

Ex-Ante Economic Evaluation and Cost-Benefit Analysis of a National Primary Healthcare Reform Program Health Financing, DALYs Monetization, and Social Return on Investment Modeling

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Abstract

Economic evaluation is critical for determining whether large-scale healthcare investments generate sufficient social returns. This study conducted an ex-ante cost-benefit analysis of a \$50 million primary healthcare reform program designed to expand access and improve quality of care for underserved populations in Honduras.

Using an integrated economic evaluation framework, the analysis combined epidemiological projections, clinical effectiveness estimates, Disability-Adjusted Life Years (DALYs), and monetary valuation techniques to compare “with-project” and “without-project” scenarios. Direct and indirect health impacts were modeled for maternal and child health interventions delivered through decentralized providers.

The program was projected to avert maternal and infant deaths, reduce disability, and generate substantial social benefits. Results estimated a benefit-cost ratio of 1.94, indicating that each dollar invested would generate nearly two dollars in social return. Sensitivity analysis confirmed the robustness of the findings.

This approach provides a scalable framework for health financing decisions, investment appraisal, and public sector prioritization.

Objectives

- Evaluate economic viability of a national health program
- Estimate social benefits of health outcomes
- Monetize DALYs avoided
- Compare “with vs without” scenarios
- Calculate benefit-cost ratio and ROI
- Support IDB financing decisions

Scope

- National primary healthcare reform
- Rural & vulnerable populations
- Multi-year implementation
- \$50M investment
- Maternal and child health focus
- Multiple preventive and curative interventions

My Role

Lead Economic Evaluation Consultant

- Designed evaluation framework
- Built cost-benefit and DALY models
- Quantified direct and indirect health impacts
- Monetized benefits using value-of-life approach
- Conducted sensitivity analysis

- Produced decision-support report for IDB and government authorities

Methods

Economic Evaluation Approach

- Ex-ante cost-benefit analysis
- With-project vs without-project comparison

Health Impact Modeling

- Clinical effectiveness literature
- Mortality reductions
- DALYs avoided

Monetization

- Value of statistical life (VSL)
- Social discount rate
- Present value of benefits

Financial Analysis

- Total program costs
- Benefit-cost ratio
- Sensitivity analysis

Key Findings

- 67 maternal deaths avoided
- 1,340 infant deaths avoided
- 2,502 deaths/disabilities prevented
- ≈ \$97.2M in social benefits
- Benefit-Cost Ratio: **1.94**
- Positive ROI across sensitivity scenarios

Impact

- Supported IDB investment approval
- Provided evidence-based financing justification
- Improved policy decision-making
- Demonstrated strong social return on health investments

Practical Applications

- Health financing reform
- Public investment appraisal
- Budget prioritization
- Population health strategy
- Development bank projects
- Value-based care programs

Conclusion

Ex-ante economic evaluation and cost-benefit analysis provide a powerful framework to guide health system investments. By linking health outcomes to monetary value, policymakers can make transparent, evidence-based decisions that maximize social welfare.