Student Page

Cost/Benefit Analysis and Ethical Considerations

Cost/benefit analysis is being used increasingly to help make decisions about reducing environmental risks. Some examples include decisions about removing asbestos from school buildings, cleaning up toxic waste sites, and chlorinating drinking water.

On first encounter, cost/benefit analysis appears to be a relatively simple, straightforward, "matter-of-fact" aid to help people decide what to do about reducing environmental risks. By definition, a cost/benefit analysis entails calculating the costs (in monetary terms) associated with a particular action, projecting the expected benefits (in monetary terms) of that action, and comparing the two figures. On the one hand, if the benefits outweigh the costs, then that course of action is economically justified. On the other hand, if the costs outweigh the benefits, that course of action is not economically justified. The decision maker might look for an alternative course of action, might still choose to proceed with that option, or might decide not to take action at all.

For example, a few years ago, it was determined that too many people were getting head injuries as a result of falling off their bicycles. A cost/benefit analysis revealed that low-cost helmets could be made available that could help to prevent head injuries and could save millions of dollars in medical costs. Helmets could even help to save lives. Consequently, many communities across the nation decided to require people to wear helmets while riding bicycles. In this case, the decision to require helmets was rather obvious: The low costs of helmets (cost) were outweighed by the savings of millions of dollars in medical costs and by the prevention of injuries and deaths (benefits). Similar analyses were conducted regarding the costs and benefits of using air bags and seat belts in automobiles.

While cost/benefit analysis can be a very useful tool in the decision-making process, not all cases are as low-cost or as straightforward as requiring citizens to wear a helmet while bicycling. To be able to make valid cost/benefit judgments, a person must compare the costs and benefits while using the same measurement scale. In cost/benefit analysis, the measuring scale is usually in dollars. For example, if taking an action to save lives is going to cost $1 million, how many lives would have to be saved to be worth that investment? Or put very simply, how many lives are equivalent to $1 million? This question raises an important issue: **How much is a human life worth?** When the costs are low, as in the case of bicycle helmets and seat belts, the decision is easy. Most people would probably agree that if seat belts saved only a few lives a year (maybe only one life), the investment would still be worth it. But, when the costs start to get very high, tough questions are asked. Let's look at some of these more difficult types of problems.

continues on next page

Student Page

Cost/Benefit Analysis and Ethical Considerations

continued

SUPERFUND CLEANUP

The Superfund is a pool of money budgeted by the U.S. Environmental Protection Agency (U.S. EPA) to clean up toxic waste sites across the nation. Just about everyone agrees that toxic waste sites are dangerous to human health and the environment and that they should be cleaned up. On average, the U.S. EPA has been spending $6.1 billion a year on toxic waste cleanup. It has been estimated that approximately 500 cancer deaths a year are prevented because of this investment. Thus, if we use a cost/benefit analysis, we find it has cost an average of $12.2 million for *each life* saved.[1] Given the high cost of cleanup, the question frequently asked is **how much should each site be cleaned up?** Should every molecule of a toxic substance be cleaned up from a particular location? If it's not necessary to clean up every molecule of a toxic substance, then how much *should* be cleaned up, or *how much is safe enough?* To answer these questions, we must first ask questions that no one really wants to answer: How much is a human life worth? How much should we spend to save 500 people from dying of cancer as a result of being exposed to toxic wastes? Could the money spent on cleaning up toxic wastes be better spent elsewhere?

REDUCED ENVIRONMENTAL RISKS

Other issues further complicate cost/benefit decisions when related to reducing environmental risk. There appears to be increasing evidence that sometimes when risks are reduced in one area, they increase in another area. Take, for example, the environmental goal of reducing air pollution by increasing the gas mileage in automobiles. To accomplish this goal, automobile makers would have to produce vehicles that are smaller and lighter. However, if cars are made smaller and lighter, they may be less safe. One could make a strong argument that smaller, lighter, and less-safe cars could result in more people being killed in automobile accidents. In fact, these less-safe cars might even eliminate all of the safety gains that have been achieved from the use of seat belts and air bags in cars. Thus, one might ask the question: **Is reduced air pollution from cars worth more fatal accidents?**

The answers to these questions are generally not found by examining the economics of the issue, but are instead related to ethical considerations of values, tradeoffs, and an equal distribution of the costs and benefits of the risk reduction action.

[1]This is just an estimate to illustrate how cost/benefit analysis can be applied. Please note that hazardous waste cleanup is performed for other benefits in addition to reduced cancer cases, such as reduced lead exposure in children.

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Cost/Benefit Analysis and Ethical Considerations

continued

USE OF COST/BENEFIT ANALYSIS

Situations such as Superfund spending and air pollution have prompted challenges to the use of cost/benefit analysis in making decisions about environmental safety and health regulation. In his essay titled "Cost-Benefit Analysis: An Ethical Critique,"[2] Steven Kelman argues against increasing the use of cost/benefit analysis for environmental, safety, and health regulation. He maintains the following:

1. In areas of regulating the environment, safety, and health, there may be instances where a certain decision might be right even though its benefits do not outweigh its costs.

2. There are good reasons to oppose efforts to put dollar values on such things as the costs and benefits of saving human lives or on protecting wetlands and wilderness areas.

3. The process of assigning a dollar value to things not traditionally traded in the marketplace is biased and imperfect.

Kelman points out that some people reject the use of cost/benefit analysis in many situations involving the environment. For example, some people feel that subjecting decisions about issues such as air quality or water quality to cost/benefit analysis reduces their true value.

There is also the issue of fairness. Kelman argues that when officials are deciding what level of air pollution will not harm the general public, a significant issue that needs to be considered is the right of certain vulnerable people—such as asthmatics, the elderly, or peoples of lower incomes or particular races or cultures—to not be sacrificed so that the rest of us can enjoy a higher standard of living. If we subject air pollution regulation to a cost/benefit analysis, can we put a price on the equal treatment of vulnerable people?

Before reading on, think about the following questions:

? Does placing a dollar value or price on something make it less valuable in any way?

? Some people say that certain things, ideas, or concepts are priceless or that they have infinite value. Do you agree?

? Do you feel that *nature* is priceless? Why or why not?

[2]Kelman, Steven. "Cost-Benefit Analysis: An Ethical Critique." In Readings in Risk, edited by Theodore Glickman and Michael Gough, Washington, DC: Resources for the Future, 1990, 129–36. (Steven Kelman is a professor at Harvard University's John F. Kennedy School of Government.)

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Cost/Benefit Analysis and Ethical Considerations

continued

Butters, Calfee, and Ippolito[3] take issue with Kelman's arguments against the increased use of cost/benefit analysis for decision-making involving health, safety, and the environment.

They argue that cost/benefit analysis is a decision-making guide not for making *private* decisions, but for making decisions that involve other people—especially when trying to balance the welfare of many people. It is designed to take values into account when decisions must be made collectively, though it is *not* a means to dictate values. The use of cost/benefit analysis is based on the principle that, in a democracy, government must act as an agent of the citizens.

Butters et al. agree with Kelman up to a point, that assigning a dollar value to things not traded in the marketplace is a flawed and biased process. They acknowledge that it is difficult to place objective dollar values on certain intangible costs and benefits, such as human life or cleaner air. They state, "Even with regard to intangibles which have been systematically studied, such as the 'value of life,' we know of no cost/benefit advocate who believes that regulatory staff economists should reduce every consideration to dollar terms and simply supply the decision-maker with the bottom line." Instead, they are concerned with (1) making the major costs and benefits explicit, thus enabling the decision maker to make tradeoffs while fully aware of the prospect of being held accountable; and (2) encouraging a more consistent set of standards.

Cost/benefit analysis is important as a tool for organizing and presenting information. It helps to eliminate an imbalance in terms of return for each dollar spent for health and safety. If such an analysis is not performed to help decide what to do, then the return for dollars spent may end up being small for some programs and large for other programs. While Kelman might be right that "there is something repugnant about assigning dollar values to lives," Butters et al. argue that "the alternative can be to sacrifice lives needlessly by failing to carry out the calculations that would have revealed the means for saving lives."

Butters et al. concede that cost/benefit analysis is highly imperfect and that a better guide—one "that would be efficient, morally attractive, and certain to ensure that governments follow the dictates of the people"—would certainly be welcome. However, without cost/benefit analysis, they feel we would be in danger of falling into a system in which government decisions could reflect the preferences *not* of the citizens, but of those in a position to influence decisions. Concessions and special favors to special interest groups or individuals can easily be hidden or disguised as tradeoffs made as part of a decision-making process.

Cost/benefit analysis can be a very valuable tool for helping people to make decisions. However, it is not perfect and must be used with an understanding of both its advantages and limitations.

[3]Butters, Gerard; John Calfee; and Pauline Ippolito. "Reply to Steven Kelman." In Readings in Risk, edited by Theodore Glickman and Michael Gough, Washington, DC: Resources for the Future, 1990, 136–37. (Gerard Butters, John Calfee, and Pauline Ippolito are members of the Federal Trade Commission (FTC); however, their responses to Dr. Kelman's arguments are their personal views, not their views as representatives of the FTC.)