J-PAL Costing Guidelines

Collecting detailed cost data is crucial to conducting cost-effectiveness analysis (CEA) and providing advice to policymakers on how they might best allocate limited budget resources. When J-PAL collects information on program costs, our goal is to illustrate how much a program would cost if it were replicated, and to facilitate more general comparisons among related projects. In our experience, it is much easier and more accurate to collect this cost information during the implementation of the program instead of trying to piece together the data after the evaluation is completed.

Collecting Detailed Cost Data

Since the goal of collecting costs data to determine how much it would cost a government or NGO to replicate the program, we must gather detailed information on the cost and quantity of all ingredients required to implement the program. The level of detail in cost data has implications not only for generating an accurate a cost-effectiveness estimate but also for identifying the drivers of cost-effectiveness or the potential cost-effectiveness of the program in another context or scale. There is a notable difference between including the total program cost and a list of itemized costs, as illustrated below:

	Budgetary Total	Itemized and Unit Cost
Cost for teacher-training program	US $10,000	2 regional trainings x 50 attendees x 1 day per training x $100 per person/day = US $10,000

The budgetary total only tells us what the implementing organization spent, whereas itemized unit costs allow us to see what the program looked like. Detailed costs allow others to examine the program model and assess whether the program cost would be the same in a different context or at scale, Cost data detail varies along two dimensions:

- **Number of program ingredients or cost items.** Detailed cost data should include itemized lists of program components and the materials required for implementation. This includes not only physical materials but also labor, transportation, administration, infrastructure, etc. We recommend using the ingredients method to create this list.
- **Details for each ingredient or item (including unit quantities and costs).** It is important to gather cost data that includes unit quantities and costs (e.g., the number of days of training necessary, the cost per day for a training facilitator, etc.).

Guidance for Gathering Costs

Now that we've outlined the level of detail to look for, we must consider which ingredients to include. These general considerations help determine what costs to include or exclude and how to calculate them.

Determining program costs

When determining the list of necessary program "ingredients," it is important to have a clear idea of what the program entails in the assumed context. As our goal in the cost collection process is to assist policymakers when they are choosing how to allocate resources between different programs, we need to clearly define how much it would cost to achieve the impacts measured by the underlying evaluation. That process requires an understanding of what is exactly being evaluated: we are measuring the impact of the program as it is compared to the *counterfactual*, what would have happened in the absence of the program.

In some cases a program starts from zero, which means all costs should to be included in the calculation. In other cases, a program is an intervention built into an already existing program or structure (e.g. monitoring and incentives to school teachers). In case of the latter we only include the additional costs needed to implement the intervention that produced (or will produce) the estimated impacts. For example, in the case of a program that introduces a after school program in public schools, we include only the marginal cost associated with the after-school program but not the cost of hiring teachers or running schools. It is important to consider the counterfactual, the starting situation against which the program is being compared, and to think about what are the additional costs of running the program.

We recommending the following steps for collecting data on the incremental cost of an intervention:

1. Use the "ingredients method of costing" outlined by Dhaliwal et al. (2013) to gather program costs.[1] List all of the ingredients necessary to implement the program, using these guidelines to determine whether particular items are generally considered "incremental" and should be included.
2. Estimate the unit cost of each item, either by looking at budgets or invoices, seeking outside information, or consulting with program staff and participants.
3. Determine how much of each ingredient was needed (i.e., a one-time or recurring expense).

Ingredients Approach

In order to give policymakers an accurate sense of the costs involved in replicating the underlying program, it is important to consider all the ingredients necessary to reproduce the program. Please note that this does not include the costs of your evaluation.

Most programs' ingredients can be broken down into the following categories:

- *Program administration:* Includes staff hired to work throughout the implementation of the intervention, costs of facilities, and any overhead costs incurred.
- *Targeting costs:* Includes any costs incurred to target, identify, and raise awareness of the program among potential participants.
- *Staff training:* Includes the costs of training staff responsible for implementing the program.
- *User training:* Includes any costs incurred to train participants or beneficiaries.
- *Implementation costs:* Includes all costs directly associated with the implementation of the intervention, such as the cost of items distributed to participants, the cost of staff who worked solely on implementation activities, or the cost of creating and maintaining resources developed for the intervention.
- *User costs:* Includes any costs incurred by program participants, such as the cost of goods users were required to purchase or the opportunity cost of participants' time.

[1] The "ingredients method" is one way of collecting cost data for cost-effectiveness analysis. It involves specifying and gathering cost data for all the ingredients necessary to replicate a program, guaranteeing comparability between programs. For more information about the "ingredients method," see Dhaliwal et al. (2013).

- *Averted costs:* Includes the costs that were replaced or discontinued as a result of the intervention. These costs should be subtracted from the total cost of the program.
- *Monitoring costs:* Includes any costs incurred due to oversight, monitoring, or tracking program participants and staff. These are costs that would be incurred as part of the program's ongoing M&E strategy, not part of the evaluation.

Each program may not incur costs in every one of these categories. For further detail, please see J-PAL's cost collection template. It provides a set of preliminary questions to help policymakers and practitioners determine which of these categories apply and to think through the sub-categories and line-items that may fall beneath these broad cost categories.

What Costs to Include or Exclude

Within each of the broad categories outlined above are items that are costs directly ascribed to the program and others that are incurred indirectly or by individuals or organizations other than implementer. As you think about all the ingredients that are needed to implement the underlying program, please keep in mind the following general guidelines.

Standard monitoring and evaluation costs versus cost for research activities

Although evaluations are often closely linked to the programs they assess, the point of costing is to estimate the resources necessary to implement *the program itself*—not the associated evaluation. Any costs of conducting the evaluation or of adhering to a research design should be excluded. For instance, it may be necessary to break up data collection costs to separate program operations in a non-research setting (i.e. standard monitoring of the program) from data collection done for the randomized evaluation. For instance, it is possible that a program would use a survey to collect information about students and households that will inform the targeting of a scholarship program for low-income families. However, the research team added sections to the survey, so the survey length, and therefore costs, were higher than would have been necessary if the program were not being evaluated. Similarly, if assets like vehicles were used for both research and implementation activities, only the proportion used for implementation activities should be included in the program costs. In this case, you should separate out fraction of the resource used for the program.

Goods and services provided for free

In some programs, certain goods and services are provided at no cost to implementers. For example, an outside organization may donate inputs such as textbooks or vehicles. Even though the program *as evaluated* did not assume these costs, goods and services provided for free were still necessary to implement the program. It is important to include these items in your list of ingredients so that others who wish to replicate or scale your intervention know what would be required.

Once the in-kind donations are included in the list of ingredients, you must decide if you will include an estimate of their market value or if you will leave the costs out. This depends on the question you are trying to answer with your CEA. If you want an estimate the CEA of the program *exactly as evaluated,* at the same scale in the same context, you may choose to assign a cost of zero to that ingredient.

However, CEA frequently aims to consider the cost to society as a whole of operating a program—considering the costs for multiple organizations as well as participating households—or to illustrate the potential cost-effectiveness of replicating the program in another context or scale—where we cannot assume the same goods and service would be donated. Under both of these cases, it is important to include the market value of such free goods and services.

One particularly common example is that of volunteer time. Although it may not be included as a cost in budgets, we should always consider the opportunity cost of volunteers' time, as donated labor may not be available in other contexts or at scale. Volunteer time can be included in cost estimates by multiplying the amount of time that volunteers spend on the program by the average wage of the volunteer workers might earn for other work. If it is not possible to survey volunteers about wages, it is often possible to find administrative data on average local wages.

Costs to participants

Participation in some programs may require participants to invest resources, both time and money. These might include the cost to travel to informational meetings or the opportunity costs of attending such meetings if they occur when the participant would otherwise be working. It is important to note the amount of time required from participants. However, similar to goods and services provided for free, including costs for this time depends on the purpose of your CEA. A CEA from a social perspective should account for the costs incurred to all members of society, including participants. A policymaker, we assume, cares not just about their own budgetary costs, but also about the costs that a particular program will impose on the people the program aims to assist. Similarly, a CEA to inform replication or scale up will also include these costs, as a potential implementer might want to consider if it is reasonable to expect participants to invest. But a CEA of a program *as evaluated,* from the perspective of an implementing organization, will not necessarily include costs incurred by participants.

Ingredients with "overlapping" uses

In some cases, the program being analyzed may share inputs with other programs. These include costs such as NGO or government staff time or shared office space. When key inputs have overlapping uses, their costs do not need to be included in full. In this case, you should determine what *proportion* of the resource were used on the program. For example, a program that uses NGO staff who work on multiple programs to measure and distribute school uniforms would only need to include the cost of the proportion of staff time spent on these activities rather than their full salary.

To calculate costs at the margin, simply estimate the proportion of a given resource that is used (e.g., NGO staff time needed to oversee a program) and multiply it by the unit cost of that resource (e.g., the NGO staff member's hourly wage).

A program may also need to purchase items (e.g., a vehicle or computers) that will not be used exclusively for program activities. One example of this is a car that is used partly for evaluation activities and partly for implementation activities. As above, these costs can be calculated by estimating the proportion that was used on program activities. For instance, if only 20 percent of trips made in a given car are related to the program, then the overall cost would include only 20 percent of the cost of gas, maintenance, depreciation, etc.

Key Dimensions of Costs to Consider for Replication or Scale

As you think about all the ingredients that are needed to implement the underlying program, it is helpful to note certain dimensions of costs that have implications for program costs during replication or scale up. These dimensions are: frequency of activities and quantity of participants.

Frequency of activities (Start-up vs. ongoing costs)

In general, costs can be divided into two large categories: development or start-up costs and recurring costs. Development costs are incurred once at the beginning of a program to set up program operations (e.g., initial meetings with community leaders, purchasing equipment for program administration) or to create program activities (e.g., development of a community outreach curriculum).

Ongoing implementation costs are continually incurred for ongoing activities throughout implementation (e.g., rent for office space, wages for program staff, regular meetings, time cost for participants to pick up transfers, etc.).

Differentiating these costs allows practitioners to analyze how program cost-effectiveness varies if it is run over a shorter or longer period of time. If an intervention is expensive to develop and set up but requires little ongoing expenditures—for example, a program that produces an informational video explaining how students can access financial aide for higher education that can be showed by teachers without much training—the program will could become more cost-effective as the video is shared with more students, year after year,

Additionally, separating the costs allows us to examine how cost-effectiveness could change if replicated in a similar context. If some of the development activities (e.g., development of a curriculum) could be transferred to a replication of a program in another context or at scale, separating the cost types makes it easier to estimate how much it might cost to implement the same program elsewhere.

Quantity of participants (Fixed vs. variable costs)

Another dimension of ingredients is how the cost is influenced by the quantity of participants. This depends on whether a cost is fixed versus variable. Fixed costs do not scale with the number of participants or implementation sites. For example, rent for an NGO's headquarters. These costs are likely to remain constant no matter how many students participate in the program.

Variable costs are incurred for each additional person, school, district, and so forth, included in the program. These costs might include salaries, trainings, and materials.

Differentiating these costs allows practitioners to analyze how program cost-effectiveness varies at scale. If the costs of an intervention are largely fixed, implementing the program at scale, and spreading the fixed costs over more participants, may improve program cost-effectiveness. However, if the vast majority of the costs are variable, cost-effectiveness may not improve (or may actually worsen) at scale

Streams of costs across time

It is also important to track *when* costs are incurred. Laying out the timeline of when costs are incurred makes it easier to understand the structure of the program. For example, if a program runs for five years, should there be only one parent information meeting in the first year, or should there be meetings at the start of every school year, incurring costs over the entire time frame?

Additionally, knowing when costs are incurred also allows you to make sure all costs are expressed in the same unit: currency units in the base year, usually the first year of the program. Organizations generally incur an opportunity cost by spending money on a particular program. Instead of implementing the program, the organization could invest and earn interest on that money. When a program's costs are distributed across time, it is necessary to discount them back to their present value in the base year to account for an organization's time preference. For more information on discounting costs (and impacts), see Dhaliwal et al 2013.

What sort of CEA is possible if you don't have disaggregated costs?

The primary motivation for collecting detailed cost data is to understand the structure of a program. We would like to have much more detailed costs than are included in most program budgets as collecting detailed cost information helps to ensure comparability across studies. Moreover, presenting the data at a highly disaggregated level can facilitate sensitivity analysis, which allows policymakers to examine how

much a similar program might cost and how it might operate in their specific context. However, this data is not always available. This section outlines some rules of thumb about what kinds of calculations can be done with cost data at various levels of detail:

- **Budgetary total only**
  - *"This program cost $150,000 to implement"*
  - *"We spent $15 per child"*

Budgetary totals provide cost information that lack detail on what ingredients the program included as well as the quantities and costs of each ingredient. With only budgetary totals or the cost per participant, there is also no information about the timeframe or sample size. In this case, it is difficult to conduct any meaningful CEA. Knowing the time over which the budget was spent allows you to ensure the impact estimate measures the effect after the entire program was implemented (e.g., one wouldn't want to compare the cost of a 2-year program to the program's impact after only 1 year). Additionally, without details on how many beneficiaries were reached, the analysis may aggregate costs and impacts over two different samples. "Per person" could mean the program cost per person who actually participated in the program while the impact estimate measures the average impact over all those offered the program.

- **Budgetary total with information on sample and timeframe**
  - *"The program cost $300,000 to roll out to 150 schools over a two-year period"*

Given a budgetary total with information on the number of participants and program timeframe, it is possible to create *a rough estimate* of a program's cost-effectiveness. However, details of program ingredients, as well as quantities and unit costs, are still missing. There is enough data to ensure that costs and impacts are aggregated over the same time-frame and number of beneficiaries, but it is not possible to say anything about the ingredients or cost structure of the program (i.e., what proportion of total costs come from different categories of costs such as labor, materials, transportation, etc.). These rough estimates of cost-effectiveness should be interpreted with caution, especially when compared to estimates from other programs, since it is not possible to verify whether the total cost includes the same items or if it was aggregated according to the same rules.

- **Budget costs to one organization, broken down into categories**

PROGRAM DEVELOPMENT (one time)		
Item	Cost	Currency
Field Labor	29,075	2011 USD
Consultants	7,262	2011 USD
Sub–grant to Schools for life	3,066	2011 USD
Travel	3,317	2011 USD
Food/Accomodations	2,658	2011 USD
TLMs and Training Materials	9,734	2011 USD
Other Expenses	3,056	2011 USD
	58,169	

With costs broken down into categories, it is feasible to generate an estimate of program cost-effectiveness. Budgets that break down costs into categories with a single, total cost for each category provide granular detail on program ingredients but still lack detailed unit quantities and costs that are useful to know when considering a program for replication or scale. For example, without knowing how many field laborers were employed in the program budget above, it is impossible to know how adding or removing laborers would change the total cost.

Furthermore, without additional information on costs incurred by other organizations or program participants, the analysis is likely to leave out the costs of key program components, making any CEA less precise.

- **Costs from multiple organizations, with categories and unit quantities and costs**

DEMOGRAPHICS	Pilot	Going to Scale	Ongoing
Number of TCAs employed	162	28,967	28,967
Number of schools	100	17,881	17,881
Number of students in S1-23 (ITT)	11,950	2,136,780	2,136,780
Number of students in S1-S3 (TOT)	4,183	747,873	747,873
Duration (in years)	1	1	9
Exchange Rate	0.51	GHC/USD	

CHILD/YR (10yr nat'l pro		Literacy	Loc. Language
Including Salaries	ITT children	0.102	0.094
	TOT children	0.046	0.048
Excluding Salaries	ITT children	0.306	0.282
	TOT children	0.870	0.810

START UP & OVERHEAD (from sheet 2)					Pilot		Costs Over Life of Program	
Item	# Per Person (if applicable)	Unit Cost, Original Currency	Original Currency	Unit Cost, 2011 USD	Units Used, Year 1	Total Cost, Year 1	PV of Cost Stream	Costs Incurred by...
Program development	-	-	-	58,169	1	58,169	-	IPA
Procurement of TLMs and supplies	-	-	-	100,257	1	100,257	-	IPA
Supervision & monitoring	-	-	-	67,707	1	67,707	-	IPA
Administration & oversight	-	-	-	367,767	1	367,767	25,605,340	IPA
SUB-TOTAL						593,900	25,605,340	

Refresher Training for Master Trainers (for training CS Supervisors)					Pilot		Costs Over Life of Program	
Item	Days	Unit Cost, Original Currency	Original Currency	Unit Cost, 2011 USD	Units Used, Year 1	Total Cost, Year 1	PV of Cost Stream	Costs Incurred by...
Honorarium of Master Trainers	1	40	2011 GHC	20	20	410	28,962	GES
Travel of Master Trainers	1	50	2011 GHC	26	20	512	36,203	GES
Food and snacks of MTs	1	12	2011 GHC	6	20	123	8,689	GES
Food and snacks of Trainers of MTs	1	12	2011 GHC	6	5	31	869	GES
Accomodation	1	50	2011 GHC	26	20	512	36,203	GES
Conference facilities rent	1	400	2011 GHC	205	1	205	14,481	GES
Misc/stationery	1	1,120	2011 GHC	574	1	573.62	79,169	GES
						2,366	204,576	

With a comprehensive list of all of the ingredients necessary to run a program, including information on how much of each ingredient was used and the unit cost for each, it is possible to conduct a rigorous CEA that can precisely estimate the program's cost-effectiveness as it was implemented. This level of detail also facilitates analysis to project the program's cost-effectiveness at a larger scale or in a different context.

Additional Resources

Below is a list of further resources related to cost-collection and CEA. For specific questions, please feel free to contact costeffectiveness@povertyactionlab.org

- Comparative Cost-Effectiveness Analysis to Inform Policy in Developing Countries: a high-level paper outlining why cost-effectiveness is useful and what assumptions must be made in conducting CEA (Dhaliwal et al. 2013).
- Cost-Effectiveness Analysis: Methods and Application: an economist's handbook for conducting CEA, with general discussion of the concepts of CEA and some specific guidelines (Levin and McEwan 2001).