



# Making decisions with available data: Global and Donor perspective with a focus on financing

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**Discussion Topic:**  
*“Experience, shortcomings,  
or best practices in data-  
driven decision making”*

**Tommy Wilkinson**  
**iHEA 2019 pre-conference session:**  
**Immunization economics**  
***13<sup>th</sup> and 14<sup>th</sup> July 2019***

# Better decisions, better health...

## Knowledge Transfer and Exchange (KTE) and Advocacy

Tailor and deliver evidence-informed messages to influence the right audiences to buy into *iDSI's* model, enabling greater health gains and more value for money

### Country engagement

Support countries to develop institutional capacities and transparent governance processes, enabling maximum health gains and transition from aid

#### Institutional Strengthening

#### Smart Purchasing

Empower countries to spend their own budgets smarter and implement more efficient and equitable HBPs and delivery platforms, making UHC and SDGs a reality

### Knowledge products

Generate, integrate and deploy policy-relevant data and knowledge to support better decisions at global and national levels

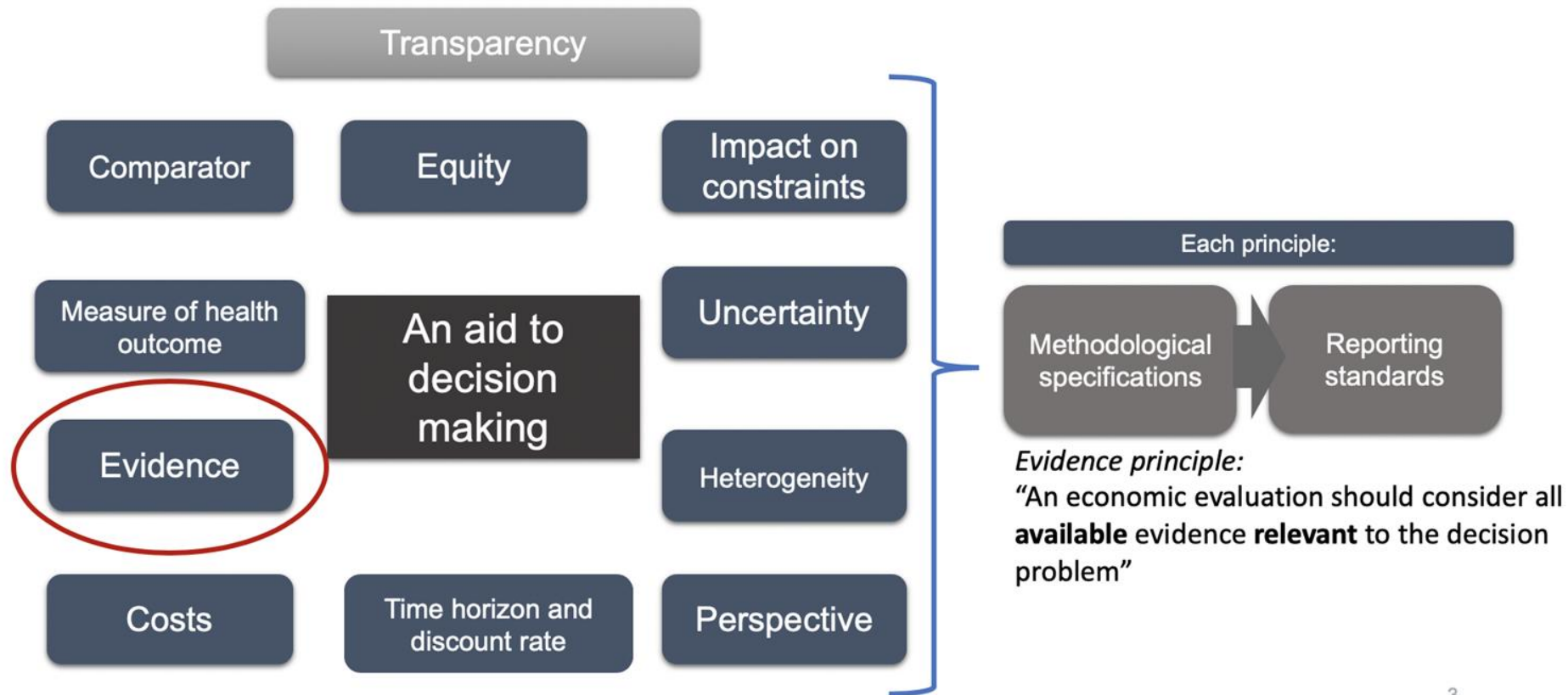
#### Data, Evidence, and Analytics

#### Methods, Processes, and Tools

Co-create global public goods to support countries and funders in standardizing, contextualizing and applying approaches to improve value-for-money in health



# Where data is scarce, the methods become ever-more important: the iDSI Reference Case





Source: Scott Adams

### Key issues:

- What do we want the data to do?
- Applicability and transferability
- Representativeness and sampling
- Availability of data vs organization of data

# Good decisions, bad decisions, accountable decisions

- Data-driven decision making is a good aim and we should always strive to collect more comprehensive, more representative, more complete, more accurate and more organized data and evidence
- Decision making in health waits for no one, even (especially) the best intentioned
- Data-poor means “disorganized” or “poorly aligned to the decision problem”, rarely “no data”
- “Accountable” rather than “Perfect” decisions are the aim
- Need processes and institutions that can “play the ball where it lies” and make local decisions in a data poor world
- Predictive analytics/machine learning will have transformative impact on the way we use data



# Assessing drivers of co-financing default risk

*Preliminary results, July 2019*

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WORKING DRAFT



# Key policy and research questions

*Does **fragility** have an impact on defaults?  
How do **previous default episodes** affect a country's defaulting behavior?  
Does it matter if a country is **more or less democratic, more or less corrupt?***

*Does **more co-financing** increase the probability of default? Does increasing government expenditures lower the probability of default? Or is it a matter of **better prioritizing** the current resource envelope?*

*Introductions lead to more...  
...nes have the same effect on...  
...ibility of default?*

*...nt do macroeconomic factors...  
...rowth, govt revenue and debt...  
...of trade shocks) influence the...  
...elihood of defaults?*

# Key variables of interest

## 1. Macroeconomic performance

- Economic growth, GNI per capita, Terms of trade, Central govt revenue and debt (absolute per capita, relative and % of GDP)
- Data sources: IMF and World Bank

## 2. Immunisation and health financing

- GGHE-D / total govt expenditures, Govt expenditures on vax / GGHE-D, Co-financing and RI expenditures per surviving infant, Previous default
- Key data sources: WHO/NHA, JRF, Gavi

## 3. Vaccines

- Cumulative number of vaccine introductions, Controls for penta, PCV, rota and HPV, and lags
- Key data sources: Gavi

## 4. Structural factors

- Fragility (as per Gavi's definition) and lags, Governance: World Bank CPIA Transparency, Accountability and Corruption Index, Political and civil rights: Freedom House's Freedom index

# Brief methodological overview

- **Longitudinal dataset from 70 Gavi-eligible countries** (excluding Ukraine, India and Cuba) **from the period of 2008 to 2017**
  - India governed by specific policy
  - Ukraine and Cuba no co-financing obligations
- A **panel regression** was estimated through a **logistic model** with **country and time-invariant fixed effects**
- **Important caveats**
  - Gavi's operating model has evolved substantially and results may reflect past dynamics
  - Changing cohort of countries due to transition may affect results
  - Gavi's definition of fragility has evolved
  - Use of proxies (e.g., CPIA index, Freedom House)
  - Co-financing policy has been revised over time
- Only results significant at the **1% and 5% levels** are reported

# Key findings (1/3) – variables with evidence of **no or little** effect on probability of default

1. **GNI per capita** is not significantly correlated with co-financing default risk
2. **Macroeconomic variables** mostly have only a marginal effect on default, e.g.,
  - A doubling (100% increase) of economic growth is associated with a 0.109% drop in the probability of default
  - A doubling of government debt levels vis-à-vis revenues is associated with a 0.017% increase
3. **Absolute amount of co-financing requirements** has only limited impact: an additional US\$1 of co-financing requirement per surviving infant is associated with a 5.6% increase in the probability of default
  - Average co-financing requirement in default episodes: USD 2.05 per surviving infant

# Key findings (2/3) – main drivers of default

- 1. Fragility:** probability of default increases up to 215.7%
- 2. A higher ratio of vax/govt health expenditures is associated -up to a point- with lower probability of default, but then effect inverts and becomes exponentially positive**
  - Complex relationship, as health budgets in most countries are consumed predominantly by fixed HR costs
- 3. Weak governance/corruption:**
  - Every 1-point difference in CPIA index  $\square$  probability of default goes up by 57.2%
- 4. Deterioration of terms of trade:**
  - 10% drop  $\square$  probability of default increases by 38%
- 5. Vaccine introductions:**
  - First two years are key, particularly with multiple introductions
  - Effects disappear with four or more introductions

# Key findings (3/3) – variables associated with reduced probability of default

1. **Lagged effects of default: If a country defaults, its probability of defaulting again falls by ~80% in the medium-term (2-4 years after default), underscoring the positive impact of the Alliance's active engagement and mitigation strategies**
  - Dialogue to explain policies and raise awareness
  - Technical support
  - Advocacy and political will building
  - Prioritization

# Other key financing-related data issues and priorities going forward

- **Accuracy of Vaccine and RI expenditures reported through JRF**
- **National Health Accounts:** how to scale-up and move ahead with institutionalization?
- Improve availability (and timeliness of availability) of **national budget data (including budget execution)**
- Increasing attention to **primary health care (PHC)**, but harmonized, comparable, easily available programmatic, expenditure data still scarce

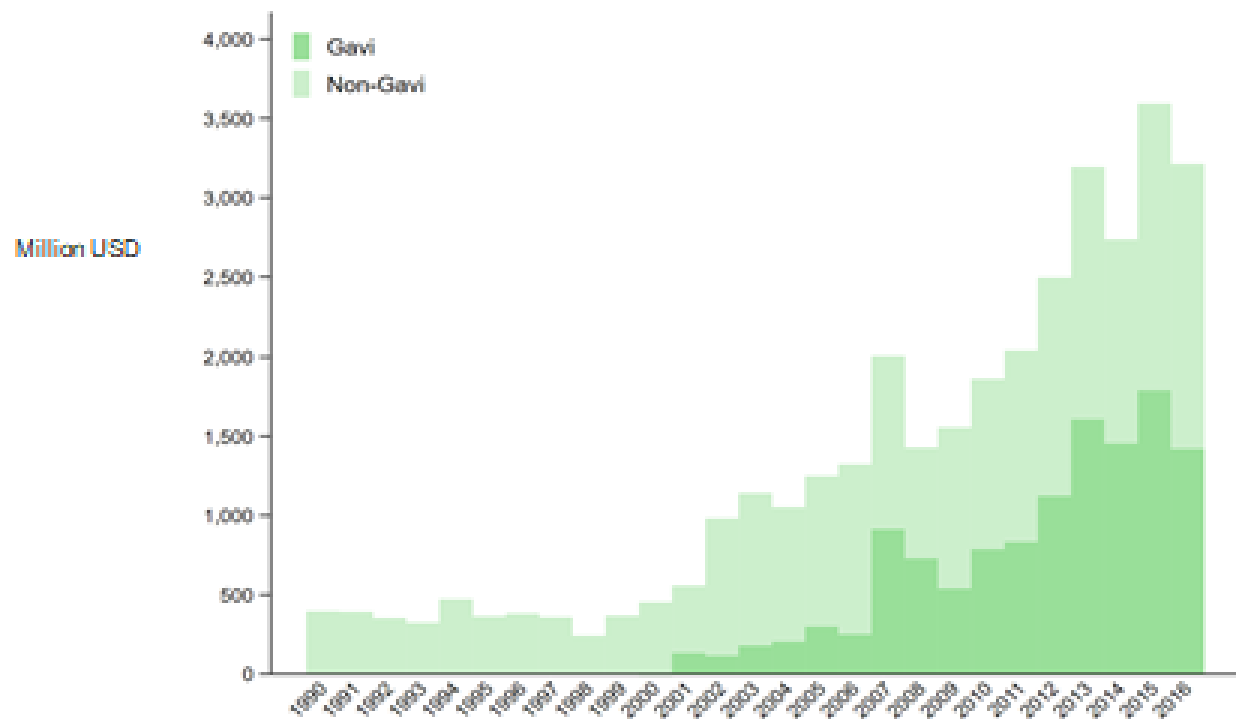
## Effect of development assistance for immunization on vaccine coverage: evidence from 120 low- and middle- income countries

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Gloria Ikilezi

7/14/19

# Development assistance for immunization (1990 to 2016)



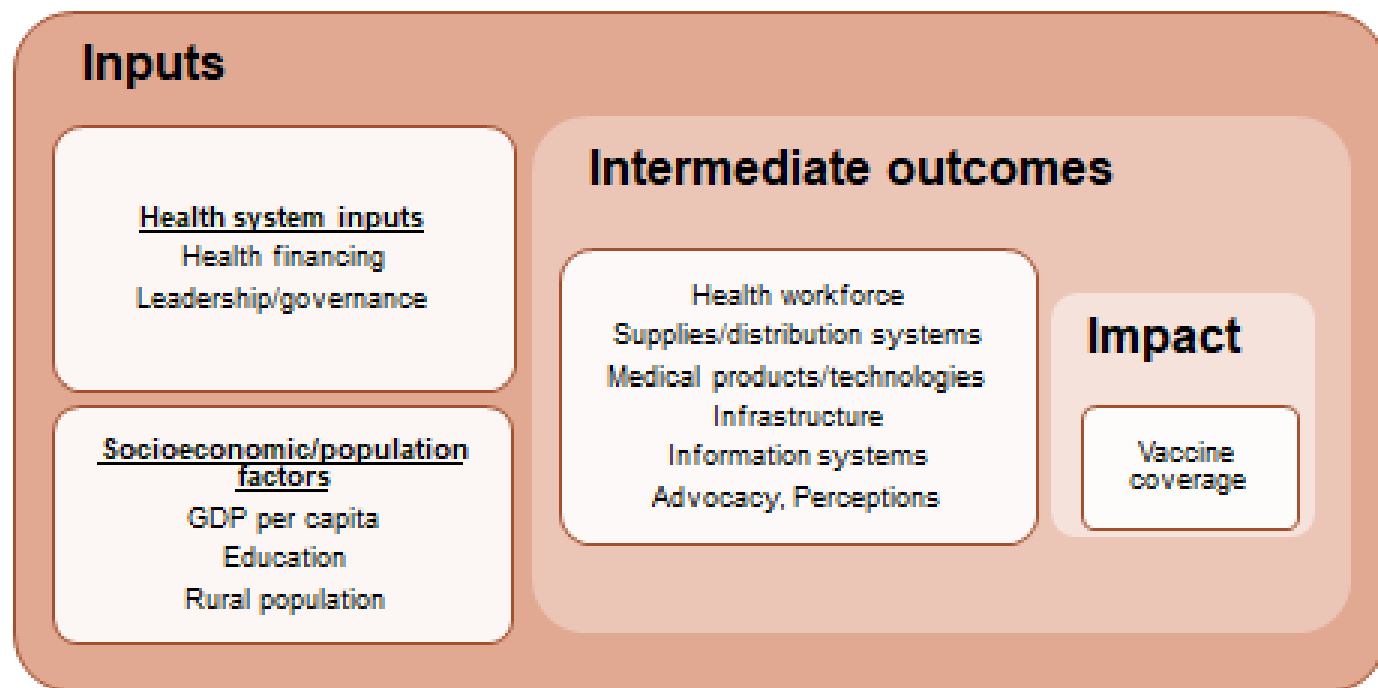
34.5 billion (USD)  
Gavi: 12.4 bn  
Non-Gavi: 22.1 bn

*Non Gavi channels:*  
WHO, UNICEF, BMGF, NGO's,  
Development Banks, PAHO

## Objectives

- ❖ Estimate changes in coverage attributable to development assistance for health (DAH)
- ❖ Additional DAH by country required to reach current coverage targets

# Conceptual framework



# Variables

Health financing  
variables  
(*in per capita*)

- Gavi DAH: Vaccine/HSS
- Non Gavi DAH
- Government Health Expenditure (GHE)

Other predictors

- GDP per capita
- Rural population
- Maternal education
- Governance effectiveness

Outcome

- Pneumococcal (PCV3)
- Pentavalent 3 (Hib)
- Rotavirus 2/3
- Measles 2
- DPT3

Sources:

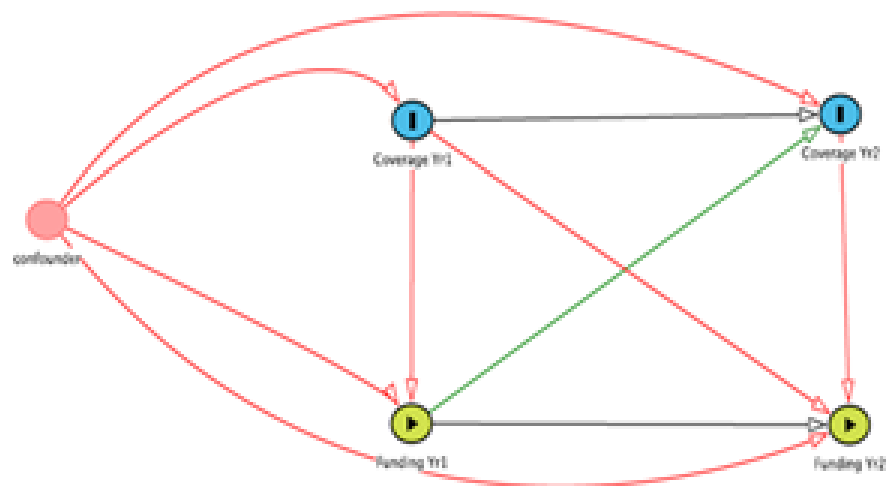
<https://www.gavi.org/results/dtsbursements/>

<http://ghdx.healthdata.org/>

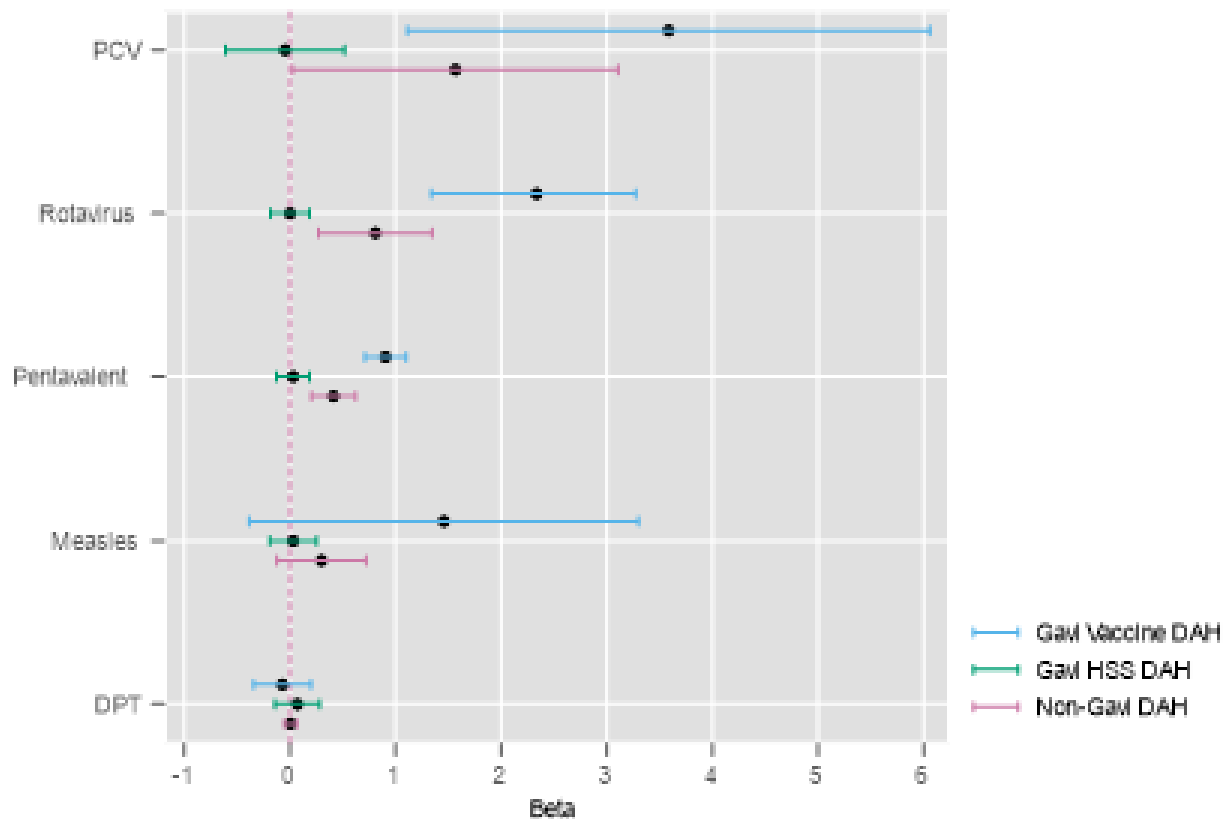
<https://datacatalog.worldbank.org/datasets/worldwide-governance-indicators>

# Primary analysis: System Generalized Method of Moments

(Roodman, 2009. <https://journals.sagepub.com/doi/abs/10.1177>)



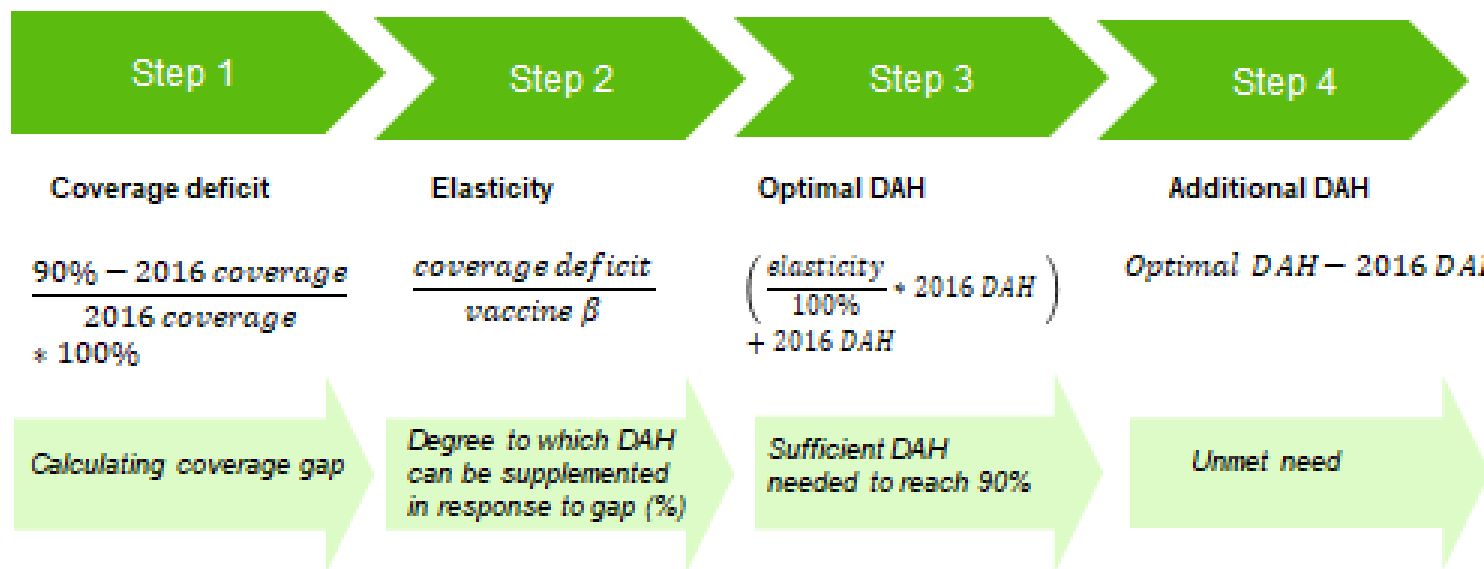
# Effect of DAH on coverage



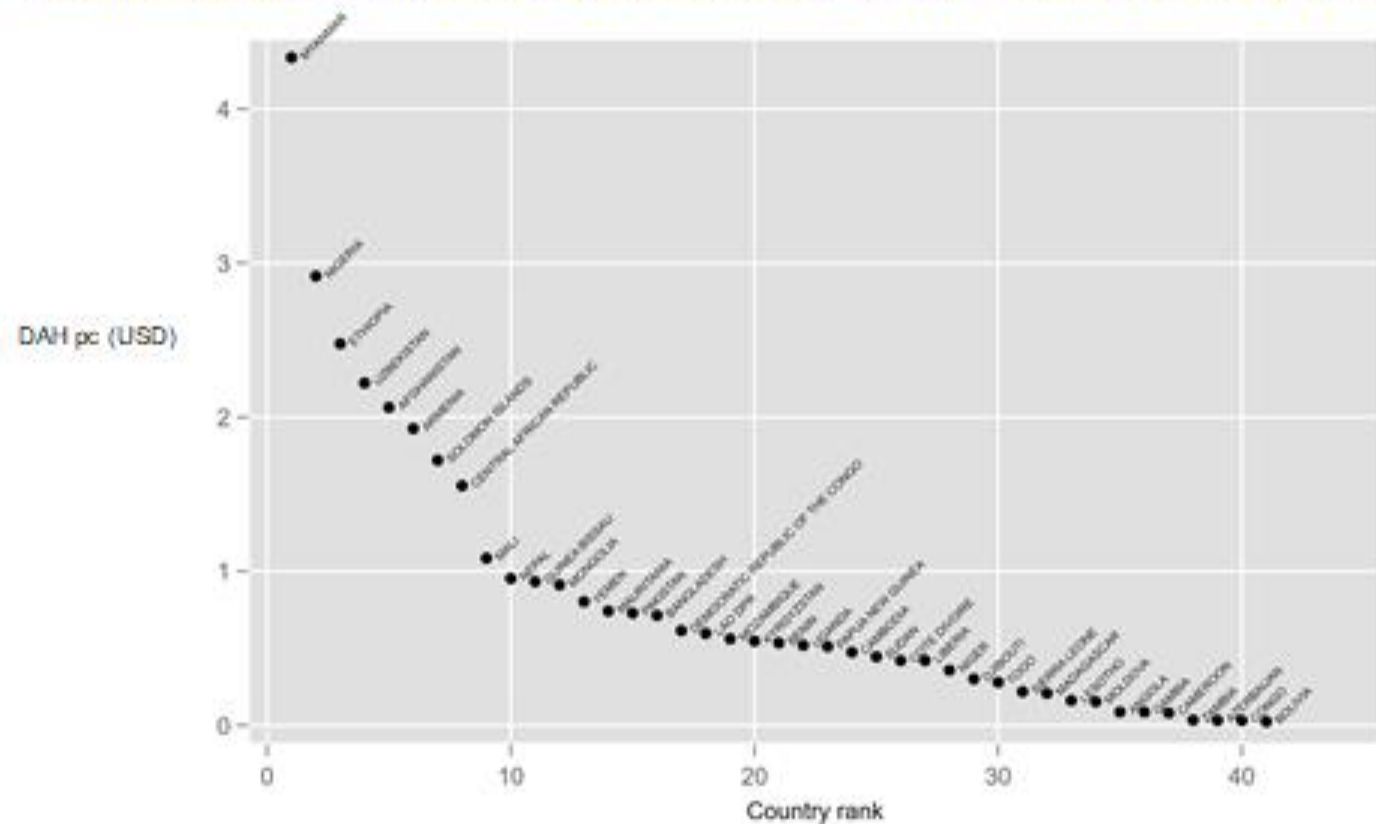
# Country specific estimated DAH requirements

## Criteria:

- Received vaccine DAH in 2016
- Coverage **below 90%** in 2016  
(GVAP National coverage target=90%)



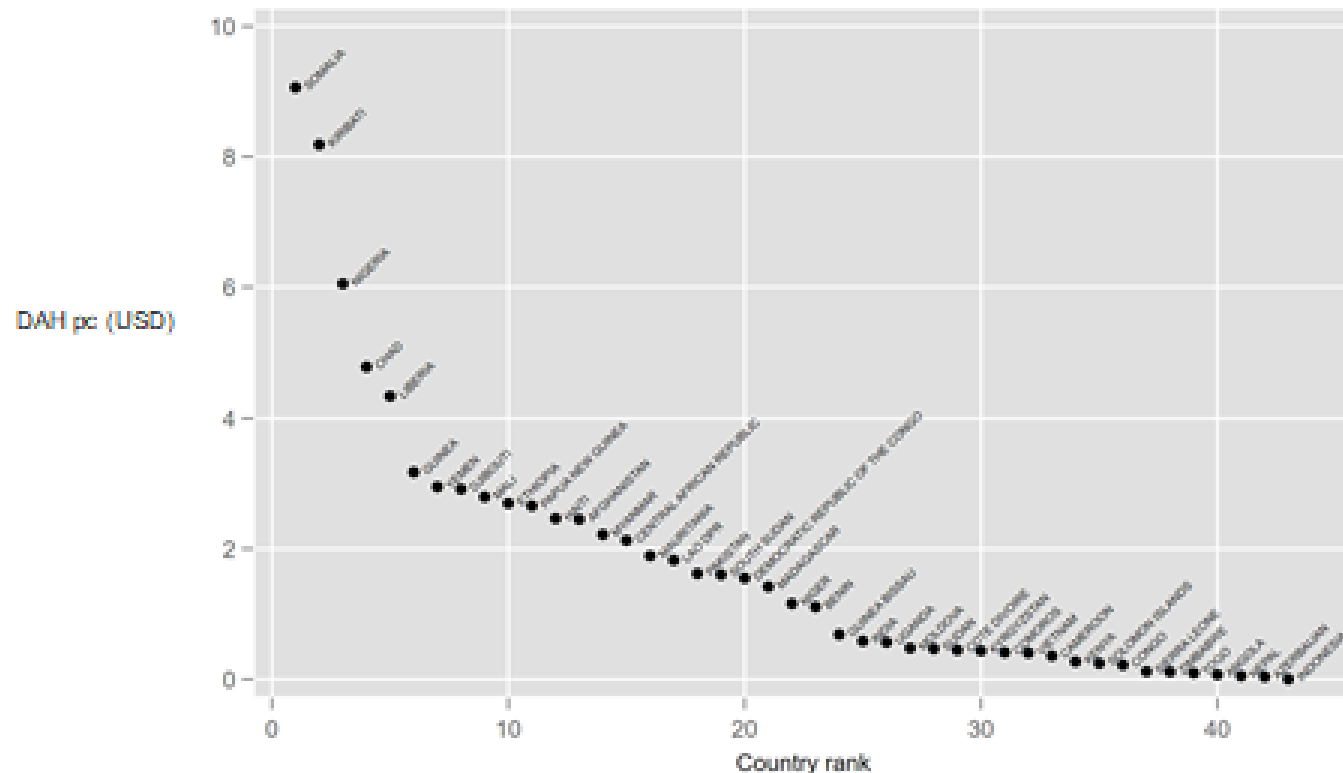
## Additional DAH required for *pneumococcal* (PCV) vaccine ranked by country (N=42)



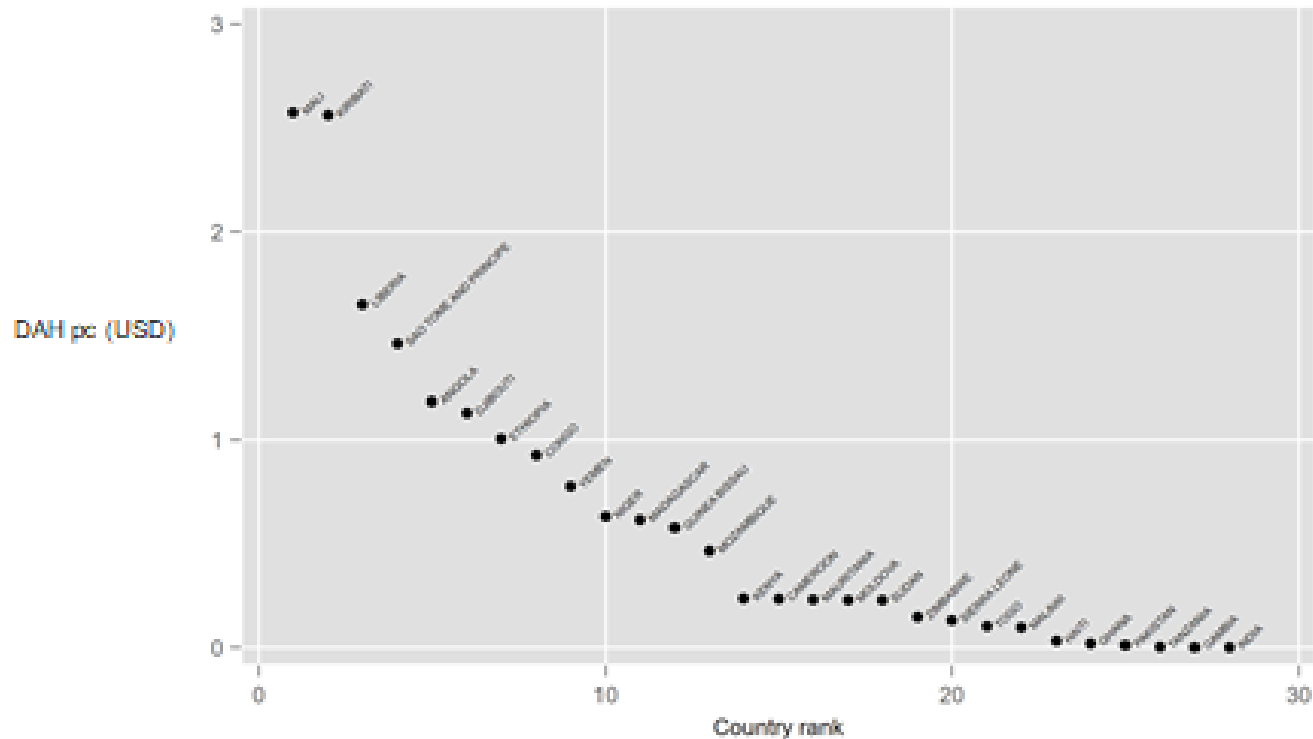
Median 0.53USD pc

(Range 0.10USD to  
4.33USD)

## Additional DAH required for *pentavalent* vaccine ranked by country (N=43)



## Additional DAH required for *rotavirus* vaccine ranked by country (N=27)



## Key findings

### Vaccine DAH positively impacts coverage

- As more vaccines are scaled up and countries transition from aid, strategies for sustainability and efficiency need to be strengthened

### No observed association between Gavi HSS and coverage

- Country specific assessments needed to evaluate HSS processes and drivers of efficiency

## Next steps

- Include government spending/domestic spending on immunization

- No association between HSS DAH and coverage, implementation bottlenecks.

Evaluations focusing on proximal outcomes  
*(Human Resource, Cold chain, supply/distribution mechanisms, demand)*

discussion

