Estimating Unit Costs and Capitation Rates for Primary Healthcare Services

Activity-Based Costing and Economic Modeling to Support Health Financing Reform in Honduras

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Abstract

Sustainable healthcare financing requires reliable cost information to guide provider payments, contracting mechanisms, and resource allocation. In decentralized health systems, the absence of standardized costing methods limits the effectiveness of capitation and performance-based financing models.

This study developed a comprehensive Activity-Based Costing (ABC) and economic modeling framework to estimate unit costs for a guaranteed package of primary healthcare services delivered by decentralized providers in Honduras. The analysis supported the design of per-capita payment rates and informed financing decisions for a national health reform program funded by the Inter-American Development Bank.

The model combined clinical pathways, resource utilization, financial records, epidemiological projections, and indirect cost allocation to estimate total costs and expected service demand for approximately 745,000 beneficiaries. Results produced standardized unit costs, total program budgets, and capitation benchmarks to guide contracting and reimbursement strategies.

Objectives

- Estimate unit costs of primary healthcare services
- Develop standardized cost structures
- Calculate capitation rates (per-capita payments)
- Support provider contracting and financing reform
- Strengthening institutional capacity in cost analysis

Scope

- First-level primary care services
- Decentralized provider network
- ~745,000 beneficiaries
- Dozens of clinical interventions (maternal, child, infectious, chronic, preventive)
- Multi-site financial and operational data

My Role

Lead Consultant

- Designed costing methodology
- Built Activity-Based Costing models
- Defined clinical “operational concepts” for each service
- Collected and validated cost data
- Estimated direct and indirect costs
- Modeled service demand and frequencies
- Calculated per-capita payment rates
- Delivered financial recommendations to policymakers and the IDB

Methods

Cost Estimation

- Activity-Based Costing (ABC)
- Clinical pathway mapping
- Direct cost identification (HR, supplies, diagnostics)
- Indirect cost allocation (administration, infrastructure, overhead)

Capitation Modeling

Per-capita payment calculated as:

$$\text{Per capita} = \text{Unit cost} \times \text{Expected frequency} \times \text{Population at risk}$$

Data Sources

- Provider financial records
- Epidemiological statistics
- Population projections
- Service production data
- Expert clinical validation

Key Findings

- Significant variation in unit costs across services
- Direct costs represented the majority of total spending
- Indirect costs standardized using overhead ratios
- Reliable cost benchmarks enabled transparent contracting
- Capitation pricing improved predictability and budget control

Impact

- Supported national health financing reform
- Informed IDB investment decisions
- Improved reimbursement design
- Strengthened budget forecasting
- Increased efficiency of decentralized providers

Practical Applications

- Capitation rate design
- Managed care pricing
- Provider payment reform
- Budget impact analysis
- Population health financing

Conclusion

Activity-Based Costing combined with epidemiological modeling provides a robust framework for estimating primary healthcare costs and designing capitation payments. This approach supports evidence-based financing decisions and strengthens health system sustainability.