

# How do we measure the return-on-investment (ROI) of Typhoid Conjugated Vaccine and Oral Cholera Vaccine ?



## Methods of Estimating the Return-on-investment of Typhoid and Cholera Vaccination Programs

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**Background:** Typhoid fever and cholera remain endemic in low- and middle-income countries. Demand for typhoid conjugated vaccine (TCV) and oral cholera vaccine (OCV) are projected to increase with rising country adoption and continuation of both vaccines. Understanding the economic value of TCV and OCV investments can help decision makers strategize resource mobilization and allocation efforts as well as advocate for funding to cover the projected costs of these vaccines within the health system. To this end, this study aims to estimate the return-on-investment (ROI) of TCV and OCV among low- and middle-income countries from 2021-2030.

**Method:** We apply health impact estimates of cases and deaths from typhoid fever and cholera infection that are to be averted due to vaccination in LMICs using models generated by the Vaccine Impact Modeling Consortium (VIMC). We then utilize the case and mortality data as inputs into the Decade of Vaccine Economics (DOVE) ROI model. The health benefits on TCV will be provided by the International Vaccine Institute (IVI) and the Yale School of Public Health (YSPH). Cholera's economic benefits are to be modeled by the International Vaccine Institute (IVI) and the Johns Hopkins Bloomberg School of Public Health (JHSPH). The estimates currently span 47 countries for OCV, and 93 for TCV. The immunization costs for TCV and OCV will include both vaccine costs (doses, syringes, injection supplies) and immunization delivery costs (personnel, cold chain equipment and maintenance, transportation, distribution services, and other recurrent costs) for routine and supplementary immunization activity (SIA) administration. Costs of TCV and OCV will be calculated using Gavi's vaccine prices and operational forecasts. Delivery cost estimates will be modeled using the DOVE Costing, Financing and Funding Gap (CFF) model. The ROI will be estimated by dividing the net benefits (benefits minus costs) by costs for each vaccine. The cost to immunize one child with TCV and that of OCV will also be assessed. Scenario analysis and sensitivity analysis will also be conducted to account for uncertainty in future vaccine prices and delivery costs.

Figure 1. ROI Methodology

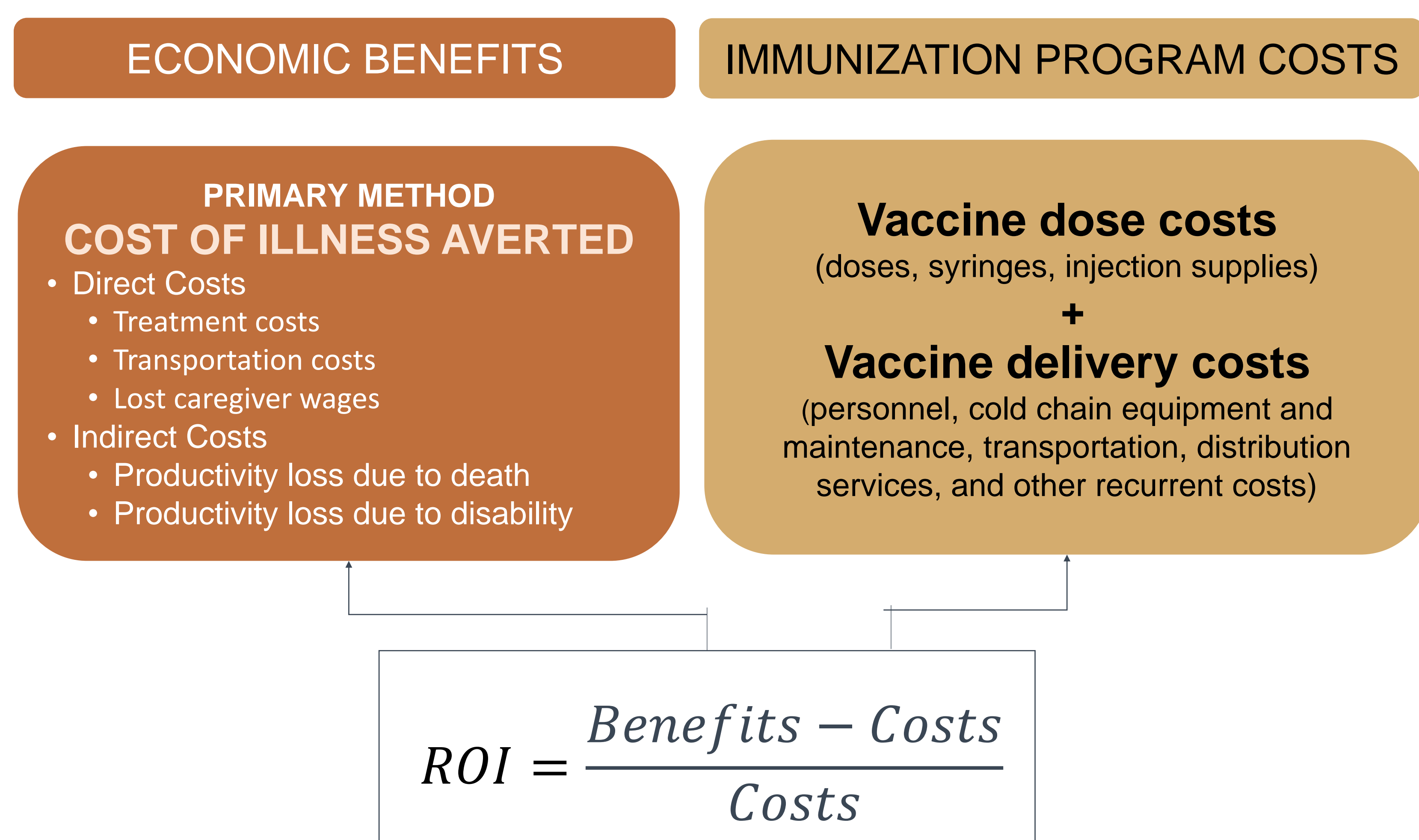
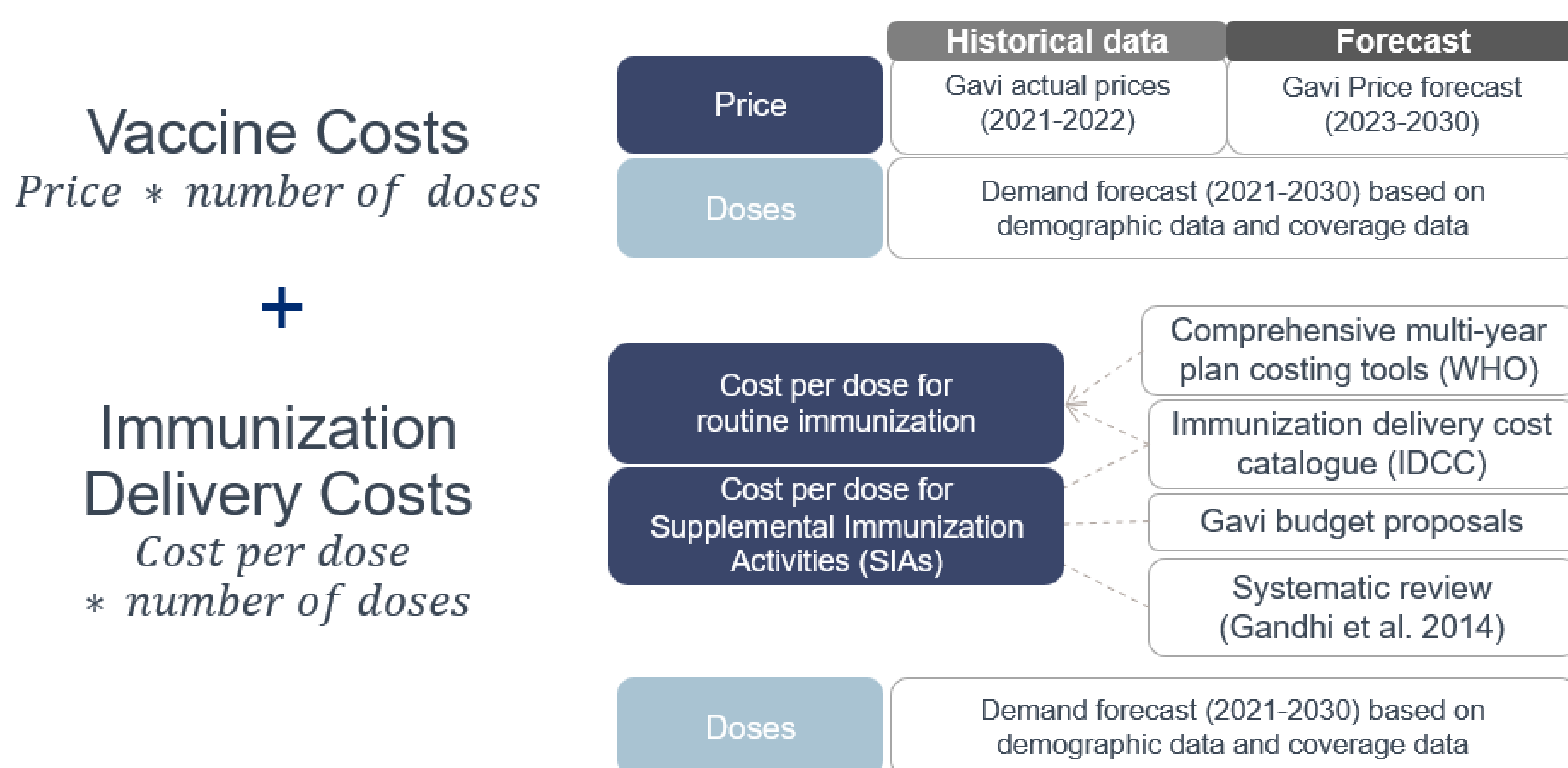


Figure 2. Immunization Program Costing Methodology



**Results:** Results on the global ROI for TCV and OCV will be available in 2023.

**Conclusion:** Vaccine-specific ROIs for OCV and TCV will build upon work already conducted for other routine immunizations and will generate comparable estimates across vaccines that are useful for assessing the economic impact and costs of these immunizations. The evidence generated will allow policymakers and donors to determine and advocate for the most efficient strategies for resource mobilization and investment to ensure sufficient coverage and sustainable immunization programs, globally.

