The state of the evidence on immunization delivery costs in low- and middle-income countries: Findings from a systematic review

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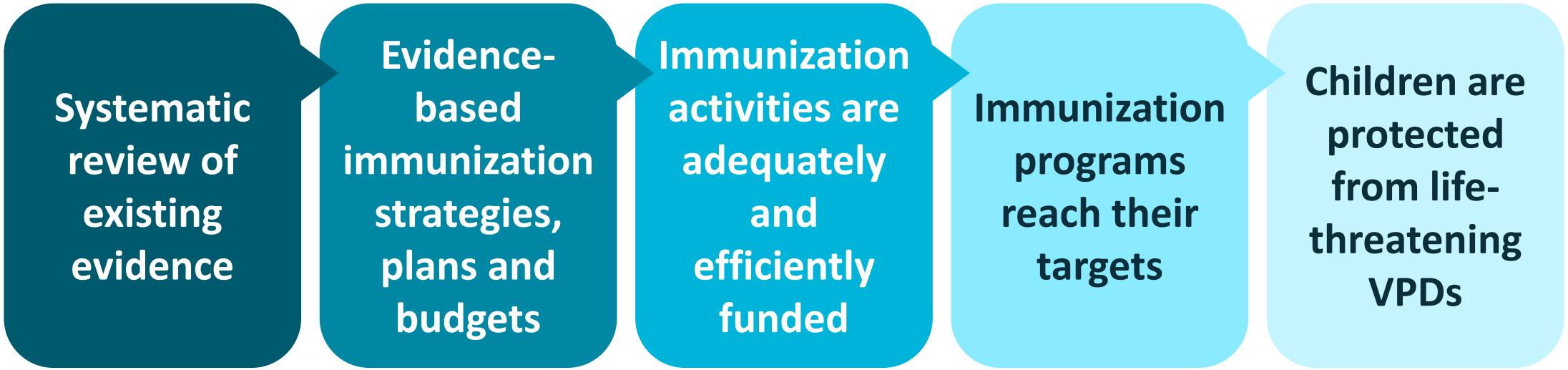
Why a review of Immunization Delivery Costs

Why do we need a systematic review of immunization delivery costs?

- **Immunization delivery costs**: the cost of vaccinating the target population, minus the cost of the vaccines themselves



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Methods

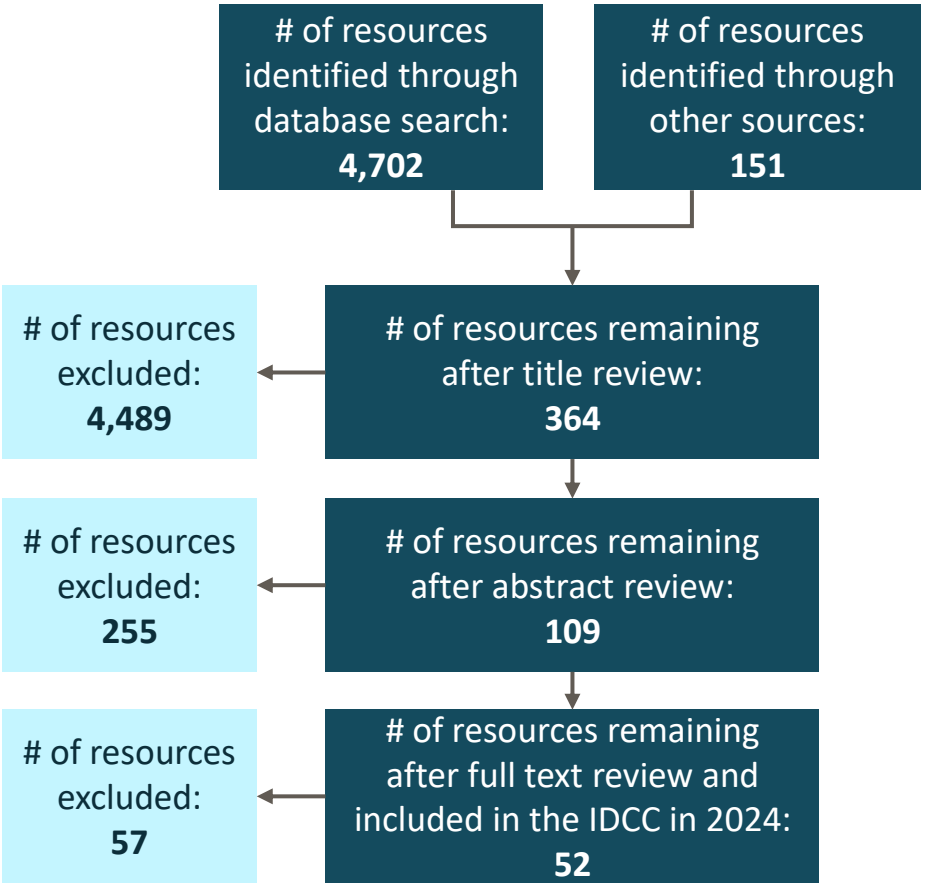
Our systematic review

Inclusion criteria

- ✓ Unit costs for vaccine delivery
- ✓ Primary data
- ✓ Low- and middle-income countries
- ✓ Full text available in English, French, Spanish, Portuguese

Search strategy

1. Peer-reviewed resources: PubMed and WHO Global Index Medicus
2. Unpublished resources: calls for submission and direct outreach



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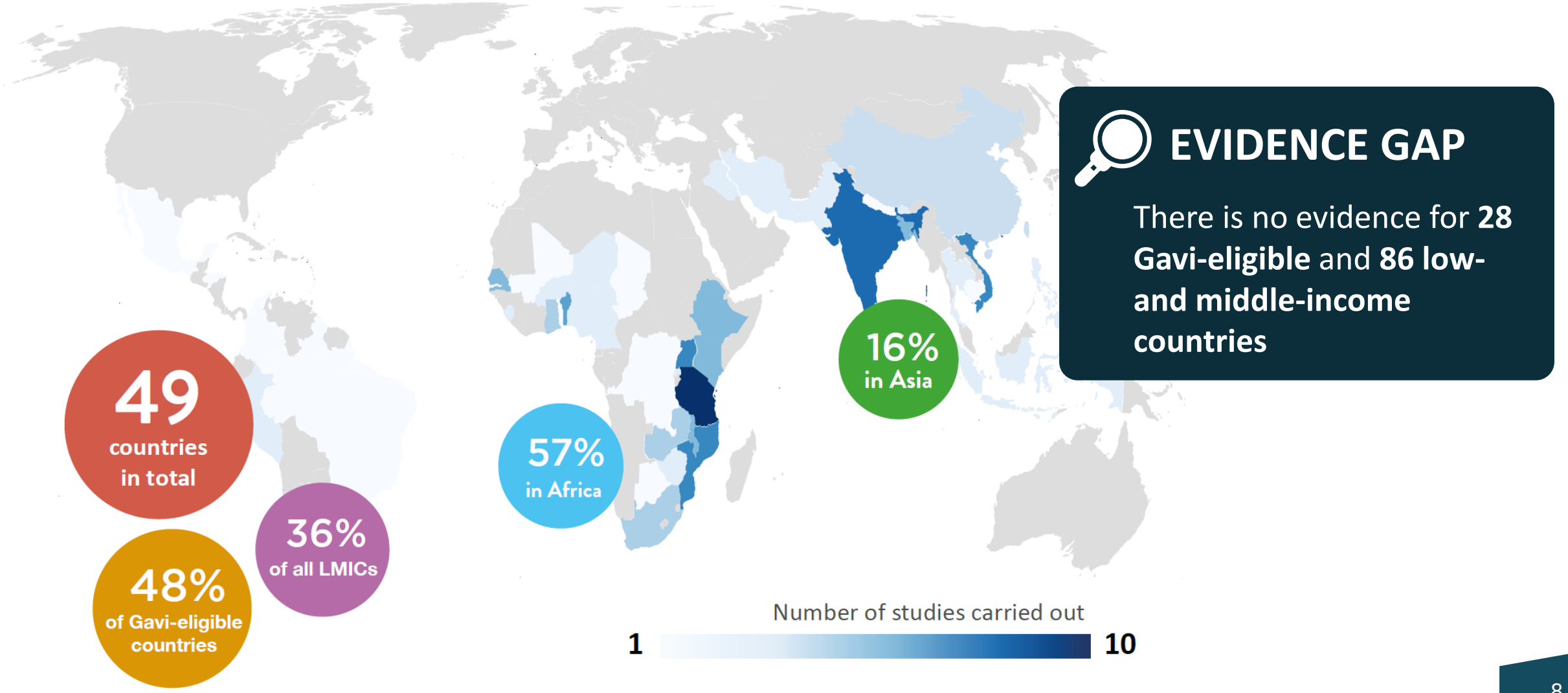
Compiled findings into the Immunization Delivery Cost Catalogue (IDCC)

- Extracted, cleaned and standardized costs and contextual data
- Converted the dataset to 2022 US dollars for comparability
- Combined findings from Vaughan et al (2019) to create an updated IDCC
- Covering the period from January 2005 to May 2024, includes **1,156 unique unit costs** across 49 countries from 119 resources

BACKGROUND INFORMATION			UNIT COSTS (2022 USD)				VACCINE DELIVERY				
Year of Publication	Article, Report or Project Title	Country	Cost per dose without vaccine (2022 USD)	Cost per dose with vaccine (2022 USD)	Cost per fully immunized person without vaccine (2022 USD)	Cost per fully immunized person with vaccine (2022 USD)	Routine vs SIA	Delivery Site	Delivery strategy (based on reported delivery site)	Delivery sector	Target delivery population
2022	Projecting the cost of introducing typhoid conjugate vaccine (TCV) in the national immunization program in Malawi using a standardized costing framework	Malawi	$ 0.92	$ 3.42	$ 0.92	$ 3.42	Routine	Static, outreach, and mobile clinics	Multiple strategies	Public	Infants (0-1 year)
2022	The economic impact of the switch from single- to multi-dose PCV13 vial in Benin	Benin	---	$ 5.89	---	---	Routine	Health facilities	Facility-based	Public	Infants (0-1 year)

What is the state of the evidence on the cost of delivering immunization?

For what countries do we have cost evidence?

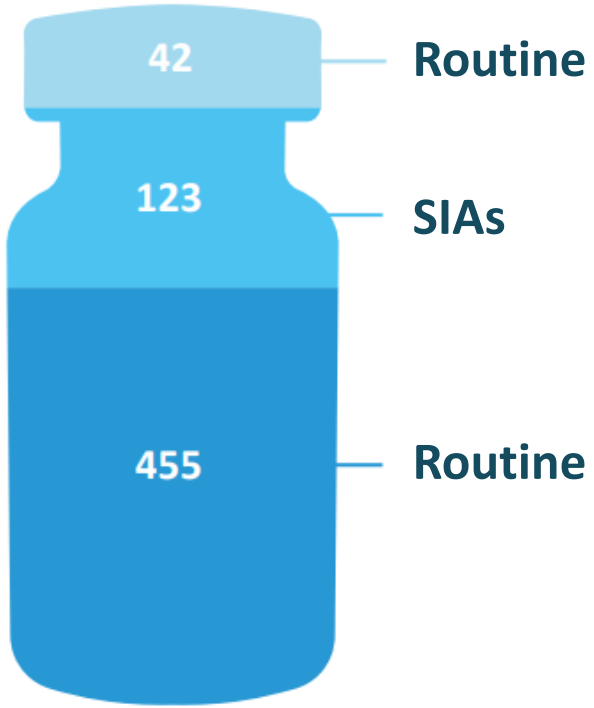


EVIDENCE GAP

There is no evidence for **28 Gavi-eligible** and **86 low- and middle-income countries**

For what delivery modalities do we have cost evidence?

73% of the data points cover **routine delivery**, while **20%** are for **supplementary immunization activities (SIAs)**



EVIDENCE GAP

Little evidence for **different types of SIAs**: subnational campaigns, integrated campaigns, PIRI, local outbreak responses, etc.

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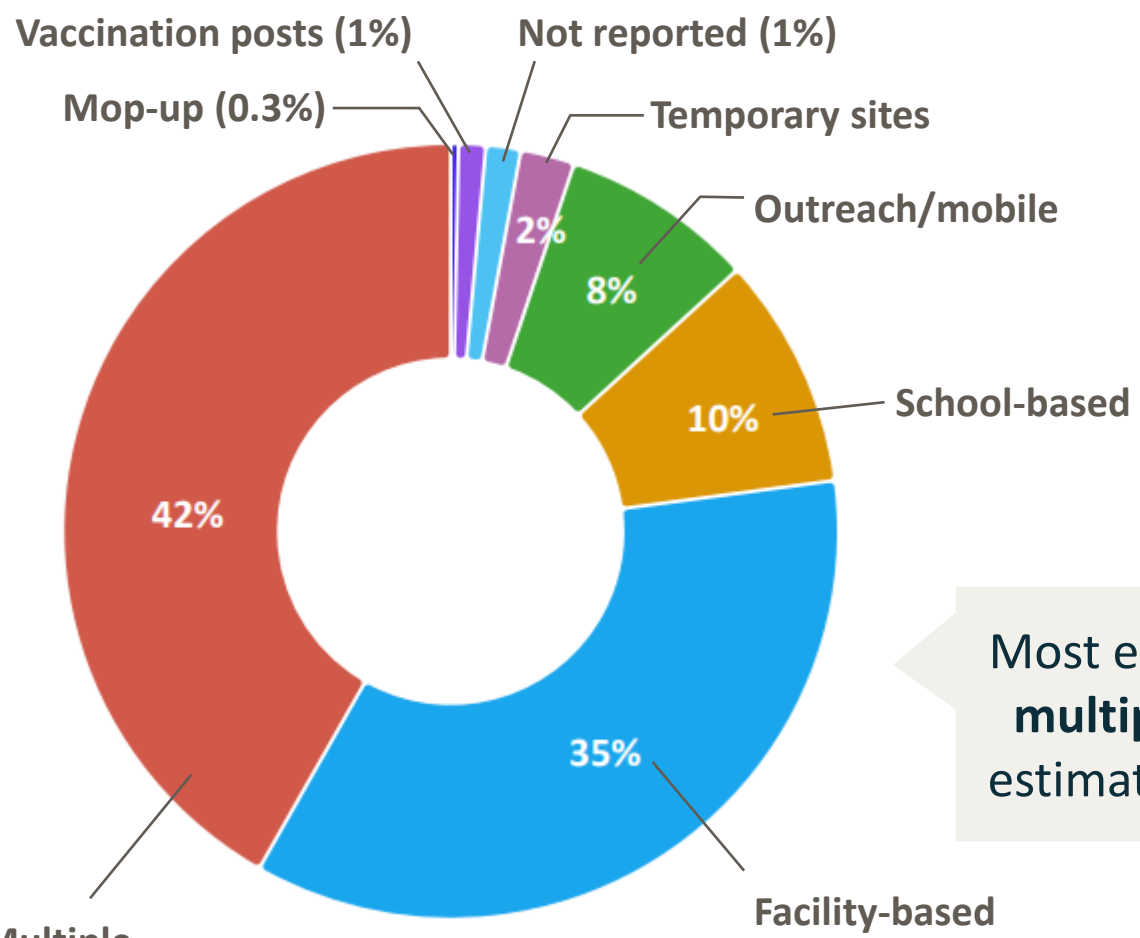
For what delivery strategies do we have cost evidence?



EVIDENCE GAP

Only 16% of studies include costs for **more than one strategy**, allowing for a comparison of the **cost-efficiency** of different strategies in the same context

Most evidence is for **facility-based delivery** or **multiple strategies combined** (e.g. one cost estimate for facility-based + routine outreach)

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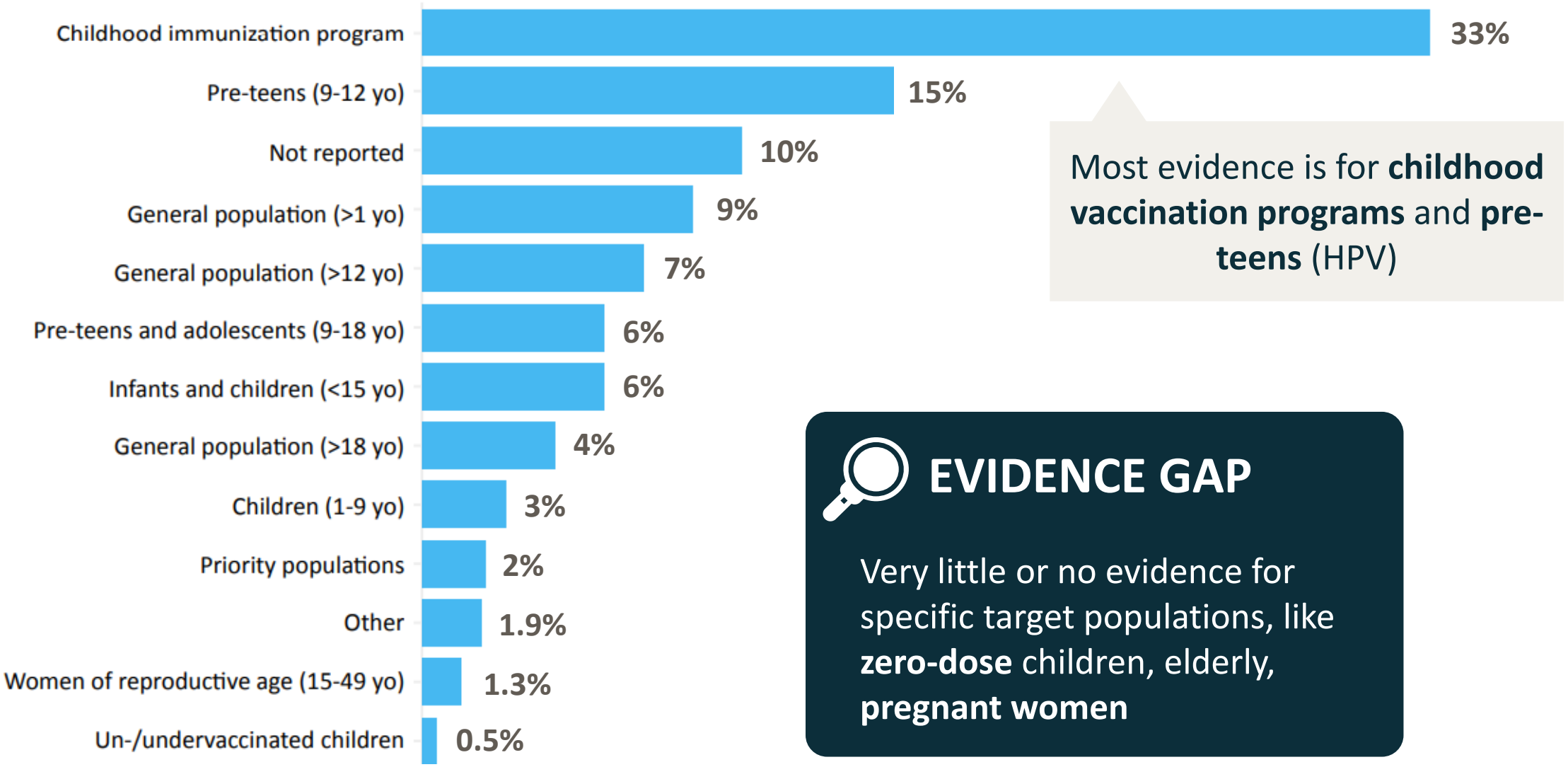
For what target populations do we have cost evidence?

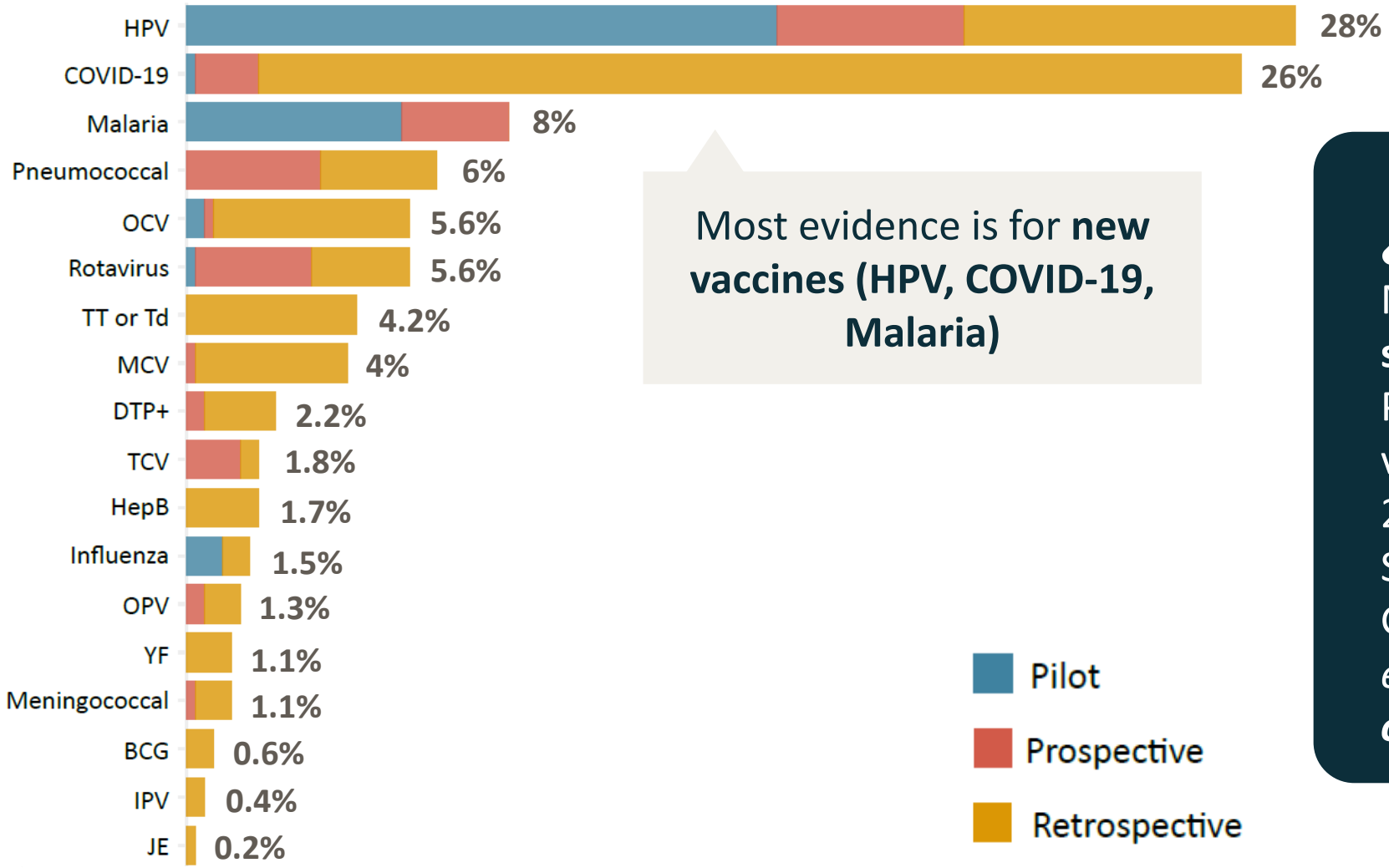


Most evidence is for **childhood vaccination programs** and **pre-teens** (HPV)

EVIDENCE GAP

Very little or no evidence for specific target populations, like **zero-dose** children, elderly, **pregnant women**

What evidence is there for single-antigen vaccine delivery?



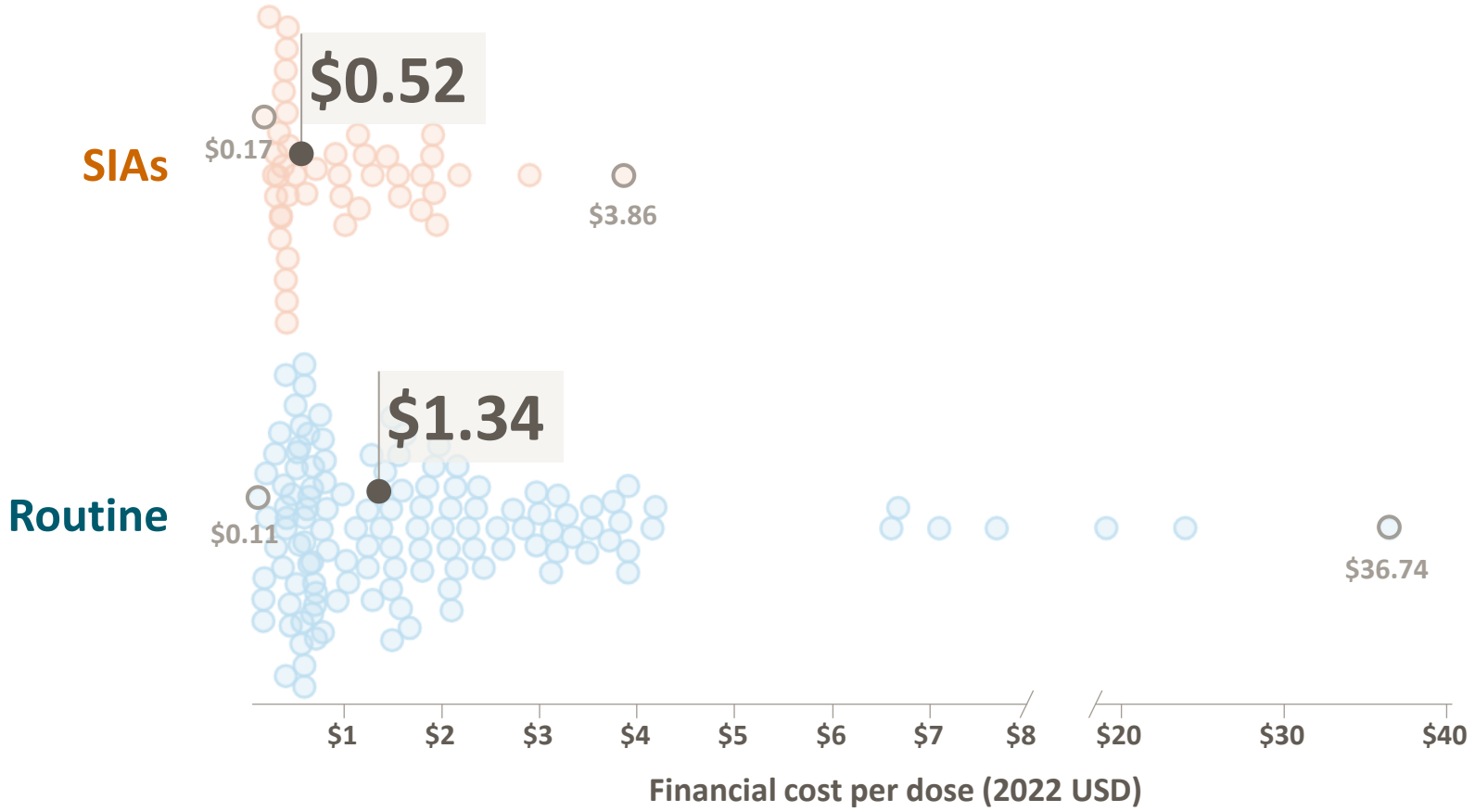
Most evidence is for **new vaccines (HPV, COVID-19, Malaria)**

EVIDENCE GAP

More evidence is needed on **scaled up delivery** of malaria, PCV delivery to adults, and new vaccines approved under Gavi's 2024 Vaccine Investment Strategy: mpox, dengue, HepE, GBS. *(For some, modelled cost estimates exist but **none based on primary data**)*

What do we know about the cost of delivering vaccines in LMICs?

Routine delivery is often more costly per dose than supplemental immunization activities (SIAs)



- SIAs include **campaigns**, **outbreak responses**, **child health days**, etc.
- SIAs generally deliver larger volumes
- Holds true when looking at economic costs

Note: Excludes pilot delivery costs for: HPV, C19, Malaria, OCV and Rotavirus. Methods used and cost components may differ among the studies included. Each dot represents one unit cost in the IDCC, some dots may be from the same study.

Outreach/mobile is the costliest among all delivery strategies

- **Facility-based** delivery tends to be **less costly** per dose
- High degree of **variation** particularly for **outreach/mobile,**
- **Outreach/mobile** requires more inputs and delivers fewer doses/session

Note: Excludes pilot delivery costs for: HPV, C19, Malaria, OCV and Rotavirus. Methods used and cost components may differ among the studies included. Each dot represents one unit cost in the IDCC, some dots may be from the same study.

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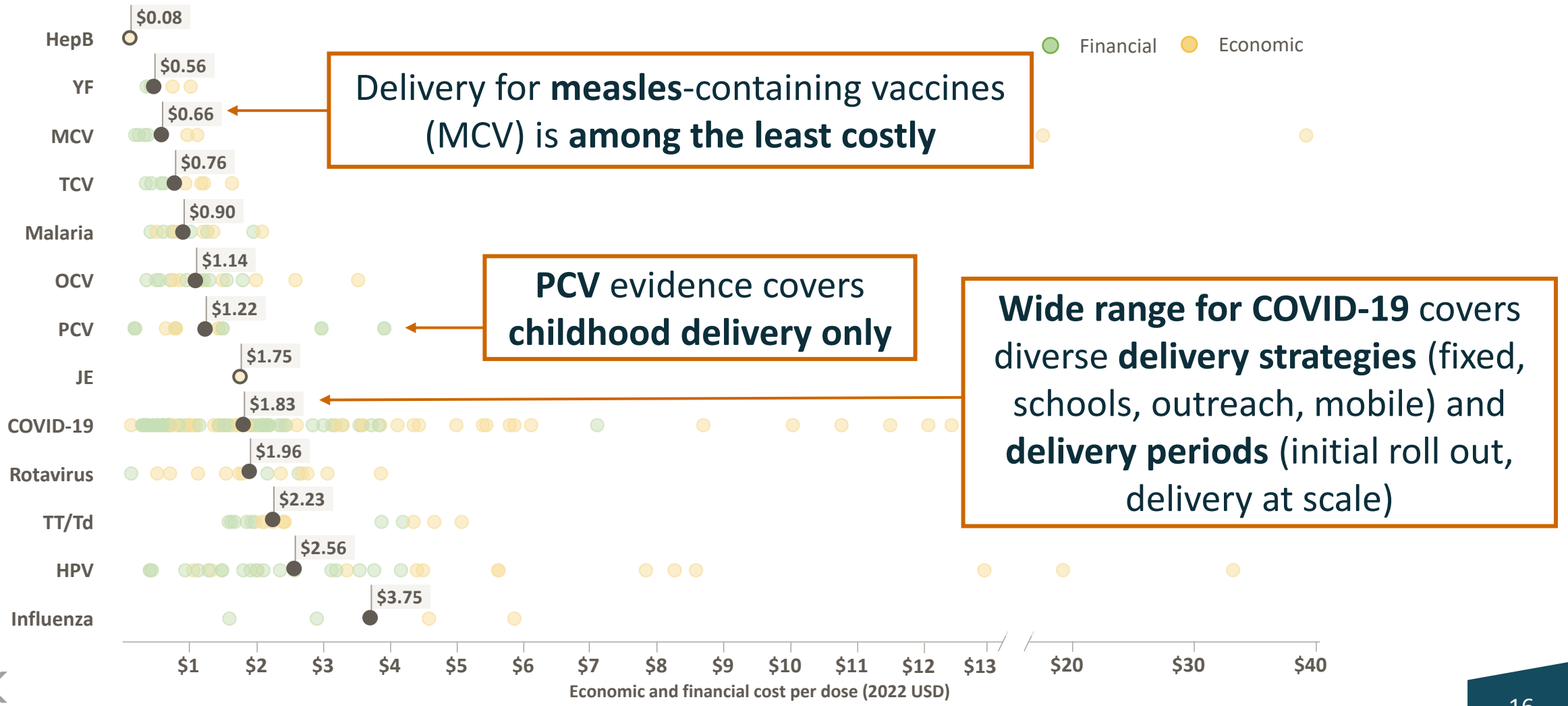
Vaccines for adolescents, adults and priority groups are generally costlier to deliver per dose



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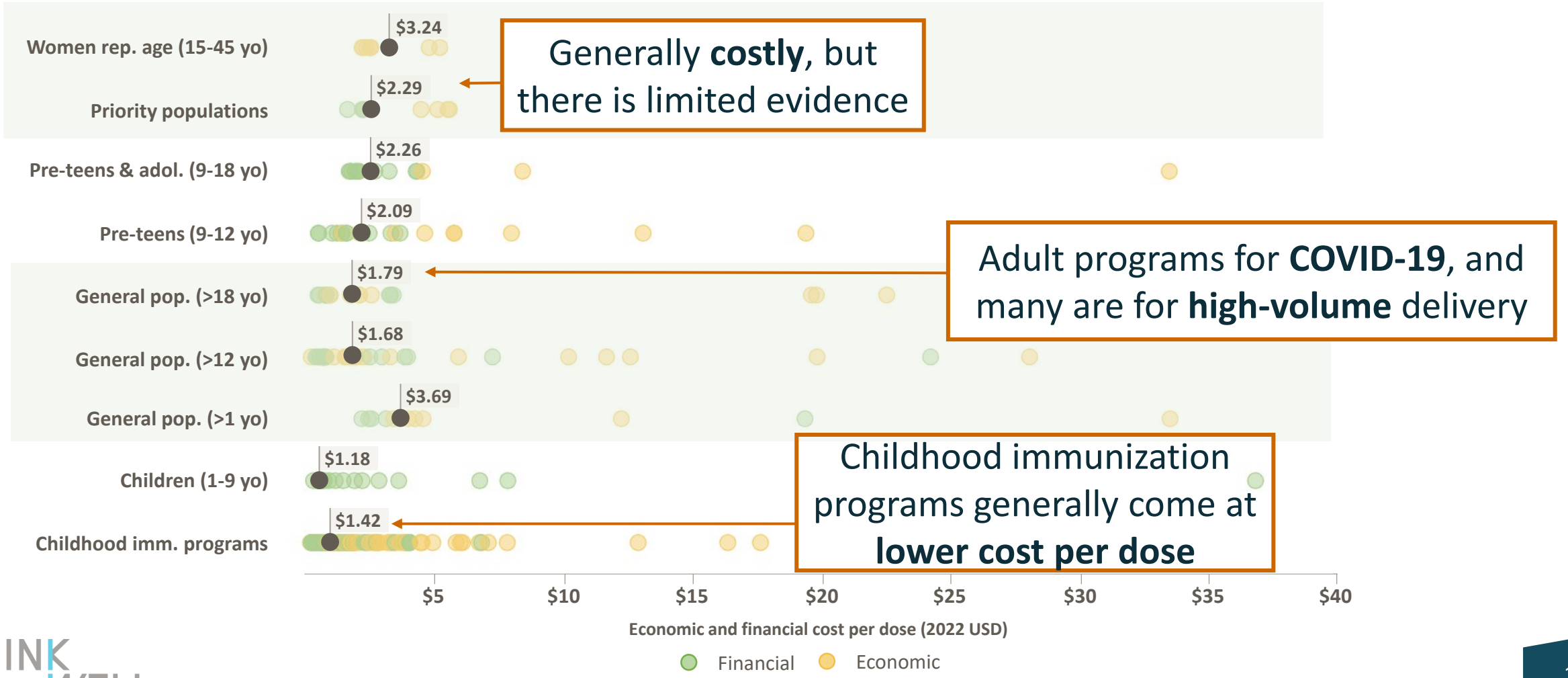
Note: **Includes both routine and SIA delivery.** Excludes pilot delivery costs for: Malaria, OCV, Rotavirus, HPV and COVID-19. No MenA data points available for cost per dose estimates. Methods used and cost components may differ among the studies included. Each dot represents one unit cost in the IDCC, some dots may be from the same study.

Vaccinating adults through routine delivery is more costly than reaching children



Note: **Only includes routine delivery.** Methods used and cost components may differ among the studies included. Each dot represents one unit cost in the IDCC, some dots may be from the same study.

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In summary…

We know that

- Routine more costly than SIAs per dose
- Outreach is the costliest delivery strategy
- Targeting adults through routine delivery is more costly than reaching children
- Vaccines targeting adolescents, adults and priority groups are generally costlier to deliver per dose

More evidence is needed on

- Reaching specific target populations, including zero-dose children
- Novel delivery strategies, such as PIRI and integrated delivery
- Delivering an efficient portfolio
- Different types of SIAs, including subnational campaigns
- For 28 (out of 54) Gavi-eligible and 86 (out of 135) low- and middle-income countries

Want to know more?

Find further **analysis**, **methodology** and download the **dataset** at:
https://immunizationeconomics.org/thinkwell-idcc/

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