Methods of Economic Evaluation: What are the Ethical Implications for Healthy Public Policy?

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Briefing Note

For up-to-date knowledge relating to healthy public policy

Introduction: The ethical implications of economic evaluations

Decision making in healthy public policy,[1] as in all policy areas, increasingly involves taking economic efficiency into consideration. Efficiency is the extent to which sought-after benefits can be obtained for the lowest possible cost, and the tools that measure it are economic evaluations. Efficiency is, however, but one of the many possible criteria according to which policy options can be judged. There is a range of other values and objectives that we may want policies to fulfill. Deciding between at times divergent values is an ethical enterprise, and the use of economic evaluations can have profound ethical implications.

The first paper in this series introduced some of the general ethical issues that arise when economic evaluations are applied in healthy public policy.[2] While there are a number of diverse methods of economic evaluation, all of them share several fundamental, underlying assumptions that have ethical implications. Most prominent among these are the assumption of individualism in methodology and utilitarianism in ethics. Methodological individualism is the assumption that, simply put, all "we's" can be reduced to collections of "I's"; in other words, all social phenomena can be explained with reference solely to the actions and beliefs of individual human beings. Such an assumption tends to promote values such as individual autonomy and can conflict with values such as social solidarity and community empowerment that are based on a more holistic understanding of communities.

The second major assumption, utilitarianism, defines good and bad purely in terms of "utility." In the version of utilitarianism most common in economics, more utility stems from that which people would prefer given a choice between several options. The more people's preferences are satisfied, the better; hence, this version is often called the "preference-satisfaction view." As with individualism, there are important ethical ramifications stemming from the assumption of utilitarianism. For example, almost any value judgement can be termed good – an individual only has to prefer it. However, if we imagine, as we sometimes do in public health, that some preferences can be conditioned and may actually be harmful, then a conflict can arise. Another series of issues comes from the maximizing nature of utilitarianism: its main goal is to maximize the number of satisfied preferences, not to reach a certain distribution of satisfied preferences. In a conflict between the two broad goals of public health, the maximization of health gains for the whole population and the reduction of health inequalities between subpopulations, economic evaluations will prioritize the first goal over the second, thus potentially leading to recommendations that will tend to exacerbate inequalities.

Although economic evaluations are evidence-informed and use hard numbers to gauge efficiency and, as such, their results may seem to be similarly hard facts, they are not value-free. At the most fundamental level, they are based on assumptions that can lead to significant ethical questions in policy decision making.

Yet such ethical questions do not only stem from these deep-down assumptions. Economic evaluations vary according to the question under study and the methods they use; each method also has its own, specific ethical implications. The aim of this paper is to highlight the ethical issues that arise from the differences between methods of economic evaluation. Although these methods

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1 Healthy public policies are policies that usually fall outside of the scope of the health sector, but which can nonetheless have important benefits for the health of the population while pursuing other aims. Examples of healthy public policies can include social housing policies, traffic-calming policies, zoning bylaws to restrict the number of fast-food outlets near schools, etc.

2 This first paper is available here: http://www.ncchpp.ca/144/Publications.ccnpps?id_article=962

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broadly share the key assumptions just described, they differ substantially in their specifics, most notably in how they calculate effects.

The various methods of economic evaluation for public policy generally, and healthy public policy specifically, all seek to find the most economically efficient policy option to pursue. This usually means determining the option with the most "bang-for-the-buck." To locate this best choice, it is necessary to determine the costs of competing policy options as well as their effects – in other words, to gauge how the relationship between costs and effects is distributed across alternatives, including, as always, the option of maintaining the status quo. This paper begins by looking at how costs are determined across the various methods of economic evaluation. Costing, while not trivial, has ethical issues that are largely shared by all methods. The differences between methods, on the other hand, truly emerge when looking at how they measure and value the effects stemming from policy options. Indeed, the question of defining and measuring effects is often the harder one and the one that has broader ethical implications. It will be discussed at length in the third section with a breakdown by method. The fourth section will focus on the important issue of whose point of view is the appropriate one to adopt in decision making. The paper will conclude with some thoughts on method choice and what it might mean to use the right tool for the job in a policy context.

List of the main acronyms

CBA	Cost-benefit analysis
CCA	Cost-consequence analysis
CMA	Cost-minimization analysis
CUA	Cost-utility analysis
MCDA	Multi-criteria decision analysis
QALY	Quality-adjusted life year
WTP	Willingness-to-pay

Calculating costs

Regardless of the method used to evaluate a policy, costs and effects are somehow compared. While there are numerous approaches to treating effects, costs are universally analyzed in dollar terms. This does not, however, make costing an easy or ethically-neutral process. Indeed, the resources to be used in each policy under consideration have to be correctly identified, measured and valued (Brouwer, Culyer, van Exel, & Rutten, 2008) and each of these steps provides its own set of concerns.

A. Identifying resources – or what kinds of resources?

The first challenge in costing a policy option often lies in simply correctly identifying costs. In general, costs are any resources necessary to bring a policy option about. They include outlays as well as ongoing expenses; they can be explicit or sometimes merely implicit. Further, some evaluations can include all negative consequences as costs.

The breadth of healthy public policy means that the resources interventions utilize are not always limited to one ministry, one level of government or one agency nor do they often arise solely from direct health care (Simoens, 2009). A full list of resources to be costed can include not only the physical materials and staff time required but also items such as productivity gains or losses, time diverted by family and caregivers and much more. For example, a recreation program for seniors might require equipment purchases, updates to existing infrastructure, new staff positions for activity leaders as well as transportation and caregiver time costs associated with bringing participants to and from the program.

It may be the case, whether explicitly or implicitly, that only some costs are taken into account in an evaluation. Such selectivity may, for example, stem from narrowing the perspective to include only those costs borne by a particular agency; the issue of perspective will be discussed in more detail on pages 13-14. Taking into account only some costs while ignoring others is not necessarily problematic; it may be desirable, depending on the situation. If we want to positively discriminate in favour of a certain population, for example, it may be relevant to ignore some of the costs borne by the rest of society and focus only on those borne by this group in the analysis. At other times, however, a more circumscribed point of view can be detrimental – an incomplete accounting of costs can lead to a less than optimal policy choice. For example, if not all costs are taken into account, then policies can appear to be more beneficial than they would have been, had a comprehensive cost analysis taken place.

B. Measuring resources – or how many resources of each kind?

Once resources have been correctly identified, they have to be measured. Here, the potential issues are more methodological than ethical. Different methods of measurement can produce different cost estimates. Measures can use different scales; for example, there can be differences between the macro-level total cost of a service and more micro-level costs like that of service cost per user, which can vary depending on anticipated users. Measures can also vary depending on their source. Whether a cost analysis is based on past cost studies, current statistics or best prospective estimates matters and can lead to different outcomes (Brouwer et al., 2008). Finally, extrapolating costs further and further into the future also poses difficulties as uncertainty – both about the size of costs and whether particular costs will be actualized – grows the further we project into the future. A full accounting of the ethical implications of uncertainty is too broad a topic to include in this paper.

C. Valuing resources – or how much are they worth?

Having identified and measured resources, the final task in preparing a cost analysis for an economic evaluation is to place a value on these resources. In economic evaluations it is typical to value resources at their "opportunity cost" as per standard economic theory (Simoens, 2009). Opportunity cost refers to the value a resource has in its next best alternative use. Standard economic theory assumes that in a free and competitive market, opportunity costs are reflected in market prices. Indeed, many items, from signposts to entire buildings, can be bought on the market and are thus relatively easy to cost. Other things, however, are much harder to accurately value and for this reason may not always be included. As discussed earlier, depending on the context, this kind of omission can have important ethical implications.

Time and care are two examples of resources that do not have well-defined market prices. For example, time and productivity lost at work can be included in some health-related economic evaluations. While an individual's wage is seen to be a good proxy for this, it is not always clear what wage to use. Options are plentiful and so, difficult questions abound. Should one use the average national wage or a regional wage, the mean or the median? Perhaps instead one should use the average wage of the particular demographic at which a program is aimed? If so, how is this group defined and how does this skew the cost of a program? These are some of the questions that may arise. There is also the question of those who do important work but do not get paid, such as informal caregivers, who are predominantly women (Brouwer et al. 2008). It is important to consider how their time should be included and how it should be valued – especially since this increases program costs and so may be only reluctantly included.

These are not merely technical problems; they reflect deep ethical questions about how we value people, their energy and time. On the one hand, we may want to value all people and their time equally simply on basis of the principle of equality. On the other hand, we may be more interested in equity and targeting disadvantaged groups. Here, using the actual valuations of lower-income individuals' time will lower costs and potentially make policies directed towards them more attractive in comparison with other options targeted at the general population or other groups. Similarly, if we want to ensure that policies take into account issues of gendered work (both in and outside the household), then valuing caregiver time appropriately can be a good starting place and open up space for taking concrete steps to value caregivers during policy implementation.

Calculating costs – Summary

To calculate costs, one must:

a) Identify all types of relevant resources
b) Measure the quantity of each type of resource needed
c) Evaluate how much these resources are worth

Questions to keep in mind to identify ethical implications:

- Are all relevant costs included (kinds of resources and quantity of each kind)?
- Are the ways the resources are valued, especially those without well-defined market prices (people's time, for instance), at risk of skewing the results in favor of interventions benefiting and/or burdening some subpopulations?

Calculating benefits and other effects: The different approaches to economic evaluation

The other side to determining the costs of a policy is, of course, calculating the benefits it will produce if implemented. It is here that the various methods of economic evaluation truly differentiate themselves. Like costs, benefits have to be identified, measured and valued; unlike costs, however, there are myriad ways to accomplish these tasks, particularly the task of assigning value to benefits. The four main methods of economic evaluation will be described below with a focus on the ethical implications arising from each.

A. *Cost-minimization analysis (CMA)*, or leaving benefits aside

One of the oldest methods of economic evaluation is cost minimization analysis (CMA). It is also the simplest method because it does not require benefits to be calculated. In order for this to be possible, CMA can only be applied when benefits are assumed to be nearly uniform, both in scope and in nature, across the policy options being considered. Indeed, the most important step in performing a CMA is to determine whether it is appropriate for the given situation: it is crucial that the expected outcome of whatever policy options are being considered be essentially the same (Jefferson, Demecheli, & Mufrod, 2000).

Both the relevant direct benefits – those factors which the policy in question aims explicitly to improve – and indirect effects – those factors on which the policy in question has a positive or negative effect but which are not among its stated aims, such as productivity gains – should be equal. Only in such a situation can benefits be safely ignored and the analysis focus merely on costs. An example where CMA might be appropriate is a decision over whether to use public or private procurement for the delivery of a given project, whether it be several kilometres of bike path or a new health facility. In such situations, what counts as the most efficient course of action is the lowest-cost means that achieves the desired end.

Nevertheless, there may be ethical implications stemming from the use of CMA even in such seemingly clear-cut situations. In the decision between public and private procurement, assuming that benefits are equal because the end product is the same can omit important potential indirect effects. For example, public procurement can create and maintain expertise within public administrations that can later aid in other public projects. The question of how much value we place on such expertise is itself an ethical one, but one that cannot be posed within the bounds of a CMA. More complex varieties of evaluation make space for such indirect benefits to be potentially uncovered and the resulting broader ethical questions to be considered.

Cost-minimization analysis (CMA) – Summary

Ranks options deemed to have the same direct and indirect effects according to their costs. The least costly option is deemed the more efficient.

A question to keep in mind to identify ethical implications:

- Do the options compared really have the same direct and, especially, indirect positive and negative effects?

B. *Cost-benefit analysis (CBA)*, or monetizing benefits

Few policy decisions are so clear-cut as to warrant CMA, and more nuanced methods of economic evaluation have been devised and put to use, including in decision making for healthy public policy. An important method, developed early in the history of modern economics but still maintaining notable popularity, is cost-benefit analysis (CBA). Indeed, although CBA is what many people associate with all economic evaluations, it is but one, concrete method with its own defining features, strengths, limitations and ethical implications.

Defining features

CBA is firmly grounded in traditional welfare economic theory – this means that, in short, it seeks the maximization of net gains in social well-being as measured by satisfied individual preferences. Its key assumption is that not only all costs, but all effects of an intervention can be expressed in monetary terms. Once costs and benefits are translated into dollar amounts, policy recommendations boil down to seeing which policy option under consideration results in highest ratio of benefits to costs.

Expressing benefits in dollar terms, however, is not an easy task. The primary difficulty lies in finding a means to translate the multitude of possible, otherwise incommensurable benefits and other effects that a policy can generate – things as disparate as improvements in health, greater employment, better public safety and so on – into dollar amounts. To deal with this issue, evaluations have to choose how many effects to "monetize." One question is which effects to include: on one end of the spectrum is a choice to directly monetize the less controversial effects and leave more difficult-to-value effects out of the equation. On the other end lies translating all effects into monetary terms. Many evaluations fall somewhere in between.

A second, more challenging question is how to come up with those monetary valuations. Again, there are two broad options. One method is commonly called "revealed-preference valuation." It uses existing data on prices and behaviours to glean information about how people value things. For example, gauging the value of peace and quiet due to living in a traffic-calmed neighbourhood, might involve calculating the average price difference of similar homes in two neighbourhoods – one traffic-calmed and one not – that are otherwise very similar.

The other option is referred to as "contingent valuation" and frequently makes use of the willingness-to-pay (WTP) framework. With WTP, individuals are asked how much they would be willing to pay for particular benefits and the answers to such questions are used to generate valuations. Unlike in the revealed-preference method, here the dollar amount that a benefit is worth can be elicited directly. There are many ways of doing this, from asking explicitly how much one would pay for the benefit to engaging individuals in bidding games, asking them to choose between monetary gambles involving the benefit in question or using other proxies from which dollar values can be derived. For example, imagine wanting to determine the subjective value of being able to walk to work. Such a valuation could, for instance, be useful in evaluating the benefits of urban planning policies. One way of eliciting WTP would be to ask how much work time someone would be willing to forgo to be able to walk to work (described as, say, the time it took the employer to relocate to the new, walkable location). Here, the proxy is the individual's wage rate and multiplying it by the time potentially forgone gives a dollar value. Another means of obtaining the same information would be via a bidding game: the individual is asked whether she would hypothetically pay $X for being able to walk to work; if she answers in the affirmative, the same question is asked with a higher bid, if she answers in the negative, the bid is lowered. This continues for several rounds to reach a more precise figure.

Strengths

CBA has important strengths, especially as it can be applied to the evaluation of healthy public policy. Chief among these is universality: CBA could potentially be used in contexts where the choice is between policies that come from completely different fields, for example those that are clearly health-oriented and others that lack health-promoting components (Jefferson et al., 2000) – albeit this is not frequently done in practice. As such, CBA evaluations can be used to advocate for healthy public policies on efficiency grounds in policy areas where many other options may not be targeted, even partially, at health improvements. Cost-benefit analyses give healthy public policy advocates the potential to find a common language with their peers across a wide range of fields.

Another strong suit of CBA is its flexibility to handle any and all types of benefit (Schlander 2010). Any benefit potentially resulting from a policy that does not have a well-defined market value can regardless be expressed in monetary terms using the various tools that elicit willingness-to-pay. Thus, benefits as disparate as improvements in air quality and increased protein intake can be compared on the same metric. As the benefits stemming from many healthy public policies can be quite diverse, this flexibility is all the more an asset for this particular class of policies. Even critics of the WTP framework on which CBA is based admit that, particularly in today's conditions of scarcity of public resources, CBA is a tool that can help policy makers wisely earmark every valuable dollar across a range of competing and vastly different uses (Cookson, 2003).

Limitations

The major limitation of CBA stems, in many ways, from the same facts of its universality and flexibility that are its greatest strengths. It is hard enough to enumerate all the tangible and intangible benefits a policy may bring about; translating all of these into dollar terms adds an entirely new layer of difficulty. This is especially so for benefits that do not have well-defined market prices. Gauging their value can

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