

# From impact evaluation to decision-analysis

## ‘Value for money’ in health impact evaluations in low- and middle-income countries

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On behalf of the **NIHR Global Health Econometrics and Economics Group (GHE2)**

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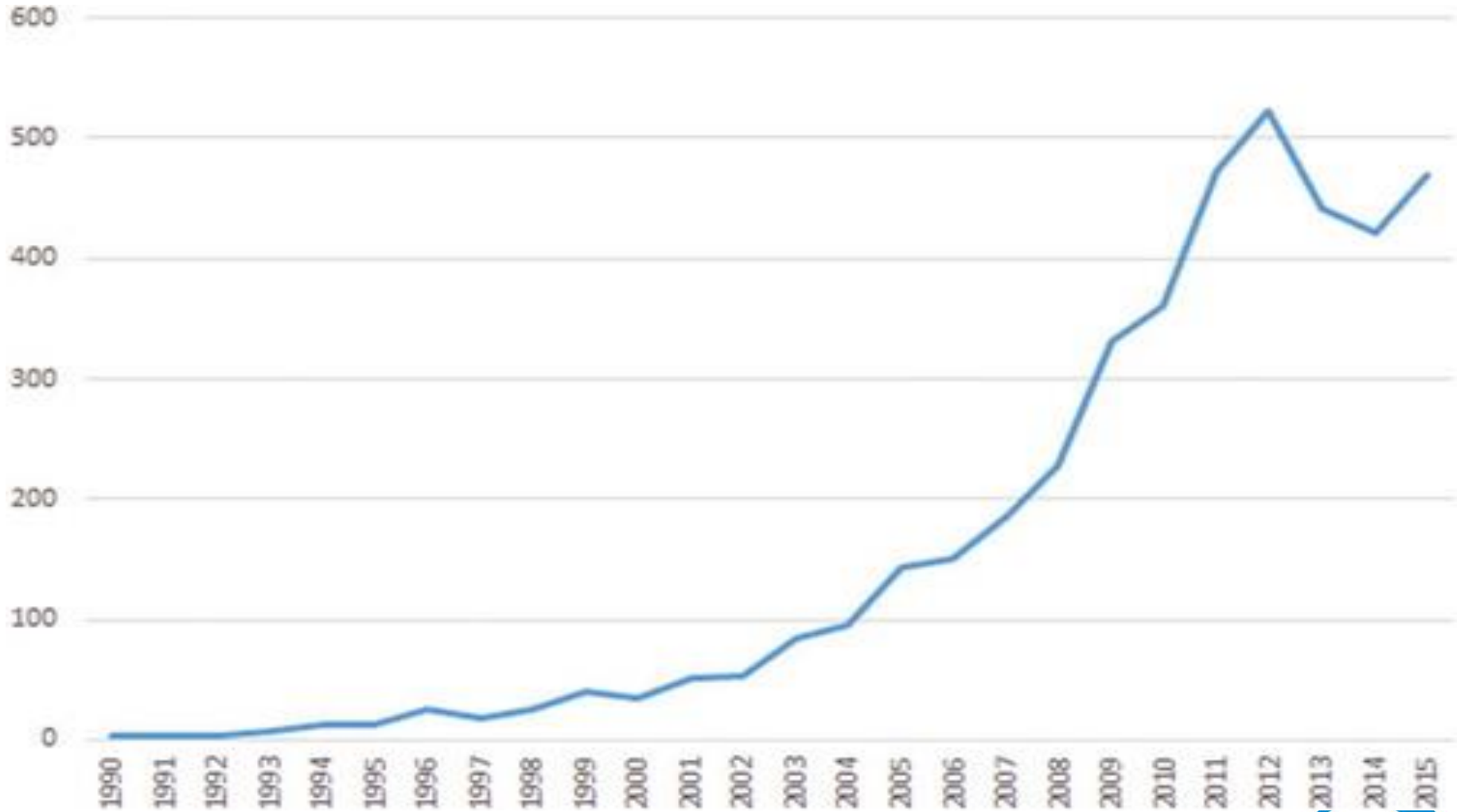
# NIHR Global Health Econometrics and Economics Group (GHE2)

- 3-year collaboration between Indonesia (CHEPS), Brazil (FIPE), South Africa (PRICELESS) and the UK (CHE)
- To address the evidence gap in **population- and health system-level interventions** by applying and developing methods to
  - (1) estimate their average and distributional **impact** and
  - (2) assess their **value-for-money**

# “Impact evaluations”

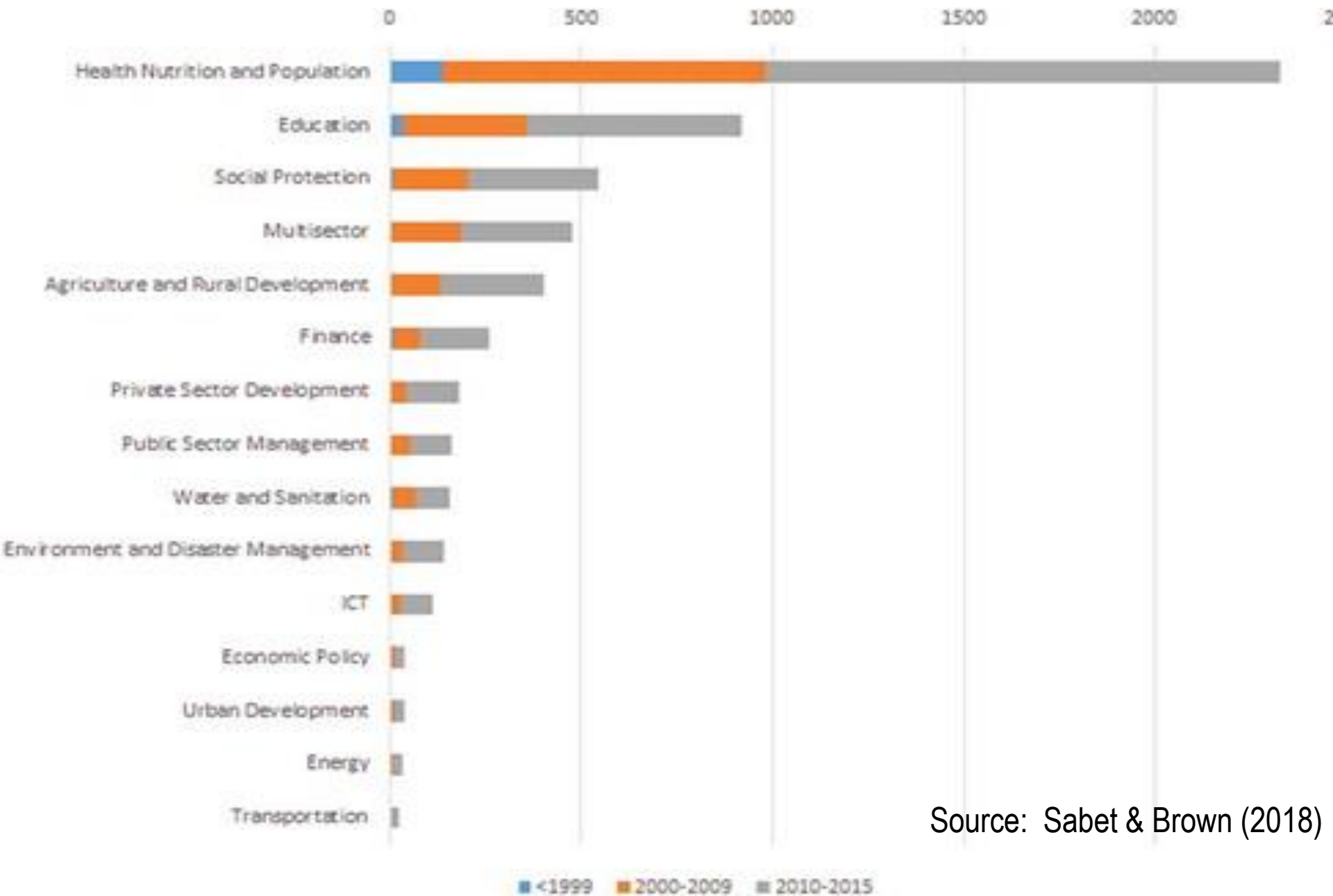
- Definition: *“A study of the attribution of changes in the outcome to the intervention with experimental or quasi-experimental design”* (3ie)
- The rise in **quantity** and **quality** of impact evaluations  
(Cameron et al 2016, McEwan 2012, Sabet & Brown 2018)
- Reflecting the explicit need for (health) policies to be based on evidence of “what works”

# Impact evaluations in LMICs from 1990–2015 (all areas)



Source: Sabet & Brown (2018)

# Impact evaluations by sector and publication decade



Source: Sabet & Brown (2018)

# “Impact evaluations”

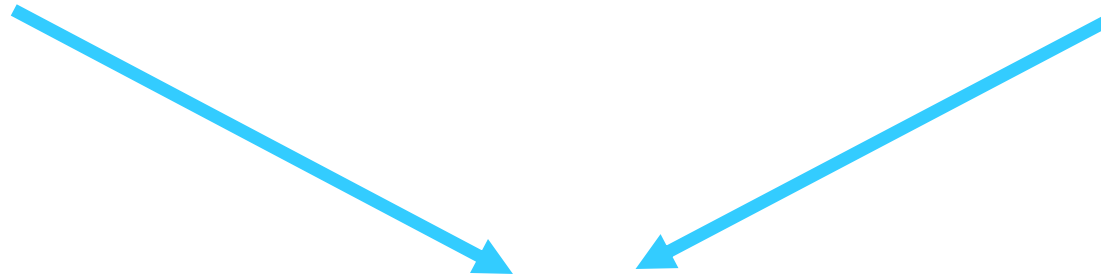
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- The rise in **quantity** and **quality** of impact evaluations (Cameron et al 2016, McEwan 2012, Sabet & Brown 2018)
- Reflecting the explicit need for (health) policies to be based on evidence of “what works”
- Yet impact evidence alone does not inform priority-setting  
→ Economic evaluation / decision analysis is needed

## Impact evaluation (IE)

- A study of the attribution of changes in the outcome to the intervention w experimental or quasi-experimental design (3ie)

## Economic evaluation (EE)

- Comparative analysis of alternative courses of action in terms of both their costs and consequences
- Requires *decision analysis*



- Objectives:**
- 1) How much do they go together?
  - 2) If they do, how well is it done?
  - 3) If not many and/or low quality, then why?

# Methods – Literature Search

- Structured literature search using
  - the 3ie Impact Evaluation Repository
  - and the Ovid Medline databases
- Econ. evaluation search terms and exclusion criteria (e.g. no costing studies)

The screenshot shows the homepage of the 3ie Impact Evaluation Repository. At the top, there are navigation links for Home, Blog, Newsletter, Events, Publications, and About. Below this is a search bar with the text "Enter your search terms here." and a "Search" button. The main content area features a grid of filters for "Title" and "Author", and a list of filter categories including "all sectors...", "all countries...", "all selected sub-groups...", "all regions...", "all evaluation methods...", "All completed impact evaluations", and "all publication types...". A sidebar on the left contains a menu with items like "Briefs", "Systematic Reviews", "Impact Evaluations", "3ie-Funded Impact Evaluations", "Impact Evaluation Repository", and "Evidence Gap Maps". A main article titled "Impact Evaluation Repository" is visible, with a sub-headline "The Impact Evaluation Repository is an index of all published impact evaluations of development interventions." and a "more..." link.

The screenshot shows the Ovid MEDLINE database website. At the top, there are links for "Login/Register" and "Product Login", and the "Wolters Kluwer" logo. The main header features the "Ovid" logo and a search bar with the text "search ovid.com". Below the search bar is a navigation menu with items like "Journals", "Books", "Collections", "Databases", "Platforms", "Featured Subjects", and "Customer Support". The main content area displays the "Ovid MEDLINE" database, with a "Request A Trial" button. A sidebar on the right promotes "Free Instant Access This Month" for "Biomedical Research Grants—ÜberResearch" and mentions "NEW! ÜberResearch is a searchable database of awarded research funding that includes more than 600,000 indexed records. And now it's available on the Ovid® platform!".



## Include

## Exclude

LMIC

High-Income Country

Treatment effect reported within study

Treatment effect estimated externally or through meta-analysis, treatment effect simulated

Experimental and quasi-experimental designs

RCTs for biomedical efficacy, other study types (i.e. uncontrolled *before and after*, *uncontrolled observational study*)

Cost-effectiveness, cost-benefit, cost-consequence, cost minimisation, RoI

Other frameworks (*MCDA*) or no economic evaluation framework

Direct health outcomes, intermediate health outcomes; Monetary valuations of health

Outcomes not directly linkable to health (*consumption*, *educational attainment*)\*

Estimation of partial/full economic costs and/or opportunity costs

No consideration of costs

English language articles only

Non-English language (based on 3ie inclusion criteria)

# Methods – Search/screening strategy

## Strategy 1: 3ie database

2,419 studies identified in 'Health nutrition and population' sector in 3ie repository

Economic evaluation search terms applied

117 studies for abstract review

70 studies exclude

47 studies for full text review

3 costing study  
2 no health outcome

42 studies

## Strategy 2: Ovid MEDLINE

8,155 impact evaluation studies identified from Ovid search

Economic evaluation search terms applied, duplicates with 3ie search removed, constrained to 2000-2017

380 studies for abstract review

282 studies exclude on Title/Abstract

84 studies for full text review

70 studies excluded based on full-text review

28 studies

70 studies for quality assessment



# Quality assessment criteria

(derived from iDSI Reference Case for Economic Evaluation, Wilkinson et al, 2016)

- 1) The transparent statement of the decision problem, and the inclusion of appropriate comparators
- 2) Details of the analysis, including the measure of health outcomes, time horizon and discounting
- 3) The perspective of the study
- 4) Relevant costs
- 5) Heterogeneity
- 6) Uncertainty
- 7) Constraints (e.g. budget impact analysis)
- 8) Equity

# Results – in brief

- 1) A clear shortage of studies that combine impact and economic evaluation (e.g. 2% of health IEs in 3ie database)
  - 2) Of those that do, even fewer have undertaken full economic evaluations
  - 3) Considerable room for improving the quality of the existing economic evaluations
- ➔ Big scope (and need) for more integration of the two!

# Results – descriptives

- Published in econ, medical, public health, development journals
- Mostly experimental (RCT design) (n=56)
- Some quasi-experimental:
  - 4 DiD, 4 PSM,
  - 1 IV, 1 ITS,
  - 4 other (matching, regression)
- Broad range of interventions evaluated (e.g. vaccination, disease prevention and treatment, health services, nutrition, health promotion, cash transfers, health system-level)
- Type of econ evaluation:
  - Mostly cost-effectiveness analysis (n=54)
  - Some cost-benefit analyses (n=8).
  - Cost-minimisation (n=3), Cost-consequences (n=2)

# Results - Quality assessment (highlights)

Criterion	Criterion Met	
	No. of studies	% of studies
Decision problem clearly stated	50	(71%)
Health measure (QALY, DALY or similar)	20	(29%)
Time horizon	23	(33%)
Perspective stated	36	(51%)
Societal perspective considered	26	(37%)
Scale-up costs	17	(24%)
Heterogeneity explored	6	(9%)
Structural uncertainty explored	6	(9%)
Budget impact analysis	3	(4%)
Equity considerations	0	(0%)

# Discussion

## Why so few, so limited quality?

- ***“We’re neither used nor trained to do this”***
  - IE and EE represent different (sub-)disciplines, different training
- ***“It is difficult”***
  - Need for guidance specific to the setting of impact evaluations
  - J-PAL costing template tool?
- ***“Nobody told us to – and it’s costly”***
  - Donors / national governments should consider demanding strong consideration of EE in IEs

# Discussion

## What next?

- Need for further development of quality assessment guidelines reflecting particular challenges of IE & EE
  - HICs: Meacock et al 2014, Meacock 2018
  - LMICs (various areas): McEwan 2012, Dahliwal et al 2013, Evans & Popova 2014
- What evidence does the decision-maker require?
- Use of observational data based impact estimates
  - incl. new methods (eg machine learning?)
  - Careful definition of parameter of interest (ATE, ATT, LATE)
  - What is the counterfactual? (e.g. no national health insurance?)
  - Combining observational estimates with external evidence (e.g. costs, long term impacts)
- Costs and benefits beyond health sector
- Distributional impacts



# Acknowledgements

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