



## Using CBA (Cost-Benefit Analysis) in Policy Evaluation

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Amidst the global pandemic, the guidance around school reopening is ever-changing. Policymakers must determine how and when to reopen schools. As educators prepare for the upcoming school year, schools are engaging in a variety of approaches, including entirely in-person, fully online, and a hybrid model of in-person and online courses [1]. Given the limited availability of resources, the U.S. government relies on the school system to educate children in an efficient, effective, and equitable manner while maintaining fiscal responsibility for tax dollars. Cost-benefit analysis (CBA) is a useful assessment tool that considers all social costs and benefits of policies and programs to help policymakers increase allocative efficiency [2, 3]. In this paper, I describe how CBA can be used to as a compare two school reopening policies and discuss the challenges associated with this approach.

Through monetizing aggregate social benefits and costs, policymakers can make informed decisions about how to best maximize utility, especially during these unprecedented times of Co-Vid [2]. Conducting a CBA of school reopening policies will allow program evaluators to identify policy intervention while maximizing benefits and reducing costs. Thus, CBAs are critical to program evaluation, especially for governmental agencies, as they ensure the prudent and efficient use of taxpayer dollars [2, 3].

In conducting CBA, evaluators must begin by articulating their assumptions [2]. When examining the use of CBA in school reopening policies, I would make two key assumptions. (1) Children want return to school and view getting more education as a benefit. (2) Schools want their students to in the classroom and understand that students cannot learn if they are not present [4]. The second step in conducting a CBA is to identify all the stakeholder groups withstanding [2]. In conducting a CBA of school reopening policies in Washington D.C, Public Schools (DCPS), I would give standing to the following groups: students and their families; teachers; non-teaching staff; school nurses; taxpayers; D.C. based employers; DCPS; D.C. government; D.C. health care systems (e.g., hospital). Next, I would create a comprehensive list of all the benefits and costs accrued to each stakeholder group.

After I have identified all costs and benefits per stakeholder group, the next step in the CBA is to quantify and monetize each item. However, this poses a challenge because certain benefits and costs (e.g., time) are non-quantifiable and, therefore, cannot be monetized. When conducting CBA, it is still essential to note non-monetary costs (e.g., opportunity costs) and benefits (e.g., increase knowledge). Although they do not monetary value, these benefits and costs are real to the stakeholder groups that experience them. Additionally, taking an inventory of all costs and benefits ensures researchers are taking steps to reduce under harm and burden [2]. Below, Table 1 presents an example of a comprehensive cost-benefit table for a CBA of school reopening policies in Washington D, C.

<b>Stakeholders</b>	<b>Benefits</b>	<b>Costs</b>
DC Government	Tax dollars to fund schools	Opportunity Costs* School Funding Increased risk and exposure to Co-Vid*
Students & Families	Academic outcomes (e.g., improved knowledge) Free and Reduced-Price Meals (FARM) Increased access to Co-Vid Testing* Transportation	Opportunity Costs* Increased risk and exposure to Co-Vid* Health Insurance
Public Schools (DCPS)	School Funding	Opportunity Costs* Salaries of teachers, school nurses and non-teaching staff FARM Increased Co-Vid testing kits Transportation
Teachers	Salary	Opportunity Costs* Increased risk and exposure to Co-Vid*
School Nurses	Salary	Opportunity Costs* Increased risk and exposure to Co-Vid*
Non-Teaching Staff	Salary	Opportunity Costs* Increased risk and exposure to Co-Vid*
Taxpayers (D.C. Residents)	Reduced access to health care (due to diminished capacity). Health Insurance	Opportunity Costs* Tax dollars to fund schools Increased risk and exposure to Co-Vid*
DC-Based Employers	Increased productivity as parents return to work.	Opportunity Costs* Health Insurance
DC Health Care Systems	Health Insurance	Opportunity Costs* Diminished capacity due to Co-Vid* Staff salaries
*denotes non-quantifiable, non-monetizable, or hard to find cost data		

**Table 1:** Comprehensive Benefits and Costs by Stakeholder in Benefit-Cost Analysis of Washington DC’s School Reopening Policies.

In conducting a CBA to examine school reopening policies, I determined that most of the costs and benefits occur as transfers between stakeholders. For example, taxpayers pay taxes to DCPS, and schools provide students with free and reduce-priced meals (FARM). I anticipate that the most significant challenges will occur as I try to gather data on the various benefits and costs. Many benefits the stakeholders receive are non-tangible (e.g., reduced healthcare access, increased productivity), which poses challenges for incorporating them into the CBA. However, they are still important to note. Fortunately, DCPS budget data is publicly available online and can be used to determine teachers’, nurses’ and staffs’ salaries, as well as the amount spent on transportation and FARM each year [5]. I do anticipate challenges getting access to health insurance and health care utilization data. Employers are not typically willing to share this information, and HIPPA regulations may prevent accessing some hospital data.

Once all benefits and costs have been monetized to the extent possible, I would then calculate the net present value of each policy option by subtracting the total net benefits from the total net costs. Then, I would compare the two schools ‘reopening policies and select the one with the lowest net present value. When using CBA to evaluate programs or policy options, it is critical to use net present value rather than cost-benefit ratios. Cost-benefit ratios are subject to manipulation and bias [2].

The final step in conducting CBA is sensitivity analysis to determine how much benefits change in response to variations in delivery or uptake for interventions. When using CBA to compare two school reopening policies, first, I would calculate the changes how much the net benefits change with as the percentage of students returning to school changes. In my sensitivity analysis, I will consider the questions: What is the increase in costs if more students return to school in the fall? What about if more parents keep their children home? Second, I would examine the impacts teachers or school nurses refusing to return to school. This sensitivity analysis will examine the extent to which staff availability and turnover affect the implementation of the school reporting policies. My final sensitivity analysis would be centered on the D.C. health care system. With school reopening, there is an increased risk of another outbreak. Thus, I would examine how increased medical and health utilization impacts the overall costs and benefits of the various reopening police [1].

Education is the key to accessing life-improving opportunities, including better employment and earning, among others [6]. However, reopening schools safely and effectively is critical for mitigating the impacts of the pandemic. CBA provides key stakeholders with the necessary evidence to make informed decisions about policy and programmatic development and implementation. Thus, using CBA in program evaluation can “help social decision-making and to increase social value or, more technically, to improve allocative efficiency” [2]. However, when conducting CBA to compare policies, there can be challenges getting the data necessary to quantify and monetize all costs and benefits. Additionally, it is important to note that evaluators should use the net present net value to compare and select policy alternatives. Cost-benefit ratios are often misleading and lead to the selection of Pareto inferior solutions [2].

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