



## Is It Moral To Create Markets In Human Health And Lives?

**T**he utility of economics in environmental decision-making is often debated, but rarely its morality. Precepts like the polluter pays or the precautionary principle are fairly easy to grasp and their consequences deduced, but not so for an analytical tool. Yet billions of dollars and millions of people are affected by methods such as cost-benefit analysis (sometimes called benefit-cost analysis), which has been enshrined by a long-standing series of executive orders and now appears to be entering environmental statutes.

Earlier this year, an economist and a law professor, Frank Ackerman and Lisa Heinzerling, teamed up to publish the book *Priceless: On Knowing the Price of Everything and the Value of Nothing* (The New Press), a systematic attack on cost-benefit as applied to environmental and health protection. It is mostly an attack on the ben-

efits side of the ratio, which has always been the most problematic.

The major benefit of many pollution regulations is that people do not die, which requires calculating the “value of a statistical life.” There can also be benefits for illnesses reduced or avoided, like asthma. These benefit calculations, when compared with the calculated costs of pollution abatement, are then used by decisionmakers in helping them determine how much pollution protection society can afford.

The result, say the authors, is that the government has in effect created a market in human lives and health — pricing the priceless, without the consent of those affected.

Are Ackerman and Heinzerling right, that such markets are created? Is it moral to do so? How can we improve the way cost-benefit analysis is done today in environmental decisionmaking?



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**James K. Hammitt**  
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**Cass R. Sunstein**  
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*“Regulators aren’t really assigning a dollar value to human life. Instead they’re assigning a dollar value to risks. There’s nothing immoral about assigning dollar values to statistical risks. Ordinary people assign such values all the time. Do you drive a Volvo?”*

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## Morality, Cost-Benefit, And The Price Of Life

FRANK ACKERMAN

Imagine a morally unacceptable world: one in which an occasional lottery will select a few people who will be enslaved to a major corporation, forced to work for the company without pay for the rest of their lives. Industry might explain that while it will make every effort to minimize the need for something as distasteful as enslaving its workers, it would be impossibly expensive to avoid every single case of slavery throughout the American economy. Economists might point out that the lotteries involve prospective cases of “statistical slavery,” not something that has already happened to named individuals. They might advocate accepting the “optimal” level of slavery rather than holding out for the utopian goal of zero.

Does this story sound any better if “enslaved” is replaced by “killed by pollution”? The slavery version sounds archaic and absurd, as well as immoral. Yet the death-by-pollution version of the same argument is what passes for sound environmental economics in 21st-century cost-benefit analysis. The only use of the monetary valuation of life and health, for public policy purposes, is to decide which involuntary lotteries (i.e., harmful pollutants) we can “afford” to protect ourselves against, and which ones we will accept. If it would cost more than the market value of the lives saved for an industry to control lethal emissions, cost-benefit analysis would allow the pollution lottery to proceed and select a few victims without regulatory interference.

The slavery lottery is unacceptable because freedom from slavery is an absolute right. It is not conditional on the costs incurred or profits lost by potential slave-owners; there is no optimal level except zero. How strong is the analogy? Is freedom from pollution that causes death or illness a right, like freedom from slavery? Or is it more like a new car, an attractive commodity to be bought if we can afford it?

Freedom from harmful pollution has long been viewed as a right, not a commodity, by many people — the drafters of the Clean Air Act and other major environmental laws among them. The polluter pays principle expresses the same idea in different language: polluters, not the public, are responsible for the costs imposed by pollution. Valuation of life and health is immoral because it is part of a retreat from this standard, because it embraces the disturbing notion that we will allow some innocent bystanders to be killed by someone else’s economic activity, just because the price is wrong.

In contrast, when buying a car, everything on the lot does have a price, and “let’s make a deal” is the obvious standard for decision-making. Years ago, Ronald Coase made the famous suggestion that the same process of private bargaining could often resolve environmental conflicts without government intervention. The Coasian bargain between opposing parties, which has now distracted economic and legal scholars for more than a generation, rests on the hidden assumption that all debates are about commodities, and none are about rights. Cost-benefit analysis systematizes the same false premise, assuming that everything, even human life, has a price.

Morality aside, advocates of cost-benefit analysis often maintain that monetary valuation helps set priorities for effective

policymaking. With cost-benefit analysis, we supposedly have a transparent, objective standard for identifying low-cost policies that save lives and protect health and the environment, and distinguishing them from much-higher-cost alternatives. This defense fails on several grounds.

In practice, there is nothing transparent or objective about cost-benefit analysis. Rather, it represents a continuation of partisan debate, cloaked in intricately technical language that excludes almost everyone from participation. The regulation of arsenic in drinking water, one of the first major rules to be based on cost-benefit analysis, led to bitter controversy over the shape of the dose-response curve and other subtleties of toxicology. Summarizing the debate, Cass Sunstein said that under plausible assumptions, the monetized benefits of arsenic regulation could be almost zero, or more than \$1 billion a year. That expansive conclusion could have been reached on the back of an envelope before the cost-benefit studies began — and has no useful implications for policymaking.

The problem that cost-benefit analysis is supposed to solve, the risk of squandering resources on high-cost regulations, is vastly overrated. The numerous stories about horrendously expensive regulations all stem from a handful of sources that are riddled with errors. Many of the classic examples of allegedly unaffordable regulations turn out, on closer examination, to be mere proposals that were never implemented. As Lisa Heinzerling has said, we face regulatory costs of mythic proportions.

Another popular misconception suggests that society is using cost-benefit analysis to allocate a fixed budget for regulatory compliance among rival claimants. Yet almost all the costs of regulations are borne by the private sector. There is no trade-off between the funds

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spent on regulatory compliance by different companies; money saved on one regulation does not flow into another industry to deal with another environmental problem. Ultimately there is a fixed limit on total regulatory costs, since we cannot spend our entire incomes on environmental protection. However, we are so far away from that limit that we can safely ignore it, just as automobile designers can ignore the fact that their vehicles can never exceed the speed of light.

If valuation of life and health raises troubling moral questions, and solves no identifiable practical problems, what should be done instead to improve the policymaking process? When scarce resources must be allocated, a "holistic" comparison of total (usually monetary) costs and total (usually nonmonetary) benefits will be more transparent and meaningful than the attempt at monetization of highly disaggregated benefits. Resources are always allocated on the basis of moral arguments and political strategies, as shown by the recent history of tax cuts and military and security-related spending. There is no reason to treat health and environmental protection differently — that is, if our government still wants to protect human health and the environment. An administration acting in good faith on these issues would stop constructing technical economic excuses for deregulation; it would celebrate our impressive history of successful, entirely affordable regulation; and it would only "fix" the limited number of policies that are actually broken.

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## Immoral Not To Weigh Benefits Against Costs

MAUREEN CROPPER

One of EPA's chief roles is to limit contaminants in air and drinking water to protect the health of the U.S. population. Air and water pollution exist because — absent government action — markets for the right to pollute the environment do not exist. EPA in effect creates these markets by limiting allowable levels of emissions — for example, by imposing emissions standards on motor vehicles and limiting the sulfur content of gasoline, or by imposing maximum contaminant levels on pollutants in drinking water. In so doing, EPA implicitly puts a price on environmental quality — a price that citizens must pay. Setting a maximum contaminant level for arsenic in drinking water of 10 parts per billion, to take one instance, imposes a treatment cost of approximately \$350 per year on households in small drinking water systems affected by the rule. Imposing Tier II emissions standards and lowering the sulfur content of gasoline raises the cost of gasoline and light duty trucks.

Because EPA in setting environmental standards effectively creates a market for environmental quality in which all must participate, the question that should be asked is whether it is moral for EPA to impose the costs of environmental protection on people without considering the benefits. In the case of air pollution and drinking water regulations — regulations that are largely health-based — this amounts to asking whether EPA should weigh the health benefits of environmental

regulation against the costs. To me, it would be immoral not to do so. The question is how this should be done.

At the very least, it is important to describe, and, when possible, to quantify the health benefits of environmental regulations. Good health may be priceless, but few households would voluntarily pay \$350 per year for an extremely small reduction in their risk of contracting cancer many years in the future. The key question is how big the risk reduction is and how far in the future it will occur. Similar questions arise in evaluating the benefits of regulations to reduce air pollution: how large are the associated health benefits, when will they occur, and who will receive them?

Should regulators assign a dollar value to the health benefits of environmental regulations? One rationale for doing so is to mimic the decisions that people would themselves make if they had full information about the costs and benefits of environmental standards. In the case of arsenic in drinking water, for example, what level of contamination would people choose if they knew the costs and benefits of different treatment options? Assigning a dollar value to the benefits of reductions in risk of death and illness requires, of course, that people have well-defined monetary values for small changes in health risks, and that these values can be measured.

Can people place a value on a small reduction in their risk of dying (or of contracting cancer) — a risk reduction of the size that would be delivered by an environmental regulation? There is certainly ample evidence that people trade time and money for small changes in health risks. People drive faster to save time and thereby increase their risk of dying. They also spend money to buy safer cars. They pay money for medicines (not always covered by

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health insurance) to lower their blood pressure or reduce their risk of cancer. And, there is empirical evidence that increased risk of death on the job is compensated in the labor market with higher wages. To infer a dollar value for risk changes from these activities requires making assumptions about the magnitude of the risk reductions people believe that they are buying when they buy safer cars or work in a safer job. It also requires controlling for all of the other aspects of the car or job that may be correlated with safety. An alternate approach is to ask people directly whether they would buy a product that would reduce their risk of dying, after taking care to communicate the size of the risk change they are buying.

There seems little doubt that people do make tradeoffs between money and risk and between time and risk — that a small change in risk is, indeed, not priceless. However, measuring what people will pay to reduce their risk of dying is difficult. It is an area where much progress has been made, but where there is still much progress to be made. In light of this fact, are there alternate methods that could be used to help regulators make tradeoffs between the costs and benefits of health and safety regulations?

An approach commonly used in public health is to express health benefits of a program in terms of the number of quality-adjusted life years saved. This entails converting reductions in illness and injury into an equivalent number of life-years saved, rather than aggregating health benefits using monetary values. The costs of the program are then divided by the number of quality-adjusted life years saved to produce a cost per QALY—a measure of the cost-effectiveness of the program. This approach avoids monetizing health benefits. It weights health benefits by the amount of healthy time gained, rather than by people's private

willingness to pay for such benefits.

Ultimately, the purpose of providing risk-based cost-benefit or cost-effectiveness measures is three-fold: to help regulators decide, in conjunction with information about the distributional impacts of a regulation, whether it should be issued; to indicate which programs are extremely good buys—for example, those that reduce particulate air pollution—and should be expanded, and those which, perhaps, should not; and, finally, to encourage a comparison of health and safety regulations across agencies. In the end, risk-based cost-benefit (or cost-effectiveness) analysis should not be the only guide to regulation, but can be used to help clarify the tradeoffs inherent in allocating scarce resources.

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## Method Is Populist And Democratic

JAMES K. HAMMITT

Risk-based benefit-cost analysis provides a systematic way to determine whether a regulation helps a community of people more than it hurts them, using the affected people's preferences as the basis for evaluation. Characterizing BCA as "placing prices on" or "creating markets in" peoples' health and lives, while superficially plausible, is deeply misleading.

As individuals we frequently make choices about spending money to protect our health. In deciding whether to buy optional side-impact airbags on a new car, a home water filter, or a carbon monoxide detector, we weigh the reduction in risk against other things on which we could spend that money. BCA tries to clarify such choices at a societal level, by quantifying the consequences of a regulation and determining how important they are to the people who face them.

At the national level, choices are complicated by the fact that the beneficiaries of a regulation—whose health risk is reduced—may not be the people who bear the costs. BCA attempts to determine whether the beneficiaries gain enough that they could compensate those who bear the costs (or are harmed in other ways), leaving everyone better off.

Since compensation is rarely paid, the moral relevance of BCA can be questioned. Two justifications can be offered. First, redistribution toward a deserving group can be achieved more efficiently through directed taxes and subsi-

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dies than by providing either more or less health protection than the affected people would purchase for themselves. Second, the people who benefit and those who are harmed by a regulation will differ from case to case, and nearly everyone may be better off if regulatory decisions are routinely made using BCA than if they are made in some other way.

BCA favors no particular outcome. It is neutral on the question of whether more health protection or less regulatory burden is better. It is populist — it counts the preferences of all the people affected by a regulation, not only the preferences of those who vote or those who are represented by lobbyists. It is democratic — it relies on what people in the affected population say they want, both in surveys and as reflected in the choices they make in their daily lives.

The practice of BCA can be improved in several ways. More should be done to recognize that people's values may differ by context — a 1 in a million risk of dying from breast cancer, in a plane crash, or while scuba diving are not the same, and the monetary values people place on reducing different risks may vary. The value an individual places on risk reduction may also depend on his or her age, health, income, and other factors. Greater sensitivity to these variations, and better evidence about their magnitudes, would allow analysts to more accurately determine whether a population would judge itself better or worse off with a particular regulation.

The practice of BCA can also be improved by better characterizing the uncertainty in the estimates, and by not claiming more precision than current methods permit. For many environmental regulations, uncertainty about how much health risks will be reduced, and about the monetary values, span a factor of 10 or more. BCA cannot be expected to determine the uniquely best level of health pro-

tection and a degree of humility among BCA proponents is warranted.

Another improvement would be to revise the often misleading terminology. Perhaps the worst offender is the "value per statistical life." Although it sounds like "what one life is worth in dollars," VSL is nothing of the kind. Rather, it is the amount of money that a large population would be willing to spend to reduce a risk by enough to prevent one expected fatality (in a specified time period). If one million people would each pay \$7 to reduce their own risk of dying next year by one in a million, their average VSL is \$7 million. Ron Howard of Stanford University long ago proposed a more accurate term — "micromort" — defined as the value of a one in a million reduction in mortality risk (\$7 in this example). One could extend the concept to millimorts, nanomorts, and so forth.

Although better terminology may help, many people are offended by the idea of using money to measure preferences for health. As a matter of effective policy making, it may be useful to measure health using "quality-adjusted life years" or other non-monetary metrics and to evaluate regulations by their "cost-effectiveness," defined as the cost per unit health gain.

Despite its limitations, BCA provides a practical method to help determine whether the community of people affected by a regulation — including those who benefit and those who bear the costs — would judge themselves to be better off, on net. It provides principled guidance for regulatory decisions and can serve as an important counterweight to special-interest advocates on all sides of a regulation.

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## Cost-Benefit: Two And A Half Cheers

CASS R. SUNSTEIN

Over the past twenty years, cost-benefit analysis has become a familiar part of national environmental policy. It has been endorsed by President Clinton as well as Presidents Reagan and George H. W. Bush; in fact President George W. Bush is operating under a cost-benefit order written in the Clinton administration. It's fair to say that cost-benefit analysis now enjoys a lot of bipartisan support.

If cost-benefit analysis is good, it's because an effort to specify costs and benefits helps to clarify what's at stake. All of us have difficulties in evaluating risks; we tend to exaggerate some hazards and to neglect others. Cost-benefit analysis imposes a valuable discipline. If a regulation would save 50 lives each year, and cost just \$10 million, then we should go forward with it. If a regulation would save one life each year, and cost \$50 million, it probably makes little sense. After the September 11 attacks, we might have shut down air travel in the United States for the next year. We didn't, because the benefits wouldn't justify the costs.

But how can government officials assign dollar values to human lives, or to reductions in human health? That's a good question. Here's what officials now do. They consult market evidence to see how much people are paid to face higher risks — in the case of mortality, risks usually on the order of 1 in 10,000 or 1 in 50,000. Suppose that American workers generally receive \$600 in additional wages when they face a risk of 1 in

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10,000. If so, regulators say that the “value of a statistical life” is \$6 million ( $\$600 \times 10,000$ ) — and hence that a program that saves 10 lives is worth \$60 million.

Is this absurd? Notice that regulators aren’t really assigning a dollar value to human life. Instead they’re assigning a dollar value to risks — usually low-level risks. It isn’t so dumb to use the numbers that emerge from real-world evidence. But maybe you don’t like that evidence. Workers may be insufficiently informed; maybe they’re coerced to take risks; maybe the evidence is too old or otherwise unreliable. Then you might ask: How much would you, or (better) would most people, be willing to spend to eliminate a mortality risk of 1 in 50,000, or 1 in 10,000, or 1 in 100,000? The question might seem impossibly abstract. If so, let’s specify it, by giving more details. But few of us would want to spend just \$1 on eliminating risks of that magnitude — and almost none of us would want to spend, say, \$50,000 or more.

In any case there’s nothing immoral about assigning dollar values to statistical risks. Ordinary people assign such values all the time, at least implicitly. (Do you drive a Volvo? The best smoke alarm on the market?) By assigning dollar values to risks, we’re not really creating markets in human life — no more than we do when we buy and sell the innumerable goods on the market that now impose various levels of risk. Suppose that a regulation would save 10 lives and cost \$150 million; suppose too that regulators go forward with it — but not with a regulation that would save one life and cost \$151 million. Shouldn’t they be candid about what they’re doing? Cost-benefit analysis has real democratic advantages, because it promotes transparency about what’s at stake.

Of course science won’t always allow us to get specific estimates

for anticipated benefits. Sometimes a range is all that we’ll have. And of course the numbers I’ve given are too sparse. We need to know about health benefits, and benefits for animals and the environment, as well as mortality reductions; and we need to know more than the bottom line. But without a sense of the anticipated effects of regulation, we’ll just be making stabs in the dark.

Certainly we should care about who pays the costs and about who gets the benefits. Suppose, for example, that a regulatory program would eliminate a 1/100,000 risk faced by 100,000 poor people, and that the cost would be paid by 1 million rich people. Suppose too that the costs of the program exceed the benefits. We might well want to go forward with the program even though it fails a cost-benefit test. An analysis of costs and benefits should be an important part of regulatory choices, but it shouldn’t be decisive.

But be careful with this point. Many environmentalists think that environmental goals march hand-in-hand with distributional goals. They think that if we force “polluters” to clean up, we’ll help poor people too. Would that life were so simple! When “companies” are asked to bear certain costs it’s likely that consumers will foot the bill, and poor people are less able to absorb price increases than rich people are. Sometimes the costs of environmental programs are borne mostly by poor people, who pay for them in higher prices and lower wages. Distributional effects are important to consider, but they don’t always argue for environmental regulation.

Cost-benefit has had many good results. It helped to encourage aggressive controls on ozone-depleting chemicals and also the phasedown of lead in gasoline. Cost-benefit analysis has also encouraged agencies to devise lower-cost methods of achieving environmental goals — and discouraged

initiatives that were pretty questionable. But under several presidents, including George W. Bush, it isn’t hard to find instances in which cost-benefit analysis served to discourage regulations that were probably desirable. Any tool can be misused.

In my view, cost-benefit analysis is best justified in pragmatic terms, as a response to the problems faced by both ordinary people and government officials in dealing with environmental risks. At the very least, it is important to know, as best we can, what we are going to get from proposed regulations — even if the benefits cannot be monetized. It’s senseless to ignore costs. To know what to do, we should compare benefits with costs; to do that, it’s important to turn benefits in monetary equivalents. Distributional considerations matter, and we need to attend to qualitative considerations as well as quantitative ones. Cost-benefit analysis doesn’t tell us all we need to know. But without it, we’ll know far too little.

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