Costing Methods: Scope and Study Design

Zero-Dose Learning Hub - August 2025

Zero-Dose LEARNING HUB

Costing studies are essential for effective planning, budgeting, and advocacy to sustainably reach zero-dose (ZD) children. A recent scoping review of the costing literature (Levin, 2024) found that immunization costing studies often lacked key methodological information, underscoring the need for ZD costing studies with rigorous and transparent methods. The following Costing Methods brief is an excerpt from the Zero-Dose Learning Hub's (ZDLH) *Costing Zero-Dose Child Interventions: An Operational Guide* and offers practical guidance on defining the scope, design, and assumptions of a costing study to estimate the incremental costs of reaching ZD and under-immunized (UI) children. By standardizing key parameters and output measures, the brief supports country teams, researchers, and decision-makers in conducting rigorous and actionable cost analyses. **Download the full toolkit** to learn more.

When designing a costing study, the study team should present the objectives of the cost analysis and then describe the scope, study design, and assumptions they plan to use in their cost estimation. The section below discusses the basic scope parameters. The following brief (and Table 1) provides recommendations and definitions of key parameters of a costing study design.

Scope

In a costing study aimed at measuring the **incremental cost of interventions to reach ZD children**, the scope typically includes a detailed examination of the **resources required** to implement targeted strategies that reach populations not previously served by routine immunization (RI) systems. These studies usually include the following:

1. Geographic and Population Scope

- Target areas: Often underserved, hard-to-reach, or conflict-affected regions
- Population focus: ZD and UI children
- Disaggregation: By age, location, gender, socioeconomic status, or other relevant equity dimensions

2. Intervention Scope

- Specific interventions: Outreach services, mobile clinics, community health worker deployment, demand-generation campaigns, cold chain expansion, social mobilization, etc.
- Delivery platforms: Routine health systems vs. supplementary activities (e.g., campaigns or integrated service packages)
- Incremental components: Focus on **what is *added*** to existing services, **not** total program costs

3. Timeframe

- Short-term (e.g., annual costing) or multi-year studies, depending on the program phase
- Account for both initial setup costs (e.g., training, infrastructure) and recurrent costs (e.g., salaries, fuel, per diem)

4. Outputs

- Cost per ZD child reached/vaccinated
- Cost per dose delivered
- Total incremental cost of reaching target coverage goals
- Possibly cost-effectiveness estimates, if linked to measurable health outcomes

Photo Credit: GaneshAID, Mali

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Photo Credit: International Center for Diarrhoeal Disease Research, Bangladesh

An incremental costing study provides essential evidence for planning, budgeting, resource mobilization, and policy advocacy, especially in Gavi-supported or low-resource contexts where efficiency and equity are major concerns.

Study Design

The study team should clearly describe the objectives of the cost analysis, whether to inform budgeting, prioritize interventions, or support decision-making in resource allocation. They also need to specify whether the estimated costs will be used in cost-effectiveness or cost-benefit analyses. Cost-effectiveness analysis compares the cost per immunization outcome achieved through an intervention compared to an alternative intervention or no intervention. Cost-benefit analysis compares the financial costs of an intervention against its monetary/economic benefits, such as treatment cost savings, caregiver time saved, and the societal value of lives saved.

Beyond defining the study's objectives, the study team should specify whether the package of ZD interventions addresses supply-side constraints, demand-side constraints, or both. They also need to define the study audience, target populations, and time horizon (as detailed in Table 1). Additionally, the team should indicate whether the study will employ a pre-post design or a comparison evaluation (see Table 1 for definitions).

The study team will need to estimate the following output measures in their analysis:[1]

- **Total cost of each activity or component:** The sum of all resources used for a specific activity.
- **Total cost of the intervention:** The sum of all resources used for the whole intervention.
- **Incremental cost of the ZD intervention per additional DTP1 child reached:**[2] The additional intervention cost is divided by the number of additional children vaccinated with DTP1 (diphtheria, tetanus, and pertussis). This measure estimates the cost that is incremental to the existing immunization services and is an indication of cost-effectiveness.
- **Incremental cost per capita:** The additional intervention cost divided by the national population.

Table 1 outlines the key assumptions and methods that should be described in the costing methodology write-up.

[1] Brenzel, Logan. *Common Approach for the Costing and Financing Analyses of Routine Immunization and New Vaccine Introduction Costs*. Working paper. Gates Foundation, 2013.

[2] Please note: it is unlikely that countries/programs can measure the *incremental cost per additional ZD child reached* because often there are no reliable ways to measure the numbers of ZD children (which means no reliable denominator). Therefore, we use the number of children vaccinated with DTP1 as the proxy for ZD children reached.

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Table 1. Summary of Costing Methods for Study Design, Data Collection, and Types of Cost

	Definition/Recommendations	Notes
Study Design		
Study type	Define the type of study you are going to implement (e.g., costing study, efficiency analysis, economic evaluation, or other).	The study type and objective should be aligned.
Study objective	Specify the objective of the cost analysis; for example, informing budgeting or prioritizing projects.	All analyses should include an estimation of cost per additional DTP1 dose.
Type of ZD intervention	Indicate whether the intervention addresses supply-side constraints, demand-side constraints, or both. Also, specify if the intervention is multifaceted with multiple objectives.	
Audience	Identify the intended audience of the analysis (e.g., immunization researchers, health economists, or immunization program managers).	
	Detail how the target audience was engaged during the study's conceptualization and how the study's outputs are relevant for policymaking.	
Target population	Define the target population of the intervention.	Usually includes children under the age of two and is often at the subnational level. However, this may vary depending on the context and intervention.
Time horizon	Specify the start and end dates of the intervention as well as the duration over which health outcomes and costs are calculated.	
Timing of data collection	Indicate the dates of data collection.	
Output measures	Define the intervention outputs to be measured, such as the **cost per additional DTP1 dose** and **total cost of the intervention**.	These output measures also can be customized to align with a specific intervention being targeted.
Perspective	Specify the point of view considered for costs in a costing study (i.e., who incurred the costs). The perspective defines whose costs are being considered in the costing study. • **Payer perspective** includes costs incurred by the disbursing agents.	Costing studies are most often from the provider or health system perspective (e.g., Ministry of Health, implementing partners).

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	Definition/Recommendations	Notes
Study Design (Continued)		
	• **Provider/health system perspective** includes costs incurred by health service providers. • **Societal perspective** includes all costs incurred by both providers and clients.	Studies that consider the societal perspective include community or household costs (e.g., transportation, opportunity cost of time needed to seek vaccination services).
Types of Cost		
Ingredients costing	Specify the quantity of each resource used in each activity or intervention and multiply the quantity by the price of the input. Ingredients costing is a granular accounting because it includes each resource used.	
Start-up, recurrent, and capital costs	**Start-up** costs are one-time programmatic activities and are treated as capital costs. **Recurrent** costs are the value of resources that last less than one year. **Capital** costs are the value of resources lasting more than one year such as equipment.	
Financial and economic costs	**Financial** costs are monetary outlays, with straight-line depreciation for capital goods. **Economic** costs reflect the value of all resources used, regardless of the financing source, including opportunity costs (e.g., existing resources and donated items).	Financial and economic costs are calculated differently. Financial costs only include the costs of resources that are purchased monetarily and reflect the costs incurred by the payer/provider. They do not include salaries of existing personnel or donated items.
Incremental and full costs	**Incremental** costs reflect the additional resources required to add a new service/intervention. **Full** costs include both baseline costs and additional/incremental costs of the new intervention.	
Cost components	Identify key additional costs and their definitions, including personnel, vaccines and injection supplies (if part of intervention), transport, social mobilization and sensitization, supervision. If cost categories/components are excluded, a justification needs to be provided.	Salaries of already existing personnel are in economic costs but not financial costs when conducting incremental costing. This is because existing personnel are always receiving salaries. The opportunity cost of their time is included in economic costing.

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	Definition/Recommendations	Notes
Data Collection		
Measurement approach for costing	Specify the type of costing approaches used in the study (e.g., bottom up/ingredients approach).	
Sampling	Define the sampling method (e.g., random sampling) in line with the study perspective (payer, provider, or societal perspective) and determine whether the sampling approach is statistically representative. For ZD costing studies, if the study seeks to measure payer or provider costs, the most common sampling unit is the health facility for both intervention and control areas. Other types of sampling units include community districts and provinces/regions. If the study seeks to measure the caregiver's costs of seeking vaccination, then the sampling approach usually involves a household survey and the sampling unit is the household or caregiver. Details of how respondents were selected/ sampled should be described.	If the purposive sampling is used, justify why this approach was taken.
Incremental prospective or retrospective, pre-post, and pre-post with a control (counterfactual)	**Incremental prospective or retrospective costing** involves collecting cost data during or after the intervention but not before it begins. Two types of quasi-experimental designs are commonly used, neither of which use random assignment of participants: • **Pre-post studies** involve collecting cost data in the intervention district/areas before (baseline) and after (endline) the intervention has been implemented. • **Pre-post studies with a control group** involve collecting baseline and endline cost data in both intervention district/areas and in comparison areas with similar characteristics.	A pre-post design with or without a control group can be used for the costing.
Prospective vs. retrospective data collection	Indicate whether cost data were collected through direct observation during implementation of ZD intervention (prospective) or obtained retrospectively after implementation.	

	Definition/Recommendations	Notes
Data Collection (Continued)		
Data sources	Describe the data sources used to estimate costs. Data sources could include: i) Desk/record review (immunization records, expenditure reports, etc.), ii) interviews, and iii) observation. Methods: structured questionnaires, topic guides, etc.	
Sequenced vs. simultaneously implemented interventions	Indicate whether the intervention is sequenced[3] (implemented in phases) or conducted simultaneously.	
Costing assumptions	Costing assumptions: All scenarios and assumptions used for cost projections should be clearly detailed and transparent to ensure that they are understood by the reader and can be replicated in other settings if need be.	
Valuation and Pricing		
Currency	The currency in which the cost data will be collected should be mentioned, including the costing year. Any currency conversions (e.g., to US dollars) should be reported.	
Inflation rate used	Inflation rates used, especially for retrospective studies, should be reported.	

Source: Technical Brief on Current Costing Literature on Interventions to Reach Zero-Dose Children in Low- and Middle-Income Countries[4]

ZD Intervention Costing Use Cases

The use cases for the costs identified by the ZD costing study include cost analysis, cost-effectiveness analysis, and cost-benefit analysis.

Cost analysis focuses on estimating the cost of the ZD intervention as well as the incremental cost of the ZD intervention per incremental ZD child reached. It also provides information on the most influential cost inputs in the intervention and can be used to identify ways to decrease costs of the intervention. Information on total costs can be used to assess the affordability of the intervention and for advocacy for continued funding and planning for scale-up. It can also be used to compare the cost of reaching an additional ZD child through different ZD interventions. This data can also be input into other types of economic evaluation: cost-effectiveness analysis, cost-benefit analysis, and cost savings analysis.

[3] Sequenced: a series of consecutive interventions.

[4] Levin, Ann, et al. *Technical Brief on Current Costing Literature on Interventions to Reach Zero-Dose Children in Low- and Middle-Income Countries*. Technical brief. JSI, 2024.

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Cost-effectiveness analysis estimates the costs and health outcomes of ZD interventions. It involves comparing one intervention to another or to the status quo by estimating the additional cost of a unit of a health outcome, such as a death averted, a disability-adjusted life year averted, or life year gained. The measure used for cost-effectiveness analysis is the incremental cost-effectiveness ratio (ICER). Using the ICER results, the study team can make recommendations on the most cost-effective intervention to policymakers and program managers.

A cost-effectiveness analysis calculates the net cost of a ZD intervention. The costs averted include medical costs from diseases averted from DTP1 vaccination and/or productivity losses.[5] The costs averted are subtracted from the costs of implementation to get net costs.

$$\text{ICER} = \frac{\text{Net Additional Cost of Intervention (Total Cost – Treatment Cost Averted)\#}}{\text{\# Health Outcomes Averted}^{6}}$$

In most cases, we are comparing the ZD intervention to no intervention. The alternative ICER formula shown in the footnote below is useful if comparing the ZD intervention to another existing intervention, such as the RI program.

Cost-benefit analysis compares the costs and benefits of an intervention by estimating monetary units of benefits. Cost-benefit analysis is calculated by subtracting costs from benefits. The benefits of vaccination include medical costs averted, productivity gains, and monetized value of health improvements. The results from this analysis can be used to compare the cost-benefit of ZD interventions.

Photo Credit: African Field Epidemiology Network, Nigeria

Led by JSI, Gavi's ZDLH is a global learning initiative to generate evidence and engage stakeholders to identify and reach ZD and UI children. As the global learning partner, JSI supports Country Learning Hubs in Bangladesh, Mali, Nigeria, and Uganda to advance evidence-based strategies aligned with Gavi's Identify-Reach-Monitor and Measure-Advocacy (IRMMA) framework. Key ZDLH achievements include demand-driven technical assistance and the development of tools and resources, all aimed at reaching ZD children and integrating evidence into policy and practice.

[5] Productivity losses often include the value of caretaker time spent seeking health care instead of working.

[6] If the cost-effectiveness of the ZD intervention is being compared to another (existing) intervention, use the following formula: ICER=Cn-Co/En-Eo [Cn=cost of the new intervention, Co=cost of the older intervention, En=# health outcomes averted through new intervention, Eo=# health outcomes averted through older intervention]. Note: the "health outcomes averted through the intervention" is the measure of intervention effectiveness used for the study.