



Principles of Evidence Aggregation

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Agenda

1. [What is evidence aggregation?](#)
2. [Basic process of evidence aggregation](#)
3. [Biases in evidence aggregation](#)
4. [Strategies to measure and counter biases](#)

1 Evidence aggregation





Evidence aggregation

A process of systematically searching for, screening, collecting (extracting), and analyzing findings from multiple studies to draw broader and less biased conclusions about a specific question or topic.





Objectives of evidence aggregation

To assess the reliability, validity, and generalizability of research evidence.

- **Reliability:** Consistent findings across multiple studies and settings.
- **Validity:** Accurate measurement of causal relationship, including precision.
- **Generalizability:** Applicability of findings to broader or (more specific) populations or settings.

To answer policy relevant questions and inform program design.





Methods of evidence aggregation



**Meta
analysis/
regression**



**Systematic
review**



**Vote
counting**



**Narrative
review**



**Bayesian
evidence
synthesis**



Some examples



Is Investment in Preprimary Education Too Low?

Lessons from (Quasi) Experimental Evidence across Countries

Alaka Holla
Magdalena Bendini
Lelys Dinarte
Iva Trako

The World Bank Economic Review, 36(1), 2022, 244–267
<https://doi.org/10.1093/wber/lhab007>
Article

What We Learn about Girls' Education from Interventions That Do Not Focus on Girls

David K. Evans and Fei Yuan



Original Article | Full Access

Specification Searching and Significance Inflation Across Time Methods and Disciplines[†]

Eva Vivalt

American Political Science Review (2021) 115, 2, 709–716
doi:10.1017/S0003055420000957 © The Author(s), 2021. Published by Cambridge University Press on behalf of the American Political Science Association

Letter

Do Commodity Price Shocks Cause Armed Conflict? A Meta-Analysis of Natural Experiments

GRAEME BLAIR *University of California, Los Angeles*
DARIN CHRISTENSEN *University of California, Los Angeles*
AARON RUDKIN *University of California, Los Angeles*

OXFORD

Unconditional Cash Transfers: A Bayesian Meta-Analysis of Randomized Evaluations in Low and Middle Income Countries

Tommaso Crosta, Dean Karlan, Finley Ong, Julius
Rüschepöhler & Christopher R. Udry

2 Basic process for evidence aggregation



Basic process

Identify objective

Rationale for the evidence aggregation.
What are the research questions to answer?

Search

Search for relevant studies using broad eligibility criteria from multiple sources.

Screen

Screen the studies systematically using inclusion/exclusion criteria and document the process.

Extract/code

Extract a set of outcomes and variables from all studies in a consistent way, including effect measures and study attributes.

Aggregate & analyze

Adopt appropriate synthesis methods to analyze the data collected from eligible studies.

3 Biases in evidence aggregation





Evidence aggregation is not bias-proof

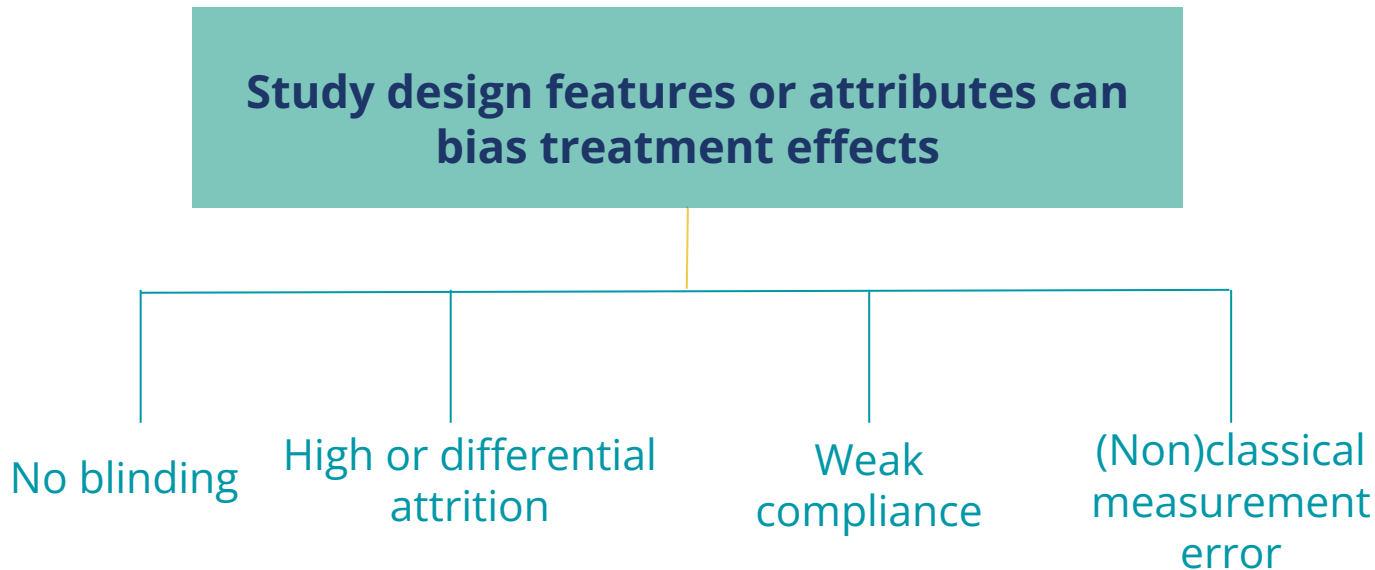
- A goal of evidence *aggregation*: mitigate biases from individual studies.
- Simply aggregating multiple studies does not necessarily reduce biases.
- Assessing and reporting risks of biases is crucial for evidence aggregation. [[PRISMA CHECKLIST](#)]

Types of bias

- Results of individual studies included
- Results of a synthesis



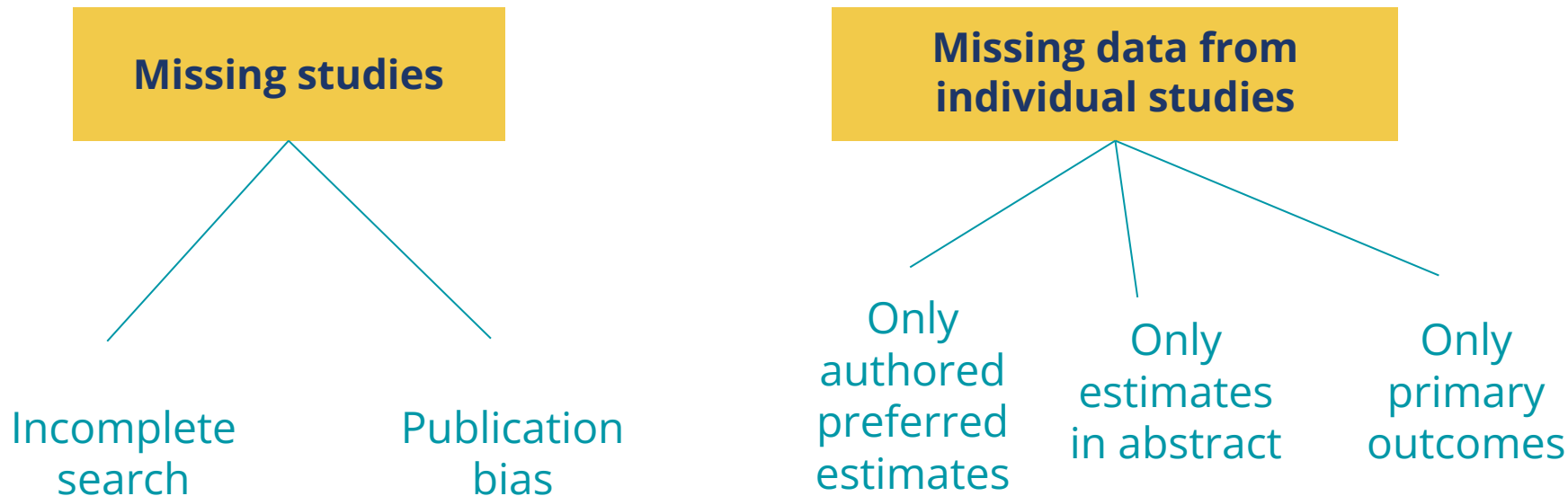
Types of biases: **Individual studies**



Aggregating biased studies → biased average effect

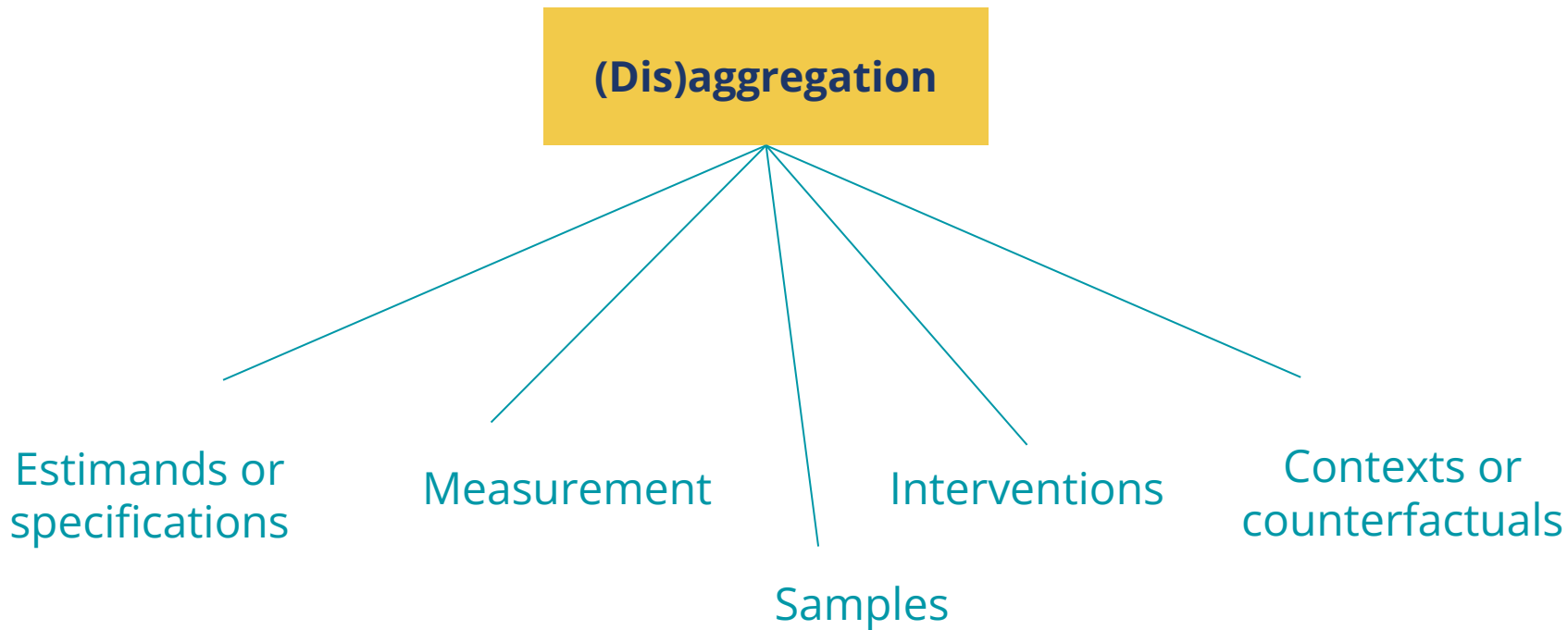


Types of biases: **Synthesis**

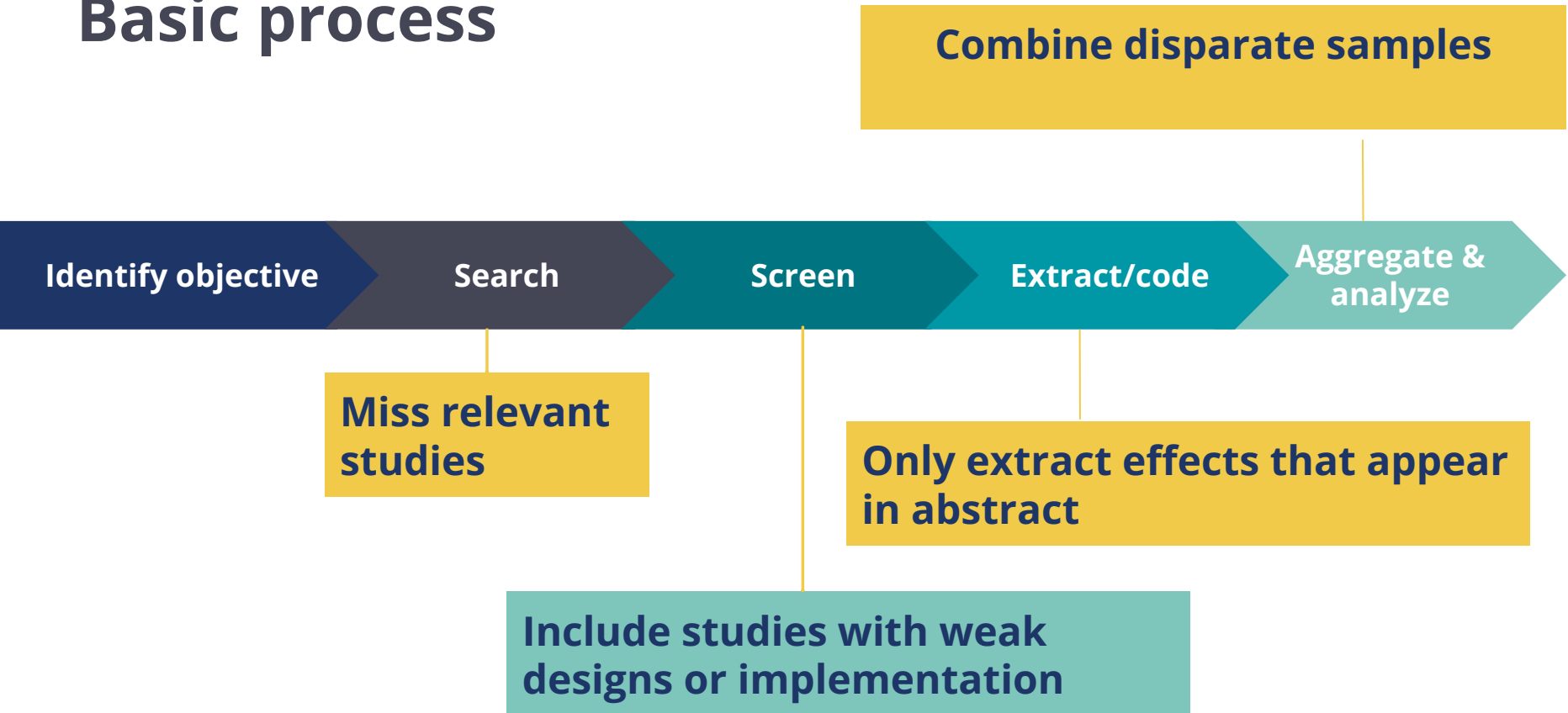




Types of biases: **Synthesis**



Basic process



Strategies to 4 measure and counter biases



Assessment of risks of biases

Best practices

Reliability:

Independent assessments from multiple reviewers

Reporting: Specify tools, reviews, and assessment results.

Assessment strategies

Using tools to systematically assess risks of bias in studies or syntheses

- [RoB 2 tool \(tool for Risk of Bias in randomized trials\)](#)
- GRADE (Grading of Recommendations Assessment, Development, and Evaluation)

Sensitivity analyses (disaggregations & aggregations)

Reduce biases in the research process



Search

Include full search strategies for all databases, registers and websites

Screen

Specify the methods used to decide whether a study met the inclusion criteria of the review

Extract/Code

1. Specify methods used to collect data
2. List items to collect

Analyze

Describe synthesis methods and results

IDEAL strategy to reduce & assess bias



Search

Intake process for collections
Tools for scraping from journals and working paper series

Screen

Tools for classifying method, location, and topic

Extract

Fields that assess risk of bias of individual studies
Extraction of all treatment effects
Double coding

Analyze

Fields that detail estimand/specification, measurement, and interventions
Fields that permit standardization

IDEAL fields for reporting and sensitivity analyses



**RCT
experimental
design**

Interventions

Outcomes

Sample

Data collection

**Empirical
estimation
model**

**Estimates of
treatment
effects and
precision**

**Research
transparency &
conflict of
interest**

5 IDEAL & measurement of bias





IDEAL enables best practices

IDEAL outputs

Search

Include full search strategies for all databases, registers and websites

Standard intake process for evidence collections, tools for scraping

Screen

Specify the methods used to decide whether a study met the inclusion criteria of the review

Open-source RCT and topic classification tools

Extract/Code

1. Specify methods used to collect data
2. List items to collect

- Metadata schema
- Survey fields and coding protocol with data entry mask
- Double entry coding
- Quality checks and supervision

Analyze

Describe synthesis methods and results

Standardization of effect size
Guidelines for aggregation

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Thank you
for listening



Impact Data and Evidence Aggregation Library