

Open Policy Analysis: Concepts and Applications

Metodos En Pauta, Universidad de Pernambuco

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22 February 2021 | [slides](#)

About Us

BITSS

The Berkeley Initiative for Transparency in the Social Sciences works to improve the credibility of science by advancing transparency, reproducibility, rigor, and ethics in research.

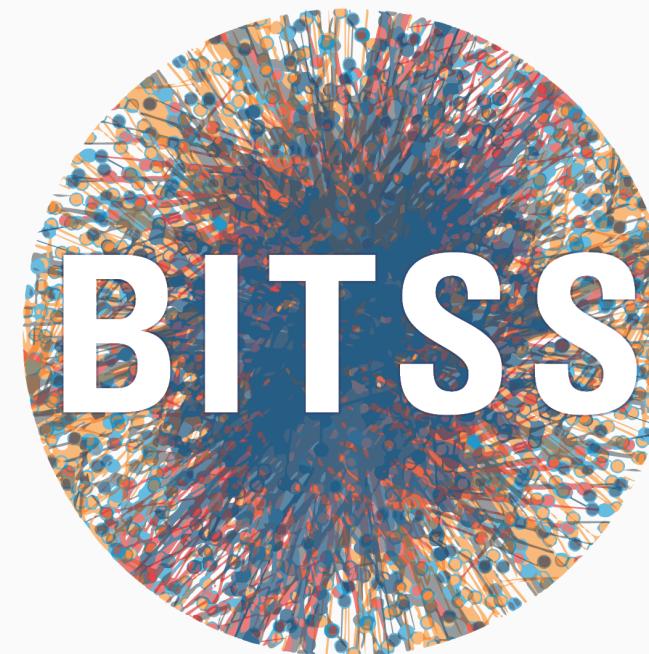
OPA

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Fernando Hoces

Katie Hoeberling

We are part of the Center for Effective Global Action ([CEGA](#)).



BERKELEY INITIATIVE FOR TRANSPARENCY
IN THE SOCIAL SCIENCES

Edward Miguel

Jui Paithane

Undergraduate RAs



Motivation: Rise of Alternative Facts



Senator *discussing facts* on unemployment insurance

Interviewer: “We I have looked at what economist are saying, and [...] there is no measurable evidence that people are staying at home because of [\$600 unemp. insurance]”

Congressman: “[scoffs] I don’t know which economist you are talking about, but ...”

A Framework for Open Policy Analysis

Based on Hoces, Grant and Miguel 2020

Policy Analysis And The Evidence-Based Policy Movement

Evidence-Based movement is growing.

- The golden age of evidence-based policy (Haskins 2017).
- Credible causal evidence (Angrist & Pischke, 2010).
- Transparency and reproducibility of research (Miguel et al. 2014).
- Commission on Evidence-Based Policymaking (CEBP, 2017)

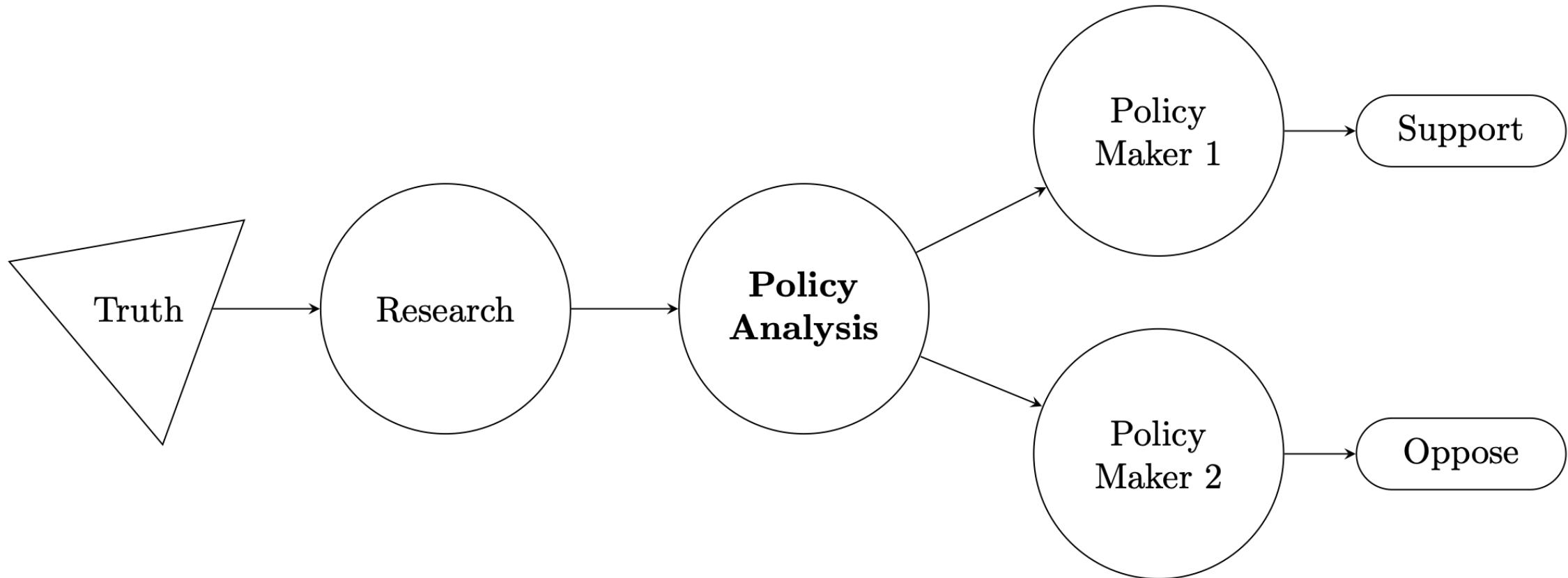
Policy Analysis is a fundamental link.

- As many definitions as textbooks (Dunn, 2015; Weimer & Vining, 2017; Williams, 1971)
- Common denominator: client-oriented empirical analysis meant to inform a specific policy debate
- Aspires at scientific rigor. (Wildavsky 1979),

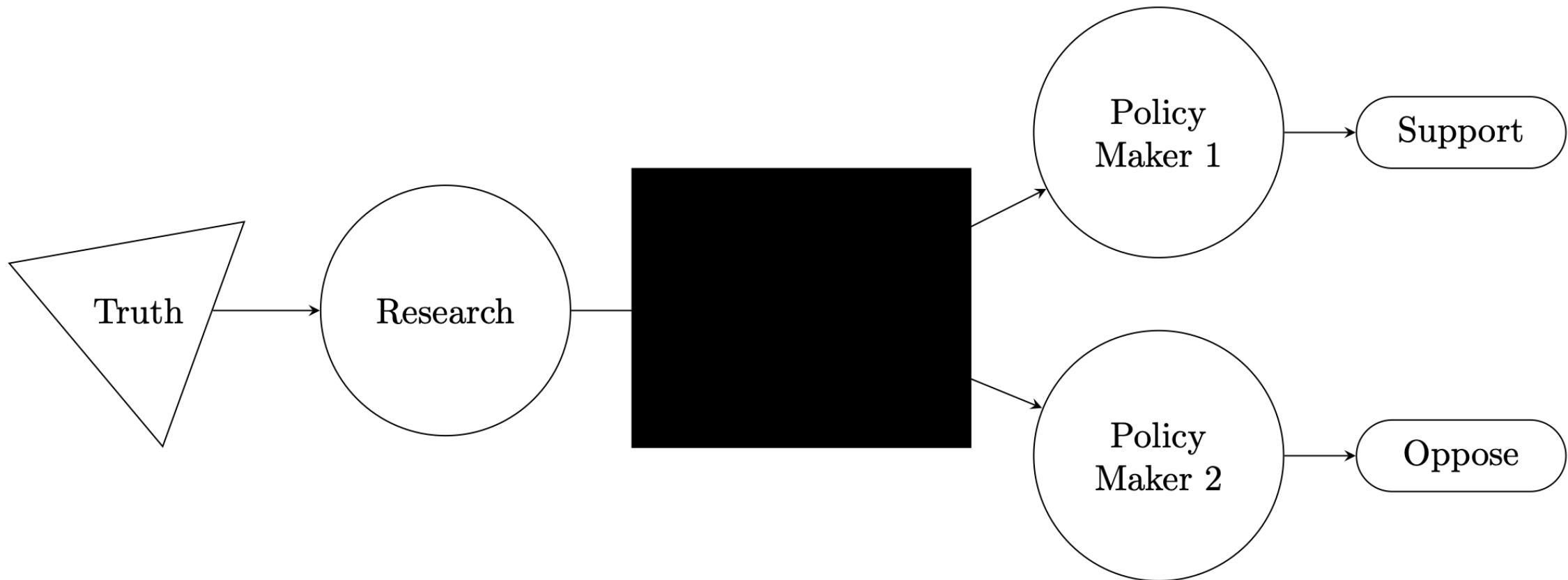
Examples of Policy Analysts



One Link From Evidence to Policy



One Link From Evidence to Policy



Reproducibility Crisis In Empirical Research

- Large magnitude of publication bias (Franco et al 2014).
- Evidence of extensive p-hacking across social science disciplines (Gerber et al 2008, Brodeur et al 2016).
- Replication rates are low (Collaboration et al, 2015 , Camerer et al, 2016, 2018).
- Computational reproducibility is also low (Stodden et al 2016, Chang and Li 2015, Gertler et al 2018).

The Open Science Movement

- Definition of principles of Open Science/Research Transparency (Miguel et al 2014)
- Development of guidelines to operationalize principles of Open Science (Nosek et al 2015)
- Journals and funders: Journals (Science + 5k other journals), Registries (AEA), Funders (NIH, NSF and multiple donors)

Credibility Crisis Of Policy Analysis

- Incredible Certitudes (Manski, 2013)
- Report wars (Wesselink et al, 2013)
- Alternative facts (“The Death of Expertise” Nichols, 2017; “The Death of Truth”, Kakutani 2018; “Post-Truth”, McIntyre 2018)

How This Affects The Evidence Based Policy Link?

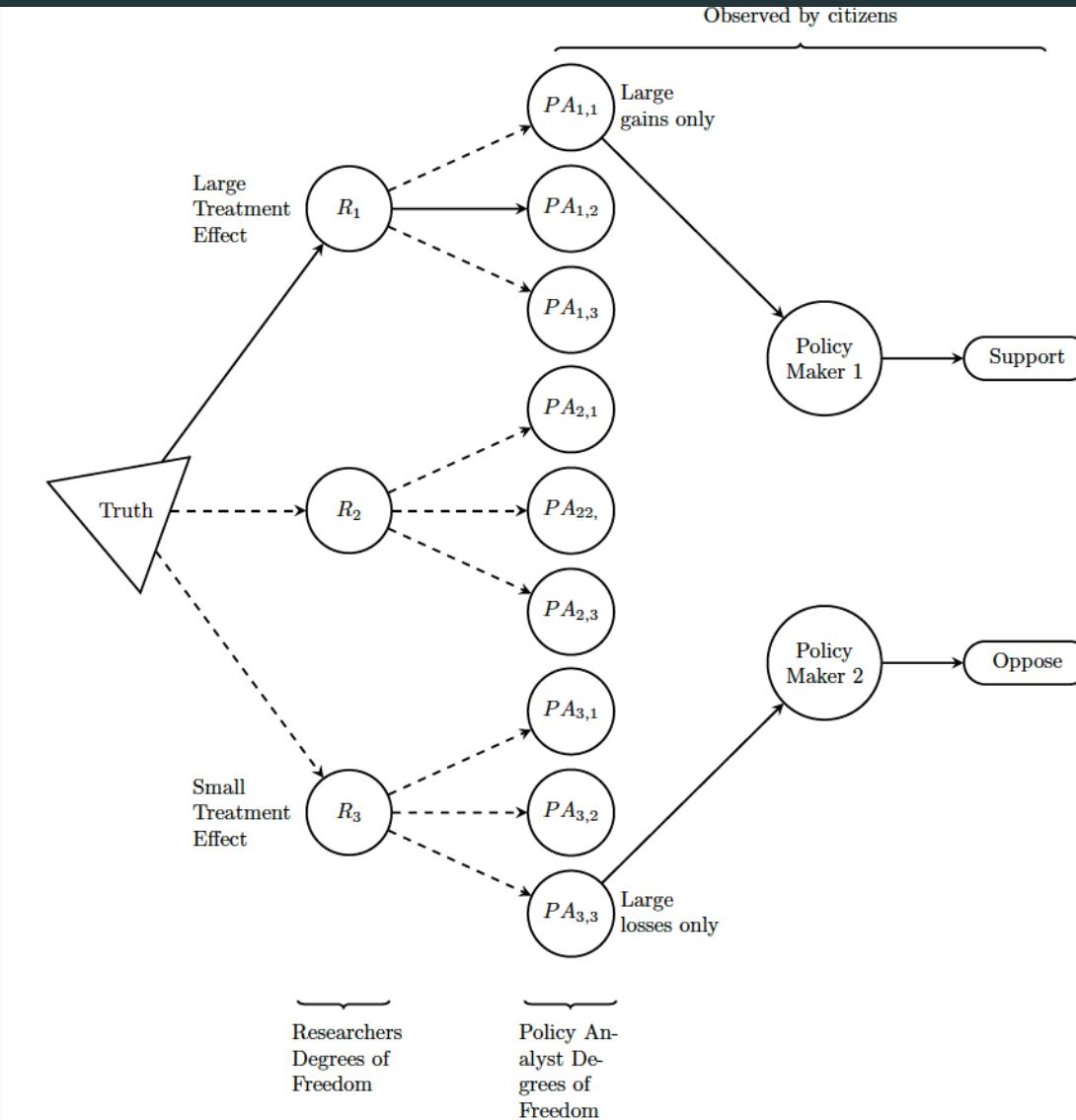


Figure 2: Policy-making with low credibility in research and policy analysis

Relevance

Main consequences of policy analysis that lacks openness:

- 1 - Cherry picking evidence.
- 2 - Challenging to automate and improve systematically recurring reports.
- 3 - Difficulty understanding how research informs policy analysis.

Cherry Picking Evidence

“When I was director of the CBO, I was very frustrated when we would write a policy report [saying] a certain policy would have **these two advantages and these two disadvantages**, and the **advocates** would **quote only** the part about the **advantages**, and the **opponents** would quote **only** the part about the **disadvantages**. That encourages the view that there are simple answers. There aren’t **generally simple answers**. There are **trade-offs**.”

Douglas Elmendorf (Director of CBO, 2009-2015) Harvard Magazine, 2016)

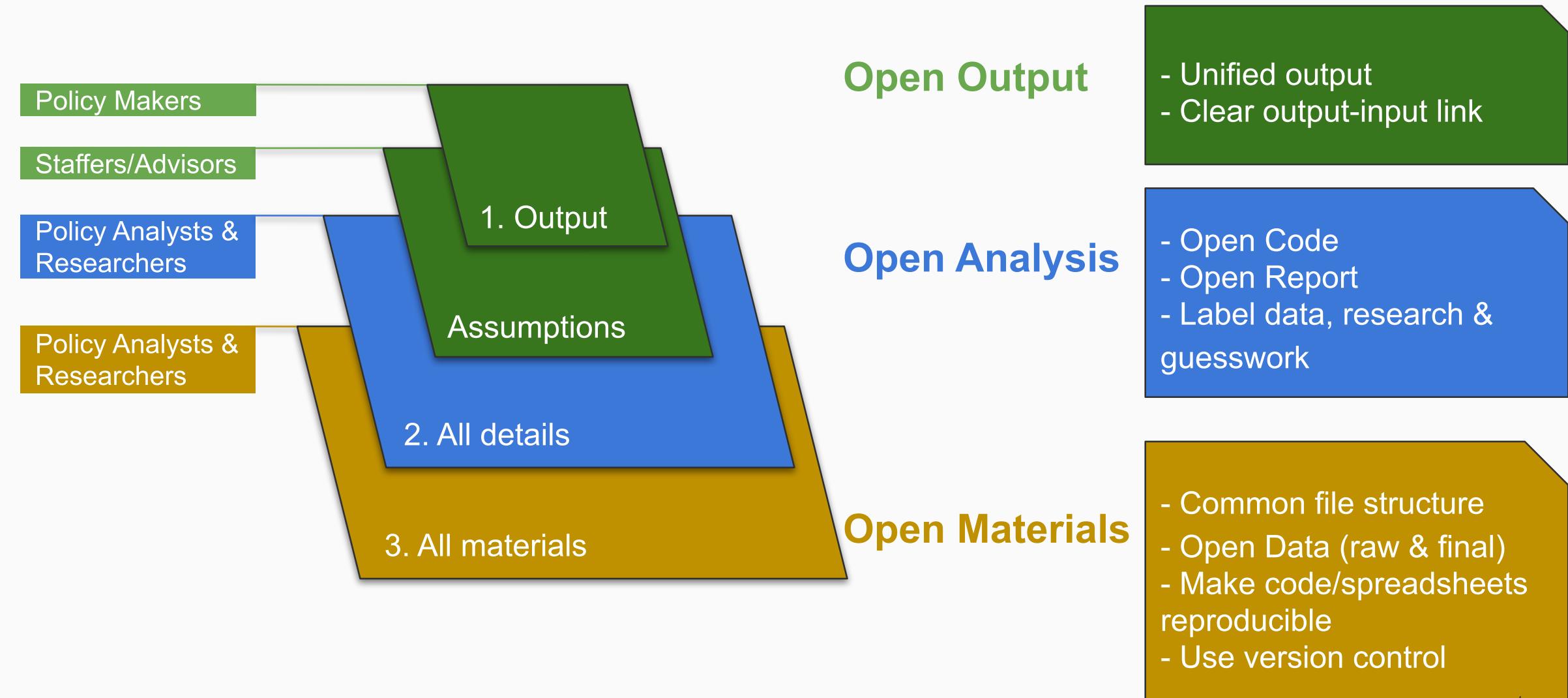
Open Science

	Empirical Research	Policy Analysis
Problems	Reproducibility Crisis	Credibility Crisis
Solutions	Open Science Principles, Guidelines, Applications	...

Open Policy Analysis

	Empirical Research	Policy Analysis
Problems	Reproducibility Crisis	Credibility Crisis
Solutions	Open Science Principles, Guidelines, Applications	Open Policy Analysis Principles

A Framework for Open Policy Analysis



Open Policy Analysis Applications

Deworming Interventions

- Parasitic worm infections are endemic in many countries, disproportionately affecting the poor
- They interfere with regular bodily processes by decreasing nutrient uptake and can thus lead to serious consequences on human health, education outcomes, and long-term economic well being
- Mass deworming interventions, at school level, have been proposed as a cost-effective approach to tackle this problem

Different settings for deworming

- Context of original study (Kenya, 1998-99) had very high prevalence rates of worm infections
- Implementation costs were very low (\$0.42 per round of treatment)
- Length of treatment was relatively short (2.4 years)
- Current deworming settings have lower prevalence rates, varying implementation costs and length of treatments

Strong debate around initial results

- Ozier (2020) summarizes differences between original findings (Miguel and Kremer 2004) and a re-analysis (Aiken et al, 2015). Emphasizes the role of communication of results in a reanalysis.
- This type of debate (result/re-analysis) can be seen in several other topics. For example: minimum wage, immigration, taxation.
- OPA need not guarantee agreement on key research finding, but should help avoid multiple policy reports

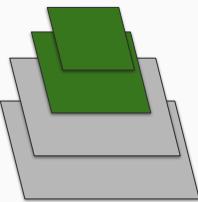
OPA on Deworming Interventions (Kenya+)

Contributions of OPA to deworming:

1. Selected one policy estimate among several alternatives and establish a clear link between it and underlying assumptions
2. Added documentation to increase reproducibility
3. Created a public repository with all materials for one-click reproducibility

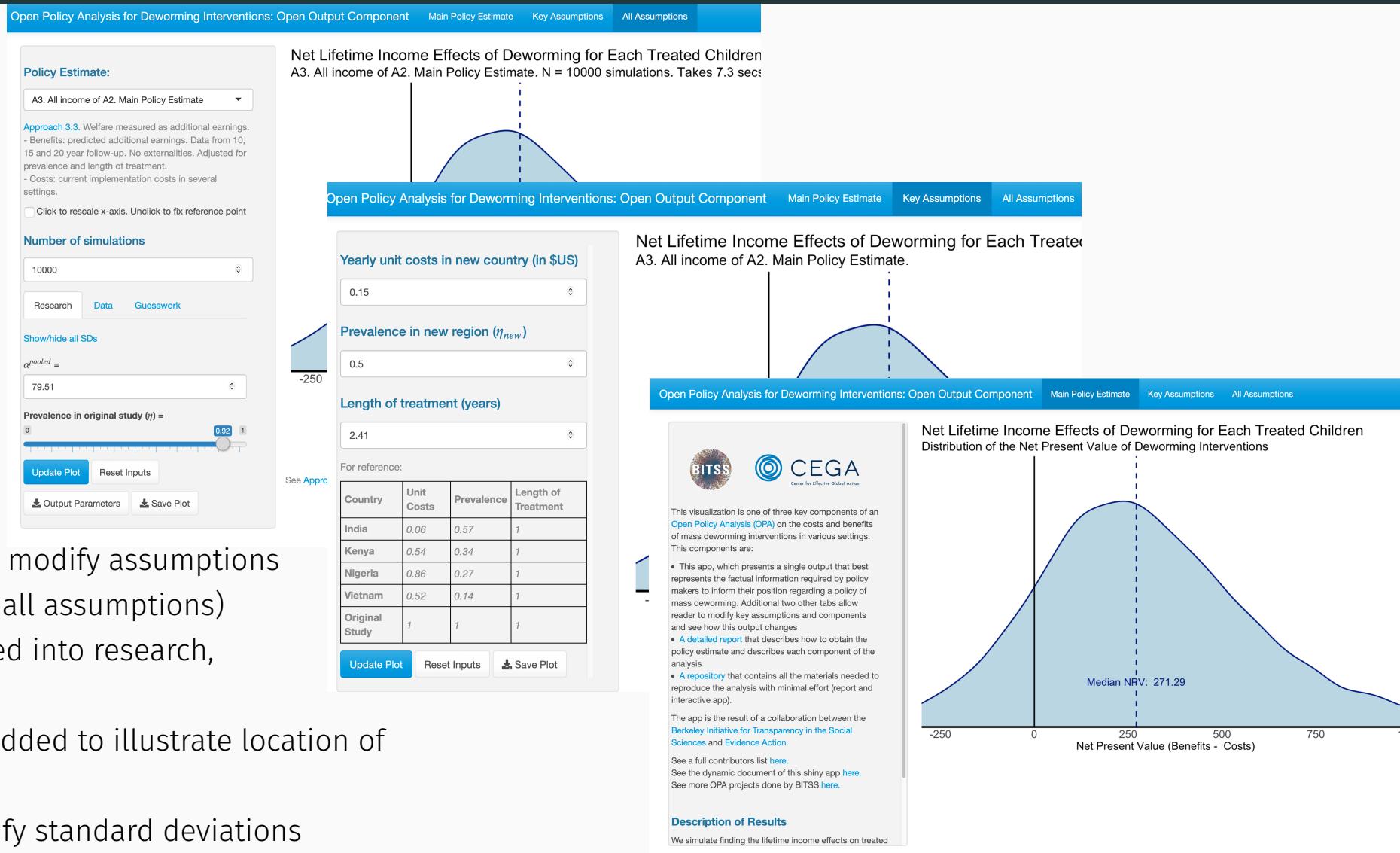
Open Output

Demo



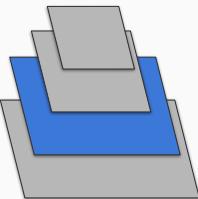
Main features

- One clear output previously agreed in consultation with policy partner
- Two additional tabs to modify assumptions (key assumptions and all assumptions)
- Each source is classified into research, data, or guesswork
- High level equations added to illustrate location of components
- Added feature to modify standard deviations
- Track values of each component



Open Analysis

Demo



Main features

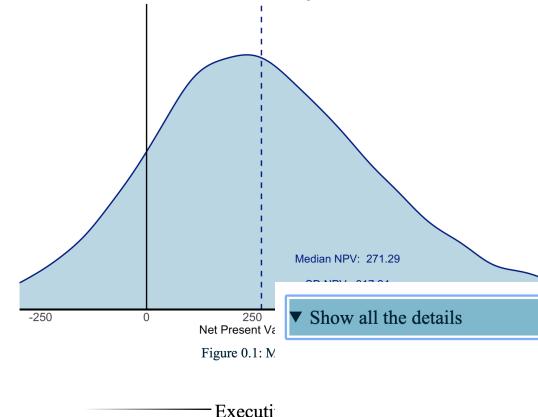
- Complete narrative description of the methodology
- Translation of each narrative step into an equation
- Implementation of each equation into code
- Combine all of the above into using a dynamic document (RMarkdown)
- Presentation of narrative, equations, and code in layered fashion to avoid overwhelming the reader
- Icon figure

BITSS CEGA
Open Policy Analysis
1 Introduction
2 Methodology
3 Main Results
References

OPEN POLICY ANALYSIS FOR DEWORMING

18 December, 2020

Net Lifetime Income Effects of Deworming for Each Treated Children
Distribution of the Net Present Value of Deworming Interventions



$$B = \sum_{t=0}^{50} \left(\frac{1}{1+r} \right)^t E_t \quad (1)$$

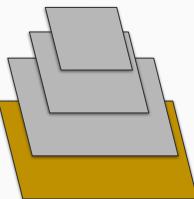
Where:

- E_t : earnings individuals are expected to generate at period t
- r : real interest rate as the discounting rate
- t : period t. Period 0 represents time of intervention. Individuals are assumed to enter the labor market 9 years after treatment.

```
# - inputs: stream earnings, discounting rate, number of periods
# - outputs: function that computes the present value of benefits
chunk_benefits <- function(){
#####
pv_benefit_f <- function(
  earnings_var = earnings_in,
  interest_r_var = interest_in,
  periods_var = periods_so
) {
  index_t <- 0:periods_var
  res1 <- sum( ( 1 / (1 + interest_r_var) )^index_t * earnings_var )
  return(res1)
}
```

Open Materials

Demo



Main features

- One-click reproducible documentation and app
- Extensive readme files
- Clear folder structure
- Version controlled
- Open data
- Acknowledgment to all contributors

BITSS-OPA / [opa-deworming](#)

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 21 branches 1 tag Go to file Add file Code

fhoces Change title of readmen file 53bb6f1 1 minute ago 728 commits

.binder update install.R 2 months ago

code Merge branch 'master' of <https://github.com/fhoces/opa-deworming> 1 hour ago

data

docs

rawdata

.gitignore

contributors.R

contributors.csv

opa-deworming.Rproj

readme.Rmd

readme.md

readme.md

Open Policy Analysis of Deworming

BITSS BERKELEY INITIATIVE FOR TRANSPARENCY IN THE SOCIAL SCIENCES

R version 4.0.0 (2020-04-24) -- "Arbor Day"
(Copyright (C) 2020 The R Foundation for Statistical Computing
Platform: x86_64-apple-darwin17.0 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
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Natural language support but running in an English locale

R is a collaborative project with many contributors.
(Type 'contributors()' for more information and
'citation()' on how to cite R or R packages in publications.)

Go to file Add file Code

Environment History Connections

Import Dataset Global Environment

Files Plots Packages Help Viewer

OPEN PO

BITSS CEGA

Open Policy Analysis

1 Introduction
2 Methodology
3 Main Results
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Net Lifetime Income Effect
Distribution of the Net Present

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The screenshot shows a GitHub repository named 'BITSS-OPA / opa-deworming'. The repository has 21 branches and 1 tag. A recent commit by 'fhoces' changes the title of a README file. The repository contains folders for '.binder', 'code', 'data', 'docs', 'rawdata', '.gitignore', 'contributors.R', 'contributors.csv', 'opa-deworming.Rproj', 'readme.Rmd', and 'readme.md'. Below the repository view is a RStudio interface. The left pane shows the file structure with '05_final_opa.Rmd' open, displaying R Markdown code for a shiny app. The right pane shows the 'Environment' tab of RStudio with various packages loaded. At the bottom, there's a shiny app window titled 'Open Policy Analysis' with logos for BITSS and CEGA, and a sidebar with navigation links for 'Introduction', 'Methodology', 'Main Results', and 'References'.

Lessons for future OPA projects: Costs

- Costs (approx bandwidth over a year at full time):
 - Principal Investigator 30-50%
 - Research assistant/programmer 100-150%
 - Program Manager 20%-30%
 - Original researcher: 1-5%
- Not all policy analysis justify this level of effort
- Characteristics that might justify an OPA:
 - Topics with strong disagreement on the facts among analysts
 - Recurrent reports (eg. ex-ante economic analysis from development banks/agencies)
 - Topics that have large expected welfare effects (eg. tax reform, social cost of carbon)
- With each new OPA project, templates will emerge and costs will likely fall

Additional Benefits of OPA

Easy to update and reuse

After deworming OPA is released, anybody can modify and improve into a newer version

Clearer connection of how evidence from research is used in policy analysis

Researchers can see clearly where their estimates are being used in a policy analysis. For example, the OPA can be used to justify power calculations of potential new studies.

Connection with forecasting

When there is little information for a parameter used in an OPA, a forecasting exercise can be carried out to elicit expert knowledge (DellaVigna, Pope, Vivaldi 2019).

Our Plan for OPA

- Develop framework to support OPA
- Support transition/adoption of OPA, and develop **case studies**
- Train students and analysts
- Build a community of practice

Other OPA Project: Wealth Tax (US)

- 2019
- See here

An Aspiration

“Democracy Thrives In Sunlight”

The Open Times

Washington DC

VOL. III., No. 14

JULY 13, 2025

THREE DOLLARS

*Ministry of
Labor
Publishes Open
Report on
Minimum Wage
Results Will Be Published
Separately in Two Weeks*

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Bipartisan Support for The Report's Methodology

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