

COVID-19 vaccine delivery costing and funding gap estimates

Overview of preliminary results

November 1, 2022



Objective of analysis

To update the global COVID-19 vaccine delivery cost and funding gap estimates for the purpose of advocacy, fund raising, program/policy dialogue with countries

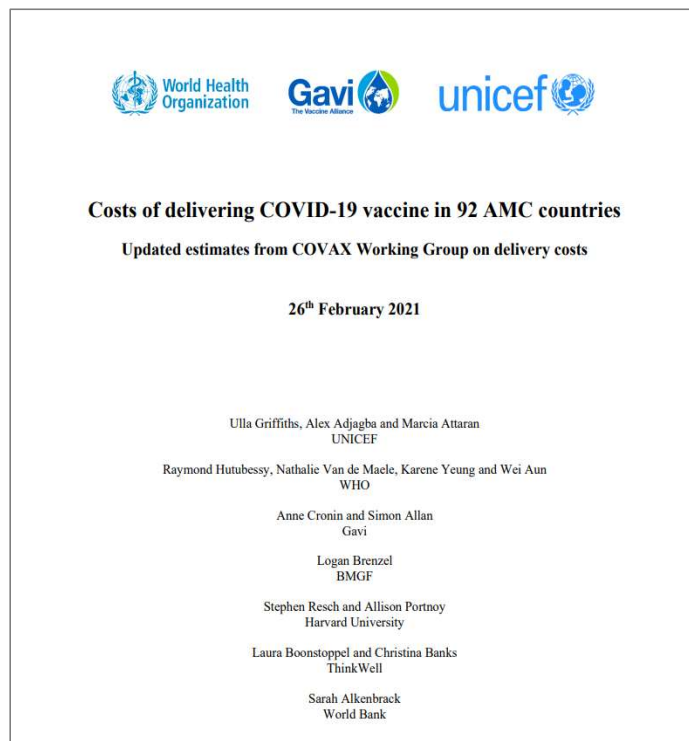
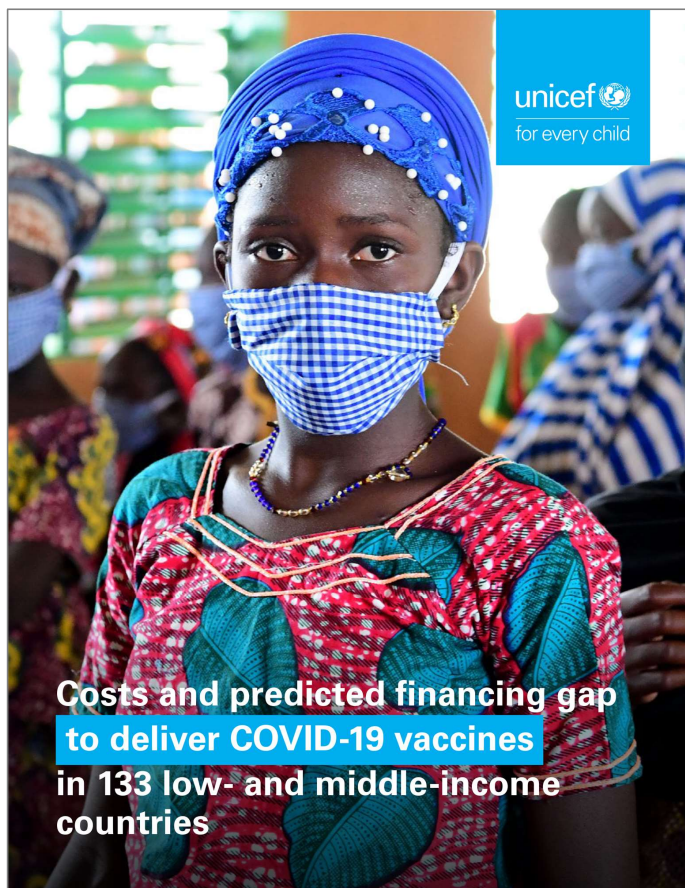
by:

- Revising and updating the global COVID-19 vaccine delivery costing model (Harvard model) and estimates
- Updating estimates of external financing commitments and available funding (UNICEF's COVID-19 vaccine delivery Financial Monitoring)

Prepared by CoVDP Cost and Funding Gap Modeling Working group

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Methodology for delivery cost and funding gap estimates build on work published in Jan. 2022 and Feb. 2021



<https://www.unicef.org/documents/costs-and-predicted-financing-gap-deliver-covid-19-vaccines-133-low-and-middle-income>

Model inputs and outputs: new cost estimate scenarios

| Scenario | Country targets (Constrained) | Country Targets (Unconstrained) | Global Targets (Aspirational 100/100/70) |
|--------------------------------|--|---|---|
| Target coverage | National targets moderated by historical best absorption rates + eligible boosters if country coverage targets are reached | National coverage targets fully achieved within 18-month timeframe + at least 50% eligible boosters | 70% coverage + at least 50% eligible boosters 100% health workers and 100% at risk pop. reached with primary doses and first booster |
| Period of analysis | July 2022 – Dec 2023 | July 2022 – Dec 2023 | July 2022 – Dec 2023 |
| Adj. for historical absorption | Yes | No | No |
| Delivery Modality | Varies by country (on aggregate: 54% fixed site, 20% outreach, and 26% mass vaccination) | Varies by country (on aggregate: 54% fixed site, 20% outreach, and 26% mass vaccination) | Varies by country (on aggregate: 54% fixed site, 20% outreach, and 26% mass vaccination) |
| Delivered doses | 3.4 Billion doses | 3.96 Billion doses | 4.99 Billion doses |

*As of July 1, 2022, 50.4% (2.5 billion) of the population included in our analysis had completed C19 vaccine primary series. All doses administered prior to this date were excluded from the cost analysis

**Proportion of doses delivered by each delivery modality varies by country, aggregate proportion presented here. F- fixed; O – outreach; M – mass vaccination

Delivery cost outputs| All Scenarios | Summary

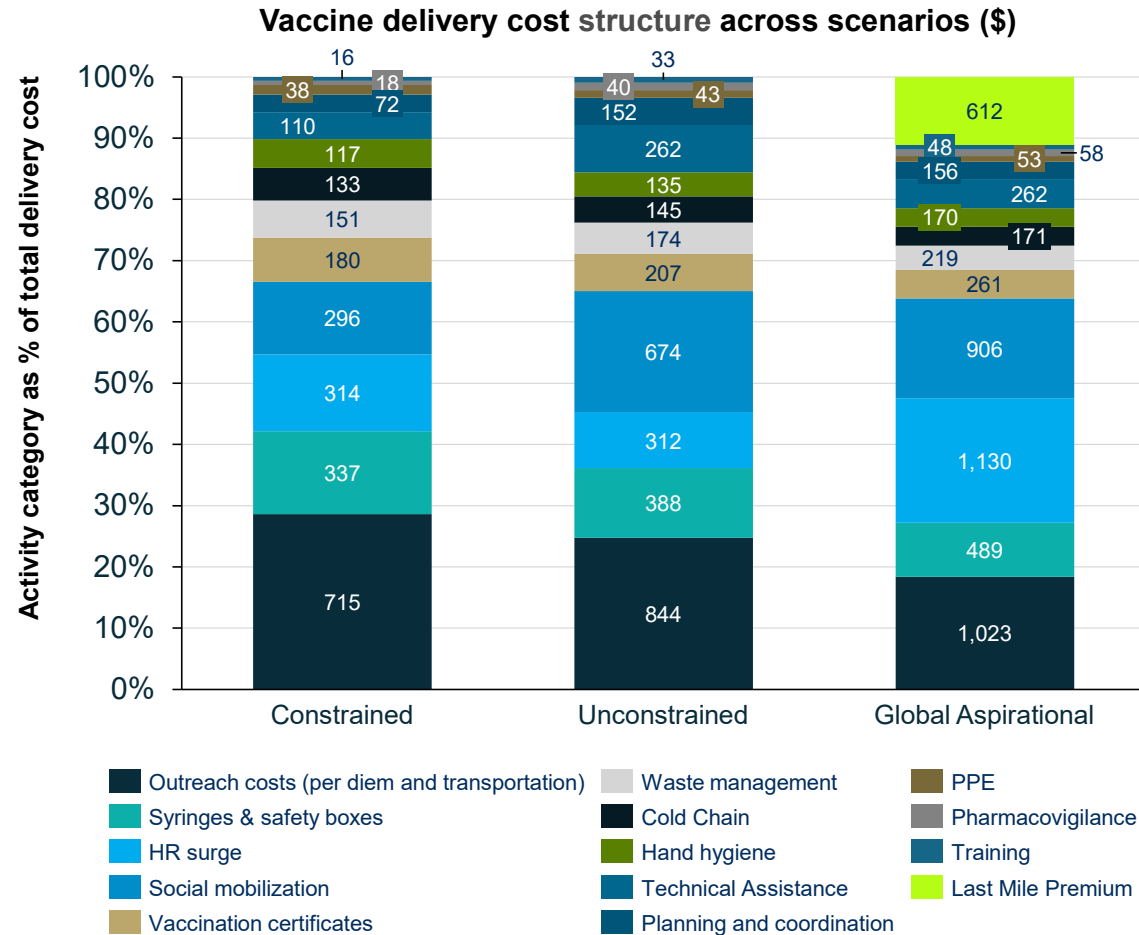
| | Constraint: National targets moderated by historical best absorption rates | | Unconstraint: National coverage targets fully achieved within 18-month timeframe | | Aspirational: 100% (health workers)/100% (at risk pop.)/70% other population coverage | |
|--------------------------------|---|----------------------------|---|----------------------------|--|----------------------------|
| | Delivery Cost (USD) | Cost per dose (USD) | Delivery Cost (USD) | Cost per dose (USD) | Delivery Cost (USD) | Cost per dose (USD) |
| All countries (133) | 2,497,153,626 | 0.73 | 3,409,905,849 | 0.86 | 5,558,359,113 | 1.11 |
| AMC (92) | 2,108,003,229 | 0.75 | 2,949,977,686 | 0.89 | 4,881,613,885 | 1.15 |
| SFC (41) | 389,150,397 | 0.64 | 459,928,164 | 0.72 | 676,745,229 | 0.90 |
| CoVDP Priority (34) | 551,897,463 | 1.02 | 1,186,656,228 | 1.23 | 2,428,850,826 | 1.46 |
| LIC (27) | 465,847,200 | 1.34 | 890,546,379 | 1.43 | 1,734,555,350 | 1.65 |
| LMIC (55) | 1,656,167,019 | 0.66 | 2,062,815,499 | 0.75 | 3,164,599,604 | 0.98 |
| UMIC (50) | 304,755,644 | 0.56 | 440,080,464 | 0.77 | 639,176,992 | 0.92 |
| No income classification (1) | 70,383,764 | 2.40 | 16,463,508 | 0.56 | 20,027,168 | 0.68 |
| Overall, excluding India (132) | 2,005,905,313 | 0.85 | 2,875,180,351 | 0.99 | 4,771,800,707 | 1.26 |
| India (1) | 491,248,314 | 0.46 | 534,725,499 | 0.50 | 786,558,407 | 0.66 |

Delivery cost outputs| Constrained Scenario

| | No. of countries | Primary Doses (in millions) | Booster Doses (in millions) | Delivery Cost (US\$ M): Primary series | Delivery Cost (US\$ M): Boosters |
|----------------------------------|------------------|--------------------------------|--------------------------------|---|-------------------------------------|
| Total | 133 | 1,163 | 2,278 | \$1,117 | \$1,380 |
| AMC | 92 | 979 | 1,850 | \$986 | \$1,122 |
| SFC | 41 | 184 | 428 | \$131 | \$258 |
| CoVDP Priority | 34 | 467 | 72 | \$509 | \$43 |
| LIC | 27 | 278 | 69 | \$381 | \$85 |
| LMIC | 55 | 702 | 1,817 | \$596 | \$1,060 |
| UMIC | 50 | 175 | 371 | \$135 | \$170 |
| No Income Classification | 1 | 8 | 22 | \$4 | \$66 |
| Overall (excluding India) | 132 | 1,054 | 1,320 | \$1,058 | \$948 |
| India | 1 | 109 | 958 | \$59 | \$433 |

Delivery cost outputs| All Scenarios | Cost Structure

- Top four cost drivers across scenarios include outreach costs (per diem and transportation costs), syringes and safety boxes, social mobilization costs and costs of additional health workers needed to deliver vaccines beyond existing HWF that are reallocated to implement C19 vaccination.
- In the global aspiration scenario, an additional cost driver is a **last mile premium**; this reflects higher marginal cost to reach the last 30th percentile of high-risk population with two primary doses and first booster dose



Upper bound estimates to achieve the modelled targets will be higher as different model parameters are varied



Funding Analysis | Methodology

Allocated funding

Funding data is collected from financing sources/organizations providing resources to countries to support COVID-19 vaccine roll-out.

Data is maintained in the COVID-19 Vaccine Financial Monitoring (C19VFM) database

Total Funds Utilized

Utilization rates are applied to the funding data to understand the total amount of funding utilized in each country.

Utilization rates reflect country and grant specific utilization data where possible.

Where utilization data is not available, utilization assumptions are provided by financing sources

Total Funds Remaining

Utilized funds are subtracted from the allocated funding for each country to calculate the total amount of funds remaining available to support COVID-19 vaccine roll-out.

For each country, the remaining funds are compared to the estimated costs of COVID-19 vaccine roll-out

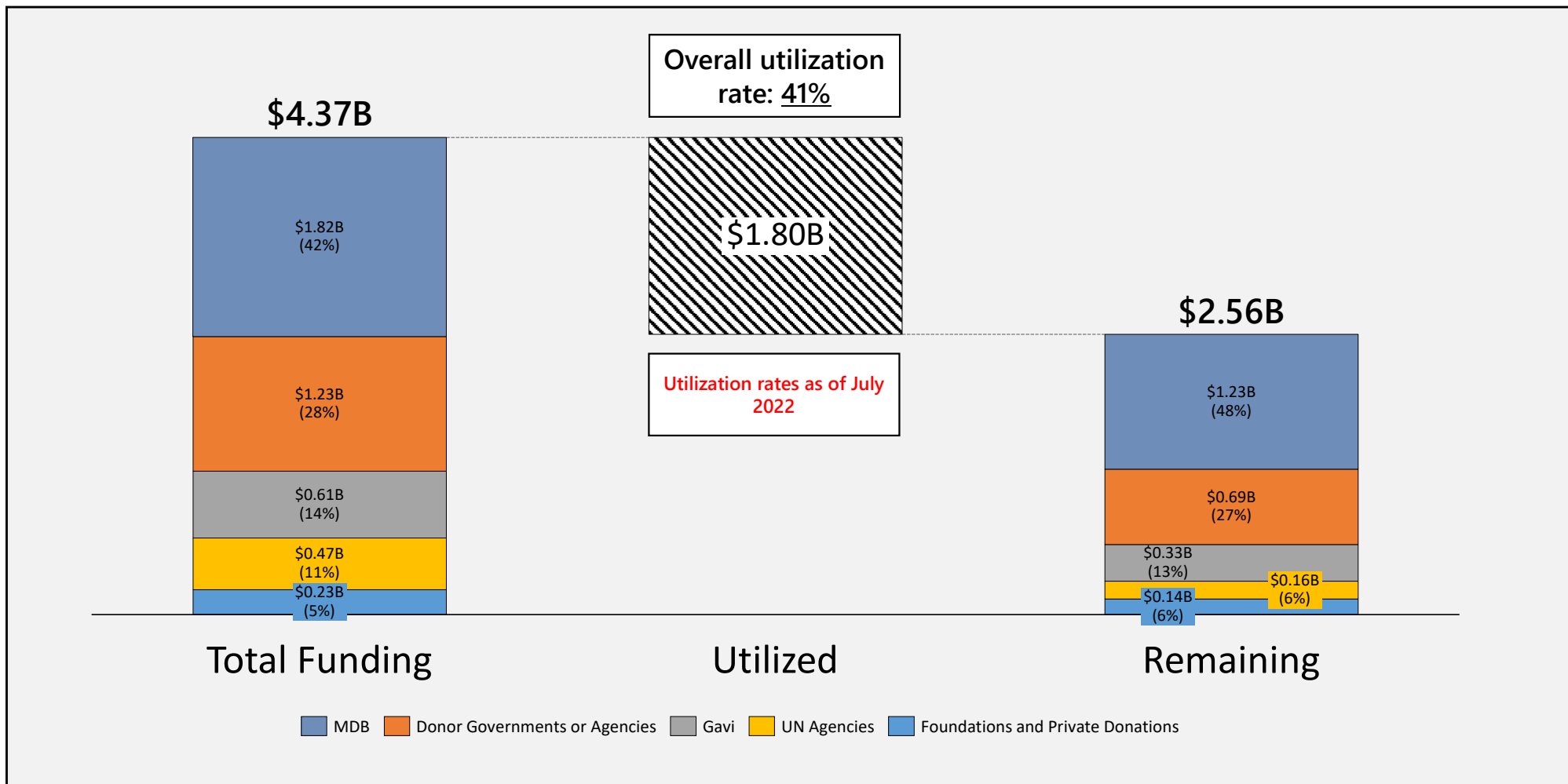
Illustrative Example



Data reflects funding and utilization as of July 2022



Funding Analysis | 133 LMICs



Funding Gap Estimates Summary

| | National coverage targets moderated by historical best absorption rates | | National coverage targets fully achieved within 18-month timeframe | | 100% (health workers)/100% (at risk pop.)/70% other population coverage | |
|----------------------------------|---|----------------------|--|----------------------|---|----------------------|
| | Constrained | | Unconstrained | | Global Aspirational | |
| | No. of countries with funding gap | Funding Gap (USD) | No. of countries with funding gap | Funding Gap (USD) | No. of countries with funding gap | Funding Gap (USD) |
| Overall | 56 (133) | 1,266,079,995 | 65 (133) | 1,315,978,754 | 101 (133) | 3,294,370,805 |
| AMC | 29 (92) | 1,006,793,121 | 36 (92) | 1,083,150,750 | 67 (92) | 2,801,362,495 |
| CoVDP Priority Countries | 1 (34) | 977,963 | 7 (34) | 140,772,230 | 27 (34) | 1,012,753,617 |
| SFC | 27 (41) | 259,286,873 | 29 (41) | 232,828,003 | 34 (41) | 493,008,310 |
| LIC | 4 (27) | 45,123,048 | 9 (27) | 86,784,932 | 24 (27) | 713,139,961 |
| LMIC | 21 (55) | 989,757,658 | 23 (55) | 1,025,928,725 | 36 (55) | 2,130,943,323 |
| UMIC | 30 (50) | 162,743,660 | 32 (50) | 190,734,023 | 40 (50) | 432,188,488 |
| No Income Classification | 1 (1) | 68,455,629 | 1 (1) | 68,455,629 | 1 (1) | 18,099,033 |
| Overall (Excluding India) | 55 (132) | 836,763,159 | 64 (132) | 875,792,621 | 100 (132) | 2,569,743,875 |
| India | 1 (1) | 429,316,836 | 1 (1) | 440,186,132 | 1 (1) | 724,626,930 |

Funding Gap Analysis | Constrained Scenario | Gap as a % of GGHE (2019)

Preliminary Estimates
Data as of 19th October 2022

| Country | Income Classification | Estimated Delivery Costs (USD) | Estimated Delivery Cost Per Dose Delivered (USD) | Remaining Funding (USD) | Funding Gap (USD) | Gap as a % of General Government Health Expenditure 2019 | Gap as a % of Total External Funding Mobilized |
|------------------|-----------------------|--------------------------------|--|-------------------------|-------------------|--|--|
| Eritrea | LIC | 7,928,462 | 1.80 | 781,195 | 7,147,267 | 45.94% | 729.55% |
| Bangladesh | LMIC | 181,725,333 | 1.54 | 25,485,616 | 156,239,717 | 11.22% | 155.78% |
| Marshall Islands | UMIC | 1,593,883 | 29.48 | 64,000 | 1,529,883 | 9.52% | 2390.44% |
| Myanmar | LMIC | 43,982,775 | 0.85 | 4,577,248 | 39,405,528 | 7.71% | 375.48% |
| Micronesia | LMIC | 1,177,164 | 11.71 | 338,258 | 838,907 | 6.27% | 191.17% |
| Kiribati | LMIC | 2,036,852 | 9.83 | 1,023,836 | 1,013,016 | 6.07% | 61.99% |
| Mozambique | LIC | 85,584,700 | 2.05 | 77,317,333 | 8,267,367 | 3.24% | 7.53% |
| Djibouti | LMIC | 2,273,931 | 4.12 | 1,295,968 | 977,963 | 3.03% | 25.72% |
| Rwanda | LIC | 16,363,474 | 1.46 | 11,045,936 | 5,317,538 | 2.05% | 28.18% |
| Angola | LMIC | 52,883,279 | 1.81 | 34,666,982 | 18,216,297 | 1.95% | 28.46% |

Limitations

- 1. Cost estimates assume 'vertical' delivery of C-19 vaccine**
 - Does not account for additional costs of intervention delivered in an integrated approach
 - Does not account for health systems strengthening interventions
- 2. Funding is assumed to be flexible across cost categories**
 - Funding may be earmarked for items such as cold chain
- 3. Governments now have competing priorities affecting utilization of funds earlier committed for COVID-19 vaccine delivery**