DECEMBER 10, 2025 | 9 AM-ET (2PM-UTC) | WEBINAR

What does it cost to reach zero-dose children?

Flavia Moi
Health Systems Insight

Girmaye Dinsa
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Abdi Gari Negasa
Fenot Associates, Haramaya University

Hadiza Salele
CHAI

Tahmeena Hassan
PHC Global

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What does it cost to reach zero-dose children?

Introduce yourself and **chat** with participants and panelists using the **chat** at the bottom of your screen

Submit **questions** using the Q&A at the bottom of your screen at any point

This webinar will be **recorded**

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Agenda

1. **Welcome & opening –** Christina Banks, ThinkWell/ImmunizationEconomics.org

2. 
Flavia Moi, Health Systems Insight
The cost of reaching Zero-Dose children: Overview of existing evidence


Girmaye Dinsa Fenot Associates & MOH Ethiopia
The cost of reaching zero-dose children in the Afar and Somali regions of Ethiopia


Abdi Gari Negasa, Fenot Associates & Haramaya University
The cost of reaching zero-dose children in the Afar and Somali regions of Ethiopia


Hadiza Salele, CHAI
Incremental Costs and Impact of Weekend Vaccination Sessions: Lessons Learnt from Implementing the Zero-dose Reduction Operational Plan in Lagos state, Nigeria


Tahmeena Hassan, PHC Global
Estimating the cost of identifying and vaccinating zero-dose children through selected interventions compared with routine delivery in Pakistan

3. **Q&A**

Flavia Moi

Health Systems Insight

Covering...

Overview of costing evidence

Health Systems Insight

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The cost of reaching Zero-Dose children

Overview of existing evidence

Flavia Moi

December 10th 2025

Background

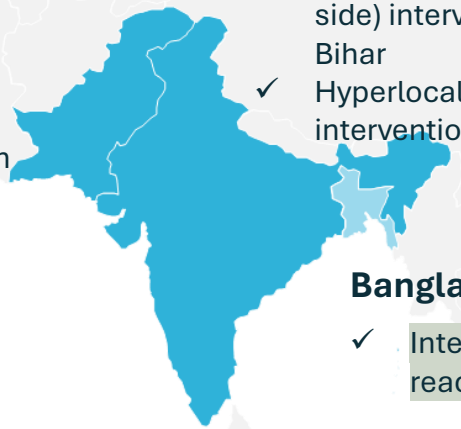
Who are zero-dose children?

- Have not received any routine vaccines (no DTP1)
- Concentrated in marginalized, hard-to-reach communities
- Reaching zero-dose children is central to improving equity

Why do we need cost evidence?

- Planning, budgeting, and financing of zero-dose interventions
- Balance equity goals with affordability and operational constraints
- Identify where each strategy is most efficient

Overview of the cost evidence on reaching zero-dose children



Pakistan
- ✓ Cash incentives
- ✓ Private clinics and TBA referrals
- ✓ Clinic on wheels
- ✓ Polio H2H identification
- ✓ Routine Outreach and Integrated outreach

India
- ✓ HCD behavioral (demand-side) interventions in urban Bihar
- ✓ Hyperlocal HCD-based interventions in rural Bihar

Nigeria
- ✓ Regular & ZDROP delivery
- ✓ Extended session times
- ✓ Big Catch-Up campaign
- ✓ Drone delivery
- ✓ Beneficiary costs

= Not included in this summary

= Results coming soon

Bangladesh
- ✓ Interventions to reach ZD children

Ethiopia
- ✓ Routine, PIRI and MHNTs
- ✓ Routine catch-up vs campaign for measles ZD
- ✓ Community-based surveillance with referral slip

The DRC
- ✓ Door-to-door & all contact vaccination
- ✓ Mapping for health

Uganda
- ✓ H2H identification
- ✓ Big Catch-Up campaign
- ✓ Last mile & drone delivery

Indonesia
- ✓ Financial reform to reach ZD children

Vaccinating ZD children in rural and hard-to-reach areas

$0.89
Financial cost
Measles routine catch-up

$1.73
Economic cost
Measles campaign

$3.50
Financial, incr. cost
MHNTs *(Imm. only)*

$6.65
Economic cost
PIRI

$1.08
Financial cost
Measles campaign

$1.78
Economic cost
Measles routine catch-up

$4.14
Financial cost
Facility-based, optimized routine

$19.30
Financial cost
Health center

$12.53
Economic cost
Big Catch-up

$90.40
Economic cost
Health center

$4.28
Financial cost
Add. outreach sessions

$25.67
Financial cost
Optimized routine outreach

$4.22
Financial cost
PIRI

$8.59
Financial cost
Health post

$31.41
Financial, full cost
MHNTs *(incl. non immunization)*

$129.26
Economic cost
MHNTs *(incl. non immunization)*

$52.47
Economic cost
Health post

Ethiopia Uganda Nigeria (Jigawa and Kaduna)

Vaccinating ZD children in rural and hard-to-reach areas

$0.89
Financial cost
Measles routine catch-up
809/campaign

$1.73
Economic cost
Measles campaign
790/campaign

$3.50
Financial, incr. cost
MHNTs *(Imm. only)*
96/year

$6.65
Economic cost
PIRI
646/year

$1.08
Financial cost
Measles campaign
790/campaign

$1.78
Economic cost
Measles routine catch-
809/campaign

$4.14
Financial cost
Facility-based, optimized
14/month

$19.30
Financial cost
Health center
144/year

$4.28
Financial cost
Add. outreach sessions
18/month

$12.53
Economic cost
Big Catch-up
23,716/ campaign

$90.40
Economic cost
Health center
144/year

$4.22
Financial cost
PIRI
646/year

$8.59
Financial cost
Health post
384/year

$25.67
Financial cost
Optimized routine outreach
5/month

$31.41
Financial, full cost
MHNTs *(incl. non immunization)*
96/year

$52.47
Economic cost
Health post
384/year

$129.26
Economic cost
MHNTs *(incl. non immunization)*
96/year

Ethiopia Uganda Nigeria (Jigawa and Kaduna)

Vaccinating ZD children in rural and hard-to-reach areas

- **Access key issue** in hard-to-reach areas
- Reaching **more children drives affordability**
- **Trade-off between cost** and minimizing time children remain **off schedule**
- **Integrated delivery strategies** can provide more services with continuity at low financial incremental cost

Reaching ZD children in urban settings

* = preliminary results

$0.97
Financial cost
Fixed-site delivery

$4.23
Financial incr. cost
Extended hours

$12.22
Financial cost
ZDROP outreach

$22.45
Financial cost
Facility-based, not ZDROP

$39.85
Economic cost
Routine outreach

$5.17
Financial cost
Routine outreach

$6.06*
Financial cost
Outreach optimization (*excl. TA*)

$12.27*
Routine

$15.26
Financial cost
Integrated outreach

$21.77*
Economic cost
Outreach optimization (*excl. TA*)

$47.13
Economic cost
Integrated outreach

$54.36
Economic cost
Clinic on wheels

$7.90
Financial cost
Regular outreach, not ZDROP

$11-16*
Existing approaches

$19.19
Financial cost
Clinic on wheels

$43.12*
Economic cost
Outreach optimization (*with TA*)

$58.68
Economic cost
Fixed-site delivery

Ethiopia
India (urban Bihar)
Nigeria (Lagos)
Pakistan (Sindh and Punjab)
Pakistan (super high-risk UCs in Karachi)

Reaching ZD children in urban settings

* = preliminary results

$0.97
Financial cost
Fixed-site delivery
0.3/day

$4.23
Financial incr. cost
Extended hours

$12.22
Financial cost
ZDROP outreach
23/month

$22.45
Financial cost
Facility-based, not ZDROP
2/month

$39.85
Economic cost
Routine outreach
0.7/day

$5.17
Financial cost
Routine outreach
0.7/day

$6.06*
Financial cost
Outreach optimization (*excl. TA*)
8/month

$12.27*
Routine

$15.26
Financial cost
Integrated outreach
1.3/day

$21.77*
Economic cost
Outreach optimization (*excl. TA*)
8/ month

$47.13
Economic cost
Integrated outreach
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Economic cost
Fixed-site delivery
0.3/day

Ethiopia
India (urban Bihar)
Nigeria (Lagos)
Pakistan (Sindh and Punjab)
Pakistan (super high-risk UCs in Karachi)

Reaching ZD children in urban settings

- Wider **range of barriers** in urban areas require **context-specific interventions**
- When access is a key barrier, supply side interventions like extended hours can be cost-efficient
- **Increased** (supply-side) **resources may not translate to better reach** when barriers are mostly demand-side
- This requires tailored **community engagement** and context-specific **behavioral interventions**

Demand-side community-based interventions

* = preliminary results

$10.70*
Referral from traditional birth attendants (TBAs)

$18.41*
Bundle of interventions *(excl. design costs)*

$17.5-26.5*
Referral from private clinics

$137*
Bundle of interventions *(incl. design costs)*

$379*
Bundle of HCD intervention *(excl. TA)*

$71-174
Economic cost
Comm. volunteer with referral slip

$501*
Economic cost
Bundle of HCD interventions *(incl. TA)*

Ethiopia (pastoralist area)
India (urban Bihar)
India (rural Bihar)
Pakistan (Super high-risk UCs in Karachi)

Demand-side community-based interventions

* = preliminary results

$10.70*
Referral from traditional birth attendants (TBAs)

$18.41*
Bundle of interventions *(excl. design costs)*
382

$17.5-26.5*
Referral from private clinics

$137*
Bundle of interventions *(incl. design costs)*
382

$379*
Bundle of HCD intervention *(excl. TA)*
50

$71-174
Economic cost
Comm. volunteer with referral slip
12-31% reduction in prevalence

$501*
Economic cost
Bundle of HCD interventions *(incl. TA)*
50 ZD children reached

Ethiopia (pastoralist area)
India (urban Bihar)
India (rural Bihar)
Pakistan (Super high-risk UCs in Karachi)

Demand-side community-based interventions

- **Can be effective** at tackling deep-rooted demand-side barriers
- Very **high design costs**
- Cost per zero-dose child could go down as more children are reached and design costs are amortized
- **Re-design likely needed** to scale behavioral interventions as addressing deep-rooted hesitancy requires **context-specific solutions**

Takeaways

- Reaching more zero-dose children per session drives affordability, but there is a **trade-off between cost and leaving children off-schedule**.
- **Integrated strategies** can be effective at reaching zero-dose children at a **low cost per service** delivered while **delivering greater health benefits**.
- **Context matters**: what is cost-efficient in one location may not be in another.
- **Design costs may go down over time** as interventions mature locally, but likely will **not decrease with scale** as new geographies may require re-design.

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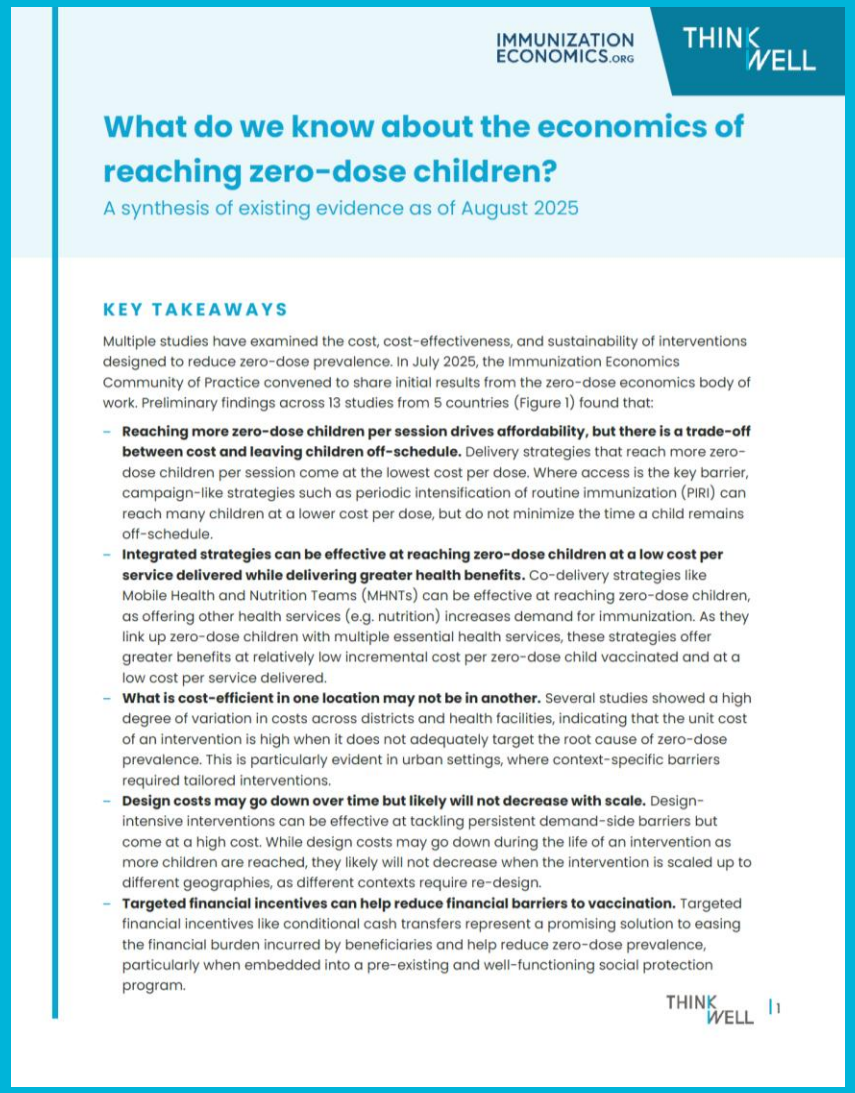

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What do we know about the economics of reaching zero-dose children?

A synthesis of existing evidence as of August 2025

KEY TAKEAWAYS

Multiple studies have examined the cost, cost-effectiveness, and sustainability of interventions designed to reduce zero-dose prevalence. In July 2025, the Immunization Economics Community of Practice convened to share initial results from the zero-dose economics body of work. Preliminary findings across 13 studies from 5 countries (Figure 1) found that:

- **Reaching more zero-dose children per session drives affordability, but there is a trade-off between cost and leaving children off-schedule.** Delivery strategies that reach more zero-dose children per session come at the lowest cost per dose. Where access is the key barrier, campaign-like strategies such as periodic intensification of routine immunization (PIRI) can reach many children at a lower cost per dose, but do not minimize the time a child remains off-schedule.
- **Integrated strategies can be effective at reaching zero-dose children at a low cost per service delivered while delivering greater health benefits.** Co-delivery strategies like Mobile Health and Nutrition Teams (MHNTs) can be effective at reaching zero-dose children, as offering other health services (e.g. nutrition) increases demand for immunization. As they link up zero-dose children with multiple essential health services, these strategies offer greater benefits at relatively low incremental cost per zero-dose child vaccinated and at a low cost per service delivered.
- **What is cost-efficient in one location may not be in another.** Several studies showed a high degree of variation in costs across districts and health facilities, indicating that the unit cost of an intervention is high when it does not adequately target the root cause of zero-dose prevalence. This is particularly evident in urban settings, where context-specific barriers required tailored interventions.
- **Design costs may go down over time but likely will not decrease with scale.** Design-intensive interventions can be effective at tackling persistent demand-side barriers but come at a high cost. While design costs may go down during the life of an intervention as more children are reached, they likely will not decrease when the intervention is scaled up to different geographies, as different contexts require re-design.
- **Targeted financial incentives can help reduce financial barriers to vaccination.** Targeted financial incentives like conditional cash transfers represent a promising solution to easing the financial burden incurred by beneficiaries and help reduce zero-dose prevalence, particularly when embedded into a pre-existing and well-functioning social protection program.

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Thank you!

Want to know more?

Find our **brief on the cost of reaching zero-dose children**: **https://immunizationeconomics.org/cost-of-reaching-zerodose-children/**

More questions? **fmoi@healthsystemsinsight.org**

This work was supported by the Gates Foundation

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& MOH Ethiopia

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Covering...
reaching zero-dose children in rural Ethiopia through routine delivery strategies, and selected interventions

What does it cost to reach zero-dose children?

10 December 2025

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December 10, 2025

The cost of reaching zero-dose children in the Afar and Somali regions of Ethiopia

Presenter: Girmaye Dinsa and Abdi Gari Negasa

Contributors: Firew Bobo , Flavia Moi, Mirkuzie Woldie, Laura Boonstoppel

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This work is supported by the Gates Foundation

Introduction

Ethiopia is home to over 1.1 million zero-dose children

- To close the gap, the Ministry of Health developed the "*Accelerated Action plan to address zero-dose, and under-vaccinated children in Ethiopia 2023-2025*"
- Includes several strategies to reach zero-dose children, but the cost of these are not known

Purpose of this study: to estimate the effectiveness and cost of immunization delivery strategies aimed at reaching zero-dose children in rural remote areas

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Methods

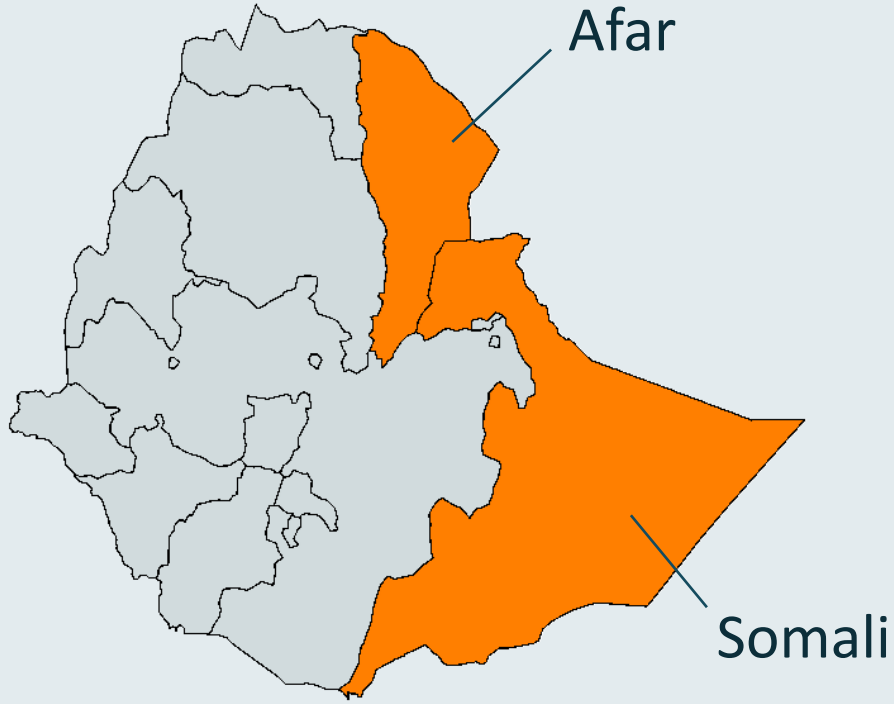
Quantitative analysis:

- Activity-based, bottom-up micro-costing study from a health systems perspective
- Cost represent volume weighted averages in 2024 USD
- Sample: 6 woredas (districts), 17 health centers, 32 health posts covering Dec 2023 to Nov 2024

Qualitative analysis:

- Conducted 16 key informant interviews across all system levels (from national level MOH to health extension workers) to contextualize cost findings and understand operational and financial enablers and bottlenecks

Geographic scope:



Rural regions with **nomadic pastoralist** populations, **conflict-affected** areas, among the **most marginalized**, with limited access to basic healthcare, the lowest immunization coverage, and the **highest rates of zero-dose children**

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Immunization strategies

1. Routine immunization and regular outreach (RI/RO)

- Implemented by health centers and health posts (each health center oversees up to 5 health posts)
- Health centres provide facility-based services five days a week and conduct regular monthly outreach, while health posts primarily focus on outreach activities.

2. Mobile Health and Nutrition Teams (MHNT)

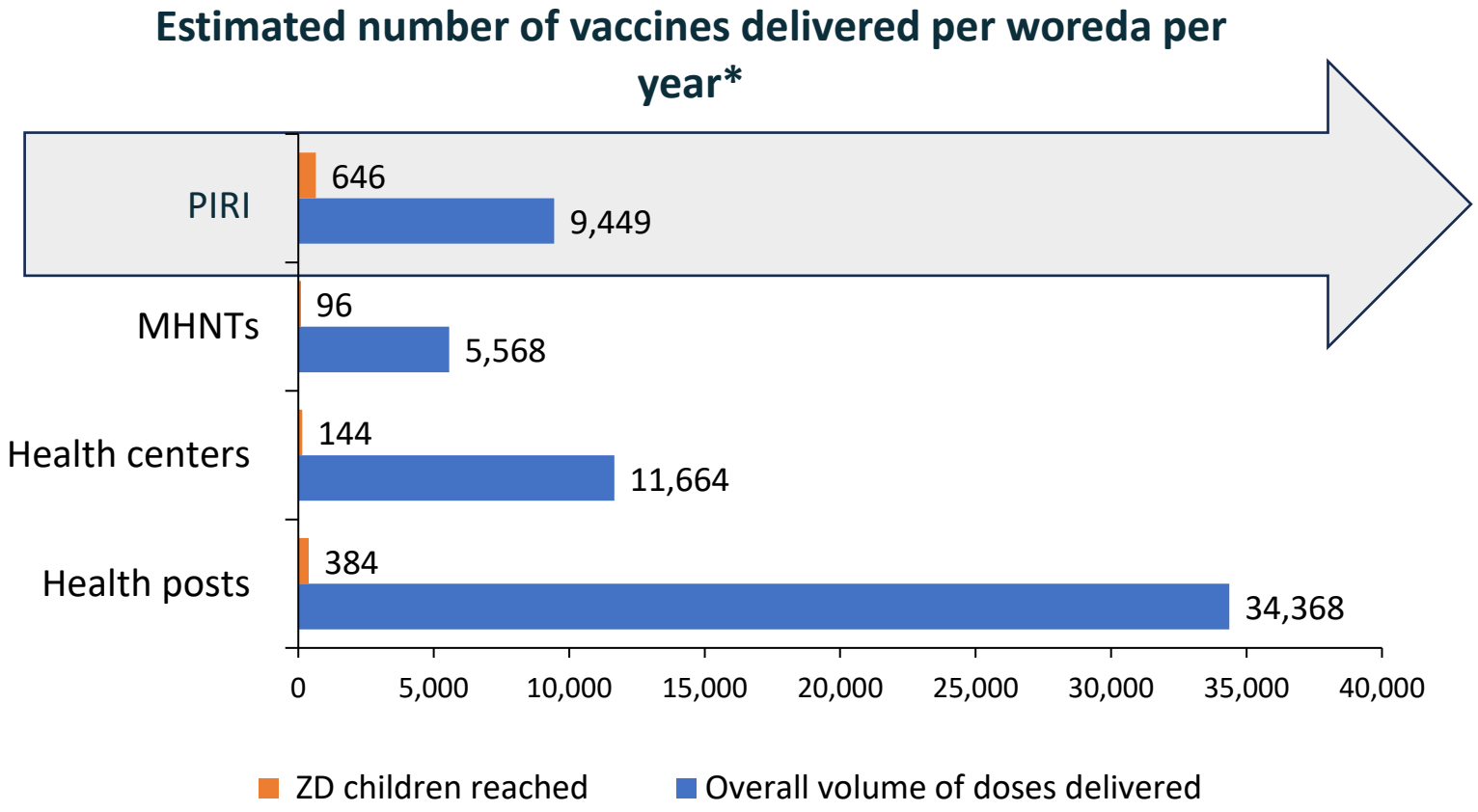
- Mobile teams primarily delivering maternal, nutrition, and immunization services in hard-to-reach areas
- Operates 5 or 6 days per week, one dedicated day per kebele, a kebele 'graduates' when key indicators (such as stunting) have sufficiently improved
- Dedicated staff and vehicles funded by UNICEF

3. Periodic intensification of routine immunization (PIRI)

- Campaign-style approach implemented from woreda (district) level, with strong community involvement
- Per policy should be implemented 4x per year, in reality 2-3 times per year, dependent on funding available

Results

Health posts deliver the majority of all vaccine doses but PIRI sessions are most effective at reaching zero-dose children

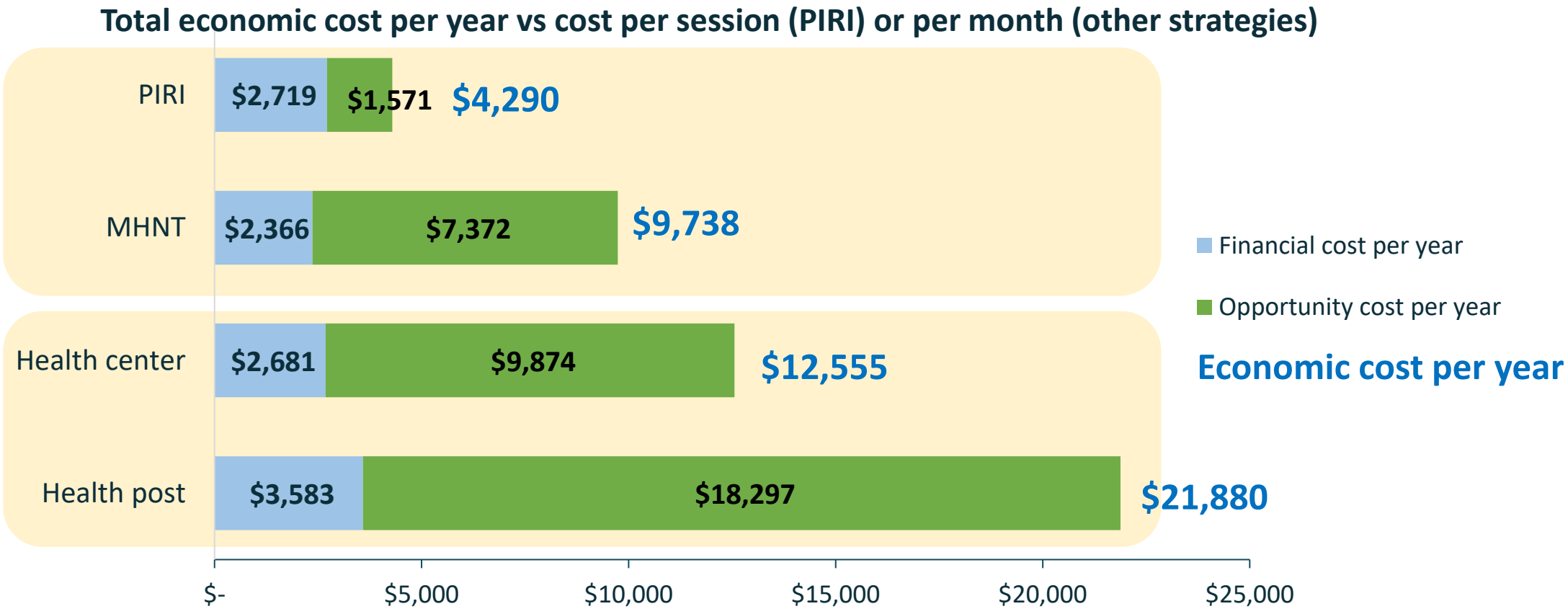


Even though only conducted a few times per year, PIRI reaches more ZD children (646) than all health centers and health posts in a woreda combined (528)

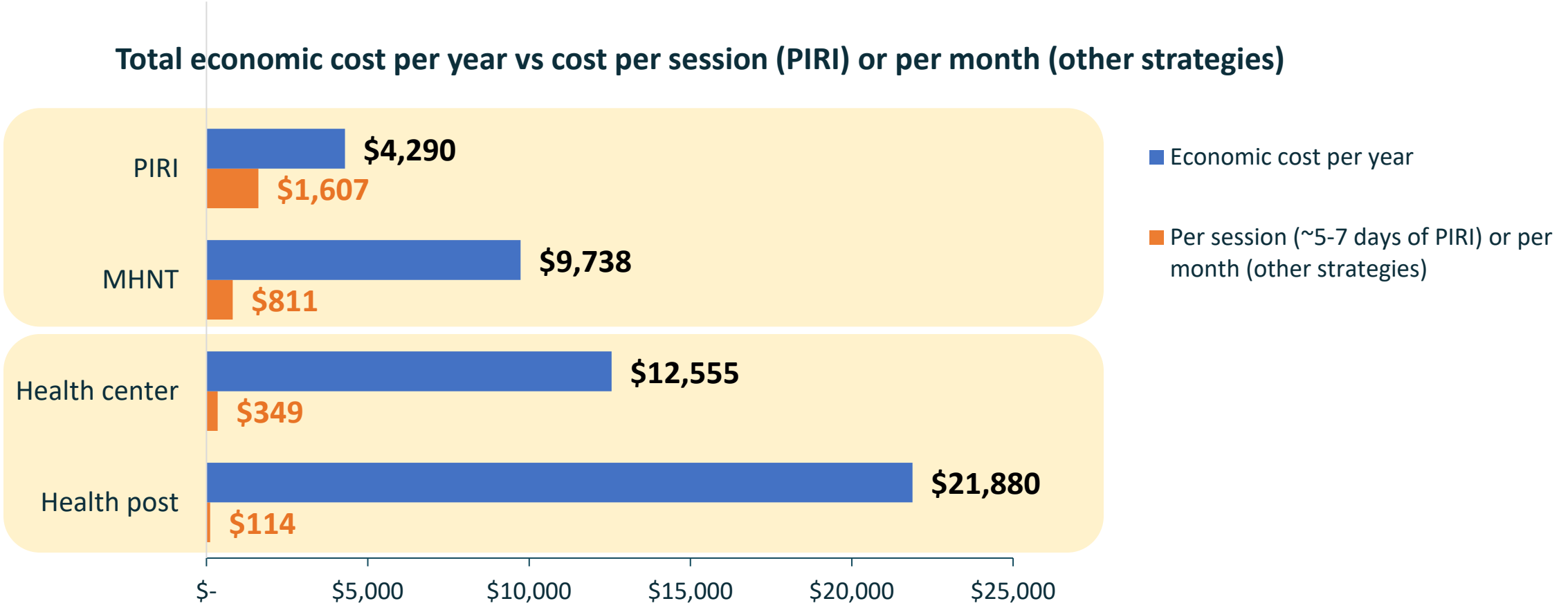
MHNTs reach fewer ZD children though there is only one such team per woreda, and they operate in a highly targeted manner, delivering a full package of services before they continue to the next kebele

** Monthly data and per session data extrapolated over a year. Considering 16 health posts, 3 health centers, and 1 mobile health and nutrition team per woreda, and PIRI sessions conducted 2.67 per year*

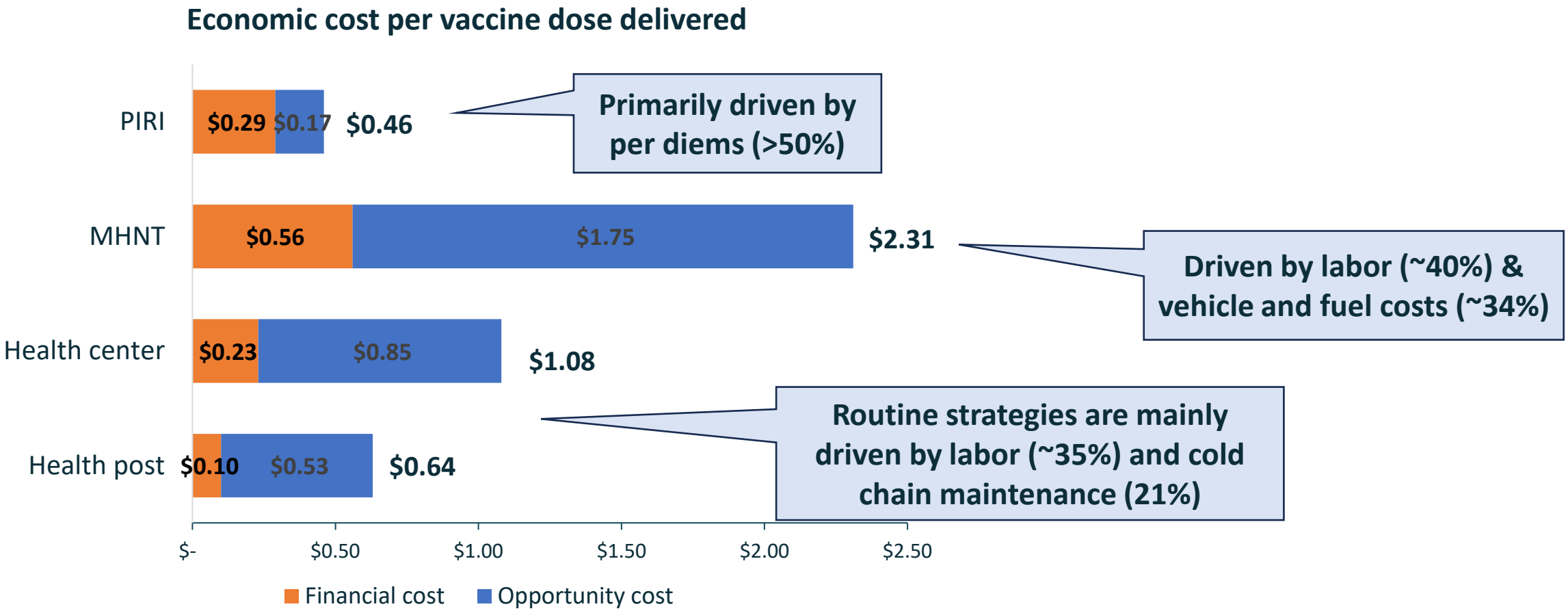
Total annual delivery costs of zero dose strategies are lower than routine delivery



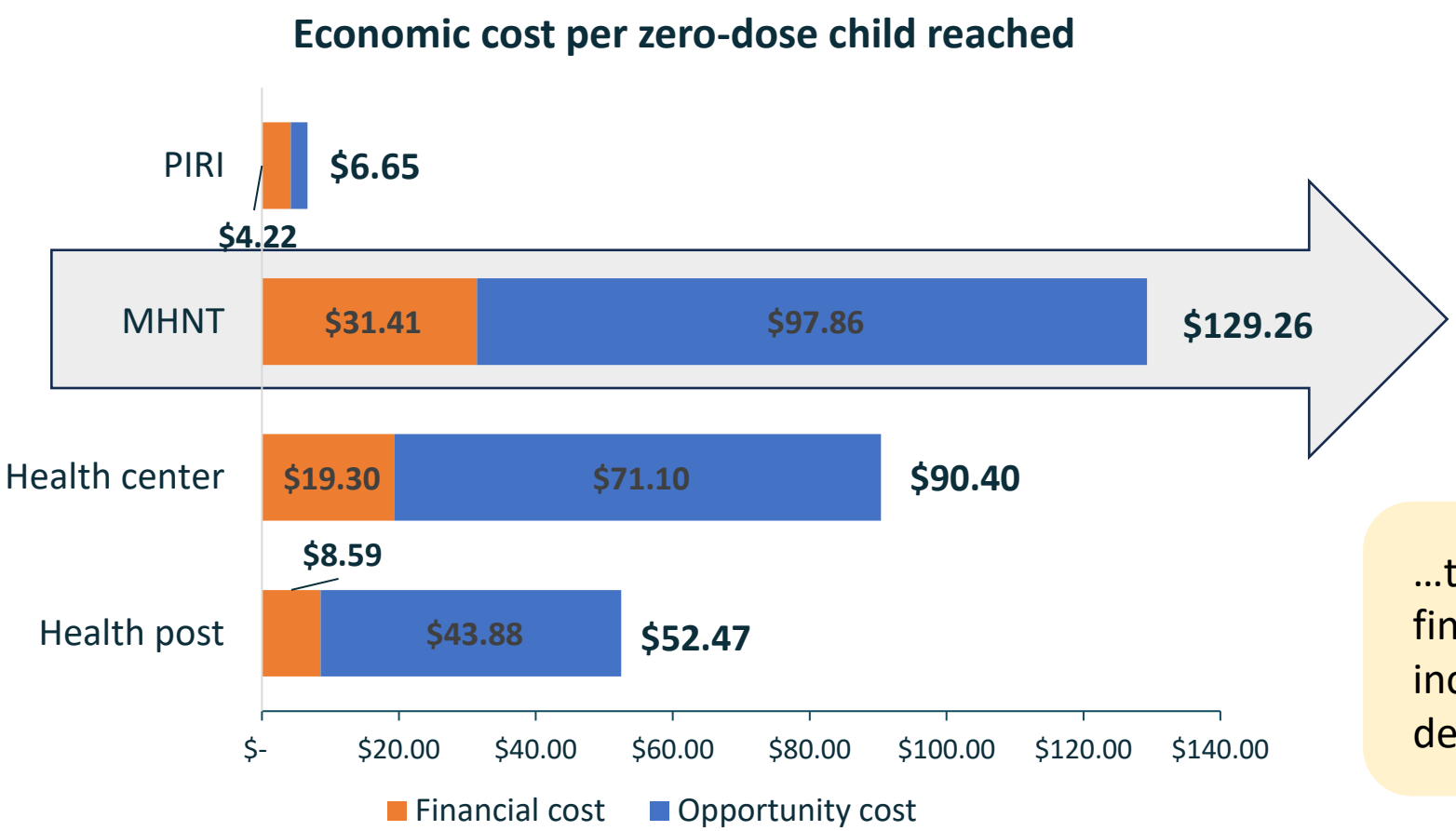
Though per session/per month zero-dose strategies cost more than routine delivery

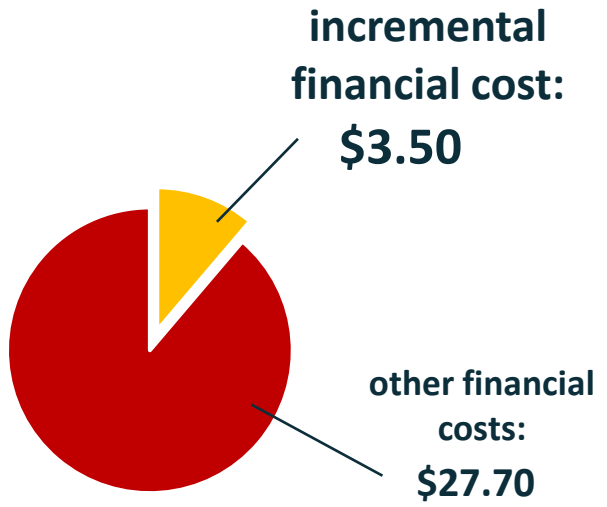


Cost per dose of PIRI is driven by per diems while other strategies are mainly driven by the cost of labor



Cost per zero-dose child reached: PIRI is the most cost-efficient delivery strategy





…though only a really small portion of the financial cost per dose for MHNTs is incremental/immunization-specific as it delivers many other services

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Conclusions

Both **MHNT and PIRI are effective** at filling operational challenges and resource gaps in the routine system by reaching missed children among mobile communities in hard-to-reach areas

Strategies must complement, not replace each other, as simultaneous MHNT and PIRI may cause **resource overlap** and **reduced effectiveness**.

PIRI is most effective and cost-efficient at reaching zero-dose children, though as it is implemented only 2-3 times per year, children remain permanently behind on schedule unless they are linked up with the routine system

Referral linkages with routine have been weak, resulting in **dropouts**, and reportedly parents have **postponed vaccination visits** to wait for an upcoming PIRI campaigns. Furthermore, if the frequency of PIRI were to increase, its cost-efficiency would drop.

The immunization-specific financial cost of **MHNT** delivery is low, and it offers a more **comprehensive, consistent, targeted, integrated approach** to reaching vulnerable communities

Moreover, integration with other highly demanded services such as nutrition has **increased uptake** of immunization compared to standalone delivery.

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Thank you!

To see our Quantitative and qualitative analysis report, go to this link

Acknowledgements

We would like to thank the Ministry of Health, UNICEF, Afar and Somali regional health bureau, and Elidar, Mille ,Ewa, Babili, Erer, and Yahob district EPI coordinators for their vital contributions to this work.

Hadiza Salele

CHAI

Covering...
the cost and impact of extending immunization sessions to evenings and weekends in Lagos, Nigeria

Incremental Costs and Impact of Weekend Vaccination Sessions: Lessons Learnt from Implementing the Zero-dose Reduction Operational Plan in Lagos state (Nigeria)

Presenting Author: Hadiza Salele[1]

Contributing Authors: *Zainab Yusuf[1], Tijjani Hussaini[1], Adebisi Adeyoyin[1], Salisu Sulaiman[1], Olufunke Fasawe[1], Emmanuel Okpanachi[1], Abiodun Giwa[1], Prince Friday[1], Akinpelu Adetola Mathew[2], Sulaiman Etamesor[3]*

Affiliations: 1. Clinton Health Access Initiative 2. Lagos State Primary Health Care Board 3. National Primary Health Care Development Agency

Outline

01 Background

02 Methodology

03 Results

04 Limitations

05 Conclusion

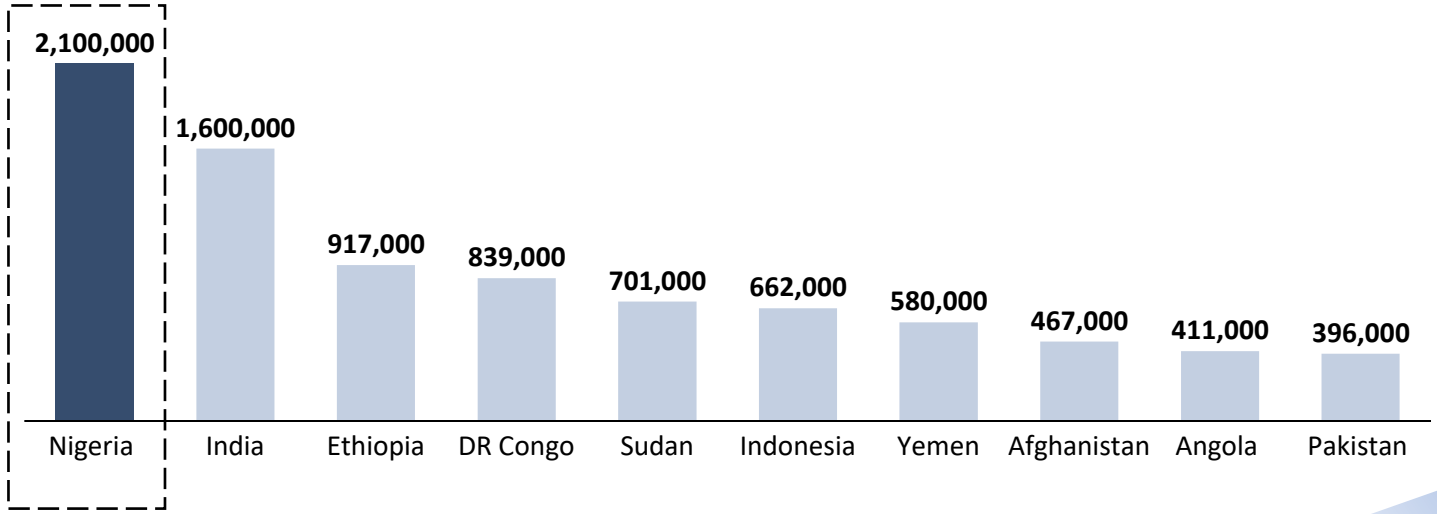
06 Call to Action

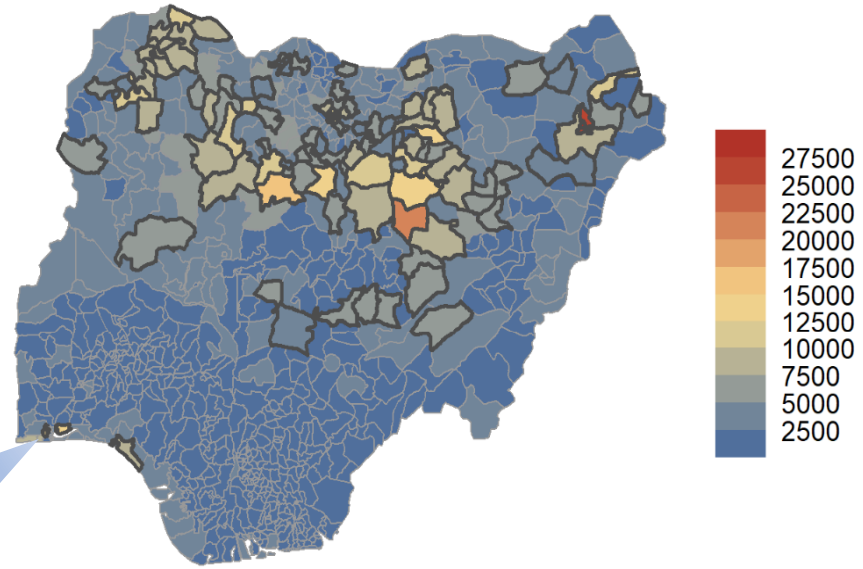
Background (1/2)

Despite progress made on RI, Nigeria has the highest number of zero-dose children with more than 2.1m unimmunized children

100/774 LGAs have the highest concentration of ZD children & are prioritized for ZD interventions

Zero-dose (ZD) children *are children who have not received the first dose of penta*





2 LGAs (Alimosho and Ikorodu) in Lagos are amongst the 100 zero-dose LGAs

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Sources: Zero-dose prioritization data, WHO & UNICEF Estimates of National Immunization Coverage (WUENIC Estimates), MICS/NICS 2021, Combined NPSIA DATA

Background (2/2)

Alimosho & Ikorodu are densely populated cosmopolitan LGAs, with increasing migrant population. 3 out of 5 women are working class and bear most childcare responsibilities.

"I went to a health facility for supervision and a mother came rushing into the health facility, begging me to ask the Nurse to attend to her baby so that she can rush to work"

A LGA Immunization Officer

Lagos State government introduced the **weekend vaccination** to reach these working-class women.

Weekend vaccination sessions are provided as fixed sessions in PHC facilities **on Saturdays only**. There are two categories of health facilities providing weekend vaccinations based on the number of operating hours

Type	Implementation Approach	Cost Elements*
Selected hours ***(17 facilities)***	Vaccination is provided **for 6 to 8 hours** during fixed sessions and requires ○ 1 – 2 vaccinators ○ 1 recorder ○ 1 community mobilizer	Stipend & meals for vaccinator Stipend for recorder Stipend for comm. mobilizer
24-hour providing services ***(56 facilities)***	Services are provided **throughout the day** during fixed sessions and requires ○ Changing staff rotations	None

*These sessions also incur running cost including facility operational cost, cost of vaccinators and demand generators, cost of vaccines, logistics cost, cost of syringes. These cost elements are not included.

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Methodology

Objectives

1. To estimate the quantified effectiveness of ZDROP in reaching zero dose and increasing access to immunization
2. To determine whether weekend vaccination are cost-effective in reaching more children
3. To gain insights into the experiences, best practices, and challenges associated with implementing extended immunization sessions

A mix-method approach was employed including

Desk review & Facility data collection

- **Administrative facility data** from July 2024 to February 2025 was collected from NHMIS immunization registers and tally sheets from 4 health facilities
- Cost data was collected from ZDROP budget costing and utilization data templates
- To compute the number of zero-dose children reached during the extended sessions. **Incremental cost per dose of vaccine delivered** was calculated using (adjusted and non-adjusted):-

$$\frac{\text{Additional cost incurred per extended session}}{\text{Average of the number of vaccines delivered per session}}$$

Stakeholder interviews

- Interviews were conducted with the following using a structured guide.
  - ✓ **Local Government Immunization Officers (LIO) (2)**
  - ✓ **Facility in-charges (2)**
  - ✓ **Immunization Providers across the two LGAs (4)**
- ✓ Thematic content analysis was used to synthesize the findings

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Results (1/3)

$154,738

Total cost of the ZDROP intervention in Lagos State

1,662

Total # of zero-dose children who received DPT1

$93.10

Incremental cost per zero-dose child reached.

$34.26

Incremental cost per dose delivered (adjusted for all antigens)

Comparison with other findings

- The incremental cost per zero-dose child lies within the range found in a study conducted in India (Clarke-Deelder E, et al (2024)), which ranged from **$22 to $193**
- Ozawa, et al (2018) found that intervention costs per dose for the 56 interventions ranged widely from **$0.01 to $38.16**

Ozawa S. Tatenda T. Yemeke, Kimberly M. Thompson, Systematic review of the incremental costs of interventions that increase immunization coverage, Vaccine, Volume 36, Issue 25, 2018, Pages 3641-3649; Clarke-Deelder E, Christian Suharlim, Susmita Chatterjee, Allison Portnoy, Logan Brenzel, Arindam Ray, Jessica Cohen, Nicolas A Menzies, Stephen C Resch, Health impact and cost-effectiveness of expanding routine immunization coverage in India through Intensified Mission Indradhanush, Health Policy and Planning, 2024; https://doi.org/10.1093/heapol/czae024

Results (2/3)

Facilities providing weekend sessions for 6 to 8 hours

Key findings

- **$1.36/dose** *(adjusted for all antigens)* was spent to conduct the extended session*

Other findings

- **$6/dose** (Clarke-Deelder, *et al.,* 2024)
- **$2.70/dose** (Uddin *et al.,* 2012)

Although, there are methodological differences in estimating cost per dose delivered, the incremental cost of conducting weekend vaccination was **seen to be lower** than other additional interventions conducted to reach zero dose children.

* Incremental cost of **$4.23** per zero dose child reached was obtained i.e. only including zero dose children reached with penta-1 only

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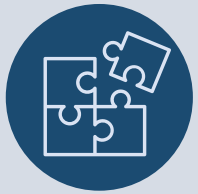
Sources: CHAI Team Analysis of cost per dose data; Clarke-Deelder E, Christian Suharlim, Susmita Chatterjee, Allison Portnoy, Logan Brenzel, Arindam Ray, Jessica Cohen, Nicolas A Menzies, Stephen C Resch, Health impact and cost-effectiveness of expanding routine immunization coverage in India through Intensified Mission Indradhanush, Health Policy and Planning, 2024; https://doi.org/10.1093/heapol/czae024. Chatterjee S, Das P, Nigam A. et al. 2018. Variation in cost and performance of routine immunisation service delivery in India. BMJ Global Health 3: e000794.doi: 10.1136/bmjgh-2018-000794..

Results (3/3)

Stakeholders shared that

Best Practices & Lessons learnt



Weekend vaccination is complimentary & equitable — 8/8

Ensuring equity for vaccination for children necessitates varied strategies, with weekend sessions particularly beneficial for reaching working-class women

Vaccines and supplies were accessible — 8/8

Provision of weekend vaccination was not impeded by inaccessibility to vaccines. There were not instances when vaccines couldn't be accessed

Wastage rate management led to reschedule — 3/8

Health care workers had to rescheduling of vaccination to workdays to avoid wastage of vaccines

Health talks was used in increasing awareness — 8/8

Caregivers receive information on the availability of weekend vaccination sessions during immunization health talk which was subsequently cascaded to other caregivers

Challenges

Human Resource Gaps — 8/8

Shortage of health care workers affected the availability of weekend sessions and led to increase workload amongst health care workers

Delayed funds release — 4/8

This affected the ability of facilities to engage community mobilizers and hence affected client turnout

Demand Generation was not sufficient — 4/8

There is need to engage additional community mobilizers to reach additional households with information on vaccination.

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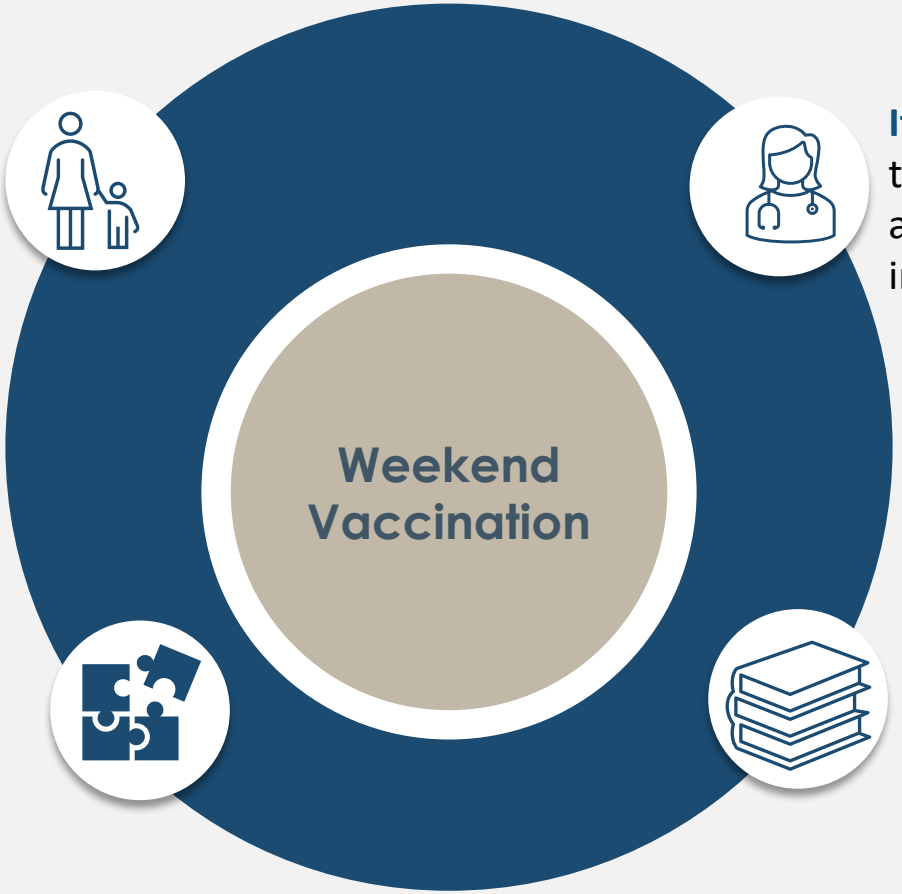
Source: CHAI Team analysis of Stakeholder Interviews

Conclusion

Weekend vaccinations are cost effective in reaching working class mothers and can be further optimized by implementing strategic demand generation efforts



It is imperative to address HR shortages to reduce burnout, improve HCW welfare and support facilities to provide immunization sessions effectively

Weekend vaccination complements other immunization service delivery approaches including fixed sessions, community outreach and market storms

Weekend vaccination should be integrated into immunization policies and plans, as part of gender and equity consideration to enhance immunization uptake

Call to Action

1 Development & IPs

- Support National and state governments to implement weekend sessions to reach working class women, as part of efforts to advance equity in vaccination

2 Health Managers and Implementers

- Integrate weekend sessions into the service delivery models, health development plans and data reporting tools
- Investment in HRH and innovative financing mechanisms

3 Policy Markers

- Create comprehensive guidance materials and normative documents to facilitate the efficient and effective implementation of weekend vaccination programs.

Thank you

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Tahmeena Hassan

PHC Global

Covering...
the cost of identifying and vaccinating zero-dose children in Sindh and Punjab provinces, Pakistan

Estimating the cost of identifying and vaccinating zero-dose children through selected interventions compared with routine delivery in Pakistan

Tahmeena Ali Hassan, PHC Global

Background

- An estimated **396,899 zero-dose children** in Pakistan in 2024
- The Expanded Program on Immunization (EPI), Polio Eradication Initiative (PEI) and partners have launched multiple zero-dose initiatives, but their **comparative cost and effectiveness remained unknown.**

Objectives

- Evaluate the **cost and outputs** of strategies to identify and vaccinate zero-dose children in urban and rural Punjab and Sindh, alongside routine immunization
  - Estimate cost per zero-dose child identified and vaccinated
  - Assess programmatic and financial enablers and barriers
  - Develop actionable recommendations for federal and provincial decision-makers.

Strategies at a glance

Routine strategies

Fixed site

- Routine vaccination services provided at designated permanent health facilities.
- Generally daily (1-2 sessions per day).

Routine Outreach

- Health workers deliver vaccination at nearby communities on a routine schedule,
- Generally daily (1-2 sessions per day).

Selected dedicated zero-dose strategies

Integrated outreach

- Outreach campaign systematically planned, where a vaccinator is accompanied by a social mobilizer in low-performing areas.
- **Not** integrated health services.
- Occurs 2-3 times a year until recent big catch-up campaign (12-22 days long).

ZD reach

Clinic on Wheels

- Mobile healthcare initiative in Punjab only to underserved urban areas to deliver vaccines, family planning, ultrasounds , nutrition, ANCs and maternal care, and OPD prescriptions.
- Established in May 2024 by IRMNCH & Nutrition dept.
- Occurs daily.

ZD reach

Polio house-to-house (H2H) campaigns

- National/subnational campaigns where polio workers deliver oral polio vaccines to households. Leveraged to identify zero-dose children, data shared with EPI to reach within six weeks.
- Every month/every few months.

ZD identification

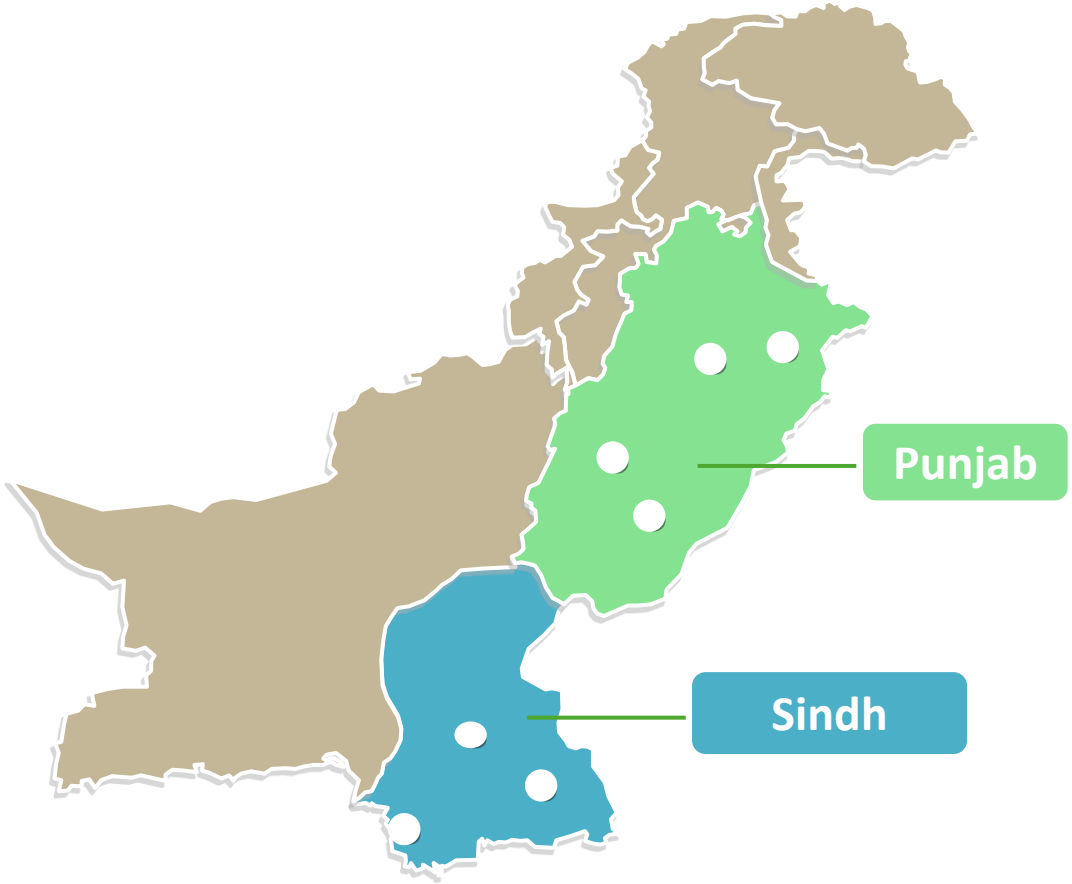
Study design

Sample

- 7 districts across 2 provinces
- 42 health centers & 2 mobile clinics in 26 Union Councils (UCs)
- UCs serve as the lowest administrative level in Pakistan and the level data is recorded.
- Selection criteria: Gavi priority status, population size, coverage, ZD kids, rural/urban

Methods

- Mixed-methods: Bottom-up costing analysis + qualitative interviews with healthcare providers
- Assessed most recent campaigns & a usual month of routine activity
- Payer perspective
- Financial and economic costs *(volumed-weighted average)*
  - Full cost: fixed site, regular outreach, integrated outreach
  - Incremental cost: Clinic on Wheels, Polio h2h campaigns



Zero-dose child = *18 weeks and over not yet reached with Penta1 (EPI) or any injectable vaccines (PEI)*

The number of zero-dose children identified each day through polio house-to-house campaigns per Union Council **ranged from 1.1 to 2.3**

Intervention	Average ZD children identified by Union Council per day
Polio H2H campaigns (Nov 23)	2.3
Polio H2H campaigns (Oct 24)	1.1

Fewer zero-dose children were identified in Oct 2024 than in Nov 2023 suggesting the strategy's effectiveness might be declining as remaining ZD children become harder to reach.

Intervention	Average ZD children reached by Union Council per day
Fixed site delivery	0.3
Routine outreach	0.7
Integrated outreach	1.3
Clinic on Wheels	0.7

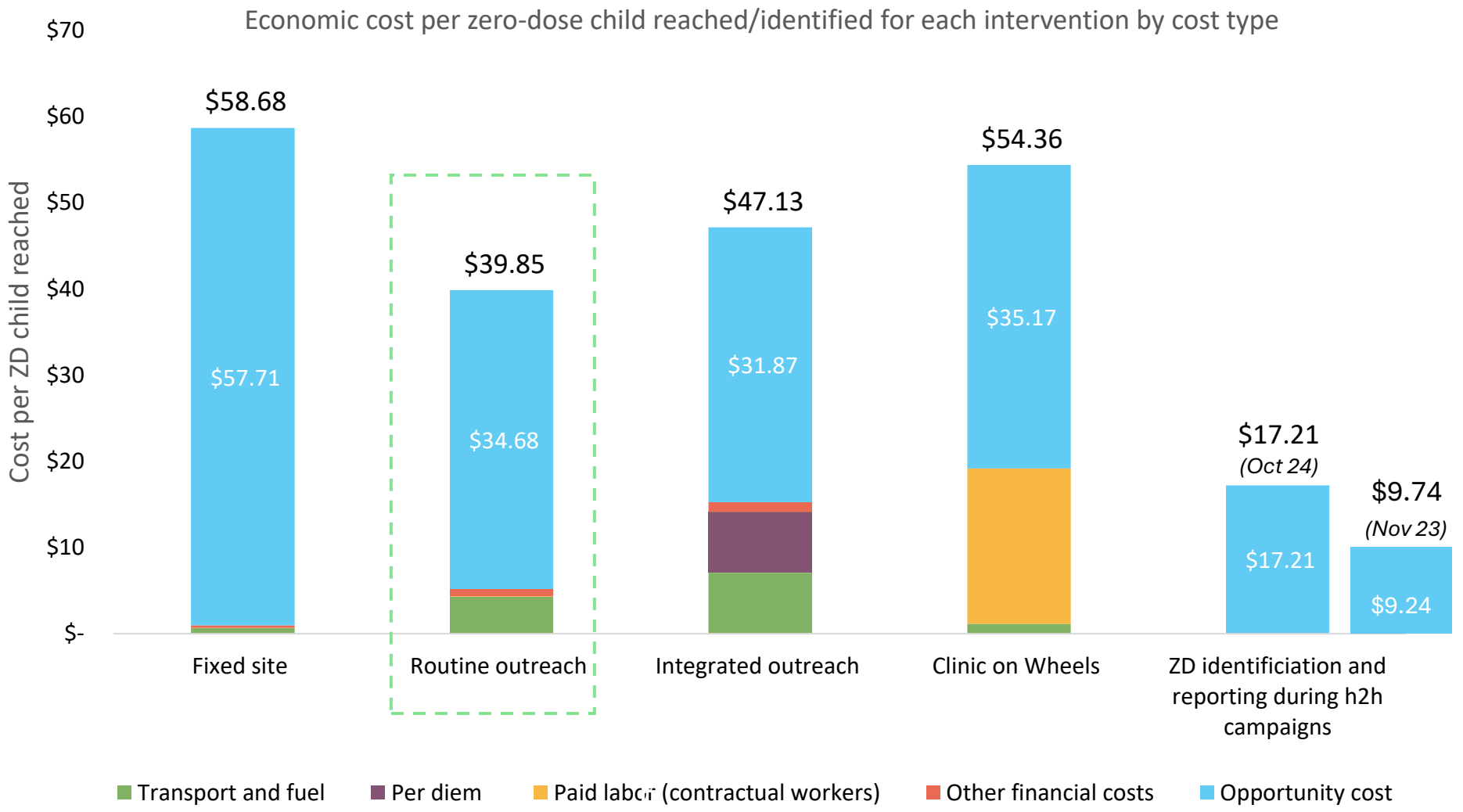
Integrated outreach activities **reached more zero-dose children**, though its coverage was not substantially more than regular outreach

Intervention	Average ZD children identified by Union Council per day
Polio H2H campaigns (Nov 23)	2.3
Polio H2H campaigns (Oct 24)	1.1

Intervention	Average ZD children reached by Union Council per day
Fixed site delivery	0.3
Routine outreach	0.7
Integrated outreach	1.3
Clinic on Wheels	0.7

Fixed-site delivery was the least effective strategy, reaching only 0.3 zero-dose children per day across both rural and urban settings.

Overall, routine outreach incurred the **lowest economic cost** per zero dose child reached

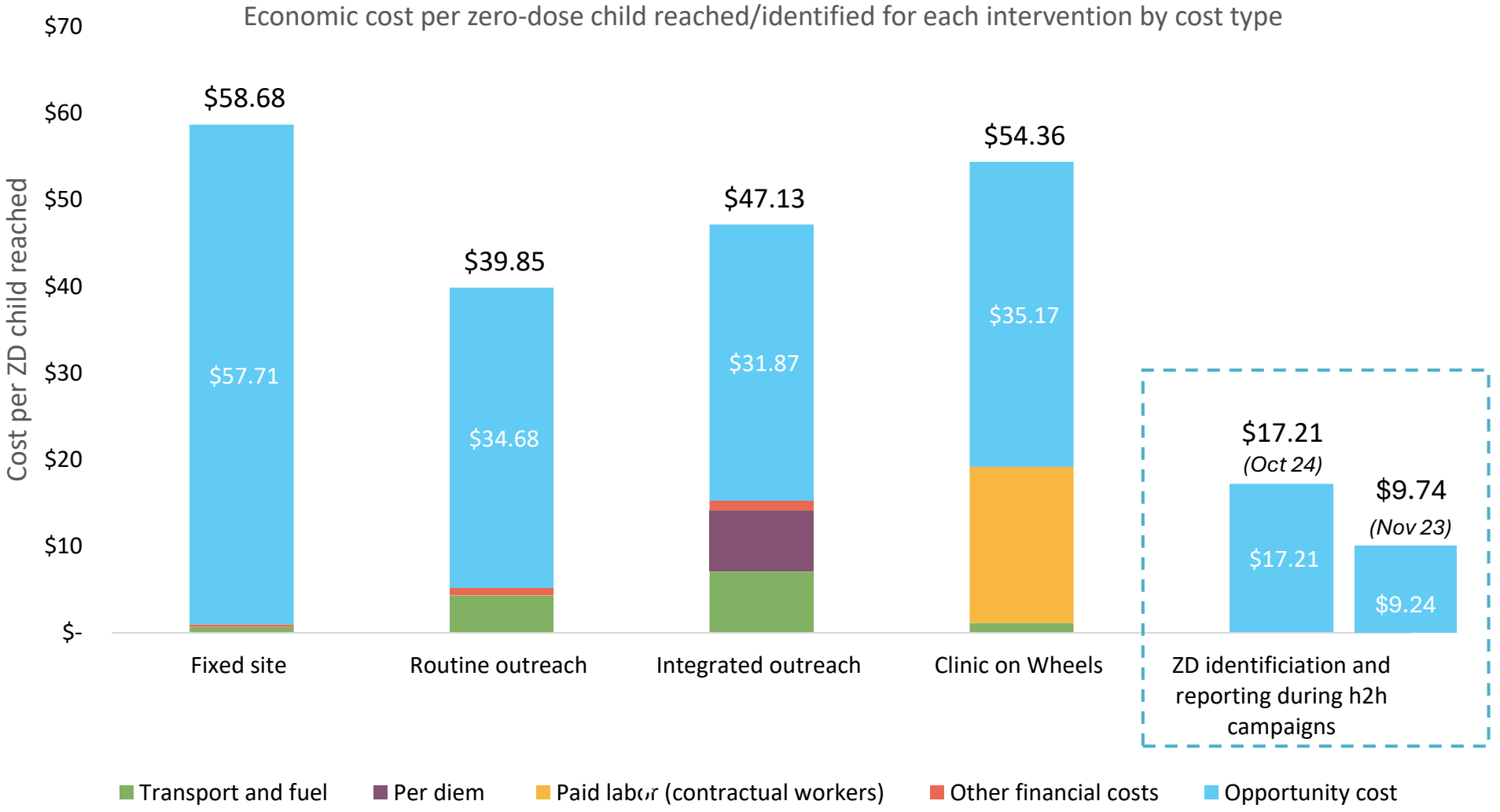


Routine outreach has **fewer staff** and **less financial support** than most other strategies

Overall, integrated outreach and Clinic on Wheels have a higher cost per zero-dose child reached than routine outreach as better resourced.

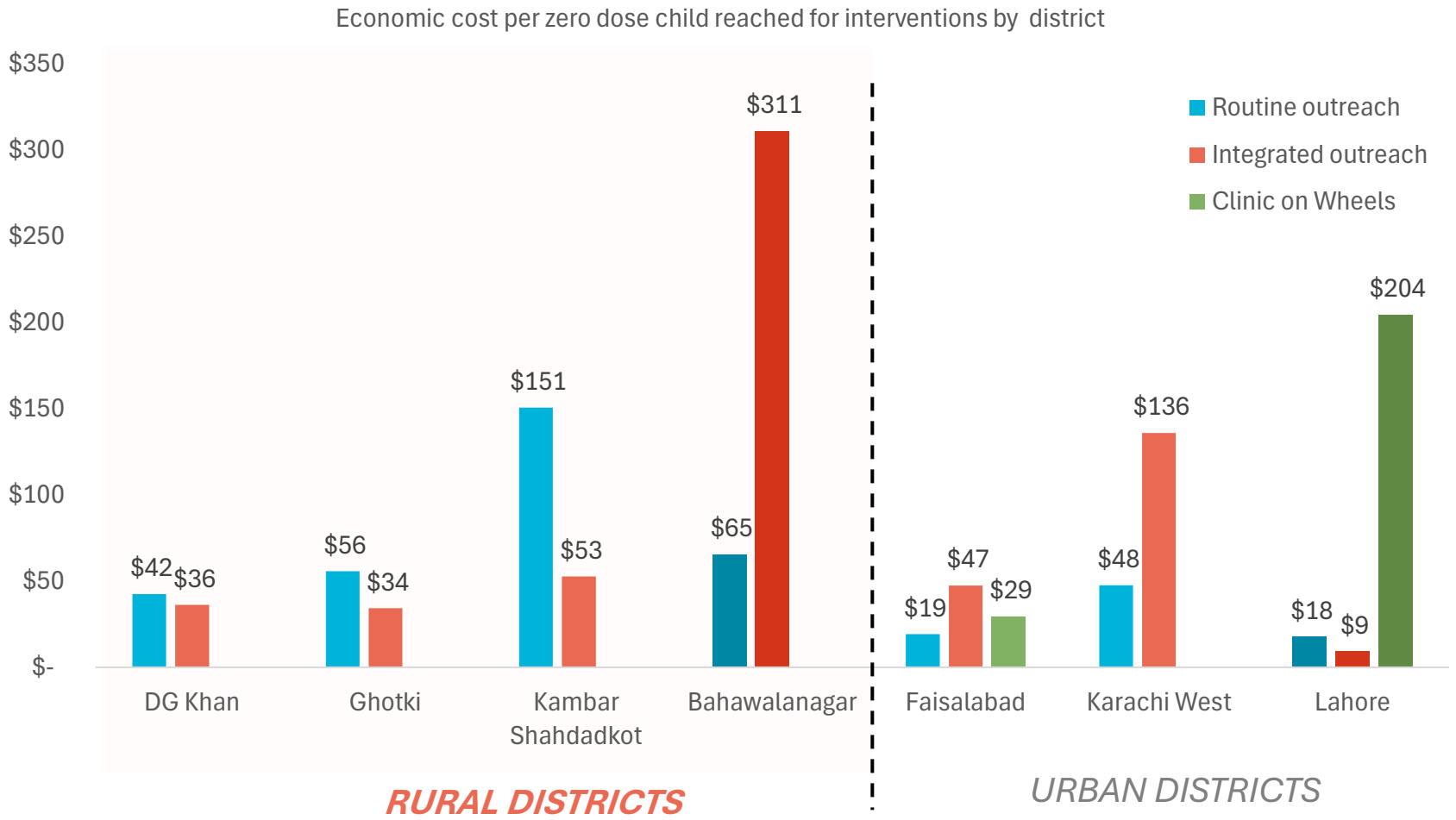
Opportunity costs are **primarily driven by labor** for all strategies.

Incremental cost per ZD child identified for polio h2h campaigns consisted solely of the opportunity cost of **additional staff & volunteer time**



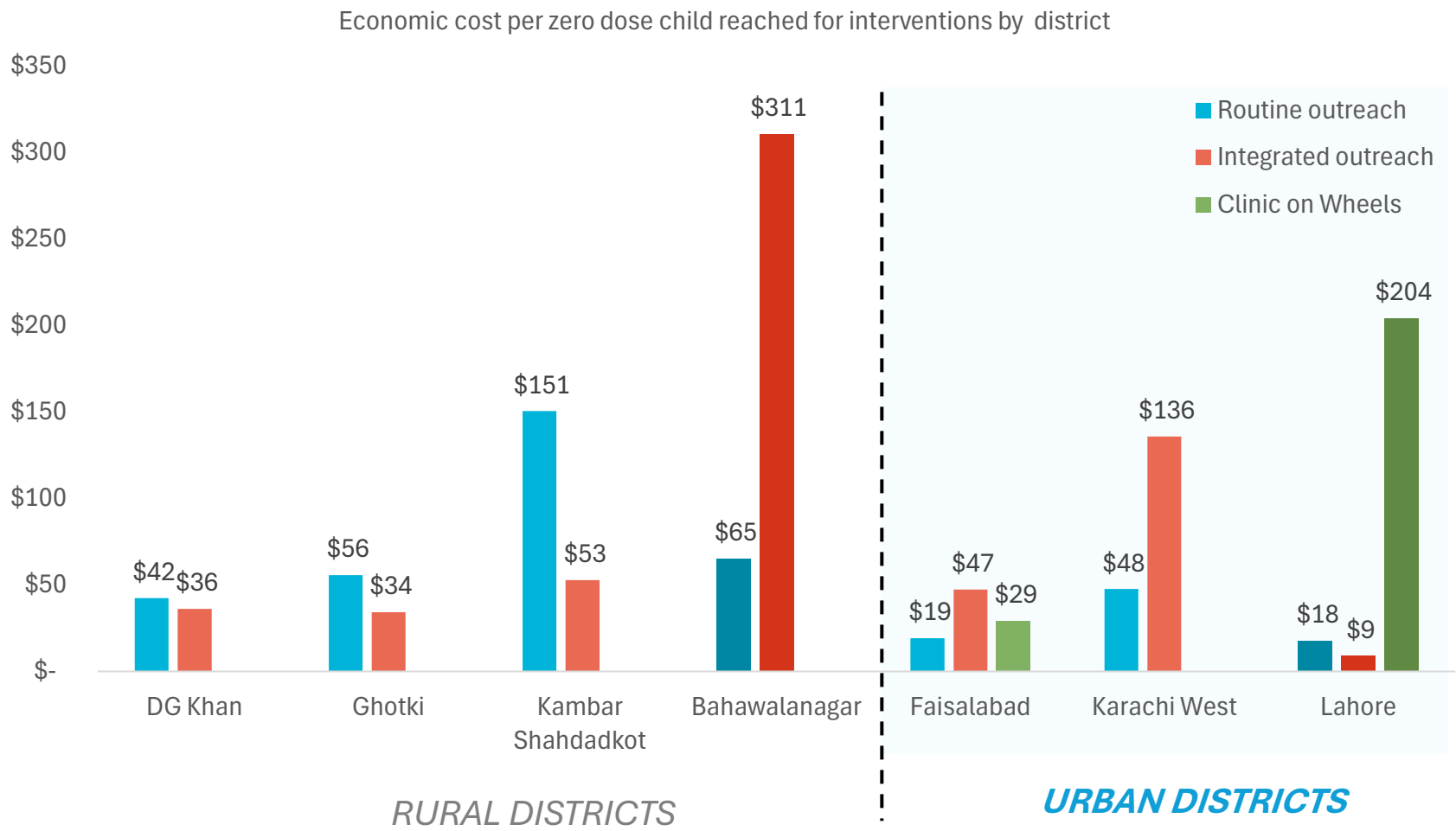
- Cost per zero-dose child identified was lower in the Nov 2023 polio H2H campaign than in Oct 2024, due to more ZD children being reached.
- **No additional financial cost for identifying ZD kids in polio campaigns**, just opportunity cost of additional staff time for ZD identification and reporting estimated at 82 additional minutes per health personnel per day.

In most **rural districts**, integrated outreach was a more cost-efficient strategy, while routine outreach was more cost-efficient for most urban districts



In rural districts, integrated outreach activity fills critical infrastructure gaps resulting in substantially more ZD kids reached than routine outreach (1.4 vs 0.6 per day). *Exception was Bahawalnagar,* with significant weather-related access barriers during the activity.

In most rural districts, integrated outreach was a more cost-efficient strategy, while routine outreach was more cost-efficient **for most urban districts**



Integrated outreach activity effectiveness was more limited in urban districts where public resistance to immunization is a significant barrier & routine outreach was better resourced. *Exception was Lahore* where IOA was particularly well-staffed & made more gains.

The effectiveness and efficiency of each intervention vary based on their **ability to address the main drivers of zero-dose prevalence** for the specific context

Supply-side gaps

Integrated outreach was generally more cost efficient in rural areas as helps address key human & financial resource gaps. *E,g,* in some rural districts, routine outreach is carried out by single vaccinators covering large areas and they benefit significantly from the support of voluntary social mobilizers for integrated outreach.

Hesitancy and mistrust

In most urban districts, routine outreach is more cost efficient than integrated outreach. Widespread campaign fatigue reduced acceptance of intensive campaigns and routine outreach demonstrated its potential to maintain trusting community relationships

Poverty

While fixed-site delivery was generally inefficient in reaching zero-dose children, in one rural district, financial incentives at facilities helped boost zero-dose reach of fixed-side delivery by addressing poverty as the predominant barrier.

Accessibility

Clinics on Wheels were more cost-efficient in areas with more concentrated transient populations than dispersed.

Key Takeaways

1. To be most effective at reaching zero-dose children, the immunization strategies **must match the specific zero-dose barriers** of the context where they are implemented

2. Immunization **outreach campaigns should be strategically deployed** only where routine delivery is constrained, and not as a blanket intensification across provinces

3. Clinics on Wheels is a highly targeted intervention, most effective in areas where zero-dose children are **concentrated in informal settlements.** It is relatively high-cost compared to outreach.

4. Integrating zero-dose identification into **polio house-to-house campaigns is relatively cost-efficient**, as it requires no additional financial costs.

Questions?

Click the Q&A at the bottom of your screen

Flavia Moi, Health Systems Insight
on the global evidence synthesis

Girmaye Dinsa, Fenot Associates & MOH Ethiopia
on the cost of reaching zero-dose children in rural Ethiopia

Abdi Gari Negasa, Fenot Associates & Haramaya University
on the cost of reaching zero-dose children in rural Ethiopia

Hadiza Salele, CHAI
on the cost of reaching zero-dose children in Lagos, Nigeria

Tahmeena Hassan, PHC Global
on the cost of identifying and vaccinating zero-dose children in Pakistan

If you have questions for the panelists following the webinar, please contact us at **immunizationeconomics@thinkwell.global**.

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