Welcome to this webinar on data triangulation! Where are you connecting from?

niamey niger

pakistan

papua new guinea

sudan

philippines manila

atlanta

lahore-pakistan

sierra leone
bangladesh

sri lanka

cameroon

jordan

nigeria

indonesia

amsterdam

gambia

uganda

mozambique

ghana

kenya

india

drc

ethiopia

halima toro from nigeria

geneva

zambia

kaduna nigeria

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WHO SCHOLAR LEVEL 2 CERTIFICATION COURSE ON

DATA TRIANGULATION FOR IMPROVED DECISION MAKING IN IMMUNIZATION PROGRAMMES

FIRST COHORT

LEVEL 2 COHORT 1-SPRING 2020 ONLINE 48 HOURS

ENGLISH 16 MARCH – 22 MAY 2020 FRENCH 30 MARCH – 5 JUNE 2020

Open webinar series

Ground rules

- Your active participation is needed

- Submit questions and ideas using the Q&A button in Zoom

- Vote for questions you would like to see answered

- We will also use mentimeter for quiz questions

- Go to menti.com on your phone or computer if you wish to participate

- Do not be disappointed if we are unable to answer your question

- All resources in www.tinyurl.com/2020-triangulation

5   13
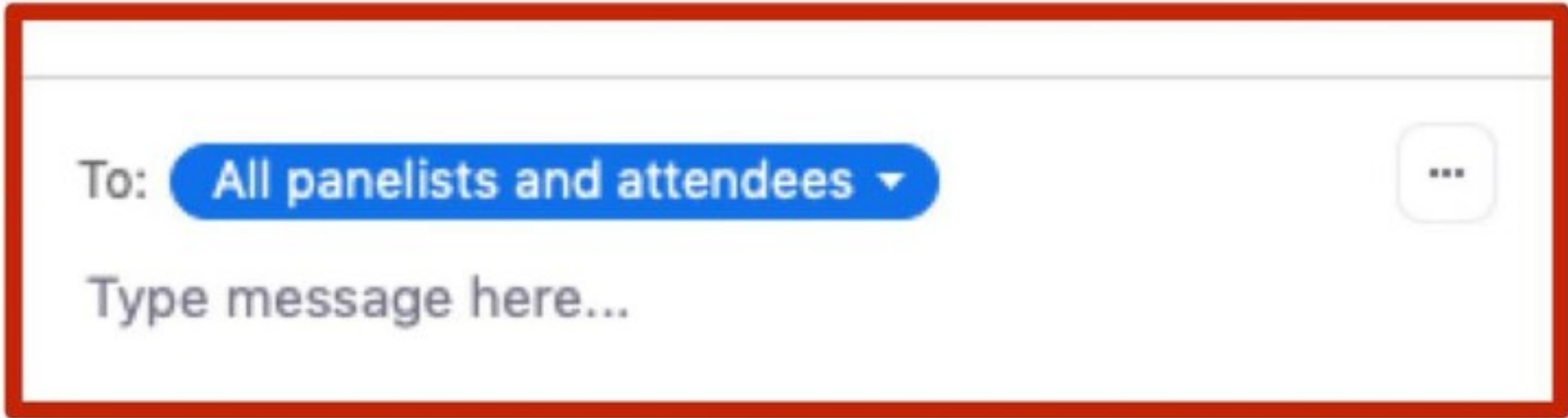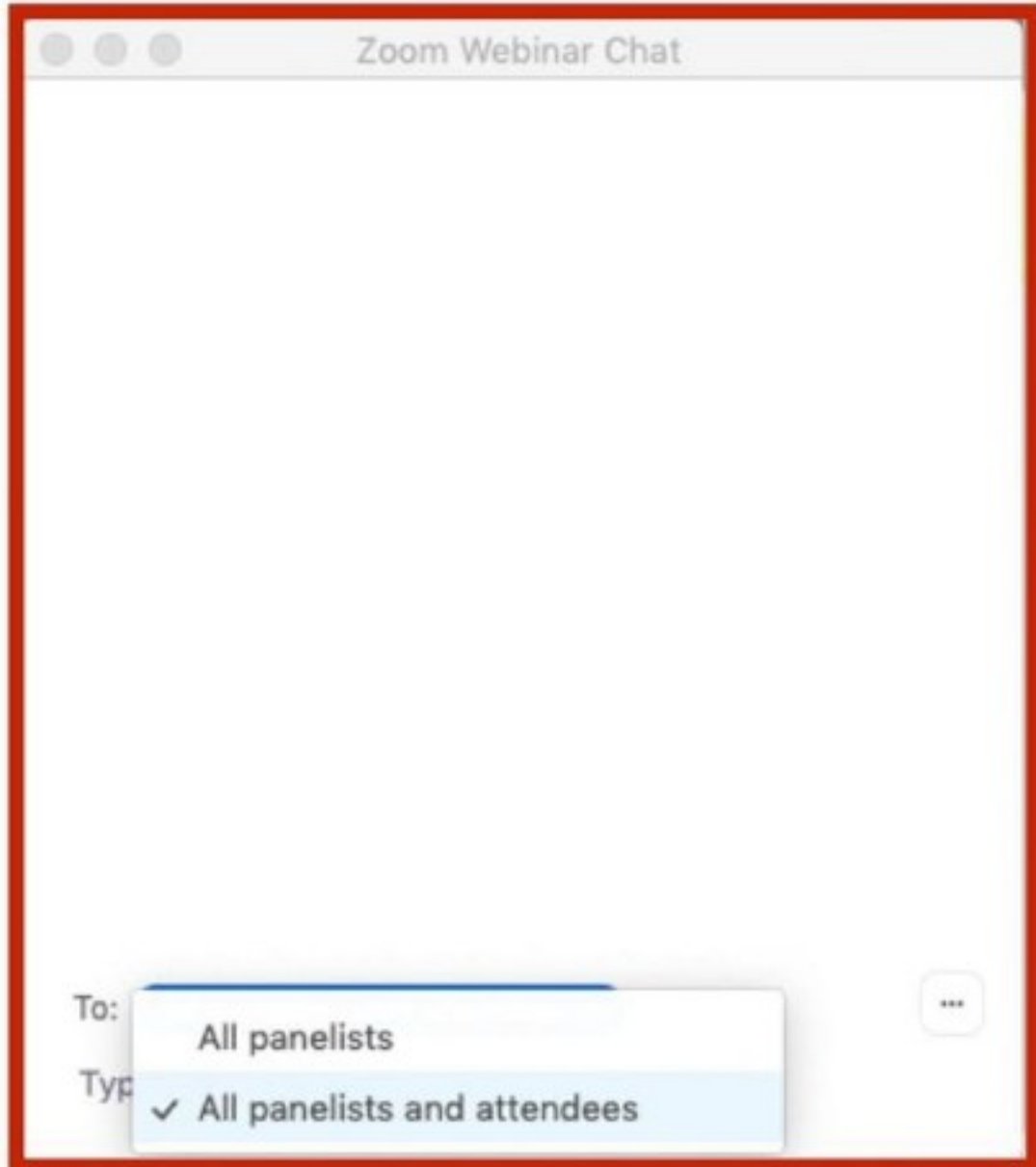
Ask your questions

▶ Click the Q & A button

▶ Vote for the best questions

▶ Comment on the questions
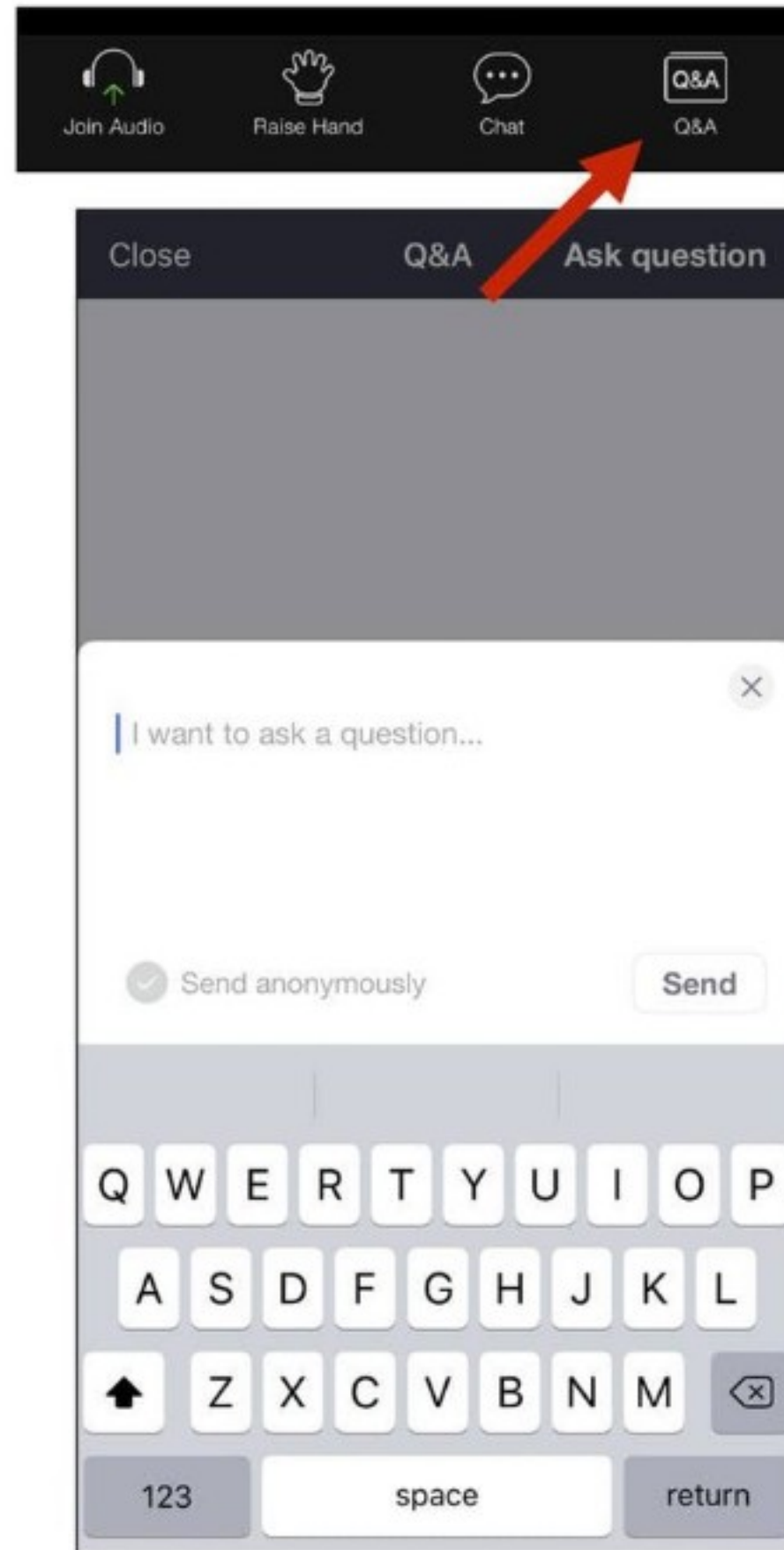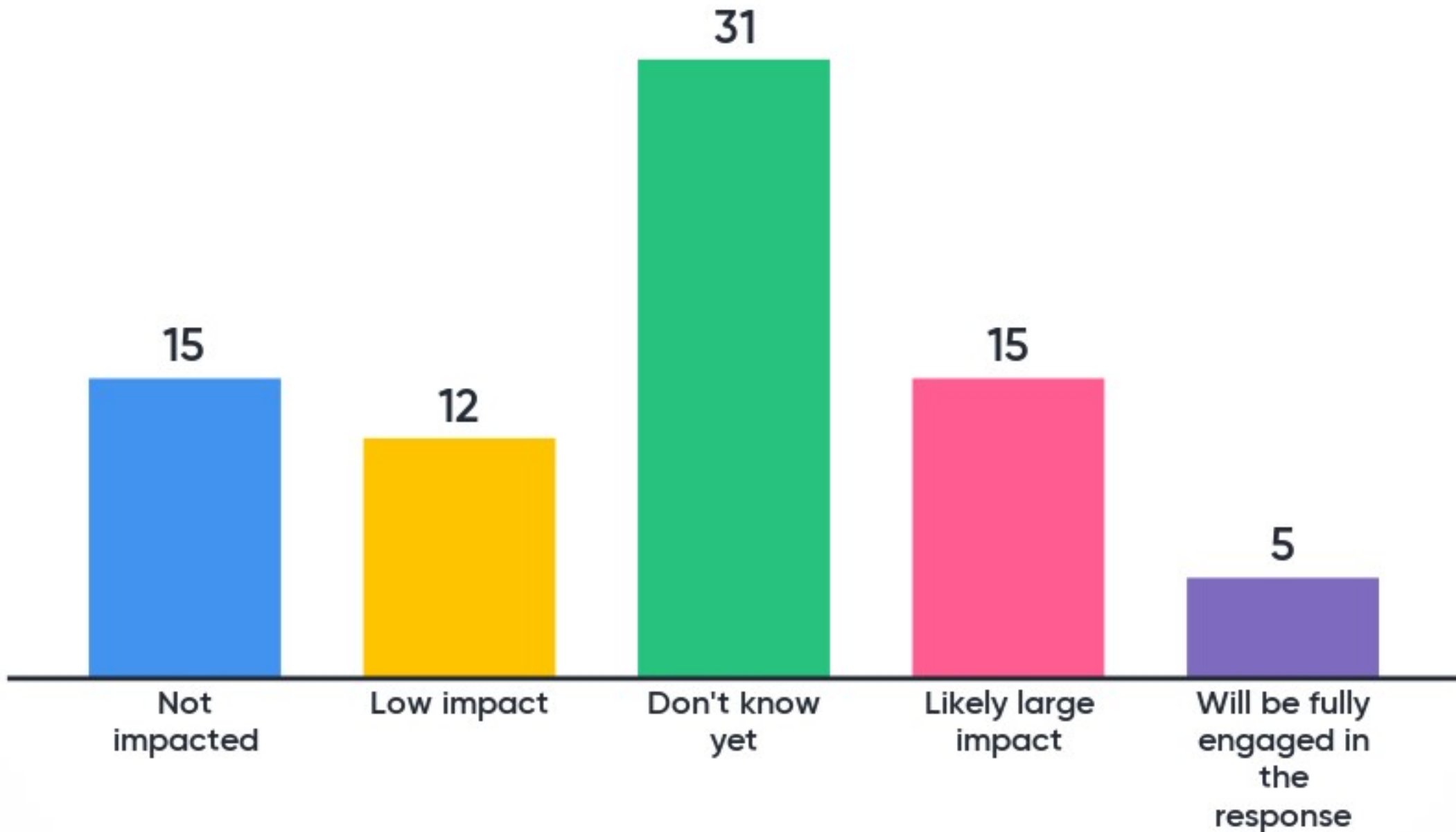
Data triangulation: overview

- Framework for data triangulation

- The questions you are dealing with

- How will the Level 2 Scholar course help you?

11   1   23

Which of the following best matches your idea of data triangulation?

7

Validating data quality

4

Visualizing data on dashboards
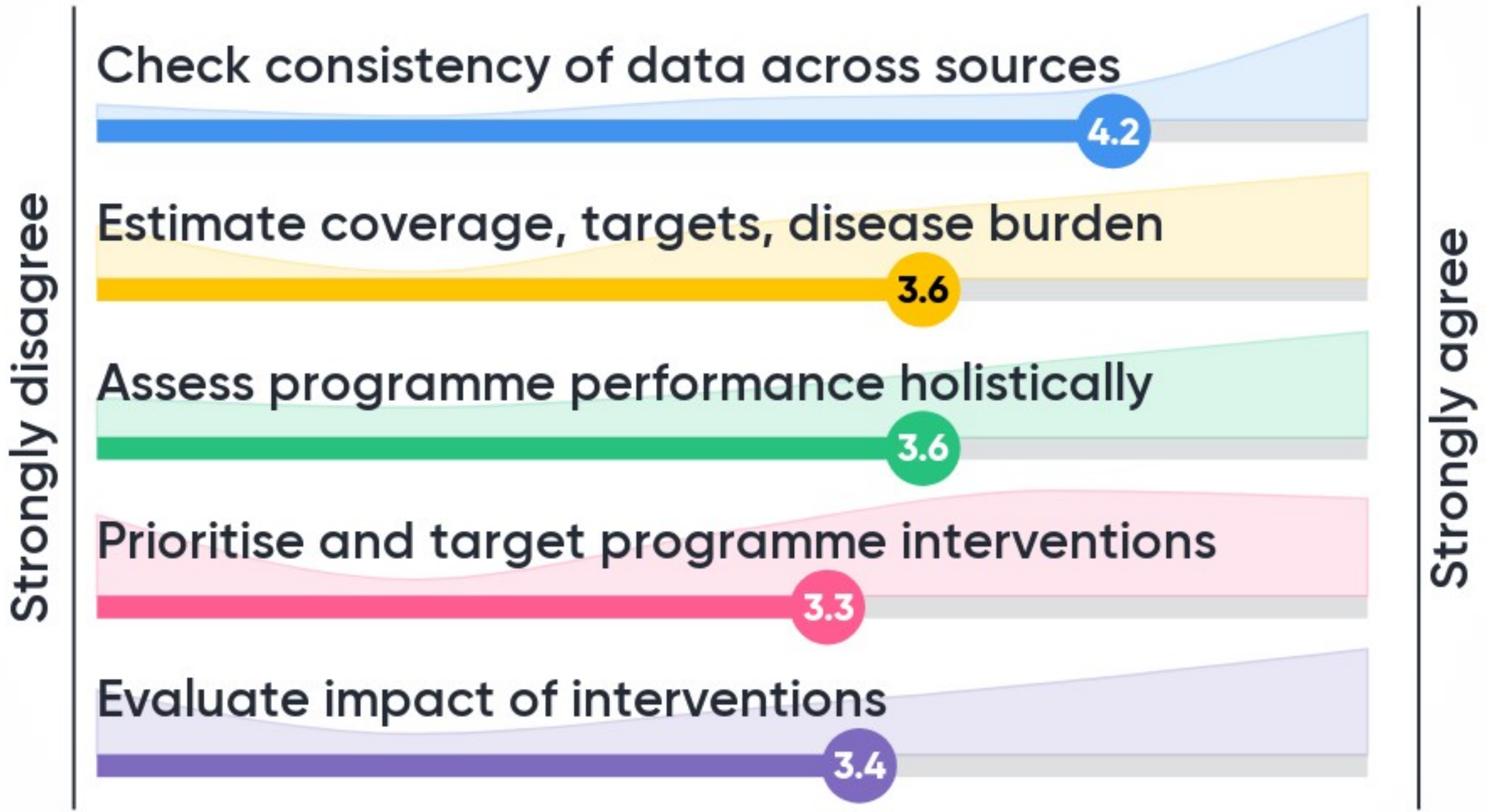
7

Harmonizing data

4

Predictive modeling of data

37

Comparing at least 2 data sources

33

Comparing at least 3 data sources

92

Triangulation can be used to:

Strongly disagree ← → Strongly agree

- Check consistency of data across sources — 4.2
- Estimate coverage, targets, disease burden — 3.6
- Assess programme performance holistically — 3.6
- Prioritise and target programme interventions — 3.3
- Evaluate impact of interventions — 3.4

91

How familiar are you with the triangulation framework?

51

12   12   13

Read it   Skimmed   Aware of   What is
           it   it   it?

88
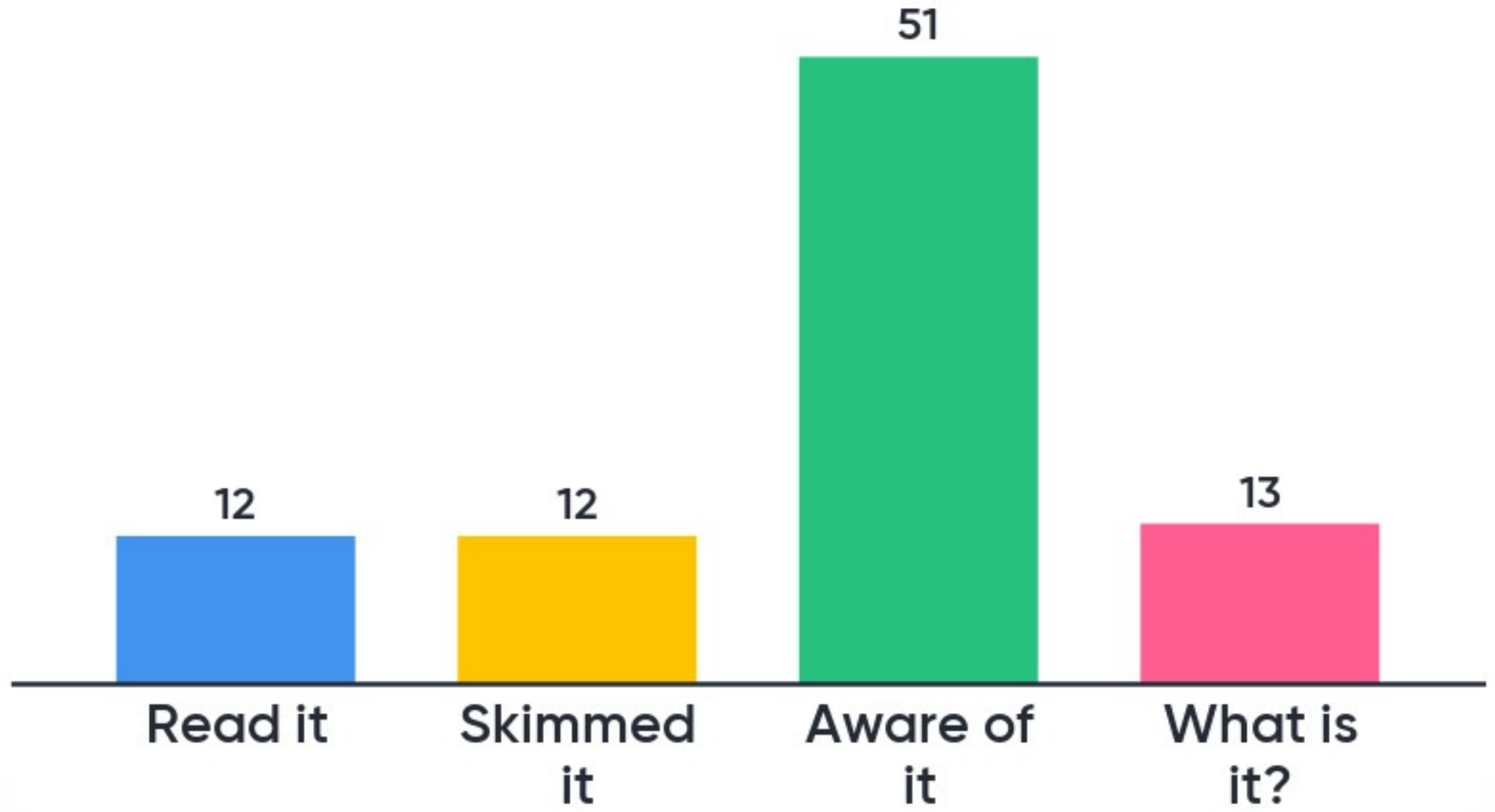
What is Data Triangulation?

Definition: **Critical synthesis of existing data from two or more sources to address relevant questions for program planning and decision-making**

Identifies and aims to address limitations of any one data source and/or data collection methodology

Encourages deeper insight through making sense of complementary information and broader context

8   21
♥   ?   👍   👎
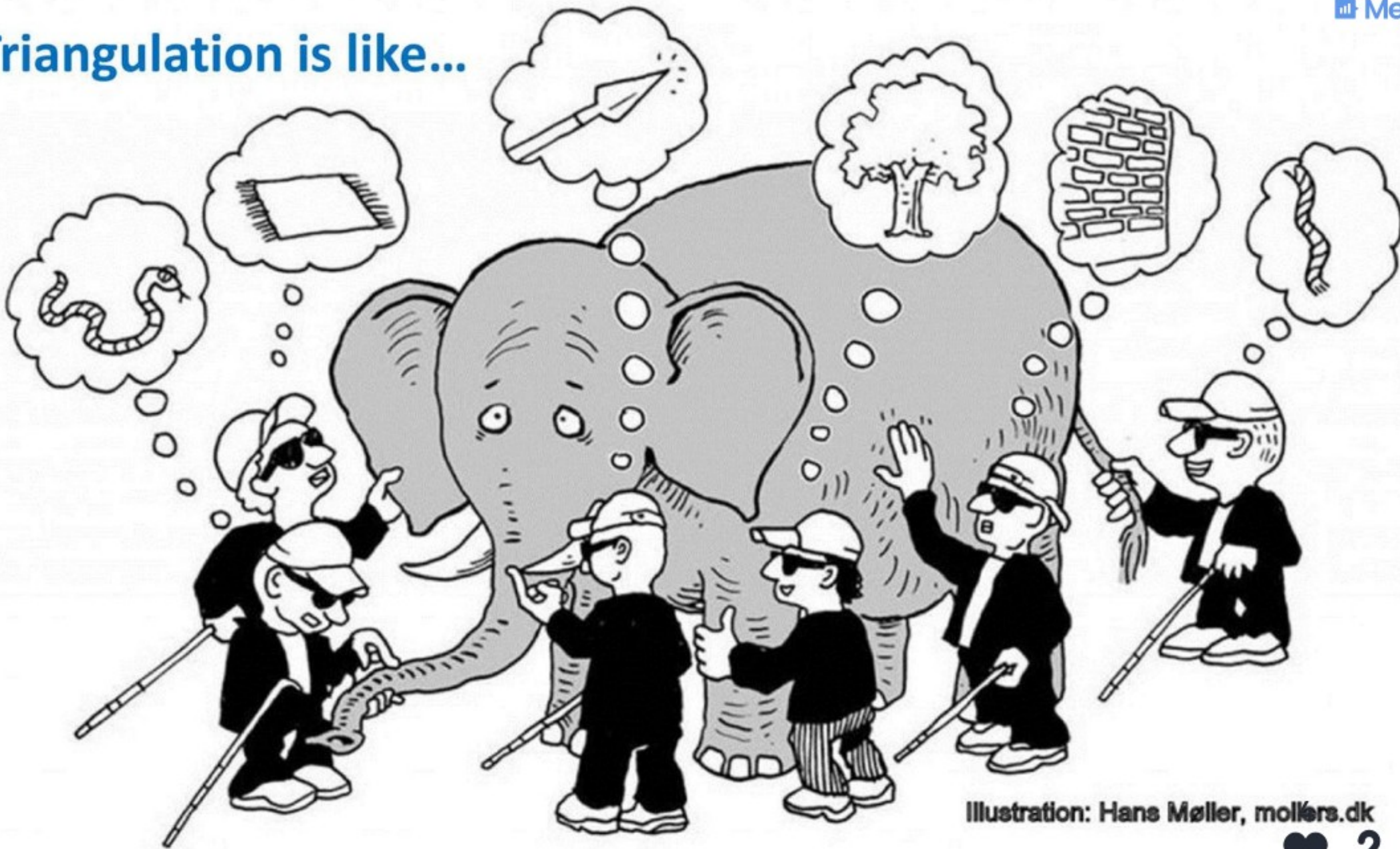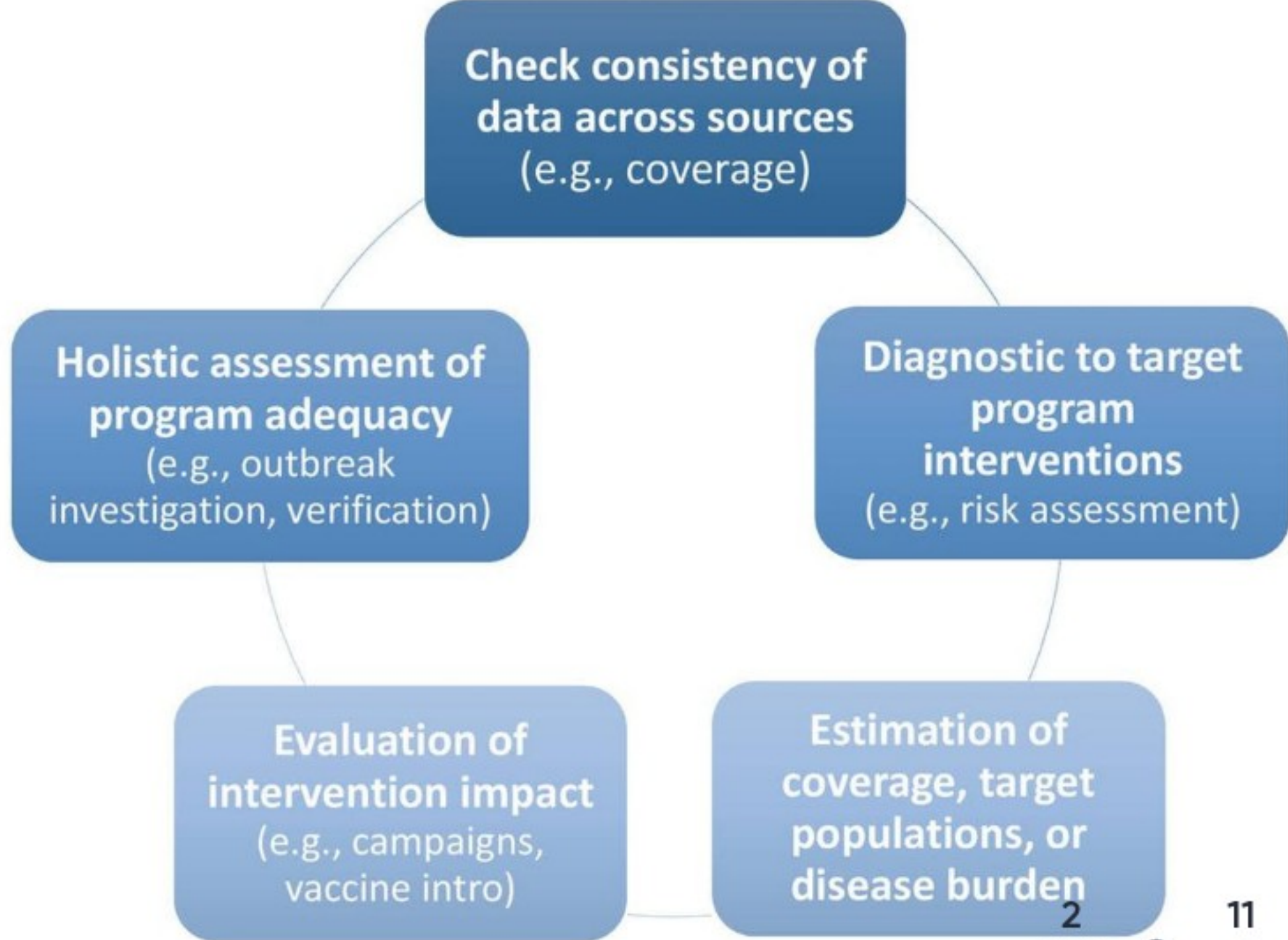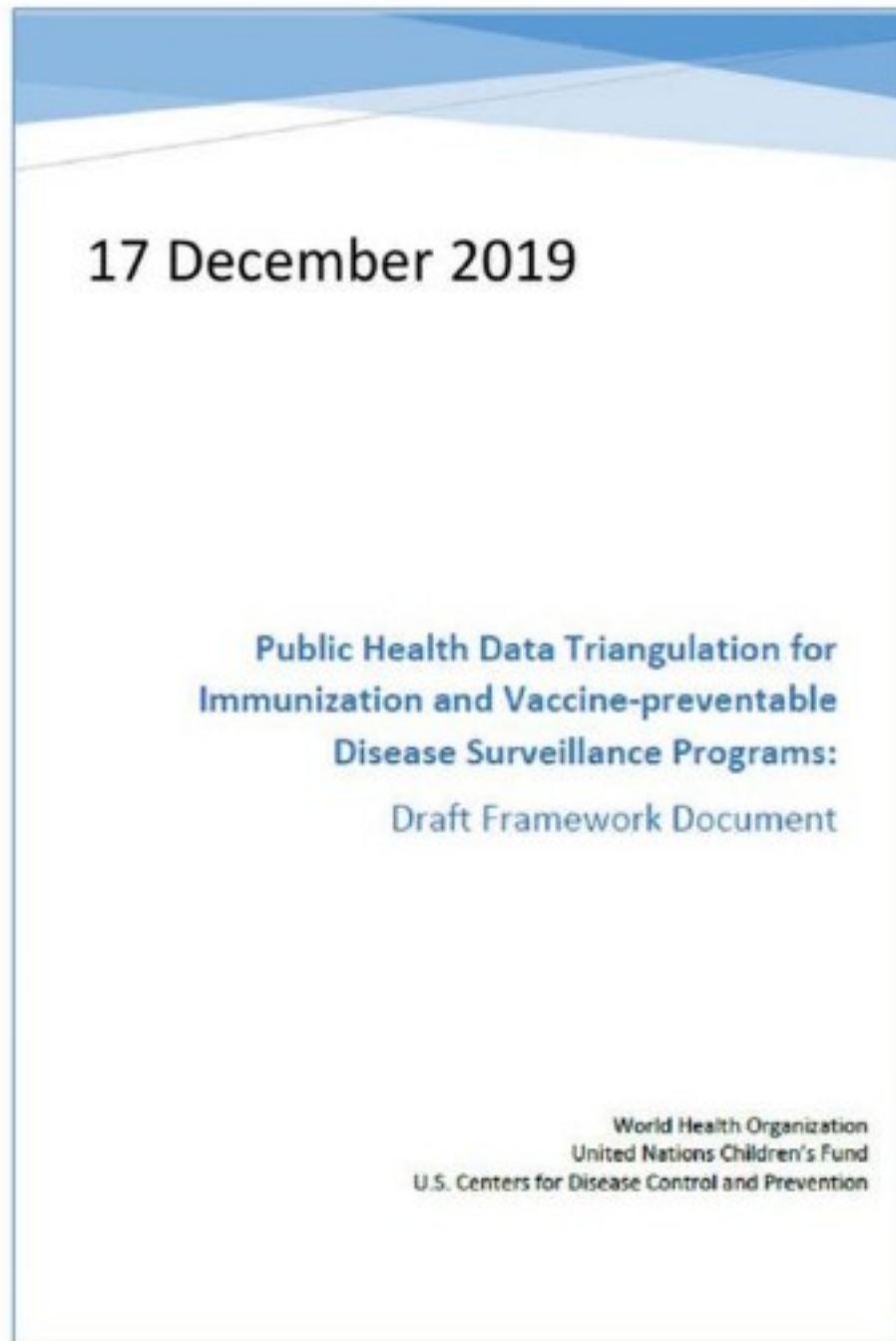
Triangulation is like...

Illustration: Hans Møller, mollers.dk

Triangulation Use by EPI

Landscape analysis:
5 types of triangulation used by EPI

Not just data validation!

- Check consistency of data across sources (e.g., coverage)
- Diagnostic to target program interventions (e.g., risk assessment)
- Estimation of coverage, target populations, or disease burden
- Evaluation of intervention impact (e.g., campaigns, vaccine intro)
- Holistic assessment of program adequacy (e.g., outbreak investigation, verification)

Public Health Data Triangulation for Immunization and VPD Surveillance Programs: Draft Framework

17 December 2019

Public Health Data Triangulation for
Immunization and Vaccine-preventable
Disease Surveillance Programs:

Draft Framework Document

World Health Organization
United Nations Children's Fund
U.S. Centers for Disease Control and Prevention

Data Triangulation Framework

What it is & how to use

What the added value is

Country triangulation exercises

Bangladesh

Cote d'Ivoire

Global guidance draft, May 2020

Level 1 (Subnational level)

Level 2 (National level)

WHO, UNICEF, CDC collaboration (Gavi support)   https://www.learning.foundation/vpd-triangulation-draft

Triangulation for Improved Decision-making in Immunization Programs: Draft Guidance (March 2020)

Available at:
https://tinyurl.com/2020-triangulation

Level 1

A. General Triangulation Guidance

Annexes
- B. Immunity gaps
- C. Programme performance
- D. Programme targets (denominators)

Level 2

A. General Triangulation Guidance
1. Introduction
2. Overview of Triangulation
3. Key issues in Triangulation
4. 10-Step Triangulation Process
5. Considerations for Implementation

Annexes
- B. Immunity gaps
- C. Programme performance
- D. Programme targets (denominators)

Benefits of data triangulation

✓ Encourages collaboration across programmes units and potential for greater data sharing and access

✓ Aids deeper understanding of data through synthesis with contextual information & consideration of data limitations

✓ Identifies areas for program improvement, including data quality, that might not be apparent from use of individual data sources

✓ Improves confidence in conclusions & quality of recommendations for planning & policy/strategy decision-making

✓ Strengthens health system by building capacity for critical thinking, data analysis & use within an increasingly data-rich environment

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Two Ways to Triangulate Data
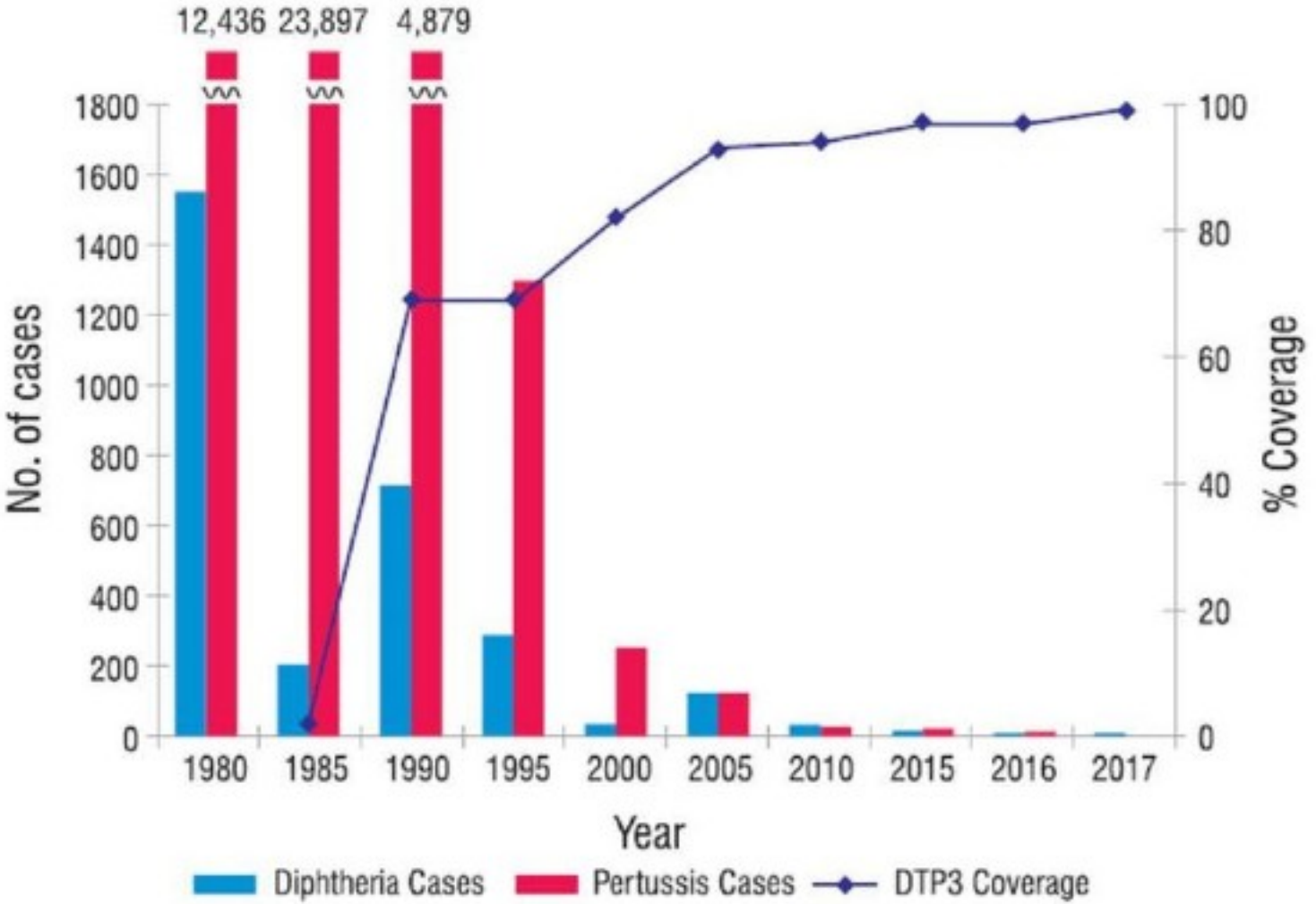
1) Combine data in one analysis (e.g., graph) from start

2) Separate analyses & combine through interpretation at end

Either way: Critical thinking required

2   1   8
♥   ? 10👍 👎

Example 1: Immunization program impact on diphtheria & pertussis burden

Figure 2: **DTP3 coverage[1], diphtheria and pertussis cases[2], 1980-2017**

Subnational level

Repeated outbreaks in same area with high administrative coverage

- Vaccine quality issue?
- Data quality issue?
- Other factors?

[1] WHO and UNICEF estimates of national immunization coverage, July 2018
[2] WHO vaccine-preventable diseases: monitoring system 2018

http://www.searo.who.int/immunization/data/fact_sheets/en/

7

Example 2: Verification of Measles, Rubella, & Congenital Rubella Syndrome Elimination in the Americas
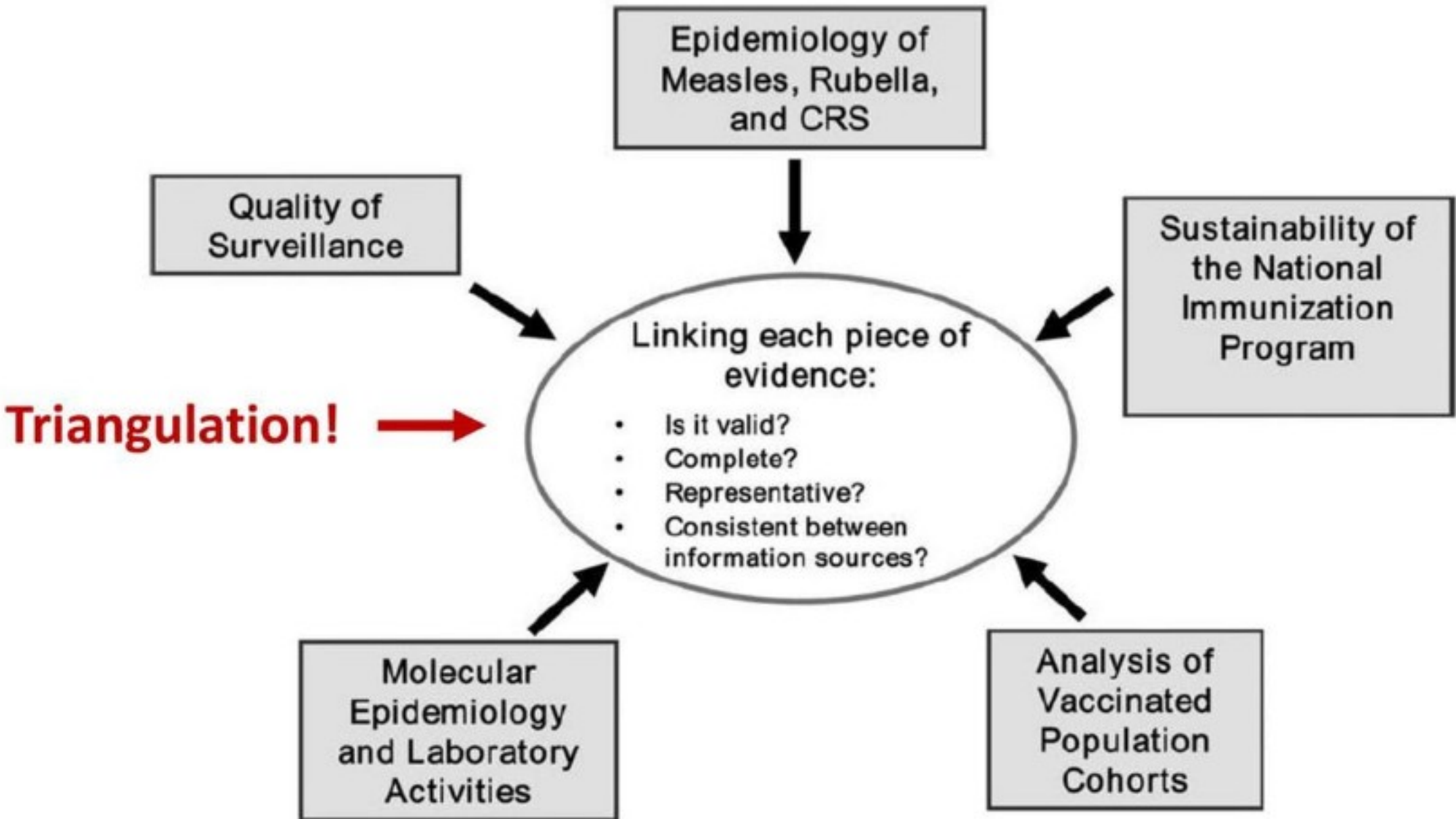
Source: Castillo-Solorzano et al (2011) JID 2011;204:S683–S689

Minimal Criteria for Triangulation

1) Access to two or more data sources, and

2) Data management/analysis capacity, and

3) Willingness to take action on results

Format will vary based on
- level (national vs. subnational)
- frequency (routine vs. ad-hoc)

1   3
13

Triangulation Principles

🎯 Driven by important program objectives

🔍 Use existing data, no new data are collected

📊 Include diverse data sets (e.g. coverage, stock, surveillance)

👥 Engage a multidisciplinary team, if possible

🧩 Basic analysis that includes local knowledge in interpretation

📋 Results communicated for use in improved decision-making

3 ❤ ? 14👍 6 👎

Triangulation Process (Level 1)

Ask the key question

Identify existing data sources

Summarize data & local context

Communicate results for action

1   5
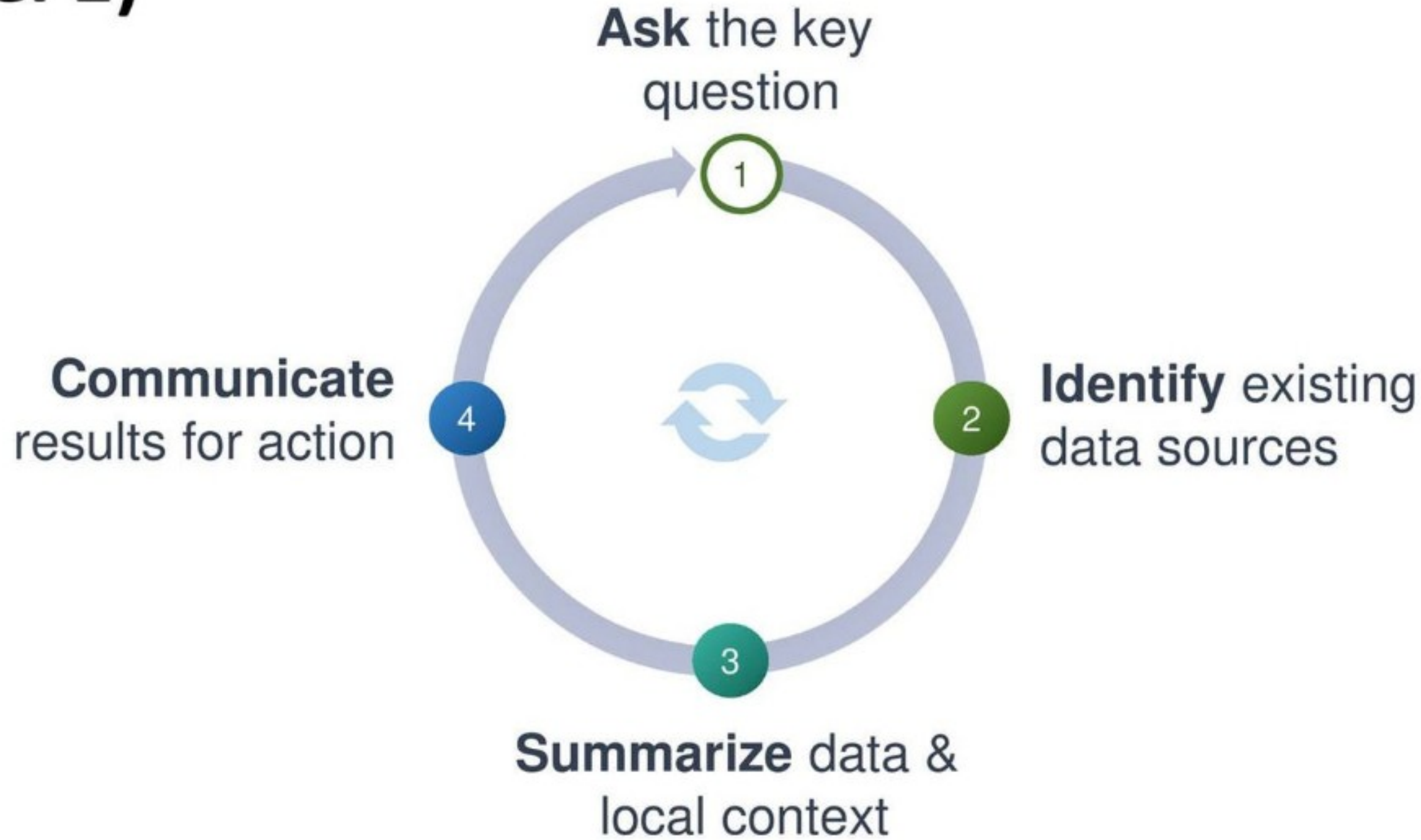
Triangulation Use for Monitoring & Evaluation

- Can use to answer a program question taking many months to investigate, or

- Principles can be used in day-to-day monitoring & decision-making, e.g.,
  - Same questions each month
  - Data sources pre-determined
  - Analysis automated (e.g., dashboard)

- Both cases – analysis has purpose & **critical thinking** required to process data into usable information

1. ASK the key question

? Start by identifying key program problem & related questions
   • How do hope to use data for action at end?

Question must be answerable & actionable

Action may inform local program planning, or where an policy change from higher level needed

Engage variety of relevant staff from beginning
   • Review examples, brainstorm, facilitate group discussion

Why questions are important

- Making a question is a critical-thinking activity — practice ☺

- Question helps direct & limit scope of analysis

- Asking important questions engages audience (decision-makers) when telling your triangulation story at end

What's your initial theory of **why** the problem exists?

**Hypothesis** — explanation made based on limited evidence as a starting point for investigation

2

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Criteria for Identifying a Data Triangulation Question

Criteria	Description
Relevant	• Important and timely based on country priorities?
Answerable	• Data available to address question? • Adequate time elapsed for process to lead to measurable outcome?
Actionable	• Answer leads to initiation of public health action? • Issues identified able to be changed through interventions?
Appropriate	• Best addressed by triangulation vs. research, or single data set?
Feasible	• Sufficient time and resources to finish task?

Specify/limit scope based on what can be answered and acted upon

(Adapted from Rutherford et al. 2010)

2. IDENTIFY existing data sources
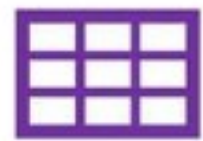
Identify all relevant data sources, including those not in routine use
- Talk with staff /partners within & outside program

Access & effort required to compile data in usable format

Invaluable – creating list of all data sources & well organized archive
- Aid more regular use in the future

Consider strengths & limitations of each source

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What data sources do you have access to?

Reported coverage data	Coverage surveys	Population estimates	Vaccine supply and use	Service delivery	AEFI surveillance	VPD surveillance
95	77	75	72	52	51	78

104
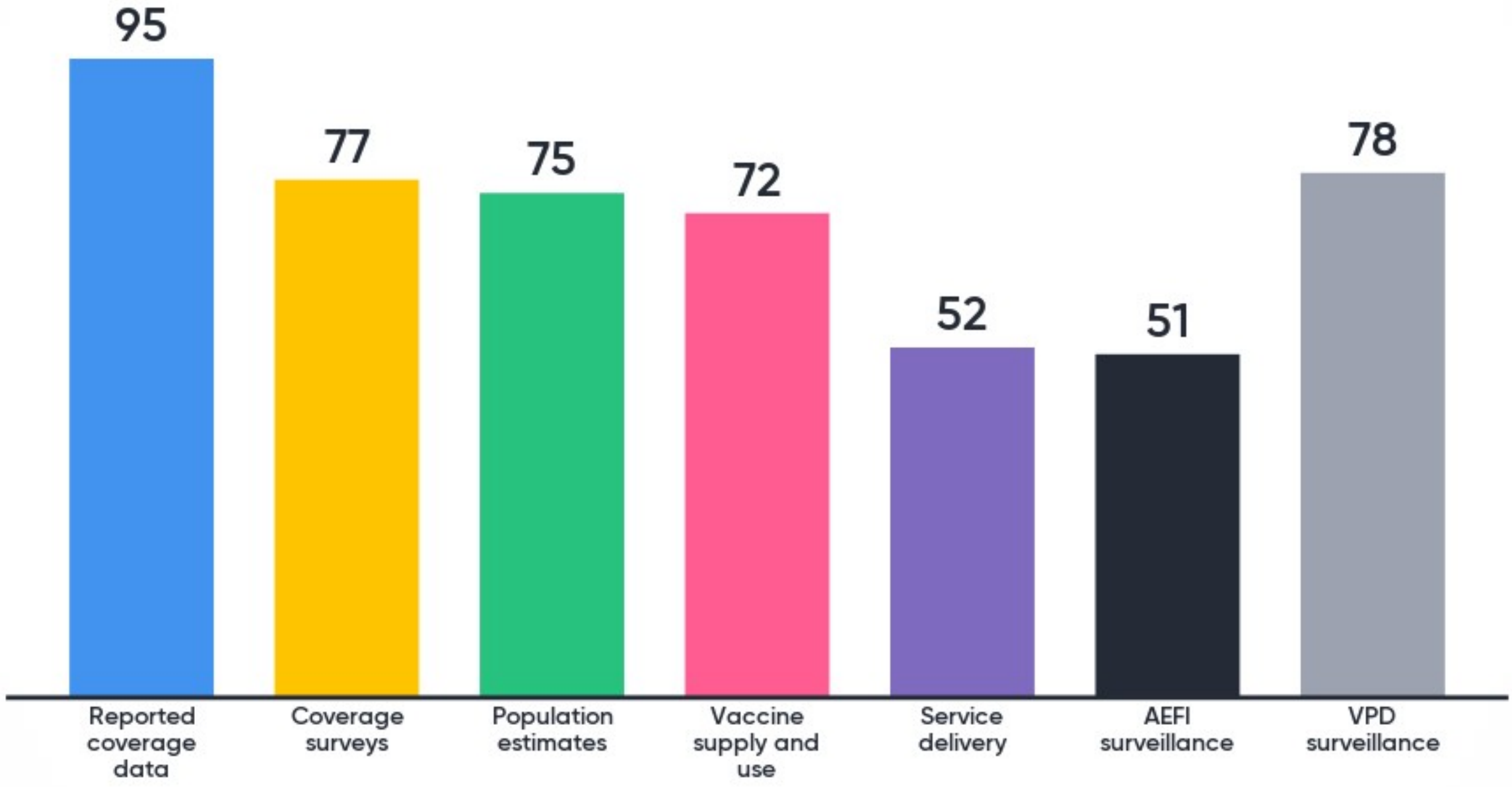
What data sources to include in triangulation

- **Diverse — gain more complete understanding of programme issue**

- *Independent* **in terms of collection method — more helpful for assessing & addressing limitations of individual data sources**
  - e.g., poor data entry exists in both coverage & vaccine stock reports?

- **Describing trends in process & outcome indicators — useful**
  - Coverage & VPD incidence
  - Program data (e.g., stock-outs, vaccine sessions) & coverage

- **Match in terms of geography and/or time period**

2   2   11

22

3. SUMMARIZE data & local context

📈 Assess data quality: completeness, internal consistency*

📈 Evaluate trends across data sources (place/time)

🧠 Incorporate contextual information & local knowledge

💡 Brainstorm multiple hypotheses to explain findings

💬 Be honest about data limitations, e.g., missing data, errors

*Handbook on Use, Collection and Improvement of Immunization Data
https://www.dropbox.com/s/8ivdiu0g5xvnlbc/handbook.pdf?dl=1

5   14

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Analysis Guidance

- Best graph & disaggregation to see patterns related to question
  - Try several options & compare

- Annotate with important context to aid interpretation
  - Circles, arrows, text, benchmark lines

- Do trends across data sets match expectation?
  - Areas of agreement & disagreement
  - Critical view of silence (zero or missing)
  - Requires knowledge of how data fit together & data limitations

WHO-EURO Effective Communication of Immunization Data

Examples: Interpreting comparisons of different data

Comparison	Expected	Considerations
Administrative coverage & survey coverage	⬆⬆	• Quality of reported data • Population movement • Role of private sector • Robustness of survey methods
Doses administered & vials used/shipped	⬆⬆	• Vaccine presentation • Wasted/sacrificed doses • Buffer stock practices • Informal exchange networks
Vaccination coverage & cases of disease	⬆⬇	• Program history (vaccine intro., supplementary immunization) • Disease epidemiology (age of cases, herd immunity threshold) • Surveillance performance

4   13

25

Map of district Penta3 administrative coverage vs coverage survey, 2016

Administrative (2015)

Coverage Survey (2016)
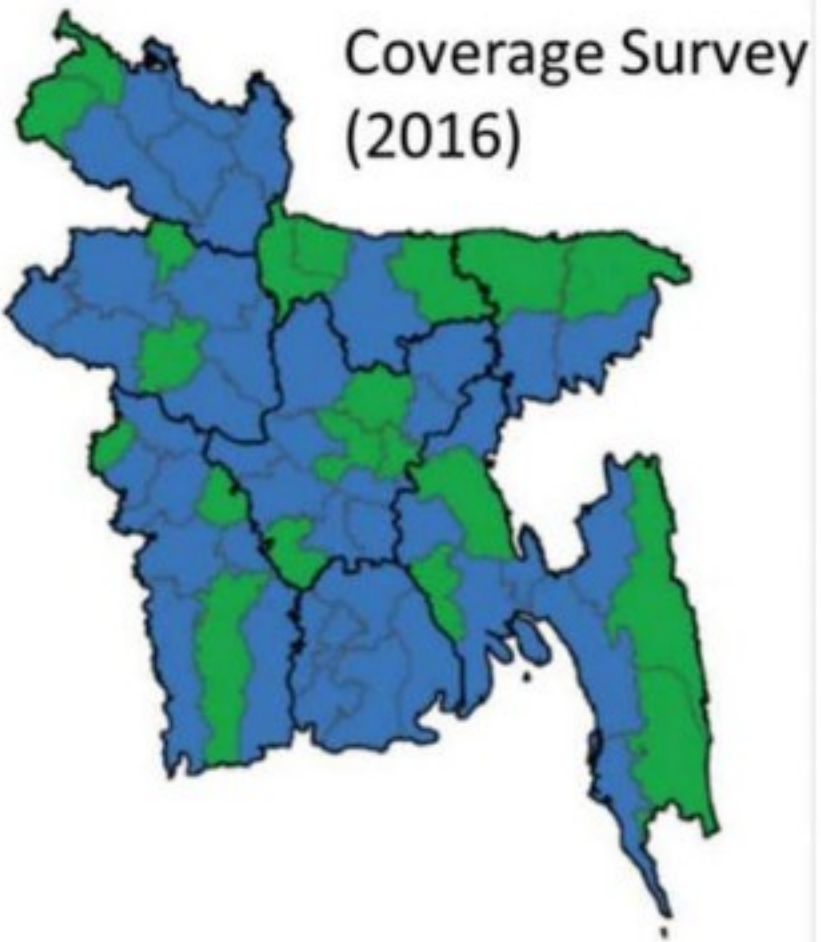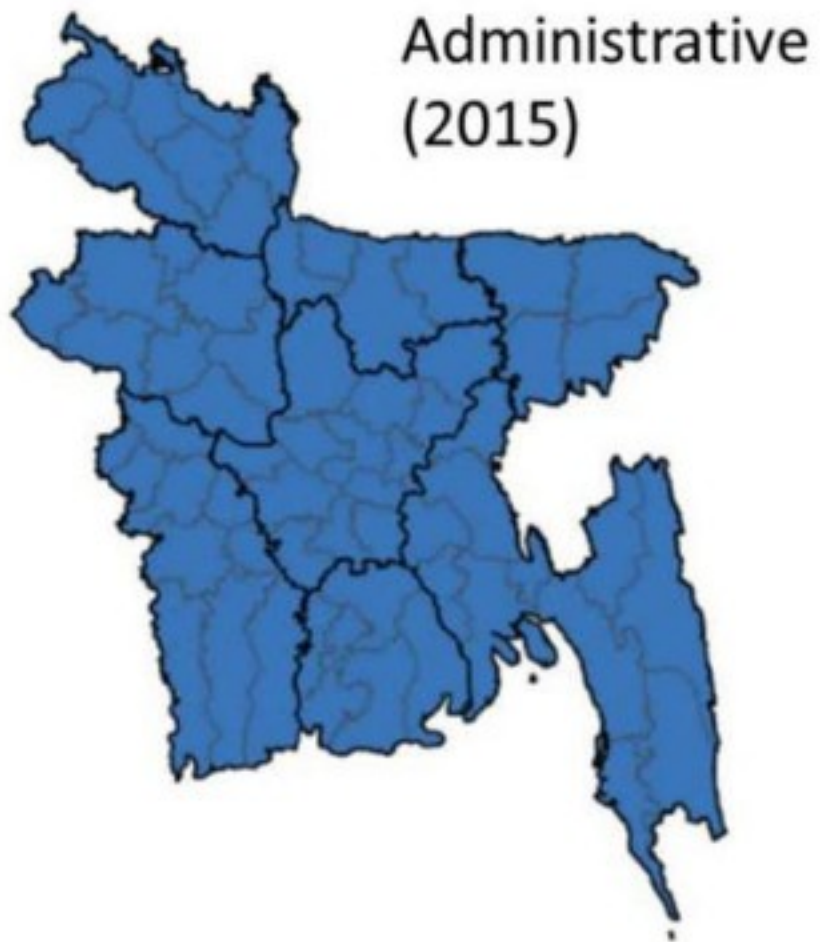
Administrative coverage data is overestimated — hides subnational coverage gaps

<70%   70% - 79%   80% - 89%   ≥90%

http://www.searo.who.int/immunization/data/fact_sheets/en/

10

Total Penta doses administered vs. vials used (stock) — select sub-district, 2018

Need with buffer
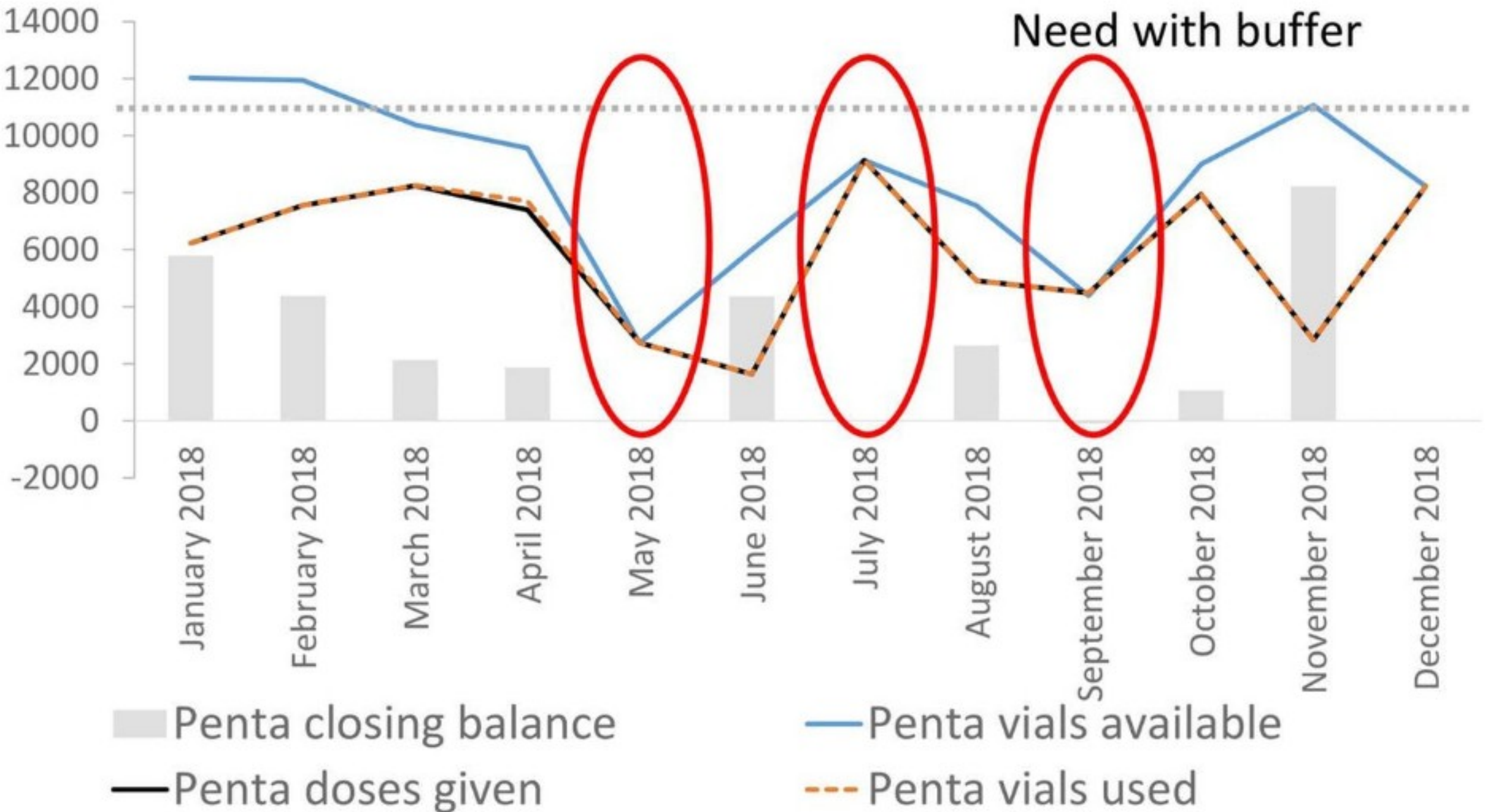
Good data agreement — Penta doses given & vials used

Unreliable stock affecting Penta coverage — using all vials available, zero closing balance

Penta closing balance

Penta vials available

Penta doses given

Penta vials used

7

Confirmed measles cases by age vs. vaccination coverage, sect district, 2018-2019
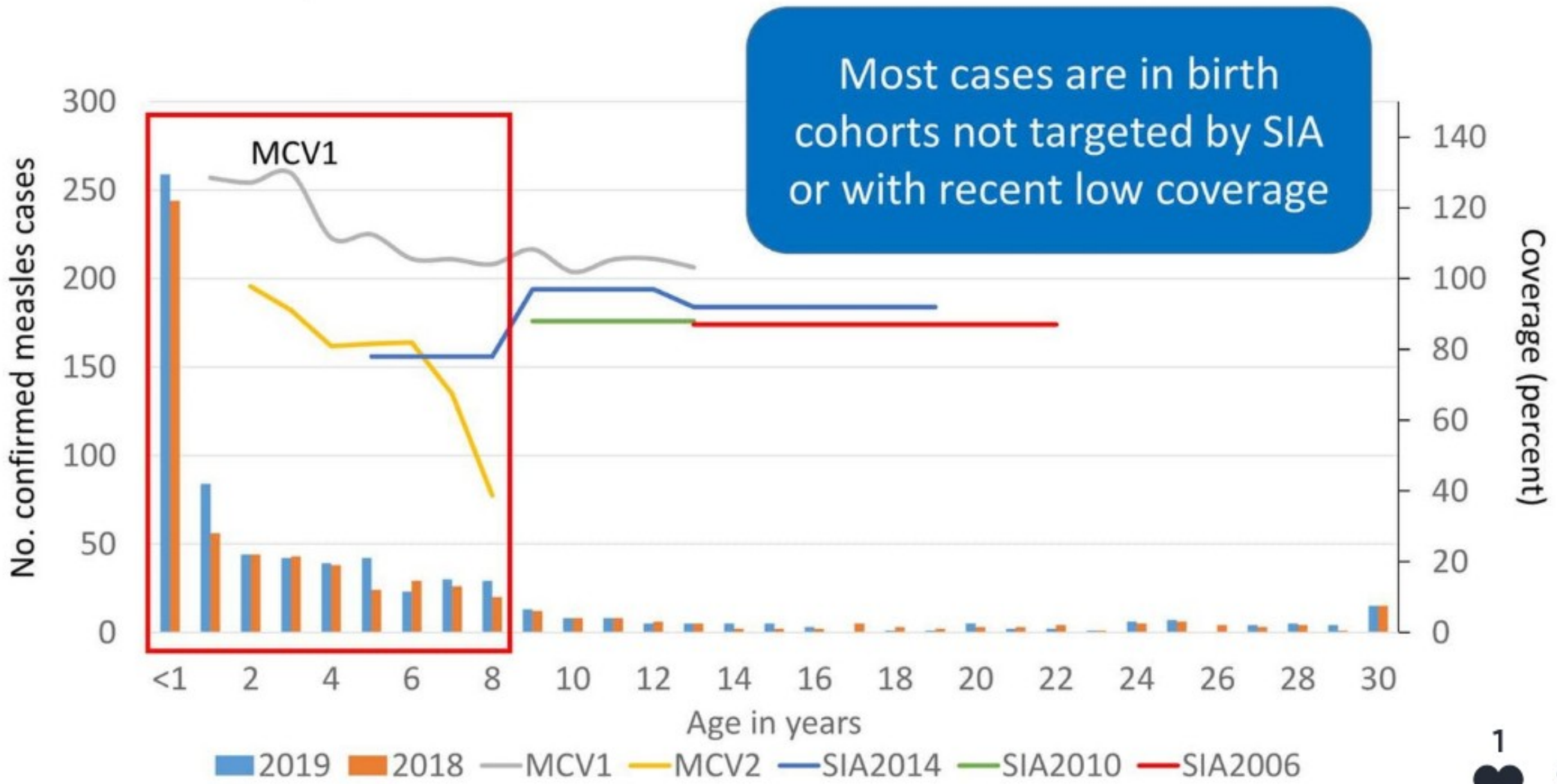
4. COMMUNICATE results for action

Simple key messages tailored to your target audience

Tell a story with your data!

- Visual information processed faster than words
- Logical flow, supported with explanatory details
- Case studies, if relevant

Recommend actions based on triangulation results

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   29

Making an action plan

Action may be at your administrative level, or other levels

Obtain input from people tasked with implementing plan

Think creatively about solutions if resources are limited

Prioritize based on what's feasible for short & long-term

Examples of recommended actions
- Supportive supervision on improving data quality
- Revise microplan guidance to use local growth rates
- Catch-up vaccination in areas with coverage gaps

1   7
30

Triangulation Process & Phases (Level 2)

Identify key question/issue

Communicate results & discuss plan of action

Identify data sources

Refine analysis question

Act

Prepare

Summarize results & conclusions

Gather & prepare data

Analyze

If necessary, identify additional data

Examine reliability of data

Consider explanatory causes

10-steps for more in-depth analyses

Compare trends across data sets

3   17

Opportunities for integrating triangulation with existing activities

- Routine analysis
  - Feedback on reported data
  - EPI data review meetings (monthly, quarterly)
  - Annual desk reviews
  - Periodic in-depth assessments
- Ad-hoc evaluations of intervention impact or program implementation
- Outbreak investigations
- Part of Data Quality Reviews, EPI/VPD Surveillance Reviews
- Trainings of Mid-level managers & supportive supervision
- Dashboard design

2   10

Creator project

- Problem statement and question formulation

- Identification and review of relevant data sources

- Interpretation and conclusions

- Next steps

The following webinars will be relevant for me:

Strongly disagree — Strongly agree

- Data for planning: Gavi and microplanning — **4.2**
- Data for equity — **4.3**
- Communicating effectively with data — **4.4**
- Hands-on visualization workshop — **4.2**

👤 75
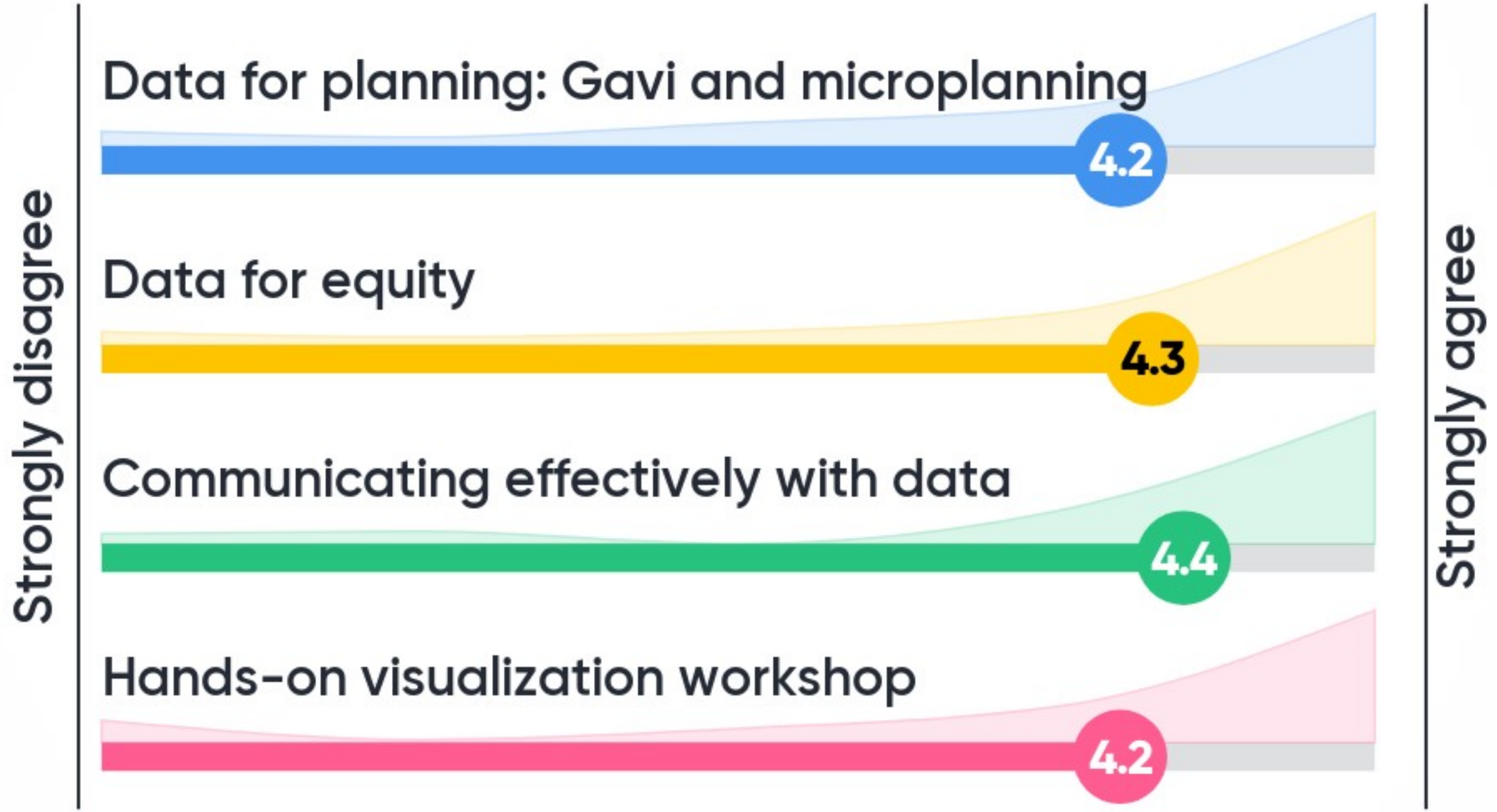
Time to hear from you!

We have asked you what the big questions are that keep you awake
Share with us why these are important questions, and how you think they
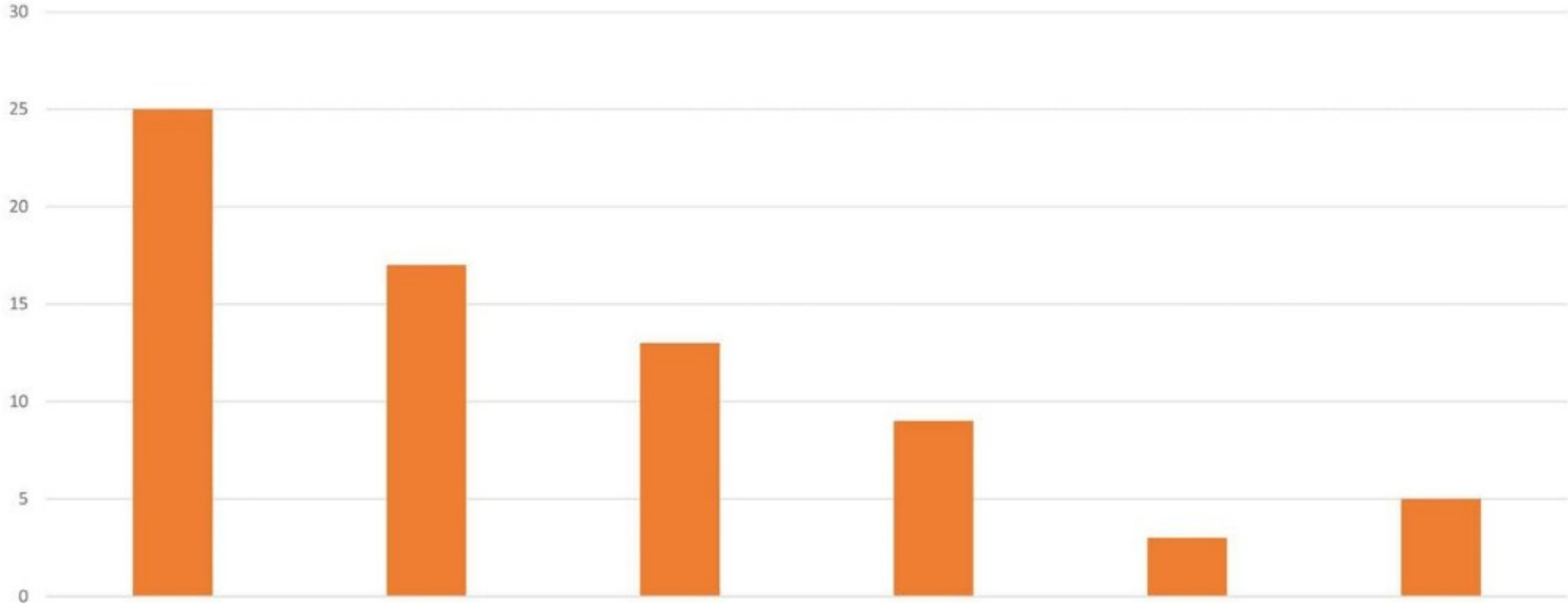might be answered

Priority questions per category

(72 out of 207 respondents identified one)

2   19

Dr Ashok Jaybhaye
India, Province, State, Zone or Region (sub-national)

Equity

➢ What are the strategies to improve immunization coverage in low coverage and underserved population in low resource setting in order reduce the risk?

➢ Reported Coverage, Evaluated Coverage, Various national surveys, supply chain data

➢ By coverage evaluation at small scale, analyzing various data and qualitative interactions with stakeholders

➢ Due to various challenges like incorrect denominator, awareness gap, supply & demand side imbalances etc

Mojisola Afolabi
Nigeria, Province, State, Zone or Region (sub-national)

Equity

➢ Data available revealed about 30,000 un-immunized children across 11 districts (Local government area) in the state.

➢ These districts have both high density and scattered population areas.

➢ Where are the un unprotected children that can be targeted for interventions.

➢ We need data on the specific areas for targeted interventions

➢ DHIS-2, LQAS, Surveillance data

➢ Children are registered by settlement in facilities providing immunization. Settlements not captured at all are currently being treated as priority

➢ Incomplete response from facilities, lack of traceable addresses

Naeem Asghar
Pakistan National

Equity

➢In Pakistan Polio program has been doing extensive campaigns with OPV since many years and their data shows that coverage of all those campaigns in more than 90% but still Polio is not eradicated from Pakistan why?

➢National EOC for Polio Pakistan

➢As Deputy Director EPI I listen that instead of extensive campaigns Polio is not being eradicated due to EPI low coverage although every Polio case had received more than 10 doses of Polio vaccine through Polio Campaigns

➢Because according to my knowledge due herd immunity factor the Polio should have been eradicated with campaigns more than 90% coverage

Khyati Aroskar
India, Health facility

Risk

➢Targets given by the district to the health facility are never met, so how prevalent should the disease be. And if disease is not detected--target wrongly given or no disease actually

➢ Registers immunization

➢Registers and on site

➢Target calculator

Ayele ADEB
Ethiopia, Province, State, Zone or Region (sub-national)

Risk

➢ How having high administrative coverage report still outbreak of cases reported?

➢Administrative coverage, comparing health facilities report with estimated target group population and surveillance data

➢Needs additional information, and the quality of the report might be an issue.

Simon Kaddu Ssentamu
Bangladesh, District

Risk

➢ In Cox' s Bazar district, with the Rohingya refugees, Vaccine Preventable Disease outbreaks like measles still observed despite high percentage of immunogenicity from sero survey

➢ Serosurvey and administative data

➢ Review of program and considering utilizing electronic registry

➢ Some data on cold chain and vaccine efficacy by time of administration may be lacking

Obafemi Babalola
Liberia, National

Risk

➢Why is persistent measles outbreak among those vaccinated?

➢Immunization coverage, DHIS2

➢Routine immunization coverage, outbreak investigation

➢ Need evaluation of the routine Immunization process

Evans Attivor
Ghana, District

Micro-planning

➢ In an area of suspected inaccurate population, how do I ascertain the actual EPI performance of facilities? How can low performing facilities be identified and assisted?

➢ District Health Information Management System, Annual reports, Ghana Health Service website

➢ Using Drop Out Rates for Penta, OPV vis.a.vis the administrative coverage I believe with negative DOR, question has been partially answered. However, routine performance is mostly based on administrative data

Prioritization

➤ What is the best way to determine denominator for immunisation, given that the census results looks either over estimated or under estimated depending on regions?

➤ Census data, Kenya demographic health survey

➤ Mostly census data is used but has wide variation and a time previous antigen achievements have been used to determine denominator

➤ There is no common agreement most times

Prioritization

➤How do you determine effective vaccination coverage that allows you to prioritise groups, areas etc to target in vaccination programs?

➤Vaccination coverage, sero-conversion, vaccine efficacy

➤Not doing or measuring it

➤Lack of appropriate data in realtime

Resources

Triangulation for Improved Decision-making in Immunization Programs: Draft Guidance (March 2020)
https://tinyurl.com/2020-triangulation

Effective Communication of Immunization Data (2019)
http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/2019/effective-communication-of-immunization-data-2019

Public Health Data Triangulation for Immunization and VPD Surveillance Programs: Draft Framework (Dec 2019)
https://www.learning.foundation/vpd-triangulation-draft

Resources (www.tinyurl.com/2020-triangulation)

- Triangulation for Improved Decision-making in Immunization Programs: Draft Guidance (CDC, March 2020)

- Public Health Data Triangulation for Immunization and VPD Surveillance Programs: Draft Framework (CDC, Dec 2019)

- Effective Communication of Immunization Data (WHO EURO 2019)

- Draft Rubric for Level 2 Creator project

Suggestions and questions!

Thanks a lot Yean, Heather, Angela.. nice overview of the course

Can be it more sessions but with shorter duration to easily concentrate and cope with time duration

Thank you very much for inspiration lecture

Please share resources

overall it was quite introductory session i wish or in my opinion there are quite different issues in developing and developed countries so that we may put in different tables and take actions according to the scenarios.

how did people ask questions showing on presentation?

Nice webinar

Very good presentation, participation & discussions. Some part of your slides were not visible, out of the screen. Thank You Very Much!

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