security risk. Australia soon followed suit.²⁶ (However, efforts in 2013 to extend that measure further were not so successful.)
- Officials eliminated the ritual of forcing passengers to remain in their seats during the last half hour of flights to Washington’s Ronald Reagan National Airport.
- Considerations of permanently closing Washington’s Ronald Reagan National Airport, potentially a very costly venture, were abandoned.
- Harassment of automobiles picking up and dropping off passengers appears to have been relaxed.
- Passengers are now usually required to show boarding passes only once to inspectors.
- Domestic passengers in the United States no longer need to show their identification at the gate.
- The orange alert put in place at American airports after an airline bomb plot was rolled up in distant Britain in 2006 was abandoned in 2011 when the whole color-code scheme, of which it was part, was scrapped.
- The number of federal air marshals has presumably been reduced with a hiring freeze that began in 2012.²⁷
- Passengers under age 13 and over age 74 are no longer required to remove shoes or jackets when going through screening.

“The United Kingdom, which faces an internal threat from terrorism that may well be greater than that for the United States, nonetheless spends proportionately much less than half as much on homeland security, and the same holds for Canada and Australia.”

■ The Transportation Security Administration has begun to institute PreCheck. That program allows expedited screening for a large portion of passengers—potentially half of them—selected from frequent-flier programs and from Global Entry and other trusted traveler programs. Those passengers do not need to take off belts, shoes, or jackets, nor do they need to remove liquids and laptops from their carry-on luggage. In addition, they are not required to undergo full-body screening. Even though that program might, in some sense, be viewed as making us less safe, it appears to have generated no opposition. Indeed, any clamor created among the public has come from those who are anxious to join up.

Furthermore, it is possible that politicians and bureaucrats are overly fearful about the political consequences of reacting moderately to terrorism. Sometimes, leaders have been able to restrain their instinct to overreact, and this has often proved to be entirely acceptable politically. The United States did not massively overreact to terrorist bombings against its soldiers and citizens in Lebanon in 1983 or over Lockerbie, Scotland, in 1988.²⁸

This issue is particularly important because, as noted, it certainly appears that, to the degree that overreaction increases the costs inflicted by terrorism without providing compensating benefits, avoiding overreaction is by far the most cost-effective counterterrorism measure. One might, in that respect, compare the reaction to 9/11 with that to the worst terrorist event in the developed world before then, the downing of an Air India airliner departing Canada in 1985 in which 329 people, 280 of them Canadian citizens, perished. Journalist Gwynne Dyer points out that, proportionate to population, the losses were almost exactly the same in the two cases. But, continues Dyer, “here’s what Canada didn’t do: it didn’t send troops into India to ‘stamp out the roots of the terrorism’ and it didn’t declare a ‘global war on terror.’ Partly because it lacked the resources

for that sort of adventure, of course, but also because it would have been stupid.”²⁹ A similar conclusion was presumably reached by the Indian government after the dramatic and costly terrorist attacks in Mumbai in 2008.

Moreover, although political pressures may force actions and expenditures that are unwise, they usually do not precisely dictate the level of expenditure. Thus, although there are public demands to “do something” about terrorism, nothing in those demands specifically requires American officials to mandate removing shoes in airport security lines, to require passports to enter Canada, to spread bollards like dandelions, or to make a huge number of buildings into forbidding fortresses. The United Kingdom, which faces an internal threat from terrorism that may well be greater than that for the United States, nonetheless spends proportionately much less than half as much on homeland security, and the same holds for Canada and Australia.³⁰ Yet politicians and bureaucrats in those countries do not seem to suffer threats to their positions or other political problems because of it.

RESPONSIBLE COUNTERTERRORISM POLICYMAKING

In seeking to evaluate the effectiveness of the massive increases in homeland security expenditures since September 11, 2001, the common and urgent query has been “are we safer?” That, however, is the wrong question. Of course, we are “safer”—the posting of a single security guard at one building’s entrance enhances safety, however microscopically. The correct question to begin with is “how safe are we?” and that should lead to a systematic examination of another query, “are the gains in security worth the funds expended?” Or, as it was posed shortly after 9/11 by risk analyst Howard Kunreuther, “How much should we be willing to pay for a small reduction in probabilities that are already extremely low?”³¹ Working to answer that absolutely central question involves dealing with considerations

“When we spend resources on regulations and procedures that save lives at a high cost, we forgo the opportunity to spend those same resources on measures that can save more lives at the same cost or even at a lower one.”

of cost per saved life and acceptable risk as fed into cost–benefit analysis.

As far as we can see, DHS decisionmakers do not follow robust risk assessment methodology. If they did, low-cost solutions that are easily deployed and effective would be the first to be implemented, and we do not find that to be the standard. That observation is supported by a committee of the U.S. National Academy of Sciences in a 2010 report. After spending the better part of two years investigating the issue, the committee could not find “any DHS risk analysis capabilities and methods” adequate for supporting the decisions made about spending on terrorism and noted that “little effective attention” was paid to “fundamental” issues. The committee came across only one document that could explain “exactly how the risk analyses are conducted” and looked over reports in which it was not clear “what problem is being addressed.” That situation is particularly strange because, as the committee also notes, the risk models used in the department for *natural* hazards are “near state of the art” and “are based on extensive data, have been validated empirically, and appear well suited to near-term decision needs.”³² As far as we can tell, the report, which essentially suggests that DHS had spent hundreds of billions of dollars without knowing what it was doing, generated no coverage in the media whatsoever.

A 2012 evaluation by the RAND Corporation of a risk analysis tool developed for the DHS is similarly critical. The report notes that the tool has “thousands of input variables,” many of which cannot be estimated with much precision, and it could generate results that are “completely wrong.” Moreover, running the tool takes so long that it was not possible “to conduct even a superficial sensitivity analysis” of the tool’s “many thousands of assumptions and parameter estimates.” In addition, the tool deals with only relative risk, not absolute risk (a key criticism as well in the 2010 National Research Council study), and its estimates of relative risk “are subject to strong, probably untenable, assumptions.” The tool is also in-

sensitive to changes in the magnitude of risk and “assumes no attack can be deterred.”³³

Moreover, when it comes to terrorism, DHS appears to be exceptionally risk averse: its decisions cannot be supported even with the most risk-averse utility functions possible, and its level of risk aversion is exhibited by few, if any, government agencies, including the Nuclear Regulatory Commission and Environmental Protection Agency.³⁴ Much the same seems to hold for the development of counterterrorism security measures in other countries.

More broadly, any responsible analysis must also include a consideration of what else could have been done with the effort and money being expended on the policy proposed.³⁵ When we spend resources on regulations and procedures that save lives at a high cost, we forgo the opportunity to spend those same resources on measures that can save more lives at the same cost or even at a lower one.³⁶ Spending on a wide range of more cost-effective risk-reduction programs like flood protection, vaccination and screening, vehicle and road safety, health care, and occupational health and safety would probably result in far more significant benefits to society. For example, diverting a few percent of the nearly \$10 billion per year spent on airline security could save many lives at a fraction of the cost if it were spent instead on bicycle helmets for children, tandem mass spectrometry screening programs, smoke alarms, or tornado shelters.³⁷

It may be useful in that light to put counterterrorism expenditures in the broadest comparative context. Bjørn Lomborg assembled a group of international experts to answer one question: “if we had an extra \$75 billion to put to good use, which problems would we solve first?”³⁸ That sum is less than what the United States spends on homeland security in a single year. More than 40 experts, tasked to do “what is rational instead of what is fashionable,” applied cost–benefit thinking to a wide range of issues. For many measures, the benefit is 10 times greater than the cost, and, most important, the number of lives saved is spectacular. According to those analysts, spending merely

\$2 billion could save more than 1.5 million lives: 1 million child deaths could be averted by expanded immunization coverage, while community-based nutrition programs could save another half-million lives. In assessing expenditures for dealing with transnational terrorism, by contrast, the experts found costs to be 3 to 25 times higher than any benefits.³⁹

We recognize that risk and cost-benefit considerations should not be the sole criteria for public decisionmaking. Nonetheless, they provide important insights into how security measures may (or may not) perform, their effect on risk reduction, and their cost-effectiveness. They can reveal wasteful expenditures and allow limited funds to be directed where the most benefit can be attained. If risk and cost-benefit advice is to be ignored, the onus is on public officials to explain why that is so and to detail the tradeoffs and cuts to other programs that will inevitably ensue. That is, if diversions of funds would easily save many lives, a government obliged to allocate funds in a manner that best benefits society must explain why it is spending billions of dollars on security measures with very little proven benefit and why that policy is something other than a reckless waste of resources.

Our findings dealing with the questionable cost-effectiveness of overall increases in homeland security expenditures since 9/11 should not be taken to suggest that *all* security measures necessarily fail to be cost-effective: there may be specific measures that are cost-effective. But each should be subjected to the kind of risk analysis we have applied to the overall increases in expenditure.

We have done so for several specific measures. It appears, for example, that the protection of a standard office-type building is highly questionable: under most circumstances, it would be cost-effective only if the likelihood of a sizable terrorist attack on the building is a thousand times greater than it is at present. Something similar holds for the protection of bridges.⁴⁰ Conversely, hardening cockpit doors and training flight crews about how to resist flight deck invasions on aircraft appear

to be cost-effective. However, the provision for air marshals on the planes decidedly is not, and the cost-effectiveness of full-body scanners is questionable at best. Indeed, sizable reductions in those two programs could easily result in saving hundreds of millions of dollars per year both for the taxpayer and for the airlines, with no negative consequences for safety—particularly if a bit of the saved money is spent on less expensive security measures like secondary cockpit barriers and armed pilot training.⁴¹

“Policy-making is a risky business,” one group of analysts has acknowledged. But, they continue, “regardless of the varied desires and political pressures, we believe that it is the responsibility of analysts forcefully to advocate rational decision methods in public policy-making, especially for those with high risk.”⁴² Or as Paté-Cornell observes, if policymakers don’t embrace rational approaches, politically driven processes “may lead to raising unnecessary fears, wasting scarce resources, or ignoring important problems.”⁴³ And, one might add, when public safety is the issue at hand, they may cost lives. Central in all that, as risk analyst David Banks has suggested, is “the distinction between realistic reactions to plausible threats and hyperbolic overreaction to improbable contingencies.”⁴⁴

To be irrational with your own money may be foolhardy, to give in to guilty pleasure, or to wallow in caprice. But to be irrational with other people’s money, particularly where public safety is concerned, is irresponsible. In the end, it becomes a dereliction of duty that cannot be justified by political pressure, bureaucratic constraints, or emotional drives.

If officials in charge of providing for public safety are incapable of carrying out their jobs in a manner that provides the most safety for the money expended, they should frankly admit that they are being irresponsible—that they consider retaining their position to be more important than providing for public safety—or they should refuse to take the job in the first place. People who join the army or become firefighters accept the possibility that at some point they may be put in a position in

“Risk and cost-benefit considerations should not be the sole criteria for public decisionmaking. Nonetheless, they can reveal wasteful expenditures and allow limited funds to be directed where the most benefit can be attained.”

which they are shot at or are required to enter a burning building. People who become decisionmakers should in equal measure acknowledge that to carry out their job properly and responsibly, they may be required on occasion to make some difficult, even career-threatening decisions.

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